SUBMISSION COVER SHEET

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

Registered Entity Identifier Code (optional): 19-263 (3 of 4)

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): 08/22/19 Filing Description: Initial Listing of Two (2) Dutch TTF and Two (2) UK NBP Natural Gas Option 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:

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

August 22, 2019

VIA ELECTRONIC PORTAL

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

Re: CFTC Regulation 40.2(a) Certification. Notification Regarding the Initial Listing of Two (2) Dutch TTF and Two (2) UK NBP Natural Gas Option Contracts. NYMEX Submission No. 19-263 (3 of 4)

Dear Mr. Kirkpatrick:

New York Mercantile Exchange, Inc. ("NYMEX" or "Exchange") is notifying the Commodity Futures Trading Commission ("CFTC" or "Commission") that it is self-certifying the initial listing of two (2) Dutch TTF and two (2) UK NBP natural gas option contracts (the "Contracts") for trading on the CME Globex electronic trading platform and for submission for clearing via CME ClearPort, effective Sunday, September 8, 2019, for trade date Monday, September 9, 2019, as more specifically described below.

Contract Title	**Dutch TTF Natural Gas Calendar Month Option**	**UK NBP Natural Gas Calendar Month Option**	**Dutch TTF Natural Gas Futures-Style Margined Calendar Month Option**	**UK NBP Natural Gas Futures-Style Margined Calendar Month Option**
Commodity Code	TTO	UKO	TFO	UFO
Rulebook Chapter	1161	1163	1162	1164
Settlement Type	Physical	Physical	Physical	Physical
Contract Size	1 MWh per hour for each hour in each Gas Delivery Day in the Contract Month	1,000 therms multiplied with the number of calendar days in the contract month	1 MWh per hour for each hour in each Gas Delivery Day in the Contract Month	1,000 therms multiplied with the number of calendar days in the contract month
Listing Schedule	Monthly contracts listed for 36 consecutive months. Contracts for a new month will be added following the termination of trading in the front month contract.			
First Listed Month	October 2019			
Minimum Price Fluctuation	€0.005 per MWh	0.005 pence per therm	€0.005 per MWh	0.005 pence per therm
Value per tick	Between €3.36 and €3.725	Between £1.40 and £1.55	Between €3.36 and €3.725	Between £1.40 and £1.55
Block Trade Minimum Threshold	5 contracts			
Termination of Trading	Trading terminates on the fifth calendar day immediately preceding the first calendar day of the Contract Month, unless such day is not both a NYMEX business day and a London business day, in which case trading terminates on the first preceding NYMEX business day that is a London business day. However, if that day is also the last trading day of the underlying Futures contract, trading shall terminate on the first preceding NYMEX business day that is a London business day.			
CME Globex Matching Algorithm	F: First-In, First-Out (FIFO)			

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Underlying Futures Contract Tile / Commodity Code	Dutch TTF Natural Gas Calendar Month Futures / TTF	UK NBP Natural Gas Calendar Month Futures / UKG	Dutch TTF Natural Gas Calendar Month Futures / TTF	UK NBP Natural Gas Calendar Month Futures / UKG
Strike Price Increment	€0.005 per MWh	0.005 pence per them	€0.005 per MWh	0.005 pence per them
Strike Price Listing Rule	Minimum 20 strikes at €0.50 per MWh strike increment above and below the at-the-money strike	Minimum 20 strikes at 0.50 pence per therm strike increment above and below the at-the-money strike	Minimum 20 strikes at €0.50 per MWh strike increment above and below the at-the-money strike	Minimum 20 strikes at 0.50 pence per therm strike increment above and below the at-the-money strike
Option Type	European Style			
Margining Style	Premium Upfront/ Equity-Style		Futures-Style	

Trading and Clearing Hours:

CME Globex and CME ClearPort	Sunday - Friday 6:00 p.m. - 5:00 p.m. Eastern Time/ET (5:00 p.m. - 4:00 p.m. Central Time/CT) with a 60-minute break each day beginning at 5:00 p.m. ET (4:00 p.m. CT)

Exchange Fees:

Dutch TTF Natural Gas Calendar Month Option

Dutch TTF Natural Gas Futures-Style Margined Calendar Month Option

Exchange Fees	Member	Non-Member
CME Globex	$1.50	$2.10
EFP	$1.50	$2.10
Block	$1.50	$2.10
EFR/EOO	$1.50	$2.10

Processing Fees	Member	Non-Member
Futures from Exercise/Assignment	$0.00	$0.00
	House Account	**Customer Account**
Option Exercise/Assignment Notice	$0.90	$1.00
Facilitation Fee	$0.60	
Give-Up Surcharge	$0.05	
Position Adjustment/Position Transfer	$0.10	

UK NBP Natural Gas Calendar Month Option

UK NBP Natural Gas Futures-Style Margined Calendar Month Option

Exchange Fees	Member	Non-Member
CME Globex	$0.70	$1.00
EFP	$0.70	$1.00
Block	$0.70	$1.00
EFR/EOO	$0.70	$1.00

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Processing Fees	Member	Non-Member
Futures from Exercise/Assignment	$0.00	$0.00
	House Account	**Customer Account**
Option Exercise/Assignment Notice	$0.90	$1.00
Facilitation Fee	$0.60	
Give-Up Surcharge	$0.05	
Position Adjustment/Position Transfer	$0.10	

The Exchange is also notifying the CFTC that it is self-certifying block trading on the Contracts with a minimum block threshold of 5 contracts.

The Exchange reviewed the designated contracts market core principles ("Core Principles") as set forth in the Commodity Exchange Act ("CEA" or "Act") and identified that the Contracts may have some bearing on the following Core Principles:

- **Compliance with Rules**: Trading in the Contracts will be subject to all NYMEX Rules, including prohibitions against fraudulent, noncompetitive, unfair and abusive practices as outlined in NYMEX Rule Chapter 4, the Exchange's trade practice rules, the majority of which are contained in Chapter 5 and Chapter 8 of the NYMEX Rulebook, and the dispute resolution and arbitration procedures of NYMEX Rule Chapter 6. As with all products listed for trading on one of CME Group's designated contract markets, trading activity in the Contracts will be subject to monitoring and surveillance by CME Group's Market Regulation Department. The Market Regulation Department has the authority to exercise its investigatory and enforcement power where potential rule violations are identified.

