dixigroup ANALYTICS ON DUTY

QUALITY OF GAS SUPPLY:
CASE OF UKRAINE

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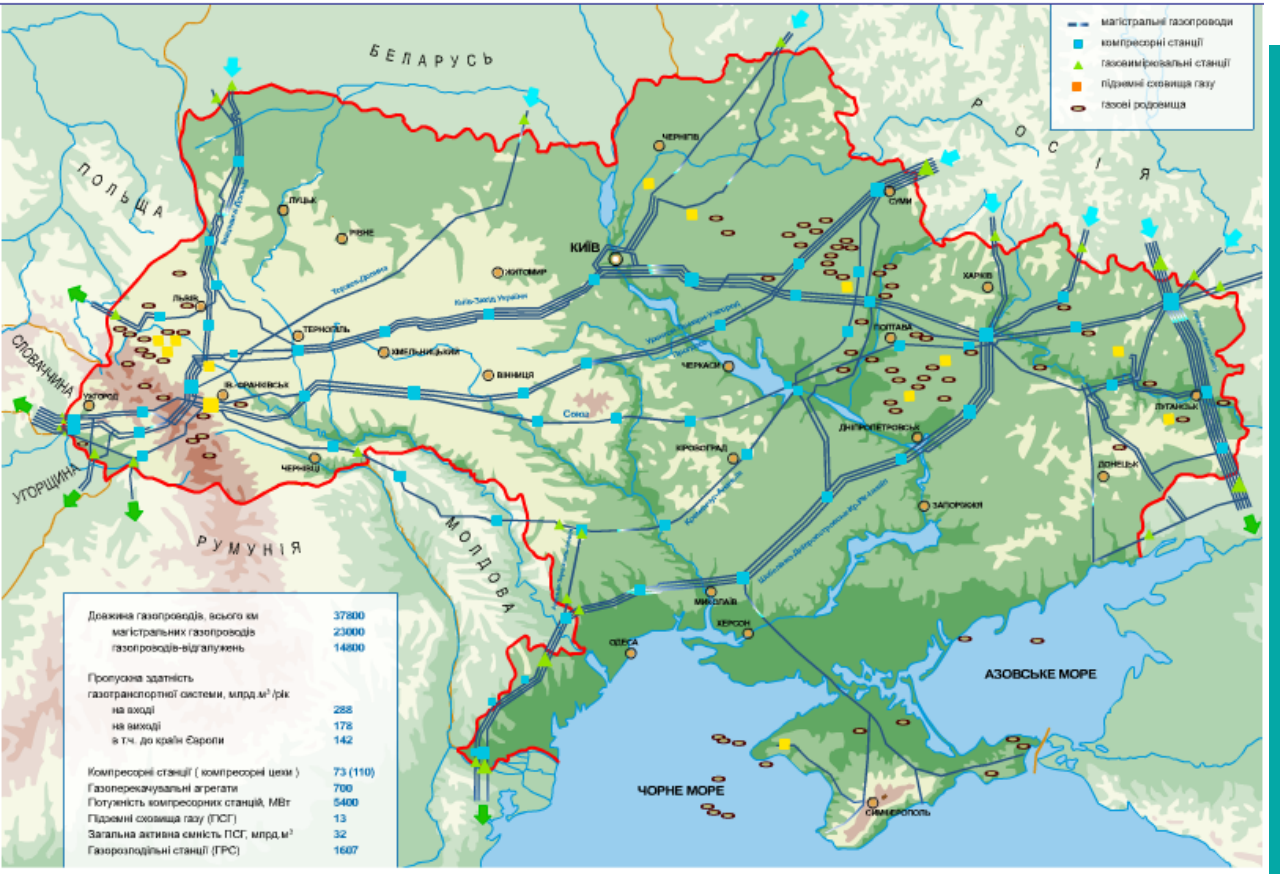
QUALITY OF GAS SUPPLY: UKRAINE



Source: Ukrtransgas

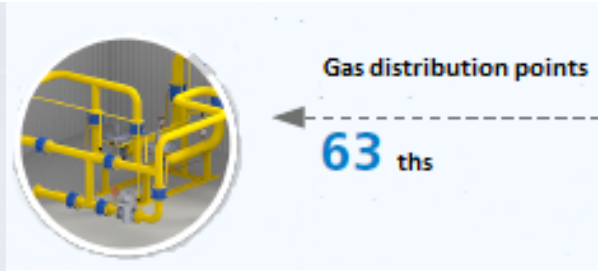
HIGH PRESSURE	MEDIUM PRESSURE	LOW PRESSURE
> 1,2 MPa 1,2 – 0,3 MPa	0,05-0,3 MPa	< 0,05 MPa

Legislative basis:

- Law “On Gas Market” 2015
- Transmission Network Code 2015
- Distribution Network Code 2015
- Rules for Gas Supply (NERC) 2015
- Rules of Security of Gas Supply (MoE) 2015
- Resolution of CoM on PSOs 2015

Length of TSO gas pipelines - 38,55 thousands of km; Length of DSO gas pipelines - 409,3 thousands of km;

QUALITY OF GAS SUPPLY: UKRAINE



Source: Regional Gas Company

CONTINUITY OF GAS SUPPLY (1)

DEFINITION OF INCIDENT	DEFINITION OF LEAK	DEFINITION OF ACCIDENT
Yes	Yes	Yes
Rules of Security of Gas Supply Systems	Rules of Security of Gas Supply Systems	National Action Plan
Ministry of Energy	Ministry of Energy	Ministry of Energy
DSO	DSO	TSO

