

## APPENDIX A

### CASH MARKET ANALYSIS

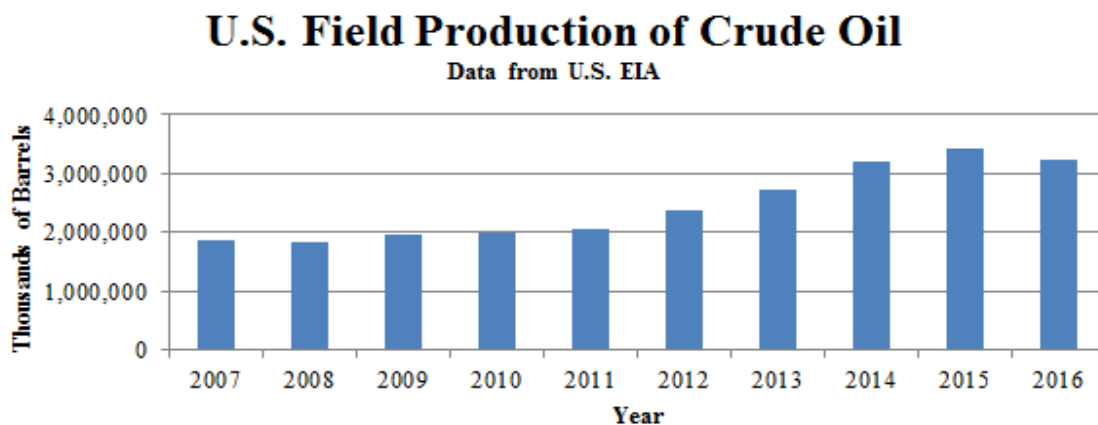
#### Crude Oil, Refined Products, and Natural Gas Liquids

##### A. Commodity Market Descriptions

###### 1. Crude Oil and Refined Products

Crude oil is one of the most widely used and actively traded commodities in the world. Crude oil is the unrefined and unprocessed petroleum that can be found in multiple global locations. The fossil fuel is drilled and harvested from oil reserves, naturally-occurring, subterranean geological formations where petroleum naturally pools. After extraction, the oil is separated into various stages of refinement (i.e. fuel oil, diesel, etc.), often by heating the crude oil in giant furnaces. The refined products are then separated from the crude oil, stored, and sold or consumed in their various forms. The markets for crude oil and each of its refined products are robust and competitive based on the unique chemical makeup and classifications of each product, its by-products, and its various uses.

Crude oil production in the United States has increased steadily over the last 100 years.<sup>1</sup> Much of the production has been concentrated on the supply of oil found in the southern and southeastern United States, however, advances in extraction have allowed for production improvements related to oil reserves in North Dakota, Alaska, and various offshore drilling facilities. The chart below demonstrates the increase in production of crude oil in the U.S. from 2007 to 2016.



<sup>1</sup> U.S. Field Production of Crude Oil, U.S. Energy Information Administration, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPUS2&f=A>

Many domestic and global industries rely on either crude oil or its by-products for production. The airline industry, for example, relies on jet fuel, a highly combustible petroleum by-product created by heating crude oil to a temperature of 176 °C, to power its commercial and passenger aircrafts. By-products of crude oil also extend to household consumption, as liquid petroleum gas (LP gas), the petroleum derivative created when crude oil is heated to approximately 40 °C, is used to heat homes across the globe. These are just two of the innumerable examples for how petroleum products are used globally.

Various forms of crude oil and refined products are described in the glossary of select terms provided below.<sup>2</sup>

Term	Definition
Jet Fuel	A normally gaseous straight-chain or branch-chain hydrocarbon extracted from natural gas or refinery gas streams. It includes normal butane and refinery-grade butane and is designated in ASTM specification D1835 and Gas Processors Association specifications for commercial butane.
Heating Oil	A distillate fuel oil that has distillation temperatures of 400 degrees Fahrenheit at the 10-percent recovery point and 640 degrees Fahrenheit at the 90-percent recovery point and meets the specifications defined in ASTM Specification D 396. It is used in atomizing type burners for domestic heating or for moderate capacity commercial/industrial burner units. See No. 2 Distillate.
Gasoline	A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in spark-ignition engines. Motor gasoline, as defined in ASTM Specification D 4814 or Federal Specification VV-G-1690C, is characterized as having a boiling range of 122 to 158 degrees Fahrenheit at the 10 percent recovery point to 365 to 374 degrees Fahrenheit at the 90 percent recovery point. Motor Gasoline includes conventional gasoline; all types of oxygenated gasoline, including gasohol; and reformulated gasoline, but excludes aviation gasoline. Note: Volumetric data on blending components, such as oxygenates, are not counted in data on finished motor gasoline until the blending components are blended into the gasoline.
Diesel	A fuel composed of distillates obtained in petroleum refining operation or blends of such distillates with residual oil used in motor vehicles. The boiling point and specific gravity are higher for diesel fuels than for gasoline.

<sup>2</sup> U.S. Energy Information Administration - Glossary. (n.d.). Retrieved from <https://www.eia.gov/tools/glossary/index.php>

Fuel Oil	A liquid petroleum product less volatile than gasoline, used as an energy source. Fuel oil includes distillate fuel oil (No. 1, No. 2, and No. 4), and residual fuel oil (No. 5 and No.6).
RBOB Gasoline	Reformulated gasoline blendstock for oxygenate blending.
CBOB Gasoline	Conventional gasoline blendstock for oxygenate blending.
ULSD	Ultra-low sulfur diesel fuel - Diesel fuel containing a maximum 15 parts per million (ppm) sulfur.

Production centers and shipping hubs for crude oil in the southern United States, Middle East, and North Sea have created natural market hubs where physical crude oil and refined products are bought and sold by a diverse group of companies, including producers, pipeline companies, utilities, storage operators, and marketers, as well as, commercial entities utilizing the commodity as an input in their business models. The commodity specifications themselves are often highly detailed and the cash commodity must meet certain specifications (i.e. sulfur content, density, boiling point, etc.) for delivery. A sample of the cash commodity is often tested prior to delivery to ensure compliance with product specifications. While the commodity is generally available at the production center at a fixed price, the hundreds of various production centers of crude oil globally generally trade at a differential to a major market hub (i.e. Brent or WTI) or regional production center (i.e. LLS, Mars, Bakken, etc.). In certain instances, market participants will trade crude oil as a differential to a refined product (i.e. crack spread), allowing market participants to hedge production and refinement in a single transaction. On a near real-time basis the prices and quantities traded in the cash market are then reported to third-party index creators, as described in the following sections. Many of the Exchange’s products being listed will settle at a differential to Brent, WTI, or another regional production center. Those differentials will be based on indices published by third parties described further in this document.

## 2. Natural Gas Liquids

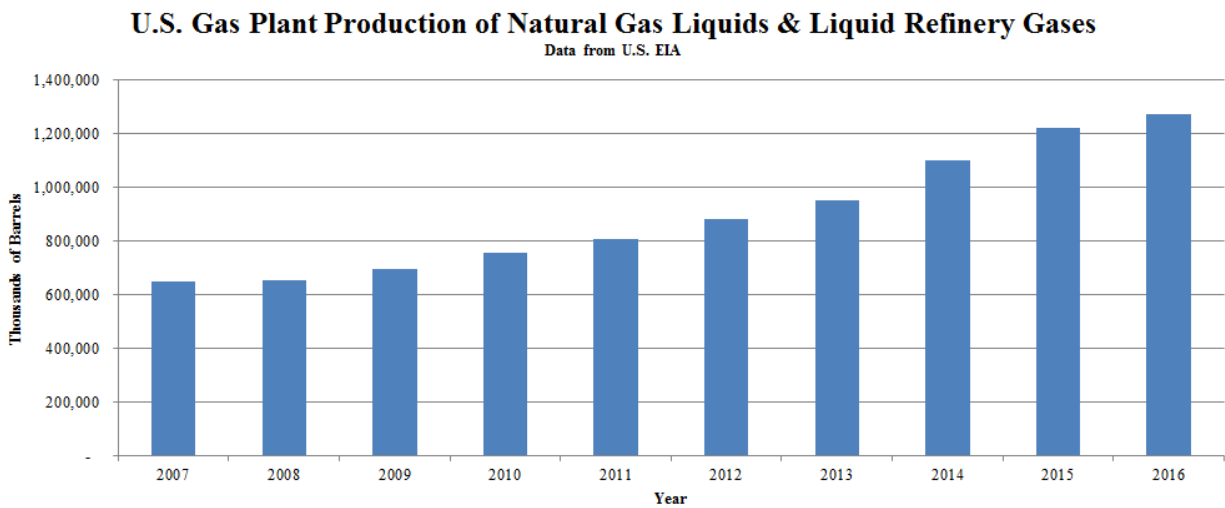
Natural gas liquids (NGLS) are separated from wet natural gas as liquids “through the process of absorption, condensation, or other methods in gas processing or cycling plants.”<sup>3</sup>