- **Contract Not Readily Subject to Manipulation**: The Contracts are not readily subject to manipulation as a result of the liquidity and transparency of the underlying cash market.

- **Prevention of Market Disruption**: Trading in the Contracts will be subject to the Rules of NYMEX, which include prohibitions on manipulation, price distortion, and disruption to the cash settlement process. As with any new product listed for trading on a CME Group designated contract market, trading activity in the Contracts proposed herein will be subject to monitoring and surveillance by CME Group's Market Regulation Department

- **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 Exchange will publish on its website information in regard to contract specifications, terms, and conditions, as well as daily trading volume, open interest, and price information for the Contracts. In addition, the Exchange will advise the marketplace of the launch of the Contracts by releasing a Special Executive Report ("SER"). The SER will also be posted on CME Group's website.

- **Daily Publication of Trading Information**: The Exchange will publish contract trading volumes, open interest levels, and price information daily on its website and through quote vendors for the Contracts.

- **Execution of Transactions**: The Contracts will be listed for trading on the CME Globex electronic trading and for clearing through CME ClearPort. The CME Globex electronic trading venue provides for competitive and open execution of transactions. CME Globex affords the benefits of reliability and global connectivity.

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- **Trade Information**: All requisite trade information for the Contracts will be included in the audit trail and is sufficient for the Market Regulation Department to monitor for market abuse.

- **Financial Integrity of Contract**: The Contracts will be cleared by the CME Clearing House, a derivatives clearing organization registered with the CFTC and subject to all CFTC regulations related thereto.

- **Protection of Market Participants**: NYMEX Rulebook Chapters 4 and 5 set forth multiple prohibitions that preclude intermediaries from disadvantaging their customers. These rules apply to trading in all of the Exchange's competitive trading venues.

- **Disciplinary Procedures**: Chapter 4 of the Rulebook contains provisions that allow the Exchange to discipline, suspend or expel members or market participants that violate the Rulebook. Trading in the Contracts will be subject to Chapter 4, and the Market Regulation Department has the authority to exercise its enforcement power in the event rule violations in these products are identified.

- **Dispute Resolution**: Disputes with respect to trading in the Contracts will be subject to the arbitration provisions set forth in Chapter 6 of the Rulebook. Chapter 6 allows all nonmembers to submit a claim for financial losses resulting from transactions on the Exchange to arbitration. A member named as a respondent in a claim submitted by a nonmember is required to participate in the arbitration pursuant to Chapter 6. Additionally, the Exchange requires that members resolve all disputes concerning transactions on the Exchange via arbitration.

Pursuant to Section 5c(c) of the Act and CFTC Regulations 40.2(a), the Exchange hereby certifies that listing the Contracts complies with the Act, including regulations under the Act. There were no substantive opposing views to the proposal.

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

Should you have any questions concerning the above, please contact the undersigned at (212) 299-2200 or via e-mail at CMEGSubmissionInquiry@cmegroup.com.

Sincerely,

/s/ Christopher Bowen
Managing Director and Chief Regulatory Counsel

Attachments: Exhibit A: NYMEX Rulebook Chapters
Exhibit B: Position Limits, Position Accountability and Reportable Level Table in Chapter 5 of the NYMEX Rulebook (attached under separate cover)
Exhibit C: NYMEX Rule 588.H. – ("Globex Non-Reviewable Trading Ranges") Table
Exhibit D: Cash Market Overview and Analysis of Deliverable Supply

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Exhibit A
NYMEX Rulebook

Chapter 1161
Dutch TTF Natural Gas Calendar Month Option

1161100. SCOPE OF CHAPTER

This chapter is limited in application to put and call Dutch TTF Natural Gas Calendar Month Options on the Dutch TTF Natural Gas Calendar Month Futures (TTF) contract. In addition to the rules of this chapter, transactions in Dutch TTF Natural Gas Calendar Month Options shall be subject to the general rules of the Exchange.

1161101. OPTION CHARACTERISTICS

The number of months open for trading at a given time shall be determined by the Exchange.

1161101.A. Trading Schedule

The hours of trading shall be determined by the Exchange.

1161101.B. Trading Unit

The Dutch TTF Natural Gas Calendar Month Option is an option on the Dutch TTF Natural Gas Calendar Month Futures contract. On exercise of a call option, the long position will be assigned a long position in the Dutch TTF Natural Gas Calendar Month Futures contract with the same contract month at the strike price. On exercise of a put option, the long position will be assigned a short position in the Dutch TTF Natural Gas Calendar Month Futures with the same contract month contract at the strike price.

1161101.C. Price Increments

Prices shall be quoted in Euros per MWh. The minimum price fluctuation shall be €0.005 per MWh.

1161101.D. Position Limits, Exemptions, Position Accountability and Reportable Levels

The applicable position limits and/or accountability levels, in addition to the reportable levels, are set forth in the Position Limit, Position Accountability and Reportable Level Table in the Interpretations & Special Notices Section of Chapter 5.

A Person seeking an exemption from position limits for bona fide commercial purposes shall apply to the Market Regulation Department on forms provided by the Exchange, and the Market Regulation Department may grant qualified exemptions in its sole discretion.

Refer to Rule 559 for requirements concerning the aggregation of positions and allowable exemptions from the specified position limits.

1161101.E. Termination of Trading

Trading terminates on the fifth calendar day immediately preceding the first calendar day of the Contract Month, unless such day is not both a NYMEX business day and a London business day, in which case trading terminates on the first preceding NYMEX business day that is a London business day. However, if that day is also the last trading day of the underlying Futures contract, trading shall terminate on the first preceding NYMEX business day that is a London business day.

