MONITORING OF QUALITY OF SERVICES PROVIDED BY ENERGY COMPANIES OF UKRAINE

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Service Quality Monitoring in Ukraine

Law of Ukraine on Natural Monopolies

Article 9. Principles of regulation of activities of subjects of natural monopolies

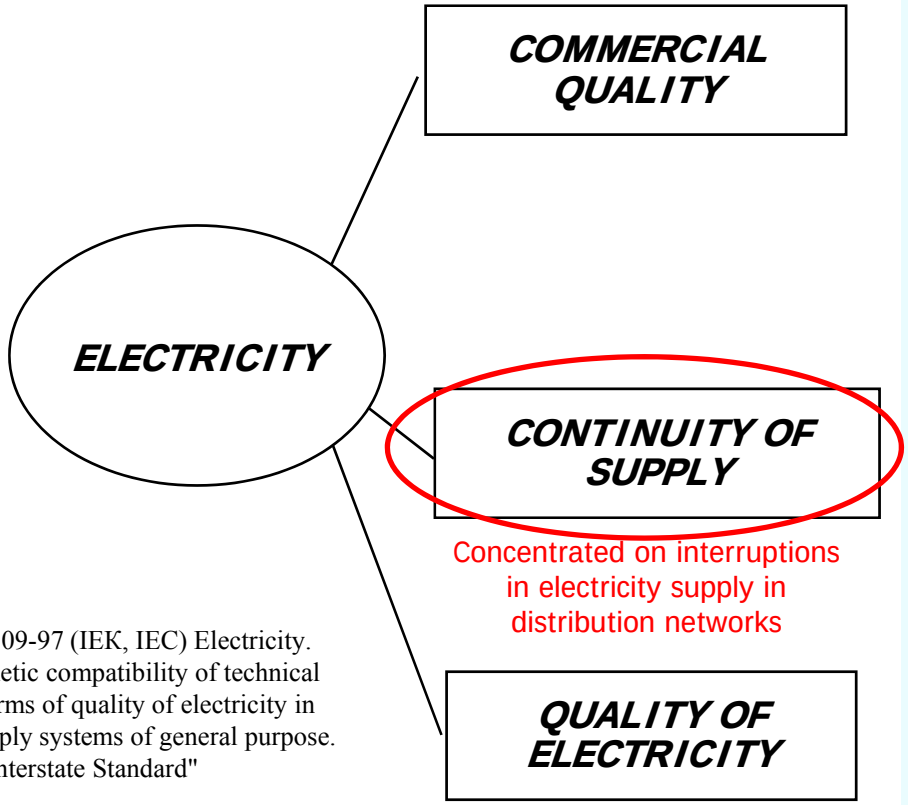
1. Regulation of activities of subjects of natural monopolies is done on the basis of the following principles:

promotion of improvement of quality of goods and meeting the demand for them;

2. When regulating prices (tariffs) for goods of subjects of natural monopolies the following is taken into account:

compliance of the quality of goods produced (sold) with the needs of consumers.

Main Areas of Electricity Quality Regulation



Concentrated on interruptions in electricity supply in distribution networks

"GOST 13109-97 (IEK, IEC) Electricity. Electromagnetic compatibility of technical devices. Norms of quality of electricity in electricity supply systems of general purpose. Interstate Standard"

COMMERCIAL QUALITY:

- response to calls
- meter reading
- billing
- assigning reception hours and compliance with them
- connecting to networks
- verification of the voltage level and of meters

CONTINUITY OF SUPPLY:

- interruption with notification
- Interruption without notification

QUALITY OF ELECTRICITY:

- voltage fluctuations
- frequency deviations
- voltage drops
- nonsinusoidal nature of voltage

SUPPLY

GENERATION TRANSMISSION AND DISTRIBUTION

Quality of Electricity

- European Standard EN-50160: Voltage characteristics of electricity supplied by public distribution systems.

- “GOST 13109-97 (IEK, IEC) Electricity. Electromagnetic compatibility of technical devices. Norms of quality of electricity in electricity supply systems of general purpose. Interstate Standard"

- Law of Ukraine on Electricity establishes the right of a consumer (Article 25) to “receive electricity, whose quality characteristics are determined by state standards” and responsibility of the energy supplier (Article 24) in the amount of 25% of cost of electricity sold with quality parameters outside those set by the state standards, and in the amount of double cost of non-sold electricity in case of interruption of power supply in case of fault of the energy supplier (according to the conditions of the agreement on use of electricity.

- Rules of Use of Electricity by the Population (Decree of the CMU No. 1357 of 26.07.1999), and Rules of Use of Electricity (NERC decree No. 28 of 31.07.1996): item 6.47. “In case a supplier of electricity or power transmission organization receives from a consumer information about deviations of electricity quality indicators from contracted values, within two days the parties have to arrange joint metering, analysis and to prepare a bilateral document on the quality of electricity”.
  - In case deviations of quality indicators from the state standards are confirmed, the energy supplier should be held liable in accordance with the legislation.