Planned interruption

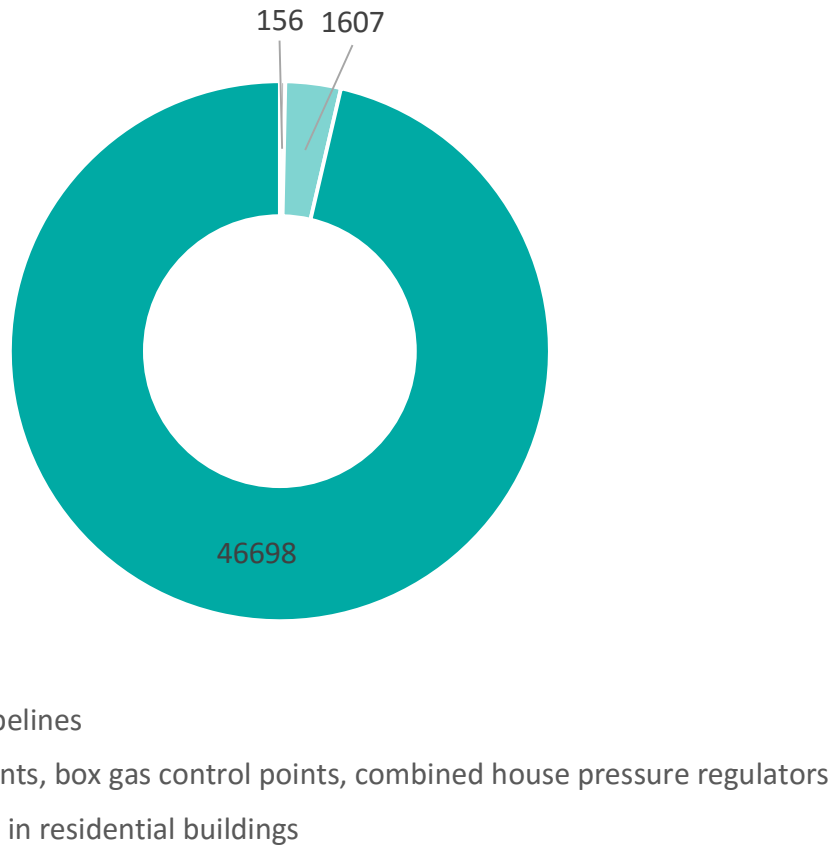
10 YEARS DEVELOPMENT PLAN		
DSO website		
Nov 1 – list of planned activities	Correction – 21 days before start of activities	If more than 5 hours interruption – 5 days before start of activities

CONTINUITY OF GAS SUPPLY (2)

TYPES OF INCIDENTS/ACCIDENTS
Leak of gas
Broken equipment
Mechanical damage
Corrosive damage
Gas flash
Gas explosion
Carbon monoxide intoxication
Fire
Unauthorized interference
Gas supply modes violations
Other

Source: Letter of Derzhgirpromnahliad (State Industry Safety Committee)

Leaks reported by emergency dispatchers of an oblgaz, *2016*



Source: Regional Gas Company, data from one oblast (Kyiv oblast)

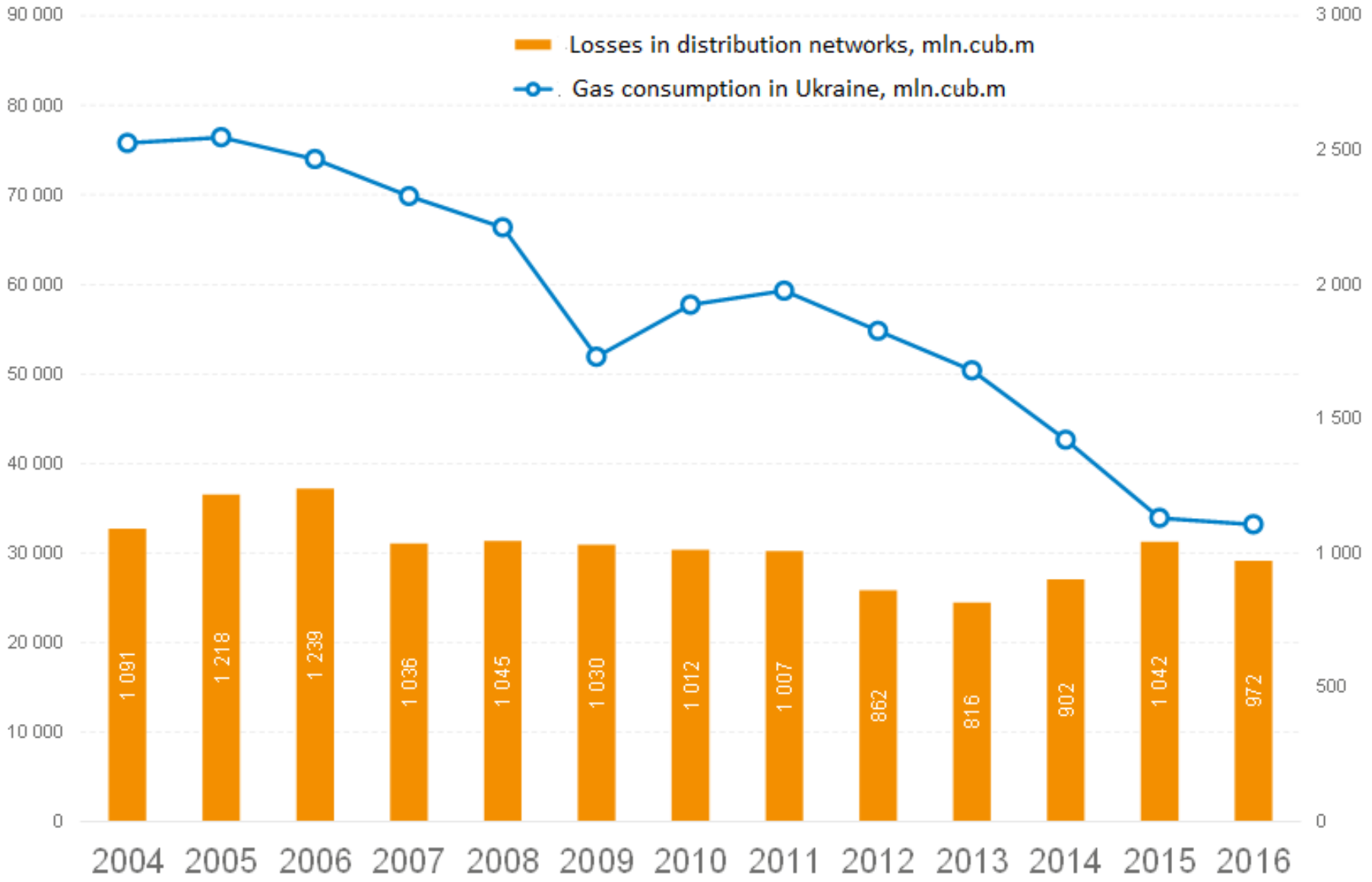
CONTINUITY OF GAS SUPPLY (3)