On the last trading day, trading terminates at 16:15 hours London prevailing time.

The option shall be available for automatic exercise. The in-the-money value of the option shall be based on a methodology to be published by the Exchange that reflects markets prices at the termination of trading of a contract. Notice of exercise must be delivered by a Clearing Member to the Clearing House not later than 17:30 London prevailing time on that day.

1161101.F. Type of Option

The option is a European-style option which can only be exercised into the underlying futures on Expiration Day.

1161102. EXERCISE PRICES

Transactions shall be conducted for option contracts as set forth in Rule 300.20.

Chapter 1163
UK NBP Natural Gas Calendar Month Option

1163100. SCOPE OF CHAPTER

This chapter is limited in application to put and call UK NBP Natural Gas Calendar Month Options on the UK NBP Natural Gas Calendar Month Futures (UKG) contract. In addition to the rules of this chapter, transactions in UK NBP Natural Gas Calendar Month Options shall be subject to the general rules of the Exchange.

1163101. OPTION CHARACTERISTICS

The number of months open for trading at a given time shall be determined by the Exchange.

1163101.A. Trading Schedule

The hours of trading shall be determined by the Exchange.

1163101.B. Trading Unit

The UK NBP Natural Gas Calendar Month Option is an option on the UK NBP Natural Gas Calendar Month Futures contract. On exercise of a call option, the long position will be assigned a long position in the UK NBP Natural Gas Calendar Month Futures contract with the same contract month at the strike price. On exercise of a put option, the long position will be assigned a short position in the UK NBP Natural Gas Calendar Month Futures with the same contract month contract at the strike price.

1163101.C. Price Increments

Prices shall be quoted in British pence (GBp) per therm. The minimum price fluctuation shall be GBp 0.005 per therm.

1163101.D. Position Limits, Exemptions, Position Accountability and Reportable Levels

The applicable position limits and/or accountability levels, in addition to the reportable levels, are set forth in the Position Limit, Position Accountability and Reportable Level Table in the Interpretations & Special Notices Section of Chapter 5.

A Person seeking an exemption from position limits for bona fide commercial purposes shall apply to the Market Regulation Department on forms provided by the Exchange, and the Market Regulation Department may grant qualified exemptions in its sole discretion.

Refer to Rule 559 for requirements concerning the aggregation of positions and allowable exemptions from the specified position limits.

1163101.E. Termination of Trading

Trading terminates on the fifth calendar day immediately preceding the first calendar day of the Contract Month, unless such day is not both a NYMEX business day and a London business day, in which case trading terminates on the first preceding NYMEX business day that is a London business day. However, if that day is also the last trading day of the underlying Futures contract, trading shall terminate on the first preceding NYMEX business day that is a London business day.

On the last trading day, trading terminates at 16:15 hours London prevailing time.

The option shall be available for automatic exercise. The in-the-money value of the option shall be based on a methodology to be published by the Exchange that reflects markets prices at the termination of trading of a contract. Notice of exercise must be delivered by a Clearing Member to the Clearing House not later than 17:30 London prevailing time on that day.

1163101.F. Type of Option

The option is a European-style option which can only be exercised into the underlying futures on Expiration Day.

1163102. EXERCISE PRICES

Transactions shall be conducted for option contracts as set forth in Rule 300.20.

Chapter 1162
Dutch TTF Natural Gas Futures-Style Margined Calendar Month Option

1162100. SCOPE OF CHAPTER

This chapter is limited in application to put and call Dutch TTF Natural Gas Futures-Style Margined Calendar Month Options on the Dutch TTF Natural Gas Calendar Month Futures (TTF) contract. In addition to the rules of this chapter, transactions in Dutch TTF Natural Gas Futures-Style Margined Calendar Month Options shall be subject to the general rules of the Exchange.

1162101. OPTION CHARACTERISTICS

The number of months open for trading at a given time shall be determined by the Exchange.

1162101.A. Trading Schedule

The hours of trading shall be determined by the Exchange.

1162101.B. Trading Unit

The Dutch TTF Natural Gas Futures-Style Margined Calendar Month Option is an option on the Dutch TTF Natural Gas Calendar Month Futures contract. On exercise of a call option, the long position will be assigned a long position in the Dutch TTF Natural Gas Calendar Month Futures contract with the same contract month at the strike price. On exercise of a put option, the long position will be assigned a short position in the Dutch TTF Natural Gas Calendar Month Futures with the same contract month contract at the strike price.

1162101.C. Price Increments

Prices shall be quoted in Euros per MWh. The minimum price fluctuation shall be €0.005 per MWh.

1162101.D. Position Limits, Exemptions, Position Accountability and Reportable Levels

The applicable position limits and/or accountability levels, in addition to the reportable levels, are set forth in the Position Limit, Position Accountability and Reportable Level Table in the Interpretations & Special Notices Section of Chapter 5.

A Person seeking an exemption from position limits for bona fide commercial purposes shall apply to the Market Regulation Department on forms provided by the Exchange, and the Market Regulation Department may grant qualified exemptions in its sole discretion.

Refer to Rule 559 for requirements concerning the aggregation of positions and allowable exemptions from the specified position limits.

1162101.E. Termination of Trading

Trading terminates on the fifth calendar day immediately preceding the first calendar day of the Contract Month, unless such day is not both a NYMEX business day and a London business day, in which case trading terminates on the first preceding NYMEX business day that is a London business day. However, if that day is also the last trading day of the underlying Futures contract, trading shall terminate on the first preceding NYMEX business day that is a London business day.

On the last trading day, trading terminates at 16:15 hours London prevailing time.

The option shall be available for automatic exercise. The in-the-money value of the option shall be based on a methodology to be published by the Exchange that reflects markets prices at the termination of trading of a contract. Notice of exercise must be delivered by a Clearing Member to the Clearing House not later than 17:30 London prevailing time on that day.

