

# Advanced Virtualisation – Merging the Virtual Trading Point with Virtual Gas Storage Points

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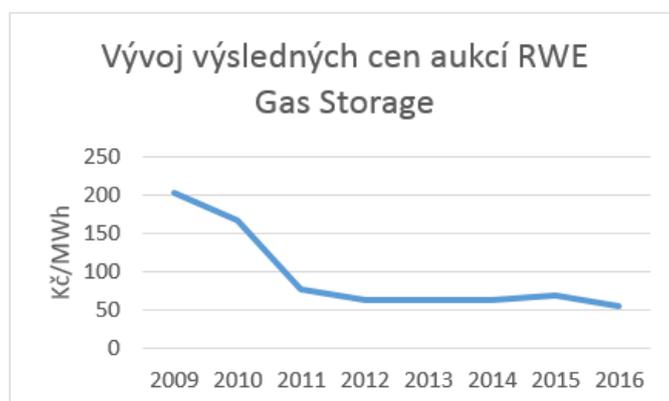
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## Problem Identification

The necessity of reserving the transmission capacity to and from the virtual storage increases the process complexity when using underground storage facilities and creates additional costs associated with their use. Given that a significant role of the Czech gas storage capacity is to ensure a secure supply for customers in the Czech Republic (a decree on a state of emergency counts with it), a major task for the state should thus be creating conditions for the continued use of gas storage facilities in the Czech Republic to prevent their shut-down due to their unattractiveness. Currently, the price of storage capacity reflects the already very small summer-winter spreads on the market, so any added charge in the form of a transmission tariff lowers the attractiveness of storing gas and the level of its active use as such and can make it unprofitable for an operator of a gas storage to run such gas storage facilities (gas storage facilities are already being closed elsewhere in Europe, for example Storengy in France closed three gas storages – Trois-Fontaines and Soings-en-Sologne in 2012, St-Clair-sur-Epte in 2014 – and VNG Gas Storage intends to close UGS Buchholz during the 2016-2017 season).

*Table of the average final price at the RWE/Innogy auction for the given storage year converted to annualized product (bundle: volume + extraction + injection rate) in CZK/MWh*



The current market setting is characterised by the following problems and risks associated with the use of virtual storages:

- 1) the decrease of attractiveness of storing gas and its lowered attractiveness to foreign sources of flexibility reduces the interest in underground storage facilities as a source of flexibility, they are reflected in the price at the storage capacity auctions in the Czech Republic, each additional indirect cost has a higher proportional impact at a low unit price;
- 2) the existing business model of a separate virtual trading point and virtual storage points with the necessity of reserving the transmission capacity from/to storage facilities

- reduces the business and process flexibility and liquidity of trading on the VTP and thus strengthens the role of the VTP as the virtual trading point in the region;
- 3) a low active use of storage capacity limits the trading liquidity on the Czech natural gas market because of the existence of additional costs when using storage facilities for short-term trading opportunities (such as more frequent use of storage facilities for balancing the daily and intraday price fluctuations) and reducing the costs of trading (bid-offer spread) at the virtual trading point;
  - 4) a low demand for storing natural gas in the Czech Republic also leads to a reduction in the security of supply in the country and especially in the long term could increase the probability of failure to ensure the return on investment in underground storage facilities and cause their closure due to prolonged lack of profitability;
  - 5) a possible closure of underground storage facilities could in the future impair the ability of natural gas traders to meet the legislative requirement of ensuring a minimum of 30% of the gas safety standard from underground storage facilities.

## Description of the Proposed Solution

The transmission capacity for gas storage virtual points is not reserved, to store gas in reservoirs in the Czech Republic it is enough to reserve the storage capacity with the respective operator of a gas storage. Therefore, the ERO will not determine the price of transmission for gas storages.

The virtual gas storage point "merges" with the virtual trading point. A trader / clearance entity that brings gas to the Czech Republic or trades on the virtual trading point will thus have direct access to and from a gas storage facility without having to reserve the transmission capacity and therefore without the need for administering additional contracts with the TSO (while not having to have another financial security with the TSO)

Gas storage points will be seen as a part of the entire transmission system, therefore in a similar way as is the virtual trading point, in practice, virtual gas storage points would be found virtually on the VTP. The output from a gas storage facility will always be at the virtual trading point.

Instead of submitting nominations of storage, clearance entities will submit special types of nominations of the commitment to extract and inject, in which the counterparty will always be the respective SSO

In terms of financial security at OTE, the impact on traders will be neutral. The risk of exposure is not changed, the formula for calculating it will however be adjusted according to the nomination of the obligation to extract and inject in place of the nomination of transmission to and from the storage facilities

The need for reconciling the nomination of transmission and storage is removed. It will be important to continue the cooperation of a transmission system operator with a gas storage facility to make sure that the nominated values are actually being injected in or extracted from the storage facility.

## Graphical Representation of the Current and the Proposed Gas Market Models

Graphical comparison of the current gas market model in the Czech Republic based on its Entry-Exit system (Fig. 1), and the proposed model of advanced virtualisation (Fig. 2)

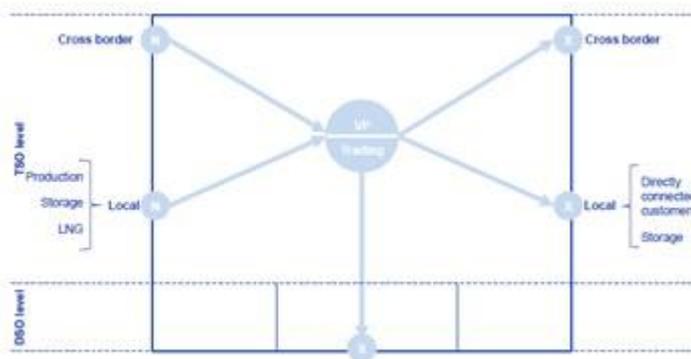


Figure 1: The current Entry-Exit System

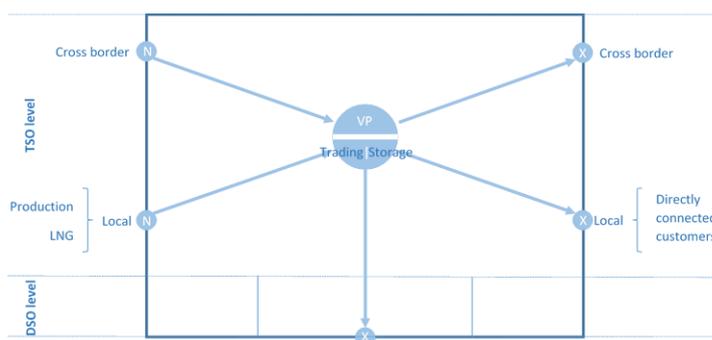


Figure 2: The proposed Entry-Exit System

This model would remain in place, the only modification would be the status of virtual gas storage points which would in the model be shifted to the virtual trading point and there would not be a need to reserve transmission for them.

