**SUBMISSION COVER SHEET**

***IMPORTANT*: Check box if Confidential Treatment is requested** ☐

**Registered Entity Identifier Code (optional): 21-109**

**Organization: New York Mercantile Exchange, Inc. ("NYMEX")**

**Filing as a:** ☒ **DCM** ☐ **SEF** ☐ **DCO** ☐ **SDR**

**Please note - only ONE choice allowed.**

**Filing Date (mm/dd/yy): 02/24/21 Filing Description: Increase of Spot Position Limits of Eleven (11) Core Energy Futures and Related Contracts**

**SPECIFY FILING TYPE**

**Please note only ONE choice allowed per Submission.**

**Organization Rules and Rule Amendments**

| | | |
|---|---|---|
| ☒ | Certification | § 40.6(a) |
| ☐ | Approval | § 40.5(a) |
| ☐ | Notification | § 40.6(d) |
| ☐ | Advance Notice of SIDCO Rule Change | § 40.10(a) |
| ☐ | SIDCO Emergency Rule Change | § 40.10(h) |

**Rule Numbers:** See filing.

**New Product** **Please note only ONE product per Submission.**

| | | |
|---|---|---|
| ☐ | Certification | § 40.2(a) |
| ☐ | Certification Security Futures | § 41.23(a) |
| ☐ | Certification Swap Class | § 40.2(d) |
| ☐ | Approval | § 40.3(a) |
| ☐ | Approval Security Futures | § 41.23(b) |
| ☐ | Novel Derivative Product Notification | § 40.12(a) |
| ☐ | Swap Submission | § 39.5 |

**Product Terms and Conditions (product related Rules and Rule Amendments)**

| | | |
|---|---|---|
| ☐ | Certification | § 40.6(a) |
| ☐ | Certification Made Available to Trade Determination | § 40.6(a) |
| ☐ | Certification Security Futures | § 41.24(a) |
| ☐ | Delisting (No Open Interest) | § 40.6(a) |
| ☐ | Approval | § 40.5(a) |
| ☐ | Approval Made Available to Trade Determination | § 40.5(a) |
| ☐ | Approval Security Futures | § 41.24(c) |
| ☐ | Approval Amendments to enumerated agricultural products | § 40.4(a), § 40.5(a) |
| ☐ | "Non-Material Agricultural Rule Change" | § 40.4(b)(5) |
| ☐ | Notification | § 40.6(d) |

**Official Name(s) of Product(s) Affected**:

**Rule Numbers:**

**Christopher Bowen**
Managing Director and Chief Regulatory Counsel
Legal Department

February 24, 2021

**VIA ELECTRONIC PORTAL**

Mr. Christopher J. Kirkpatrick
Office of the Secretariat
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

**Re: CFTC Regulation 40.6(a) Certification. Increase of Spot Position Limits for Eleven (11) Core Energy Futures and Related Contracts.**
**NYMEX Submission No. 21-109**

Dear Mr. Kirkpatrick:

Pursuant to Commodity Futures Trading Commission ("CFTC" or "Commission) Regulation 40.6(a), New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") is certifying an increase to the spot month position limits of eleven (11) core energy futures contracts in Exhibit 1. below and their related contracts as more specifically described in Appendix A attached, (collectively, the "Contracts") commencing with the April 2021 contract month and beyond (collectively, the "Rule Amendments") effective concurrent with the March 15, 2021 effective date for the CFTC's final rule on Position Limits for Derivatives ("Final Rule"). NYMEX notes that the 11 core energy futures contracts set forth in Exhibit 1. are core referenced futures contracts as that term is defined in the CFTC's final rule on Position Limits for Derivatives.

In a separate but related matter and in a further effort to comply with the CFTC's Final Rule, NYMEX is requesting review and approval of amendments to NYMEX Rules 559. ("Position Limits and Exemptions") and 562. ("Position Limit Violations") (See NYMEX Submission No. 21-069 dated January 27, 2021.)

**Exhibit 1.**

| Contract Title | Commodity Code | Rulebook Chapter | Current Spot Month Position Limits up to and including March 2021 Contract Month | Increased Spot Month Position Limits Commencing with April 2021 Contract Month and Beyond |
|---|---|---|---|---|
| Light Sweet Crude Oil Futures | CL | 200 | 3,000 | 6,000/5,000/4000 |
| Crude Oil Bullet Futures | WS | 691 | 3,000 | 6,000/5,000/4000 |
| Crude Oil Last Day Financial Futures | 26 | 828 | 3,000 | 6,000/5,000/4000 |
| Henry Hub Natural Gas Futures | NG | 220 | 1,000 | 2,000 |
| Henry Hub Natural Gas Look-Alike Last Day Financial Futures | HH | 823 | 1,000 | 2,000 |
| NY Harbor ULSD Futures | HO | 150 | 1,000 | 2,000 |
| NY Harbor ULSD Last Day Financial Futures | 23 | 829 | 1,000 | 2,000 |
| NY Harbor ULSD Bullet Futures | BH | 825 | 1,000 | 2,000 |

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| | | | | |
|---|---|---|---|---|
| RBOB Gasoline Futures | RB | 191 | 1,000 | 2,000 |
| RBOB Gasoline Last Day Financial Futures | 27 | 830 | 1,000 | 2,000 |
| RBOB Gasoline Bullet Futures | RT | 555 | 1,000 | 2,000 |

As a result of the increase of to the spot month position limits for the Contracts, the Exchange is also amending the spot month position limits for certain futures and option contracts which aggregate into the Contracts for position limit purposes. A comprehensive list of all impacted contracts can be found in Appendix A, which is attached under separate cover.

The Position Limit, Position Accountability and Reportable Level Table and Header Notes located in the Interpretations and Special Notices Section of Chapter 5 of the NYMEX Rulebook (the "Table") will be amended to reflect aforementioned changes. Appendix A provided under separate cover, provides the Table with additions **underscored** and deletions ~~struck through~~.

NYMEX is also providing an updated analysis of deliverable supply in connection with the increased position limits for the Light Sweet Crude Oil Futures, Henry Hub Natural Gas Futures, NY Harbor ULSD Futures, and RBOB Gasoline Futures contracts (see Appendix B, C, D, and E, respectively, provided under separate cover).

The Exchange reviewed the designated contract market core principles ("Core Principles") as set forth in the Commodity Exchange Act ("Act") and identified that Rule Amendments may have some bearing on the following Core Principles.

- **Contracts Not Readily Subject to Manipulation**: The Contracts are not readily subject to manipulation due to the deep liquidity and robustness in the underlying physical markets.

- **Position Limitations or Accountability**: The speculative position limits for the Contracts as demonstrated in this submission are consistent with the Commission's guidance.

- **Availability of General Information**: The information contained herein will be disseminated to the marketplace via Market Surveillance Notice. The Exchange will publish information on the Contracts' specifications on its website, together with daily trading volume, open interest, and price information.

Pursuant to Section 5c(c) of the Act and CFTC Regulation 40.6(a), the Exchange hereby certifies that the Rule Amendments comply with the Act, including regulations under the Act. There were no substantive opposing views to this proposal.

The Exchange certifies that this submission has been concurrently posted on the Exchange's website at: http://www.cmegroup.com/market-regulation/rule-filings.html.

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If you require any addition information regarding this submission, please contact the undersigned at (212) 299-2200 or via e-mail at CMEGSubmisisonInquiry@cmegroup.com.

Sincerely,

/s/Christopher Bowen
Managing Director and Chief Regulatory Counsel

Attachments: Appendix A - Position Limit, Position Accountability, and Reportable Level Table in Chapter 5 of the NYMEX Rulebook (attached under separate cover)
Appendix B - Analysis of Deliverable Supply – Light Sweet Crude Oil Futures
Appendix C - Analysis of Deliverable Supply – Henry Hub Natural Gas Futures
Appendix D - Analysis of Deliverable Supply – NY Harbor ULSD Futures
Appendix E - Analysis of Deliverable Supply – RBOB Gasoline Futures

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# Appendix A

## NYMEX Rulebook

## Chapter 5
## ("Trading Qualifications and Practices")
### Position Limit, Position Accountability, and Reportable Level Table

(attached under separate cover)

# Appendix B

## Analysis of Deliverable Supply – Light Sweet Crude Oil Futures

In estimating deliverable supply for the Light Sweet Crude Oil Futures, the New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") relied on long-standing precedent, which provides that the key component in estimating deliverable supply is the portion of typical production and supply stocks that could reasonably be considered to be readily available for delivery.

Appendix C to part 38 of the Commodity Futures Trading Commission's regulations defines deliverable supply as "the quantity of the commodity meeting the contract's delivery specifications that can reasonably be expected to be readily available to short traders and saleable by long traders at its market value in normal cash marketing channels at the derivative contract's delivery points during the specified delivery period, barring abnormal movement in interstate commerce."

### I. Methodology and Data Sources

The Exchange considered three components in evaluating deliverable supply estimates of the Domestic Light Sweet Common Stream Crude Oil for the Cushing, Oklahoma delivery location of the Light Sweet Crude Oil Futures contract:

(1) Crude Oil Production;

(2) Crude Oil Flows to the delivery area; and

(3) Crude Oil Storage in the delivery area.

#### A. Crude Oil Production

While crude oil production information is, in part, available from other sources, particularly at the state level from energy or tax revenue authorities, the Exchange determined to use production information collected by the U.S. Department of Energy ("DOE") Energy Information Administration ("EIA"). Specifically, the Exchange has chosen to rely on the EIA production data because it constitutes a single source, employing common standards, across all states. The EIA data are highly regarded but they do not provide sufficient breakdown on the quality characteristics of the oil production to determine the subset of total production that would qualify as Domestic Light Sweet under the terms of the futures contract.

#### B. Crude Oil Flows to the Cushing Delivery Area

To determine the flows of Domestic Light Sweet crude oil into the delivery area, NYMEX consulted with industry executives and professionals from pipeline and storage terminal operators in Cushing as well as other major industry participants. It is noteworthy that the estimates provided here are materially less than the production that can readily access the delivery mechanism and which *could* be delivered due to the fact that the sources we used were specifically knowledgeable about *actual* Cushing deliveries. Thus, the information provided is not what *could be* delivered — the standard which is in accordance with Commission's policy and precedent — but what actually *is* delivered. The Exchange believes that the Cushing delivery mechanism for light sweet crude oil and corresponding commercial secondary market constitutes such a sophisticated and highly-developed commercial market mechanism that, at any time, the actual flows to and stocks in the delivery area represent precisely the deliverable supply sufficient to support the mechanism. In other words, even though at any time there is additional production that *could* be delivered to the delivery mechanism, we are only including what *actually* flows in our estimate of deliverable supply.

#### C. Crude Oil Storage in the Cushing Delivery Area

Storage data are provided on a weekly basis by EIA. Details are provided for the U.S. Petroleum Administration for Defense Districts ("PADDs") and Cushing. There are five PADDs and, in some cases, they correspond to broad regions. PADD 2 broadly includes the Midwest; PADD 3 broadly includes U.S. Gulf Coast states and New Mexico; PADD 4 contains the Rocky Mountain States excluding New Mexico. Cushing is the only single location where crude oil official

inventory numbers are collected and publicly disseminated on a regular basis anywhere in the world. The actual geographic market that is consistently most applicable to the NYMEX crude oil futures contract would, therefore, include much of PADD 2, not just Cushing.

Nonetheless, NYMEX includes only inventories reported at Cushing, so these underestimate relevant storage. As with production, EIA does not provide details on the quality characteristics of stored crude oil, but the industry experts with whom NYMEX consulted consistently estimated that 60% to 70% of the crude oil stored at Cushing qualified as Domestic Light Sweet Common Stream (to be conservative, the Exchange will discount 40% of inventory in its calculation of deliverable supply estimates).

## II. The Cushing Physical Delivery Mechanism: Scope of Deliverable Crude Oil

The Cushing physical delivery mechanism is comprised of a network of nearly two dozen pipelines and 12 storage terminals, with extensive inter-connectivity. Two of the storage facilities — Enterprise and Enbridge — and their pipeline manifolds are the core of the Cushing physical delivery mechanism.[1] Physical volumes delivered against the Light Sweet Crude Oil Futures contract within the Enterprise and Enbridge systems are at par value. Any deliveries made on futures contracts elsewhere in Cushing require the seller to compensate the buyer for the lower of the transportation netbacks from these facilities to where the delivery occurs. Detailed information about the inflowing and outflowing pipelines is contained below in Table 2.

Terminating obligations in the Light Sweet Crude Oil Futures contract are fulfilled by delivering WTI type light sweet crude oil designated as "Domestic Common Stream" by Enterprise Products LLC. Market participants commonly refer to the light sweet deliverable streams as "WTI." In addition, the Domestic Common Stream includes a fungible blend of light sweet streams produced in the U.S. shale oil areas, including the Bakken, Niobrara, and Permian producing areas. Furthermore, each of these light sweet crude oil streams is fungibly blended and included as part of the "Domestic Common Stream" within the complex that comprises the Cushing delivery mechanism, as well as in the WTI physical market which calls for delivery in the Cushing delivery mechanism.

## III. Physical Market Trading Structure and Term Contracts

### A. Physical Market Trading Structure

Typically, there is a chronology of sales and purchases of crude oil in the onshore U.S. market that starts with a sale from producer and finishes with a purchase by an end-user to consume the crude oil. First-sales are from producers to aggregators or other middleman-type firms with delivery at the property where it is produced. The first-sale buyer transports oil downstream from the point of sale. Usually the first-sale buyer resells the oil to someone other than the end-user but sometimes sells directly to the end-user.

Final sales are sales to end-users who when they consume the oil remove it from the supply chain. End-users, however, also resell oil. Such end-user re-sales sometimes occur during the same commercial cycle in which they purchased it; other times, they occur during a later commercial cycle after the oil has been stored for a period of time. Like end-users, other buyers of oil also can either resell it immediately or store it first for some period of time and then resell it later. Thus, it is a common commercial practice that the first-sale and multiple subsequent re-sales occur in the same delivery cycle.