1162101.F. Type of Option

The option is a European-style option which can only be exercised into the underlying futures on Expiration Day.

1162101.G. Settlement Variation and Option Value

The option is a European-style option which can only be exercised into the underlying futures on Expiration Day. This contract is a future-style margin option. Settlement variation rules for futures-style margin options conform to those set forth for non-options stipulated in NYMEX Rule 814. As such, when a clearing member or its customers is long or short any amount of any commodity for a settlement cycle, as indicated by Clearing House records, settlement for any outstanding exposure shall be made with the Clearing House based on the settlement price for that settlement cycle. For futures-style margin options, each clearing member and its customers shall pay to, or collect from, the Clearing House any loss or profit, as the case may be, represented by the difference between (x) the settlement price of the futures-style margin option for such settlement cycle and (y) the settlement price of the futures-style margin option for the prior settlement cycle (or, for the first settlement cycle after the purchase/sale of such option, the price at which the option was purchased or sold).

1162102. EXERCISE PRICES

Transactions shall be conducted for option contracts as set forth in Rule 300.20.

Chapter 1164
UK NBP Natural Gas Futures-Style Margined Calendar Month Option

1164100. SCOPE OF CHAPTER

This chapter is limited in application to put and call UK NBP Natural Gas Futures-Style Margined Calendar Month Options on the UK NBP Natural Gas Calendar Month Futures (UKG) contract. In addition to the rules of this chapter, transactions in UK NBP Natural Gas Futures-Style Margined Calendar Month Options shall be subject to the general rules of the Exchange.

1164101. OPTION CHARACTERISTICS

The number of months open for trading at a given time shall be determined by the Exchange.

1164101.A. Trading Schedule

The hours of trading shall be determined by the Exchange.

1164101.B. Trading Unit

The UK NBP Natural Gas Futures-Style Margined Calendar Month Option is an option on the UK NBP Natural Gas Calendar Month Futures contract. On exercise of a call option, the long position will be assigned a long position in the UK NBP Natural Gas Calendar Month Futures contract with the same contract month at the strike price. On exercise of a put option, the long position will be assigned a short position in the UK NBP Natural Gas Calendar Month Futures with the same contract month contract at the strike price.

1164101.C. Price Increments

Prices shall be quoted in British pence (GBp) per therm. The minimum price fluctuation shall be GBp 0.005 per therm.

1164101.D. Position Limits, Exemptions, Position Accountability and Reportable Levels

The applicable position limits and/or accountability levels, in addition to the reportable levels, are set forth in the Position Limit, Position Accountability and Reportable Level Table in the Interpretations & Special Notices Section of Chapter 5.

A Person seeking an exemption from position limits for bona fide commercial purposes shall apply to the Market Regulation Department on forms provided by the Exchange, and the Market Regulation Department may grant qualified exemptions in its sole discretion.

Refer to Rule 559 for requirements concerning the aggregation of positions and allowable exemptions from the specified position limits.

1164101.E. Termination of Trading

Trading terminates on the fifth calendar day immediately preceding the first calendar day of the Contract Month, unless such day is not both a NYMEX business day and a London business day, in which case trading terminates on the first preceding NYMEX business day that is a London business day. However, if that day is also the last trading day of the underlying Futures contract, trading shall terminate on the first preceding NYMEX business day that is a London business day.

On the last trading day, trading terminates at 16:15 hours London prevailing time.

The option shall be available for automatic exercise. The in-the-money value of the option shall be based on a methodology to be published by the Exchange that reflects markets prices at the termination of trading of a contract. Notice of exercise must be delivered by a Clearing Member to the Clearing House not later than 17:30 London prevailing time on that day.

1164101.F. Type of Option

The option is a European-style option which can only be exercised into the underlying futures on Expiration Day.

1164101.G. Settlement Variation and Option Value

The option is a European-style option which can only be exercised into the underlying futures on Expiration Day. This contract is a future-style margin option. Settlement variation rules for futures-style margin options conform to those set forth for non-options stipulated in NYMEX Rule 814. As such, when a clearing member or its customers is long or short any amount of any commodity for a settlement cycle, as indicated by Clearing House records, settlement for any outstanding exposure shall be made with the Clearing House based on the settlement price for that settlement cycle. For futures-style margin options, each clearing member and its customers shall pay to, or collect from, the Clearing House any loss or profit, as the case may be, represented by the difference between (x) the settlement price of the futures-style margin option for such settlement cycle and (y) the settlement price of the futures-style margin option for the prior settlement cycle (or, for the first settlement cycle after the purchase/sale of such option, the price at which the option was purchased or sold).

1164102. EXERCISE PRICES

Transactions shall be conducted for option contracts as set forth in Rule 300.20.

Exhibit B

NYMEX Rulebook
Chapter 5
("Trading Qualifications and Practices")

Position Limits, Position Accountability and Reportable Level Table in Chapter 5 of the NYMEX Rulebook

(attached under separate cover)

Exhibit C
NYMEX Rulebook
Chapter 5
("Trading Qualifications and Practices")

(additions underscored)

NYMEX Rule 588.H. – ("Globex Non-Reviewable Trading Ranges") Table

Instrument	Globex Symbol	Non-Reviewable Range (NRR)	Bid/Ask Reasonability
UK NBP Natural Gas Calendar Month Option	UKO	The greater of delta times the underlying futures non-reviewable range or 20% of premium up to 1/4 of the underlying futures' non-reviewable range with a minimum of 1 tick	The greater of the delta times the underlying futures' non-reviewable range or 20% of the fair value premium up to the underlying futures' non-reviewable range with a minimum reasonability of $0.025
Dutch TTF Natural Gas Calendar Month Option	TTO	The greater of delta times the underlying futures non-reviewable range or 20% of premium up to 1/4 of the underlying futures' non-reviewable range with a minimum of 1 tick	The greater of the delta times the underlying futures' non-reviewable range or 20% of the fair value premium up to the underlying futures' non-reviewable range with a minimum reasonability of $0.025
Dutch TTF Natural Gas Futures-Style Margined Calendar Month Option	TFO	The greater of delta times the underlying futures non-reviewable range or 20% of premium up to 1/4 of the underlying futures' non-reviewable range with a minimum of 1 tick	The greater of the delta times the underlying futures' non-reviewable range or 20% of the fair value premium up to the underlying futures' non-reviewable range with a minimum reasonability of $0.025
UK NBP Natural Gas Futures-Style Margined Calendar Month Option	UFO	The greater of delta times the underlying futures non-reviewable range or 20% of premium up to 1/4 of the underlying futures' non-reviewable range with a minimum of 1 tick	The greater of the delta times the underlying futures' non-reviewable range or 20% of the fair value premium up to the underlying futures' non-reviewable range with a minimum reasonability of $0.025

