

NEW YORK MERCANTILE EXCHANGE, INC.

ANALYSIS OF DELIVERABLE SUPPLY

NY HARBOR ULSD FUTURES

SEPTEMBER 2018

In estimating deliverable supply for the NY Harbor ULSD 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. In its guidance on estimating deliverable supply, the Commodity Futures Trading Commission (“CFTC” or “Commission”) states:

In general, the term “deliverable supply” means the quantity of the commodity meeting a derivative 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. Typically, deliverable supply reflects the quantity of the commodity that potentially could be made available for sale on a spot basis at current prices at the contract’s delivery points. For a non-financial physical-delivery commodity contract, this estimate might represent product which is in storage at the delivery point(s) specified in the futures contract or can be moved economically into or through such points consistent with the delivery procedures set forth in the contract and which is available for sale on a spot basis within the marketing channels that normally are tributary to the delivery point(s)¹.

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.

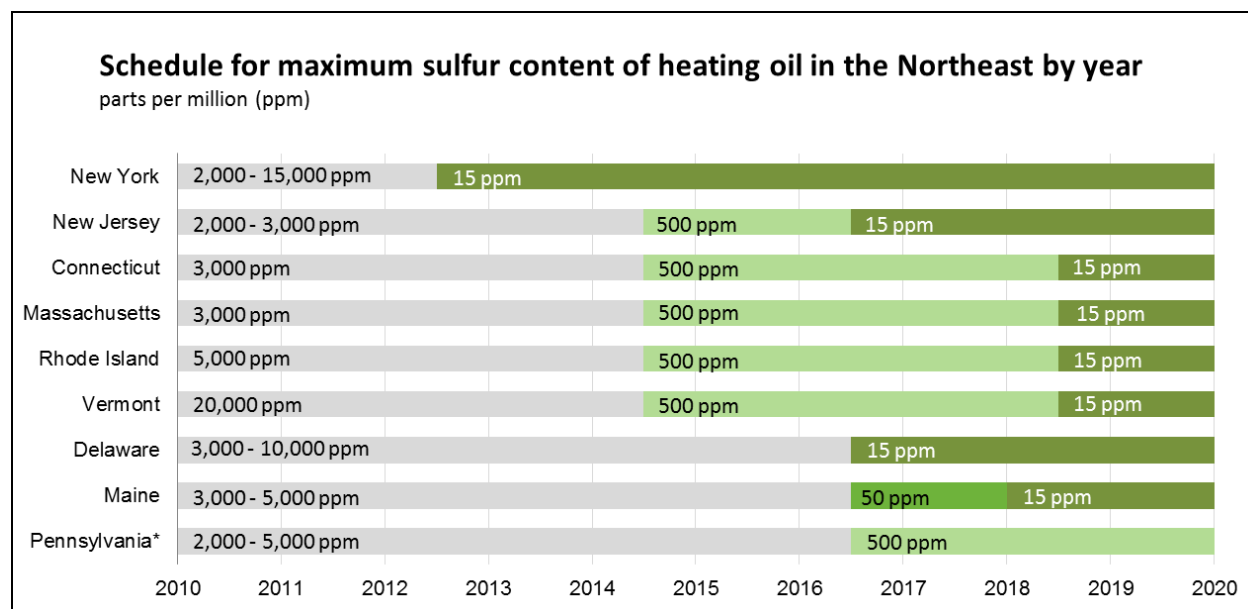
II. Introduction

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.

¹ http://www.ecfr.gov/cgi-bin/text-idx?SID=74959c3dbae469e2efe0a42b45b8dfae&mc=true&node=ap17.1.38_11201.c&rgn=div9

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 the 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 footsteps, 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 State²



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)³.

² http://www.eia.gov/forecasts/steo/special/winter/2014_winter_fuels.pdf

³ <http://www.eia.gov/analysis/petroleum/nerefining/prelim/>

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 mainly light, low-sulfur crude oil. Bayway's refining units include fluid catalytic cracking (FCC), hydro desulfurization 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/d⁴.

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.

Earlier 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 distillates⁵ 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 2013⁶ 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/d⁷ 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 Midwest⁸. Figure 2 below illustrates the logistics of refining and products transportation in the Northeast.

