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*COOPERATION ON EXCHANGE OF EXPERIENCE BETWEEN THE RA PUBLIC SERVICES  
REGULATORY COMMISSION (PSRC) AND US IOWA UTILITIES BOARD (IUB)*

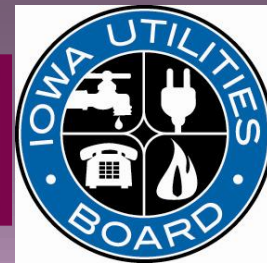
# REGULATION IN GAS SUPPLY SYSTEM

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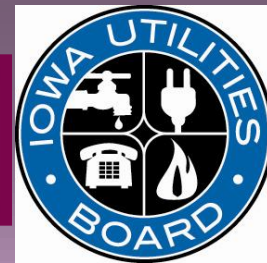


***ESTABLISHMENT OF REGULATED RATES  
(SERVICE FEES) IS ONE OF THE MAIN  
FUNCTIONS OF PSRC.***

***ORDER OF ESTABLISHING AND REVISING RATES, AND  
CALCULATING THE RATE METHODOLOGY SHALL BE  
DEVELOPED AND APPROVED BY THE COMMISSION.***



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***Established rates shall enter into force after thirty days  
from the date the decision is made.***

***Validity period of the rates can not be less than 6 months, except the cases,  
when:***

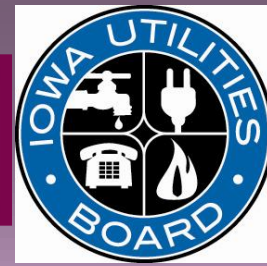
- a) A licensee breaches conditions of the license for activities,***
- b) A new decision is made by the Commission on establishing a new rate  
based on a court's decision on judicial appeal of the rates established.***

***Commission may establish long term rate for activities of a licensee.***

***The rate established may express both a specific numerical value  
and a calculation formula that depends on specific values .***



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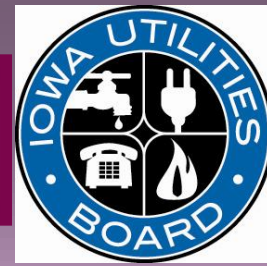
***The established rate may be revised on an initiative of both a licensee and the Commission.***

***The Commission shall revise the rate (re-approval or change) and make the decision within 90 days after receiving a licensee's application package for revision.***

***The Commission may revise the rate on its own initiative and establish a new rate in accordance with the procedure approved by the Commission on the basis of results of the licensee's economic activities, fulfillment of requirements defined for quality of investment programs and services provided to the consumers.***



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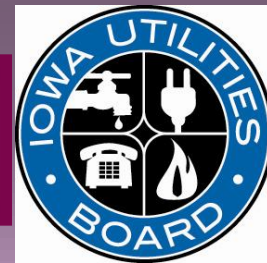
*A licensee may sell the natural gas or provide licensed services with a lower rate than the one established by the Commission, provided that:*

- *The licensed activity is or will not be imposed to a risk,*
- *It is not aimed at acquiring a monopolistic status on the market,*
- *The rate is lowered at the expense of a licensee's profit.*

*In case of such lowered rates, while establishing new rates, the Commission does not consider potential losses of the licensee experienced due to lowered rates.*



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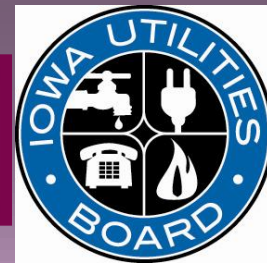


## ***Main objectives of the rate policy are to:***

- Ensure financial sustainability of companies of the system,***
- Ensure involvement of sufficient capital with a reasonable price required for modernization and development of the sector,***
- Promote safe and reliable provision of gas supply services by acceptable and competitive rates,***
- Promote effective use of gas supply services by consumers.***



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***Two groups of rates are applied in the gas supply system:***

**a) For services provided internally to each other by companies of the system - *regulated rates for transportation, distribution***

**b) For gas consumers – *regulated rates for provision of services***



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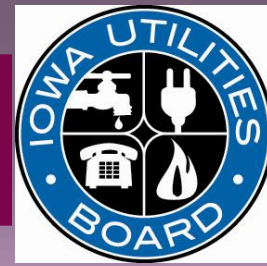
**Process of developing rates is  
implemented in a number of stages.**

**Each stage has its clear purposes and  
requires certain calculations, as well as  
adoption of principles (methodology) for  
implementation of those calculations.**





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During the first stage, volumes of annual returns of the system's companies shall be calculated, which will be sufficient for implementation of operational costs ***aimed at provision of reliable, safe and continuous operation*** and gaining ***a reasonable profit*** against the used capital.