Exhibit D

Cash Market Overview and Analysis of the Deliverable Supply

CASH MARKET OVERVIEW

DATA SOURCES:

We have used the following data sources within this analysis and provided further information on each source below.

For Dutch TTF Natural Gas

Gasunie Transport Services (GTS), is a gas Transmission System Operator (TSO) operating in the Netherlands and is responsible for the management of the natural gas network in the country. Gasunie set up the Title Transfer Facility ("TTF") virtual trading hub in 2003. It is the owner and operator of the Dutch gas transmission network and is responsible for the management, operation and development of the gas transport system in the country[1].

FOR UK NBP Natural Gas

National Grid[2] is the gas and power TSO operating in the United Kingdom and is responsible for the management of the natural gas network in the country. National Grid is the operator of the National Balancing Point ("NBP"), which serves as the central trading and balancing venue for natural gas market participants in the UK.

OFGEM[3] is the Office of Gas and Electricity Markets in the UK. The agency is a non-ministerial government department and an independent National Regulatory Authority, recognized by EU Directives. The principal objective of OFGEM is to protect the interests of existing and future electricity and gas consumers, mainly by promoting competition in the market place. OFGEM publishes a range of reports to monitor wholesale energy markets in the UK.

[1] https://www.gasunietransportservices.nl/en
[2] http://www2.nationalgrid.com
[3] https://www.ofgem.gov.uk/

The Dutch and UK Natural Gas markets

Overview

The European gas market has seen more than fifteen years of market liberalization. Historically, long term supply deals for the European markets were done on an oil-indexed basis. This is because there was a degree of price linkage between oil and gas, as the two could potentially compete against each other as generation fuel. However, oil for power generation has largely disappeared in Europe, and there are only very few applications in which the two fuels directly compete against each other: the economic justification for oil price linkage is much weaker than it was before. This has led to a gradual decline of oil-indexation as a pricing mechanism for long-term pipeline and LNG supply contracts. The decline of oil-indexation in contract pricing led to an equivalent increase in the use of hub pricing. This development first started in the UK in the early 2000's and was later followed by the continental European gas markets. NBP and TTF are the dominant virtual hubs for contract pricing, both for wholesale gas supply and for the purchase of gas for industrial and commercial use in Europe. TTF is used beyond the Dutch market, as it provides a benchmark reference for many of the Continental European gas markets: typically gas prices are highly positively correlated as physical infrastructure allows for arbitrage flows to greatly reduce regional price differences between most highly interconnected markets in Western Europe (including prices for Germany – Europe's largest consumer, France, Italy, Austria, etc.)[4].

The Dutch Natural Gas market

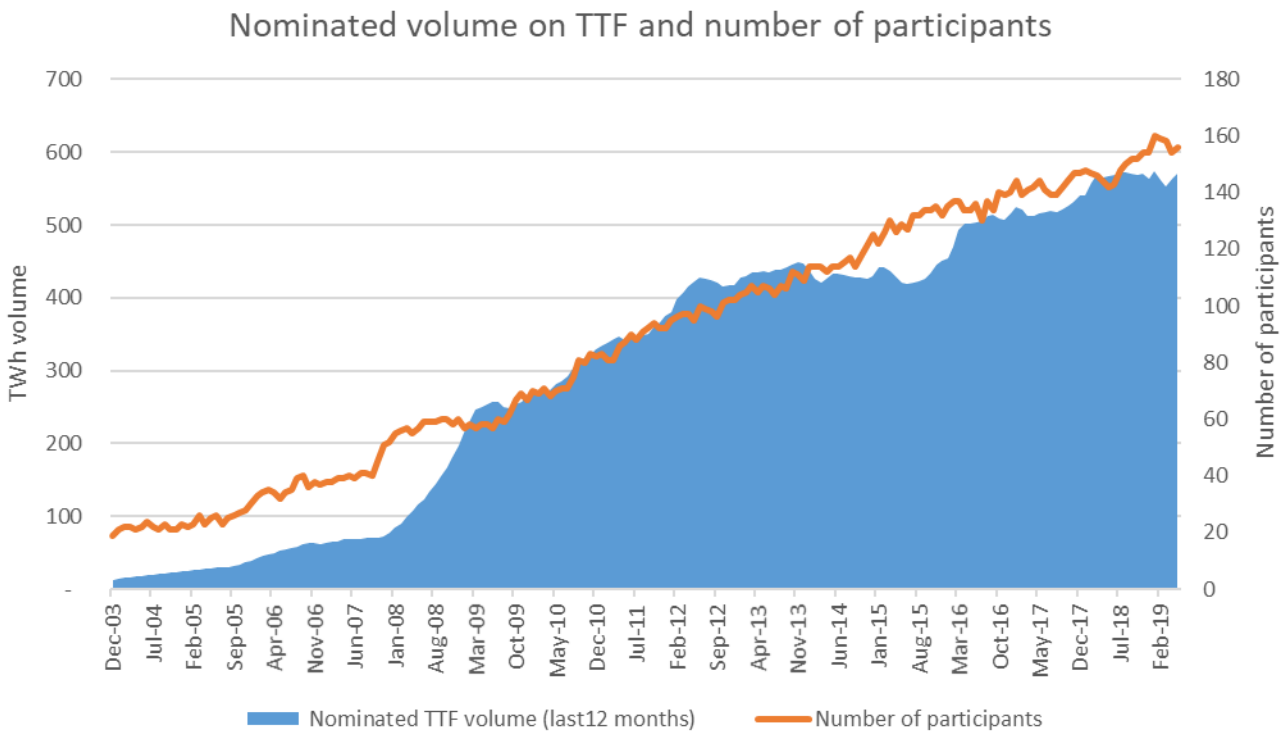
TTF refers to the Title Transfer Facility, a virtual trading hub for natural gas in the Netherlands. The TTF was set up by Gasunie in 2003. TTF participants exchange rights to natural gas via a nomination process within the TTF market area. Unlike Henry Hub, TTF is a purely virtual construct for nominal transfer of gas rights: there is no physical location for exchange as TTF represents gas injected into any part of the Dutch market area. Gas sold on TTF must have been previously injected into the Gasunie system. Trading on TTF means the transfer of ownership to gas within the Dutch grid system. While title transfer via a nomination is a bilateral process between Buyer and Seller, Gasunie needs to always know who owns the gas molecules in its system. The virtual title transfer should be consistent with physical gas flows: counterparties who bought rights to gas in the virtual trading zones physically import gas into the system via pipelines/ LNG cargoes, or withdrew gas from storage facilities and into the transportation grid. The corresponding TTF Sellers export gas into neighboring countries, deliver gas for local consumption or inject gas into storage facilities and out of the grid. Overall, participants are incentivized to balance their portfolio as they are levied a Balancing Charge against net imbalances between acquiring and disposing TTF nominations. GTS monitors the system and gas flows and may enter the market in its role as the "marginal balancer" if such actions are required. However, Gasunie will never enter the market for speculative or trading purposes beyond balancing transactions. TTF is firmly established as the main forward trading and risk management venue for Continental European Gas trading. On its website, GTS provides information how much volume is nominated on TTF and how many parties are active in a given month[5]. We base our Deliverable Supply Analysis on this data, as nominated volume on TTF represents readily available supply that may be used to fulfill delivery obligations via a corresponding nomination. A sufficient amount of nominated volume should indicate a mature market, in which participants can access TTF liquidity (to fulfil delivery obligations resulting from OTC and exchange activity) on a short-term basis.