As discussed above, the Cushing delivery market is essentially a major reseller market where buyers either: resell the oil to someone else; store the oil and resell it later; store the oil and then consume it later; or transport it to consume it. The Cushing market is essentially downstream of first-sales. Most of the sales in the Cushing market are for resale and not for either storage or final-sale; in fact, the physical market in "WTI," in which the standard form of delivery is within the pipeline system at Cushing, is estimated to be 10-20 times the multiple of "WTI" oil that flows to Cushing. As such, it is clear that most sales are for resale because they constitute the selling, over-and-over (thus, *re*-selling), of the base

[1] Three of the major sources for the cash-market information provided herein are Plains All America, Enterprise and Enbridge. Enterprise oversees the vast majority of deliveries in the Cushing Delivery Market and, as indicated, Enterprise and Enbridge are the core delivery mechanism operators. Plains and Enbridge account for about 60% of the storage available at Cushing.

physical oil that flows to Cushing. *Argus Media* documents about 5-8 times the flow in "WTI" sales but does not capture all of the sales.[2]

### B. Term Contracts

The Exchange has spoken with and interviewed a number of market participants regarding common commercial practices with respect to the use of term contracts in the U.S. onshore crude oil market.[3] The responses we received were consistent and they can be summarized as follows:

- Almost all first-sales of production are sold term; as discussed in the previous section, typically for delivery on the property where it is produced (or nearest gathering pipeline or holding tank), and typically to middleman-firms or aggregators. These middleman-firms typically resell the crude oil to other middleman-firms (or participants performing that function) or to end-users. Typically, the first-sales contracts are "evergreen" contracts that can be discontinued by either party with notice. NYMEX is including evergreen contracts in the "term contracts" category.
- There are no restrictions applied to the resale of crude oil bought first-sale on a term basis from producers. In fact, that would clearly not be applicable because sales are typically to aggregators or others acting in a middleman-firm role with the expressed responsibility of reselling the oil.
- The Cushing market is downstream of first-sales; in other words, Cushing is downstream of any term sales from producers. Thus, even if barrels were sold term by the producer, in the Cushing market those barrels are re-sold and re-delivered by either the purchaser from the producer or a subsequent purchaser from that original purchaser. The Cushing market mechanism, which consists of trading and physical delivery of light sweet crude oil, is a commercial secondary (or *spot*) market which is extremely liquid, comprised of broad participation and results in a substantial quantity of physical delivery of crude oil.
- Some end-user refiners in the Cushing market purchase specific light sweet crude oil streams, such as Bakken or Niobrara Light Sweet crude oil, on a term basis, and these refiners tend to segregate a portion of the specific light sweet crude streams for processing at their refineries. Based on conversations with refiners in the Cushing market, the Exchange estimates that approximately 10% of the deliverable supply for Cushing is segregated and designated for use by end-user refiners, and therefore is not available for re-sale in the Cushing market. Consequently, the Exchange will reduce its estimate of deliverable supply in Cushing by 10% to account for the specific light sweet streams that are designated for processing and segregated by the end-user refiners.
- Our sources expressly advised us that any production sold long-term was available for potential re-sale, such as during periods of refinery maintenance, and this is especially the case in the Cushing market.

### C. Crude Oil Production

The production area that supplies crude oil to Cushing via pipeline and rail is comprised of the following eight (8) states: North Dakota, Montana, Wyoming, Colorado, New Mexico, Onshore Texas, Oklahoma, and Kansas.

In the three-year period of December 2017 through November 2020, the average production of crude oil available in the eight states was approximately 8.3 million barrels per day. Based on discussions with industry participants, our estimate of the portion of that average production which would qualify as Domestic Light Sweet Common Stream is 50% or higher— i.e., approximately 4.15 million barrels per day. The 4.15 million barrels per day of crude oil production is equivalent to approximately 124.75 million barrels per month, or 124,750 futures contracts equivalents (contract size: 1,000 barrels).

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[2] The commercial market for physical delivery of light sweet crude oil in Cushing is a *secondary* (or *spot*) market mechanism. The number of physical deliveries in this market each month is 240 million barrels or higher (240,000 futures contracts equivalent or higher).

[3] These include: Plains All America, a major Midcontinent aggregator and marketer and operator of pipeline and storage terminals including in Cushing; and an Energy Market Participant Group of several dozen market participants organized through Hunton & Williams LLP to discuss and comment on Regulatory issues.

Table 1 below provides annual production data available for production in the eight states that supply the Cushing crude oil market for the period of December 2017 through November 2020. The data show that production peaked in 2019, and then declined in 2020. As indicated above, the Exchange has determined to not utilize production data in its deliverable supply estimate, but the data demonstrates that production levels are more than sufficient to support the actual flows of deliverable product to the delivery location.

### D. Crude Oil Flows to the Cushing Delivery Area

Currently, there is approximately 4.1 million b/d of inflow pipeline capacity to Cushing and 3.2 million barrels per day of outflow capacity. In addition, according to the EIA, there are 91.2 million barrels of storage capacity in the Cushing area which continues to grow steadily.

The Exchange collects inbound Cushing crude oil flows periodically but not on an on-going or scheduled basis as such information is proprietary and non-public. Based on information provided by industry sources in Table 2 below, as of December 2020, actual flows of crude oil to Cushing have ranged from 2.3 million to 2.6 million barrels per day, with Domestic Light Sweet Common Stream Crude Oil averaging between 1.3 to 1.5 million barrels per day.[4] On a 30-day monthly basis, actual flows of Domestic Light Sweet Common Stream Crude Oil ranged from 39 to 46.5 million barrels per month, or 39,000 to 46,500 Light Sweet Crude Oil futures contract equivalents.

As of July 2018, actual flows of crude oil in-bound to Cushing have ranged from 2.2 million to 2.5 million barrels per day as shown in Table 3 below, with Domestic Light Sweet Common Stream Crude Oil averaging between 1.270 to 1.450 million barrels per day.[5] On a 30-day monthly basis, actual flows of Domestic Light Sweet Common Stream Crude Oil ranged from 38.0 to 43.5 million barrels per month, or 38,000 to 43,500 Light Sweet Crude Oil futures contract equivalents.

As of March 2015, estimated in-bound flows of Domestic Light Sweet Common Stream Crude Oil into Cushing averaged between 920,000 and 1,000,000 barrels per day as illustrated in Table 4 below. On a 30-day monthly basis, actual flows of Domestic Light Sweet Common Stream Crude Oil were 27.6 million to 30.0 million barrels per month or 27,600 to 30,000 Light Sweet Crude Oil futures contract equivalents.

Given that the Exchange only collects pipeline flow data on a periodic basis, the Exchange is unable to provide a three-year average of Domestic Light Sweet Common Stream Crude Oil flows into Cushing. As such, the Exchange determined to average the 2015, 2018 and 2020 estimated flows data collected. The average of the ranges for 2015, 2018 and 2020 for Domestic Light Sweet Common Stream Crude Oil flows into Cushing are 35,000 to 40,000 contract equivalents. The midpoint of the average of the ranges is approximately 37,500 contract equivalents.

### E. Crude Oil Storage in the Cushing Delivery Area

As of May 2020, EIA reported that shell storage capacity at Cushing was 91.2 million barrels and working storage capacity was 75.8 million barrels.[6] Currently, there is substantial excess working capacity at Cushing (nearly 28 million barrels). Finally, it should be noted that, at least on a temporary basis, storage can exceed working capacity and it is common for an individual tank to reach 85-90% of shell capacity (which exceeds the 83% average underlying the EIA estimates).

Table 5 below provides monthly averages of weekly Cushing stocks for the period beginning January 2018 through December 2020 as published by the EIA. For the three-year average from January 2018 through December 2020, inventories averaged 42.6 million barrels and ranged from about 23 million to 60 million barrels. NYMEX asked operators of storage in Cushing if they would share specific data on quantities of Domestic Light Sweet Common Stream Crude Oil stored at their facilities and they responded that such data were confidential. As discussed above, the Exchange estimated that approximately 60% of the total oil stored at Cushing qualified as Domestic Light Sweet Common Stream Crude Oil. Based on the foregoing, for the January 2018 – December 2020 period, the monthly average Domestic Light

[4] The sources were various pipeline operators and other industry sources.

[5] The sources were: Plains All America, an aggregator and marketer of crude oil production and pipeline and storage terminal operator at Cushing; and other industry sources.

[6] http://www.eia.gov/petroleum/storagecapacity/table2.pdf Shell capacity is defined by EIA as the design capacity of a petroleum storage tank which is always greater than or equal to working storage capacity.

Sweet Common Stream Crude Oil stored at Cushing was approximately 25.5 million barrels or 25,500 futures contract equivalents.

The Exchange has further evaluated both operational practices at storage facilities as well as commercial practices by customers of storage facilities to determine if some components of inventoried product could rightfully be considered *not* to be readily deliverable.

With respect to operational practices, based on discussions with some industry experts, the Exchange conservatively estimates that 6.75% of stored product, on average, is required for operational minimums.[7] This converts into discounting an estimated 1.7 million barrels of Domestic Light Sweet crude oil based on the three-year average storage level (or 1,700 contract equivalents). In applying a discount of 6.75% to account for operational minimums, average monthly Domestic Light Sweet Common Stream Crude Oil for the January 2018 – December 2020 period is further reduced to approximately 23,800 contract equivalents.

With respect to commercial practices, the Exchange specifically sought whether storage customers were expressly allotting any stored barrels at Cushing for refining that were, therefore, unavailable for secondary market delivery. We consistently heard from market participants that was not the case; that barrels stored at Cushing are not specifically targeted for scheduled refining. Rather, refiners typically store barrels targeted for scheduled refining in tanks on the premises at their respective refineries or at other storage facilities. However, we did hear from one refiner that they keep barrels stored at Cushing for the contingency that there could be some unexpected interruption in their refinery supply; and, rather than refine the barrels stored at Cushing, they use them to trade for other barrels they would refine. Thus, the Exchange determined to further reduce the average monthly Domestic Light Sweet Common Stream crude oil stored at Cushing to account for this *contingency storage* in our estimate of deliverable supply. We estimate this quantity to be 2 million barrels (or 2,000 contract equivalents) of Domestic Light Sweet crude oil. Therefore, for the January 2018 – December 2020 period, the Exchange estimates stored product at Cushing (adjusted for quality specifications, operational minimums and contingency storage) and which is readily available for delivery against the Light Sweet Crude Oil futures contract to be approximately 21,800 contract equivalents.

Based on the above analysis, the Exchange determined at this time to base its estimates of deliverable supply on the sum of:

- Storage: 21,800 contract equivalents (which represents the average monthly inventory for the January 2018 – December 2020 period adjusted to account for quality specifications, operational minimums and contingency storage); and
- Inflow: 37,500 contract equivalents (which represents the midpoint of the average of the ranges of the 2015, 2018 and 2020 Domestic Light Sweet Common Stream Crude Oil flows into Cushing).

The total estimated deliverable supply, consisting of storage and pipeline inflows, was 59,300 contract equivalents. Additionally, and as noted in the above analysis, the Exchange shall apply a 10% reduction to the sum of inventory storage and inflows into Cushing in order to discount segregated barrels that may be designated for processing by end-user refiners and typically not available for re-sale in the Cushing market. Therefore, after applying the 10% reduction, the Exchange has determined the estimated deliverable supply available for delivery against the Light Sweet Crude Oil Futures contract at approximately 53,370 futures contract equivalents per month.

The proposed spot month limits for the Light Sweet Crude Oil Futures contract utilize a tiered structure of 6,000/5,000/4,000 contracts for the final three days of trading in the expiring contract month. Based on the foregoing analysis, the proposed spot month position limit of 6,000 contracts represents 11.2**%** of the estimated monthly deliverable supply. Further, the proposed spot month position limit of 5,000 contracts represents 9.4**%** of the estimated monthly deliverable supply. Finally, the proposed spot month position limit of 4,000 contracts represents 7.5**%** of the total estimated monthly deliverable supply.

**Table 1**

[7] The Exchange has been advised that, for older tanks, the operational minimum is 9% and, for newer tanks, it is 4.5%. The Exchange's assessment is that the majority of tanks at Cushing would qualify as newer. Nonetheless, to be conservative, we have applied the mid-point percentage—6.75%-- for all of Cushing.

**U.S. Crude Oil Production[8]**
**For Eight States that Supply Cushing, Oklahoma**
**(in Thousands of Barrels per Day)**

| Annual Averages based on Monthly EIA Data | Crude Oil Production (Thousands of Barrels per Day) |
|---|---|
| **Dec 2017 to Nov 2018** | 7,601 |
| **Dec 2018 to Nov 2019** | 8,809 |
| **Dec 2019 to Nov 2020** | 8,543 |
| **Three-Year Average** | **8,318** |

**Table 2**
**Crude Oil Flows to Cushing (as of December 2020)**
**(Barrels/Day)[9]**

| Incoming Pipelines | Capacity | Owner | Estimated Flows (in Barrels/Day) |
|---|---|---|---|
| Keystone XL (from Steele City, NE) | 760,000 | Transcanada | 400,000 – 450,000 BD (100% Heavy Sour) |
| Basin Pipeline (Permian) | 550,000 | Plains All American | 250,000 – 325,000 (90% WTI, 10% Sour) |
| Centurion North Pipeline (Permian) | 170,000 | Occidental | 40,000 – 50,000 (100% WTI) |
| Spearhead Pipeline (Canada) | 195,000 | Enbridge | 180,000 – 195,000 (100% Heavy Sour) |
| Flanagan South (Canada/Bakken) | 600,000 | Enbridge | 450,000 – 500,000 (10% WTI, 90% Heavy Sour) |
| White Cliffs Pipeline (Niobrara) | 90,000 | Rose Rock | 85,000 – 90,000 (100% WTI) |
| Cashion, OK Pipeline | 250,000 | Plains All American | 120,000 – 130,000 (100% WTI) |
| Mississippian Lime Pipeline | 150,000 | Plains All American | 70,000 – 80,000 (100% WTI) |
| Pony Express Pipeline (Niobrara) | 400,000 | Tallgrass | 350,000 – 375,000 (100% WTI) |
| Saddlehorn/Grand Mesa | 450,000 | Magellan/Plains | 225,000 – 300,000 (100% WTI) |
| Glass Mountain | 210,000 | Navigator | 50,000 – 60,000 (100% WTI) |
| Hawthorn (Stroud to Cushing) | 90,000 | Hawthorn | 25,000 – 30,000 (100% WTI) |
| SCOOP Pipeline | 70,000 | Magellan | 45,000 – 50,000 (100% WTI) |
| Great Salt Plains | 35,000 | Parnon | 25,000 – 30,000 (100% WTI) |
| Eagle North | 25,000 | Blueknight | 4,000 – 7,000 (100% WTI) |
| Red River | 35,000 | Plains All American | 1,000 – 5,000 (100% WTI) |
| **TOTAL In-Bound Capacity** | **4.1 Million Capacity** | | **WTI Flow: 1,310,000 – 1,550,000 B/D** |

| Outgoing Pipelines | Capacity (B/D) | Owner |
|---|---|---|
| Seaway Pipeline | 950,000 | Enterprise |
| Keystone MarketLink | 750,000 | Transcanada |
| BP#1 (to Chicago) | 180,000 | BP |
| Ozark (to Wood River, IL) | 360,000 | Enbridge |
| Osage (to Eldorado, KS) | 165,000 | Magellan/NCRA |
| Coffeyville CVR pipeline | 110,000 | CVR Energy |
| Phillips (to Ponca City, OK) | 122,000 | ConocoPhillips |
| Phillips (to Borger, TX) | 59,000 | NuStar |
| Plains Red River (to Longview) | 235,000 | Plains All American |
| Diamond Pipeline (to Memphis) | 200,000 | Plains All American |
| Sunoco (twin lines to Tulsa) | 70,000 | Sunoco |
| Magellan Tulsa | 30,000 | Magellan |
| **TOTAL Out-bound Capacity** | **3.2 Million B/D** | |

**Table 3**
**Crude Oil Flows to Cushing (as of July 2018)**

[8] The production listed here includes North Dakota, Montana, Wyoming, Colorado, New Mexico, Onshore Texas, Oklahoma, and Kansas. The web link is: http://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbblpd_a.htm

[9] Sources: pipeline operators and other industry sources.

