Appendix 1

“Long-Term Options” Product Description

Long-term contracts on the

purchase (System Buy) or sale (System Sell)

of gas by Trading Hub Europe GmbH

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1 Product Design

(1) A “Long-Term Option” (“LTO”) is an External System Balancing Transaction under which a Provider undertakes to ensure its ability during the relevant Contract Period agreed pursuant to section 3 (5) (a) of the Terms and Conditions for External System Balancing Actions to sell gas to (System Buy) or buy gas from (System Sell) the market area manager Trading Hub Europe GmbH (“MAM”), with the available product variants being:

a) Hour (“H”) and

b) Rest-of-the-Day (“RoD”)

(2) Where an LTO is agreed for the product variant “H”, the relevant Provider shall ensure its ability on each and every gas day throughout the relevant Contract Period to supply (System Buy) or receive (System Sell) a specified hourly quantity of gas in any specified individual hour on receiving an instruction to this effect (“Call Order”) from the MAM. The Provider shall thus only supply (System Buy) or receive (System Sell) the instructed gas quantity in the relevant hour in respect of which the Provider has received a Call Order pursuant to section 6 of this Product Description (“Call Hour”). Call Orders may be issued for individual hours during each gas day. Under LTOs for the product variant “H”, the relevant Provider has an obligation to ensure that it will supply (System Buy) or receive (System Sell) an instructed gas quantity in each Call Hour on any given gas day throughout the relevant Contract Period, provided the MAM issues the relevant Call Order in good time, i.e. no less than three (3) hours before the start of each Call Hour (“Call Lead Time”). The Provider shall ensure that it is in a position to make or take delivery of the agreed gas quantity during each and every individual hour of each and every gas day throughout the relevant Contract Period.

(3) For the product variant “RoD”, the MAM will in each invitation to tender specify the maximum number of gas days for each Contract Period on which the MAM may call on the Provider to render its service (“Call Days”). The Provider shall ensure that it can supply (System Buy) or receive (System Sell) gas quantities at a constant hourly rate from the hour from which the call is made ("Call Hour") until the end of the respective gas day ("Call Period"), i.e. for a maximum of 24 hours per gas day[1] and a minimum of one (1) hour per gas day, up to a maximum of the contracted number of Call Days of the Service Period in the event of a call by the MAM in accordance with section 6 of this Product Specification. Except where a Call Order is issued in respect of the last hour of a gas day only, the product variant “RoD” does not involve the supply (System Buy) or receipt (System Sell) of gas

[1] On days when the clocks change from or to daylight saving time, a Call Period may comprise up to 25 or 23 hours, respectively.

during specified individual hours of a gas day. On receiving a Call Order the relevant Provider shall supply (System Buy) or receive (System Sell) the relevant gas quantity, provided the MAM has issued that Call Order in good time no less than three (3) hours before the start of the Call Hour instructed in each case ("Call Lead Time"). Once the Call Days have been exhausted, no further call shall be made by the MAM within the Contract Period and the Provider's obligation to secure shall cease. If the MAM does not specify a number of call days in an invitation to tender, the number of call days for the respective Contract Period is unlimited, i.e. the Provider must ensure that the MAM can call the agreed performance on every gas day of the Contract Period.

(4) When submitting an LTO Bid pursuant to section 4, the Provider shall specify the balancing zone or sector (as the case may be) where the Provider offers to supply or receive gas ("Delivery Location") in accordance with section 3 (2) of the Terms and Conditions for External System Balancing Actions. All gas to be supplied (System Buy) or received (System Sell) by the Provider in accordance with section 1 (5) shall then be supplied or received in said balancing zone or sector.

(5) On receiving a Call Order, the Provider shall cause a physical effect via its balancing group(s) by way of making corresponding nominations or renominations at cross-border interconnection points, virtual interconnection points within the meaning of Article 19 (9) of Regulation (EU) 2017/459 of 16 March 2017 (Network Code on Capacity Allocation Mechanism) or storage connection points so as to initiate physical inputs or offtakes of gas in accordance with section 1 (2) and/or section 1 (3) of the Product Description, subject to the restrictions set out below. Connection points to production facilities may not be used for this purpose.