Role of NERC in Monitoring Quality of Services on Transmission and Supply of Electricity

- ***Regulation on the National Electricity Regulatory Commission of Ukraine (Decree of the President of Ukraine of 21.04.1998 No. 335)***

4. ***In accordance with its tasks, the Commission:***

5) within its competence protects interests of consumers in issues related to prices for electricity, gas, oil and oil products, and also to reliability of their supply and quality of services from supply organizations;

5. The Commission has the right:

8) to exercise control over quality of services of organizations that supply electricity and gas, for which it is envisioned by the tariff, according to rules of use of electricity and gas;

- ***Comprehensive plan of measures to ensure financial stability of enterprises in the fuel and energy complex (Order of the CMU of 28.05.2005 No. 167-p)***

Item 7.7 “Development and implementation of standards of quality of services related to supply of electricity in order to protect consumer rights”.

Possible mechanisms for service quality regulation (incentives to improve service quality)

- Publishing comparative information on service quality of various companies in order to promote yardstick competition between them on quality indices.
- Application of economic sanctions (fines, compensations) in case of non-compliance with standards. Money from fines should be paid to finance programs of service quality improvement.
- Written notifications, making amendments in license conditions or revocation of licenses.
- Revision of the level of tariffs for transmission of electricity through local networks and supply of electricity at the regulated tariff, and of other economic sanctions that affect income and profit of the energy company.

Methodology and indicators of quality of services related to transmission and supply of electricity

- NERC Decree No. 200d-r of 17.12.2009 "On Provision of Information by Licensees on forms of monitoring service quality indicators"

Services provided by energy companies for 2009 (commercial quality)

Code of the type of service	Reason for calling	Number of requests to get services for 2009	Time of service provision according to normative documents
1	2	3	4
S1	Provision of access to power network		
S1.1	Issuance of technical conditions (i.19 *)	30.336	15 days
S1.2	Connection of customer's power installation to power network		
S1.2.1	without the need to interrupt power supply of other consumers	13.210	5 working days
S1.2.2	if there is a need to interrupt power supply to other consumers	11.055	15 working days
S1.3	Re-connection of power installations of the consumer after disconnection (item 7.12**)	21.014	5 working days
S1.4	Restoration of power supply of consumers after elimination of violations and repayment of debts (item 36 ***)		
S1.4.1	in cities	121.363	3 days
S1.4.2	in rural areas	36.745	7 days
S2	Preparation of a draft agreement on supply of electricity		
S2.1	for consumers (except for population) with connected capacity up to 150 kW (item 5.3 **)	13.608	7 working days
S2.2	for consumers (except for population) with connected capacity 150 kW and more (item 5.3 **)	775	14 working days
S3	Verification of metering devices upon requests of consumers		
S3.1	Verification of metering devices of consumers (except for population) (item 6.36 **)	17.639	20 days
S3.2	Verification of metering devices for population (item 29 ***)	48.847	20 days
S4	Analysis of quality of electricity		
S4.1	Conducting together with the consumer analysis of quality of electricity and preparation of a bilateral act for consumers (except for population) (item 6.47 **)	339	2 days
S5	Preparation of an act on claim about violation of conditions of the agreement		
S5.1	Arrival of the company representative for drawing up the act on claim about violation of conditons of the agreement (item 50 ***)		
S5.1.1	in urban areas	172	3 days
S5.1.2	in rural areas	123	7 days
S5.2	Elimination of faults noted in the act on claim or presentation of well grounded refusal (item 51 ***)	42	10 days
S6	Giving an answer to a written claim of a residential consumer	94.064	месяц
	TOTAL:	**409.332**	

* Procedure for presenting source data for designing urban development facilities approved by Decree of the Cabinet of Ministers of Ukraine of 20.

** Rules of use of electricity approved by NERC Decree of 31.07.96 No. 28 (in the version of NERC Decree of 17.10.2005 No. 910);

*** Rules for using electricity by population approved by decree of the Cabinet of Ministers of Ukraine of 26.07.99 No. 1357;

**** Закона Украины "Об обращении граждан".

HOW CAN CONTINUITY OF POWER SUPPLY BE DETERMINED?