## Description of a Contractual Model for the Transfer of Gas between the VTP and the Virtual Gas Storage

The legal title to move gas to the virtual trading point (hereinafter referred to as "VTP") through the transmission system is the contract for gas transmission. The same contract for the transmission of gas also serves as a legal title to move gas into the virtual gas storage (hereinafter referred to as "VGS"), which is also part of the VTP according to the proposed model of advanced virtualisation. While entering the Czech Republic, the gas automatically joins the VTP and the fee for transmission services to the country is hence implicitly paid for. The actual transfer of gas to and from the VGS is not regarded as transmission, but only as transfer within the VTP. The point of gas production, which

supplies new gas to the system in a similar way as during import, lies outside of the VTP. As for storage, it is only regarded as temporary storing of gas, which is still part of the system and the VTP. The gas can be traded on the VTP and its new owner can also store it in a storage facility. The right to transfer gas to a gas storage facility within the VTP remains regardless of who is the owner of the gas and whether or not he or she has concluded a contract of transmission with the TSO. In this sense, this proposal presents the need to adjust the gas market rules. The model of gas transfer within the virtual trading point is independent of the TSO's preferred model of relocation of allowed revenues. Details of the actual transaction between a SSO and the TSO would be adjusted in the same way as are now in the so-called interconnection agreement.

## Nomination of Transmission at the Entry and Exit Points of the Transmission System from/to the Gas Storage

According to the proposed option, the nomination of transmission at the entry and exit points of the transmission system from/to a virtual storage would be cancelled, the TSO would however receive a general nomination for the point of virtual gas storage from the OTE or a SSO, depending on the agreement of the market participants (OTE, SSO and TSO). The nomination of storage would therefore be used as the nomination of transmission, and therefore as an instruction to initiate transmission.

## Analysis of the Impact on Existing Contracts to Provide Gas Transmission Services

*Analysis of the impact on existing contracts to provide gas transmission services on the bases of which a clearance entity or a foreign participant reserves the transmission capacity from/to the storage facility and the date of possible implementation of the proposal to the gas market model in the Czech Republic*

According to Section 72 (5) of the Energy Act, the contract to provide gas transmission services obliges the TSO to provide gas transmission services for a gas market participant and the gas market participant agrees to pay for the service of gas transmission for a regulated price. If the Energy Regulatory Office no longer determines the regulated price for reserving capacity to and from a gas storage in its current form, the market participants are by definition not obligated to continue to pay such a price. Any contractual arrangements between the parties established by the contract of transmission concerning the obligation of a market participant to pay a regulated price for reserving capacity to the TSO will from then on lack a legal basis and as such would probably not remain enforceable. It is therefore advisable to cancel that particular provision of the contract of transmission through its Appendix.

## Possible Methods for Covering the Income Loss of the TSO

In principle, we see two options and their combination:

1. Adjustment of input tariffs at border points, whether directly only by increasing the input tariff or by partial comparison of input and output charges at border points, thus by a partial increase of the input tariff and reduction of the output tariff at the same level. Both possible modifications would lead to an increase in revenues collected by the TSO at border points.

2. An alternative or complementary option is to transfer uncollected revenues from transmission to/from the virtual storage to the domestic point. At the domestic point, the increased tariffs of the TSO would then enter into the calculation of tariffs of a DSO.

Both of these methods of collecting revenue would be in line with the idea that this proposal/change is raising liquidity on the domestic market, increasing security of supply of natural gas and ensuring the probability that underground storage facilities will continue to operate, which is an advantage for the Czech market in particular.

Because storage operators currently use only a small amount of the transmission capacity into a virtual storage and the real returns of the TSO from this service are small compared to the total sum of regulated revenues of the TSO, we do not expect major complications from their reallocation. We expect, and this is in fact the aim of this proposal, that the total sum of regulated revenues of the TSO would not change because of this proposal, the methodology of regulation through allowed revenues and correction factors for surpassing the limit of resources or a failure to meet the limit would be maintained.

## Benefits of Advanced Virtualisation

The proposal will have the following benefits:

- 1) increase in attractiveness of storing gas in the Czech Republic, which will lead to its greater commercial exploitation (reservation of storage capacity during the expected lower summer – winter spreads, greater use of short-term opportunities with the removal of a variable fee for transmitted gas volume);
- 2) greater use of storage facilities will lead to an increased trading liquidity on the Czech gas market due to lower costs of pursuing business opportunities (such as more frequent use of reservoirs for balancing the daily and intraday price fluctuations) and thus to reduced costs of trading (bid-offer spread) at the virtual trading point;
- 3) simplification of the Czech gas market business model together with achieving a greater liquidity and likely strengthening the role of the virtual trading point in the region;
- 4) a greater use of storage capacity will also increase the security of supply in the Czech Republic and especially in the long term should reduce the probability of failure to ensure return on investment in underground storage facilities and prevent their possible closure due to prolonged lack of profitability;
- 5) in the future, it will ensure that gas traders will be able to meet the legislative requirement to secure a minimum of 30% of the standard gas supply security limit from underground reservoirs.

## The contribution of advanced virtualisation to increase the use of storage facilities and thus to increase security of gas supplies in the Czech Republic

Declining interest in storing gas in the Czech Republic is reflected in falling prices for storage and also in the fact that in the beginning of the last storage year, i.e. 01/ 04/ 2016, the spare capacity of the Innogy Gas Storage facility was not completely sold. The remaining capacity was sold later for a period of less than one year. The decline of interest in storing gas is therefore perceptible and long term. This fact should be seen primarily in the context of ending long-term storage contracts, which

cover about 70% of the storage capacity available on the Czech market and which are therefore not subject to annual auctions. Czech storage facilities are at the same time in direct competition with facilities in Germany, from which gas is imported to the Czech Republic.

The proposed merging of the VTP and the virtual gas storage could provide an impetus towards an increased interest in storing gas in the Czech Republic. Looking at the total cost of storage of a seasonal product, transmission then constitutes 4%<sup>1</sup> of the total cost. When using storage capacity for short-term trading, transmission then constitutes almost 10%<sup>2</sup> of the price for storage capacity (using the daily transmission capacity to and from a facility). However, an even greater benefit than the actual cost reduction would be to maximally simplify the administration related to utilising a storage facility. A trader could transfer his or her gas from a storage facility to the VTP at any time without any additional costs. This simplification would create a significant added value for the depositor. We can assume that depositors would find more use for the possibilities of the virtual trading point and, therefore, the net financial savings would be even higher than the aforementioned 4%. Short-term transmission products are more expensive than the long-term ones, that is why pursuing current market opportunities is more expensive in proportion to a unit of transmitted gas. At the same time, depositors will not have to pay a principal for the carrier to provide transmission to and from a storage facility, which is an obstacle especially for smaller traders due to limited cash flow and thus an obstacle in using a storage facility. We can therefore expect an increased willingness of traders to use storage capacity (an interest of new depositors from the ranks of smaller traders and an increase in the amount of storage capacity reserved for existing depositors).

Enhancing the value of a storage facility, which would happen thanks to the proposed change of the gas market model, would encourage depositors to use storage facilities. In effect, this would mean higher future interest in storing gas in the Czech Republic and for Czech customers there would be a greater probability that the entire capacity of a storage facility would be sold and used actively. If a state of emergency was declared, the gas in a storage facility on the Czech territory could easily be used for the needs of the Czech gas system and to supply its end customers. The sold and commercially used storage capacity thus has a direct impact on the quality of security of the Czech gas supply.