For implementation of these calculations, it is necessary to have approved principles for determination of the required costs and profit.



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During the second stage, *the service provision cost* shall be determined for consumers and consumer groups through classification of the costs for various functions and distribution of the required revenue among the various consumer groups.

During the third stage, *the rate structures* shall be selected and *rates* shall be calculated.



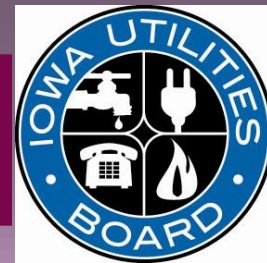
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# ***1. DETERMINATION OF A REVENUE REQUIREMENT***



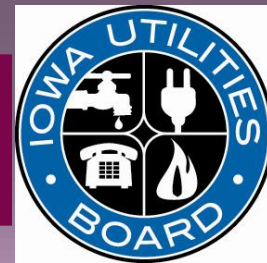
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***In order to ensure continuous operation, the companies must have an opportunity to receive compensation for the reasonable costs made for a provision of services.***



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***The annual revenue requirement (RR) of “ARMRUSGASPROM” CJSC is calculated with the following formula:***

$$RR = PGC + GTC + OMC + AC + D + P \quad (1)$$

***PGC – purchased gas cost without a value added tax,***

***GTC – gas transportation cost, which is the annual cost that is paid by “ARMRUSGASPROM” CJSC to “TRANSGAS” LLC for gas transportation within the territory of the country,***

***OMC – annual operation and maintenance costs,***

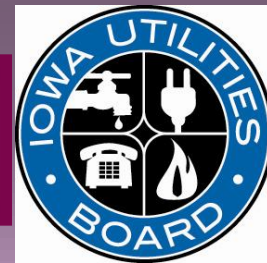
***D – depreciation of fixed assets and amortization of intangible assets***

***T - taxes paid by the company, without the VAT and income tax, duties and other mandatory fees envisaged by the legislation,***

***AP - allowable profit.***



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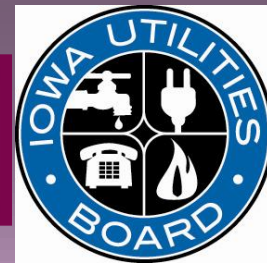


***The annual revenue requirement ( $RR_t$ ) for “TRANSGAS” LLC is determined with the same formula without purchased gas and transportation cost components:***

$$RR_t = OMC + AC + D + T \quad (2)$$



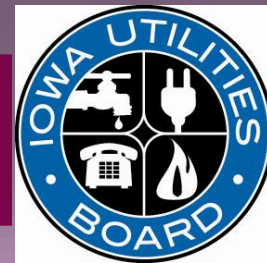
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**The revenue requirement of companies is calculated by taking into consideration *the actual costs for 12 months with certain adjustments*, which consider changes to be made in costs and revenues that are already known at the stage of submitting the application and during validity of the new rates and which are measured by reasonable accuracy.**



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## 1.1 PURCHASED GAS COST

$$PGC = \sum_i C_i V_i$$

$C_i, V_i$  -

Cost and volumes of 1000 m<sup>3</sup> of gas purchased by  
“ARMRUSGASPROM” CJSC during the year from various importers  
and at different dates.

Total amount of gas purchased during the year

$$V = \sum_i V_i$$

that is required for ensuring an annual consumption  
and calculated with the following formula:

$$V = V_3 + \Delta V,$$

$V_3$

- volume of gas supplied during the year to consumers,

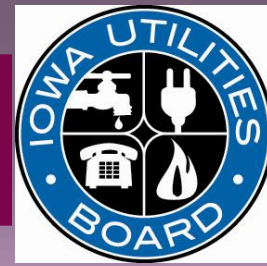
$\Delta V$

- Gas losses in the transportation and distribution systems  
calculated by methodology approved by the Commission  
and own needs.