(a) Where the Provider causes the physical effect under LTOs for the product variant "RoD" relating to the supply or receipt of low CV gas, said effect cannot be caused by way of nominations or renominations at cross-border interconnection points. Under LTOs for the product variant "RoD" relating to the supply or receipt of high CV gas, Providers shall not be entitled to cause the required physical effect by way of nominations or renominations at cross-border interconnection points on the German-Dutch border.

In any case the Provider shall ensure for the product variant "RoD"

- that it causes physical inputs of gas in the form of a positive physical balance of the Provider's inputs and offtakes of gas in the agreed balancing zone or sector that at least corresponds to the quantity requested by the MAM in the relevant Call Order where it has agreed to supply gas to the MAM (System Buy),

- that it causes physical offtakes of gas in the form of a negative physical balance of the Provider's inputs and offtakes of gas in the agreed balancing zone or sector that at least corresponds to the quantity requested by the MAM in the relevant Call Order where it has agreed to receive gas from the MAM (System Sell).

Physical balance shall in each case mean the sum of the Provider's inputs of the data type "Entryso" minus the sum of the Provider's offtakes of the data type "Exitso" in the agreed balancing zone or sector. When determining this physical balance, inputs and offtakes of gas at entry and exit points that must not be used to cause the physical effect according to this Product Description shall not be taken into account.

If, at the time of the Call Order, the Provider already has a corresponding physical flow in place (Entryso or Exitso nominations) in the form and amount of the required physical balance for all hours of the Call Order period and if the Provider wishes to use this physical flow to deliver on the Call Order, the Provider may in this case balance the quantity requested by the MAM at the Virtual Trading Point (VTP) in another balancing zone or sector in the gas quality of the Call Order in order to avoid an over- or undersupply in its balancing group.

While the Provider supplies (System Buy) and/or receives (System Sell) gas quantities, nominations or renominations in the opposite direction of the MAM's Call Order will only be permitted to the extent that the required positive (System Buy) or negative (System Sell) physical balance can be guaranteed.

(b) The Provider shall ensure for the product variant H

- that it causes its physical inputs of gas to be increased, on balance, in the amount of the Call Order and/or its physical offtakes of gas to be reduced accordingly in the agreed balancing zone or sector where it has agreed to supply gas to the MAM (System Buy)

- that it causes its physical offtakes of gas to be increased, on balance, and/or its physical inputs of gas to be reduced accordingly in the agreed balancing zone or sector where it has agreed to receive gas from the MAM (System Sell).

The change in the physical inputs or offtakes of the Provider shall be made in each case in relation to the hour (hour "H-1") that immediately precedes the Call Hour (hour "H"). The balance within the meaning of this sub-section shall also be the sum of the Entryso data series inputs minus the sum of the Exitso data series offtakes in the agreed balancing zone or sector. The inputs or offtakes at all entry and exit points allocated to the called-off balancing zone or sector shall be taken into account, irrespective of whether or not a prohibition of use pursuant to this Product Description applies to individual points. In each case, the final nominated quantities according to allocation shall apply. If the MAM issues a Call Order for several delivery hours in immediate succession, the Provider shall only owe an additional change in physical inputs or offtakes from one hour to the next in the amount of the difference between the Call Order quantities of the respective two hours under consideration.

(6) The Provider is aware that in order to be able to comply with the above obligations the Provider must hold entry or exit capacity (as the case may be) for the Delivery Location (i.e. in the relevant balancing zone or sector) that is at least equal to the delivery rate offered by the Provider and that it is the responsibility of the Provider to procure the availability of this entry or exit capacity.

(7) Other than described in section 1 (5) above, the Provider may also cause the required physical effect by securing that an end user who receives gas at an exit point equipped with a supply meter installation that records hourly consumption (each such exit point an "RLM Exit Point") and whose RLM Exit Point is registered to the balancing group of the Provider

- reduces its demand in the instructed balancing zone or sector accordingly where the Provider has agreed to supply gas to the MAM (System Buy), or

- increases its demand in the instructed balancing zone or sector accordingly where the Provider has agreed to receive gas from the MAM (System Sell).