OBLIGATION TO ODORIZE NATURAL GAS?	TRANSPORTATION LEVEL	DISTRIBUTION LEVEL	IS THIS MONITORED
Yes – Network Codes	Yes	No	Yes

Methodology to compute network losses

IS THERE METHODOLOGY?	WHERE?	
Yes	Distribution Network Code	The difference between the volume of natural gas supplies to DS in concrete period and volume of natural gas distributed between connected customers and transferred during this period.
		Besides, there is a Methodology to calculate network losses developed by the Ministry of energy

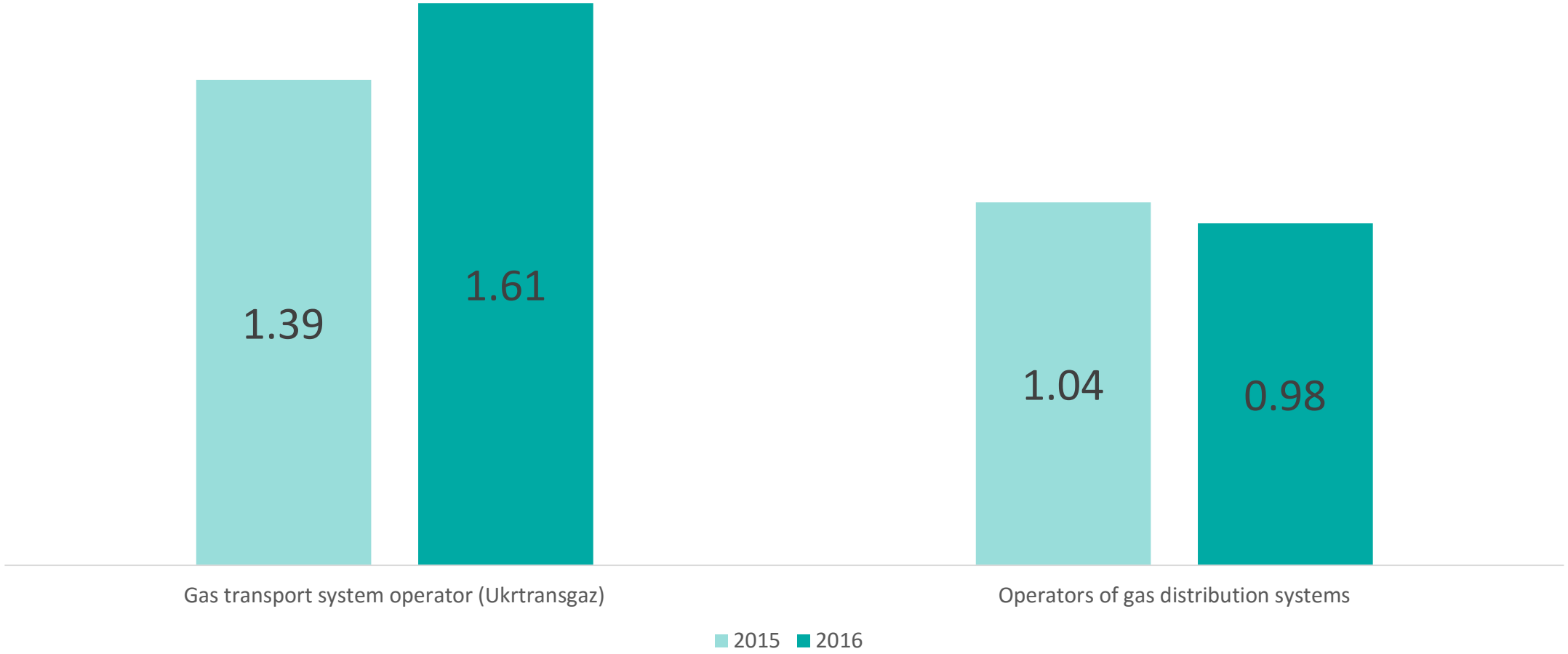
Losses in Distribution Networks



Source: Regional Gas Company

NETWORK LOSSES - 2016

Amount of operational costs and losses of GTS operator and operators of gas distribution networks in 2015-2016, bcm