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<sup>3</sup> Wet natural gas is a mixture of hydrocarbon compounds and small quantities of various non hydrocarbons existing in the gaseous phase or in solution with crude oil in porous rock formations at reservoir conditions. The principal hydrocarbons normally contained in the mixture are methane, ethane, propane, butane, and pentane. Typical nonhydrocarbon gases that may be present in reservoir natural gas are water vapor, carbon dioxide, hydrogen sulfide, nitrogen and trace amounts of helium. Under reservoir conditions, natural gas and its associated liquefiable portions occur either in a single gaseous phase in the reservoir or in solution with crude oil and are not distinguishable at the time as separate substances. Note: The Securities and Exchange Commission and the Financial

While NGLs are exclusively made of only carbon and hydrogen bonds, their chemical makeup can be as diverse as their uses. Ethane, propane, butane, and iso-butane are all NGLs and are used in various sectors of the U.S. economy.<sup>4</sup> “NGLs are used as inputs for petrochemical plants, burned for space heat and cooking, and blended into vehicle fuel.”<sup>5</sup> “Higher crude oil prices have contributed to increased NGL prices and, in turn, provided incentives to drill in [NGL]-rich resources with significant NGL content.”<sup>6</sup>

As described in the chart below, United States production of NGLs has increased steadily over the last ten years, from an annual production of approximately 651 million in 2007 to approximately 1.3 billion in 2016. Much of the increase in production has centered around advancements in shale fracking in the northern United States and the increased demand for the cash commodity.



NGL markets trade substantially similar to the markets for crude oil described above. Production centers and/or shipping hubs operate as market hubs where diverse groups of buyers and sellers create robust and liquid markets for the various NGL types. The specifications for the products are standardized globally, and the commodity is often sampled prior to delivery to ensure compliance with product specifications. While the markets can be traded at a fixed price, NGL products, similar to crude oil, often trade at differentials to regional or international NGL indices or indices of complementary products. On a near real-time basis the prices and quantities traded in the cash market are then reported to third-party index creators, as described in the following sections.

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Accounting Standards Board refer to this product as natural gas. U.S. Energy Information Administration - Glossary. (n.d.). Retrieved from <https://www.eia.gov/tools/glossary/index.php>

<sup>4</sup> What are natural gas liquids and how are they used? (2012, April 20). Retrieved from <https://www.eia.gov/todayinenergy/detail.php?id=5930>

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

Various forms and sources of NGLs are described in the glossary of select terms provided below.<sup>7</sup> The markets for these products are often combined into differentials, as described above, to trade as spreads.

<b>Term</b>	<b>Definition</b>
Butane	A normally gaseous straight-chain or branch-chain hydrocarbon extracted from natural gas or refinery gas streams. It includes normal butane and refinery-grade butane and is designated in ASTM specification D1835 and Gas Processors Association specifications for commercial butane.
Ethane	A normally gaseous straight-chain hydrocarbon. It is a colorless paraffinic gas that boils at a temperature of -127.48 degrees Fahrenheit. It is extracted from natural gas and refinery gas streams.
Ethanol	An alcohol which is most often derived from corn. Ethanol is designed to be blended with gasoline to produce a cleaner burning fuel, and is an accepted oxygenate component for the oxygenated seasons mandated by the EPA.
Iso-butane	A normally gaseous branch-chain hydrocarbon. It is a colorless paraffinic gas that boils at a temperature of 10.9 degrees Fahrenheit. It is extracted from natural gas or refinery gas streams.
Natural Gasoline	A mixture of hydrocarbons, mostly pentanes and heavier, extracted from natural gas, that meets vapor pressure, end-point, and other specifications for natural gasoline set by the Gas Processors Association.
Non-TET	Price designation which only applies to products traded in the Mont Belvieu Caverns facility that is a subsidiary of Enterprise Products Partners, LP.
Propane	A normally gaseous straight-chain hydrocarbon. It is a colorless paraffinic gas that boils at a temperature of -43.67 degrees Fahrenheit. It is extracted from natural gas or refinery gas streams. It includes all products designated in ASTM Specification D1835 and Gas Processors Association Specifications for commercial propane and HD-5 propane.
TET	The designation used within the industry to specify that product traded in the original TET facility currently owned by the Energy Transfer Partners LP and Regency Energy Partners LP joint venture, (LST), at Mont Belvieu, Texas.

#### B. *Price Sources*

The Exchange is listing futures contracts based on various, standardized price indices for U.S., Canadian and European-based crude oil, refined products, and NGL benchmarks. The

<sup>7</sup> OPIS - Glossary of Terms. (n.d.). Retrieved from <https://www.opisnet.com/about/glossary-of-terms/>

futures products are based on the indices published by the providers listed below. In certain futures contracts, the product may be based on the differential of two indices. The indices utilize standardized, industry-approved definitions of shipping and receipt locations and product terms, as well as, common trading hub locations domestically and globally. Where applicable, the Exchange has cited the relevant definition provided by the publisher if the product specification is not readily apparent (i.e. Natural Gas Exchange indices), however, most indices utilize the standard definitions of the cash commodity provided above. The Exchange has provided footnotes offering the specific methodological process for price index creation for each index provider described below.

1. Argus Media Group

Argus Media Group (“Argus”) publishes price assessments for crude oil and refined products and its indexation of physical trades are widely used as benchmarks by market participants. Argus’ market data is based on standardized methodology provided in published descriptions.<sup>8</sup> Argus formulates its price assessments based on polling and information received by telephone, instant message, email or other means, from a “wide cross section of market participants, including producers, consumers and intermediaries.” Argus ensures that the market data is credible and that its reporters are mentored and “held accountable” for the market data published.

The Exchange will rely on prices reported by Argus for the settlement of its futures contracts based on the markets, locations, and commodities provided below.

No.	Price Assessment	Market Location	Commodity
1	Argus Sour Crude Index (ASCI)	US Gulf of Mexico	Crude Oil
2	Bakken Clearbrook	Clearbrook, MN	Crude Oil
3	Butane, Argus CIF ARA	Amsterdam, Rotterdam, Antwerp	Butane
4	Butane, Argus Far East Index (AFEI)	Japan, South China	Butane
5	Butane, Argus Saudi CP	Saudi Aramco, Saudi Arabia	Butane
6	Butane, Argus Sonatrach CP	Bethioua, Algeria	Butane
7	LLS	St. James, LA	Crude Oil
8	Mars	Clovelly, LA	Crude Oil
9	NY Harbor Jet	NY Harbor, NY	Jet Fuel
10	Propane, Argus CIF ARA	Amsterdam, Rotterdam, Antwerp	Propane
11	Propane, Argus Far East Index (AFEI)	Japan, South China	Propane
12	Propane, Argus Saudi CP	Saudi Aramco, Saudi Arabia	Propane
13	Propane, Argus Sonatrach CP	Bethioua, Algeria	Propane
14	ULSD NYH Buckeye Pipeline	NY Harbor, NY	Heating Oil

