

Storage Specification Haidach April 2016

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Article 1 Introduction

1. This **Storage Specification** completes the **Storage Services Agreement Haidach April 2016** and defines all the details required to enable **astora** to provide **Storage Services** in the Haidach **Storage Location** based on the **Storage Services Agreement** which will be concluded with regards to the Keyed Procedure held by **astora** on the trading platform **store-x** on 23.02.2016.
2. For storage of **Gas** the **General Terms and Conditions for Storage Access**, the definitions for the storage of **Gas** contained in the **General terms and Conditions for Storage Access** and §6 of the **Storage Services Agreement Haidach April 2016** shall apply, unless this storage specification contains different arrangements. The terms used in the singular also include the plural and vice versa, assuming this has not been expressly agreed otherwise or is obvious from the respective situation.
3. Upon the conclusion of a **Storage Services Agreement** this **Storage Specification** shall be an integral part of the **Storage Services Agreement**. For this product the **General Terms and Conditions for Storage Access** shall apply with the exclusion of Part four, Part five and part six.

Article 2 Storage Service

1. The **storage service** will be offered as **Bundled Storage Service**. The offer within the **Terms and Conditions for the Keyed Procedure Haidach April 2016** includes twenty (20) bundles. The **Storage Service** has a term from 01.05.2016, (06:00 a.m.) to 01.04.2017, (06:00 a.m.).
2. One (1) bundle shall comprise the following **Storage Capacities**:
 - a) **Injection rate:**

| |
|-----------------------------|
| 3.0 MWh/h firm and |
| 3.0 MWh/h interruptible and |
 - b) **Withdrawal rate:**

| |
|-----------------------------|
| 4.4 MWh/h |
| 4.4 MWh/h interruptible and |
 - c) **Working gas volume:** 9,034 MWh

Article 3 Storage Services Fee

The firm **Storage Service Fee** shall be determined by the offers within the keyed procedure. The **Storage Customer** shall be obliged to pay the firm **Storage Service Fee** for the **Storage Capacities** made available by **astora** independent of the use. The claim for payment of this firm **Storage Services Fee** shall arise at 01.05.2016. The invoicing will occur

as defined under §33 Section 1 until 6 of the **General Terms and Conditions for Storage Access**.

Article 4 Exceeding Storage Capacities

1. Astora – going beyond its obligation pursuant to Article 8 until further notice – will endeavor to enable the **Storage Customer** to make use of additional injection or withdrawal rate, in case the contractual **Storage Capacity** is restricted by §8 due to the characteristic line. Such capacity use is granted free of charge on an interruptible basis up to the maximum booked capacity irrespective of §8.
2. In the event of interruption, still available (interruptible) capacities will be divided pro rata based on the nominated quantity among those customers whose **Storage Capacity** is exceeded. Please note: Storage Customers who booked interruptible capacities as astora-part are served prior to the customers under the present proceeding.
3. For nominations exceeding the booked **storage capacities** and the capacity specified under number 1, the **Fee for Exceeding the Storage Capacities** applies.
4. The **Fee for Exceeding the Storage Capacities** will be calculated daily by using the **Tariff for Exceeding the Storage Capacities** according to the following Article 5 on the basis of the maximum hourly volume which exceeds 100% of the **Storage Capacities** per **Storage Day**.

Article 5 Tariff for Exceeding the Storage Capacities

1. The **Tariff for Exceeding the Storage Capacities** shall be:
 - a) **Injection rate:** 2.8 ct/(kWh/h)/d
 - b) **Withdrawal rate:** 3.9 ct/(kWh/h)/d

Article 6 Rounding procedure

To round the calculations of this **Storage Specification** up or down the intermediate calculations shall be rounded up or down to four (4) decimal places and the final results to two (2) decimal places. If the fifth (5th) or third (3rd) decimal place respectively should be five (5) or more, the sum shall be rounded up, if it is less than five (5), it shall be rounded down.

Article 7 Technical Limitations

1. All **Storage Capacities** of the **Storage Service** described in Article 2 shall be subject to the technical limitations listed in Sections 2 to 3 which the **Storage Customer** is informed of according to the **General Terms**

and Conditions for Storage Access via the **Nomination Procedure** that is regulated in the **Operating Agreement Haidach April 2016**.