Source: NEURC Annual Report 2016

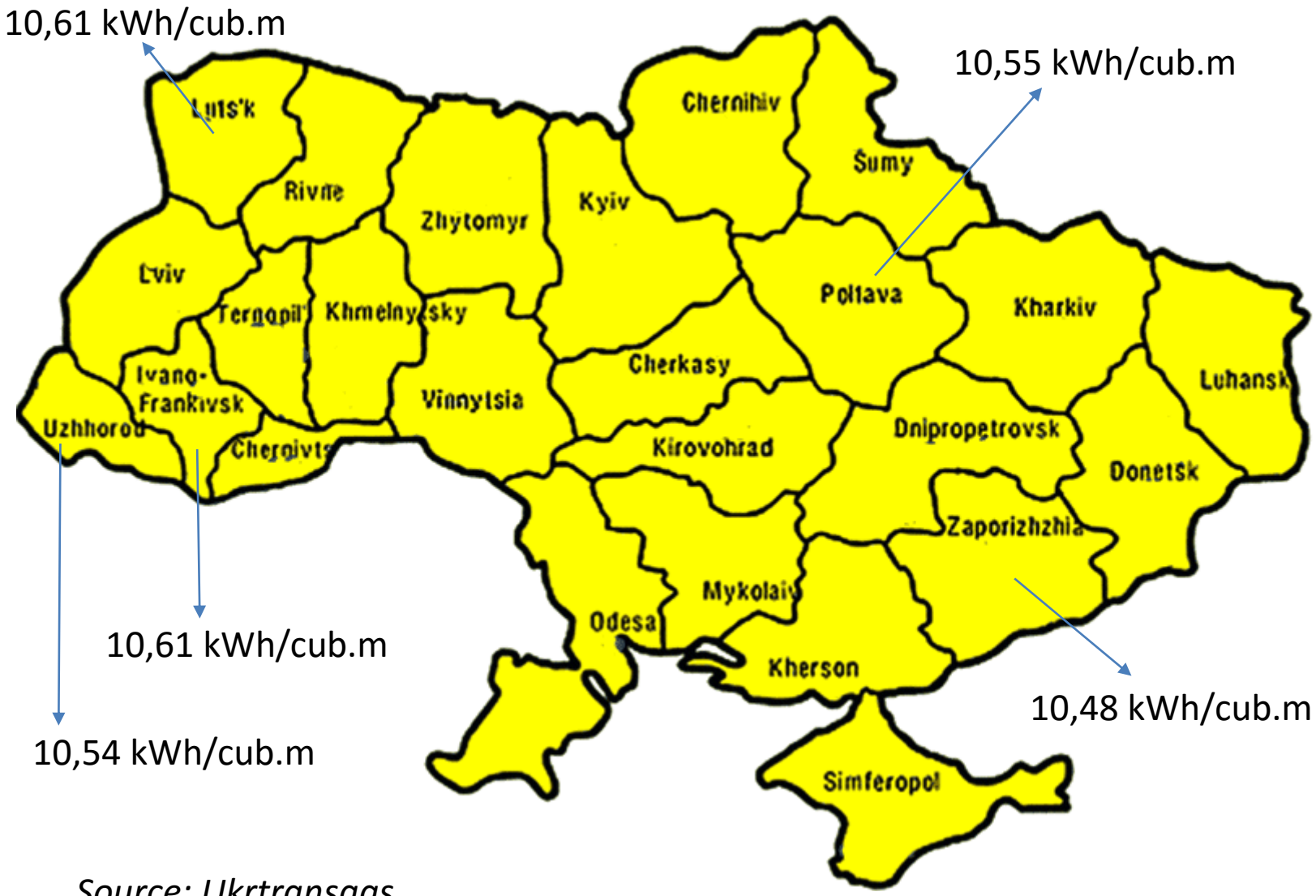
NATURAL GAS QUALITY

WHAT IS MISSED
Total sulfur
Sum of butanes
Sum of pentanes
Hydrogen
Water
Carbon Monoxide
Incomplete combustion factor
Soot index
THT
Organic halides
Radioactivity

Source: Network Codes

PARAMETERS	
Transmission Networks Code	**Distribution Networks Code**
Gross calorific value	Gross calorific value
Relative density	Relative density
Hydrogen sulfide	-
Impurities	
Wobbe index	Wobbe index
Water/Hydropower Dew Point	Water/Hydropower Dew Point
Mercaptain sulphur	-
Methane	-
Ethane	-
Propane	-
Butane	-
Pentane	-
Nitrogen	Nitrogen
Carbon content	-
Oxygen	-

NATURAL GAS QUALITY – GROSS CALORIFIC VALUE



Gross Calorific Value (Real Gross Dry)	Min
Belgium (1)	9.53
Croatia (2)	10.28
Czech Republic	9.4
France	10.7
Hungary (2)	8.6
Italy (2)	9.71
Latvia (3)	9.69
Lithuania	10.4
Poland	10.56
Portugal	no value
Slovenia	10.7
Spain	10.23