Interruptions in power supply are characterized by the following

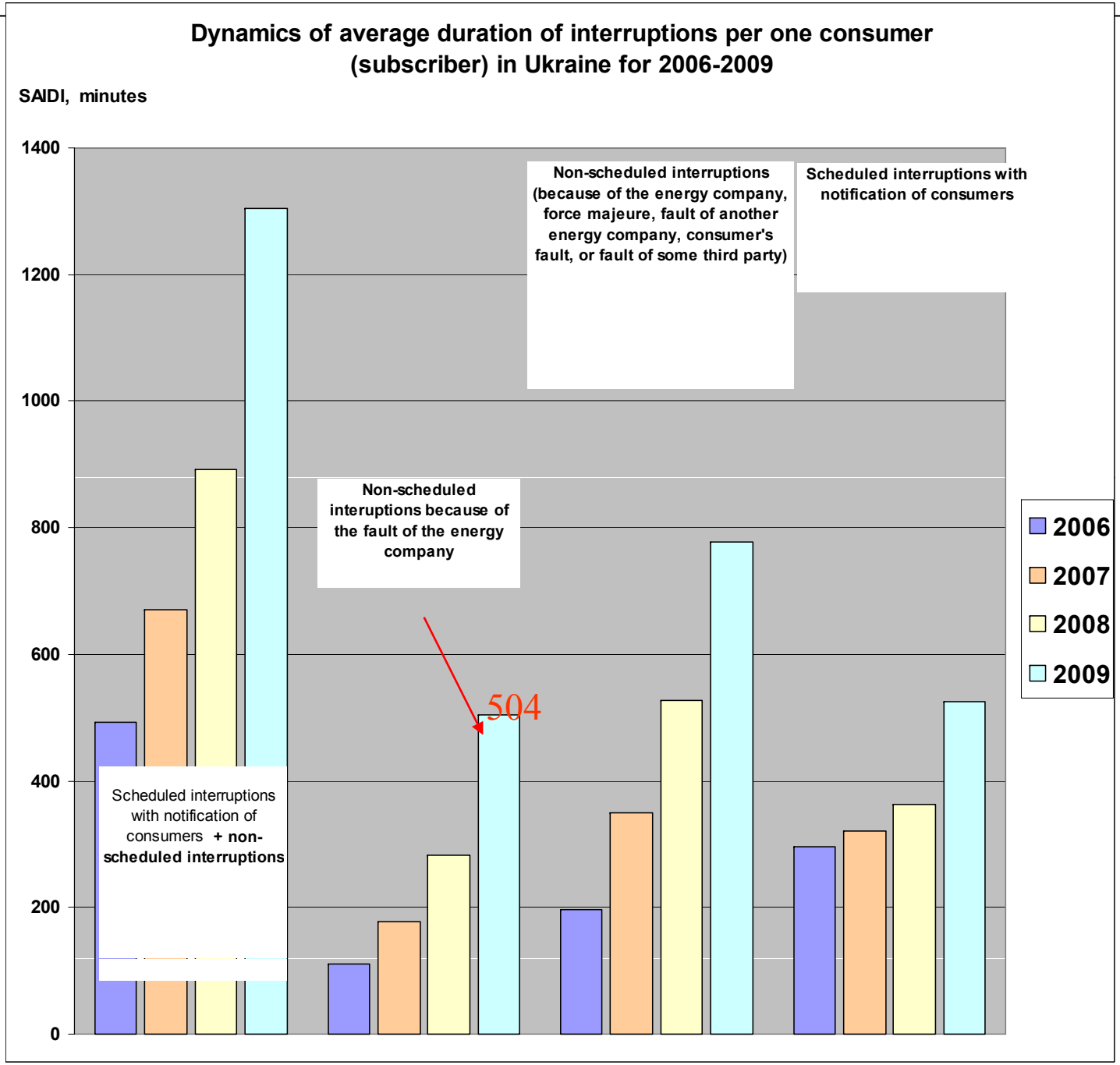
- Time between events or number of interruptions (of each type) during a certain period (usually 1 year) and territory of supply (uniformity!) for N consumers (subscribers)
  - SAIFI: average number of long interruptions in power supply per customer per year (MAIFI for short interruptions)
  - SAIDI: average duration of interruptions per customer per year
- For each interruption of one type main characteristics, which are registered:
  - Number of affected customers (subscribers) N_i ➔ SAIFI, SAIDI
  - Duration (time of beginning and end) D_i ➔ SAIDI

$$SAIFI = \frac{\sum_{i=1}^{K} N_i}{N_{tot}} \qquad SAIDI = \frac{\sum_{i=1}^{K} N_i D_i}{N_{tot}}$$