## The Impact of Advanced Virtualisation on Individual Participants of the Gas Market

We identified the following groups: TSO, SSO, OTE, traders (domestic and foreign), consumers, or (as the case may be) DSO (depending on the selection method of the TSO's gains).

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<sup>1</sup> A calculation based on the seasonal product, i.e. 6 months of injection and 6 months of extraction (simplified), in accordance with the price decision for 2017:

transmission to storage:  $(436.27 * 0.157 * 6^{0.81})$ : 182.5 = 1.60 CZK/MWh  
transmission from storage:  $(94.16 * 0.157 * 6^{0.81})$ : 182.5 + 0.23 = 0.58 CZK/MWh  
total: 2.18 CZK/MWh = 0.08 EUR/MWh (1 EUR = 27 CZK)  
calculated at the rate of annual storage capacity of 53 CZK/MWh

<sup>2</sup> Calculation based on the rates for daily transmission capacity in accordance with pricing decisions for 2017:

transmission to storage:  $(94.16 * 0.01 * 1^{0.85}) + 0.23 = 1.17$  CZK/MWh  
transmission from storage:  $436.27 * 0.01 * 1^{0.85} = 4.36$  CZK/MWh  
total: 1.17 + 4.36 = 5.53 = 0.20 EUR/MWh (1 EUR = 27 CZK) calculated at the rate of annual storage capacity of 53 CZK/MWh

For all identified gas market participants, assess the impacts broken down by individual participants on the gas market. Conduct the CBA and SWOT analysis of the proposal for each gas market participant (within the identified groups).

We analysed the impact on individual groups separately, the SWOT analysis is conducted across all groups because the impact on individual groups is more or less similar.

#### **Impact on the TSO**

For the TSO, the change would impact its relationship with the SSO. The questions of the transfer of gas and the flow of information regarding the nomination of commitments of extraction and injection at the virtual trading point would have to be adjusted. Specifically, the SSO would inform the TSO about reservations, nominations and re-nominations of extraction and injection of depositors, but collectively for the final position of the individual SSO. At the same time, it would be necessary to adjust the relationship between the TSO and the SSO in terms of taking possible shutdowns of the TSO into account in regards to the SSO – depositor relationship.

As the proposal is designed as revenue-neutral for the TSO, there should be no negative or positive impact on the revenue of the TSO. We assume that a hypothetical loss of revenues from transmission to/from the virtual storage will be replaced with the same amount of revenues from entry at the border point or an increase in revenues at the domestic point or their combination, as is described above.

#### **Impact on the SSO**

For each SSO, the proposed change to advanced virtualisation of the access to a UGS would bring new responsibilities towards the TSO and the OTE (see the relevant subsections) and would adjust the administration of nomination and re-nomination of individual depositors, because of their final aggregation towards the TSO. In principle, the only change in the relationship of a SSO with a trader/depositor will be in adjusting the delivery point and recognizing related reasons to limit available capacity (interruption due to reasons of the TSO).

#### **Impact on the OTE**

The proposed change will have a minimal impact on the OTE due to the changes required in the system.

The virtual trading point (VTP) would become simultaneously an input and an output point of the virtual gas storage. The change would affect only traders who have a contract to store gas with Czech storage operators. At present, the OTE requires financial security of the traders' exit position – e.g. supplies for end customers, exit at the borders, injection into the UGS and a commitment to deliver gas. Opposite directions, i.e. the obligation to move gas to the VTP and in some cases even part of the transmission nomination to the main transmission station / gas storage entry, in turn reduce the overall exposure.

After the implementation of advanced virtualisation, it would be necessary to introduce special types of nomination of the virtual trading point, called for example "obligation to extract" and "obligation to inject", where the counterparty would always be a SSO and the OTE would demand the same financial security for these nominations and re-nominations of commitments and would work with the risk of exposure in the same way as is currently working with the nominations and re-nominations of transmission for the virtual gas storage points. The impact would therefore be neutral for the OTE and the traders.

### **Impact on traders (domestic)**

Traders who store gas in the Czech Republic will be substantially affected by the proposed changes. The newly proposed scheme will enable traders to utilise their storage contracts more effectively. UGS are currently mostly used by traders as tools for compensating the difference in consumer demands for gas in summer and winter, so-called utilising the "internal" storage value (intrinsic value), and at the same time as tools for ensuring the standard gas supply limit, as is demanded by the Czech legislation. Through the advanced virtualisation of a UGS, the space for using a UGS for its "external" value (extrinsic value) would open for traders. I.e. the use of short-term opportunities during unexpected anomalies on the gas market, including interday or intraday balancing and when managing a specific customer portfolio of a clearance entity.

The aim of the new model is an overall simplification of the activities of traders on the market in that a trader will only submit one nomination for a SSO, which the SSO will then communicate to the TSO. The change would affect currently valid contracts for transmission which traders have arranged with the TSO. In this case, it would be factually impossible to meet the conditions of these contracts due to the change in the market, which would make the contracts ineffective and should be a cause for their abolition. If such contracts are being fulfilled and lead to the subsequent payment under regulated prices, there is no financial damage for the TSO because the missing revenues will be allocated adequately to another point of the system.

Furthermore, traders who store gas in the Czech Republic and at the same time have no other transmission contracts would not have to enter into any contract with the TSO, a contract with a SSO would suffice. The new measure would eliminate the financial security for transmission to and from a virtual storage required by the TSO.

It would also be necessary to adjust the newly established aspects of the commercial relationship between traders and a SSO. E.g. traders will have to agree to cuts in available power for legal reasons (filed and confirmed nominations) provided by the SSO, without incurring a problem with the SSO. Especially in cases of temporary shutdowns caused by the TSO due to scheduled downtime, local failure or force majeure. This is nothing new for traders. When concluding a contract between traders it is a standard to include the possibility of non-delivery, or more precisely the inability to perform due to reasons caused by the respective TSOs. On the other hand, traders/depositors don't need to negotiate the transmission capacity, so it can be expected that they will adopt this change positively.

The compensation of revenues of the TSO and its form would also be reflected in the activities of traders, therefore the structure and cost of delivery to end customers would be different (price reduction of storage use, increased price at border points or the domestic point, possibly in combination).

### **Impact on traders (foreign)**

Foreign market participants using underground storage facilities in the Czech Republic would in the proposed model have to become a clearance entity according to the Energy Act due to the evaluation of imbalances of the OTE on the VTP. This would bring about the need to conclude a contract with the OTE for settling the imbalances. However, if there are such traders, we assume that there is a very limited number of them.

### **Impact on the DSO**

We do not expect a significant impact on the DSO. No part of the proposed adjustment of the model relates to the roles and processes of a DSO. DSO's tariffs are fully regulated and the system of cash

flow from the point of selection to the point where costs are caused operates successfully. Only in the event that TSO's uncollected revenues for new transmission capacity to/from the virtual storage would be fully or partially allocated to the domestic point, for a DSO it would be reflected in the increase of the TSO's revenue allocated to the selection through a DSO. A DSO could therefore be at a greater volume risk due to the future tariff planning based in relation to expected natural gas consumption relative to its actual consumption.

### **Impact on consumers**

In the current market environment, most traders calculate the cost of structuring the supply to consumers, thus the cost of a UGS, based on the market forward curves for natural gas. The impact on the cost of structuring for individually valued consumers primarily depends on the current development of commodity prices more than on actual costs of a UGS.