⁴ <http://www.phillips66.com/EN/about/our-businesses/refining/Pages/Bayway-Refinery.aspx>

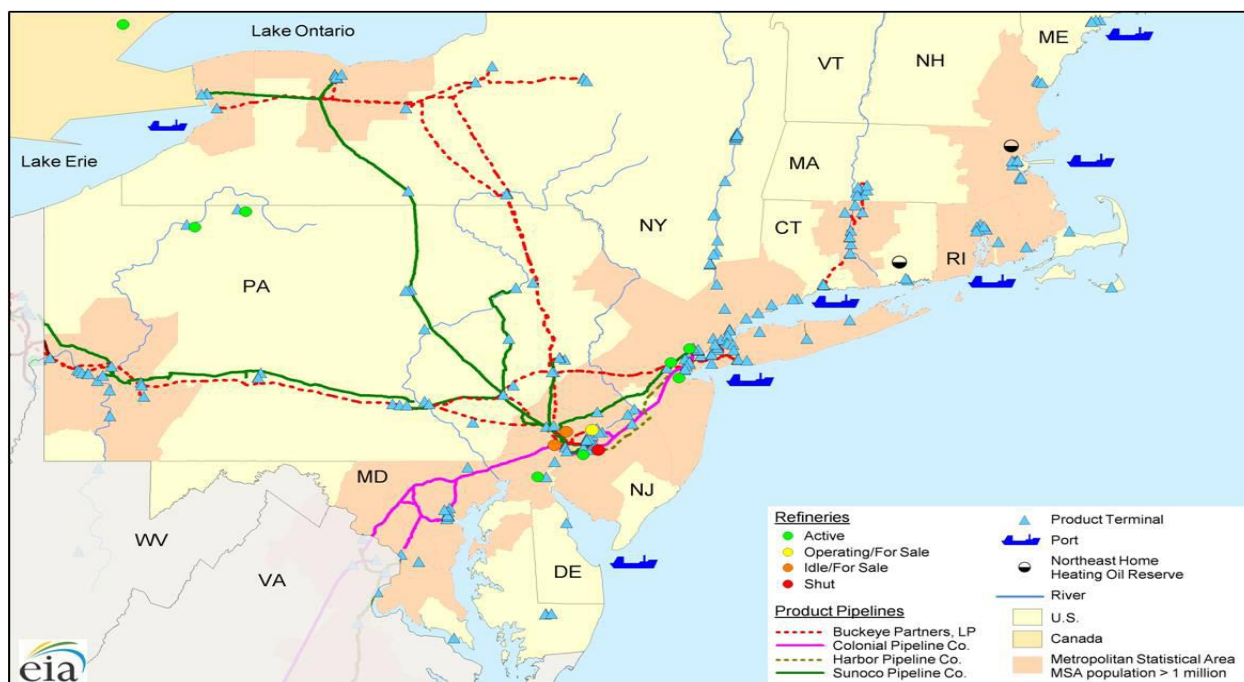
⁵ http://www.eia.gov/pressroom/presentations/sieminski_10102012.pdf

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

⁷ <http://investor.phillips66.com/financial-information/sec-filings/sec-filings-details/default.aspx?FilingId=11867386>

⁸ <http://205.254.135.7/state/state-energy-profiles-analysis.cfm?sid=NY>

Figure 2 - Northeast Refined Products Market Logistics⁹



As of January 2018, there were 135 operating refineries in the United States with total atmospheric crude oil distillation capacity of over 18.6 million barrels per calendar day¹⁰. On the East Coast (PADD 1), there are eight operable refineries, 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 imports¹¹.

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.

⁹ <http://www.eia.gov/analysis/petroleum/nerefining/update/pdf/neprodmkts.pdf>

¹⁰ http://www.eia.gov/dnav/pet/pet_pnp_cap1_dcu_nus_a.htm

¹¹ http://www.eia.gov/petroleum/refinery/outage/pdf/refinery_outage.pdf

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
Paulsboro Refining Co LLC	Paulsboro, NJ	PBF Energy Co LLC	160,000 b/d	Operational
Phillips 66 Company	Linden, NJ	Phillips 66 Company	258,000	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	Operational
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” data¹² as well as data reported by Phillips-66¹³, 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 110,000 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 87.3% utilization for the three-year period of 2015 through 2017¹⁴ (87.5%, 85.9% and 88.4% 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 86,030 b/d, or approximately 2.58 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
110,000	87.3%	96,030	10,000	2,580,900

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.

¹² See the Excel file at the link: <http://www.eia.gov/petroleum/refinerycapacity/refcap18.xls> , under the category “desulfurization, diesel fuel”

¹³ <http://www.phillips66.com/EN/about/our-businesses/refining/Pages/Bayway-Refinery.aspx>

¹⁴ http://www.eia.gov/dnav/pet/pet_pnp_unc_dcu_rec_a.htm

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

- Step 1: The Exchange first collected data on distillate fuel oil delivered on the pipeline as reported to the FERC in Form 6 for years 2015-2017¹⁵. 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 299,602,093 barrels.