Under call orders for the product variant "RoD", the Provider shall then procure throughout the relevant Call Hour that the physical offtakes made at one or several such RLM Exit Points (each a "Reference Exit Point", with eligible RLM Exit Points being those assigned to the allocation groups "RLMmT", i.e. RLM Exit Points with a flat allocation profile, or "RLMoT", i.e. RLM Exit Points with a structured allocation profile) are reduced (System Buy) or increased (System Sell) by an amount equal to the lot size agreed pursuant to section 2 of this Product Description (i.e. if the Provider uses several Reference Exit Points to deliver the required physical effect, the total offtake reduction or increase must be equal to this amount), with the offtake reduction or increase being measured in relation to the quantity of gas which was offtaken at the Reference Exit Point(s) in the hour in which the MAM issued the relevant Call Order (the "Demand Response Reference Quantity"). The sum of the actual hourly offtakes made at the Reference Exit Point(s) must not exceed (in the case of System Buy) or be less than (in the case of System Sell) the difference between the Demand Response Reference Quantity and the lot size agreed pursuant to section 2 below in any hour of the relevant Call Period. With regard to the inputs and offtakes of the Provider of the data series types Entryso and Exitso in the relevant balancing gas zone or sector, section 1 (5) (a) sentence 7 shall apply mutatis mutandis.

Under Call Orders for the product variant "H" the Provider shall effect the change in the physical offtakes at the Reference Exit Points in relation to the hour (hour "H-1") that immediately precedes the hour for which the Call Order is made (hour "H"). The physical inputs and offtakes of the Provider of the data series types Entryso and Exitso in the balancing gas zone or sector for which the Call order was issued must not change on balance in the opposite direction to the call-off of the MAM.

The change in consumption made to cause the physical effect in accordance with this section 1 (7) shall be purposefully made in response to the Call Order and shall, in particular, not have already been initiated at the time of the Call Order.

(8) Under LTOs for the supply or receipt of gas in a specified single delivery hour (product variant "H") as defined in section 1 (2) above, the Provider shall ensure that the physical effect pursuant to section 1 (4) to 1 (7) above is delivered in the exact Call Hour for the gas quantity for which the Call Order was issued.

Where the Provider wishes to deliver the required physical effect via entry and/or exit points that are connected at distribution level, it should be noted that a gas flow change in the direction instructed in the Call Order in the requested magnitude must be effected both at the delivery point(s) of the system interconnection point(s) (SIP) connecting the relevant network to the network of the upstream transmission system operator (TSO) as well as at the actual point via which the physical effect is to be provided (RLM exit point or distribution-level storage connection point). As concerns the gas flow change at the SIP(s) in question, it should be noted that it must also be effected in relation to the hour (hour "H-1") that immediately precedes the Call Hour (hour "H"). In order to ensure this the Provider has an obligation to enter into contractual arrangements with the distribution system operator (DSO) concerned so that the DSO will ensure on the Provider's behalf that the physical effect caused by the Provider within the distribution network will actually be delivered at the SIP(s) to the TSO's network.

(9) Delivering on the relevant Call Order by making use of the virtual gas quality conversion mechanism is not permitted.

(10) Except where the effect is caused via an end user with an RLM Exit Point pursuant to section 1 (7) above, the physical effect shall always be caused by the Provider itself. The physical effect shall not be caused by any third parties.

2 Lot Size

(1) Product variant "H": The lot size specified in an LTO Bid for the product variant "H" must correspond to a delivery rate of 10 MWh/h.

(2) Product variant "RoD": The lot size specified in in the relevant LTO Bids for the product variant "RoD" must correspond to a delivery rate of at least 10 MWh/h. Bids may also specify a delivery rate greater than this minimum lot size, to be stated in MWh/h and expressed in whole numbers, up to a maximum lot size of 1,000 MWh/h.

3 Pricing

(1) Providers may specify a capacity charge in EUR for the duration of the entire Contract Period so as to remunerate the Provider for ensuring its ability to supply gas to (System Buy) or receive gas from (System Sell) the MAM. Where a capacity charge is specified, it will be applied constantly throughout the relevant Contract Period (i.e. it will not be subject to variation) and irrespective of whether the MAM issues any Call Orders or not. Where a Provider fails to specify a capacity charge, the capacity charge offered by the Provider will be recorded as zero (0).