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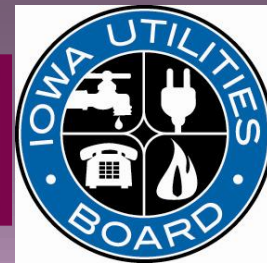


## **1.2 GAS TRANSPORTATION COSTS**

***“ARMRUSGASARD” CJSC that imports, distributes and sells gas with rates approved by the Commission, pays to “TRANSGAS” LLC for provision of gas transportation and storage services by ensuring the company’s revenue required that is calculated with formula (2).***



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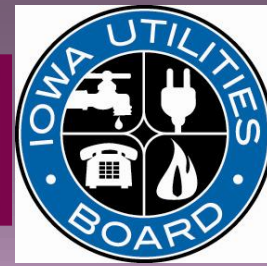
## **1.3 OPERATION AND MAINTENANCE COSTS**

Operation and maintenance costs (OMC) include:

- Salary of operating personnel, including payments to the social security fund,
- Material costs required for operation,
- Maintenance/rehabilitation costs that include costs of rehabilitation works implemented both by other contractor organizations and by own means,
- Customers service costs that include costs for maintenance of meters, reading of records, billing, accounting of service fees and collection (these costs are typical for “ARMRUSGASARD” CJSC that implements only functions of distribution and customer services),
- Administrative and general costs,
- Other operational costs which can also include allowable amounts of bad receivables.



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The costs that do not relate to the licensed activity are not included in the OMC. Separate accounting shall be implemented in the companies for such costs.

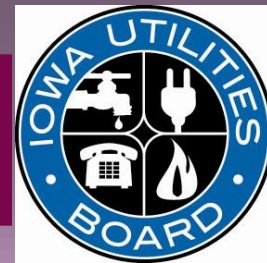
Licensed companies shall implement accounting in accordance with the Chart of Accounts and costs allocation rules approved by the Commission.

Only those costs shall be compensated by rates which are determined in accordance with the Chart of Accounts approved by the Commission.

While submitting the rate application, the companies shall present the costs for previous year that are verified by an auditor, actual (projected) costs for current year and planned costs for accounting year.



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## **1.4 ALLOWABLE PROFIT**

**That amount of the profit shall be considered as allowable, which provides an opportunity for the companies to fulfill commitments related to the capital involved for financing of assets and does not prevent involvement of additional own or loan funds required for development of the company.**

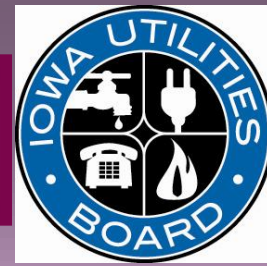
**Allowable profit is calculated as follows:**

$$AP = PB \times PR$$

**where: PB** - profit calculation base,  
**PR** - allowable profit rate.



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**Profit calculation base shall be the cost of the  
company's net assets:**

$$\mathbf{PB = NCEUA - CPNCA - AD + WC,}$$

where:

**NCEUA** – cost of non current assets that are recognized as effective and usable

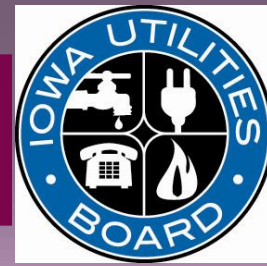
**CPNCA** – cost of consumer paid but uncompensated non current assets, such as the cost of meters and constructions

**AD** – accumulated depreciation,

**WC** – amount of working capital approved by the Commission.



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Profit base shall be revised from time to time, but not more than once a year, with a purpose to consider the following:

- Investments made in assets that are recognized as effective and usable without investments paid by the consumers,
- Allowable depreciation,
- Allowed adjustment of the working capital.



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**Allowable profit rate (PR) shall be established equally to the averaged weighted cost of the company's capital, which shall be the average cost of land and own capital calculated in accordance with their share in the capital structure.**

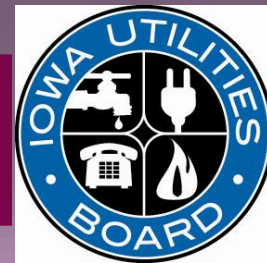
$$PR = \frac{\sum_i LC_i * r_i + OC * r_{\bar{e}}}{LC + OC}$$

**$LC_i, r_i$**  – outstanding loan balance of corresponding  $i$  loan at the beginning of year and loan servicing cost (in unit parts)

**$U\bar{r}, r_u$**  – cost of own capital at the beginning of accounting year and its reasonable rate of the allowable profit (before taxation).