On its public website, GTS provides data on nominated TTF volume and the number of active participants on a monthly granularity. Below chart shows the historic evolution of nomination volumes and participants numbers since the launch of the virtual trading hub. It shows a very positive evolution of nomination volumes

[4] For a detailed analysis of European Gas price correlation, see https://www.oxfordenergy.org/wpcms/wp-content/uploads/2013/10/NG-79.pdf

[5] https://www.gasunietransportservices.nl/en/about-gts/publications, "Development TTF data sheet". All subsequent TTF relevant data was taken from this source. Underlying data may be found in appendix.

and the number of active market participants since launch. Below chart tracks the data up to and including May 2019.



Source: GTS website

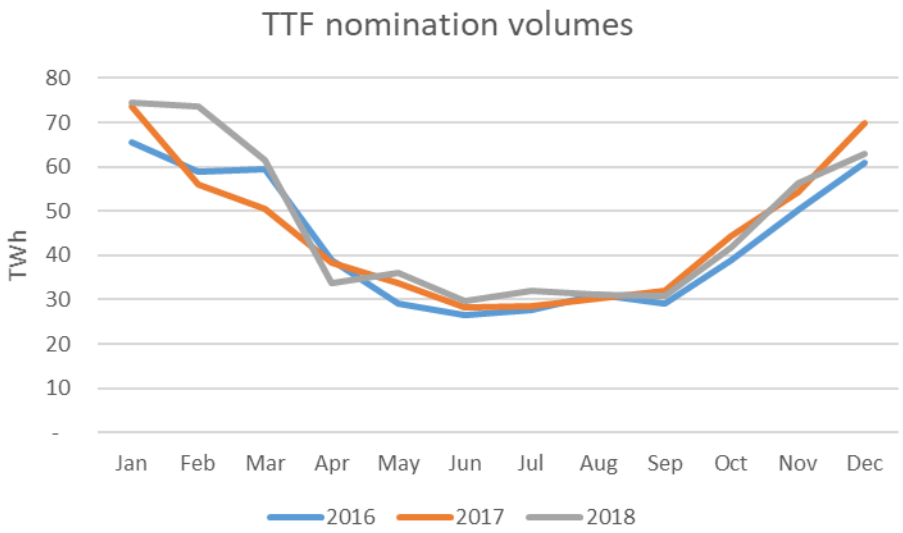
The table below provides an overview how much volume was nominated in the last 3 full Calendar Years in Terawatt-hours (TWh). The data was converted from TWh into Terajoules and MMBtu using the following conversion factors: 1 TWh = 3,600 Terajoules, 1 Terajoule = 947.816 MMBtu. The MMBtu figure was also converted into units of 10,000 MMBtu, which is the standard lot size for Henry Hub natural gas (NG contract). The data is also shown in standard European monthly lots of 720 MWh[6]. Note that the underlying data on a monthly granularity is attached to the Appendix.

Nominated TTF Volume	2016	2017	2018	3y average
TWh	515.7	539.8	563.8	539.7
Terajoules	1,856,443	1,943,139	2,029,620	1,943,067
MMBtu	1,759,566,716	1,841,738,063	1,923,706,529	1,841,670,436
US Lots (1 lot = 10,000 MMBtu)	175,957	184,174	192,371	184,167
EU Lots (1 lot = 720 MWh)*	716,220	749,668	783,032	749,640

[6] When trading in MWh per hour, market convention is to define a standard monthly lot as a 30-day month, which results in a lot size of 720 MWh (which is equal to 24 hours' times 30 days). However, actual lot sizes vary from 672 MWh (for the month of February with 28 days) to 745 MWh (the month of October with 31 days plus one extra hour due to Daylight Savings time). 1 TWh is 10^6 MWh.