We operate under the assumption that the intention is to cancel reservation and charges for transmission capacity from/to virtual storage in a neutral way for the TSO. From this point of view, this is not an abolition of these revenues of the TSO and costs of the carrier, but their conversion into other forms, either into higher entry tariffs at the border points, to higher transmission costs at the domestic point (in the way they enter the DSO tariffs) or their combination. Thus, traders/suppliers will still be subjected to these costs – either in the form of slightly more expensive imports to the Czech Republic, slightly more expensive output at the domestic point, or their combination. These costs then remain still allocated to domestic end customers and from this point of view, the impact should be again neutral.

End customers would be positively influenced by the VTP's expected increase in liquidity caused by the elimination of variable costs and lowering of fixed costs for using the virtual storage due to the reduction of the cost of trading and system balancing thanks to a more active use of a storage. Also, an easier and cheaper reservation and use of storage facilities in the Czech Republic compared to imports of flexibility from abroad creates a new opportunity.

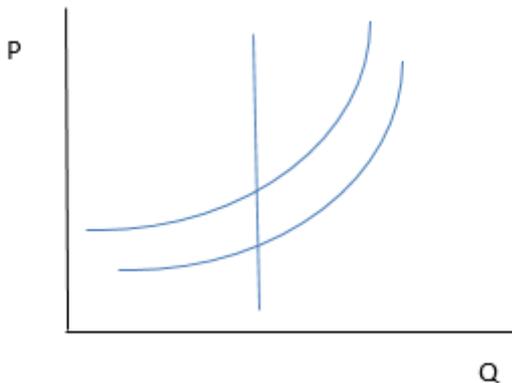
It is also important to realize that we are talking about a reallocation of TSO's revenues of around 100 mil. CZK of the total volume of about 1.9 billion CZK, so only slightly less than 5% of the transmission costs. If we base the data on knowledge that transmission contributes to the end price of gas by about 1%, we are talking here only about the reallocation (not an increase) of 0.05% of the final price for consumers. The direct impact on consumers would thus be in practice imperceptible and indistinguishable from other year-to-year factors, such as the K-factor, the effects of inflation etc.

The previous section mentioned only the price aspect. In this context, it is much more important to talk about stability and security. The intended purpose of advanced virtualisation aims to attract the UGS and prevent their possible attenuation or liquidation. It is therefore entirely in the interest of consumers to take steps that lead to ensuring a stable and secure supply even for the time when expiring long-term contracts for storage will terminate.

## **An Analysis of the Presumed Increase in Liquidity at the VTP and of the Subsequent Positive Price Effect for End Customers**

The short-term gas market on the OTE has existed since 2010, and after six years of operation, it can be concluded that the current model of the gas market has already reached its potential to create greater liquidity for the OTE. The expected increase in supply on the intraday gas market resulting

from the proposed advanced virtualisation is undoubtedly a positive step, the question therefore is, how much of a positive impact it will have. To simplify matters, in the following chart we assume zero elasticity of demand:



The economic theory of supply and demand at zero elasticity of demand and higher supply shows that increasing the supply of natural gas will reduce prices in the same extent.

### Creating liquidity

The proposed adjustment to the gas market model which combines the virtual gas storage with the virtual trading point is a change that will increase the willingness of traders to actively use the available storage capacity on a daily basis, i.e. up to 56 million m<sup>3</sup>/day (sum of the maximum daily capacity of underground gas storage in the Czech Republic) and allow their immediate delivery directly to the virtual trading point. The current daily traded quantity on the OTE is around 20 million m<sup>3</sup>/day. Thus, the daily traded quantity can potentially increase by as much as 180%. And, this is the gas that is available in the country.

The proposal also removes partial financial and administrative costs for the transfer of gas between the VTP and a gas storage. Traders can benefit from the following advantages:

- cost savings min. of 1%<sup>3</sup> of gas prices at the VTP
- time savings of related administration (to determine the available transmission capacity, purchase of transmission capacity, nomination for the TSO and the SSO, recording requests to the internal system, follow-up billing and payment) in total approx. 0.5 hours a day in the winter months

These savings allow traders to do business with profit and at a lower price difference (now the price difference must be more than 1%). It is a noticeable benefit as the price of gas at the OTE typically oscillates daily in the range between 0.10 and 0.60 EUR, while the cost of transmission to and from the reservoir is 0.20<sup>1</sup> EUR. Removing these costs for traders would thus significantly reduce the threshold for trading on the OTE and in this way release a large volume of gas in storage for trading on the OTE.

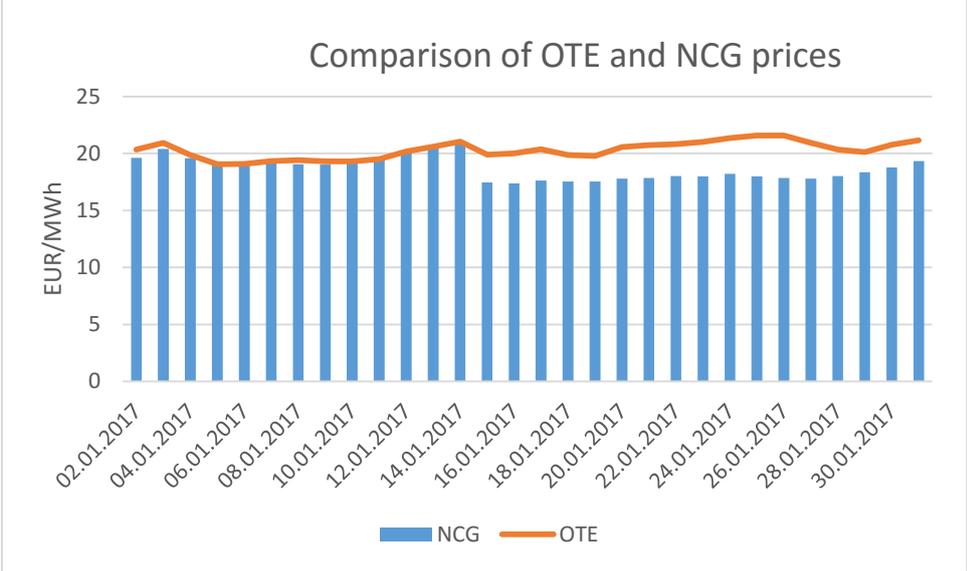
### The positive effect for customers

Higher volumes of daily traded quantity allow executing trades with higher gas volumes and gaining revenues even at low margins. Increased liquidity can therefore attract new players or inspire the existing ones to undertake larger transactions on the OTE. Due to the lower margins on the wholesale market the customer profits by lower end prices. From a simple comparison of more liquid trading points in the EU, we can clearly see that platforms on which trades are executed with higher

<sup>3</sup> Calculation based on the rates for daily transmission capacity in accordance with pricing decisions for 2017:

transmission to storage:  $(94.16 * 0.01 * 1^{0.85}) + 0.23 = 1.1716$  CZK/MWh  
transmission from storage:  $436.27 * 0.01 * 1^{0.85} = 4.3627$  CZK/MWh  
total:  $1.1716 + 4.3627 = 5.5343 = 0.204974$  EUR/MWh (1 EUR = 27 CZK)

gas volumes offer a lower price for the commodity (even when adjusted for the cost of transmission to the Czech Republic). For illustration, we compared the prices of gas on the OTE and the NCG (Germany) in January 2017. A total of 149 TWh of gas was traded on the NCG in January 2017, while on the OTE it was 804 GWh during the same period. The average difference between the price at the NCG and the OTE in this period amounted to 1.61 EUR/MWh.