<sup>8</sup> Argus Americas Crude. (2017, December). Retrieved from [http://www.argusmedia.com/~media/files/pdfs/meth/argus\\_americas\\_crude.pdf?la=en](http://www.argusmedia.com/~media/files/pdfs/meth/argus_americas_crude.pdf?la=en)

15	ULSD NYH Colonial Offline	Pasadena, TX	Heating Oil
16	WCS (Cushing)	Cushing, OK	Crude Oil
17	WTI CMA (Calendar Month Avg)	Cushing, OK	Crude Oil
18	WTI Cushing	Cushing, OK	Crude Oil
19	WTI Houston	Houston, TX	Crude Oil
20	WTI Midland	Midland, TX	Crude Oil
21	WTS	Midland, TX	Crude Oil

## 2. Natural Gas Exchange (NGX)

NGX is a corporate affiliate of the Exchange that publishes indexes for various classification of Canadian crude oil. “NGX provides market participants with a fair, transparent and efficient marketplace for trading and a clearing structure that ensures performance of the resulting [t]ransactions.” “To generate the price indices, [it] obtains source data files from [the Exchange],” a formal and standardized process.<sup>9</sup> The source data files, which contain buyer and seller trader information, price, quantity, and product name, among other relevant fields, are extracted directly from the database that is populated by [the Exchange].”<sup>10</sup> “Crude indices also include data that is imported into the NGX Clearing System from Shorcan Energy Brokers Inc., and affiliate of NGX.”<sup>11</sup>

NGX identifies the various forms and sources of crude oil and NGLs using acronyms or numerical identifiers; a glossary of select terms is provided below.<sup>12</sup> All definitions are from NGX unless otherwise noted. The Exchange will rely on prices reported by NGX for the settlement of certain futures contracts based on the published prices of the C5, LSB, SW, SYN, UHC, and WCS indices described below.

<b>Term</b>	<b>Definition</b>
1a	The crude oil indices that have “1a” in their name are calculated as the volume-weighted average of all transactions in the relevant product from the first trading day of the month prior to delivery until the last day before the first Notice of Shipments (NOS) date for the delivery month, inclusive. The official NOS dates are published by Enbridge Pipeline prior to the start of each calendar year.
1b	The crude oil indices that have “1b” in their name are calculated as the simple average of the volume-weighted averages for each trading day during the same period as the 1a.
C5	Describes petroleum products whose chemical makeup is comprised of six carbon atoms.
LSB	Describes the price of crude oil, as a differential to WTI, at Enbridge and

<sup>9</sup> NGX Price Index Methodology Guide. (2017, August). Retrieved from <http://www.ngx.com/pdf/NGXPIMG.pdf>

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

	Tundra pipelines at Cromer. Light Sour Blend (LSB) is a conventionally produced light sour crude gathered from batteries in southeastern Saskatchewan and southwestern Manitoba. LSB is considered a benchmark light sour crude. <sup>13</sup>
SW	Describes the price of crude oil, as a differential to WTI, at Enbridge Bonnie Glen, Federated, Peace, Pembina, Rainbow, and rangeland pipelines at Edmonton.
SYN	Describes the price of crude oil, as a differential to WTI, at Enbridge Alberta Oil Sands, and Trans Mountain pipelines at Edmonton. Synthetic Sweet Blend is a combination of Suncor Synthetic A and Syncrude Sweet Premium. This typical light sweet synthetic crude is a bottomless blend of hydrotreated naphtha, distillate, and gasoil fractions. <sup>14</sup>
UHC	Describes the price of crude oil, as a differential to WTI, at Enbridge and Minnesota pipelines at Clearbrook.
WCS	Describes the price of crude oil, as a differential to WTI, at Enbridge and Husky pipelines at Hardisty. Western Canadian Select is a Hardisty-based blend of conventional and oilsands production managed by Canadian Natural Resources, Cenovus Energy, Suncor Energy, and Talisman Energy. <sup>15</sup>

### 3. Oil Price Information Service (OPIS)

OPIS publishes price indexes in the natural gas liquids markets. Its price reporting in spot NGL markets is considered fair and reliable. “For North American markets, editors confirm and record deals done for NGLs between 9am and 4pm Eastern time on a fixed price basis or in a relationship to another product or location or timing.”<sup>16</sup> The data received is then reviewed by OPIS due to “the subjectivity of publishing NGL spot ranges.”<sup>17</sup>

The Exchange will rely on prices reported by OPIS for the settlement of its futures contracts based on the markets, locations, and commodities provided below.<sup>18</sup>

No.	Price Assessment	Market Location	Type
1	NGL-Conway Ethane in E-P (In-Well)	Conway, KS	Ethane
2	NGL-Mont Belvieu E-P Mix	Mt. Belvieu, TX	Ethane
3	NGL-Mont Belvieu Purity Ethane	Mt. Belvieu, TX	Ethane
4	NGL-Mont Belvieu Purity Ethane (Other Non-TET)	Mt. Belvieu, TX	Ethane
5	OPIS Full-Day Refined Spots Report - Group 3 - ULSD	Tulsa, OK	Heating Oil
6	OPIS Full-Day Refined Spots Report - Group 3 - Sub-Oct Reg	Tulsa, OK	Gasoline

<sup>13</sup> Definition of LSB. Crude Monitor CA. <http://www.crudemonitor.ca/crudes/index.php?acr=LSB>

<sup>14</sup> Definition of SYN. Crude Monitor CA. <http://www.crudemonitor.ca/crudes/index.php?acr=SYN>

<sup>15</sup> Definition of WCS. Crude Monitor CA. <http://www.crudemonitor.ca/crudes/index.php?acr=WCS>

<sup>16</sup> OPIS NGL Spot Pricing. (n.d.). Retrieved from <https://www.opisnet.com/about/methodology/#ngl-spot-pricing>

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*



7	NGL-Conway Isobutane (In-Well)	Conway, KS	Isobutane
8	NGL- Mont Belvieu Isobutane (Non-TET)	Mt. Belvieu, TX	Isobutane
9	NGL- Mont Belvieu Isobutane (TET)	Mt. Belvieu, TX	Isobutane
10	NGL-Conway N. Gasoline (IN-WELL)	Conway, KS	Natural Gasoline
11	NGL- Mont Belvieu N. Gasoline (Non-TET)	Mt. Belvieu, TX	Natural Gasoline
12	NGL- Mont Belvieu N. Gasoline (Other Non-TET)	Mt. Belvieu, TX	Natural Gasoline
13	NGL- Mont Belvieu N. Gasoline (TET)	Mt. Belvieu, TX	Natural Gasoline
14	42% NGL- Mont Belvieu Ethane (Non-TET)-OPIS; 28% NGL- Mont Belvieu Propane (Non-TET)-OPIS; 11% NGL- Mont Belvieu Normal Butane (Non-TET)-OPIS; 6% NGL Mont Belvieu Isobutane (Non-TET)-OPIS; 13% Mont Belvieu Natural Gasoline (Non-TET)	Mt. Belvieu, TX	NGL Basket
15	NGL-Conway N. Butane (In-Well)	Conway, KS	Normal Butane
16	NGL- Mont Belvieu N. Butane (Non-TET)	Mt. Belvieu, TX	Normal Butane
17	NGL- Mont Belvieu Normal Butane (Other Non-TET)	Mt. Belvieu, TX	Normal Butane
18	Mt. Belvieu "TET N. Butane"	Mt. Belvieu, TX	Normal Butane
19	Propane CIF ARA (ToT Cargoes)	Amsterdam, Rotterdam, Antwerp	Propane
20	NGL-CONWAY Propane (In-Well)	Conway, KS	Propane
21	NGL-Hattiesburg Propane (In-Line)	Hattiesburg, MS	Propane
22	NGL- Mont Belvieu Propane (Non-TET)	Mt. Belvieu, TX	Propane
23	NGL- Mont Belvieu Propane (Other Non-TET)	Mt. Belvieu, TX	Propane
24	NGL- Mont Belvieu Propane (TET)	Mt. Belvieu, TX	Propane

#### 4. PetroChem Wire (PCW)

PCW is a daily publication that distributes market data information related to “US NGLs, olefins and polymers.”<sup>19</sup> Formed in 2007, “[its] olefins and polyolefins prices currently serve as benchmarks for a number of physical and swap contracts that trade on the CME/NYMEX Clearport system.”<sup>20</sup> Market information is received by PCW by email, instant messenger and telephone and is “kept strictly confidential.”<sup>21</sup> PCW receives counterparty information, bids and offers, price and quantity, among other market data, and confirms that transactions are “normal and that parties are arms’ length.”<sup>22</sup>

The Exchange will rely on prices reported by PCW for the settlement of certain futures contracts based on the markets, locations, and commodities provided below.