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## **1.5 DEPRECIATION**

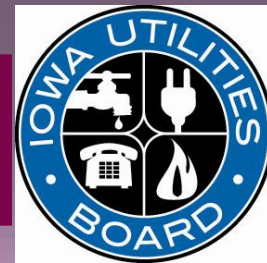
**Depreciation costs shall be estimated by a linear methodology based on the initial (acquisition) cost of effective and usable assets and useful service life.**

**If the fixed assets are used with low use coefficient or capacity with a small number of use hours, the Commission shall have the right to apply justified lower coefficients for their values/costs.**





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***Costs analysis of the company and distribution of costs depending on the type of licensed activities, types of the costs and consumers group shall be the next stage in the process of developing the rates.***

***One of the purposes of the pricing is to establish such rates that reflect costs made by the company for services provided to various consumers and consumer groups.***



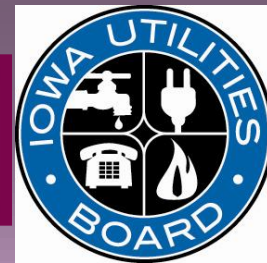
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## ***2. COST ANALYSIS***



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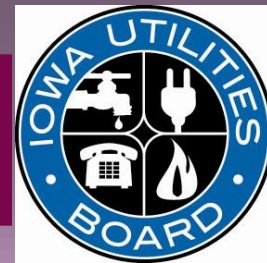
***By means of costs analysis, a share of various consumer groups  
in total costs shall be determined and costs shall be  
distributed among the consumer groups.***

***Cost analysis shall consist of the following steps:***

- 1. Functionalization of costs,***
- 2. Classification of costs,***
- 3. Classification of consumers,***
- 4. Determination of distribution  
coefficients and distribution of costs.***



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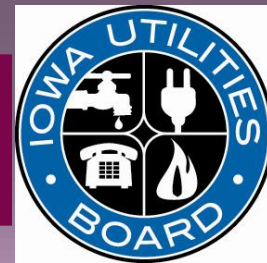
## 2.1 Functionalization of costs

**“ARMRUSGASARD” CJSC has three functional areas of activity: *import, distribution of gas and regulation of the system.***

**Each component of the company’s costs shall be distributed among these three functional areas.**



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## 2.2 Classification of Costs

Costs are classified in the following groups: ***fixed, variable and consumer service costs.***

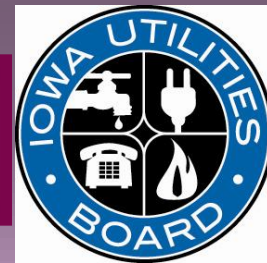
**Fixed costs** are those costs that are made by the company irrespective of the volume of gas supplied and number of consumers. These are mostly costs of servicing and maintaining the fixed assets of the company and shall be subject to compensation irrespective of the volume of gas supplied.

**Variable costs** are those costs that change depending on the volume of gas supplied. These costs include the cost of gas supplied and some other cost that depends on quantity of gas (such as costs for bad receivables write-off)

**Consumer service costs** are those costs that are directly linked to servicing of consumers. These include costs for reading of meters, billing, collection and accounting of the fees, etc., as well as costs of operation of the meters.



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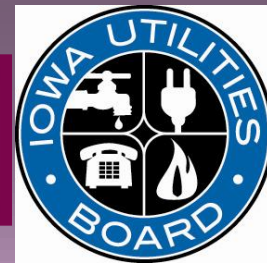
## 2.3 Classification of consumers

Rates differentiation may be done based on the ***capacity required, volumes, time of consumption, and connection conditions***. Differentiation shall be implemented by means of classifying consumers in the groups. Each consumer group shall consist of the consumers with similar consumption characteristics, whose gas supply and servicing create more or less same price load for the system.

Economic indicators can be also used beside the above described technical indicators for consumer classification. These include such indicators as ***value of the service, price elasticity, existence of alternative option, competitiveness of the service***.



