Gas Transportation Tariffs

Alternative Options and Recommendations

18 of October 2018, Dr. Konstantin Petrov (DNV GL)
AGENDA

• Overview
• Implementation of Entry-Exit System
• Cost allocation methodology
• Network Tariff Structure
• Pricing of different capacity products
• Publication of gas transportation network tariffs
• Regardless of the chosen cost allocation methodology and gas transportation network tariff structure, the sum of the network tariffs charged across all entry and exit points (in a single entry-exit system) would need to match the sum of the allowed revenues of the three gas transportation network operators of Bosnia and Herzegovina.

• Gas transportation network tariffs are only one element of the gas price paid by end-users, which also covers the cost for the procurement of gas, the cost of the retail supplier (i.e. for the sale of gas, including a retail supply margin and cost for metering and billing), the distribution network tariffs and taxes and levies.
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OVERVIEW

Implementation of an entry-exit system

- Single market area with a single entry-exit system for Bosnia and Herzegovina
- Two market areas with a separate entry-exit system each for the Republika Srpska and the Federation BiH respectively

Definition of the cost allocation methodology

- Postage stamp
- Capacity weighted distance
- Matrix approach
- Distance to reference point

Definition of the tariff structure

- Application of uniform entry and/or uniform exit tariffs
- Application of point specific entry and/or exit tariffs

Alternative options

- Principle option likely not compatible with EU acquis
OVERVIEW

• Keeping the balance

Administrative cost of any regulatory options

Accuracy of cost reflectivity for individual network users
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An entry-exit area may cover the whole country or different regions within a country and be operated by one or multiple TSOs (e.g. Germany), in the latter case a compensation mechanism between TSOs needs to be in place.
IMPLEMENTATION OF ENTRY EXIT SYSTEM

• Two entry-exit systems:
  • Two entry-exit systems with separate market areas can provide a significant barrier to market liquidity and the development of competition.
  • In terms of capacity management, the use of two separate entry-exit zones/systems would require separate capacity bookings/allocation at the internal interconnection points as well as explicit (re)nomination messages.

➤ Problematic preconditions and limited efficiency
IMPLEMENTATION OF ENTRY EXIT SYSTEM

• Single entry-exit system:
  • Transparent and easy to comprehend for the different market players, who would only need to consider the network tariffs charged at different exit points and in case they procure the gas abroad themselves also the entry tariff
  • limited administrative burden
  • Optional: mid- to long-term outlook of market integration with neighboring countries due to relatively small size of gas system and gas market in BiH

➢ More suitable for the conditions in BiH
IMPLEMENTATION OF ENTRY EXIT SYSTEM
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COST ALLOCATION METHODOLOGY

- Types of Models
  - Postage Stamps
  - Matrix Approach
  - Capacity Distance Model
  - Distance to Virtual Point

- The models are just different mathematical ways to describe reality and largely aim to achieve the same: fair cost allocation and tariff setting.

- Results may differ due to differences in the algorithms applied and the chosen cost drivers in particular.
## COST ALLOCATION METHODOLOGY

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
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</thead>
</table>
| Postage Stamp                   | - Single uniform tariff applied to either the entry or exit points  
- Does not provide locational signals  
- Not particularly suitable for networks with longer distances  
- Likely to involve cross subsidies between network users |
| Distance to Virtual Point (DVP) | - Uses distance as a key to allocate costs  
- Based on the assumption that tariffs should reflect the costs of bringing gas to the virtual point  
- Takes into account the direction of the flow under peak conditions  
- Provide locational signals |
| Capacity Weighted Distance (CWD) | - Uses distance as a key to allocate costs as well  
- Additional weighing by technical capacities of the entry and exit points  
- Provide locational signals |
| Matrix                           | - Allocation of cost to different pipeline sections  
- Establishment of unit cost matrix for all possible transport routes  
- Calculation of E/E-tariffs tariffs that approximate unit costs  
- Provide locational signals |
COST ALLOCATION METHODOLOGY