Source: Ukrtransgas

COMMERCIAL QUALITY (2) – CUSTOMER INFORMATION

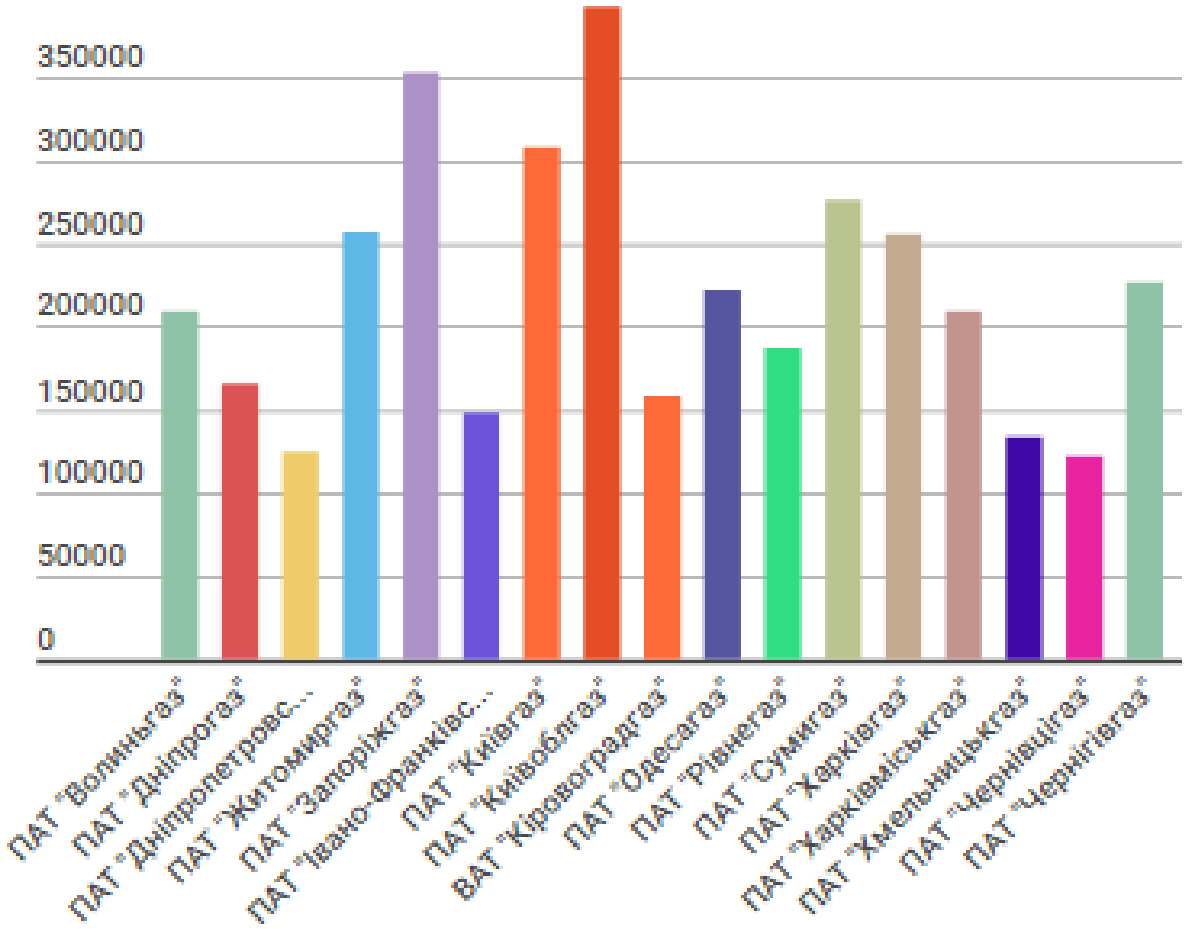
RGC statistics: **app 1,2 mln complains among 8 mln consumers in March 2017**. The main issue – prices on gas