Source: GTS website				

Due to lower heating demand during summer months, TTF nominations are characterized by a pronounced seasonality. June is the month with the lowest average nomination compared to the monthly average: across the last three years, average June nominations accounted for 62% of average nominations across the entire three years.



Source: GTS website

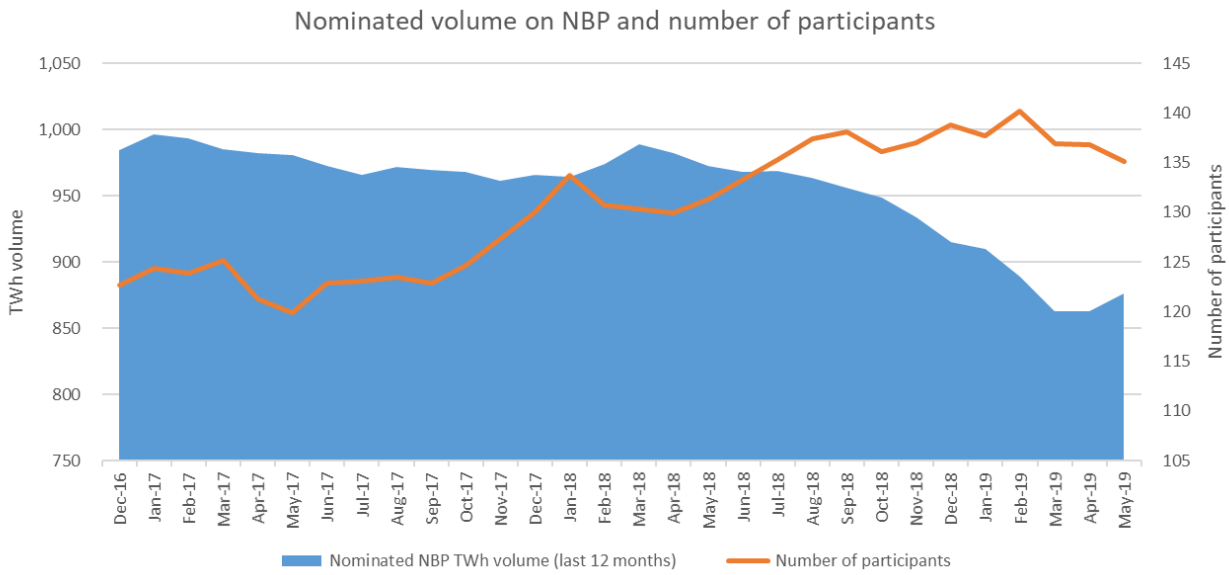
GTS also provides an overview of prevalent market liquidity. GTS tracks monthly churn rates across past years and documents the significant increase in TTF liquidity. The churn rate is defined as the total TTF volume traded across OTC and exchanges divided by the nominated TTF volume. A higher churn indicates a higher market liquidity and availability of natural gas.

Monthly Churn TTF			
	Minimum	Average	Maximum
2011	10x	18x	26x
2012	10x	20x	31x
2013	13x	20x	30x
2014	20x	34x	54x
2015	25x	40x	53x
2016	23x	46x	78x
2017	25x	42x	59x
2018	30x	54x	85x

Source: GTS website

The UK Natural Gas market

In the UK, NBP, the National Balancing Point, refers to a similar system operated by National Grid, the UK's power and gas transmission system operator. The UK was the first fully liberalized gas market in Europe and NBP has quickly become a significant forward trading and risk management venue for natural gas markets. Participants may engage in "title trade", which is the notional transfer of rights to gas within the UK's Transmission system. National Grid monitors the system and gas flows and may enter the market if balancing trades are required. Again, customers are incentivized to balance their portfolios ahead of gas flows as they are otherwise subject to imbalance charges. However, some system imbalance is unavoidable as for example domestic consumption is hard to exactly predict – for such balancing activities, National Grid enters the market as a marginal participant in order to balance its grid system. On its website, National Grid provides data on nominated volumes and on the number of market participants on a given day. Again, those figures represent volume available to be nominated against delivery obligations on the NBP. Such delivery obligations may result from OTC trades or exchange trading activity. On its public website, National Grid provides data on nominated volume and on the number of market participants on a daily granularity. Below chart shows how nominated volumes changed across the past 3 years[7]. The number of participants represents the average number of active participants in a given month.



Source: National Grid website

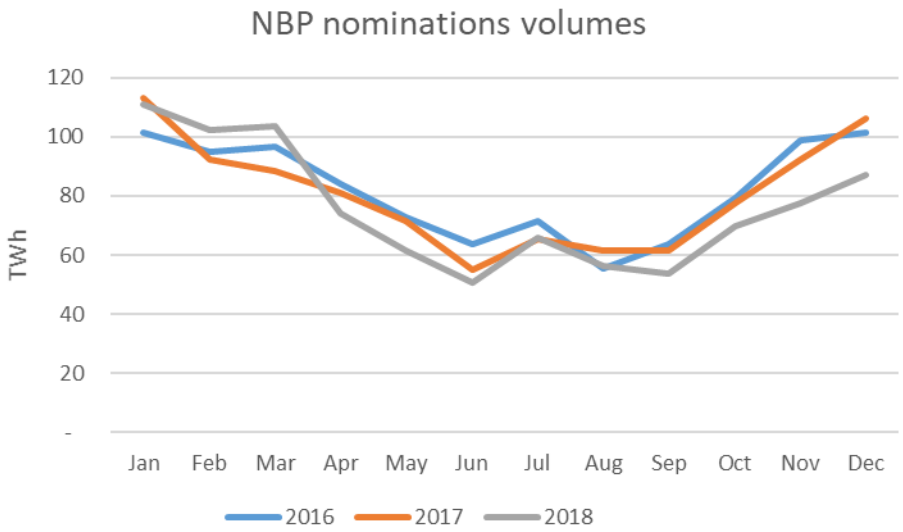
The table below was based on the same data from National Grid. For NBP, the standard trading unit is 30,000 therms per monthly lot[8]. The underlying data is attached to the appendix (with the daily data aggregated into months for brevity):

[7] http://mip-prod-web.azurewebsites.net/DataItemExplorer/Index National Grid Data Item Explorer, UK Wholesale Gas Market Liquidity Data, Nominations, Input, Total, TWh. All subsequent NBP relevant data was taken from this source. Underlying data may be found in appendix.