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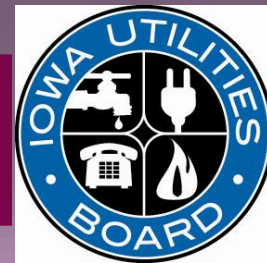


**Following classification of consumers is  
proposed based on the above described:**

- 1. Population (household consumers)**
- 2. General business consumers,**
- 3. Compressed natural gas suppliers,**
- 4. Thermal power plants,**
- 5. Heat supply,**
- 6. Large industrial consumers.**



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## **2.4 Distribution of costs**

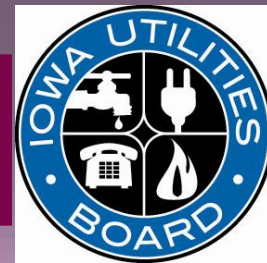
**At the next stage of analysis, the classified costs shall be distributed among the consumer groups.**

**This distribution shall be implemented by coefficients which shall be determined in a way that, to the extent possible, reflect the reasons for cost causation from consumer groups.**





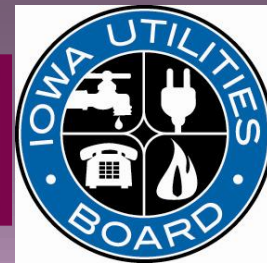
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**Distribution of fixed costs shall be implemented in accordance with the upper margin /peak/ of volume of own consumption by a separate consumer group, irrespective of time when the consumption takes place. This method of distribution is called a non-coincident method and is based on a peak consumption when distribution is implemented at the moment of maximum consumption in accordance with consumption by different consumer groups.**



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**Distribution coefficients** shall be determined with the following formula:

$$K_{Ni} = \frac{N_i}{\sum_i N_i}$$

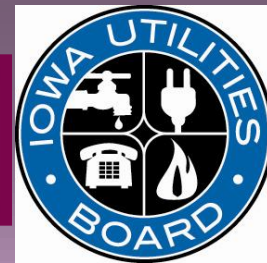
where:

$K_{Ni}$  - distribution coefficient of fixed costs of  $i$  consumer group,

$N_i$  - maximal daily consumption of  $i$  consumer group.



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**Distribution of variable costs** shall be implemented proportionally to the volume of annual consumption by consumer groups.

$$K_{Vi} = \frac{V_i}{\sum_i V_i}$$

where:

$K_{Vi}$  - distribution coefficient of variable costs of  $i$  consumer group,

$V_i$  - annual consumption of  $i$  consumer group.



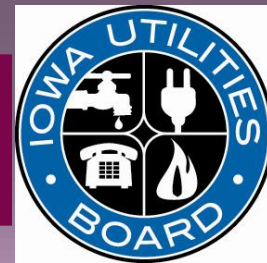
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**Distribution of *consumer service costs* shall be implemented in the “given” consumer groups proportionally to the number of consumers. Considering that provision of services to the consumers included in various consumer groups creates various costs in the company and one inhabitant is considered as a unit, “given” coefficients are applied, which, to a certain level of accuracy, reflect those differences.**



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Based on the above, coefficients of distribution of consumer service costs shall be determined with the following formula:

$$K_{ni} = \frac{\alpha_i n_i}{\sum_i \alpha_i n_i}$$

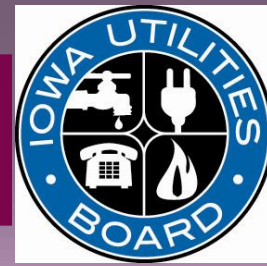
where:

$n_i$  - number of customers of  $i$  consumer group,

$\alpha_i$  - “given” coefficient of one customer of  $i$  consumer group, which shows what is the approximate number of resident-suppliers that can be served by the averaged service cost of one customer of that group.



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**Distribution of classified costs on the basis of distribution coefficients shall be implemented with the following formulas:**

$$C_{Ni} = K_{Ni} * C_N$$

$$C_{Vi} = K_{Vi} * C_V$$

$$C_{ni} = K_{ni} * C_n$$

where:

$C_N, C_V, C_n$

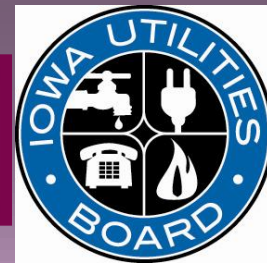
- fixed, variable and consumer service costs appropriately,

$C_{Ni}, C_{Vi}, C_{ni}$

- share of appropriate costs compensated by *i* consumer group.