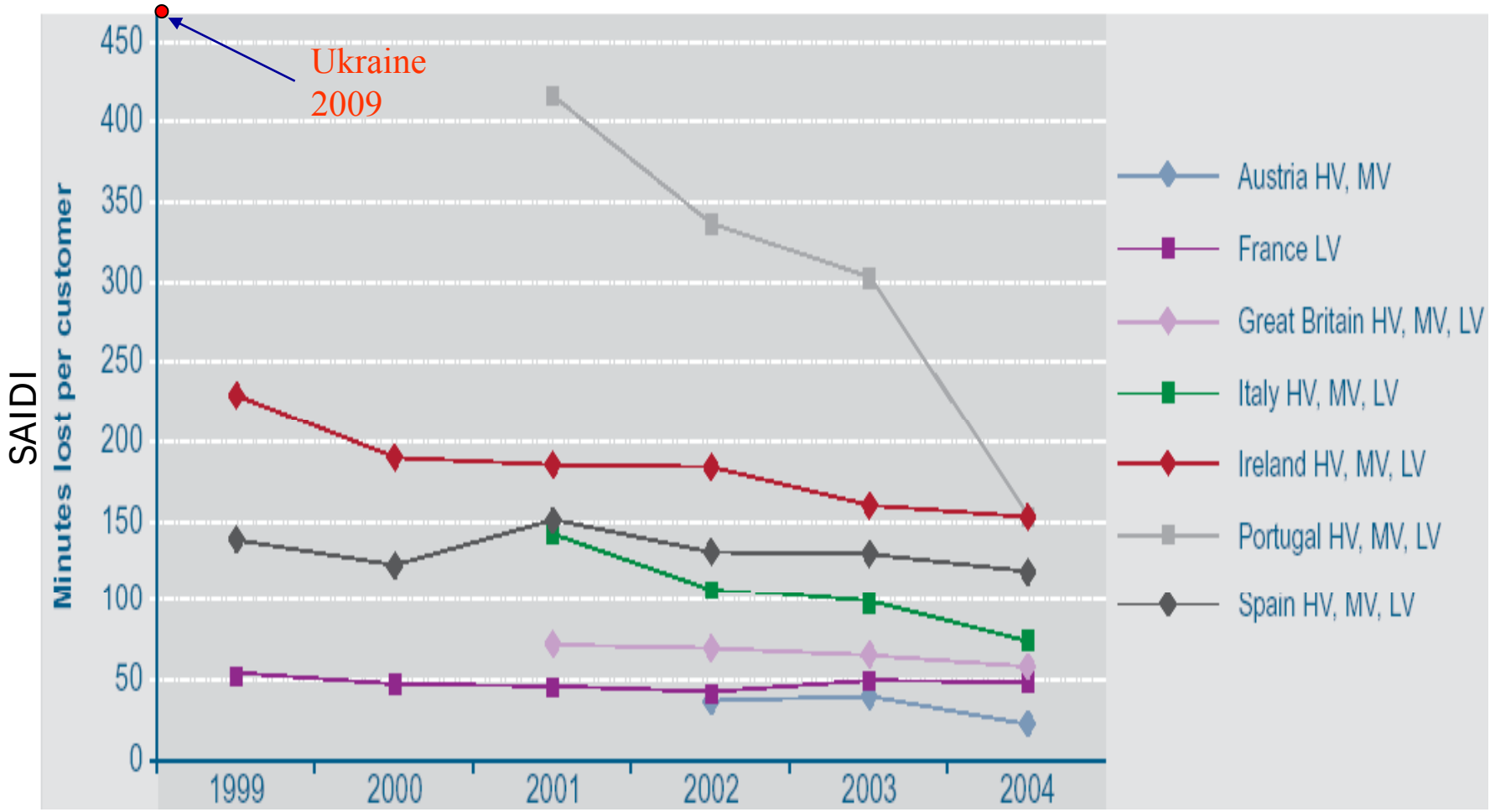
REGISTRY OF DISCONNECTIONS OF CONSUMERS FROM POWER SUPPLY

No. of disconnection	Code of the source of information	Dispatch name of equipment	voltage level				classification of disconnections						Date and time of beginning of disconnection	Date and time of the end of interruption	Длительность отключения, мин.	Type of interruption	voltage level 0,4 kV			
							scheduled		non-scheduled								urban		rural	
			110/154 kV	27,5 - 35 kV	6 - 20 kV	0,4 kV	with notification of the consumer	without notice	fault of another energy company or consumer	force majeure	fault of third persons	technological violations in energy company networks					Number of disconnected 35 -6/0,4 kV or lines 0,4kV	Number of disconnected sales points	Number of disconnected tr.35 - 6/0,4 kV or lines 0,4kV	Number of disconnected sales points
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	1	ТП-302			X							X	01.06.2008 11:01	01.06.2008 11:10	9	long	4	200	2	258
2	1	л-1				X						X	03.06.2008 09:17	03.06.2008 09:19	2	short			1	20