NERC information: Among **main issues –**

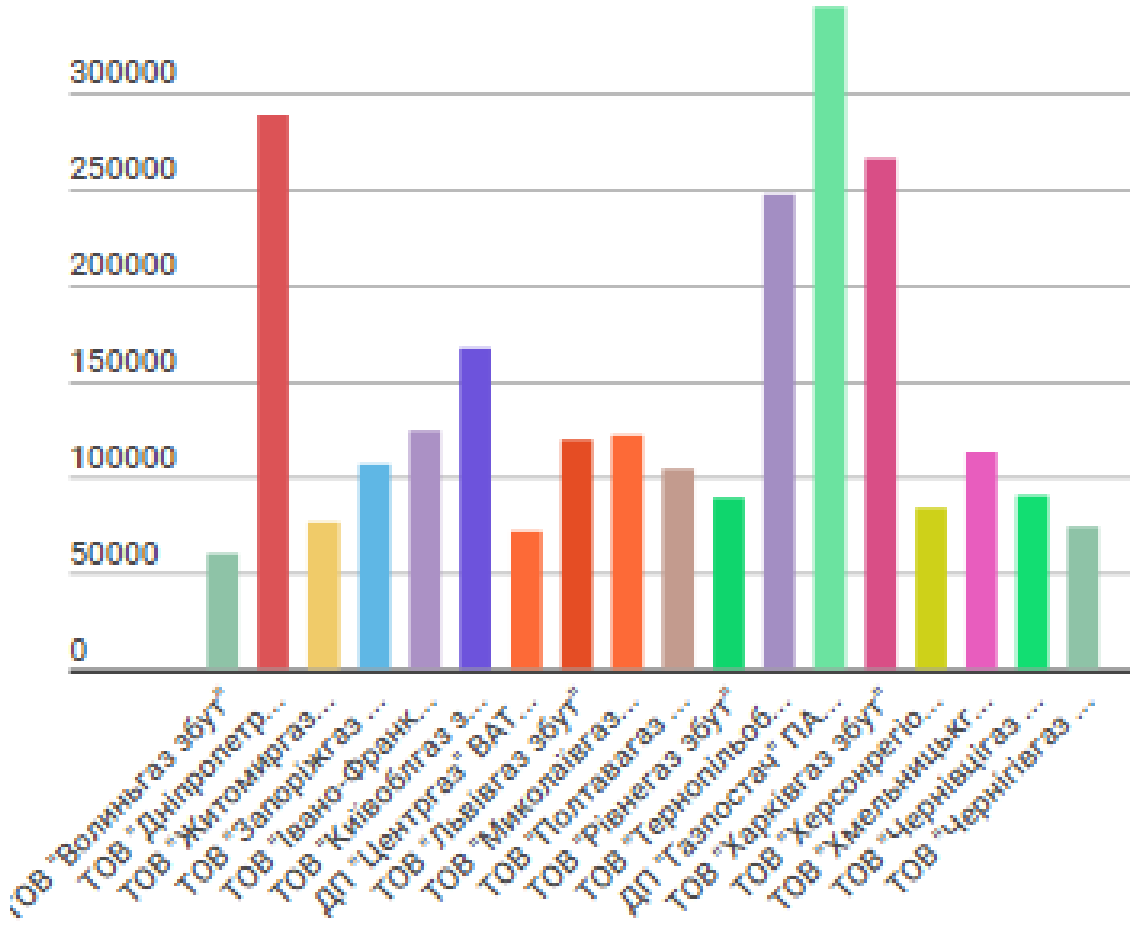
- Whether DSOs and suppliers activities are in accordance to the legislation
- Prices on gas and reason of debts
- Verification of gas meters
- Access to distribution systems