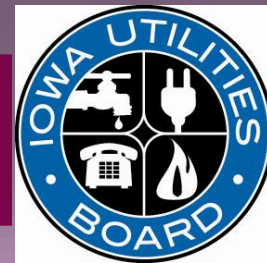
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### 3. SELECTION OF THE TYPES AND STRUCTURES OF RATES FOR GAS SUPPLY SYSTEM AND CALCULATION



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## 3.1 TRANSPORTATION RATE

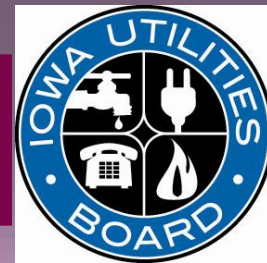
**The transportation rate shall be established by “TRANSGAS” LLC for services of gas transportation and storage. The company provides services to “ARMRUSGASARD” CJSC by transporting gas imported by latter from the border up to the distribution limits.**

**The same services will also be provided to other licensees who import gas for own needs and exporting.**





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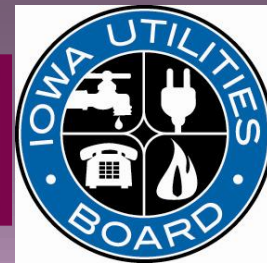


**Costs necessary for operation of gas transportation system under the conditions of absent linear compressor stations do not depend on quantity of gas transported and are considered as fixed – capacity costs.**

**A part of costs for gas storage can be considered as directly proportional to the amount of gas stored (for example, cost of gas consumed for operation of compressors or financial costs that relate to gas stored). However, as the transportation company does not own that gas, these costs are compensated at the expense of gas owners and are not included in the required revenue of the transportation company.**



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**Gas transportation rate shall be a single-part rate with the following measurement units of service:**

- a) Maximum daily consumption (thous.m<sup>3</sup>/day) of the peak month under the conditions of limited capacity of transportation system,**
- b) Amount of transported gas (thous.m<sup>3</sup>) under the conditions of missing limitations of the transportation system capacity.**



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**a) Transportation rate  $R_t$  (AMD/month. Thous. m3/day):**

$$R_t = \frac{MF_t}{12 \sum_i Q_{imax}}$$

**where:  $Q_{imax}$  - maximum daily consumption (thous.m3/day) during the overloaded month of  $i$  transportation client.**

**Monthly fees of the gas transportation clients shall be considered as fixed values which equal to:**

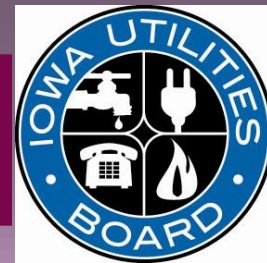
$$MF_t = R_t * Q_{imax}$$

**These fees do not depend on volume of gas transported during that month.**

**Maximum daily consumption of gas shall be determined by the Client's meter based on measurements conducted in advance. If no such measurements were conducted, then it can be determined by dividing the consumption during the overloaded winter month by number of days of that month. In case of lack of even such data, the maximal consumption can be determined by capacity of limiting devices.**



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**b) Transportation rate  $R_t$  (AMD/thous, m3):**

$$R_t = \frac{MF_t}{\sum_i V_{ti}^{\text{annual}}}$$

where:  $V_{ti}^{\text{ann}}$  is the annual quantity of gas transported for  $i$  licensee (thous. m3) which is measured at the point of handing of gas from the transportation system to the client or distributor.

**Monthly fee for the transported gas shall comprise:**

$$MF_t = R_t * V_{ti}^{\text{month}}$$

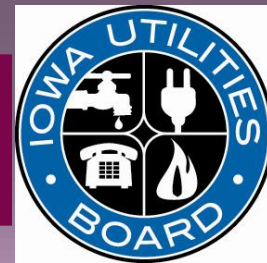
where:  $V_{ti}^{\text{month.}}$  - is the monthly quantity of gas transported for  $i$  client, which is determined by meter records, if gas is handed to the owner directly from the transportation system based on the following formula:

$$V_{ti}^{\text{month.}} = \frac{V_{bi}^{\text{month}}}{1 - \frac{\alpha_b}{100}}$$

If gas is handed to the owner through distribution system. Here  $\alpha_p$  are gas losses in distribution network as a percentage of gas entered in the system.