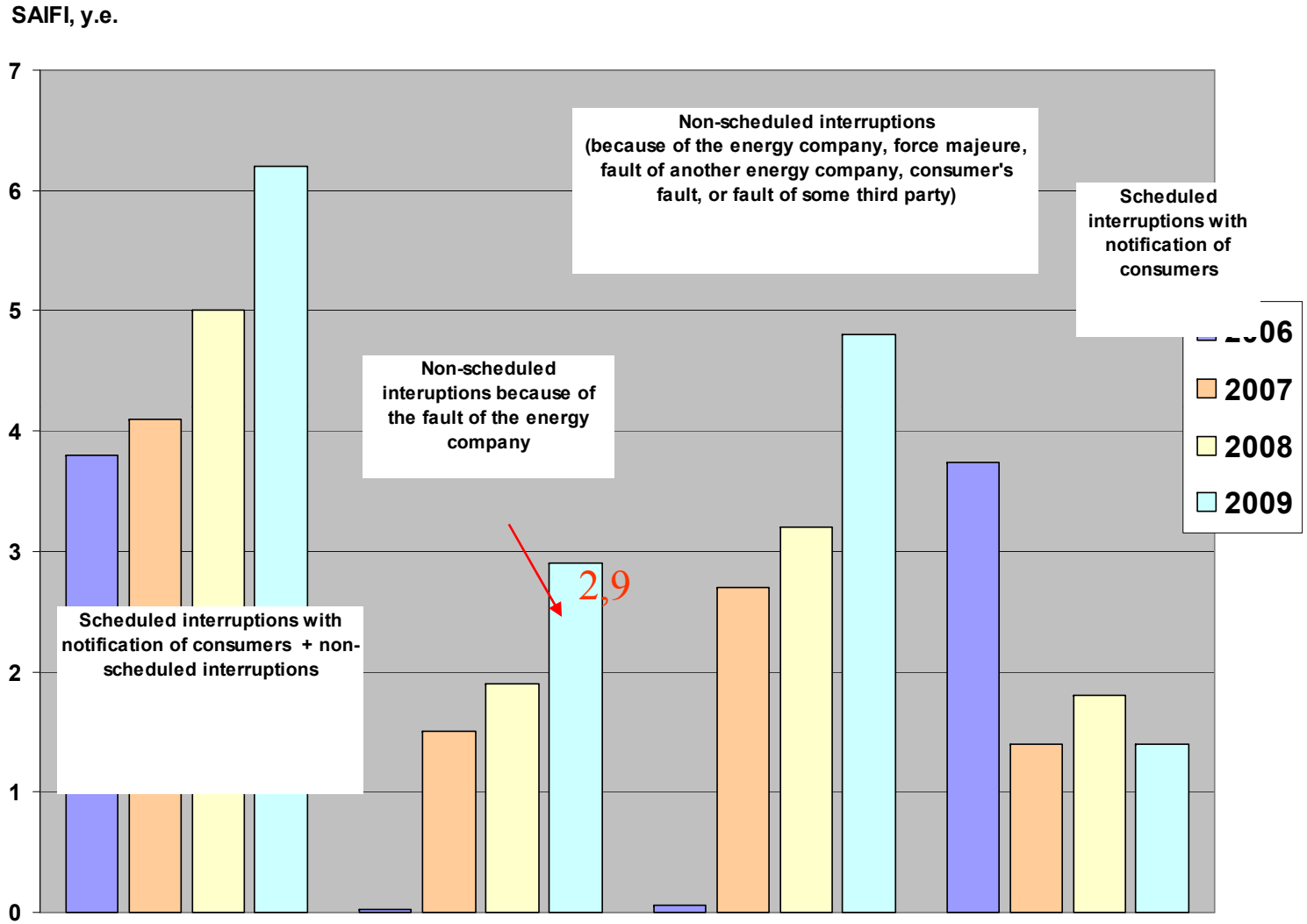
Dynamics of average duration of interruptions per one consumer (subscriber) in Ukraine for 2006-2009



Non-scheduled interruptions in some EU countries *(except for emergency events), 1999-2004*



Dynamics of the average number of interruptions per one customer (subscriber) of Ukraine for 2006-2009