COMMERCIAL QUALITY (3) – CUSTOMER INFORMATION

Calls to DSOs call centers, 2016



Calls to suppliers' call centers, 2016

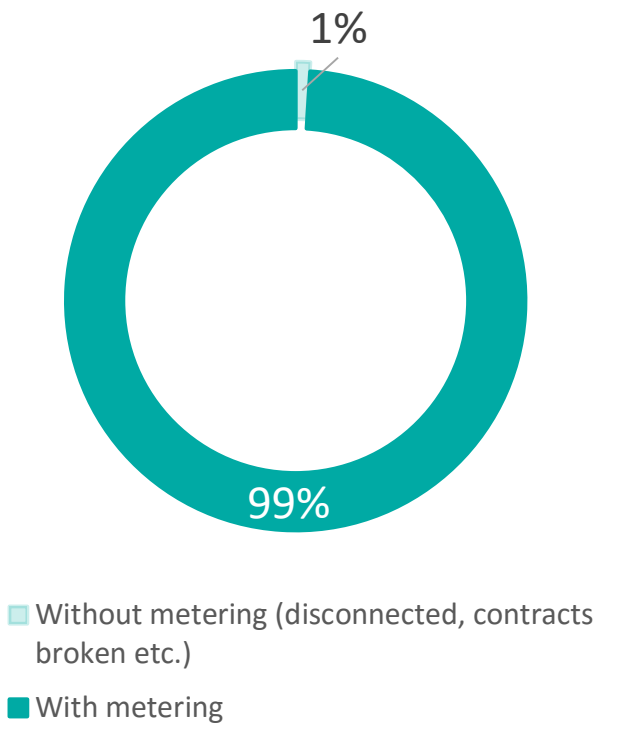


Source: NEURC

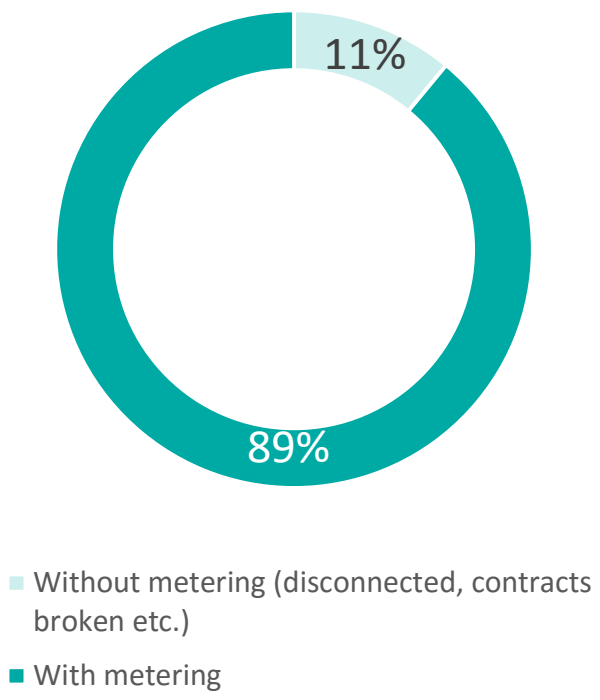
METERING ISSUES

level of equipment of the population with gas meters as of January 1, 2017

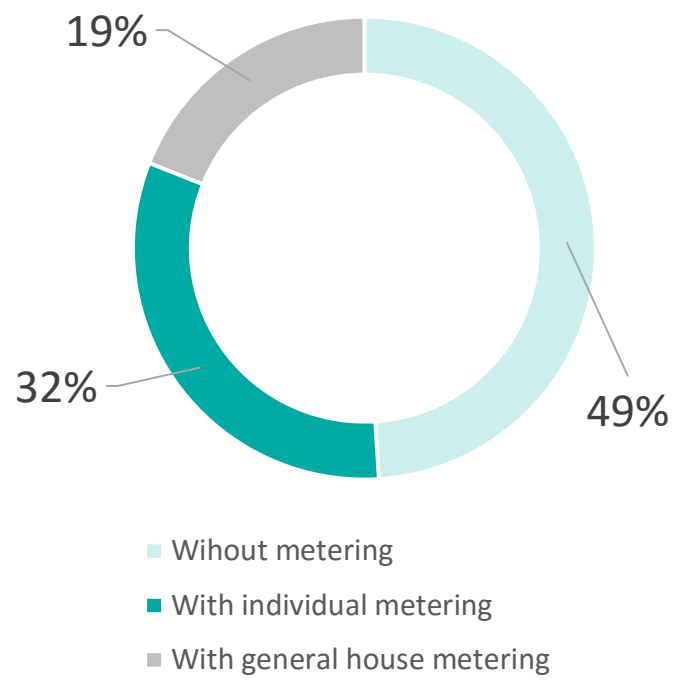
Population which uses gas in complex, including heating