Price Assessment	Market Location	Type
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<sup>19</sup> About us. PetroChem Wire. [https://www.petrochemwire.com/Frames/About/About\\_PCW.html](https://www.petrochemwire.com/Frames/About/About_PCW.html)

<sup>20</sup> *Id.* at Mission Statement

<sup>21</sup> PCW NGLs Methodology. (n.d.). Retrieved from <https://www.petrochemwire.com/Frames/About/PCW%20NGLs%20Methodology%207-14-16.pdf>

<sup>22</sup> *Id.*

Monomers - Benzene US CP	U.S.	Benzene
Monomers - Ethylene Mt B FOB	Mt. Belview, TX	Ethylene
Monomers - PGP FOB Mt B EPC	Mt. Belview, TX	Propylene

## 5. Platts Price Assessments

Platts publishes benchmark price assessments for crude oil and refined products and its price reporting is well known in the industry as fair and accurate. The Exchange also relies on Platts published price assessments for many of its financial natural gas futures contracts. Platts’ reporting of prices for crude oil and refined products is based on its Market on Close assessment process, which “establishes core standards for how data is collected and published, how data is prioritized by value, and ultimately how data is analyzed in the course of completing [its] assessments.”<sup>23</sup> Platts releases, in as near to real-time as practicable, the market data that it receives, including, but not limited to, “firm bids and offers from named companies, expressions of interest to trade and confirmed trades that are received from market participants throughout the day.”<sup>24</sup> Platts reviews information received from market participants for credibility and tests “reported transactional activity, including the specific price agreed, the counterparty to the trade, the point of origin and destination for delivery of the commodity, the size of the transaction, any physical quality commitments agreed as part of the trade, the terms and conditions of a trade and when a trade was agreed.”<sup>25</sup>

The Exchange will rely on prices reported by Platts for the settlement of certain futures contracts based on the markets, locations, and commodities provided below.

No.	Price Assessment	Market Location	Type
1	Chicago Ethanol	Chicago, IL	Ethanol
2	Daily Gulf Coast Jet Fuel	Houston, TX	Jet Fuel
3	Daily Gulf Coast ULSD	Houston, TX	Heating Oil
4	Diesel 10ppm FOB ARA Barges	Amsterdam, Rotterdam, Antwerp	Diesel
5	Fuel Oil 380 CST Singapore	Singapore	Fuel Oil
6	Group 3 Sub-Octane Gasoline	Tulsa, OK	Gasoline
7	Group 3 ULSD	Tulsa, OK	Heating Oil
8	Gulf Coast CBOB 87 Gasoline Prompt Pipeline	Houston, TX	Gasoline

<sup>23</sup> Methodology and Specifications Guide - Crude Oil. (2017, September). Retrieved from <https://www.platts.com/IM.Platts.Content/MethodologyReferences/MethodologySpecs/Crude-oil-methodology.pdf>

Methodology and Specifications Guide - Americas Refined Oil Products. (2017, December). Retrieved from <https://www.platts.com/IM.Platts.Content/MethodologyReferences/MethodologySpecs/Americas-refined-oil-products-methodology.pdf>

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

9	Gulf Coast Export ULSD Cargoes	Houston, TX	Heating Oil
10	Gulf Coast Jet Fuel	Houston, TX	Jet Fuel
11	Gulf Coast ULSD	Houston, TX	Heating Oil
12	Gulf Coast Unl 87 Gasoline Prompt Pipeline	Houston, TX	Gasoline
13	LA Jet Fuel	Los Angeles, CA	Jet Fuel
14	New York 1% Fuel Oil	NY Harbor, NY	Fuel Oil
15	New York 3.0% Fuel Oil	NY Harbor, NY	Fuel Oil
16	New York Ethanol	NY Harbor, NY	Ethanol
17	ULSD 10ppm CIF MED Cargoes	Mediterranean (Genova/Lavera)	Heating Oil
18	ULSD 10ppm CIF NWE Cargoes	Northwest Europe	Heating Oil
19	ULSD NYH Colonial Offline	NY Harbor, NY	Heating Oil
20	USGC HSFO	Houston, TX	Fuel Oil

#### 6. Other Futures Exchanges

Additionally, the Exchange will rely on futures market prices published by ICE Futures Europe (IFEU), a registered foreign board of trade and affiliate of the Exchange, and the New York Mercantile Exchange (NYMEX), a designated contract market (DCM) owned by CME Group, Inc., for the settlement of its futures contracts based on the contracts provided below. The markets themselves are robust and liquid.<sup>26</sup> The futures markets below are maintained and monitored in accordance with regulations published by CFTC and/or a foreign, equivalent regulator, and the product specifications are identical or substantively similar to the products being listed by the Exchange.

No.	Exchange Contract (Code)	Exchange	IFED Contract
1	NY Harbor ULSD Future (HO)	CME/NYMEX	Heating Oil 1 <sup>st</sup> Line Future
2	RBOB Gasoline Future (RB)	CME/NYMEX	RBOB Gasoline 1 <sup>st</sup> Line Future
3	Light Sweet Crude Oil Future (CL)	CME/NYMEX	WTI 1 <sup>st</sup> Line Future
4	ICE Brent Crude Futures (B)	IFEU	Brent 1 <sup>st</sup> Line Future

## POSITION LIMIT ANALYSIS

Commission rule 150.5(b)(1) sets forth the requirement for setting speculative position limits and states as follows:

<sup>26</sup> For example, average daily volume for WTI Crude Oil at CME/NYMEX was 1.4 million contracts and other refined products traded at CME/NYMEX had average daily volume of 379,000 contracts, as of May 2017. CME Group Reached Average Daily Volume of 16.3 Million Contracts in April 2017, up 18 Percent from April 2016. (2017, May 2). Retrieved from [http://www.cmegroup.com/media-room/press-releases/2017/5/02/cme\\_group\\_reachedaveragedailyvolumeof163millioncontractsinapril2.html](http://www.cmegroup.com/media-room/press-releases/2017/5/02/cme_group_reachedaveragedailyvolumeof163millioncontractsinapril2.html)

For physical delivery contracts, the spot month limit level must be no greater than one-quarter of the estimated spot month deliverable supply, calculated separately for each month to be listed, and for cash settled contracts [emphasis added] the spot month limit level must be no greater than necessary to minimize the potential for manipulation or distortion of the contract's or underlying commodity's price;<sup>27</sup>

For the purpose of setting spot month position limits at levels that minimize the potential for manipulation or distortion of the contract's or underlying commodity's price, the Exchange considered many factors. The two primary factors are 1) the robust nature of the underlying commodities' cash markets and 2) the fact that each new cash settled product prior to its listing on the Exchange was available for trade on ICE Futures Europe, a Foreign Board of Trade registered with the Commission.

Based on the research summarized in the above cash market analysis, the Exchange concludes that each commodity represented in the 246 contracts is built on a robust cash market with secondary transactions for the cash commodity that vastly exceed actual deliveries of such cash commodities. A highly-developed and actively-traded cash commodity reduces the potential for manipulation or distortion of the corresponding futures contract and the cash commodity itself.