## (Barrels/Day)[10]

| Incoming Pipelines | Capacity | Owner | Estimated Flows (in Barrels/Day) |
|---|---|---|---|
| Keystone XL (from Steele City, NE) | 590,000 | Transcanada | 350,000 - 400,000 BD (100% Heavy Sour) |
| Basin Pipeline (Permian) | 450,000 | Plains | 350,000 - 400,000 (80% WTI, 20% Sour) |
| Centurion North Pipeline (Permian) | 170,000 | Occidental | 120,000 - 140,000 (100% WTI) |
| Spearhead Pipeline (Canada) | 195,000 | Enbridge | 150,000 - 175,000 (100% Heavy Sour) |
| Flanagan South (Canada/Bakken) | 600,000 | Enbridge | 400,000 - 450,000 (10% WTI, 90% Heavy Sour) |
| White Cliffs Pipeline (Niobrara) | 215,000 | Rose Rock | 100,000 - 120,000 (100% WTI) |
| Plains Cashion, OK Pipeline | 250,000 | Plains | 120,000 -145,000 (100% WTI) |
| Mississippian Lime Pipeline | 150,000 | Plains | 95,000 - 100,000 (100% WTI) |
| Pony Express Pipeline (Niobrara) | 325,000 | Tallgrass | 300,000 – 325,000 (100% WTI) |
| Saddlehorn-Grand Mesa | 340,000 | Magellan/Plains | 140,000 – 150,000 (100% WTI) |
| Glass Mountain | 210,000 | Sem Group | 30,000 – 40,000 (100% WTI) |
| Hawthorn (Stroud to Cushing) | 90,000 | Hawthorn | 10,000 – 20,000 (100% WTI) |
| Great Salt Plains | 35,000 | Parnon | 30,000 – 35,000 (100% WTI) |
| Eagle North | 20,000 | Blueknight | 5,000 – 10,000 (100% WTI) |
| **TOTAL In-Bound Capacity** | **3.6 Million Capacity** | | **WTI Flow: 1,270,000 – 1,450,000 B/D** |

| Outgoing Pipelines | Capacity (B/D) | Owner |
|---|---|---|
| Seaway Pipeline | 850,000 | Enterprise |
| Keystone MarketLink | 700,000 | Transcanada |
| BP#1 (to Chicago) | 180,000 | BP |
| Ozark (to Wood River, IL) | 345,000 | Enbridge |
| Osage (to Eldorado, KS) | 165,000 | Magellan/NCRA |
| Coffeyville CVR pipeline | 110,000 | CVR Energy |
| Phillips (to Ponca City, OK) | 122,000 | ConocoPhillips |
| Phillips (to Borger, TX) | 59,000 | NuStar |
| Plains Red River Pipeline (to Longview) | 125,000 | Plains All American |
| Plains Red River Pipeline | 25,000 | Plains All American |
| Sunoco (twin lines to Tulsa) | 70,000 | Sunoco |
| Plains Cherokee | 20,000 | Plains All American |
| Magellan Tulsa | 30,000 | Magellan |
| Diamond Pipeline (to Memphis) | 200,000 | Plains |
| **TOTAL Out-bound Capacity** | **3.0 Million B/D** | |

[10] Sources: Plains All American Pipeline Company, and other industry sources.

**Table 4**
**Crude Oil Flows to Cushing (as of March 2015)**
**(Barrels/Day)[11]**

| Incoming Pipelines | Capacity | Owner | Estimated Flows (in Barrels/Day) |
|---|---|---|---|
| Keystone XL (from Steele City, NE) | 575,000 | Transcanada | 200,000 - 250,000 BD (Heavy sour) |
| Basin Pipeline (Permian) | 450,000 | Plains | 250,000 (80% WTI) |
| Centurion North Pipeline (Permian) | 120,000 | Occidental | 95,000 - 100,000 (100% WTI) |
| Spearhead Pipeline (Canada) | 210,000 | Enbridge | 150,000 - 175,000 (Canadian sour) |
| Flanagan South (Canada/Bakken) | 585,000 | Enbridge | 400,000 - 450,000 (10% WTI, 90% Sour) |
| White Cliffs Pipeline (Niobrara) | 150,000 | Rose Rock | 100,000 - 120,000 (100% WTI) |
| Plains Cashion, OK Pipeline | 100,000 | Plains | 80,000 (100% WTI) |
| Mississippi Lime Pipeline | 175,000 | Plains | 110,000 (100% WTI) |
| Pony Express Pipeline (Niobrara) | 320,000 | Tallgrass | 180,000 – 200,000 (100% WTI) |
| Hawthorn (Stroud to Cushing) | 90,000 | Hawthorn | 20,000 – 25,000 (100% WTI) |
| Great Salt Plains | 30,000 | JP Energy | 15,000 – 20,000 (100% WTI) |
| Northern Cimarron | 30,000 | Rose Rock | 15,000 – 20,000 (100% WTI) |
| Midcontinent Pipeline | 30,000 | Sunoco Logistics | 25,000 – 30,000 (100% WTI) |
| Glass Mountain Pipeline | 140,000 | Rose Rock | 40,000 – 50,000 (100% WTI) |
| **TOTAL In-Bound Capacity** | **3.0 Million Capacity** | | **WTI Flow: 920,000 – 1,000,000 B/D** |

**Table 5**
**Cushing Storage[12]**
**Average of Weekly Stocks**
**(in Thousand Barrels)**

| Year | Month | Stock |
|---|---|---|
| 2018 | Jan | 41,309 |
| | Feb | 31,941 |
| | Mar | 30,448 |
| | Apr | 35,519 |
| | May | 36,509 |
| | Jun | 31,754 |
| | Jul | 24,175 |
| | Aug | 23,714 |
| | Sep | 23,301 |
| | Oct | 29,339 |
| | Nov | 35,977 |
| | Dec | 40,779 |
| 2019 | Jan | 41,574 |
| | Feb | 43,977 |
| | Mar | 46,961 |
| | Apr | 45,133 |
| | May | 48,553 |
| | Jun | 52,712 |
| | Jul | 50,567 |
| | Aug | 43,000 |
| | Sep | 39,921 |
| | Oct | 43,780 |
| | Nov | 45,286 |

[11] Sources: Plains All American Pipeline Company, JSK consulting, and other industry sources.

[12] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=W_EPC0_SAX_YCUOK_MBBL&f=W

| | | |
|---|---|---|
| | Dec | 38,672 |
| 2020 | Jan | 35,715 |
| | Feb | 38,237 |
| | Mar | 39,614 |
| | Apr | 56,831 |
| | May | 57,986 |
| | Jun | 46,927 |
| | Jul | 50,002 |
| | Aug | 52,722 |
| | Sep | 54,744 |
| | Oct | 59,464 |
| | Nov | 60,373 |
| | Dec | 58,353 |
| **Three-Year Avg.** | | **42,640** |

# Appendix C

## Analysis of Deliverable Supply – Henry Hub Natural Gas Futures

In estimating deliverable supply for the Henry Hub Natural Gas Futures, the New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") relied on long-standing precedent, which provides that the key component in estimating deliverable supply is the portion of typical production and supply stocks that could reasonably be considered to be readily available for delivery.

Appendix C to part 38 of the Commodity Futures Trading Commission's regulations defines deliverable supply as "the quantity of the commodity meeting the contract's delivery specifications that can reasonably be expected to be readily available to short traders and saleable by long traders at its market value in normal cash marketing channels at the derivative contract's delivery points during the specified delivery period, barring abnormal movement in interstate commerce."

### I. Methodology and Data Sources

The Exchange considered four factors in evaluating the Henry Hub natural gas deliverable supply estimates:

(1) Geographic extent of the market;
(2) Natural gas production that can flow to the delivery location;
(3) Delivery capacity of the delivery mechanism; and
(4) Storage information.

#### A. Geographic Extent of the Market

The geographic extent of the market defines both the sources from which supplies can be readily provided as well as the destinations into which supply can be re-delivered. The Henry Hub delivery mechanism is part of a broader geographic market that encompasses U.S. Gulf Coast (USGC) area production, sales and re-sales. This includes production from Texas, Louisiana, Mississippi and Alabama, USGC area storage and USGC area pipelines and supporting facilities.

#### B. Natural Gas Production

To determine production estimates, NYMEX reviewed information gathered from two sources: Bentek, a wholly-owned subsidiary of Platts and the U.S. Department of Energy ("DOE") Energy Information Administration ("EIA").

Bentek is an industry leader in the provision of data aggregation and collation from the Interstate Natural Gas Pipelines' electronic bulletin boards.[2] Interstate natural gas pipelines are subject to Federal Energy Regulatory Commission ("FERC") oversight and jurisdiction. As part of its regulatory oversight, FERC

[1] http://www.ecfr.gov/cgi-bin/text-idx?SID=74959c3dbae469e2efe0a42b45b8dfae&mc=true&node=ap17.1.38_11201.c&rgn=div9
[2] Bentek collects details on the flow of interstate pipeline natural gas from the production source, commonly known as the wellhead, to the local distribution company's (including municipal operated distributors) delivery point, commonly known as its city-gate, beyond which point the pipeline ceases to be a federally regulated interstate pipeline.

requires interstate pipelines to operate publicly accessible electronic bulletin boards which provide information on scheduling, available capacity and natural gas flows on a near real-time basis. Among other things, Bentek collects and disseminates collated data from these electronic bulletin boards daily. Given this, the Bentek data presented can be more current than the EIA data, which are typically subject to a minimum two-month delay in publication.

EIA data are a definitive source for production information and EIA does provide marketed production data for Federal U.S. Gulf Coast offshore production as well as onshore production for individual states such as Louisiana and Texas; these data include, however, some onshore production that would not be able to readily access the delivery point.

Bentek provides greater geographic detail than the EIA data by providing both U.S. Gulf Coast offshore and onshore natural gas production that has ready access to the delivery point. As is discussed below, NYMEX believes that the Bentek data underestimates the total production with ready access to the Henry Hub but, nonetheless, represents a reasonable basis for production estimates.

### C. Henry Hub Operating Capacity

The source of the Henry Hub pipeline receipt and delivery capacity is the Sabine Pipe Line Co. website. As part of FERC regulation, interstate pipelines are required to provide daily capacity information that includes receipt and delivery design, scheduled and available for all certificated interconnections.[3] The inflowing natural gas daily receipts operating capacity is 3,385,000 Dth which is equivalent to 3,385,000 MMBtu. The outflowing natural gas daily deliveries operating capacity is 3,165,000 Dth which is equivalent to 3,165,000 MMBtu.

### D. State of Louisiana and Producing Area Natural Gas Storage

Storage data are provided on a weekly basis by EIA and are approximately four business days old upon release. These data are provided by general region—East, West and Producing. Producing includes the U.S. Gulf Coast region which includes the delivery location for the Henry Hub Natural Gas Futures contract. The EIA also collects data at the individual state level but provides this data with a time lag of approximately six months. At these frequencies of release, there is no official storage data with greater geographic detail than either the Producing region or state level.

## II. The Henry Hub Physical Delivery Mechanism

The Henry Hub consists of interconnections with 11 interstate and intrastate pipelines and related infrastructure. The Henry Hub is owned and operated by EnLink Midstream. The deliveries pipelines source their natural gas from the U.S. Gulf Coast region, both onshore and offshore, which extends from Texas to Alabama. Henry Hub has two compressor stations that enable natural gas to move from lower pressure pipeline Henry Hub receipt interconnections to higher pressure downstream Henry Hub pipelines.

Henry Hub also offers an intra-Hub tracking and transfer service, a form of in-system title transfer and documentation, to accommodate trading and delivery needs of its customers. This service, which is offered by Sabine Hub Services Company, a non-federal jurisdictional subsidiary of EnLink Midstream, enhances the natural gas trading environment for producers, marketers, and end-users with respect to meeting their physical and financial requirements. In addition, the number of interruptible transportation customers of Henry Hub has grown to approximately 160 market participants.

## III. Physical Market Trading Structure and Term Contracts

### A. Physical Market Trading Structure

Typically, there is a chronology of sales and purchases of natural gas in the U.S. market that starts with a sale from producer and finishes with a purchase by an end-user to consume the natural gas, typically far downstream of the U.S. Gulf Coast. First-sales are from producers to marketers or other middleman-type firms with delivery at the production point or where natural gas first enters the pipeline system (or liquids

[3] https://sabinepipeline.enlink.com/

processing facility attached to the system). The first-sale buyer transports it from the point of sale downstream. Typically, the first-sale buyer resells the natural gas to someone other than the end-user. Sales to end-users, who do not further resell the natural gas but ultimately consume it, are final-sales.

As implied, sometimes end-users also resell natural gas, frequently during the same commercial cycle in which they purchased it. Other buyers of resold natural gas also either resell it or store it and resell it later. A common commercial practice is the first-sale and multiple subsequent re-sales occurring in the same delivery cycle; this line of re-sales usually includes a final sale, but not always, since a significant portion of natural gas is stored.

Henry Hub is essentially an active reseller market where buyers either: resell the natural gas to someone else at Henry Hub; transport it downstream for delivery and re-sale to someone else; transport it downstream to consume it; or transport it downstream to store it. Most of the sales and deliveries in the Henry Hub are comprised of volumes for re-sale, storage or final-sales. In fact, the commercial physical market in Henry Hub sales is estimated to be 7-8 times the multiple of physical natural gas that flows through Henry Hub, which is a direct indication that most sales are for re-sale. Platts *Gas Daily* and *Inside F.E.R.C.* publish transaction information for delivery at Henry Hub but do not capture all transactions that occur at the Henry Hub.