(2) On all gas quantities supplied (System Buy) or received (System Sell) by a Provider a commodity charge in EUR/MWh will be applied, which may result in a payment by the MAM or the Provider, as the case may be.

4 Submission of LTO Bids

(1) In addition to the general provisions pursuant to sections 3 and 4 of the Terms and Conditions for External System Balancing Actions, the provisions of this section 4 shall apply to the submission of LTO bids.

(2) All LTO Bids must specify at least the following information:

- the identity of the Provider,
- where the LTO Bid is for the product variant “RoD”, the lot size offered pursuant to section 2 (2) above,
- whether the Provider offers to supply gas to the MAM (System Buy) or receive gas from the MAM (System Sell),
- the relevant Delivery Location, i.e. the relevant balancing zone or sector,
- the capacity charge offered pursuant to section 3 (1) above,
- the commodity charge offered pursuant to section 3 (2) above,
- the relevant balancing group number, which must be the number of a balancing group contract registered by the Provider for gas of the gas quality corresponding to the gas quality in the balancing zone or sector to which the LTO Bid relates (i.e. the Delivery Location).

5 Acceptance of LTO Bids

(1) LTO Bids will generally be accepted in accordance with section 5 of the Terms and Conditions for External System Balancing Actions based on the projected cost as determined in accordance with sections 5 (2) to 5 (3) below.

All LTO Bids received will be ranked according to the projected specific cost in EUR/MWh (section 5 (2) (b) or section 5 (3) (b) below). Where this would result in a situation where a system balancing requirement cannot be appropriately met, especially, without limitation, where in the case of the product variant “RoD” the quantity to be contracted based on the lot sizes offered would exceed the MAM’s requirement, the MAM will instead accept such combination of bids as meets (or exceeds) the MAM’s requirement at the lowest cost possible (with due regard to the projected total cost in EUR according to section (2) (a) or section (3) (a) below).

(2) The calculations pursuant to section 5 (1) for LTO Bids received for the supply of gas quantities by a Provider (System Buy) with be carried out in accordance with the following formulae:

(a) The projected total cost will be determined according to the following formula:

PTC_{Buy} = (Cap + Com x LS x SD)

where

PTC_{Buy} = the projected total cost in EUR

Cap = the capacity charge in EUR offered pursuant to section 3 (1)

Com = the commodity charge in EUR/MWh offered pursuant to section 3 (2)

LS = the lot size in MWh/h offered by the Provider

SD = the projected service duration in hours; the service duration expected in each case will be calculated by the MAM on the basis of appropriate assumptions, particularly – provided any Call Orders have been issued – based on historical data available for the relevant period from past years

(b) The projected specific cost of each LTO Bid will be determined according to the following formula:

PC_{Buy} = PTC_{Buy}/(SD x LS)

where

PC_{Buy} = the projected specific cost in EUR/MWh

PTC_{Buy} = as defined in section 5 (2) (a) above

LS = as defined in section 5 (2) (a) above

SD = as defined in section 5 (2) (a) above

(3) The calculations pursuant to section 5 (1) for LTO Bids for the receipt of gas by a Provider (System Sell) will be made using the following formulae:

(a) The projected total cost of each LTO Bid will be determined according to the following formula:

PTC_{Sell} = Cap - Com x LS x SD

where

PTC_{Sell} = the projected total cost in EUR

Cap = as defined in section 5 (2) (a) above

Com = as defined in section 5 (2) (a) above

LS = as defined in section 5 (2) (a) above

SD = as defined in section 5 (2) (a) above

(b) The projected specific cost will be determined according to the following formula:

$PC_{Sell} = PTC_{Sell}/(SD \times LS)$

where

PC_{Sell} = the projected specific cost in EUR/MWh

PTC_{Sell} = as defined in section 5 (3) (a) above

LS = as defined in section 5 (2) (a) above

SD = as defined in section 5 (2) (a) above

6 Call Order

(1) In addition to the general provisions pursuant to section 6 of the Terms and Conditions for External System Balancing Actions, the provisions of this section 6 shall apply to the process of issuing of Call Orders.