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## 3.2 DISTRIBUTION RATE

**Distribution rates are applied for those licensees (Client), which import gas for the purposes of own consumption or export (also when gas passes through the distribution network).**

Gas distribution rate shall be a single-part rate, which may have the following measurement units of service:

- a) Maximum daily consumption (thous.  $\text{m}^3/\text{day}$ ) of the overloaded month under the conditions of limited capacity of distribution system,
- b) Amount of transported gas (thous.  $\text{m}^3$ ) under the conditions of missing limitations of the distribution system.



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**a) Distribution rate  $R_d$  (AMD/month.thous.m3/day):**

$$R_d = \frac{MVF_d}{12 \sum_i Q_{i\max}}$$

**where:  $Q_{i\max}$  - maximum daily consumption of gas by  $i$  client (thous.m3/day) during the overloaded month that was transported through the distribution system.**

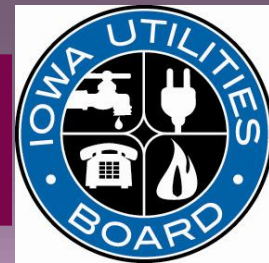
**Monthly fees shall be considered as fixed values which equal to:**

$$MFdi = Rd * Q_{i\max}$$

**These fees do not depend on volume of gas distributed through the system during that month.**



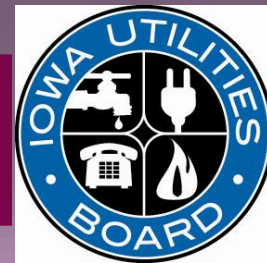
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**Maximum daily consumption of gas shall be determined by a client's meter based on measurements conducted in advance. If no such measurements were conducted, then it can be determined by dividing the consumption during a peak winter month by number of days of that month. In case of lack of such data, the maximum consumption can be determined by capacity of limiting devices.**



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**b) Distribution rate  $R_d$  (AMD/thous.m3):**

$$R_d = \frac{MF_d}{\sum_i V_{di}^{\text{annual}}}$$

**where:  $V_{di}^{\text{annual}}$  - is the annual quantity of gas distributed by the system for  $i$  licensee (thous. m3) which is measured at the point the gas flows from the transportation system to the client or distributor.**

**Monthly fee for gas distribution shall comprise:**

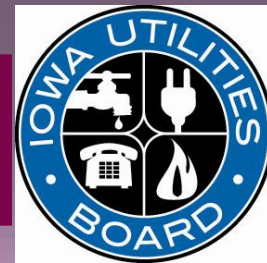
$$MF_{di} = R_d \cdot$$

**where  $V_{di}^{\text{month}}$  - is the monthly quantity of gas transported for  $i$  client through the distribution system, which is determined by meter records**





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### 3.3 Retail Rates of Consumer Groups

Cost classified by the distribution company (“ARMRUSGASARD” CJSC) and distributed among the consumer groups shall serve as a basis for calculation of consumer groups rates.

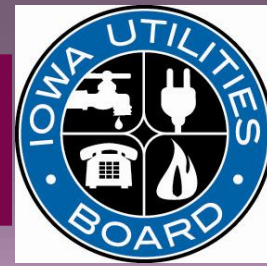
Calculation of the rates shall be implemented in the single-part or two-part rates system.

Moreover, the company may suggest other approaches for the rates structure and calculation of rates.

Rate structures and calculation of rates proposed by the consumer groups are presented below:



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A rate component reflecting the price of gas purchased shall be established separately in all the rates, which may be changed without submission of a complete application for rate revision. This is done in cases of changes in gas price purchased and currency.