### B. Term Contracts

The Exchange contacted and surveyed natural gas market participants regarding common commercial practices, including the use of term contracts, in the North American natural gas market.[4] The responses we received were consistent and can be summarized as follows:

- Most first-sales of production are sold term, as indicated above, typically for delivery on the producing property or nearest entry to the pipeline system, including liquids processing plants, and typically to middleman-firms. These middleman-firms typically resell the natural gas to other middleman-firms or to market participants performing that function or to end-users. Gulf Coast market participants estimated re-sales ranging from 50% to over 90%—skewing towards the higher end. Some market participants indicated they did not know of exceptions but did not estimate 100% of first sales to be ultimately resold.
- No restrictions typically apply to the resale of natural gas bought first-sale on a term basis from producers. In fact, restrictions would clearly not be applicable because sales are typically to marketers or others acting in a middleman-firm role with the expressed responsibility of reselling the natural gas. The participants with whom we spoke indicated that they had not encountered any restrictions. Several market participants did point out that "burner-tip" sales—i.e. to utilities—could entail a restriction on the utility from reselling the natural gas; however, they made clear that such sales, in their experience, were downstream of first-sales and first re-sales as well, especially in the U.S. Gulf Coast.
- Henry Hub is largely downstream of first-sales; some first-sales take place there but, typically, not as part of a term sale. Consequently, natural gas production that is readily accessible to Henry Hub in terms of transportation is also readily accessible commercially. Natural gas that has readily accessible transportation to Henry Hub is not otherwise committed and unavailable to be delivered at Henry Hub.
- Term sales do not result in reductions to the deliverable supply for Henry Hub. All market participants agreed that natural gas purchased on a term sale is available for re-sale and delivery, including to the Henry Hub and that all market participants downstream of first-sales participate in the market for resale (as some first-sellers do).
- Our sources expressly advised us that any production sold long-term was available for re-sale, which is especially the case in the U.S. Gulf Coast market and the Henry Hub.

[4] The Exchange contacted 15 firms, surveying 10, as well as a market participant group that included several dozen members. The individually contacted firms included major producers and marketers. The Energy Market Participant Group was organized through Hunton & Williams LLP to discuss and comment on regulatory issues.

## IV. Deliverable Supply Estimates and Supporting Data

The factors considered in evaluating deliverable supply are natural gas production, deliverable capacity at the Henry Hub, and natural gas storage.

### A. Natural Gas Production

The Exchange reviewed monthly data reported by EIA for Federal Offshore – Gulf of Mexico Natural Gas Marketed Production (Table 1 below) from January 2018 through November 2020. The monthly average offshore natural gas production was approximately 8,124 contract equivalents for 2018, 8,461 contract equivalents in 2019, and 6,358 contract equivalents from January 2020 -November 2020(contract size: 10,000 MMbtu). Federal Offshore production is a subset of production that is readily accessible to be delivered at the Henry Hub.

The Exchange also reviewed monthly data reported by EIA for Louisiana Natural Gas Marketed Production (Table 2 below) and Texas Natural Gas Marketed Production (Table 3 below) from January 2018 through November 2020. The monthly average onshore production for Louisiana was approximately 23,603 contract equivalents in 2018, 26,864 contract equivalents in 2019, and 26,421 contract equivalents from January 2020 – November 2020. The monthly average onshore production for Texas for 2018 was approximately 67,008 contract equivalents, 77,513 contract equivalents in 2019, and 77,101 contract equivalents from January 2020 to November 2020.

However, the onshore Louisiana and Texas production data includes production from certain regions of the states that would not be readily accessible to the Henry Hub. Consequently, even though EIA is the pre-eminent official source for production data, the Exchange relied on production estimates reported by Bentek which captures data for specific offshore and onshore areas that are accessible to the Henry Hub.

Table 5 provides Bentek's estimates of daily natural gas production accessible to the Henry Hub for Onshore and Offshore Louisiana, Texas, Mississippi and Alabama in million cubic feet for the period beginning January 2018 through December 2020. According to Bentek, average monthly onshore production accessible to the Henry Hub for the 2018 – 2020 period was approximately 4,410 contract equivalents, 6,228 contract equivalents, and 7,860 contract equivalents (through December 31), respectively. Average offshore production accessible to the Henry Hub for the 2018-2020 period was approximately, 8,358 contract equivalents 9,348 contract equivalents and 9,240 contract equivalents (through December 31), respectively. Additionally, as illustrated in Table 6 below, average offshore natural gas production accessible to the Henry Hub as estimated by Bentek yielded totals that were comparable to EIA's average of Federal offshore production. It should be noted that Bentek's offshore production data includes state offshore production that is directed to the Interstate pipeline system.

Total annual average of onshore and offshore production as estimated by Bentek for the period beginning January 2018 through December 2020 is approximately 12,768 contract equivalents,15,576 contract equivalents and 17,100 contract equivalents, respectively.

The Exchange monitors production regularly and, in light of the continued production in the Gulf Coast region and other areas, anticipates the continuing central role provided by the Henry Hub as a delivery mechanism for natural gas. The production quantities included in these estimates represent production that is tendered in the secondary (or spot) market and which could easily access the Henry Hub delivery mechanism to dependably fulfill a secondary (or spot) market delivery at the Henry Hub. The actual delivery path for production depends on the actual commercial activity each month in the secondary market, including delivery obligations for NYMEX natural gas contracts. There are multiple delivery points (including the Henry Hub) where such secondary market deliveries can take place for this production and the actual delivery locations for specific production each month fluctuates with its corresponding secondary market transactions.

### B. Henry Hub Deliverable Capacity

According to the Form 10-K report[5] which EnLink Midstream filed with the U.S. Securities and Exchange Commission (SEC) in 2014, Henry Hub transfer services capacity is 2.1 Bcf per day or 2,100,000 MMBtu per day. This converts into 210 contract equivalents per day or 6,300 contract equivalents per month.

According to the Henry Hub pipeline receipt and delivery operating capacity as published on the Sabine Pipe Line Co. website, the inflowing natural gas daily receipts operating capacity is 3,385,000 Dth which is equivalent to 3,385,00 MMBtu. The outflowing natural gas daily deliveries operating capacity is 3,165,000 Dth which is equivalent to 3,165,000 MMBtu.

Additionally, the Exchange has taken into consideration backhaul in estimating the deliverable supply. Displacement or backhaul refers to gas flows that are scheduled in the opposite direction of existing scheduled flow in a pipeline, at a storage facility or at a Hub that accommodates delivery such as the Henry Hub. Displacement is a standard component of transportation services provided under FERC Gas Tariff[6] of Sabine Pipe Line in accordance with FERC regulations. This mechanism is integral to the network and considered as a common practice in pipeline operations.

Displacement can occur at any interconnect or point(s) on a natural gas pipeline system when volumes nominated and scheduled to flow in one direction are displaced by volumes nominated and scheduled to flow in the opposite direction. It is important to note that all confirmed nominations are viewed as flowing gas but only the net result of scheduled nominations flowing opposite directions at the same point will actually physically flow. The remaining volumes not displaced will determine the direction of actual physical flow through the inlet and outlet meters at the Henry Hub. Additionally, backhaul is coordinated directly by interconnecting pipeline operators as a natural consequence of scheduled nominations between the two, without any special distinction or notification to shippers. Also, the Exchange has confirmed with the pipeline operator that incorporating displacement is both reasonable and appropriate.

In evaluating delivery capacity, the Exchange calculated the average monthly backhaul deliveries and receipts for all interconnects based on Design and Available capacities data provided by EnLink Midstream from January 1, 2018 to December 31, 2020[13,7]. Given that the inflowing natural gas receipts capacity is greater than the outflowing natural gas deliveries capacity, the Exchange determined at this time to use the outflowing natural gas deliveries capacity, which is the lower of the two numbers, in its evaluation of deliverable supply.

Based on the methodology described above, the Exchange estimated the backhaul capacity at the Henry Hub based on the following a three-step approach:

Step 1: The Exchange first calculated the monthly backhaul capacity at every interconnect for each month based on all daily observations.

Step 2: The Exchange summed up the largest monthly backhaul capacity at every interconnect over each 12-month interval over the 3-year timeframe. Accordingly, the total is 15,350,901 mmBTU for the January 2018 to December 2018 period, 9,513,024 mmBTU for the January 2019 to December 2019 period, and 14,403,980 mmBTU for the January 2020 to December 2020 period.

Step 3: The Exchange averaged the three calculated values. Accordingly, the estimate of the backhaul capacity at the Henry Hub is approximately 13,089,302 mmBTU which is equivalent to 1,309 contracts per month.

The frequency and the magnitude of backhaul has increased notably during the last few years due to the following major market developments:

[5] https://www.sec.gov/Archives/edgar/data/1592000/000159200015000005/enlc201410-k.htm

[6] http://www.gasnom.com/ip/sabine/fileviewer.cfm?FromLoc=Tariff&file=tariff.pdf
Texas Gas missing data from February 2016 till July 2016

[13] Unavailable data which was not provided by the hub operator December 2018 for Acadian and from 05/27/2019 to10/21/2019 for Columbia Gulf interconnects

- Historically, US Gulf Coast ("USGC") has been a major production basin where natural gas is produced and procced then shipped to major demand center in Northeast, Midwest and Southeast via long-haul pipelines including the ones interconnected with the hub. However, the shale revolution has redefined the supply structure and Northeast is becoming a net exporter area displacing excess gas to the other markets including USGC.
- USGC is undergoing a fundamental shift and becoming a major consumption destination specifically with LNG export terminals. Henry Hub supports feeding feedstock gas to Cheniere's Sabine Pass Liquefaction through NGPL interconnect. The terminal has four primary routes into the plant: NGPL from TexOk, NGPL from Henry Hub, Creole Trail, and Transco.

### C. Natural Gas Storage in State of Louisiana and Producing Area

The Exchange reviewed monthly data reported by EIA for Louisiana Natural Gas Underground Storage Volume (Table 4 below) from January 2017 through November 2020. The monthly average for storage for Louisiana and producing regions (Alabama, Arkansas, Kansas, Louisiana, Mississippi, Oklahoma, and Texas) for the 2017 – 2020 period was approximately 60,177 contract equivalents, 51,432 contract equivalents, 54,126 contract equivalents, and 63,268 contract equivalents, respectively.

### D. Deliverable Supply Estimates

Given that production and storage levels exceed deliverable capacity, as noted above, deliverable capacity continues to be the constraining factor in estimating deliverable supply.

Based on the above analysis and as shown in Table 7, the Exchange determined at this time to base its estimates of deliverable supply solely on transfer services capacity and average monthly backhaul capacity at the Henry Hub (6,300 + 1,309 contracts per month) which is equal to **7,609** contracts per month. The current spot month position limit of 1,000 contracts represents approximately 13% of the estimated monthly deliverable supply. Twenty-five percent (25%) of the estimated monthly deliverable supply is 1,902.25. Rounding to the nearest hundreds, the proposed spot month position limit for the Natural Gas Futures Contract is 2,000 contracts.

**Table 1**
**Federal Offshore--Gulf of Mexico Natural Gas Marketed Production**
**(Million Cubic Feet)[8]**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2017** | 10,124 | 8,844 | 10,157 | 9,081 | 9,523 | 8,676 | 9,389 | 8,883 | 8,443 | 7,650 | 7,805 | 7,472 |
| **2018** | 7,442 | 7,133 | 8,045 | 7,241 | 7,484 | 7,576 | 8,818 | 9,429 | 8,518 | 8,268 | 8,679 | 8,854 |
| **2019** | 9,016 | 7,674 | 9,203 | 8,720 | 8,772 | 8,164 | 6,682 | 9,122 | 8,411 | 8,670 | 8,363 | 8,738 |
| **2020** | 8,474 | 7,834 | 8,467 | 7,759 | 6,330 | 6,071 | 6,734 | 4,341 | 4,745 | 3,708 | 5,475 | |

**Table 2**
**Louisiana Natural Gas Marketed Production**
**(Million Cubic Feet)[9]**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2017** | 15,956 | 14,335 | 17,847 | 15,395 | 16,169 | 16,635 | 16,599 | 18,267 | 18,616 | 20,673 | 20,880 | 22,613 |
| **2018** | 21,085 | 19,984 | 22,979 | 22,232 | 23,874 | 23,681 | 24,550 | 24,849 | 24,059 | 25,926 | 24,743 | 25,277 |
| **2019** | 25,904 | 24,211 | 26,752 | 26,079 | 27,046 | 26,573 | 27,822 | 27,677 | 26,666 | 27,949 | 27,079 | 28,608 |
| **2020** | 27,906 | 25,176 | 26,612 | 26,271 | 27,367 | 26,382 | 26,551 | 25,789 | 25,468 | 26,340 | 26,771 | |

**Table 3**
**Texas Natural Gas Marketed Production**
**(Million Cubic Feet)[10]**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2017** | 56,538 | 52,444 | 59,665 | 58,845 | 60,724 | 59,389 | 62,373 | 60,644 | 59,854 | 64,375 | 63,400 | 64,132 |
| **2018** | 61,754 | 57,789 | 66,105 | 63,665 | 67,403 | 65,891 | 67,494 | 69,528 | 69,328 | 71,001 | 71,835 | 72,308 |
| **2019** | 73,651 | 67,580 | 75,635 | 72,522 | 77,837 | 76,432 | 80,327 | 83,641 | 78,557 | 82,370 | 79,066 | 82,542 |
| **2020** | 82,737 | 77,134 | 83,214 | 77,284 | 73,350 | 73,310 | 76,651 | 78,846 | 74,630 | 76,126 | 74,827 | |

[8] https://www.eia.gov/dnav/ng/hist/n9050fx2M.htm
[9] http://www.eia.gov/dnav/ng/hist/n9050la2m.htm
[10] http://www.eia.gov/dnav/ng/hist/n9050tx2m.htm

**Table 4**
**Louisiana Natural Gas Underground Storage**
**Volume (Million Cubic Feet) [11]**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2017 | 59,488 | 58,297 | 56,023 | 58,237 | 60,211 | 60,668 | 60,606 | 60,227 | 62,554 | 63,932 | 62,730 | 59,149 |
| 2018 | 49,592 | 47,937 | 47,230 | 46,440 | 50,635 | 52,409 | 51,707 | 52,211 | 54,187 | 56,772 | 54,541 | 53,528 |
| 2019 | 47,381 | 42,340 | 40,482 | 46,138 | 50,447 | 54,353 | 56,139 | 57,221 | 61,062 | 65,572 | 65,173 | 63,202 |
| 2020 | 58,173 | 52,788 | 55,351 | 60,522 | 63,883 | 66,213 | 65,649 | 67,210 | 68,769 | 68,197 | 69,188 | |