Population which uses gas for heating water and cooking

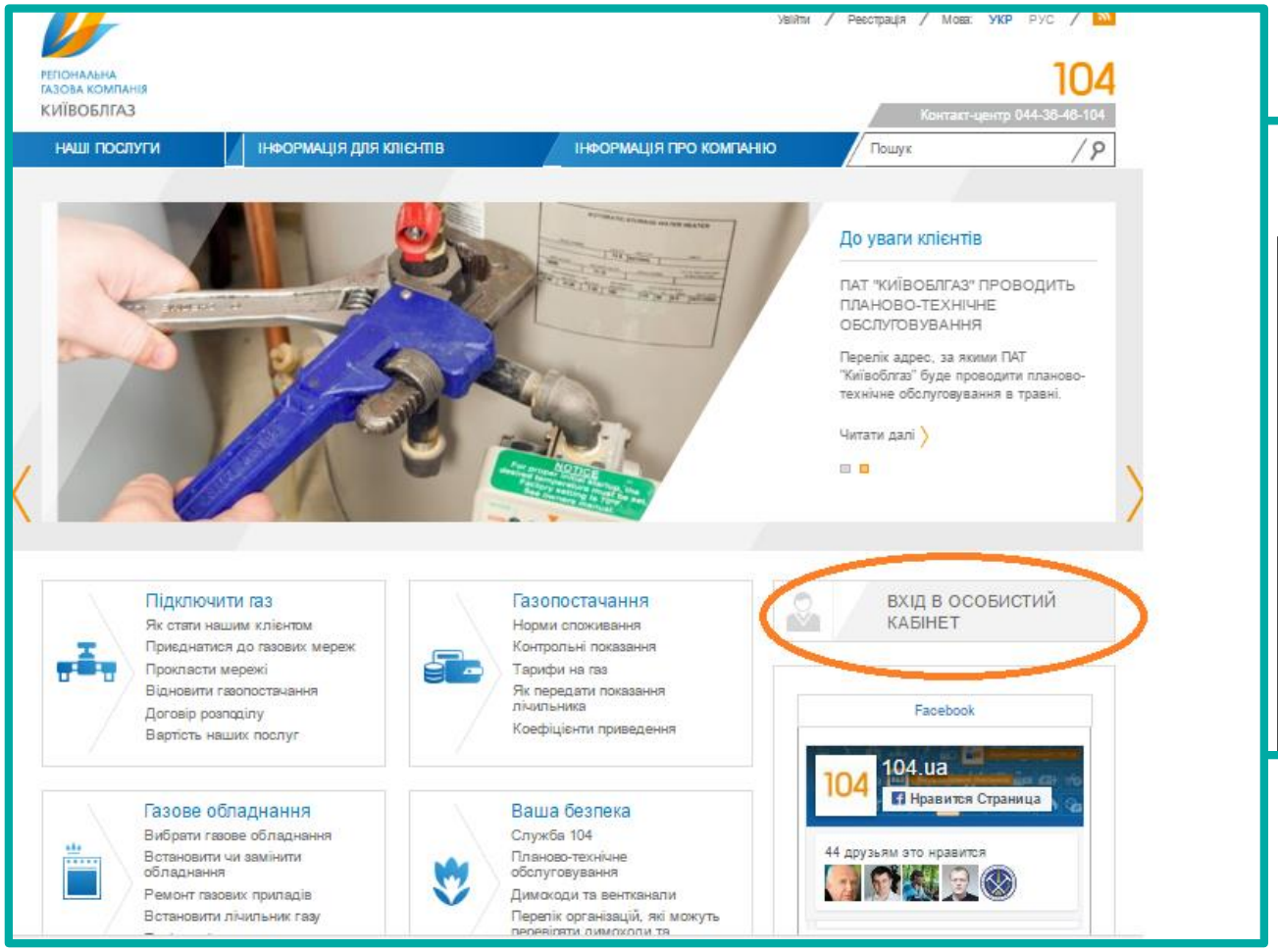


Population which uses gas for cooking



Source: NEURC Annual Report 2016

DSO COMMUNICATION WITH CUSTOMERS

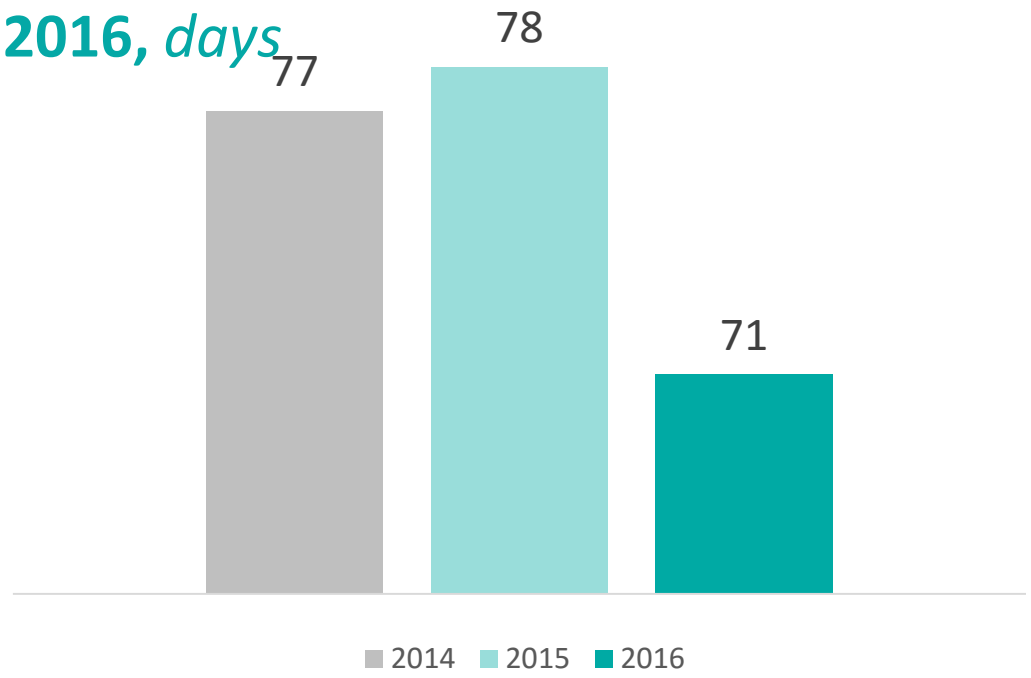


І розділ Плану розвитку газорозподільної системи на 2016-2025 роки
Інвестиційна програма
газорозподільного підприємства
ПАТ "Київоблгаз"
на 2016 рік

№ з/п	Назва робіт	Усього в кількісному виразі, одиниці	Усього обсяг фінансування, тис.грн без ПДВ	Примітка
1	2	3		15
Розділ І. Розподільчі газопроводи				
1	**Реконструкція, усього, км, у т.ч.:**			
1	**Заміна газових мереж, км**	**7,111**	**4 966,131**	
	Броварська ФЕГГ			
1.1	с.Погреби вул.Чапаєва газопровід в\т. Ду 50	0,026	22,95503	Заміна сталевого газопроводу
1.2	с.Шевченкове вул. Шкільна Глібова в\т. Ду 125	3,760	2448,377	Заміна сталевого газопроводу на ПЕ
	Білоцерківська ФЕГГ			
1.3	м.Біла Церква вул. Леваневського (старий переїзд - вул. Павліченко)н/т Ду 89	0,240	175,957	Заміна сталевого газопроводу на ПЕ
1.4	м.Біла Церква вул. 1-а Піщана м. Біла Церква с/т Ду 89	0,365	438,304	Заміна сталевого газопроводу на ПЕ
	Васильківська ФЕГГ			
1.5	с. Саливінки, вул. Леніна газопровід н/т Ду 89	1,400	800,978	Заміна сталевого газопроводу на ПЕ
1.6	с.Саливінки вул. Білоцерківська вул.Майдан, н/т Ду 89	0,745	769,114	Заміна сталевого газопроводу на ПЕ

COMMERCIAL QUALITY (3) – GRID ACCESS

Duration of standard connection to networks 2014-2016, *days*



Payment for standard connection service– agreement between customer and DSO but in accordance to the methodology adopted by NEURC

AMCU report: main violations on gas market in 2016

- Inclusion to technical requirement demands which are reasonable for access
- Unauthorized interruption of gas supply
- Overestimation of payments for grid access (non-standard access)
- Violation of terms of consideration of requests for grid access (too long)
- Violation of terms fulfillment of agreement for grid access (too long)

Findings and recommendations

- Gas quality in Ukraine (Energy Community Countries?) might be a chapter for the next Benchmarking Report;
- NEURC, TSO and DSOs already have most of the indicators defined in the Benchmarking Report;

- Continuity of supply indicators are the most covered in Ukraine;
- Commercial quality indicators are the least covered in Ukraine; this is the issue to improve;
- Including Ukraine (Energy Community Countries?) might help to speed up reforms “visible” for consumers

THANK YOU FOR YOUR ATTENTION!

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