Moreover, as required in Part 48 (Registration of Foreign Boards of Trade) the terms and conditions for each of the 246 contracts were previously submitted to the Commission by ICE Futures Europe. Accordingly, these contracts were reviewed by the Commission previously and presumably were deemed not readily susceptible to manipulation at the conclusion of that review.

### **Spot Month Position Limits and Single and All-Months Combined Accountability Levels**

For the purpose of spot month position limits, the Exchange is only aggregating and netting positions in the different futures contracts of the same class of contract. For example, positions in WTI 1<sup>st</sup> Line Future will be combined and netted with positions in WTI 1<sup>st</sup> Line Mini Future and WTI 1<sup>st</sup> Line Balmo Future. However, the Exchange will not combine and net the aforementioned WTI 1<sup>st</sup> Line positions with the positions in the legs of Cracks or Differential contracts that reference WTI 1<sup>st</sup> Line Future. The Exchange recognizes that not aggregating all legs is a departure from the practices of other exchanges, but the Exchange has determined at this time that a more restrictive regime is appropriate. Additionally, for the purpose of spot month position limits and position accountability levels, certain contracts denoted in the Exchange position limit table will diminish ratably as the contract month progresses toward month end.

For demonstrating compliance with position limit requirements, the Exchange has set spot month position limits as follows. For the 121 futures and options contracts in the linked

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<sup>27</sup> 17 CFR 150 (5 May 1999), p. 24048.

markets, the Exchange has set initial spot month position limits at the levels referenced in the December 30, 2016 Reproposal of part 150. Therefore, for contracts that reference Light Sweet Crude Oil the spot month limit will be 10,400 lots, for contracts that reference NY Harbor ULSD the spot month limit will be 2,900 lots, and for contracts that reference RBOB Gasoline the spot month limit will be 6,800 lots. These levels are appropriate based on the Commission's determination, as follows:

As explained above, the Commission has verified that the estimates of deliverable supply for each of the NYMEX Natural Gas (NG), Light Sweet Crude (CL), NY Harbor ULSD (HO), and RBOB Gasoline (RB) core referenced futures contracts submitted by CME are reasonable. The Commission has determined to repropose the initial speculative spot month position limit levels for the NG, CL, HO, and RB core referenced futures contracts at 25 percent of estimated deliverable supply which, in the case of CL, HO, and RB is higher than the levels recommended by CME.<sup>52</sup> As is evident from the table set forth below, this also means that the Commission is reproposing speculative position limit levels that are significantly higher than the levels for these four contracts as previously proposed.<sup>28</sup>

For 43 contracts, the Exchange has set initial spot month position limits at the same level as a corresponding contract on NYMEX, and as such, the level is appropriate.

For 73 contracts, the Exchange has set initial spot month position limits at the level established by the Financial Conduct Authority ("FCA"). These levels are appropriate based on the FCA's methodology for determining spot month limits, which goes as follows:

The methodology for calculating the limits should allow competent authorities to balance the objectives of setting limits at a level sufficiently low to prevent persons holding positions in those commodity derivatives from abusing or distorting the market against the objectives of supporting orderly pricing and settlement arrangements, developing new commodity derivatives and enabling commodity derivatives to continue to support the functioning of commercial activities in the underlying commodity market.<sup>29</sup>

For each of the remaining nine contracts that did not fit into any of the categories noted above, the Exchange is setting the initial spot month limit at 1,000 lots. This is an appropriate level based on the aforementioned factors, such as having an active and robust cash market and being previously listed on ICE Futures Europe without a spot month limit while having no issues with manipulation or price distortion.

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<sup>28</sup> 17 CFR 150 (30 December, 2016), p.96764.

<sup>29</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0591&from=EN>

The following table provides the criteria for which position limits have been established for each contract.

Limit Codes

- 1 = December 2016 CFTC Proposed 150
- 2 = Existing Limit on CME
- 3 = FCA Limit
- 4 = None of above--default 1,000 lots

<b>Commodity Code</b>	<b>Product Description</b>	<b>Rulebook Chapter</b>	<b>Spot Month Limit</b>	<b>Limit Code</b>
ARH	Crude Outright – Argus LLS Future	A.1	3000	2
ARM	Crude Outright – Argus Mars Future	A.2	3000	2
ACT	Crude Outright – Argus WTI Cushing Trade Month Future	A.3	10400	1
TDE	Crude Outright – Daily EU-Style WTI Future	A.27	10400	1
WUL	Crude Outright – EU-Style WTI Future	A.9	10400	1
02L-03F	Crude Outright – WTI 1st Line Balmo Future	A.5	10400	1
R	Crude Outright – WTI 1st Line Future	A.4	10400	1
RMM	Crude Outright – WTI 1st Line Mini Future	A.6	104000	1
WTB	Crude Outright – WTI Bullet Future	A.7	10400	1
GUE	Diesel Outright – Gulf Coast Export ULSD (Platts) Future	A.16	1000	2
GUU	Diesel Outright – Gulf Coast ULSD Future	A.15	1000	2
ETC	Ethanol Outright – Chicago Ethanol Future	A.26	1000	2
ETN	Ethanol Outright – New York Ethanol Future	A.25	1000	2
FRA-FSE	Fuel Oil Outright – New York 1% Fuel Oil Balmo Future	A.11	1000	2
FOW	Fuel Oil Outright – New York 1% Fuel Oil Future	A.10	1000	2
14X	Fuel Oil Outright – New York 3.0% Fuel Oil (Platts) Future	A.12	300	2
FPA-FQE	Fuel Oil Outright – USGC HSFO (Platts) Balmo Future	A.14	1000	2
RBO	Fuel Oil Outright – USGC HSFO (Platts) Future	A.13	1000	2
0X0-0XU	Gasoline Outright – RBOB Gasoline 1st Line Balmo Future	A.18	6800	1
RBS	Gasoline Outright – RBOB Gasoline 1st Line Future	A.17	6800	1
RBM	Gasoline Outright – RBOB Gasoline 1st Line Mini Future	A.19	68000	1
HOF	Heating Oil Outright – Heating Oil 1st Line Future	A.20	2900	1
HOM	Heating Oil Outright – Heating Oil 1st Line Mini Future	A.21	29000	1
0Z0-0ZU	Jet Fuel Outright – Gulf Coast Jet Fuel (Platts) Balmo Future	A.23	1000	2
GCJ	Jet Fuel Outright – Gulf Coast Jet Fuel (Platts) Mini Future	A.24	10000	2
JCF	Jet Fuel Outright – Gulf Coast Jet Fuel Future	A.22	1000	2
GUV	Diesel Crack – Gulf Coast ULSD vs Brent 1st Line Future	B.2	1000	2
GUW	Diesel Crack – Gulf Coast ULSD vs WTI 1st Line Future	B.1	10400	1
NFB	Fuel Oil Crack – New York 1% Fuel Oil vs Brent 1st Line Future	B.3	1000	2