**Table 5**
**US Gulf Natural Gas Production Accessible**
**to Henry Hub (Million Cubic Feet per Day) [12]**

| Available LA/TX/MS/AL Natural Gas Supply | 2018 | 2019 | 2020 |
|---|---|---|---|
| Bentek LA Offshore YTD | 1,466 | 1,792 | 1,819 |
| Bentek LA Onshore YTD | 266 | 310 | 293 |
| Bentek TX Offshore YTD | 250 | 174 | 162 |
| Bentek TX Onshore YTD | 1,071 | 1,651 | 2,203 |
| Bentek MS Offshore YTD | 588 | 648 | 617 |
| Bentek AL Offshore YTD | 482 | 502 | 482 |
| Bentek AL-MS-FL Onshore YTD | 133 | 115 | 124 |
| Total Bentek LA, TX, MS/AL | 4,256 | 5,192 | 5,700 |
| Daily Contract Equivalent (CE) | 426 | 519 | 570 |
| 30-Day Month CE | 12,768 | 15,576 | 17,100 |
| 25% of 30-Day Month CE | 3,192 | 3,894 | 4275 |

| Available Natural Gas Supply | 2018 | 2019 | 2020 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Total Bentek Offshore LA, TX, MS/AL** | 2,786 | 3,116 | 3,080 |
| **Daily Contract Equivalent (CE)** | 278.60 | 311.60 | 308.00 |
| **30-Day Month CE** | 8,358 | 9,348 | 9,240 |

| Available Natural Gas Supply | 2018 | 2019 | 2020 |
|---|---|---|---|
| **Total Bentek Onshore LA, TX, MS/AL** | 1,470 | 2,076 | 2,620 |
| **Daily Contract Equivalent (CE)** | 147 | 208 | 262 |
| **30-Day Month CE** | 4,410 | 6,228 | 7,860 |

**Table 6**
**Monthly Average Offshore Production Accessible to Henry Hub Estimated by Bentek vs. EIA Monthly Average of Federal Offshore Production**
**(In Contract Equivalents)**

| Year | Bentek | EIA |
|---|---|---|
| **2018** | 9,240 | 8,124 |
| **2019** | 9,348 | 8,461 |
| **2020** | 8358 | 6,358 |

**Table 7 Deliverable Supply Estimates**

| | |
|---|---|
| Transfer Services Capacity | 2,100,000 |
| Monthly Backhaul | 13,089,302 |
| Transfer Capacity Daily Contract Equivalent | 210 |
| Transfer Services Capacity Monthly Contract Equivalent | 6,300 |
| Monthly Backhaul-Contract Equivalent | 1,309 |
| DS: Transfer Cap+Backhaul Contract Equivalent | 7,609 |
| 25% Threshold | 1,902 |
| % of current Limit | 13.14% |

# Appendix D

## Analysis of Deliverable Supply – New York Harbor ULSD Futures

In estimating deliverable supply for the NY Harbor ULSD Futures contract, New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") relied on long-standing precedent, which provides that the key component in estimating deliverable supply is the portion of typical production and supply stocks that could reasonably be considered to be readily available for delivery.

Appendix C to part 38 of the Commodity Futures Trading Commission's regulations defines deliverable supply as "the quantity of the commodity meeting the contract's delivery specifications that can reasonably be expected to be readily available to short traders and saleable by long traders at its market value in normal cash marketing channels at the derivative contract's delivery points during the specified delivery period, barring abnormal movement in interstate commerce."

### I. Methodology and Data Sources

The Exchange considered four components in evaluating deliverable supply estimates of Ultra Low Sulfur Diesel ("ULSD") for the New York Harbor delivery location of the NY Harbor ULSD Futures contract:

- **A.** ULSD production at Bayway Refinery;
- **B.** ULSD deliveries to the NY Harbor on Colonial Pipeline;
- **C.** ULSD storage levels in the delivery area;
- **D.** ULSD imports and exports into the delivery area.

For production, storage and import/exports, the Exchange determined to use data collected by the U.S. Department of Energy ("DOE") Energy Information Administration ("EIA") for its analysis and evaluation of deliverable supply estimates for ULSD in New York Harbor. The EIA provides detailed data on the key components of deliverable supply. The EIA provides such data on a weekly, monthly, and annual basis.

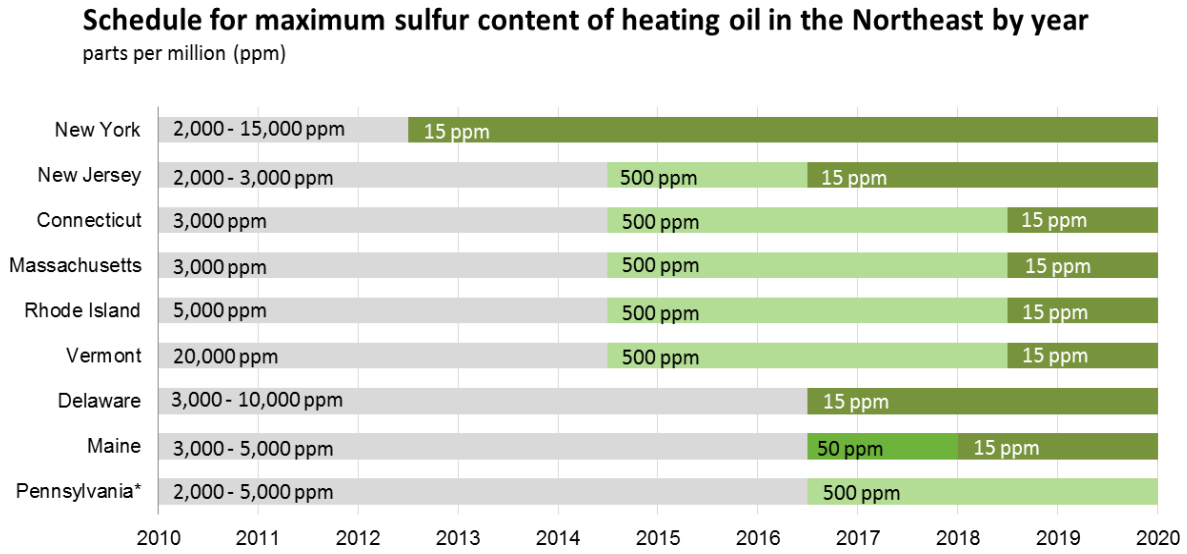
For ULSD pipeline deliveries, the Exchange relied on a combination of public information disseminated by the EIA, Federal Energy Regulatory Commission ("FERC") as well as private interviews with reliable industry sources with whom the Exchange has had a long-standing relationship.

### II. Introduction

ULSD is a distillate fuel that has a dual-use as heating oil and as a transportation fuel. As of December 1, 2010, all on-highway diesel fuel consumed in the United States is ULSD as mandated by federal regulations. Unlike diesel fuel used in transportation, heating oil has no federal sulfur content restrictions. However, various State initiatives to apply comparable sulfur limits to heating oil are in planning or implementation stages in the Northeast, the main heating oil consuming region.

According to the EIA, New England and the Central Atlantic Coast of the United States (collectively known as the "Northeast" for data purposes) are the main consumers of heating oil, typically accounting for 80% of the sales. As of July 1, 2012, New York State mandated that all heating oil sold for residential, commercial and industrial heating applications within the State contain no more than 15 parts per million (ppm) of sulfur. Following New York's path, Delaware and New Jersey transitioned to 15ppm sulfur content in 2016. As of July 1, 2018, Connecticut, Maine, Massachusetts, Rhode Island and Vermont transitioned to ULSD for heating purposes. Figure 1 below is a summary of the specification changes to Heating Oil by State.

**Figure 1 - Heating Oil Sulfur Specification Changes per State[14]**




The NY Harbor ULSD Futures contract is the main benchmark used for pricing the distillate products market, which includes diesel fuel, heating oil, and jet fuel. The Exchange has amended the grade and quality specifications in response to changes in environmental regulations in the Northeast, requiring cleaner, lower sulfur diesel standards for heating oil. Effective beginning with the May-2013 delivery month, the NY Harbor ULSD Futures contract required delivery of on-road ULSD with a maximum of 15ppm sulfur content.

After transitioning to lower sulfur grade in May-2013, the NY Harbor ULSD Futures serves as a dual-use contract that is a price reference and hedging instrument for both the heating oil and on-road diesel markets. The heating oil pool will eventually be fully integrated into the ULSD market and the widespread adoption of a 15ppm sulfur content limit for heating oil is likely to encourage the development of a seamless ULSD distillate market throughout the entire East Coast, according to the EIA. Consequently, due to the phase-out of high-sulfur heating oil delivery specifications, the Exchange has focused its deliverable supply analysis on the ULSD sector of the distillate fuel market.

### New York Harbor Delivery Region

New England and the Central Atlantic Coast of the United States, collectively defined by the EIA as the “Northeast”, is a well-connected and integrated geographical region in terms of oil and products infrastructure. The region is part of the larger PADD 1 (Petroleum Administration Defense District)[15].

Located in both New York and New Jersey, the New York Harbor area is the largest oil importing and third largest container port in the nation, and is the main oil and refined products pricing and trading hub. Petroleum products in New York Harbor are supplied by refineries located in New Jersey, Delaware and Pennsylvania, all located within 100 miles of the New York Harbor area. East Coast refineries, a majority of which are located in New Jersey and Philadelphia, send products by local pipelines into New York Harbor.

Among the refineries serving the NY Harbor area, Bayway refinery is the largest supplier of ULSD. Located on the New York Harbor in Linden, New Jersey, the Phillips-66-owned refinery processes

[14] http://www.eia.gov/forecasts/steo/special/winter/2014_winter_fuels.pdf

[15] http://www.eia.gov/analysis/petroleum/nerefining/prelim/

mainly light, low-sulfur crude oil. Bayway's refining units include fluid catalytic cracking (FCC), hydro de- sulfurization units, a naphtha reformer, an alkylation unit and other processing equipment. The refinery's total crude capacity is 258,000 barrels per day (b/d), while its ULSD capacity is 108,000-115,000 b/d[16].

The Colonial Pipeline is the largest refined products pipeline in the US and a key products supply link for the Northeast. The pipeline connects the Northeast to refinery output from the US Gulf Coast and foreign imports, principally from Canada, Virgin Islands, Caribbean and Europe. Colonial's network of pipelines crosses 11 states, serving more than 260 marketing terminals in the Southern and Eastern United States. The pipeline provides a link from the US Gulf Coast to the New York Harbor area through the south and across the Eastern seaboard. It generally takes from 14 to 24 days for a product batch on the Colonial Pipeline to get from Houston, Texas to the New York Harbor, with 18.5 days the average time. The Philadelphia-area refineries are strategically located along the Colonial Pipeline.

In 2011, Colonial expanded the northern end of its Houston-to-New York system, adding 100,000 barrels per day (b/d) of capacity. In addition, the company completed a series of system upgrades leading to more than 100,000 b/d of capacity for distillates[17] specifically serving the New Jersey, Pennsylvania, and New York markets. Also, Colonial Pipeline added an additional 100,000 b/d of gasoline and distillates capacity in early 2013[18] to meet demand in on the northern portion of the line (Greensboro, NC to Linden, NJ).

The Harbor Pipeline is an approximately 80-mile 171,000 b/d[19] refined product common carrier pipeline originating near Woodbury, New Jersey and terminating in Linden, New Jersey. It is majority-owned and operated by Sunoco Logistics.

Many of the petroleum products delivered to New York Harbor are redistributed to smaller ports where they supply local demand. In particular, the Hudson River, which meets the Atlantic Ocean in New York Harbor, provides a major inland water route for petroleum product barges supplying eastern New York and parts of western New England. Significant volumes are shipped to New England via barge from New York Harbor. On the other side of the State, western New York product markets are primarily supplied from Canada at the Port of Buffalo, and via the Buckeye and Sunoco Logistics pipeline systems from Pennsylvania and the Midwest[20]. Figure 2 below illustrates the logistics of refining and products transportation in the Northeast.

[16] http://www.phillips66.com/EN/about/our-businesses/refining/Pages/Bayway-Refinery.aspx

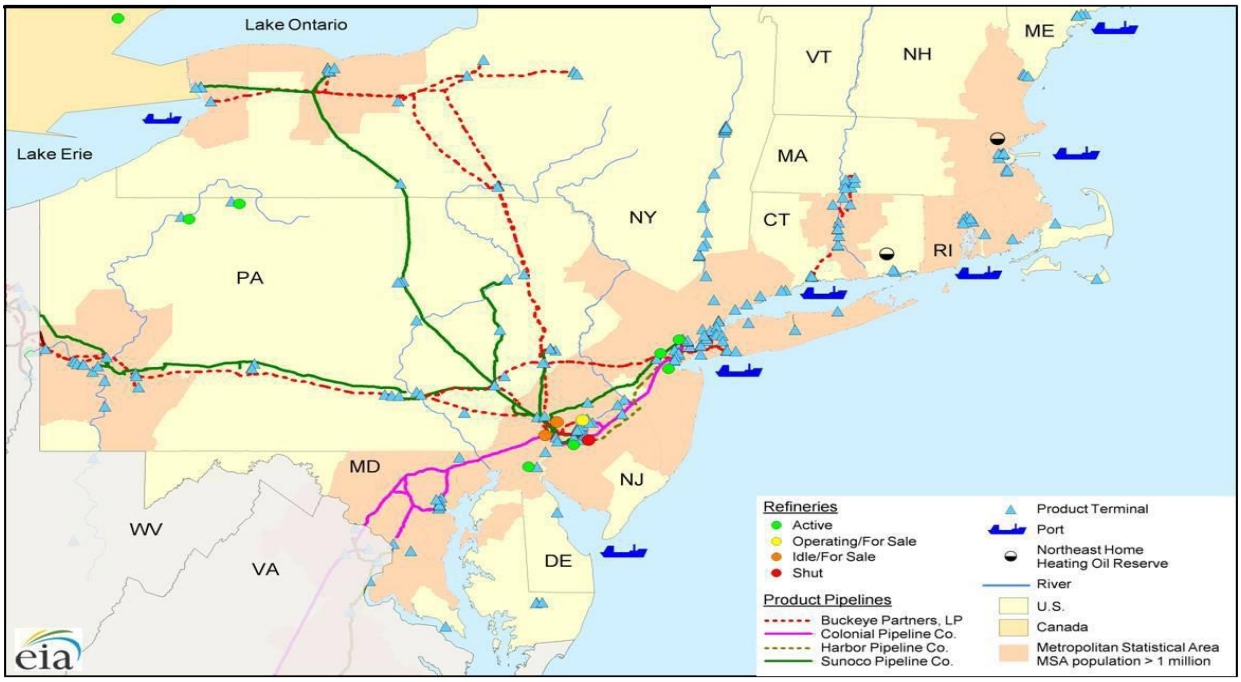
[17] http://www.eia.gov/pressroom/presentations/sieminski_10102012.pdf

[18] http://www.colpipe.com/home/news-media/press-releases/pressdetail?ID=7cb2e327-d0b3-6eb4-9c07-ff00009907dd

[19] http://investor.phillips66.com/financial-information/sec-filings/sec-filings-details/default.aspx?FilingId=11867386

[20] http://205.254.135.7/state/state-energy-profiles-analysis.cfm?sid=NY

**Figure 2 - Northeast Refined Products Market Logistics[21]**




As of January 1, 2020, there were 135 operating refineries, in which 131 were operating in the United States with total atmospheric crude oil distillation capacity of over 19.0 million barrels per calendar day[22]. On the East Coast (PADD 1), there are eight operable refineries, in which seven are currently operating with 1.2 million b/d of atmospheric crude distillation capacity. The region has 502,500 b/d of fluid catalytic cracking (FCC) capacity. PADD 1 includes all states in New England, the Mid-Atlantic, and the South Atlantic and is subdivided into three sub-PADDs.