(2) The MAM will issue a Call Order by sending a message in the MAM-specific REQEST data format ("MAM-REQEST") to the Provider. The Provider shall confirm receipt of the Call Order with a confirmation message in the corresponding MAM-specific REQRES data format ("MAM-REQRES"). This reconfirmation message is for control purposes only and does not affect the validity of the Call Order in respect of the relevant Balancing Product.

(3) In the event that a Call Order cannot be issued using MAM-REQEST for technical reasons, the Bidder shall be informed by telephone and by e-mail or in another suitable manner in text form via the contact point specified by the Bidder as part of prequalification process. In this case, the Provider shall confirm the Call Order accordingly by telephone and by e-mail or by other suitable means in text form. This reconfirmation is for control purposes only and does not affect the validity of the Call Order in respect of the relevant Balancing Product.

(4) It is hereby pointed out that the available LTO Bids for the product variant RoD ranked at rank 4 will be included in a combined Merit Order List (MOL) together with the bids placed for the Short Term Balancing (STB) Services Product if both are found to be equally suitable, taking into account the Delivery Location selected for the supply or receipt of the gas and the Lead Time, insofar as an STB invitation to tender has been issued. The Call Orders for the LTO Bids will be issued in accordance with section 6 of the Terms and Conditions for External System Balancing Actions.

7 Test Call Orders

(1) The MAM shall have the right to occasionally issue Call Orders outside the MOL pursuant to section 6 of the Terms and Conditions for External Balancing Actions for the purpose of testing the functioning of the relevant systems and the reliability of the contracted LTOs available (each such Call Order a "Test Call Order") without providing advance notice of this to the relevant Provider.

(2) In particular, without limitation, Test Call Orders pursuant to section 7 (1) above may be issued to a Provider where considerable time has passed since an LTO Call Order was last issued to the Provider or where there is objective evidence indicating that the Provider may not duly comply with its obligations on receiving a Call Order.

(3) The MAM will publish the Test Call Order on its website as an MOL deviation. In all other respects, Test Call Orders are regular Call Orders to which the other provisions of the Terms and Conditions for External System Balancing Actions, with the exception of section 12, and the provisions of this Product Description apply without restriction.

8 Processing of Call Orders at the VTP

(1) For each Call Order issued by the MAM, the MAM will on behalf of the relevant Provider as well as in its own name make a nomination (single-sided nomination) at the VTP in accordance with the provisions set out in section 8 (2) below for a gas quantity in the relevant gas quality (high CV gas or low CV gas) equal to the quantity stated in the corresponding REQEST message. As part of this process, the quantities of several of the Provider's bids for which the MAM has issued Call Orders will be nominated together in the respective balancing group for each gas quality.

(2) Where a Call Order is issued for the supply (System Buy) of gas by a Provider under a Contracted LTO, the MAM will submit an output nomination at the VTP for gas to be offtaken from the Provider's balancing group as specified pursuant to section 4 (2) above ("VTP Output Nomination"). Where a Call Order is issued for the receipt (System Sell) of gas by a Provider under a Contracted LTO, the MAM will submit an input nomination at the VTP for gas to be delivered to the Provider's balancing group as specified pursuant to section 4 (2) above ("VTP Input Nomination").

(3) A fee levied for the use of the VTP will also be levied for the nomination of gas quantities as part of Call Orders issued in accordance with this Product Description.

(4) The transfer of title in respect of the gas quantities supplied or received as well as the transfer of risk between the Parties shall take place at the VTP for the agreed gas quality (high CV gas or low CV gas).

9 Provider's Duty to Prove Compliance with Contractual Obligations

(1) On request by the MAM the Provider shall prove in a suitable manner that it has duly complied with its obligations under this Product Description or that it is able to do so (as the case may be), especially, without limitation, its obligation to ensure its ability to supply (System Buy) or receive (System Sell) gas at all times in accordance with section 1 (2) and/or (3) hereinabove and, in the case of a Call Order being issued, its obligation to cause the required physical effect in accordance with sections 1 (4) to (10) hereinabove, respectively.