Table 3 – Colonial Pipeline Distillate Fuel Deliveries

	Total Delivered Out (YTD Barrels)
2015	320,144,455
2016	296,595,314
2017	282,066,510
Average	299,602,093

- 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 2015-2017 timeframe, total distillates shipped from the Gulf Coast (PADD 3) to PADD 1 averaged at 305,365,000 barrels¹⁶ per year. In the same time period the ULSD (0-15 ppm Sulfur) shipments from PADD 3 into PADD 1 averaged at 279,145,000 barrels¹⁷ per year, which is 91.38% of all distillates.

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

	Total Distillates	ULSD (0-15 ppm)	% ULSD
2015	325,364	293,338	90.16%
2016	299,849	274,478	91.54%
2017	291,693	269,618	92.43%
Average	305,635	279,145	91.38%

- 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 273,617,290 barrels of ULSD per year was shipped on the Colonial Pipeline in the 2015-2017 timeframe.

¹⁵ See Page 601.2, Line 19, Column (j) at:

[FERC Form 6 for 2015 http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14207820](http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14207820) page 601.2 box i19
[FERC Form 6 for 2016 https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14563767](https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14563767) page 601.2 box i19
[FERC Form 6 for 2017 https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14893903](https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14893903) page 601.2 box i19

¹⁶ <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pets&s=mdimxp1p31&f=a>

¹⁷ http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pets&s=md0mx_r10r30_1&f=a

Table 5 – Colonial Pipeline ULSD Deliveries

	Total Delivered (Step 1)	% ULSD (Step 2)	ULSD Shipped on Colonial Pipeline (Barrels)
2014	303,094,355	85.33%	258,629,924
2015	320,144,455	90.16%	288,632,222
2016	296,595,314	91.54%	271,499,617
2017	282,066,510	92.43%	260,720,032
Average 2015- 2017			273,617,290

- Step 4: In Step 3, the Exchange estimated the amount of ULSD shipped on the Colonial Pipeline, which spans from the US Gulf Coast to the East Coast. Not all ULSD shipped on the pipeline is delivered to the NY Harbor delivery region so the Exchange estimated the NYH-specific ULSD shipments using FERC Form 6 and tariff data. Per FERC Order IS07-86¹⁸ ULSD that is delivered south of Philadelphia (Booth, PA) is subject to an annual total surcharge that is reported to the FERC through Form 6¹⁹. According to Table 6 below, in the 2014-2016 timeframe, the ULSD surcharge on the Colonial Pipeline averaged at \$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 available²⁰.

Table 6 – Colonial Pipeline ULSD Surcharge South of Booth

	Total Surcharge (\$)
2014	7,666,428
2015	9,319,899
2016	9,526,342
Average	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 schedules²¹ and illustrated in Table 7 below. 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.

¹⁸ http://elibrary.ferc.gov/idmws/file_list.asp?document_id=4472753

¹⁹ 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

²⁰ Docket Number IS17-106, <https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=14442959>.

²¹ 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.

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	\$0.056
2016	IS16-258	\$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 North of Booth are calculated by subtracting ULSD barrels South of Booth from the total ULSD shipped on Colonial Pipeline values provided in Table 5. The barrels of estimated ULSD shipments delivered North of Booth, PA is 105,360,105 barrels per year in 2014-2016. This is equivalent to 8,780,009 barrels of ULSD per month shipped on the Colonial Pipeline.

Table 8 – Colonial Pipeline ULSD Barrels

	Total Surcharge (\$)	Surcharge Rate per Barrel	ULSD Barrels South of Booth	ULSD Barrels North of Booth (Annual)	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	119,179,513	9,931,626
2016	9,526,342	0.056	170,113,250	101,386,367	8,448,864
Average	8,837,556	0.053	167,560,483	105,360,105	8,780,009

- As the last step in estimating the amount of ULSD shipped on the Colonial Pipeline and delivered to the NYH area, the Exchange removed part of the ULSD shipments generating from Philadelphia refiners as these do not end up in the New York Harbor. According to the EIA Prime Suppliers Sale Volume data²² for Pennsylvania in 2012-2014 (latest three-year time period available), sales of ULSD from Pennsylvania refineries averaged at 4,703,000 gallons per day (or 111,977 barrels per day), which is equivalent to 3,359,310 barrels per month. To arrive at the final ULSD shipments on the Colonial Pipeline to the NYH area -excluding Philadelphia refinery input, the Exchange subtracted 3,359,310 barrels from 8,780,009 from Table 8 to obtain 5,420,699 barrels per month.