• PADD 1A – New Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut

• PADD 1B – New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia

• PADD 1C - West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida

Supply dynamics for each of the three sub-PADDs vary. PADD 1A, New England, has no refineries and relies on imports and transfers from other PADDs, primarily PADD 1B. PADD 1C, the South Atlantic, also has no operating refineries and relies primarily on pipeline transfers and marine shipments from PADD 3 and imports. PADD 1B is supplied by a combination of in-region refineries, transfers from other PADDs - primarily from PADD 3- and imports[23].

The majority of PADD 1B refineries are located in New Jersey, Delaware and Pennsylvania, and within 100 miles of the New York Harbor area. These refineries are directly connected to the New York Harbor market by local pipelines and/or waterborne barges. A list of Northeast refineries is provided in Table 1.

**Table 1 – Mid-Atlantic (PADD 1B) Refineries**

| Name | State | Owner | Capacity | Status |
|---|---|---|---|---|
| Delaware City Refinery Co LLC | Delaware City, DE | PBF Energy Co LLC | 182,200 b/d | Operational |

[21] http://www.eia.gov/analysis/petroleum/nerefining/update/pdf/neprodmkts.pdf

[22] http://www.eia.gov/dnav/pet/pet_pnp_cap1_dcu_nus_a.htm

[23] http://www.eia.gov/petroleum/refinery/outage/pdf/refinery_outage.pdf

| | | | | |
|---|---|---|---|---|
| Paulsboro Refining Co LLC | Paulsboro, NJ | PBF Energy Co LLC | 160,000 b/d | Operational[24] |
| Phillips 66 Company | Linden, NJ | Phillips 66 Company | 258,000 b/d | Operational |
| American Refining Group Inc | Bradford, PA | American Refining Group Inc | 11,000 b/d | Operational |
| Philadelphia Energy Solutions | Philadelphia, PA | Carlyle Group | 335,000 b/d | Idle |
| United Refining Co | Warren, PA | Red Apple Group Inc | 65,000 b/d | Operational |
| Monroe Energy LLC | Trainer, PA | Delta Airlines Inc | 190,000 b/d | Operational |

## III. Deliverable Supply Estimates

### A. ULSD Production

According to EIA's "Refinery Capacity by Individual Refinery" data[25] as well as data reported by Phillips- 66[26], the total distillate fuel capacity at the Bayway refinery is approximately 108,000-130,000 b/d. Industry interviews indicate that almost all of Bayway's distillate fuel capacity is used for ULSD production. In estimating ULSD production at the Bayway refinery, the Exchange adjusted the capacity figure downward due to seasonal factors, to 108,000 barrels per day. Further, EIA provides operable refinery utilization rates for the "East Coast" area of PADD 1, which is an accurate representation of the utilization rate for the Bayway refinery. EIA's operable utilization rates represent the utilization of the atmospheric crude oil distillation units and are calculated by dividing the gross input to these units by the operable calendar day refining capacity of the units. Accordingly, the EIA refinery utilization rate is 81.6% utilization for the three-year period of 2017 through 2019[27] (88.4%, 85.0% and 71.3% respectively). Finally, according to industry sources at Phillips-66, it was explained that approximately 10,000 barrels per day of ULSD production are committed to long-term customers. Therefore, after accounting for long- term commitments, the net ULSD production at Bayway Refinery is estimated at 78,128 b/d, or approximately 2.34 million barrels per month.

**Table 2 - Bayway Refinery Production**

| ULSD Capacity (b/d) | Capacity Utilization (3-Year Average) | Net ULSD Production (b/d) | ULSD Production committed to Long-Term Contracts (b/d) | Net ULSD Production Barrels per Month |
|---|---|---|---|---|
| 108,000 | 81.6% | 88,128 | 10,000 | 2,343,840 |

### B. ULSD Deliveries

The main pipeline supplying ULSD to the NY Harbor market is the Colonial Pipeline. Data for precise ULSD flows are not publicly shared by pipeline operators, however the Exchange estimated these figures using a combination of publicly available data and industry interviews.

To estimate the amount of ULSD on the Colonial Pipeline, the Exchange utilized a five-step approach.

- Step 1: The Exchange collected data on distillate fuel oil delivered on the pipeline as reported

[24] Paulsboro Refinery Reconfiguration and Optimization, https://investors.pbfenergy.com/news/2020/10-29-2020-103142029

[25] Refinery Capacity by Individual Refinery Data: https://www.eia.gov/petroleum/refinerycapacity/refcap20.xls under the category "desulfurization, diesel fuel"

[26] http://www.phillips66.com/EN/about/our-businesses/refining/Pages/Bayway-Refinery.aspx

[27] http://www.eia.gov/dnav/pet/pet_pnp_unc_dcu_rec_a.htm

to the FERC in Form 6 for years 2017-2019[28] as year 2020 is not yet available. These reports are designed to collect both financial and operational informational from oil pipeline companies subject to FERC jurisdiction. Table 3 illustrates total deliveries in barrels per year. Accordingly, the three-year average is reported at 279,276,824 barrels.

**Table 3 – Colonial Pipeline Distillate Fuel Deliveries**

| | **Total Delivered Out (YTD Barrels)** |
|---|---|
| **2017** | 282,066,510 |
| **2018** | 275,256,167 |
| **2019** | 280,507,795 |
| **Average (2017 – 2019)** | **279,276,824** |

- Step 2: To estimate the portion of shipped distillates that is ULSD, the Exchange used the percentage of ULSD shipments for PADD 1 as reported by the EIA. The Exchange believes that the share of ULSD out of total distillates shipped from PADD 3 to PADD 1 is representative of the ULSD shipments on the Colonial Pipeline. As illustrated in Table 4 below, in the 2017-2019 timeframe, total distillates shipped from the Gulf Coast (PADD 3) to PADD 1 averaged at 305,067,000 barrels[29] per year. In the same time period, the ULSD (0-15 ppm Sulfur) shipments from PADD 3 into PADD 1 averaged at 285,414,000 barrels[30] per year, which is 93.53% of all distillates.

[28] See Page 601.2, Line 19, Column (i) at:
FERC Form 6 2017, page 601.2 box i19, https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14893902
FERC Form 6 2018, page 601.2 box i19, https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15222963
FERC Form 6 2019, page 601.2 box i19, https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15513650

[29] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mdimxp1p31&f=a

[30] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=md0mx_r10r30_1&f=a

**Table 4 – PADD 1 Receipts by Pipeline, Tanker and Barge from PADD 3 (Thousand Barrels)**

| | ULSD (0-15 ppm) | Total Distillates | %ULSD |
|---|---|---|---|
| **2017** | 269,618 | 291,693 | 92.43% |
| **2018** | 286,868 | 308,300 | 93.05% |
| **2019** | 299,756 | 315,207 | 95.10% |
| **Average (2017 – 2019)** | **285,414** | **305,067** | **93.53%** |

- Step 3: To estimate ULSD shipments specific to the Colonial Pipeline, the Exchange applied the ULSD percentages applicable to PADD 1 from Step 2 above on total ULSD distillate fuel deliveries from Step 1. Table 5 below shows that approximately 261,199,666 barrels of ULSD per year which is equivalent to 21,766,639 barrels per month was shipped on the Colonial Pipeline in the 2017-2019 timeframe.
-

**Table 5 – Colonial Pipeline ULSD Deliveries**

| | Total Delivered (Step 1) | % ULSD (Step 2) | ULSD Shipped on Colonial Pipeline (Barrels) | ULSD Shipped on Colonial Pipeline (Barrels per Month) |
|---|---|---|---|---|
| **2017** | 282,066,510 | 92.43% | 260,720,032 | 21,726,669 |
| **2018** | 275,256,167 | 93.05% | 256,121,265 | 21,343,439 |
| **2019** | 280,507,795 | 95.10% | 266,757,701 | 22,229,808 |
| **Average (2017- 2019)** | | | 261,199,666 | 21,766,639 |

- Step 4: Previously, the Exchange calculated the amount of ULSD that was shipped on the Colonial Pipeline and delivered to the NY Harbor market, which is the terminus of the Colonial Pipeline. This calculation methodology was based on the surcharge that was assessed by FERC on ULSD shipments on Colonial Pipeline for the time period of 2014 through 2016. This ULSD surcharge was a temporary fee that was mandated by FERC and publicly reported by Colonial Pipeline for all ULSD shipments during the time period of 2014 through 2016. This FERC surcharge was discontinued at the end of 2016. Based on this reported surcharge data, the Exchange was able to calculate the amount of ULSD that was shipped on Colonial Pipeline and delivered in NY Harbor. Not all ULSD shipped on Colonial Pipeline is delivered to the NY Harbor delivery region, so the Exchange performed a calculation to estimate the New York Harbor-delivered ULSD shipments using FERC Form 6 and tariff data. Per FERC Order IS07-86[31] ULSD that was delivered south of Philadelphia to the Colonial Pipeline terminal in Booth, PA was subject to an annual total surcharge that was reported to the FERC through Form 6[32] for the time period of 2014 through 2016.

[31] http://elibrary.ferc.gov/idmws/file_list.asp?document_id=4472753

[32] See Schedule Page 300, Line 2, Column C at:
FERC Form 6 for 2013 http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13518863 page 601.2 box i19
FERC Form 6 for 2014 http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13844493 page 601.2 box i19
FERC Form 6 for 2015 http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14207820 page 601.2 box i19

According to Table 6 below, in the 2014-2016 timeframe, the ULSD surcharge on the Colonial Pipeline averaged $8,837,556. In addition, on January 1, 2017, Colonial Pipeline discontinued the ULSD surcharge, therefore the Exchange used the time period of 2014 – 2016 for which the surcharge data is available[33]. This FERC surcharge data provides valuable information that can be used to calculate the amount of ULSD that is delivered to the NY Harbor market on the Colonial Pipeline.

**Table 6 – Colonial Pipeline Surcharge for ULSD Deliveries South of Booth, PA**

| | Total Surcharge ($) |
|---|---|
| **2014** | 7,666,428 |
| **2015** | 9,319,899 |
| **2016** | 9,526,342 |
| **Average (2014 – 2016)** | **8,837,556** |

To calculate the number of ULSD barrels subject to the surcharge, the Exchange used a per barrel surcharge rate applicable to each year. These rates are reported to the FERC via tariff schedules[34] and illustrated in Table 7 below. The average surcharge was calculated by taking an average of the surcharges that were in place, weighted by how long they were in effect over the course of the year. In 2014, the surcharge of $0.04 was in effect for the first half of the year (January-June) and the surcharge of $0.054 was in effect for the second half of the year (July- December) so the weights are equally distributed. In 2015, there were three reported surcharges; the surcharge of $0.054 was effective for the first half of the year (January - June) while the surcharge of $0.056 was effective July-December, so despite having only three reported surcharges instead of four, the weights are also distributed equally. In 2016, there were four reported surcharges in which the rate remained unchanged. For the 2014-2016 timeframe, the average surcharge rate per barrel was $0.053.

**Table 7 – Colonial Pipeline ULSD Surcharge Rate for Delivery South of Booth**

| Year | Docket Number | Reported Surcharge (per barrel) | Average Annual Surcharge |
|---|---|---|---|
| 2014 | IS14-122 | $0.040 | **$0.047** |
| 2014 | IS14-272 | $0.040 | |
| 2014 | IS14-516 | $0.054 | |
| 2014 | IS14-673 | $0.054 | |
| 2015 | IS15-51 | $0.054 | **$0.055** |
| 2015 | IS15-124 | $0.054 | |
| 2015 | IS15-403 | $0.056 | |
| 2016 | IS16-61 | $0.056 | |

[33] Docket Number IS17-106, https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14442959.

[34] To locate these documents, go to http://elibrary.ferc.gov/idmws/search/fercgensearch.asp For the "Date Range" field, select "All". In the "Docket Number" field, type the relevant Docket Numbers provided in Table 7. Then click "Submit" at the bottom. The result will be the full docket file. In the furthest right column, click "FERC Generated PDF". In the PDF, search for Item 125 and the surcharge is found within the text.

| | | | |
|---|---|---|---|
| 2016 | IS16-258 | $0.056 | **$0.056** |
| 2016 | IS16-628 | $0.056 | |
| 2016 | IS16-694 | $0.056 | |

Dividing total surcharge by average surcharge rate gives the estimated ULSD shipments south of Booth, PA as displayed in Table 8. ULSD barrels delivered North of Booth, PA were calculated by subtracting ULSD barrels delivered South of Booth from the total ULSD shipped on Colonial Pipeline as shown in Table 5. This calculation derives the amount of ULSD that is shipped North of Booth, PA on Colonial Pipeline to the NY Harbor market. The calculation results as performed by the Exchange are displayed in Table 8 below. The Exchange estimated the total ULSD shipments delivered North of Booth, PA to be 105,360,102 barrels per year in 2014-2016. This is equivalent to 8,780,008 barrels of ULSD per month shipped on the Colonial Pipeline to destinations that are North of Booth, PA. which is approximately 40%of the total amount of ULSD shipped on the Colonial Pipeline as reported in Table 5 above.

**Table 8 – Colonial Pipeline ULSD Barrels**

| | Total Surcharge ($) | Surcharge Rate per Barrel | ULSD Barrels South of Booth | ULSD Barrels North of Booth (Annually) | ULSD Barrels North of Booth (Monthly) |
|---|---|---|---|---|---|
| **2014** | 7,666,428 | 0.047 | 163,115,489 | 95,514,435 | 7,959,536 |
| **2015** | 9,319,899 | 0.055 | 169,452,709 | 119,179,504 | 9,931,625 |
| **2016** | 9,526,342 | 0.056 | 170,113,250 | 101,386,367 | 8,448,864 |
| **Average (2014 – 2016)** | **8,837,556** | **0.053** | **167,560,483** | **105,360,102** | **8,780,008** |

- As the last step in estimating the amount of ULSD shipped on the Colonial Pipeline and delivered to the NY Harbor area, the Exchange reduced the amount of ULSD shipments delivered North of Booth, PA to account for ULSD barrels supplied by Philadelphia refiners to the Pennsylvania market that are not destined for the New York Harbor market. According to the EIA Prime Suppliers Sales Volumes data[35] for Pennsylvania in 2017-2019, sales of total distillates from Pennsylvania refineries averaged 5,916,333 gallons per day (or 140,865 barrels per day), which is equivalent to 4,225,952 barrels per month. The EIA data reports the volume of total distillates supplied to Pennsylvania, of which around 90% or more is ULSD. To arrive at the estimated amount of ULSD shipped on the Colonial Pipeline to the NY Harbor area (excluding Philadelphia refinery supplies), the Exchange subtracted 4,225,952 barrels from 8,780,008 from Table 8 to obtain 4,554,056 barrels per month.