Increased liquidity on the OTE will also manifest itself in an easier and cheaper access to budget flexibility. This inexpensive flexibility will help traders to compensate for the differences in expected consumption and possibly also for system balancing of the deviation. The end customer will again benefit from these lower costs because in a competitive environment the lower costs for traders will be reflected in the prices for end customers.

Allowing easier transfer of gas from a storage to the VTP will also reduce price peaks at the OTE. Thanks to an increased willingness of traders to respond and a lower amount of related administration, at higher prices on the OTE, the depositor can deliver the gas to the OTE in an amount that is needed to restore the balance of supply and demand, leading to lower prices.

Finally, a higher liquidity at the OTE will simplify the purchase of the gas for traders – they will not have to buy in Germany but directly at the VTP. This fact will greatly simplify business in gas supply for end consumers. It will significantly reduce not only the transmission costs but also the capital required for transmission and the professional and language skills required for the purchase of gas abroad. It can be assumed that this significant reduction of barriers obstructing the entry into business on the gas market will lead to the emergence of new suppliers and thus to a greater competition on the gas suppliers market for end customers. More liquid VTP may also increase the interest of foreign traders to trade and settle their positions on the VTP and thus will further strengthen its liquidity.

## Cost-benefit Analysis of Advanced Virtualisation for Individual Gas Market Participants

### TSO, OTE, DSO

Quantitative analysis of the impact on the TSO, OTE, DSO is simple for this proposal. The expected financial impact on these market participants is in principle of the draft neutral. Putting the proposal into practice will require a modification of the OTE system, associated with the implementation of a

new type of nomination, for which a one-time investment will be needed. The change will also reflect in the adjustment of financial security patterns and in business conditions of the OTE.

### **SSO**

From the perspective of the SSO, this would be a positive change which would reduce incidental costs associated with storage and thus it would lower the barrier for storage. As a consequence, growing willingness of traders/storage operators to use storage services in the Czech Republic and to pay for them can be expected. Lower total cost of storage could subsequently indirectly reflect in a higher demand and more active participation in auctions. We expect that the higher demand will have a positive impact on the SSO in the future.

### **Traders**

From the viewpoint of traders/storage operators, the storage on an annual basis as well as the storage on a daily opportunity cost basis will become cheaper, the obligation to reserve transmission capacity to/from the storage will be removed as well as the obligation to pay a fixed rate or a rate per transported volume. This should result in higher liquidity at the VTP, thus in reducing the trading costs, the business and system balance costs and arbitrage trading strategies using the virtual storage costs. On the contrary, according to the chosen alternative of maintaining regulated revenues of the TSO, the entry of natural gas from abroad and/ or its exit to end customers may become relatively more expensive which would reflect in the DSO prices for end customers and traders would not be directly touched.

The impact on individual traders will therefore be highly individual, depending on the type of conducted transactions and the type of customer portfolio, and it is difficult to characterise it in general. It should lead to more attractive use of storage facilities in the Czech Republic compared with the import of flexibility from abroad.

By implementing the proposed alternative for the next season, traders holding existing storage contracts would spare additional storage costs related to the removal of the obligatory reservation for transmission capacity from/to a virtual storage. However, they would of course have to face compensating payments ensuring the preservation of regulated revenues of the TSO (e.g. the intended increase in input border rates). For new storage contracts, entered into after the implementation of the proposed changes, the evaluation of the financial impact of the introduced change would also depend on the projection of the new situation into the level of the auction prices for the reservation of storage capacity.

The method of selecting compensating revenues of the TSO (either revenues from transporting through the input border rates and/or from the exit at the domestic point) would affect the distribution of direct costs between the trader and the consumer. While a trader transporting from abroad would directly bear costs resulting from the increase in the price of the transmission at border points, the consumer would be directly subject to the change of DSO rates, including a possible increase in the TSO output rate at the domestic point.

However, it is important to note that we are still in the whole talking about the reallocation of only about 5% of regulated revenues of the TSO and traders will, if necessary, have the option to reflect the modified cost structure in the products offered to other traders or to end customers.

### **Consumers**

For the quantification from a consumer viewpoint, the size of the redistribution of the TSO revenues was between individual points estimated at about 5% of all regulated transportation revenues, which is about 0.05% of the final price for natural gas. For costumers, this implies the reallocation of costs

associated with storage to costs associated with consumption (depending on the DSO reallocation) or import, not about the additional choice. For this reason, in practice, this will be an unnoticeable item dissolved among other factors (such as the K-factor or inflation). Consumers could be directly affected by selecting the compensation for the revenues of the TSO by increasing the TSO output rate at the domestic point which would be reflected in DSO rates that are charged directly to consumers. However, in case of effective functioning of the market, this option would lead to a partial reduction in direct costs of traders, which should, in a competitive environment, reflect in lower commodity prices of supplies offered to consumers.

Increased VTP liquidity, lower business and system balancing costs, increased security of supplies resulting from increased use of virtual storage in the Czech Republic and increased probability of maintaining the current capacity of the storage facilities in the Czech Republic should be of benefit to customers in the future.

## Benefits for Users of Domestic Point

Benefits for users of domestic point:

- greater security of gas supply in emergencies
- higher OTE liquidity
- potentially stronger competition in the gas market for end customers, if the OTE liquidity increases to the point that traders would be able to buy gas for their end customers directly the VTP instead of in Germany. The knowledge and capital barrier to the entry into the gas market for suppliers would thus be significantly reduced
- potentially lower price for the commodity in the medium term in case that the OTE liquidity increases to an extent which will attract large foreign subjects that are able to optimise the portfolio and reduce their costs more than other traders and would thus be able to offer a lower price and at the same time generate income from a higher volume of transactions
- given the important role of the transmission system in the Czech Republic, higher liquidity at the VTP could, from the perspective of the gas industry in Central and Eastern Europe, in the longer term also lead to growing importance of this point, where the wiring flexibility at the VTP would directly lead to HUB liquidity
- potentially greater stability in the management of the gas system in which market participants could in a better and cheaper way balance their own variations and a smaller residual deviation would impact the TSO. For stability of the gas system, it is better if the entity is able to balance its variations through physical points (storages) than to stay in the deviation and then cause additional costs in the management system to the TSO
- reducing price peaks at the OTE due to the lower opportunity costs, i.e. without the need to reserve the transportation and pay short-term rates for it and a faster reaction time of depositors when transporting gas from the storage and its trading at the OTE – gas is available immediately at the VTP