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GIP-GJT	Fuel Oil Crack – New York 1% Fuel Oil vs WTI 1ST Line Balmo Future	B.5	10400	1
FOK	Fuel Oil Crack – New York 1% Fuel Oil vs WTI 1st Line Future	B.4	10400	1
GCS	Fuel Oil Crack – USGC HSFO (Platts) vs Brent 1st Line Future	B.6	1000	2
1JH-1KB	Fuel Oil Crack – USGC HSFO (Platts) vs Brent 1st Line Balmo Future	B.7	1000	2
GUF	Fuel Oil Crack – USGC HSFO (Platts) vs WTI 1st Line Future	B.8	10400	1
1EB-1F5	Gasoline Crack – RBOB Gasoline 1st Line vs Brent 1st Line Balmo Future (in Bbls)	B.10	6800	1
RBR	Gasoline Crack – RBOB Gasoline 1st Line vs Brent 1st Line Future (in Bbls)	B.9	6800	1
RBW	Gasoline Crack – RBOB Gasoline 1st Line vs WTI 1st Line Future (in Bbls)	B.11	10400	1
HBT	Heating Oil Crack – Heating Oil 1st Line vs Brent 1st Line Future (in Bbls)	B.12	2900	1
HBW	Heating Oil Crack – Heating Oil 1st Line vs WTI 1st Line Future	B.13	10400	1
GUB	Jet Fuel Crack – Gulf Coast Jet Fuel vs Brent 1st Line Future	B.14	1000	2
TMF	Condensate Diff – TMX C5 1A Index Future	C.25	10400	1
TMC	Condensate Diff – TMX C5 1B Index Future	C.47	10400	1
ABL	Crude Diff – Argus ANS vs Brent 1st Line Future	C.97	3000	2
BAK	Crude Diff – Argus Bakken (Clearbrook) Crude Oil Future	C.26	1000	2
ARI	Crude Diff – Argus LLS vs Brent 1st Line Future	C.2	3000	2
ARJ	Crude Diff – Argus LLS vs Dated Brent (Platts) Future	C.27	3000	2
180-18U	Crude Diff – Argus LLS vs WTI 1st Line Balmo Future	C.28	10400	1
ARK	Crude Diff – Argus LLS vs WTI 1st Line Future	C.3	10400	1
ARQ	Crude Diff – Argus LLS vs WTI Trade Month Balmo Future	C.29	10400	1
ARL	Crude Diff – Argus LLS vs WTI Trade Month Future	C.4	10400	1
ARN	Crude Diff – Argus Mars vs Brent 1st Line Future	C.7	3000	2
ART	Crude Diff – Argus Mars vs WTI 1st Line Balmo Future	C.30	10400	1
ARO	Crude Diff – Argus Mars vs WTI 1st Line Future	C.5	10400	1
ARS	Crude Diff – Argus Mars vs WTI Trade Month Balmo Future	C.31	10400	1
ARW	Crude Diff – Argus Mars vs WTI Trade Month Future	C.6	10400	1
TAB	Crude Diff – Argus Sour Crude Index (ASCI) Diff Calendar Future	C.17	5000	2
TOB	Crude Diff – Argus Sour Crude Index (ASCI) Diff Trade-Month Future	C.38	5000	2
CSH	Crude Diff – Argus WCS (Cushing) Crude Oil Trade Month Future	C.1	1000	2
AIM	Crude Diff – Argus WTI CMA Trade Month Future	C.8	10400	1
MSN	Crude Diff – Argus WTI Houston vs Argus WTI Midland Trade Month Future	C.16	3000	2
AIK	Crude Diff – Argus WTI Houston vs WTI 1st Line Balmo Future	C.36	10400	1
AIL	Crude Diff – Argus WTI Houston vs WTI 1st Line Future	C.14	10400	1
ACL	Crude Diff – Argus WTI Houston vs WTI Trade Month Balmo Future	C.37	10400	1
ACM	Crude Diff – Argus WTI Houston vs WTI Trade Month Future	C.15	10400	1

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MST	Crude Diff – Argus WTI Midland vs Argus WTS Trade Month Future	C.13	3000	2
MLU	Crude Diff – Argus WTI Midland vs WTI 1st Line Balmo Future	C.34	10400	1
MLT	Crude Diff – Argus WTI Midland vs WTI 1st Line Future	C.11	10400	1
MLS	Crude Diff – Argus WTI Midland vs WTI Trade Month Balmo Future	C.35	10400	1
MSV	Crude Diff – Argus WTI Midland vs WTI Trade Month Future	C.12	10400	1
AFI	Crude Diff – Argus WTS vs WTI 1st Line Balmo Future	C.32	10400	1
AFH	Crude Diff – Argus WTS vs WTI 1st Line Future	C.9	10400	1
AVS	Crude Diff – Argus WTS vs WTI Trade Month Balmo Future	C.33	10400	1
AVT	Crude Diff – Argus WTS vs WTI Trade Month Future	C.10	10400	1
TML	Crude Diff – TMX LSB 1A Index Future	C.23	10400	1
1TT-1UN	Crude Diff – TMX SW 1A Index Balmo Future	C.40	10400	1
TMR	Crude Diff – TMX SW 1A Index Future	C.21	10400	1
TMS	Crude Diff – TMX SYN 1A Index Future	C.18	10400	1
SYN	Crude Diff – TMX SYN 1B Index Future	C.39	10400	1
TMU	Crude Diff – TMX UHC 1A Index Future	C.22	10400	1
UHB	Crude Diff – TMX UHC 1B Index Future	C.41	10400	1
1SY-1TS	Crude Diff – TMX WCS 1A Index Balmo Future	C.96	10400	1
TMW	Crude Diff – TMX WCS 1A Index Future	C.20	10400	1
TDX	Crude Diff – TMX WCS 1B Index Future	C.19	10400	1
TIZ	Crude Diff – WTI 12-Month Calendar Spread Future	C.46	10400	1
TIA	Crude Diff – WTI 1-Month Calendar Spread Future	C.45	10400	1
BTD	Crude Diff – WTI 1st Line vs Brent 1st Line Future	C.24	10400	1
TIB	Crude Diff – WTI vs Brent Bullet Future	C.44	10400	1
VYH-VZL	Crude Diff-TMX WCS 1B Index Balmo Future	C.95	10400	1
DWO	Daily WTI 1-Month Calendar Spread Future	C.100	10400	1
UL7	Diesel Diff – 67-Grade USGC ULSD (Platts) vs Heating Oil 1st Line Future	C.66	2900	1
NH2	Diesel Diff – Argus 62-Grade NYH ULSD vs Heating Oil 1st Line Future	C.64	2900	1
NH7	Diesel Diff – Argus 67-Grade NYH ULSD vs Heating Oil 1st Line Future	C.65	2900	1
AIO	Diesel Diff – Argus ULSD NYH Buckeye Pipeline vs Heating Oil 1st Line Future	C.61	2900	1
AIP	Diesel Diff – Argus ULSD NYH Colonial Offline vs Heating Oil 1st Line Future	C.62	2900	1
DFK	Diesel Diff – Daily Gulf Coast ULSD (Platts) vs Heating Oil 1st Line Future	C.59	2900	1
DFE	Diesel Diff – Diesel 10ppm FOB ARA Barges (Platts) vs Heating Oil 1st Line Future	C.78	2900	1
DCS	Diesel Diff – Group 3 ULSD (OPIS) vs Heating Oil 1st Line Future	C.68	2900	1
GUH	Diesel Diff – Group 3 ULSD (Platts) vs Heating Oil 1st Line Future	C.67	2900	1
JCU	Diesel Diff – Gulf Coast ULSD (Platts) vs Gulf Coast Jet Fuel (Platts) Future	C.60	1000	2