[8] Just like "European" MWh per hour monthly lots are referred to with a standard lot size of 720 MWh, UK monthly lots are computed based on a standard lot size of 30,000 therms (30-day months times 1,000 therms per day). 1 MMbtu is equal to 10 therms

Nominated NBP Volume	2016	2017	2018	3y average
TWh	984	966	915	955
Terajoules	3,543,592	3,477,574	3,292,728	3,437,965
MMBtu	3,358,673,157	3,296,100,354	3,120,900,737	3,258,558,083
US Lots (1 Lot = 10,000 MMBtu)	335,867	329,610	312,090	325,856
UK Lots (1 Lot = 30,000 therms)	1,119,558	1,098,700	1,040,300	1,086,186
Source: National Grid				

NBP nominations are also characterized by a pronounced seasonality. On average across the last 3 years (2016-2018), nominations have been the lowest in June: Average June nominations represented only 71% of the average monthly volume flowing through the hub across the entire period.



Source: National Grid[9]

[9] http://mip-prod-web.azurewebsites.net/DataItemExplorer/Index National Grid Data Item Explorer, UK Wholesale Gas Market Liquidity Data, Nominations, Input, Total, TWh. Underlying data may be found in appendix.

OFGEM, the UK's gas and power regulator[10], publishes "Wholesale Markets Indicators" that show that churn rates in NBP (the ratio of spot and forward trading to delivered volume) have been stable across the last 6 years, and that ample liquidity was available to participants at all times.

Monthly Churn NBP			
	Minimum	Average	Maximum
2011	11x	19x	28x
2012	10x	21x	26x
2013	11x	18x	27x
2014	15x	25x	30x
2015	16x	23x	27x
2016	10x	22x	34x
2017	12x	23x	33x
2018	9x	20x	32x

Source: Ofgem

[10] https://www.ofgem.gov.uk/data-portal/wholesale-market-indicators under "Access and Liquidity"

ANALYSIS OF DELIVERABLE SUPPLY

Appendix C to part 38 of the 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."

For TTF and NBP, the basis for deliverable supply are the nominations executed on the UK and Dutch transmission systems. These figures include all nominations regardless whether those nominations are the result of spot trades or long-term transactions. No adjustment is made for term contracts, as both NBP and TTF markets are highly developed, fully liberalized and are characterized by high churn rates. The UK and the Netherlands' natural gas markets are free from restrictions meaning that volumes between short and long-term supply are easily interchangeable. There is a high degree of flexible storage, gas pipelines to the continent and LNG infrastructure. Liquidity is created through a well-functioning spot exchange market and via the OTC broker market.

However, due to the seasonality of natural gas consumption, Exchange staff applied a reduction of DS to match the month with the lowest nomination flows. For the Dutch market, nominations are reduced by 38% to account for seasonality (because nominations in June account for 62% of the average monthly flows). For NBP, the applicable reduction is 29% (because nominations in June account for 71% of the average monthly flows).

For the **Dutch TTF Natural Gas Calendar Month Futures (commodity code TTF),** an annual deliverable supply of 749,640 lots (in 720 MWh lot sizes) is equivalent to a monthly figure of 62,470 lots. After applying a reduction of 38%, the monthly figure is equal to 38,731 lots. Based on the existing spot month position limit of 6,000 contracts, the total monthly deliverable supply of 38,731 lots represents 15.5% of the Deliverable Supply.

For the **UK NBP Natural Gas Calendar Month Futures (commodity code UKG),** an annual deliverable supply of 1,086,186 lots (in 30,000 therm lot sizes) is equivalent to a monthly figure of 90,516 lots. After applying a reduction of 29%, the monthly figure is equal to 61,266 lots. Based on the existing spot month position limit of 9,000 contracts, the total monthly deliverable supply of 61,266 lots represents 14.0% of the Deliverable Supply.

Appendix – Nominations Data

TTF – source Gasunie

TTF (TWh)	2016	2017	2018	2019	Month average (excl 2019)		Reduction applicable
Jan	65	74	75	85	71	158%	
Feb	59	56	74	61	63	140%	
Mar	59	50	61	52	57	127%	
Apr	39	38	34	44	37	82%	
May	29	34	36	43	33	73%	
Jun	27	28	30		28	62%	38%
Jul	28	29	32		29	65%	
Aug	31	30	31		31	69%	
Sep	29	32	31		31	68%	
Oct	39	44	42		42	93%	
Nov	50	54	56		54	119%	
Dec	61	70	63		65	144%	
Average	43	45	47		45	100%	
Total	516	540	564		540		

NBP – source National Grid

NBP (TWh)	2016	2017	2018	2019	Month average (excl 2019)		Reduction applicable
Jan	101	113	111	106	109	136%	
Feb	95	92	102	81	96	121%	
Mar	97	88	103	78	96	121%	
Apr	84	81	74	74	80	100%	
May	73	72	62	75	69	86%	
Jun	64	55	51		56	71%	29%
Jul	72	65	66		68	85%	
Aug	55	61	57		58	73%	
Sep	64	61	54		60	75%	
Oct	79	78	70		76	95%	
Nov	99	92	78		90	113%	
Dec	102	106	87		98	124%	
Average	82	80	76		80	100%	
Total	984	966	915		955		