## SWOT Analysis of Advanced Virtualisation

<p><b>Strengths:</b></p> <ul style="list-style-type: none"> <li>• Simple product for storage capacity users. The number of contracts necessary for the use of storage capacity would decrease, a user not using export/ import would no longer need a contract with the TSO.</li> <li>• Storage operators would pay lower costs for the use of the storage facilities, since they would not have to provide financial backing of trader/storage operator to the TSO for the capacity to/from the virtual storage, because for this capacity, a contract with the TSO would not be necessary. Such cost reduction should lead to increased interest in storage and increased liquidity at the VTP.</li> <li>• Removing a fixed payment for transportation to/from UGS, storage users would pay a lower price for storage services and opportunity costs would be reduced compared with flexibility import from abroad.</li> <li>• Removing the unit payment for injected/extracted amount would reduce the opportunity costs for the use of storage and the liquidity at the VTP would increase. Therefore, the trading costs at the VTP as well as business and system balancing costs would decrease.</li> <li>• Ultimately, the natural gas storage in the Czech Republic would become more attractive.</li> <li>• Changing the model would lead to a simpler trade and it would also help to stabilise the conditions for the activities of the storage operators.</li> <li>• Increasing liquidity at the VTP, increased use of storage facilities in the Czech Republic as a source of flexibility and a higher probability of maintaining the existing storage capacity would lead to increased security of gas supply in the Czech Republic.</li> </ul>	<p><b>Weaknesses:</b></p> <ul style="list-style-type: none"> <li>• External users of the virtual storage, still unregistered with the OTE, will need to be subject to clearing.</li> <li>• The necessity to make changes to ensure the conditions for the functioning of the modified model: <ul style="list-style-type: none"> <li>&gt; The current definition of nomination and allocation to the VTP is not in accordance with a deviation of the virtual storage point. The requirement to introduce an "extracting obligation" (entry) and "injection obligation" (exit) as an alternative form to the obligation to supply/offtake at the virtual trading point.</li> <li>&gt; The necessity to modify/update the contractual relations between the TSO and the SSO, between the SSO and the storage operators, the cancellation of the relationship of transportation from/to virtual storage between the TSO and the storage operator and the emergence of a new relationship between foreign storage operators and the OTE, for those who are still not registered.</li> <li>&gt; All interested parties (users, SSO, OTE, TSO) would have to make necessary adjustments in information systems due to changes in the market model (delivery points) and also due to the new setting of identifiers. For example, each market participant who would like to be nominated for an UGS virtual point (regardless of whether it would be a user is or not) would have to be clearly identified in the OTE, TSO and SSO systems.</li> <li>&gt; Another consequence would be the</li> </ul> </li> </ul>
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<ul style="list-style-type: none"> <li>• After evaluating the SSO, the OTE informs the TSO about a net and aggregated position. Subsequently, the SSO and TSO dispatching centres must, in close cooperation, handle operational issues (pressures, delivery points, etc.) as is currently the case.</li> <li>• Although a deviation between the nominations and the actual allocations could occur (mainly due to restrictions on the CMS or the TSO part) and although the traders/storage operators would still have the obligation to maintain appropriate financial security to the OTE, there would not be a negative impact on the risk management system of the OTE.</li> <li>• The model successfully operates abroad, for example in Denmark, as described below in the foreign experience section.</li> </ul>	<p>need for a new sub-setting of communication processes User x SSO x OTE x TSO.</p> <p>&gt; A user of storage capacity would be nominated only to the SSO (nomination to the TSO would not be possible), these nominations would have to bear a unique identifier of the contract and the gas supplier. Since there would probably be more contracts and more gas suppliers, the identifier would have to uniquely assign gas to a storage contract.</p>
<p>Opportunities:</p> <ul style="list-style-type: none"> <li>• The shift from UGS to the VTP could offer the possibility of expanding the products and simplify trading of existing products between traders / storage operators at the VTP (while retaining powers of the SSO to refuse a trade due to the lack of security), for example: <ul style="list-style-type: none"> <li>• Higher short-term use of the UGS, associated with higher sales of short-term injection and extraction operations.</li> <li>• Storage gas trading at the VTP level.</li> <li>• Storage capacity trading (bundle), or individual item trading.</li> <li>• Storage capacity trading (bundle) simultaneously with volume.</li> <li>• Temporary interruption of capacity or trading when there are restrictions due to shut-downs of equipment with performance without volume and without gas, generally the opportunity to expand portfolio of services for the SSO.</li> </ul> </li> </ul>	<p>Threats:</p>

## Proposal Risk Assessment

We do not see any real risks, the proposal is quite simple to implement and does not have any negative impact, except for the need for registration of foreign storage operators yet not registered with the OTE.

## Evaluation of the Market with Storage Capacity in the EU and a Description of the Regulatory Regimes in Countries Where a Solution Similar to the Proposed One Is Applied

A similar model as the one proposed by us is used in Denmark:

### **The Danish business system consists of the following parts:**

- 3 entry/exit points (Nybro Ellund and Dragør)
- 1 entry point for biogas (BNG)
- 1 domestic exit zone (including three distribution zones)
- 2 virtual trading points (GTF and ETF or NPTF)
  - GTF – Primarily allows gas trading between traders/ importers.
  - ETF or NPTF – the Gaspoint Nordic exchange, where spot and forward products are traded. The point must always be balanced, therefore there is a rule that the nomination must be the same on both sides. Unlike at the GTF, where the rule applies that the smaller of the entered values is confirmed.
- 1 virtual storage created by merging two physical storage facilities (Stenlille and Lille Torup)

### **Business connection to the gas system**

Virtual gas storage (VGS) is at the level of other entry exit/points (exit from the transmission system, a virtual trading point, entry into the distribution system) and is included in a zone which covers entire Denmark as a whole. Transport charges are paid only when entering the zone, transportation between the virtual points is included in the price of entry.

### **Allocation of freight rates to individual points**

Under the act on gas supplies, individual network operators (TSO, DSO, LNG, etc.) are responsible for determining and calculating rates and other items prices. Therefore, the NRA does not issue pricing decisions in the same way as is customary in the Czech Republic. The Danish NRA only monitors the level of rates and according to the act on gas supplies it may, in case of disagreement with the published price lists of operators, issue their own decision. On its website, the NRA shows the TSO allocation model, which analyses individual transportation points and determines their cost efficiency. In this case, the transportation points include the border points, the domestic exit point and entry point for biogas. Determining the freight rates does not include the virtual gas storage points. Based on this, rates for the use of individual points for TSO are additionally calculated by the TSO itself. The basic prerequisite for such a specified rate system was the demand for flexible and efficient use of the whole system. The entire Danish transmission system was from the beginning designed as a logical unit containing not only pipelines, compressors, etc., but also underground gas storage. Therefore, we believe this is the primary and the main reason for the lack of special transportation rate for the UGS, as this transportation rate of gas would be charged twice. In the first case, through transportation to/from the border points and in the second case through transportation to/from the underground storage.