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MXQ-- MYU	Diesel Diff – Gulf Coast ULSD (Platts) vs Heating Oil 1st Line Balmo Future	C.58	2900	1
GOH	Diesel Diff – Gulf Coast ULSD vs Heating Oil 1st Line Future	C.57	2900	1
GUX	Diesel Diff – Gulf Coast ULSD vs Low Sulphur Gasoil 1st Line Future	C.48	1000	2
HOC	Diesel Diff – New York Harbor ULSD 1-month Calendar Spread Future	C	2900	1
TMN	Diesel Diff – ULSD 10ppm CIF Med Cargoes (Platts) vs Heating Oil 1st Line Future	C.79	2900	1
TNN	Diesel Diff – ULSD 10ppm CIF NWE Cargoes (Platts) vs Heating Oil 1st Line Future	C.80	2900	1
UHL	Diesel Diff – ULSD NYH Colonial Offline (Platts) vs Heating Oil 1st Line Future	C.63	2900	1
GOK	Fuel Oil Diff – Fuel Oil 380 CST Singapore (Platts) vs USGC HSFO (Platts) Future (in Bbls)	C.81	1000	2
GHK-GIO	Fuel Oil Diff – New York 1% Fuel Oil (Platts) vs USGC HSFO (Platts) Balmo Future	C.52	1000	2
FOD	Fuel Oil Diff – New York 1% Fuel Oil (Platts) vs USGC HSFO (Platts) Future	C.51	1000	2
GGF-GHJ	Fuel Oil Diff – New York 1% Fuel Oil vs 1% FOB NWE Cargoes Fuel Oil Balmo Future	C.50	1000	2
FOH	Fuel Oil Diff – New York 1% Fuel Oil vs 1% FOB NWE Cargoes Fuel Oil Future	C.49	1000	2
14W	Fuel Oil Diff – New York 3.0% Fuel Oil (Platts) vs USGC HSFO (Platts) Future	C.53	1000	2
GJU-GKY	Fuel Oil Diff – USGC HSFO (Platts) vs Fuel Oil 3.5% FOB Rotterdam Barges (Platts) Balmo Future (in Bbls)	C.55	1000	2
GOE	Fuel Oil Diff – USGC HSFO (Platts) vs Fuel Oil 3.5% FOB Rotterdam Barges (Platts) Future (in Bbls)	C.54	1000	2
NVV	Fuel Oil Diff – USGC HSFO (Platts) vs Fuel Oil 3.5% FOB Rotterdam Barges (Platts) Future (in MTs)	C.56	1000	2
1Y4-1YY	Gasoline Diff – Group 3 Sub-Octane Gasoline (Platts) vs RBOB Gasoline 1st Line Balmo Future	C.92	6800	1
GDL	Gasoline Diff – Group 3 Sub-octane Gasoline (Platts) vs RBOB Gasoline 1st Line Future	C.91	6800	1
G3V	Gasoline Diff – Group 3 V-Grade Sub-octane Gasoline (OPIS) vs RBOB Gasoline 1st Line Future	C.93	6800	1
056-060	Gasoline Diff – Gulf Coast CBOB 87 Gasoline Prompt Pipeline (Platts) vs RBOB Gasoline 1st Line Balmo Future	C.90	6800	1
GDM	Gasoline Diff – Gulf Coast CBOB 87 Gasoline Prompt Pipeline (Platts) vs RBOB Gasoline 1st Line Future	C.89	6800	1
000-00U	Gasoline Diff – Gulf Coast Unl 87 Gasoline Prompt Pipeline (Platts) vs RBOB Gasoline 1st Line Balmo Future	C.88	6800	1
UM1	Gasoline Diff – Gulf Coast Unl 87 Gasoline Prompt Pipeline (Platts) vs RBOB Gasoline 1st Line Future	C.87	6800	1
RCM	Gasoline Diff – RBOB Gasoline 1-Month Calendar Spread Future	C.86	6800	1
GDO	Gasoline Diff – RBOB Gasoline 1st Line vs Argus Eurobob Oxy FOB Rotterdam Barge Future	C.82	6800	1
1F6-1G0	Gasoline Diff – RBOB Gasoline 1st Line vs Argus Eurobob Oxy FOB Rotterdam Barges Balmo Future	C.83	6800	1
140-14U	Gasoline Diff – RBOB Gasoline 1st Line vs Argus Eurobob Oxy FOB Rotterdam Barges Balmo Mini Future	C.85	6800	1

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GDQ	Gasoline Diff – RBOB Gasoline 1st Line vs Argus Eurobob Oxy FOB Rotterdam Barges Mini Future	C.84	6800	1
11M-1JG	Heating Oil Arb – Heating Oil 1st Line vs Low Sulphur Gasoil 1st Line Balmo Future (in Bbls)	C.70	2900	1
ULM	Heating Oil Arb – Heating Oil 1st Line vs Low Sulphur Gasoil 1st Line Future (in Bbls)	C.69	2900	1
ULL	Heating Oil Arb – Heating Oil 1st Line vs Low Sulphur Gasoil 1st Line Future (in MTs)	C.94	2900	1
EHL	Heating Oil Diff – EU-Style Heating Oil vs Low Sulphur Gasoil Future	C.98	2900	1
03G-04A	Jet Fuel Diff – Argus NYH Jet Fuel vs Heating Oil 1st Line Balmo Future	C.77	2900	1
JCH	Jet Fuel Diff – Argus NYH Jet Fuel vs Heating Oil 1st Line Future	C.76	2900	1
DFL	Jet Fuel Diff – Daily Gulf Coast Jet Fuel (Platts) vs Heating Oil 1st Line Future	C.73	2900	1
04B-055	Jet Fuel Diff – Gulf Coast Jet Fuel (Platts) vs Heating Oil 1st Line Balmo Future	C.72	2900	1
JHO	Jet Fuel Diff – Gulf Coast Jet Fuel vs Heating Oil 1st Line Future	C.71	2900	1
01Q-02K	Jet Fuel Diff – LA Jet Fuel (Platts) vs Heating Oil 1st Line Balmo Future	C.75	2900	1
LA4	Jet Fuel Diff – LA Jet Fuel (Platts) vs Heating Oil 1st Line Future	C.74	2900	1
B20-B2U	WTI 1ST Line vs Brent 1st Line Balmo Future	C.43	10400	1
1ON-1PH	Butane, Argus CIF ARA Balmo Future	D.32	2500	3
ABR	Butane, Argus CIF ARA Future	D.31	2500	3
ABM	Butane, Argus CIF ARA Mini Future	D.33	25000	3
1PI-1QC	Butane, Argus Far East Index (AFEI) Balmo Future	D.29	2500	3
ABF	Butane, Argus Far East Index (AFEI) Future	D.28	2500	3
BUQ	Butane, Argus Far East Index (AFEI) Mini Future	D.30	25000	3
ABS	Butane, Argus Saudi CP Future	D.34	2500	3
BUS	Butane, Argus Saudi CP Mini Future	D.35	25000	3
ABO	Butane, Argus Sonatrach CP Future	D.36	1000	4
ECC	Ethane in E/P Mix, OPIS Conway In-Well Average Price Option	D.75	2500	3
LPE-LQI	Ethane in E/P Mix, OPIS Conway In-Well Balmo Future	D.2	2500	3
ECC	Ethane in E/P Mix, OPIS Conway In-Well Future	D.1	2500	3
LNZ-LPD	Ethane in E/P Mix, OPIS Mt. Belvieu Non-TET Balmo Future	D.4	2500	3
ECB	Ethane in E/P Mix, OPIS Mt. Belvieu Non-TET Future	D.3	2500	3
ETE	Ethane, OPIS Mt. Belvieu Non-TET Average Price Option	D.70	15300	3
EEA-EFE	Ethane, OPIS Mt. Belvieu Non-TET Balmo Future	D.6	15300	3
ETE	Ethane, OPIS Mt. Belvieu Non-TET Future	D.5	15300	3
ETD	Ethane, OPIS Mt. Belvieu Other Non-TET Future	D.7	1000	4
LWH-LXL	Isobutane, OPIS Conway In-Well Balmo Future	D.9	2500	3
ISC	Isobutane, OPIS Conway In-Well Future	D.8	2500	3
LVC-LWG	Isobutane, OPIS Mt. Belvieu Non-TET Balmo Future	D.11	2500	3
ISO	Isobutane, OPIS Mt. Belvieu Non-TET Future	D.10	2500	3