²² <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=C720012421&f=A>

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 19 approved delivery terminals. Based on conversations with these facilities the total cumulative working tank capacity for ULSD at all Exchange-approved delivery terminals equals 19,794,014 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
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
SHELL OIL PRODUCTS US – NEWARK	E83
FEDERAL TERMINAL - ELIZABETH	E84
KINDER MORGAN - CARTERET	E85
BUCKEYE PORT READING TERMINAL LLC	E86
BUCKEYE BROOKLYN TERMINAL	E87
SPRAGUE - BRONX SEC TERMINAL	E88
MOTIVA ENTERPRISES LLC - SEWAREN	E89
ST TERMINAL – LINDEN	E91
BUCKEYE BAYONNE TERMINAL	E92
KINDER MORGAN - PERTH AMBOY	E94
KINDER MORGAN - STATEN ISLAND	E95
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 28.02 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 14.01 million barrels in New York Harbor.

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

Thousand Barrels (Annual Averages using Weekly Data)	PADD 1²³	PADD 1B (Central Atlantic)²⁴
July 2015 – June 2016	45,879	29,312
July 2016 – June 2017	49,852	32,167
July 2017 – June 2018	37,082	22,585
Average	44,271	28,021

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 1.40 million of the 14.0 million barrels of stored ULSD are used for operational purposes, leaving approximately 12.61 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% haircut on storage figures to account for long-term agreements to arrive at a final 10.09 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 entry²⁵, ULSD imports into the New York Harbor area (which encompasses New Jersey and New York ports) averaged 25,000 barrels per day for the three-year period of July 2015 through June 2018. Further, ULSD exports from PADD 1 averaged 45,000 barrels per day for the same three-year period²⁶. Based on conversations with industry experts, the Exchange believes that approximately 30% of the exports figure represents the NYH delivery area. Therefore, applying a 70% haircut to exports resulted in 13,600 b/d in NYH. As a result, the net imports figure for July 2015 - June 2018 was 11,400 barrels per day, or 342,000 barrels per month.

²³ http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R10_1&f=W

²⁴ http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R1Y_1&f=W

²⁵ <http://www.eia.gov/petroleum/imports/companylevel/archive/>

²⁶ http://www.eia.gov/dnav/pet/pet_move_exp_dc_R10-Z00_mbbldp_a.htm

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. *Bayway Refinery Production: 2.58 million barrels per month*
- B. *ULSD Deliveries on Colonial Pipeline: 5.42 million barrels per month*
- C. *ULSD Storage: 10.09 million barrels per month*
- D. *Net Imports: 342,000 barrels per month*

The Exchange estimates the monthly deliverable supply of ULSD to the New York Harbor (NYH) to be approximately 18.43 million barrels, which is equivalent to 18,430 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 4,608 futures equivalent contracts. The current spot month position limit for the NY Harbor ULSD Futures contract is 1,000 contracts or 5.4% of the estimated monthly deliverable supply.

APPENDIX

1. PADD 1²⁷ and PADD 1B²⁸ ULSD Stocks (in Thousand Barrels)

Year	Month	PADD 1	PADD 1B
2015	Jul	38,696	24,234
	Aug	43,727	28,200
	Sep	45,626	29,817
	Oct	46,297	30,557
	Nov	46,952	31,025
	Dec	48,336	31,303
2016	Jan	49,362	32,047
	Feb	47,632	30,874
	Mar	45,163	28,751
	Apr	45,415	27,560
	May	45,986	28,732
	Jun	47,363	28,644
	Jul	48,673	30,461
	Aug	49,500	31,340
	Sep	52,341	34,029
	Oct	52,240	34,360
	Nov	51,215	33,795
	Dec	53,417	35,331
2017	Jan	53,681	35,382
	Feb	51,914	33,431
	Mar	47,276	30,349
	Apr	45,578	28,614
	May	45,947	29,452
	Jun	46,440	29,458
	Jul	46,319	29,522
	Aug	45,360	29,471
	Sep	39,460	24,959
	Oct	36,457	22,447
	Nov	38,418	24,392
	Dec	41,345	26,544
2018	Jan	38,253	23,704
	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

²⁷ EIA, Monthly averages using weekly data: http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R10_1&f=W

²⁸ EIA, Monthly averages using weekly data: http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WD0ST_R1Y_1&f=W