2. For the operation of the Haidach **Storage Facility** the following minimum rates shall be required for injection and withdrawal:

| | |
|-------------|--------------------------|
| Injection: | 15,000 m ³ /h |
| Withdrawal: | 15,000 m ³ /h |

3. In the operation of the Haidach **Storage Facility** the following times have to be considered:

| | |
|--|-------------|
| Lead time for injection: | up to 2.0 h |
| Lead time for withdrawal: | up to 2.0 h |
| Flow reversal time injection/withdrawal: | |
| - normally: | up to 2.0 h |
| - in technical exceptions: | up to 4.0 h |

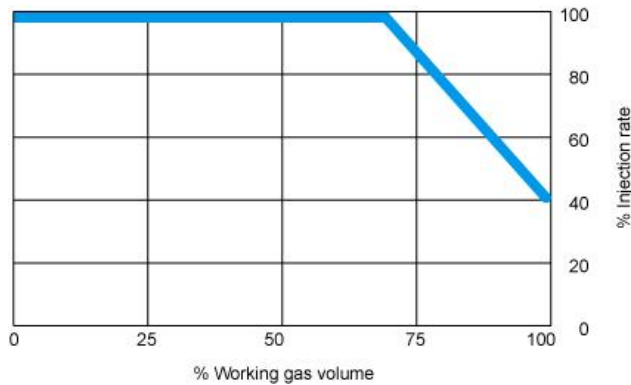
4. In the Haidach **Storage Location** the time required to process a **Renomination** shall be two (2) hours. In case of technical exceptions **astora** may reject the renomination.

Planned unavailabilities of Haidach UGS are published here:

https://www.astora.de/uploads/media/Maintenance_Calendar_Haidach_01.pdf

Article 8 Injection and Withdrawal Curves

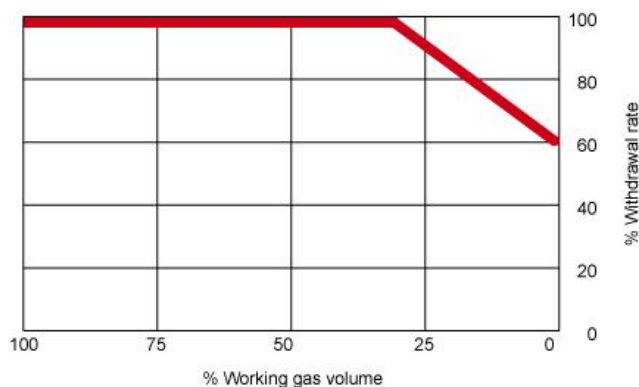
1. The usage of the **Storage Services** as per Article 2 is limited by the **Injection and Withdrawal Curves**.
2. The **Injection and Withdrawal Curves** of the Haidach **Storage Facility** assumed shall apply herein in combination with the **Storage Services** as per Article 2 and also for the corresponding **Storage Services Agreements**.
3. If a percentage of the stored **Working Gas Volume** as per Sections 4 and 5 should be reached, **astora** may lower the **Injection** or **Withdrawal Rate** to the percentage specified according to Sections 4 and 5.
4. The **Injection Curve** shows the **Injection Rates** as a function of the **Storage Customer's Working Gas Volume** which it shall be entitled to use.



The available **Injection Rates** of the **Storage Customer** (IR) in case a **Customer's Storage Level of Working Gas Volume** (WGV) exceeds 70% shall be calculated as follows:

$$IR [\%] = WGV [\%] \times (-2) + 240$$

- The **Withdrawal Curve** shows the **Withdrawal Rates** as a function of the **Storage Customer's Working Gas Volume** which it shall be entitled to use.



The available **Withdrawal Rates** of the **Storage Customer** (WR) in case a **Customer's Storage Level of Working Gas Volume** (WGV) falls below 30% shall be calculated as follows:

$$WR [\%] = WGV [\%] \times 1.3333 + 60$$

Article 9 Delivery Points

1. The **Point of Injection** and the **Point of Withdrawal** of the **Storage Location** correspond to the entry-/exitpoint “USP Haidach” of the **Neighbouring Natural Gas Network** operated by Bayernets GmbH, Munich (Netpoint-ID entry: BAY-700069-8021-1, Netpoint-ID exit: BAY-700069-8021-2).
2. The **Allocation Procedure** in Haidach shall be declaratory.

Article 10 Natural Gas Quality Specifications

For the Haidach **Storage Facility** at the **Delivery Points** listed in Article 89 hereunder the values of Austrian Standard G31 shall apply with the exception of the following parameters:

| | | |
|-----------------------|----------------------|---------------------|
| Wobbe Index min.* | kWh / m ³ | 13.60 |
| Wobbe Index max.* | kWh / m ³ | 15.70 |
| Hydrocarbon Dew Point | °C | -2 @ 1 - 70 bar (a) |
| Water Dew Point | °C | -8 @ 70 bar (a) |

*) The technical combustion parameters relate to a reference temperature of 298.15 K for the combustion of STANDARD VOLUMES with the reference conditions of 1.01325 bar and 273.15 K.