**Information sources:**

Pricing (the Act on Gas supplies, Chapter 7):

<https://www.retsinformation.dk/forms/R0710.aspx?id=183812#id378817ec-6480-448c-955a-984c9bdc51f2>

TSO prices: <http://www.energinet.dk/EN/GAS/Produkter-og-handel/transmissionstarif-prisblad/Sider/default.aspx>

NRA decision: <http://energitilsynet.dk/gas/afgoerelser/>

## Assessment of the Proposal with Regard to Stability and Long-term Sustainability of Regulatory Principles

*Assessment of the proposal with regard to the stability and long-term sustainability of regulatory principles, balance of control in terms of impact on individual market participants, objectivity and transparency of the setting of regulatory principles and inputs, continuity of the current legislation of the Czech Republic and the European Union and their current changes and especially regulatory predictability for individual electricity and gas market subjects*

Given that the volume of Czech gas storage is partially used to ensure a secure supply for customers in the Czech Republic (and the decree on a state of emergency regards it in a such way), a major task of the state should thus be to create the conditions for a continued active use of the gas storage units in the Czech Republic and to prevent their shut-down due to their unattractiveness. The price of storage capacity very precisely reflects the already very small summer - winter spreads on the market, so any surcharge in the form of a transmission fee either in the form of a fixed rate for a capacity or fee for transported quantity reduces the attractiveness of storing as such. Little interest of traders / storage operators in the reservation and use of storage facilities can cause, through low rates for storage offered by them in auctions, a lack of profitability to operate the storage facilities to storage operators (examples of already closed down storages are stated above).

Regarding the revenues of the TSO, they are in terms of regulation ensured by the overall obtained funds from all points of the transmission system where transmission capacity is reserved. Should revenues from one of the points where revenues are partially collected be cancelled, it will not have a significant impact on the TSO, since the revenues will be collected at another point of the transmission system.

## Impact on Security Standards of Supplies, Preventive Actions Plan and Emergency Plan

The need to reserve the transmission capacity for virtual gas storage points will be removed but the decree declaring a state of emergency will not have to be modified, because the demonstration of the transmission capacity to and from virtual storage is not required. The price of the access to the gas storage in the Czech Republic and its use will be reduced and therefore, the price of the safety service standard will be reduced as well, as most traders ensure the BSD by storing in virtual storages in the Czech Republic. There will be no further impact on the mechanism of the setting of safety standards.

Beyond these observations, we expect that the easier and cheaper access to storage facilities will lead to a greater use of storage facilities in the Czech Republic at the expense of low-priced imports of flexibility from foreign markets and thus help to increase security of supply and to prevent restrictive conditions by increased commercialisation and by filling the storage facilities in the country. Further impact on the Preventive Action Plan and Emergency Plan is not anticipated.

## Assessment of the Proposal in Terms of the Capacity Situation in Northern Moravia

The proposal will not affect the capacity situation in the region of northern Moravia, since there will be no qualitative change in the relationship between TSO / SSO / network users. The same level of coordination between TSO, SSO or DSO dispatching centres will still be necessary.

## Assessment of the Impact of the Proposal on Entities That Are Part of the Same Concern

In the Czech Republic, there are currently four operators of underground storages, each of which is connected, within the concern or otherwise, with at least one trading company (Innogy /RWE, MND, SPP and Gazprom). Since we assume that, if implemented, the proposed changes concerning the merging of the virtual trading point and virtual points of gas storage will affect all storage operators and all storage / transmission contracts, it would also affect the concern storage operators in storages with historical contracts.

Efforts to introduce this measure are not motivated by a positive impact on existing storage operators, the cost reduction will apply to all storage operators, both current and future. RWE Supply & Trading, which is currently the largest storage operator in the Czech Republic, is also the largest importer of gas into the Czech Republic. Thus, if the relocation of revenues to the input rate in the Czech Republic option was chosen, the impact on RTS would primarily reflect in a change of the cost structure.

The purpose of setting up a new model is to ensure greater utilisation of storages, higher market liquidity, greater supply security and lower likelihood of the closure of underground storages in the future.

## Evaluation of Compliance of the Proposal with the Third Energy Package, in Particular with Article 13 of Regulation (EC) No. 715/2009

In principle, the advanced virtualisation will bring no changes to the existing model of the gas market, which for business needs simplifies processes and gas flows from the physical world. Thus, it is virtual in many respects. At present, the depositor pays the carrier for transporting from the gas tank to the virtual trading point, regardless of whether the gas is extracted into the transmission or distribution system. The carrier is thus automatically remunerated regardless of its real costs, which is zero in the case of extraction from the storage to the distribution system. Similarly, at present, traders pay a price set by the pricing decision for transmission (either to/from the storage or to/from abroad) regardless of whether there are any real costs related to the gas transmission or not – for example, in the case of a counter flow, which is "subtracted" from the real flow of gas while only the final amount is transported. The current business model of the gas market in the Czech Republic and the EU is based on a simplification of a technical flow and its aim is to facilitate the trade in gas. It can therefore be assumed that without the existence of this simplification the trading would become so unpredictable in terms of cost, complex, administratively and challenging and time-consuming that it would form a barrier to entry.

The third energy package specifies the rates for the access to the networks in Article 13 of the Regulation 715/2009 on conditions for the access to the gas transmission system. It is based on the following principles:

- 1) rates should be based on actual costs, should be transparent and non-discriminatory

- 2) rates or methodologies for their determination should facilitate efficient gas trade and competition
- 3) rates are intended to prevent cross-subsidisation between network users
- 4) rates are set separately for every entry or exit point into the transmission system
- 5) network fees are not calculated on the basis of contract routes
- 6) rates for network access shall not restrict the market liquidity nor distort the trade across borders

These principles codify the detachment from physical flows of trade and thus also the loss of direct links between the real costs and the rates for transportation. At the same time, the principles put the competition and a functioning liquid market over the accurate accounting of costs associated with the use of a specific pipeline at a specific time. This shows the basic characteristic of the simplified business model of the gas market, which is the implicit fact that each market participant is in practice sometimes in advantage compared to the actual costs of the service transmission and the other way around at other times. All users of the system pay the same charge, or the final price at a public auction and have the same access to its use, including the use of storage facilities. The proposal of advanced virtualisation is based on the same principles and therefore it does not lead to inadequate cross-financing.

Determination of national rates for the use of networks may be motivated by the creation of a functioning liquid market and for this purpose the rates can be adjusted accordingly. As an example, we can use the setting of rates for transportation to and from the Czech Republic, while the entry to the Czech Republic is several times cheaper than the exit and the system thus specifically provides an incentive for gas import to the Czech Republic in order to promote competition and a liquid market. A similar principle would be applied in the case of a proposal of advanced virtualisation in order to support liquidity and short-term market in the Czech Republic

In this regard, it is also necessary to evaluate costs for gas transmission between gas storage facilities and transmission system from depositors to DSOs. To answer this question, it is necessary to comprehensively assess the functioning of the entire Czech gas system. Czech gas infrastructure was built as a whole, including gas storage facilities. The main system benefits brought by storage facilities are:

- a) seasonal flexibility, i.e. a gas storage at the point of consumption for the period of high consumption, typically in winter, which cannot be transported through the transportation infrastructure at one time
- b) short-term flexibility, i.e. a gas storage at the point of consumption to meet the unexpected demand peaks
- c) efficiency of the transmission network – gas facilities allow efficient design of the transmission infrastructure and thus lower investment and operational costs for the TSO (a small transmission tube, with a storage at the end, which is able to supply gas into the distribution system at a time of high consumption can be built)

Gas storage facilities bring all these benefits to the system without being evaluated for it. If these benefits were evaluated, these costs would be, in terms of the regulation, costs of running national transmission, which is currently covered, inter alia through the domestic point. The transfer of partial regulated revenues of the TSO to the domestic point is therefore legitimate and fully consistent with the principles of Czech and European regulation of the gas industry. Therefore, an unreasonable cross-financing within the meaning of the Third Energy Package is not the case here. Moreover, the cost for the drive of compressor stations represent a small amount that will be in the annual

adjustment of distribution rates significantly overshadowed by a correction factor governing the regulated revenues of distribution companies.