• Capacity Weighted Distance Model
  • Distance of an exit point to the entry point (determining the length of the pipeline network and the size and number of the compressor stations) and the capacity taken off the network at each exit point (determining the diameter of the pipelines) are the major drivers
  • More difficult to comprehend by network users
  • Higher Transportation Network Tariffs in FBiH than in RS (as long as no interconnectors exist)

➢ Cost reflectivity relatively high, reduced comprehensibility to network users
COST ALLOCATION METHODOLOGY

• Uniform Tariffs (Postage Stamp Model)
  • Easy to comprehend by network users
  • Reduced administrative burden for gas suppliers
  • No price inequalities between consumers

➢ Cost reflectivity relatively low, increased comprehensibility to network users
COST ALLOCATION METHODOLOGY

• Both models do have advantages
  • Given the limited length of the transportation network, a postage stamp methodology with uniform tariffs could be considered
  • As the cost allocation methodology should be set uniformly for the whole gas transportation network of Bosnia and Herzegovina, it should either be specified within the national gas legislation and/or with identical text in the gas sector legislation of both entities.
COST ALLOCATION METHODOLOGY

• Reconciliation mechanism
  • With the single entry-exit system for BiH, Sarajevogas A.D., operating the Zvornik and Kladanj pipeline section, would not have any entry or exit points within its transportation network, since the cross-border entry point as well as the connection points are all located within the pipeline segments of Gas Promet and BH-Gas. Therefore, also entry and exit charges would only be collected by Gas Promet and BH-Gas.
  • Reconciliation mechanism would allocate the sum of the network tariffs, collected across all entry and exit points within a year, to the three transportation network operators according to their individual level of allowed annual revenues.
  • The reconciliation mechanism would need to ensure that Sarajevogas A.D. receives continuous payments throughout the year.
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• Recommendation Entry/Exit Split:
  • Only a single entry point, role of the tariff steering function limited, entry tariffs would likely be passed on to consumers, therefore focus on the exit tariffs.
  • When further cross-border interconnection constructed, entry tariffs may start playing a greater role, however the larger part of the allowed revenue is recovered through exit tariffs
  • With the adoption of EU Regulation 2017/460 for the Energy Community, unequal entry/exist splits would however only be feasible if a postage stamp approach is applied. In case a decision for the capacity weighted distance cost allocation methodology is taken, EU Regulation 2017/460 would require to apply a 50:50 split between entry and exit tariffs
NETWORK TARIFF STRUCTURE

Split between entry and exit charges for gas transportation in the region

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of allowed revenue allocated to entries (%)</th>
<th>Percentage of allowed revenue allocated to exits (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine</td>
<td>30</td>
<td>70</td>
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<tr>
<td>Slovenia</td>
<td>20</td>
<td>80</td>
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<tr>
<td>Serbia</td>
<td>50</td>
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<tr>
<td>Romania</td>
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<td>50</td>
</tr>
<tr>
<td>Austria</td>
<td>20</td>
<td>80</td>
</tr>
</tbody>
</table>

Source: Energy Community Regulatory Board: Gas transmission Tariffs in South and Central East Europe; Feb. 2018
NETWORK TARIFF STRUCTURE

• Recommendation Capacity/Commodity Split:
  • Combination of capacity and commodity charges, splitting the allowed revenue between capacity and commodity tariff elements, e.g. on a 90:10 basis.
  • Large shares of capacity charges would also reflect that most network cost are defined by the size of the capacities used by an individual network user.
  • High share of capacity charges would likely benefit large industrial users with a relative constant natural gas consumption, whereas small customers, who consume gas primarily for heating purposes, may face a small increase of their end-user tariff.
NETWORK TARIFF STRUCTURE

Split between capacity and commodity charges for gas transportation in the region

- Ukraine
- Slovenia
- Serbia
- Romania*
- Poland
- Moldova
- Hungary
- Italy*
- Greece
- fYR of Macedonia
- Czech Republic
- Croatia
- Bulgaria
- Austria

