



*Workshop on Connection of New Customers  
and Capacity Enlargement*

**INTRODUCTION OF CONNECTION CHARGES  
(NATURAL GAS): CASE STUDY - SERBIA**

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## **I/a INTRODUCTION & LEGAL ASPECTS**

### **Natural gas sector in the Republic of Serbia – basic data:**

- **The annual consumption: 2,3 billion m<sup>3</sup> (92% import from Russian Federation and 8% domestic production)**
- **The number of transport companies: 2**
- **The number of distribution companies: 34**
- **The number of customers: 230.000 (97% households)**
- **The potential number of new customers: > 500.000**
- **The annual consumption of the average household, that uses G-4 measure device (with maximum installed capacity  $\leq 6$  m<sup>3</sup>/h), amounts to 1.400 m<sup>3</sup>**

## I/b INTRODUCTION & LEGAL ASPECTS

- **February 2007: The Energy Agency of the Republic of Serbia determined and published the Methodology for setting criteria for setting costs of connection to the transportation and distribution system for natural gas.**
- **Methodology came into force as of 1 June 2007.**
- **Pursuant to the Energy Law, the Agency:**
  - 1) **shall determine the Methodology and monitor its application (analyse and control the costs of connection),**
  - 2) **however, shall not approve the costs of connection set by energy entities in accordance with the Methodology,**
  - 3) **in case of users` complaints, the Agency shall decide on the costs of connection set by the decision that approves the connection, and that is issued by the energy entities to whose gas pipe network connection shall be carried out.**

## I/c INTRODUCTION & LEGAL ASPECTS

- Pursuant to the Methodology the energy entities:
  - 1) shall determine the costs of connection annually,
  - 2) are obliged to provide the Agency with the Act on the costs of connection along with the comprehensive calculation of the standards and costs divided accordingly to each element determined by Methodology (i.e. with respect to the type of the devices, equipment, materials, works, projects and so on),
  - 3) are obliged to enable all interested users to have an insight into the Act on the costs of connection.
  
- The customers shall pay for the connection to the energy entities whose network they are to connect in accordance with the terms in the contract signed by them (terms of payment are different, but one-off up-front one is the most common case).

## II/a METHODOLOGY FOR COSTS OF CONNECTION

- **Prior to determining Methodology, the “deep” type connection charge was traditionally dominant (due to undeveloped gas pipe network and low use of system prices which was not enough to ensure the development of the network).**
- **The Methodology is primarily based on “shallow” type connection charge increased by the part of system costs incurred by connecting the facility to the specific network - that serves for developing the basic network (something between “shallow” and “deep” type connection charge).**
- **Next year the Agency is going to modify the Methodology and move to “shallow” type of connection charge entirely (at the same time with implementation of tariff systems for transport and distribution).**

## II/b METHODOLOGY FOR COSTS OF CONNECTION

➤ **Pertaining to the Methodology the costs of connection comprise:**

- 1) the costs of equipment, devices and materials,**
- 2) the costs of carrying out the works,**
- 3) the costs of professional, operational and administrative works required to connect the facility to the system,**
- 4) the part of system costs**

➤ **Depending on the approved capacity at the point of connection to the network, the connections are divided into two types:**

- 1) standard connection: G-2,5 measure device (with maximum installed capacity  $\leq 4 \text{ m}^3/\text{h}$ ), G-4 ( $\leq 6 \text{ m}^3/\text{h}$ ) and G-6 ( $\leq 10 \text{ m}^3/\text{h}$ )**
- 2) individual connection (is each connection with installed capacity exceeding  $10 \text{ m}^3/\text{h}$ )**

## II/c METHODOLOGY FOR COSTS OF CONNECTION

- **Costs of individual connection are determined as a set of total actual costs of connection building.**
- **Costs of standard connection are divided into fixed (for standard distance of the facility from the system – 12 m) and variable (for distance > 20 m, and they are calculated per meter of length).**

- **The part of system costs (PSC) for a specific user:**

$$\text{PSC} = \text{UC} \times \text{AC}$$
$$\text{UC} = (\text{TC} / \text{MNC}) \times ((\text{MNC} - \text{ENC}) / \text{MNC})$$

**UC – Unit cost of PSC (in dinars per m<sup>3</sup>/h),**  
**AC – Allowed capacity at the connection point (in m<sup>3</sup>/h),**  
**TC – Total cost (replacement value) of PSC (in dinars),**  
**MNC – Maximum network capacity (in m<sup>3</sup>/h),**  
**ENC – Employed network capacity (in m<sup>3</sup>/h).**

- **PSC for a specific user calculated in accordance with this formula cannot exceed 30% of “shallow” connection costs!**