## Evaluation of the Compliance of the Proposal and the Current Legislation and NC TAR

The approved network code for transmission tariffs (NC TAR) in connection with transmission to/from the gas storage specifies that transmission costs can be at most 50% of the border transmission tariff. Legislation therefore explicitly allows not to charge the costs for gas transmission into and out of the gas storage. The related approved network code for the allocation of transmission capacities (NC CAM) does not state the transmission capacity to gas storage facilities, from which one can infer that the virtualisation of the transmission capacity is consistent with the TAR NC and NC CAM.

## Assessment of the Proposal in the Context of Requirements Resulting from the REMIT

In case that the reservation for transmission capacity to/ from virtual storage is terminated, there will be no need to continue to report these capacity transactions, the obligation to report the contract on gas storage will not be affected. Any other impact is not anticipated.

## Evaluation of Price Adjustments for the Transmission Capacity to /from the Virtual Storage Valid from 01/01/2015

*Evaluation of the reduction in the price for reserved transmission capacity at the entry point of the virtual gas storage 727.12 CZK/MWh/day to 436.27 CZK/MWh/day, when the charges for reserved transmission capacity at the border entry point were increased from 727.12 CZK/MWh/day to 753.46 CZK/MWh/day, with effect from 2015. Assessing the impact of this measure on the gas market in the Czech Republic, especially on the market with storage capacity*

Reducing the transmission tariff at the entry point of the virtual storage reduced the costs for the reservation for the storage capacity. At present, however, the tendency of storage operators to reduce the amount of reserved capacity at the entry to the storage deepens. Storage facilities are used mainly seasonally and the output capacity is reserved only ad hoc rather than on a long-term mining basis. From this viewpoint, the adjustment of fixed capacitive prices affects the storage operator. Moreover, prices for transmission to and from the storage were the lowest at a time when the market experienced nervousness about supplies from Russia via Ukraine due to delayed payments for gas for Ukraine's own consumption. This had a significant impact on the behaviour of traders. Generally, the decrease in the costs of transmission from the underground gas storage was not significant enough to have an observable impact on the market.

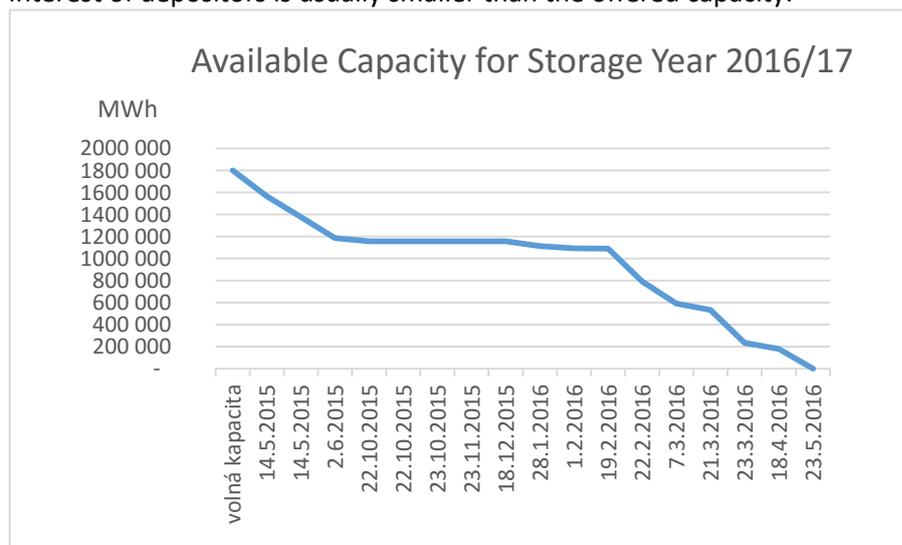
We believe a change in input fixed prices at border points is marginal from the viewpoint of traders and storage operators (variation of around 3.6% of the annual tariff price) and that seasonal influences, influences of the market prices abroad, the local business strategy of major gas subjects, the utilisation rate of the reserved annual/monthly capacity etc. have a greater impact on the price conditions of the gas market in the Czech Republic.

## Functioning of the Proposal in the Context of the Cross-border Use of Gas Storage

The present proposal of advanced virtualisation is compatible with the cross-border use of gas storage implementation proposal. The cross-border use of gas storage proposal has its own specifics, which are not the subject of this document and the issue of its implementation should be treated separately.

## Ensuring Open Access to Gas Storage, Available Capacities and Competitive Prices for Storage

The access to gas storage facilities remains unchanged, any spare capacity will thus still be offered in public auctions in accordance with rules laid down by the ERO in the decree of the Gas Market Rules. Given that the capacity is typically sold for a period of one to two years, there is a capacity of 300 to 350 million m<sup>3</sup> of gas released each year to buy. This primary capacity is usually available until March, including the period just before the beginning of the storage year, which begins in April. Last year, the free storage capacity remained available until May, i.e. after the beginning of the storage year. All information about organised auctions is published in advance and any market participant, even a foreign entity, may take part. The final price in auctions has been steadily decreasing and it is competitive with the price of storage for example in Germany. The table below clearly shows that the interest of depositors is usually smaller than the offered capacity.



The red line shows the beginning of the storage year for which the capacity is sold. The graph shows that the storage capacity for the year 2016/17 was available even after the beginning of the storage year.

*An overview of the demand for an annual capacity for the storage year 2016/2017 and 2017/2018 at the innogy Gas Storage, s.r.o. auctions (detailed information is available on the website innogy Gas Storage):*

Date of auction	Sold capacity	Storage year
14/ 05/ 2015	55%	2016/ 2017
14/ 05/ 2015	71.5%	2016/ 2017
02/ 06/ 2015	100%	2016/ 2017
22/ 10/ 2015	9.5%	2016/ 2017
22/ 10/ 2015	0%	2016/ 2017
23/ 10/ 2015	0%	2016/ 2017
23/ 11/ 2015	0%	2016/ 2017

18/ 12/ 2015	0%	2016/ 2017
28/ 01/2016	8.1%	2016/ 2017
01/ 02/ 2016	5.4%	2016/ 2017
19/ 02/ 2016	1.5%	2016/ 2017
22/ 02/ 2016	100%	2016/ 2017
07/ 03/ 2016	50%	2016/ 2017
21/ 03/ 2016	70%	2016/ 2017
23/ 03/ 2016	91%	2016/ 2017
18/ 04/ 2016	100%	2016/ 2017
23/ 05/ 2016	100%	2016/ 2017

Date of auction	Sold capacity	Storage year
25/ 10/ 2016	47%	2017/ 2018
21/ 12/ 2016	100%	2017/ 2018
24/ 01/ 2017	74.1%	2017/ 2018

In addition, a secondary capacity is available in the market. Its frequent use is illustrated by the fact that in recent years, capacity transfers and transmissions to another accounting entity worth over 100 million m<sup>3</sup> per year have been carried out at the request of depositors. Transfers and transmissions were carried out in parallel with the sale of the primary capacity, therefore it can be assumed that the price of the secondary capacity is competitive with the price of the primary capacity.