A rate component that reflects the price of gas purchased shall be common for all consumer groups and shall be calculate with the following formula:

$$RC_g = \frac{\bar{c}}{(1 - \frac{\alpha_t}{100})(1 - \frac{\alpha_d}{100})}$$

Where:  $\bar{c}$  - is the average weighted cost for one unit of gas purchased for internal consumption during the accounted period, and it equals to:

$$\bar{c} = \frac{\sum_i c_i V_i}{\sum_i V_i}$$

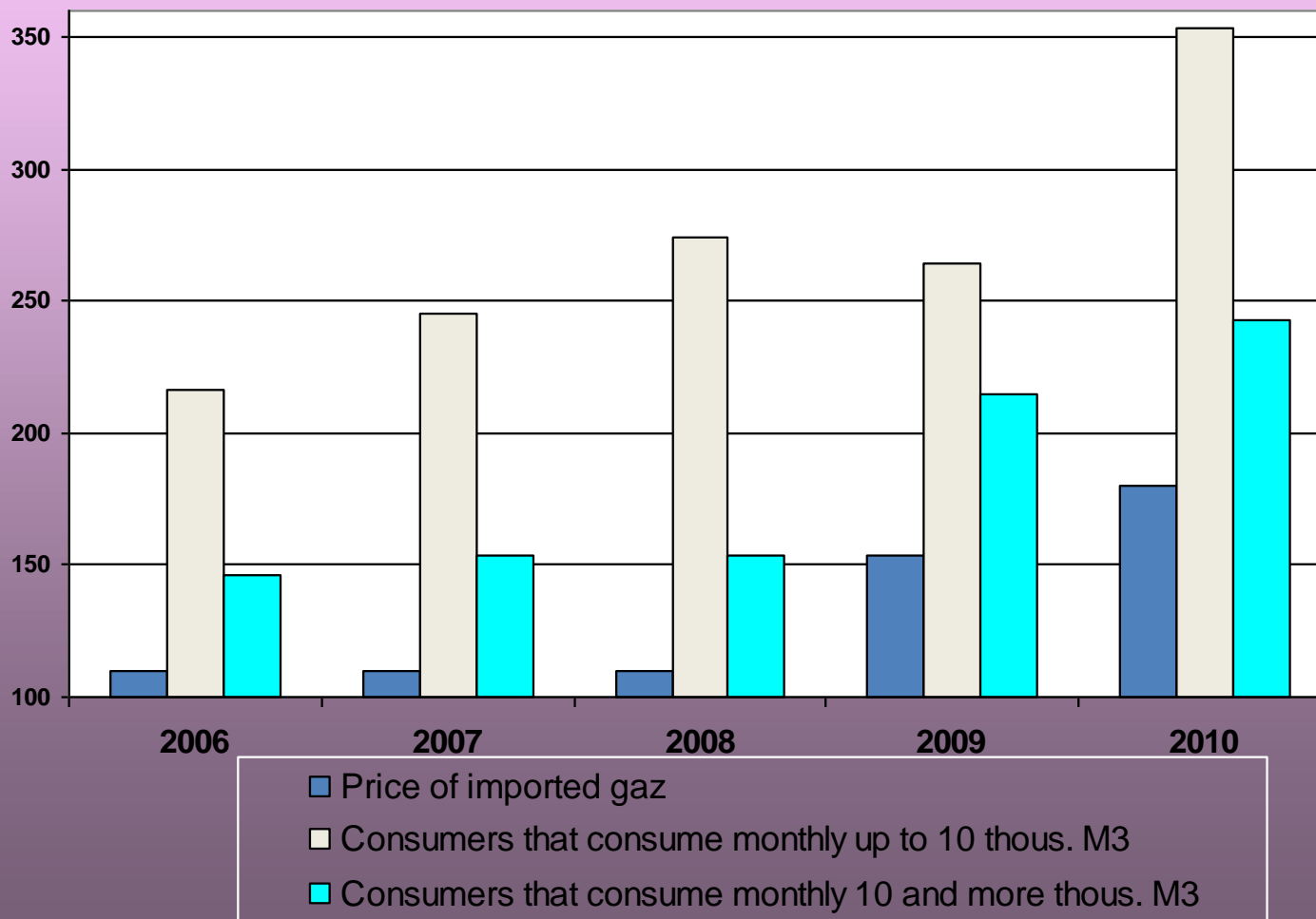


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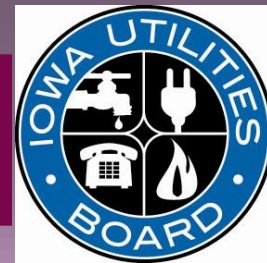
## Consumer Rates in Gas Supply System

USD/thous. m<sup>3</sup>





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***Thank you!***