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ZHF-ZIJ	Isobutane, OPIS Mt. Belvieu TET Balmo Future	D.13	2500	3
ISL	Isobutane, OPIS Mt. Belvieu TET Future	D.12	2500	3
LJF-LKJ	Natural Gasoline, OPIS Conway In-Well Balmo Future	D.15	2500	3
NGC	Natural Gasoline, OPIS Conway In-Well Future	D.14	2500	3
NGE	Natural Gasoline, OPIS Mt. Belvieu Non-TET Average Price Option	D.71	4700	3
LGA-LHE	Natural Gasoline, OPIS Mt. Belvieu Non-TET Balmo Future	D.17	4700	3
NGE	Natural Gasoline, OPIS Mt. Belvieu Non-TET Future	D.16	4700	3
GCY	Natural Gasoline, OPIS Mt. Belvieu Non-TET vs Naphtha CIF NWE Cargoes (Platts) Future	D.62	4700	3
NGW	Natural Gasoline, OPIS Mt. Belvieu Non-TET vs WTI 1st Line Future	D.61	10400	1
NBC	Natural Gasoline, OPIS Mt. Belvieu Other Non-TET Future	D.18	1000	4
LSS-LTW	Natural Gasoline, OPIS Mt. Belvieu TET Balmo Future	D.20	2500	3
NGL	Natural Gasoline, OPIS Mt. Belvieu TET Future	D.19	2500	3
NGB	NGL Basket, OPIS Mt. Belvieu Non-TET Future	D.63	1000	4
LKK-LLO	Normal Butane, OPIS Conway In-Well Balmo Future	D.22	2500	3
IBC	Normal Butane, OPIS Conway In-Well Future	D.21	2500	3
NBI	Normal Butane, OPIS Mt. Belvieu Non-TET Average Price Option	D.72	6600	3
LEA-LFE	Normal Butane, OPIS Mt. Belvieu Non-TET Balmo Future	D.24	6600	3
NBI	Normal Butane, OPIS Mt. Belvieu Non-TET Future	D.23	6600	3
NBE	Normal Butane, OPIS Mt. Belvieu Other Non-TET Future	D.25	1000	4
LRN-LSR	Normal Butane, OPIS Mt. Belvieu TET Balmo Future	D.27	2500	3
NBR	Normal Butane, OPIS Mt. Belvieu TET Future	D.26	2500	3
APC	Propane, Argus CIF ARA Average Price Option	D.76	2500	3
LMU-LNY	Propane, Argus CIF ARA Balmo Future	D.38	2500	3
APC	Propane, Argus CIF ARA Future	D.37	2500	3
AFM	Propane, Argus CIF ARA Mini Future	D.39	25000	3
1HR-1IL	Propane, Argus CIF ARA vs Naphtha CIF NWE Cargoes (Platts) Balmo Future	D.65	2500	3
APN	Propane, Argus CIF ARA vs Naphtha CIF NWE Cargoes (Platts) Future	D.64	2500	3
AFE	Propane, Argus Far East Index (AFEI) Average Price Option	D.77	2500	3
LLP-LMT	Propane, Argus Far East Index (AFEI) Balmo Future	D.41	2500	3
AFE	Propane, Argus Far East Index (AFEI) Future	D.40	2500	3
AFL	Propane, Argus Far East Index (AFEI) Mini Future	D.42	25000	3
1GW-1HQ	Propane, Argus Far East Index (AFEI) vs Naphtha C+F Japan Cargoes (Platts) Balmo Future	D.67	2500	3
ARR	Propane, Argus Far East Index (AFEI) vs Naphtha C+F Japan Cargoes (Platts) Future	D.66	2500	3
VRD-VSH	Propane, Argus Far East Index (AFEI) vs Propane, Argus CIF ARA Balmo Future	D.69	2500	3
EGD	Propane, Argus Far East Index (AFEI) vs Propane, Argus CIF ARA Future	D.68	2500	3
SCP	Propane, Argus Saudi CP Future	D.43	2500	3

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AFK	Propane, Argus Saudi CP Mini Future	D.44	25000	3
AFS	Propane, Argus Sonatrach CP Future	D.45	1000	4
TOT	Propane, OPIS CIF ARA ToT Cargoes Future	D.46	2500	3
PRC	Propane, OPIS Conway In-Well Average Price Option	D.73	2500	3
LIA-LJE	Propane, OPIS Conway In-Well Balmo Future	D.48	2500	3
PRC	Propane, OPIS Conway In-Well Future	D.47	2500	3
PRH	Propane, OPIS Hattiesburg Future	D.49	1000	4
LAA-LBE	Propane, OPIS Mt. Belvieu Non-TET Balmo Future	D.51	17000	3
PRN	Propane, OPIS Mt. Belvieu Non-TET Future	D.50	17000	3
CEJ	Propane, OPIS Mt. Belvieu Non-TET vs Propane, Argus CIF ARA Future	D.60	2500	3
CEZ	Propane, OPIS Mt. Belvieu Non-TET vs Propane, Argus Far East Index (AFEI) Future	D.58	2500	3
1YZ-1ZT	Propane, OPIS Mt. Belvieu Other Non-TET Balmo Future	D.53	2500	3
PBO	Propane, OPIS Mt. Belvieu Other Non-TET Future	D.52	2500	3
PRL	Propane, OPIS Mt. Belvieu TET Average Price Option	D.74	17000	3
LCA-LDE	Propane, OPIS Mt. Belvieu TET Balmo Future	D.55	17000	3
PRL	Propane, OPIS Mt. Belvieu TET Future	D.54	17000	3
PLM	Propane, OPIS Mt. Belvieu TET Mini Future	D.56	170000	3
CEK	Propane, OPIS Mt. Belvieu TET vs Propane, Argus CIF ARA Future	D.59	2500	3
CEY	Propane, OPIS Mt. Belvieu TET vs Propane, Argus Far East Index (AFEI) Future	D.57	2500	3
ARK	Crude Diff – Argus LLS vs WTI 1st Line Average Price Option	F.5	10400	1
ARL	Crude Diff – Argus LLS vs WTI Trade Month Average Price Option	F.6	10400	1
ARO	Crude Diff – Argus Mars vs WTI 1st Line Average Price Option	F.8	10400	1
ARW	Crude Diff – Argus Mars vs WTI Trade Month Average Price Option	F.9	10400	1
AIL	Crude Diff – Argus WTI Houston vs WTI 1st Line Average Price Option	F.10	10400	1
MLT	Crude Diff – Argus WTI Midland vs WTI 1st Line Average Price Option	F.7	10400	1
AFH	Crude Diff – Argus WTS vs WTI 1st Line Average Price Option	F.11	10400	1
TMW	Crude Diff – TMX WCS 1a Index Average Price Option	F.12	10400	1
TIZ	Crude Diff – WTI 12-Month Calendar Spread Option	F.13	10400	1
TIA	Crude Diff – WTI 1-Month Calendar Spread Option	F.1	10400	1
TIB	Crude Diff – WTI vs Brent Spread Option	F.2	10400	1
ARH	Crude Outright – Argus LLS Average Price Option	F.4	3000	2
WUL	Crude Outright – EU-Style WTI Option	F.16	10400	1
02L-03F	Crude Outright – WTI Average Price Balmo Option	F.15	10400	1
R	Crude Outright – WTI Average Price Option	F.3	10400	1
TDE	Daily EU-Style WTI Option	F.14	10400	1
DWO	Daily WTI 1-Month Calendar Spread Option	F.23	10400	1
HOC	Diesel Diff – New York Harbor ULSD 1-month Calendar Spread Option	F.24	2900	1

**CONFIDENTIAL TREATMENT  
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RBO	Fuel Oil Outright – USGC HSFO (Platts) Average Price Option	F.21	1000	2
RCM	Gasoline Diff – RBOB Gasoline 1-Month Calendar Spread Option	F.25	6800	1
RBS	Gasoline Outright – RBOB Gasoline Average Price Option	F.18	6800	1
EHL	Heating Oil Diff – EU-Style Heating Oil vs Low Sulphur Gasoil Option	F.20	2900	1
HOF	Heating Oil Outright – Heating Oil Average Price Option	F.19	2900	1
JCF	Jet Fuel Outright – Gulf Coast Jet Fuel (Platts) Average Price Option	F.22	1000	2
BUC	Benzene, PCW US Contract Price Future	G.5	1000	4
BUI	Benzene, PCW US Index Fixed Price Future	G.6	1000	4
M00-M0U	Ethylene, PCW Mont Belvieu Balmo Future	G.2	2500	3
ETH	Ethylene, PCW Mont Belvieu Future	G.1	2500	3
P10-P1U	Polymer Grade Propylene (PGP), PCW Mont Belvieu Balmo Future	G.4	2500	3
PPL	Polymer Grade Propylene (PGP), PCW Mont Belvieu Future	G.3	2500	3