Previously, based on the FERC surcharge data for the three-year period from 2014-2016, the Exchange estimated 8,780,008 ULSD barrels per month were shipped north of Booth, PA in the Philadelphia area which represented approximately 40% percent of total Colonial Pipeline ULSD shipments from PADD 3 to PADD 1.

Although Colonial Pipeline discontinued the FERC surcharge on ULSD as of January 1, 2017, the

[35] https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=C200012421&f=A

Exchange believes the percentage of pipeline shipments on average has remained fairly constant and is still a reliable estimate of the amount of ULSD that reaches New York Harbor which is the end point of the Colonial pipeline.

To be conservative, the Exchange did not reduce the total distillates supplied by Pennsylvania refiners because ULSD accounts for over 90% of total distillates shipped to PADD 1. Therefore, the previous surcharge methodology is still valid for determining the percentage of ULSD shipments that flow on the Colonial Pipeline to the NY Harbor market. Therefore, the Exchange has determined that the total ULSD supplied to NY Harbor via Colonial Pipeline is 4.55 million barrels per month.

### C. Inventories of ULSD in the New York Harbor Market

New York Harbor has a petroleum bulk terminal storage capacity of over 75 million barrels, making it the largest petroleum product hub in the country. For the purposes of ULSD delivery in NY Harbor against the NYMEX NY Harbor ULSD Futures contract, the Exchange has 17 approved delivery terminals. Based on conversations with these facilities the total cumulative working tank capacity for ULSD at all Exchange-approved delivery terminals equals 19,634,293 barrels. Table 9 below details the list of facilities approved by the Exchange.

**Table 9 – ULSD Facilities in NY Harbor**

| Name of Facility | Facility Code |
|---|---|
| KINDER MORGAN - CARTERET TRUCK RACK | E76 |
| PHILLIPS 66 - TREMLEY POINT | E78 |
| INTERNATIONAL MATEX TANK TERMINAL (IMTT) - BAYONNE | E79 |
| BUCKEYE PERTH AMBOY TERMINAL LLC | E80 |
| BUCKEYE BRONX TERMINAL | E81 |
| CITGO - LINDEN | E82 |
| FEDERAL TERMINAL - ELIZABETH | E84 |
| KINDER MORGAN - CARTERET | E85 |
| BUCKEYE PORT READING TERMINAL LLC | E86 |
| SPRAGUE - BRONX SEC TERMINAL | E88 |
| SHELL OIL PRODUCTS US - SEWAREN | E89 |
| ST TERMINAL - LINDEN | E91 |
| BUCKEYE BAYONNE TERMINAL | E92 |
| KINDER MORGAN - PERTH AMBOY | E94 |
| BUCKEYE RARITAN BAY TERMINAL LLC | E96 |
| PHILLIPS 66 - BAY WAY | E97 |
| CENTER POINT TERMINAL NEWARK, LLC | E99 |

In addition to commercial stocks held in New York Harbor terminals, the Northeast Home Heating Oil Reserve (NEHHOR), which was established in 2000 to provide heating fuel supply security in the Northeast, has a one million barrel supply of ultra low sulfur diesel. The ULSD is stored in three terminals in the NY Harbor area: Groton, Connecticut, Port Reading, New Jersey, and Revere, Massachusetts.

The three-year average of ULSD stocks held in the Central Atlantic, or PADD 1B, region is approximately 21.88 million barrels (See Table 10). According to market participants, the New York Harbor area, which includes storage terminals in New York and New Jersey, accounts for 50% to 60% of the inventories reported in EIA's PADD 1B statistics. Using a conservative estimate of 50% of PADD 1B inventories, the average stock level of ULSD is estimated to be approximately 10.94 million barrels in New York Harbor.

**Table 10 – Central Atlantic (PADD 1B) ULSD Stocks**

| Thousand Barrels (Annual Averages using Weekly Data) | PADD 1[36] | PADD 1B[37] (Central Atlantic) |
|---|---|---|
| January 2018 – December 2018 | 33,901 | 19,020 |
| January 2019 – December 2019 | 35,654 | 18,897 |
| January 2020 – December 2020 | 50,467 | 27,712 |

[36] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R10_1&f=W

[37] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R1Y_1&f=W

| | | |
|---|---|---|
| **Average** | **40,007** | **21,876** |

Based on estimates from industry experts, we determined that the operational minimum levels for storage tanks in the New York Harbor area are approximately 5% to 10%. Using the more conservative estimate of 10%, we therefore estimate that approximately 1.09 million of the 10.94 million barrels of stored ULSD are used for operational purposes, leaving approximately 9.84 million barrels available for spot month delivery. While the majority of ULSD in storage is available in the spot market, the Exchange applied a 20% reduction on storage figures to account for long-term agreements to arrive at a final 7.88 million barrels per month figure.

### D. Imports and Exports

The New York Harbor area is the largest oil import hub in the US. According to the EIA's import data by port of entry[38], ULSD imports into the New York Harbor area (which encompasses New Jersey and New York ports) averaged 55,000 barrels per day for the three-year period of December 2017 through November 2020. Further, ULSD exports from PADD 1 averaged 20,000 barrels per day for the same three-year period[39]. Based on conversations with industry experts, the Exchange believes that approximately 30% of the exports figure represents the NY Harbor delivery area. Therefore, applying a 70% reduction to exports resulted in 6,100 b/d in NY Harbor. As a result, the net imports figure for December 2017 - November 2020 was 48,900 barrels per day, or 1.47 million barrels per month.

Based on the above analysis, the Exchange determined at this time to base its estimates of deliverable supply on the sum of:

*A. Bayway Refinery Production: 2.34 million barrels per month*

*B. ULSD Deliveries on Colonial Pipeline: 4.55 million barrels per month*

*C. ULSD Storage: 7.88 million barrels per month*

*D. Net Imports: 1.47 million barrels per month*

The Exchange estimates the monthly deliverable supply of ULSD to the New York Harbor (NYH) to be approximately 16.24 million barrels, which is equivalent to **16,240** contracts per month (contract size 42,000 gallons or 1,000 barrels). Twenty-five percent of deliverable supply would result in a spot month position limit of 4,060 futures equivalent contracts. The current spot month position limit for the NY Harbor ULSD Futures contract is 1,000 contracts which represents **6.2**% of the estimated monthly deliverable supply and the proposed spot month limit of 2,000 contracts represents **12.3%** of the estimated monthly deliverable supply.

## APPENDIX

### 1. PADD 1 and PADD 1B ULSD Stocks (in Thousand Barrels)

| Year | Month | PADD 1[40] | PADD 1B[41] |
|---|---|---|---|
| 2018 | Jan | 38,253 | 23,704 |

[38] http://www.eia.gov/petroleum/imports/companylevel/archive/

[39] https://www.eia.gov/dnav/pet/pet_move_exp_dc_R10-Z00_mbblpd_m.htm

[40] EIA, Monthly averages using weekly data:
http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R10_1&f=W

[41] EIA, Monthly averages using weekly data:
http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R1Y_1&f=W

| | | | |
|---|---|---|---|
| | Feb | 37,566 | 22,758 |
| | Mar | 36,990 | 22,842 |
| | Apr | 30,144 | 17,089 |
| | May | 26,720 | 13,696 |
| | Jun | 27,950 | 13,594 |
| | Jul | 30,828 | 16,643 |
| | Aug | 35,555 | 19,965 |
| | Sep | 38,467 | 22,164 |
| | Oct | 36,932 | 19,780 |
| | Nov | 34,613 | 18,462 |
| | Dec | 32,920 | 17,852 |
| 2019 | Jan | 38,486 | 20,435 |
| | Feb | 37,066 | 19,943 |
| | Mar | 34,416 | 18,208 |
| | Apr | 30,972 | 16,038 |
| | May | 32,394 | 17,193 |
| | Jun | 37,299 | 20,769 |
| | Jul | 39,662 | 22,473 |
| | Aug | 41,071 | 22,945 |
| | Sep | 37,595 | 20,648 |
| | Oct | 31,476 | 15,755 |
| | Nov | 32,152 | 14,758 |
| | Dec | 35,901 | 18,218 |
| 2020 | Jan | 39,003 | 20,356 |
| | Feb | 35,972 | 18,111 |
| | Mar | 31,271 | 14,438 |
| | Apr | 35,815 | 15,783 |
| | May | 50,533 | 26,401 |
| | Jun | 60,766 | 34,847 |
| | Jul | 61,632 | 35,812 |
| | Aug | 60,864 | 35,535 |
| | Sep | 59,622 | 34,637 |
| | Oct | 57,564 | 32,729 |
| | Nov | 54,605 | 31,239 |
| | Dec | 56,236 | 31,551 |

# Appendix E

## Analysis of Deliverable Supply – RBOB Gasoline Futures

In estimating deliverable supply for the RBOB Gasoline Futures, the New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") relied on long-standing precedent, which provides that the key component in estimating deliverable supply is the portion of typical production and supply stocks that could reasonably be considered to be readily available for delivery.

Appendix C to part 38 of the Commodity Futures Trading Commission's regulations defines deliverable supply as "the quantity of the commodity meeting the contract's delivery specifications that can reasonably be expected to be readily available to short traders and saleable by long traders at its market value in normal cash marketing channels at the derivative contract's delivery points during the specified delivery period, barring abnormal movement in interstate commerce."

to the delivery point(s).[42]

### I. Methodology and Data Sources

The Exchange considered three components in evaluating deliverable supply estimates of RBOB Gasoline for the New York Harbor delivery location of the RBOB Gasoline Futures contract:

(1) Refinery and Blender Production;

(2) Pipeline flows and net receipts to the delivery area;

(3) Storage levels in the delivery area.

The Exchange determined to use data collected by the U.S. Department of Energy's Energy Information Administration ("EIA") for its analysis and evaluation of deliverable supply estimates for RBOB Gasoline in New York Harbor. The EIA provides detailed data on each of the three components of deliverable supply.

### II. Introduction

The New York Harbor RBOB Gasoline Futures contract is the main benchmark used for pricing of gasoline in the U.S. petroleum products market. The U.S. gasoline market represents a large physical market, with total U.S. refinery capacity of 9.5 million to 10.0 million barrels per day (b/d) of gasoline.

In the U.S. gasoline market, there are two main formulations for gasoline: Reformulated Gasoline and Conventional Gasoline, as required by a complex network of federal and state regulations. The U.S. Environmental Protection Agency ("EPA") administers the Clean Air Act ("CAA") requirements, and various state agencies regulate their own specific air rules. Under the CAA, the urban areas with the highest levels of smog pollution are required to use clean-burning Reformulated Gasoline blended with 10% ethanol. These urban areas include the entire Northeastern United States, California, Chicago, Atlanta, and Houston. These areas account for approximately 40% of U.S. gasoline demand. The 10% ethanol blending requirement in Reformulated Gasoline requires that the ethanol be segregated from the gasoline at the

wholesale level in the pipeline distribution system. In the wholesale market, the gasoline is shipped unfinished (without the ethanol) and it is called Reformulated Blendstock for Oxygen Blending (RBOB). The ethanol blending occurs at the last stage of the delivery process when the gasoline is loaded into the tanker truck for retail delivery.

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[42] http://www.ecfr.gov/cgi-bin/text-idx?SID=74959c3dbae469e2efe0a42b45b8dfae&mc=true&node=ap17.1.38_11201.c&rgn=div9

### A. New York Harbor Delivery Region

New England and the Central Atlantic Coast of the United States, collectively defined by the EIA as the "Northeast", is a well-connected and integrated geographical region in terms of oil and products infrastructure. The region is part of the larger PADD 1[43], and is more specifically defined by PADD 1A (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont) and PADD 1B (New York, New Jersey, Delaware, Pennsylvania, Maryland, and Washington, DC).[44]

Located in both New York and New Jersey, the New York Harbor area is the largest oil importing and third largest container port in the nation and is the main refined products pricing and trading hub. Petroleum products in New York Harbor are supplied by refineries located in New Jersey, Delaware and Pennsylvania, all located within 100 miles of the New York Harbor area. East Coast refineries, a majority of which are located in New Jersey, Pennsylvania and Delaware, send products by local pipelines into New York Harbor.

Many of the petroleum products delivered to New York Harbor are redistributed to smaller ports where they supply local demand. In particular, the Hudson River is a major inland water route for petroleum product barges supplying eastern New York and parts of western New England. Significant volumes are shipped to New England via barge from New York Harbor. On the other side of the state, western New York product markets are primarily supplied from Canada at the Port of Buffalo, and via the Buckeye and Sunoco pipeline systems from Pennsylvania and the Midwest[454].

### B. Refineries and Refinery Capacity Overview

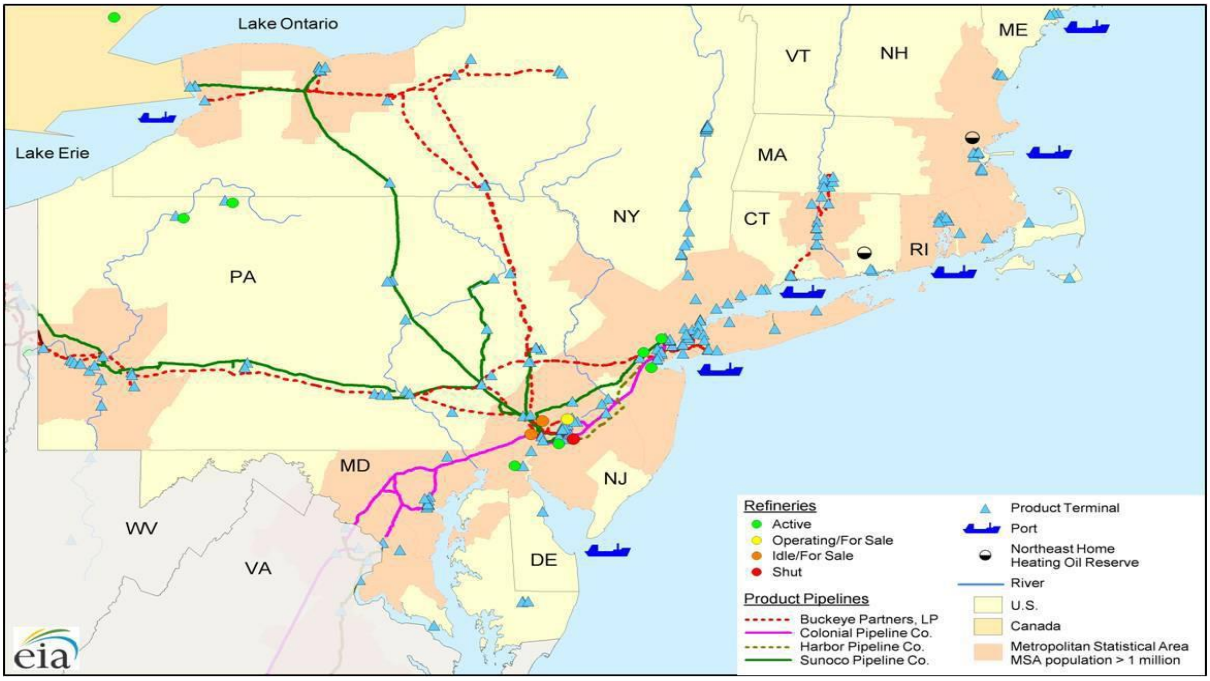
The Colonial Pipeline is the largest refined products pipeline in the U.S. and a key products supply link for the Northeast. The pipeline connects the Northeast to refinery output from the US Gulf Coast. Colonial's network of pipelines crosses 11 states, serving more than 260 marketing terminals in the Southern and Eastern United States. It generally takes from 14 to 24 days for a product batch on the Colonial Pipeline to get from Houston, Texas to the New York Harbor area, with 18.5 days being the average time.