### III/a PRACTICAL EXAMPLE:

Standard connection: Household, G-4 ( $\leq 6 \text{ m}^3/\text{h}$ ), in € without VAT

O/N	Description	Unit number	Quantity	Unit price (€)	Total amount (€)
1.	The costs of equipment, devices and materials				268,46
1.1.	Fixed costs of equipment, devices and materials				262,15
a.	<i>'Saddle' or T-part</i>	<i>Piece</i>	<i>1</i>	<i>16,13</i>	<i>16,13</i>
b.	<i>Clutch with reducer</i>	<i>Piece</i>	<i>1</i>	<i>5,67</i>	<i>5,67</i>
c.	<i>Intermediate part</i>	<i>Piece</i>	<i>1</i>	<i>10,94</i>	<i>10,94</i>
d.	<i>Tap</i>	<i>Piece</i>	<i>1</i>	<i>7,41</i>	<i>7,41</i>
e.	<i>Protection of steel pipe</i>	<i>m</i>	<i>1,4</i>	<i>2,97</i>	<i>4,16</i>
f.	<i>Household measurable-regulative set (G-4)</i>	<i>Piece</i>	<i>1</i>	<i>205,44</i>	<i>205,44</i>
g.	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>
1.2.	Variable costs of equipment, devices and materials				6,31
a.	<i>Polyethylenel pipe</i>	<i>m</i>	<i>13,5</i>	<i>0,45</i>	<i>6,07</i>
b.	<i>Warning line</i>	<i>m</i>	<i>12</i>	<i>0,02</i>	<i>0,24</i>

### III/b PRACTICAL EXAMPLE:

Standard connection: Household, G-4 ( $\leq 6 \text{ m}^3/\text{h}$ ), in € without VAT

O/N	Description	Employees' qualification	Working hours (h)	Value of working hour (€/ h)	Total amount (€)
2.	The costs of carrying out the works				202,30
2.1.	Fixed costs of carrying out the works				106,89
a.	<i>'Saddle' or T-part</i>	<i>Secondary</i>	<i>0,25</i>	<i>5,93</i>	<i>1,48</i>
b.	<i>Household measurable-regulative set (G-4)</i>	<i>Secondary</i>	<i>1</i>	<i>5,93</i>	<i>5,93</i>
c.	<i>Leakage control</i>	<i>Highly</i>	<i>1</i>	<i>9,93</i>	<i>9,93</i>
d.	...	...	...	...	...
e.	<i>Use of apparatus for welding</i>		<i>0,25</i>	<i>5,02</i>	<i>1,25</i>
f.	<i>Use of compressor</i>		<i>0,25</i>	<i>6,20</i>	<i>1,55</i>
g.	...		...	...	...
h.	<i>Use of vehicle</i>		<i>1</i>	<i>14,70</i>	<i>14,70</i>
i.	...		...	...	...
2.2.	Variable costs of carrying out the works				95,41
a.	<i>Digging of ditch</i>	<i>Elementary</i>	<i>3</i>	<i>5,00</i>	<i>15,00</i>
b.	<i>Soil cover</i>	<i>Elementary</i>	<i>1,3</i>	<i>5,00</i>	<i>6,50</i>
c.	...	...	...	...	...

### III/c PRACTICAL EXAMPLE:

Standard connection: Household, G-4 ( $\leq 6 \text{ m}^3/\text{h}$ ), in € without VAT

O/N	Description	Employees` qualification	Working hours (h)	Value of working hour (€/ h)	Total amount (€)
3.	The costs of the costs of professional, operational and administrative work				17,85
a.	<i>Reception of connection request</i>	<i>Secondary</i>	<i>0,5</i>	<i>5,93</i>	<i>2,96</i>
b.	<i>Snapshot of facility location</i>	<i>Highly</i>	<i>1</i>	<i>9,93</i>	<i>9,93</i>
c.	<i>Devising decision on connection approval</i>	<i>Highly</i>	<i>0,5</i>	<i>9,93</i>	<i>4,96</i>

4. The part of system costs (PSC) calculated in accordance with formula: 288,24 €  
(AC = 2,40 m<sup>3</sup>/h, TC = 425.436 €, MNC = 2.765 m<sup>3</sup>/h, ENC = 607 m<sup>3</sup>/h)

5. 30% of “shallow” connection costs: (268,46 + 202,30 + 17,85) x 30% = 488,61 x 30% = 146,58 €

6. TOTAL CONNECTION CHARGE: 488,61 (“shallow”) + 146,58 (PSC) = 635,19 €

**THANK YOU FOR YOUR ATTENTION**

*Energy Agency of the Republic of Serbia*

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