(2) The Provider agrees to the MAM requesting relevant evidence and data from the competent network operator, if required.

10 Penalty

(1) If in any single or several hours of a Contract Period a Provider fails to comply with its obligations under this Product Description, whether in whole or in part, the Provider shall pay a penalty to the MAM in accordance with sections 10 (2) and 10 (3) below. The foregoing shall not apply where the Provider submits evidence to the MAM that it cannot be held responsible for the breach in question.

(2) Where upon receipt of a Call Order the Provider has breached its obligations under this Product Description, whether in whole or in part, the amount of the penalty to be applied shall be determined in accordance with the following formula:

$P_C = (SR_C + PS_C) * F_C$

where

P_C = Penalty due for the Call Order in EUR

SR_C = Shortfall Rate of the Call Order, as determined in accordance with the formula below

PS_C = Penalty Surcharge applicable to the Call Order Shortfall Rate, as determined in accordance with the table below

F_C = Fee due for the Call Order pursuant to section 8 (1) and (2) of the Terms and Conditions for External System Balancing Actions

The MAM will first determine the Shortfall Rate for the Call Order according to the following formula:

$SR_C = SQ_C / CQ_C$

where

SR_C = Shortfall Rate in percent (rounded to two decimal places in accordance with good commercial practice) as determined for the Call Order in question

SQ_C = Shortfall Quantity of the Call Order in kWh, i.e. the requested quantity for which a physical effect was not or not properly delivered

CQ_C = Call Quantity of the Call Order in kWh, i.e. the total quantity of gas requested from the Provider as part of the relevant Call Order

The applicable Penalty Surcharge according to the table below shall be added to the Shortfall Rate thus determined ("Penalty Rate"):

Shortfall Rate		Penalty Surcharge
from (>)	to (≤)	
	5%	+ 0%
5%	20%	+ 5%
20%	40%	+ 10%
40%	60%	+ 15%
60%	80%	+ 20%
80%	100%	+ 25%

The contractual penalty to be paid by the Provider pursuant to this section shall then be determined by applying the Penalty Rate to the Call Fee pursuant to section 8 (1) and (2) of the Terms and Conditions for External System Balancing Actions.

(3) In addition, the MAM shall levy a contractual penalty for each month with at least one Call Order ("Call Month") in which the Provider has breached its obligations under this Product Description in whole or in part, the amount of which shall be determined in accordance with the following formula:

$P_M = (SR_M + PS_M) * Cap_M$

where

$P_M =$ Penalty due for the Call Month in EUR

$SR_M =$ Shortfall Rate of the Call Month, as determined in accordance with the formula below

$PS_M =$ Penalty Surcharge applicable Shortfall Quantity of the Call Month, as determined in accordance with the above table

$Cap_M =$ Share of the Capacity Charge agreed for the Contract Period that is attributable to the Call Month pursuant to section 3 (1)

In the first step, the MAM will also determine the Shortfall Rate for each Call Month after the Contract Period according to the following formula:

$SR_M = SQ_M / CQ_M$

where

SR_M = Shortfall Rate in percent (rounded to two decimal places in accordance with good commercial practice) as determined for the Call Month in question

SQ_M = Shortfall Quantity of the Call Month in kWh, i.e. the quantity requested in the Call Month for which a physical effect was not or not properly delivered

CQ_M = Call Quantity in kWh, i.e. the total quantity of gas requested from the Provider in the relevant Call Month

The applicable Penalty Surcharge according to the table in this section 10 (2) shall be added to the Shortfall Rate thus determined (Penalty Rate).

The contractual penalty to be paid by the Provider according to this section 10 (3) shall then be calculated by applying the Penalty Rate to the capacity charge agreed between the MAM and the Provider for the Call Month concerned. In the event that the Contract Period is shorter than one month, the aforementioned provisions for the Call Month shall be applied analogously for the shorter Contract Period.

(4) The MAM shall retain the right to claim further damages. Any penalty payable hereunder shall be offset against any such damages payable.