[43] https://www.eia.gov/tools/glossary/index.php?id=P#PADD_def

[44] https://www.eia.gov/tools/glossary/index.php?id=P#PADD_def

[45] http://205.254.135.7/state/state-energy-profiles-analysis.cfm?sid=NY

**Figure 1 - Northeast Refined Products Market Logistics[46]**




In 2011, Colonial Pipeline expanded the northern end of its Houston-to-New York system by adding 100,000 b/d of capacity. In addition, the company completed a series of system upgrades leading to more than 100,000 b/d of capacity for distillates[47] specifically serving the New Jersey, Pennsylvania, and New York markets. Also, Colonial Pipeline added an additional 100,000 b/d of gasoline and distillates capacity in early 2013[48] to meet demand on the northern portion of the line (Greensboro, NC to Linden, NJ).

In the U.S., there were 135 operating refineries, in which 131 were operating in the US with total atmospheric crude oil distillation capacity (ACDU) of 19.0 million b/d as of January 1, 2020[49]. The East Coast (PADD 1) has eight refineries, in which seven are currently operating, with 1.2 million b/d of atmospheric crude distillation capacity. The region has 502,500 b/d of fluid catalytic cracking (FCC) capacity. PADD 1 includes all states in New England, the Mid-Atlantic, and the South Atlantic and is subdivided into three sub-PADDs.

• PADD 1A – Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut

• PADD 1B – New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia

• PADD 1C – West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida

Supply dynamics for each of the three sub-PADDs vary. PADD 1A, which encompasses New England, has no refineries and relies on imports and transfers from other PADDs, primarily PADD 1B. PADD 1C, the South Atlantic, has one operating refinery and relies primarily on pipeline transfers and marine shipments from PADD 3 and imports. PADD 1B is supplied by a combination of refineries, transfers from other PADDs -- primarily from PADD 3 -- and imports[50]. As stated above, the majority of PADD 1B refineries are located in New Jersey, Delaware and Pennsylvania, and are within 100 miles of the New York Harbor

[46] http://www.eia.gov/analysis/petroleum/nerefining/update/pdf/neprodmkts.pdf
[47] http://www.eia.gov/pressroom/presentations/sieminski_10102012.pdf
[48] http://www.colpipe.com/home/news-media/press-releases/pressdetail?ID=7cb2e327-d0b3-6eb4-9c07-ff00009907dd
[49] https://www.eia.gov/petroleum/refinerycapacity/
[50] http://www.eia.gov/pressroom/testimonies/howard_03192012.pdf

area. These refineries are directly connected to the New York Harbor market by local pipelines and/or waterborne barges. A list of Northeast refineries is provided in Table 1.

**Table 1 – Mid-Atlantic (PADD 1B) Refineries (Source: EIA)**

| Name | State | Owner | Capacity | Status |
|---|---|---|---|---|
| Delaware City Refinery Co LLC | Delaware City, DE | PBF Energy Co LLC | 182,200 b/d | Operational |
| Paulsboro Refining Co LLC | Paulsboro, NJ | PBF Energy Co LLC | 160,000 b/d | Operational[51] |
| Phillips 66 Company | Linden, NJ | Phillips 66 Company | 258,500 b/d | Operational |
| American Refining Group Inc | Bradford, PA | American Refining Group Inc | 11,000 b/d | Operational |
| Philadelphia Energy Solutions | Philadelphia, PA | Carlyle Group | 335,000 b/d | Idle |
| United Refining Co | Warren, PA | Red Apple Group Inc | 65,000 b/d | Operational |
| Monroe Energy LLC | Trainer, PA | Delta Airlines Inc | 190,000 b/d | Operational |

## III. Deliverable Supply Estimates

### A. Refinery and Blender Production

In recent years, Northeast refineries supplied about 40% of gasoline (and 60% of the ULSD) consumed in the Northeast. Shipments from the U.S. Gulf Coast and imports supply the remainder of the market.[52] The EIA provides gasoline production data for RBOB Gasoline that is produced by both refiners and blenders, under the category of "refiner and blender net production" as shown in Table 2 below. The majority of PADD 1 refineries are located in Delaware, New Jersey, and Pennsylvania, with direct connection to the New York Harbor market by pipelines and/or waterborne barges. In addition, the EIA's "refiner and blender net production" category includes RBOB produced by refiners, and also includes blender production which relies on imported gasoline blending components.

Blenders are significant producers of RBOB gasoline, and the majority of RBOB blending components are sourced through imported gasoline blendstocks that enter via the New York Harbor. Typically, gasoline blenders are large trading companies that operate in the global market, such as Vitol, Glencore, and Trafigura. Since the blenders' production of RBOB is sourced from imported gasoline blending components, these imported blending components are captured in the EIA's category of "refinery and blender net production." Consequently, the Exchange will include only the EIA's "refinery and blender net production" category as the key component of New York Harbor supply and *not* include import data. Thus, to prevent potential double-counting of imported gasoline blending components, the Exchange will not use imports in its deliverable supply analysis, but rather will utilize the EIA's data for "refinery and blender net production".

According to EIA data from 2018 through 2020, the three-year average of RBOB production by refiners and blenders in PADD 1 was 1.20 million b/d, or 36.1 million barrels per month, as presented in Table 2 below. The RBOB gasoline that is produced in PADD 1 is in the vicinity of New York Harbor area, with direct connectivity to New York Harbor terminals, and the majority of this RBOB is transshipped and/or stored in New York Harbor terminals.

[51] Paulsboro Refinery Reconfiguration and Optimization, https://investors.pbfenergy.com/news/2020/10-29-2020-103142029
[52] http://www.eia.gov/pressroom/testimonies/howard_03192012.pdf

**Table 2 – PADD 1 Production[53] (Source: EIA)**

| RBOB Gasoline, in thousands b/d | January 2018 – December 2018 | January 2019 – December 2019 | January 2020 – December 2020 | Average |
|---|---|---|---|---|
| Refinery and Blender Net Production | 1,269 | 1,286 | 1,054 | 1,203 |

In conversations with market participants, it was determined that a portion of the Philadelphia refinery production is used to supply the Pennsylvania market via the Buckeye Laurel Pipeline. Based on EIA's prime supplier sales data[54], the Exchange estimates that the gasoline supplied to Pennsylvania was approximately 225,000 barrels per day for the three-year period of 2018 through 2020. Therefore, the Exchange reduced the total refinery and blender net production by 225,000 barrels per day to account for gasoline supplied to Pennsylvania directly from Philadelphia-area refineries. Consequently, the total refinery and blender net production available for the New York Harbor market is approximately 975,000 barrels per day (rounding down), which is equivalent to 29.3 million barrels per month.

Further, according to input from market participants, approximately 30% to 40% of RBOB production is committed to retail distribution networks, and the remaining portion is available for re-selling in the spot market. Therefore, at least 60% of PADD 1 production of RBOB would be available for re-selling in the New York Harbor spot market. Consequently, we estimate that approximately 17.6 million barrels per month of RBOB (60% of 29.3 million barrels per month) would be deliverable in New York Harbor.

### B. Pipeline Flows and Net Receipts

The U.S. Gulf Coast, or PADD 3, refining capacity accounts for 50% of total US production of refined products and provides approximately 266,000 b/d of RBOB gasoline to PADD 1 via pipeline and tanker/barge shipments, as presented in Table 3 below. However, the majority of PADD 1 pipeline and tanker/barge receipts of RBOB from PADD 3 do not end up in the New York Harbor area as they are delivered at points further south of New York Harbor. According to market participants, only about 25% to 30% of PADD 1 gasoline receipts are delivered to the New York Harbor area. Therefore, using the more conservative 25% estimate for RBOB pipeline and tanker/barge shipments from PADD 3, the total receipts from PADD 3 to the New York Harbor area accounts for approximately 66,500 b/d (25% of 266,000 b/d) or 2.0 million barrels per month.

**Table 3 – RBOB Movements from PADD 3 into PADD 1[55] (Source: EIA)**

| | December 2017 – November 2018 | December 2018 – November 2019 | December 2019 – November 2020 | Average |
|---|---|---|---|---|
| RBOB Movements, in Barrels per Day | 261 | 274 | 264 | 266 |

[53] EIA, http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WGRRPP12&f=W
[54] EIA Prime Supplier Sales Volumes by State, https://www.eia.gov/dnav/pet/pet_cons_prim_dcu_SPA_m.htm
[55] EIA, Monthly Data in barrels per day, https://www.eia.gov/dnav/pet/pet_move_ptb_dc_R10-R30_mbbl_m.htm

### C. Inventories of Gasoline in the New York Harbor Market

The New York Harbor area has petroleum bulk storage capacity of over 75 million barrels, making it the largest petroleum product hub in the country. The three-year average of gasoline stocks held in the Central Atlantic region, or PADD 1B, including New York, New Jersey, and Pennsylvania is approximately 33.9 million barrels as seen in Table 4 below. According to market participants, the New York Harbor RBOB market accounts for 25% to 30% of the inventories reported in EIA's PADD 1B inventory statistics. Using the more conservative estimate of 25% of PADD 1B inventories, the average stock level of gasoline is estimated to be about 8.5 million barrels in the New York Harbor area. Based on estimates from industry experts, we determined that the operational minimum levels for storage tanks in the New York Harbor area are approximately 5% to 10%. Using the more conservative estimate of 10%, we therefore estimate that approximately 850,000 barrels of the approximately 8.5 million barrels of stored gasoline in the New York Harbor area is used for operational purposes, leaving 7.6 million barrels available for spot month delivery from inventory.

**Table 4 – Gasoline Stocks in PADD 1B[56] (Source: EIA)**

| Inventory, in thousand barrels | PADD 1B (Central Atlantic) |
|---|---|
| **January 2018 – December 2018** | 33,508 |
| **January 2019 – December 2019** | 32,833 |
| **January 2020 – December 2020** | 35,260 |
| **Average** | 33,867 |

## ANALYSIS OF DELIVERABLE SUPPLY

Based on the above analysis, the Exchange determined at this time to base its estimates of deliverable supply on the sum of:

*A. Refinery and Blender Production = 17.6 million barrels*

*B. Pipeline flows to the delivery area = 2.0 million barrels*

*C. Storage levels in the delivery area = 7.6 million barrels*

The Exchange estimates the monthly deliverable supply of RBOB gasoline to the New York Harbor to be approximately 27.2 million barrels, which is equivalent to **27,200** contracts per month (contract size 42,000 gallons or 1,000 barrels). The proposed spot month position limit for the New York Harbor RBOB Gasoline Futures Contract is 2,000 contracts or **7.4%** of the estimated monthly deliverable supply.

[56] http://www.eia.gov/dnav/pet/pet_stoc_wstk_dcu_r1y_w.htm

## APPENDIX A

### PADD 1, Refiner and Blender Net Production[57]

### (Source: EIA, Monthly Averages based on Weekly Data)

(Thousand Barrels per Day)

| Year | Month | Total |
|---|---|---|
| 2018 | Jan | 1,144 |
| | Feb | 1,207 |
| | Mar | 1,235 |
| | Apr | 1,267 |
| | May | 1,291 |
| | Jun | 1,302 |
| | Jul | 1,309 |
| | Aug | 1,315 |
| | Sep | 1,255 |
| | Oct | 1,299 |
| | Nov | 1,287 |
| | Dec | 1,314 |
| 2019 | Jan | 1,226 |
| | Feb | 1,260 |
| | Mar | 1,275 |
| | Apr | 1,283 |
| | May | 1,308 |
| | Jun | 1,329 |
| | Jul | 1,301 |
| | Aug | 1,313 |
| | Sep | 1,271 |
| | Oct | 1,276 |
| | Nov | 1,297 |
| | Dec | 1,288 |
| 2020 | Jan | 1,206 |
| | Feb | 1,244 |
| | Mar | 1,090 |
| | Apr | 627 |
| | May | 807 |
| | Jun | 1,014 |
| | Jul | 1,124 |
| | Aug | 1,174 |
| | Sep | 1,127 |
| | Oct | 1,112 |
| | Nov | 1,086 |
| | Dec | 1,042 |

[57] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WGRRPP12&f=W

**PADD 1B (Central Atlantic) Total Gasoline Stocks [58]**

**(Source: EIA, Monthly Averages based on Weekly Data)**

(Thousand Barrels)

| Year | Month | PADD 1B (Central Atlantic) Total Gasoline Stocks |
|---|---|---|
| 2018 | Jan | 30,745 |
| | Feb | 34,686 |
| | Mar | 32,363 |
| | Apr | 33,428 |
| | May | 32,655 |
| | Jun | 33,175 |
| | Jul | 33,263 |
| | Aug | 32,270 |
| | Sep | 35,632 |
| | Oct | 35,897 |
| | Nov | 33,207 |
| | Dec | 34,770 |
| 2019 | Jan | 34,482 |
| | Feb | 38,273 |
| | Mar | 36,135 |
| | Apr | 32,586 |
| | May | 32,143 |
| | Jun | 31,946 |
| | Jul | 29,075 |
| | Aug | 31,288 |
| | Sep | 32,854 |
| | Oct | 31,577 |
| | Nov | 30,399 |
| | Dec | 33,239 |
| 2020 | Jan | 35,895 |
| | Feb | 36,905 |
| | Mar | 36,791 |
| | Apr | 39,447 |
| | May | 38,943 |
| | Jun | 39,473 |
| | Jul | 35,847 |
| | Aug | 33,297 |
| | Sep | 30,883 |
| | Oct | 30,049 |
| | Nov | 30,621 |
| | Dec | 34,965 |

[58] http://www.eia.gov/dnav/pet/pet_stoc_wstk_dcu_r1y_w.htm