Source: Energy Community Regulatory Board: Gas transmission Tariffs in South and Central East Europe; Feb. 2018
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## PRICING CAPACITY PRODUCTS

<table>
<thead>
<tr>
<th>Auction</th>
<th>Capacity Product</th>
<th>Calendar Year</th>
<th>Calendar Year + 1</th>
<th>Calendar Year + 2</th>
<th>Calendar Year + 3</th>
<th>→</th>
<th>Y+15</th>
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<tbody>
<tr>
<td>Annual Yearly</td>
<td>Yearly</td>
<td></td>
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<td>→</td>
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<td>Interr.</td>
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<tr>
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<tr>
<td>Rolling Monthly</td>
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<tr>
<td>Rolling day ahead</td>
<td>Daily</td>
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<tr>
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<td>Interr.</td>
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</tr>
</tbody>
</table>

- **Firm**: Standard product of specified duration
- **Interr.**: Bidding window and allocation of respective product(s)

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**Rolling day ahead**

**Monthly**

**Quarterly**

**Yearly**

**Annual**

**Within-day**

**Daily**

**Multipliers**

**Short term tariffs**

**Rolling day ahead**

**Monthly**

**Quarterly**

**Yearly**

**Annual**

**Within-day**

**Daily**

**Multipliers**

**Short term tariffs**

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**PRICING CAPACITY PRODUCTS**

- **Firm**: Standard product of specified duration
- **Interr.**: Bidding window and allocation of respective product(s)
PRICING CAPACITY PRODUCTS

• Recommendation (I):
  • Annual, quarterly and monthly capacity products, complemented by daily capacity products later
PRICING CAPACITY PRODUCTS

• Definitions

*Quarterly Product*
\[ \text{Pst} = M_Q \times \left( \frac{P_y}{365} \right) \times d \]

*Monthly Product*
\[ \text{Pst} = M_M \times \left( \frac{P_y}{365} \right) \times d \]

*Daily Product*
\[ \text{Pst} = M_D \times \left( \frac{P_y}{365} \right) \]

*Within-day Product*
\[ \text{Pst} = M_{WD} \times \left( \frac{P_y}{8760} \right) \times h \]

• Properties

- Keep the balance between facilitating short-term gas trading and efficient revenue recovery
- Keep the balance between facilitating short-term gas trading and providing long term signals for efficient investment
- ENTSOG’s Tariff Network Code and Regulation (EU) 2017/460 set a range of 1.0 - 1.5 for quarterly and monthly capacity products; and 1.0 - 3.0 for daily and within-day capacity products.
• Seasonality Factors
  • Instrument to encourage efficient use of network by providing signals for congestion and the value of capacity at given time
  • Aim to reflect the use of network (flows or booking profiles)
  • For left example, monthly ratios = Monthly Demand / Average Demand
  • May be calculated through a linear function (SF=MD/AD) or a quadratic function (Adjusted SF=(MD/AD)^2)
• Recommendation (II):
  • For the pricing of capacity products, the seasonality factors and the price multipliers for non-yearly capacity products should follow the range set out in Regulation (EU) 2017/460, i.e. between 1 and 1.5 for quarterly and monthly respectively between 1 and 3 for daily standard capacity products and between 1 and 3 for the seasonal factors.
  • Adjustment factors for interruptible capacity based on the probability of an interruption in the transportation network of BiH (average duration of interruptions and the average amount of interrupted capacity observed in the last years)
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PUBLICATION OF GAS TRANSPORTATION TARIFFS

• Recommendation:
  • We suggest to publish the elements specified in Regulation (EU) 2017/460 in relation to the tariff setting (both in local languages and in English), including information on key regulatory and cost data.

  • the split between capacity and commodity charges
  • the split between entry and exit tariffs
  • the network tariff levels for capacity charges per type of capacity for individual entry and exit points
  • the level of commodity charges for individual entry and exit points
Hvala!

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