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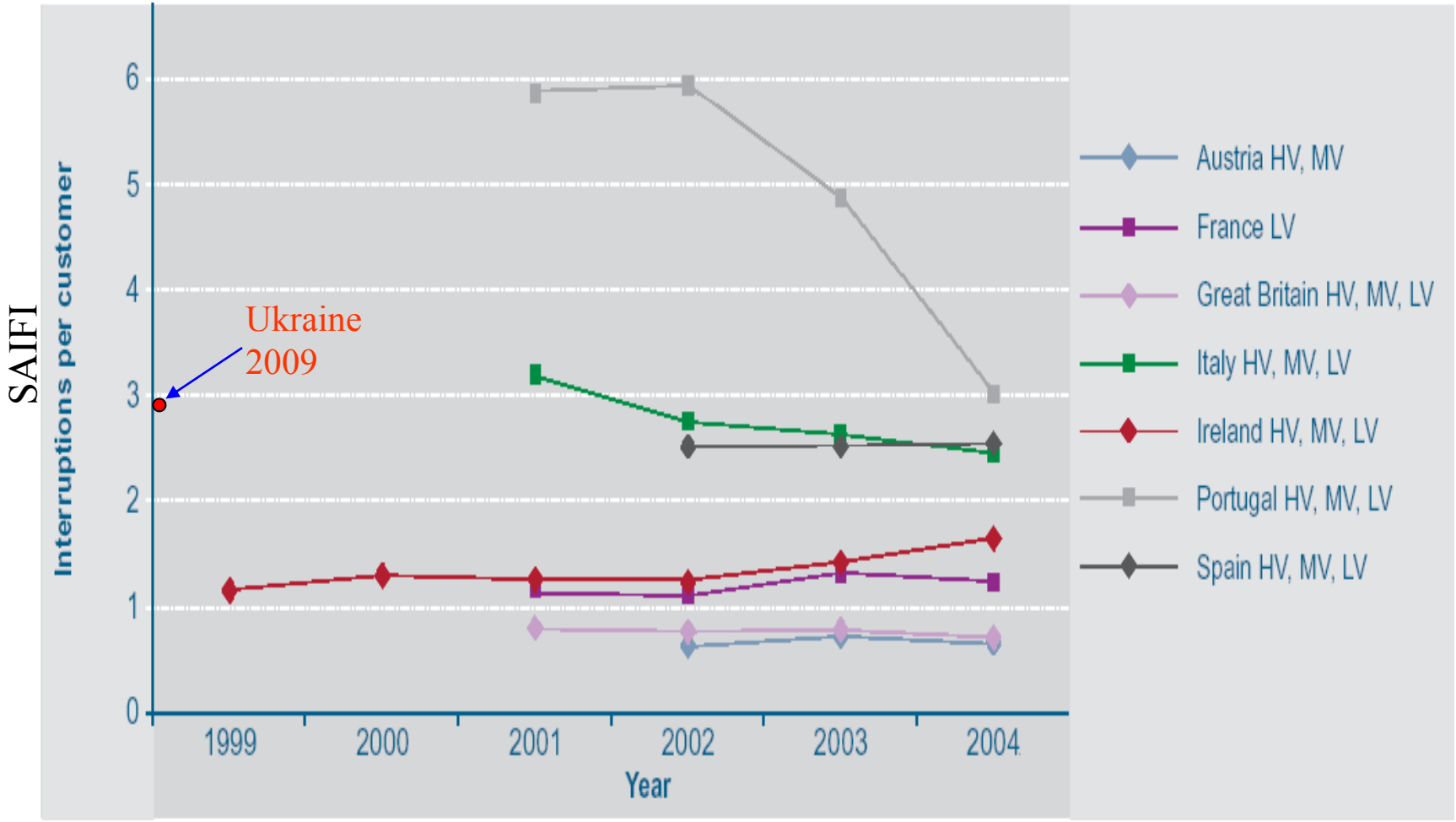
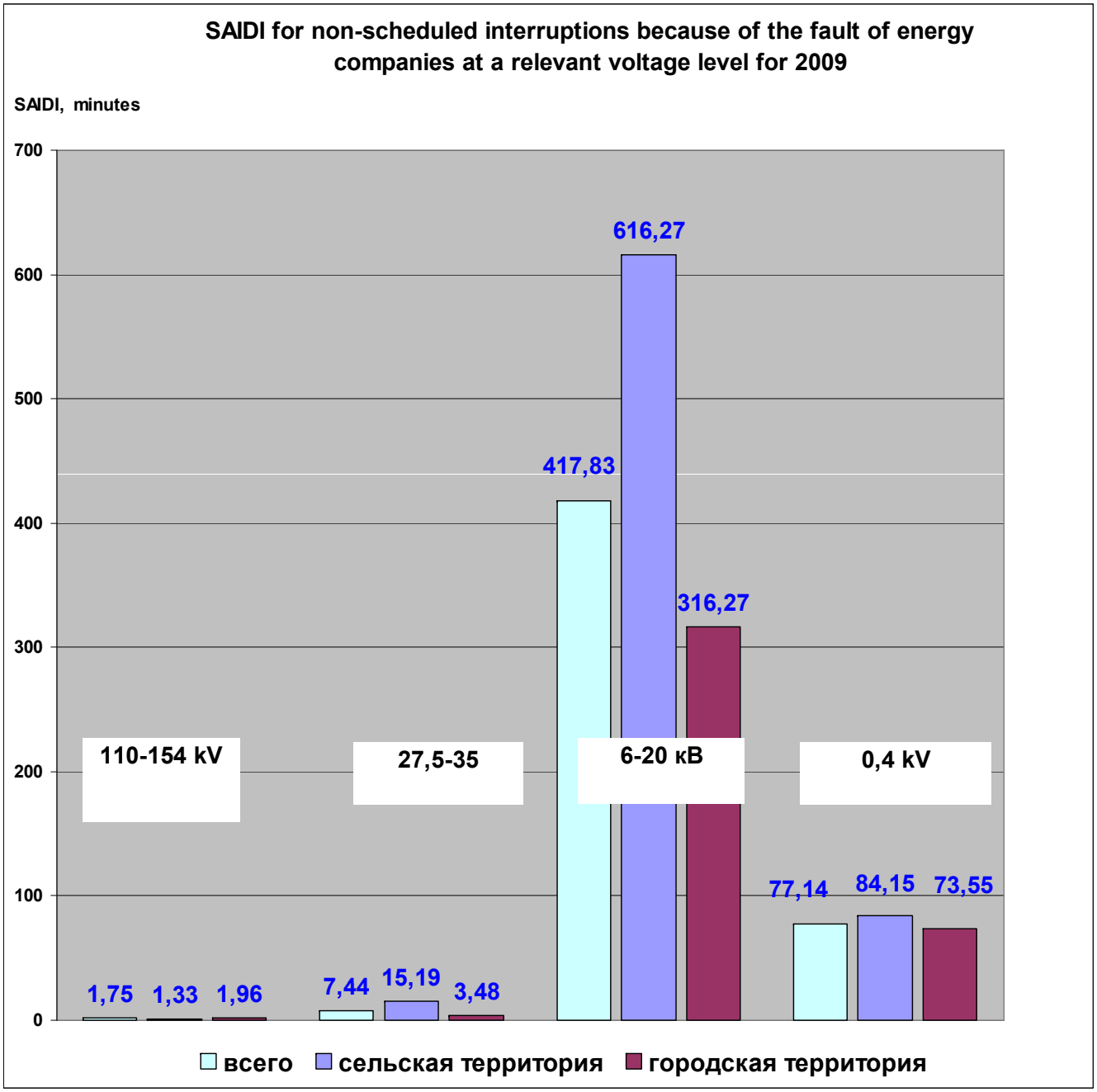
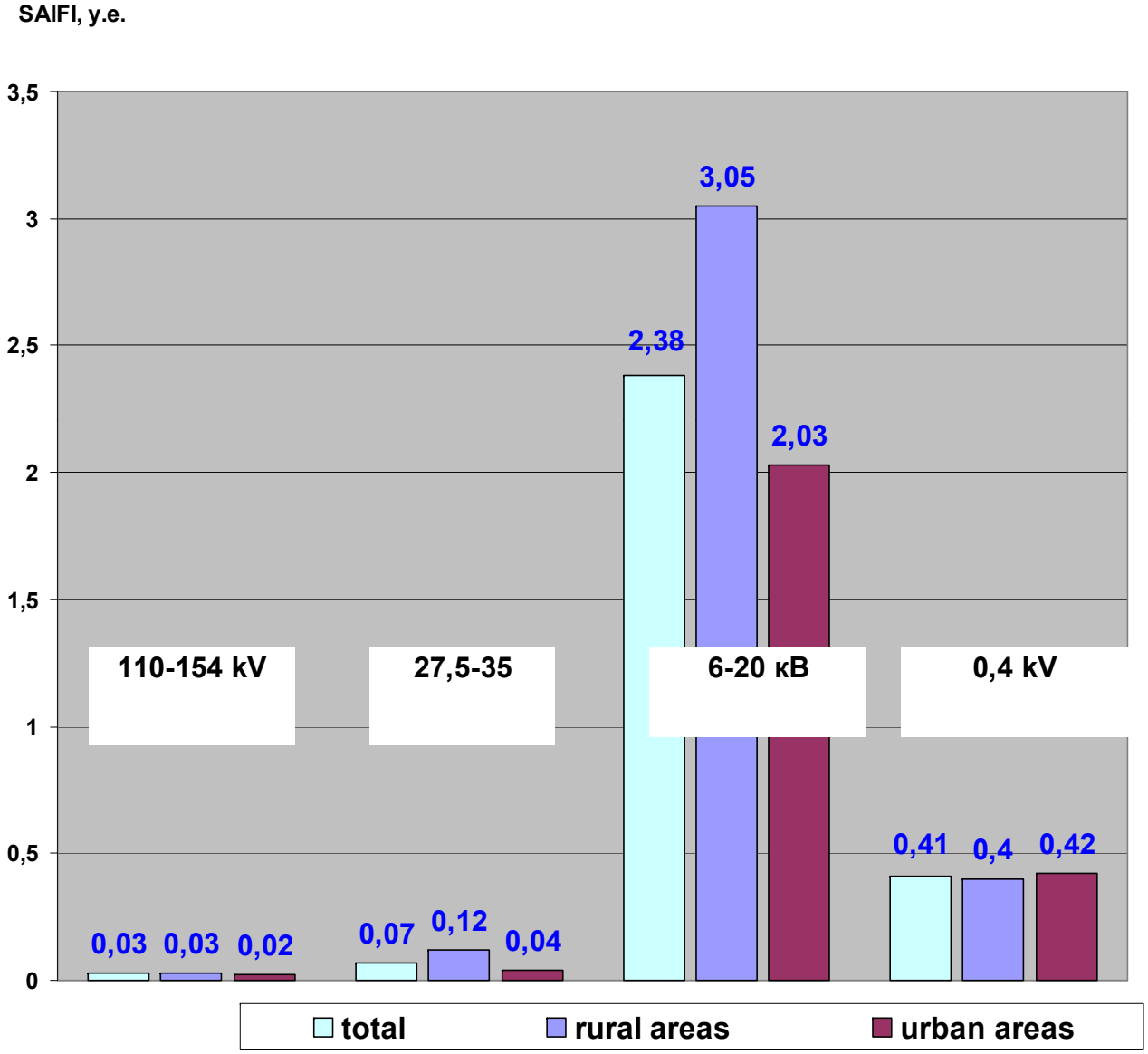
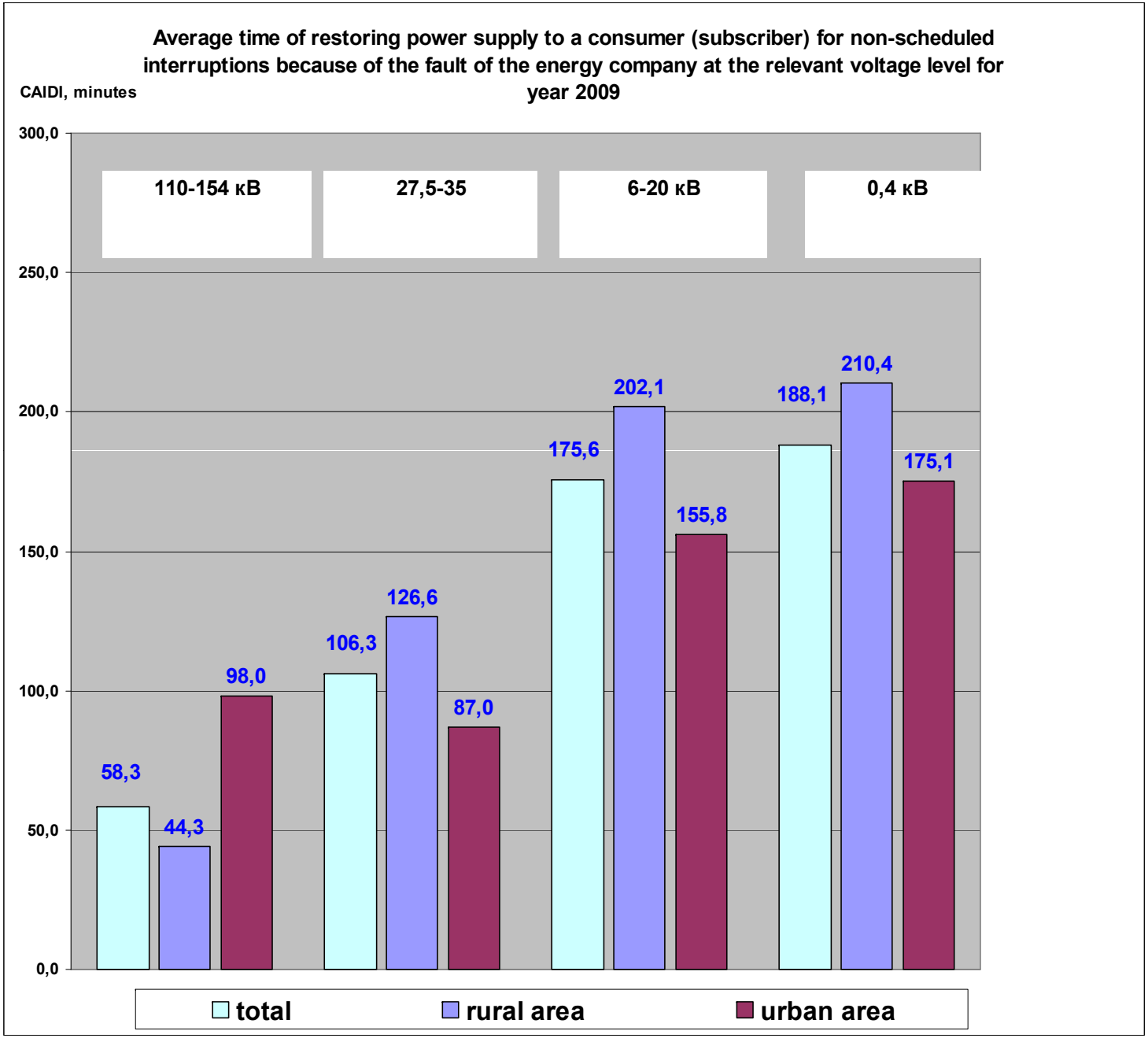



SAIDI for non-scheduled interruptions because of the fault of energy companies at a relevant voltage level for 2009
SAIDI, minutes
700
600
500
400
300
200
100
0
110-154 kV
27,5-35
6-20 кВ
0,4 kV
1,75
1,33
1,96
7,44
15,19
3,48
417,83
616,27
316,27
77,14
84,15
73,55
всего
сельская территория
городская территория
Total
rural area
urban area

SAIFI for non-scheduled interruptions because of the fault of energy companies at a relevant voltage level for year 2009




Average time of restoring power supply to a consumer (subscriber) for non-scheduled interruptions because of the fault of the energy company at the relevant voltage level for year 2009
CAIDI, minutes
300,0
250,0
200,0
150,0
100,0
50,0
0,0
110-154 кВ
27,5-35
6-20 кВ
0,4 кВ
58,3
44,3
98,0
106,3
126,6
87,0
175,6
202,1
155,8
188,1
210,4
175,1
total
rural area
urban area

Thank you for attention