

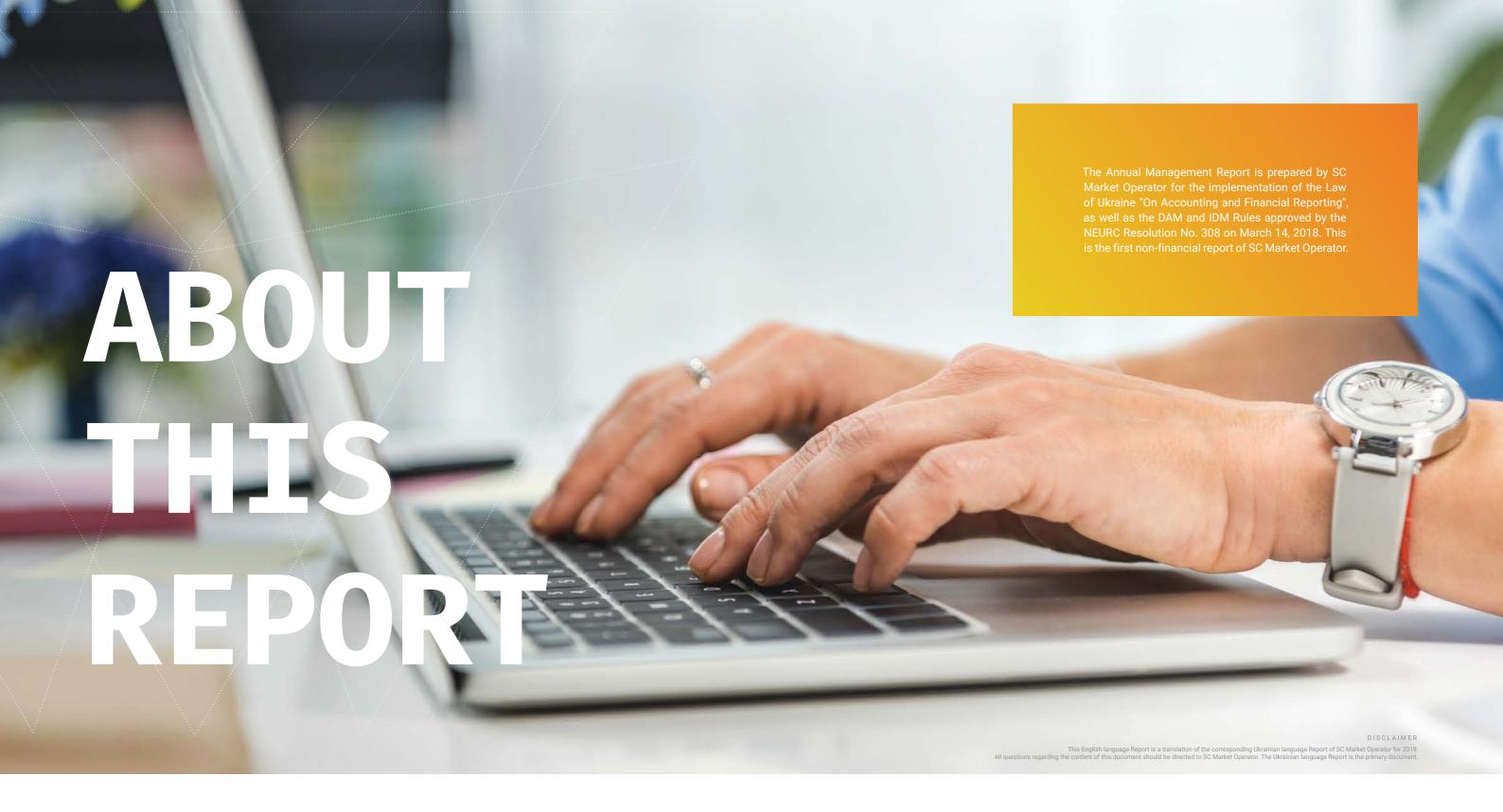
ANNUAL REPORT OF SC MARKET OPERATOR

HISTORIC YEAR FOR UKRAINE ELECTRICITY

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FOREWORD

DEAR COLLEAGUES, FRIENDS AND **BUSINESS PARTNERS!**



2019 was a historic year for the Ukrainian electricity. Ukraine has implemented one of the most complicated reforms, and it has got a new electricity market since July 1, 2019. We had considerably less time than the European states to implement the relevant legislation. Nevertheless, the Ukrainian electricity power market started operating according to the new rules, and Ukraine proven to the world its ability to realize truly difficult challenges on guite short notice. The prompt launch of the new electricity market has also allowed Ukraine to receive 500 mln EUR of EU macrofinancial assistance.

The State has ceased to be the single seller and buyer of electricity since last year. Power producers, electricity suppliers, traders and large industrial consumers are operating under market conditions where price is formed through competition for the buyer, not through manual management. In accordance with European Union rules, electricity trading is taking place in such segments of the new market as the bilateral contracts market, "day-ahead" market, intraday market and balancing market.

I had the honor to coordinate the electricity market reformation. Firstly, as the Head of the Project office of the Coordination Center for introduction of a new electricity market, which was established by the Cabinet of Ministers of Ukraine. Later I continued this work in collaboration with the USAID Energy Security Project; and on June, 2019 I became a director of SC Market Operator - the enterprise responsible for the organization of trading at the "day-ahead" market and intraday market.

Reformation of electricity market was necessary for Ukraine. Inadequacy of the old model of the Ukrainian power market to present-day challenges, growing amount of cross-subsidization, deterioration of the accepted electricity payments wasn't a full list of problems that could not be solved by cosmetic changes. A major overhaul was needed to change globally the philosophy of the Ukrainian energy

On June 30, 2019 SC Market Operator conducted start-up auctions at the "day-ahead" market. And I was extremely pleased to read the headlines in the leading Ukrainian and

> "I AM CONVINCED **THAT 2019 WAS** A HISTORIC YEAR FOR THE UKRAINIAN **ELECTRICITY**"

foreign mass media dated July 1: "Ukraine launched the reform of the electricity market: Ukrainians did NOT remain without power".

It was even more important to feel the wonder and respect of our European partners in regards to launching two market segments ("day-ahead" market and intraday market) at the same time. In fact, Poland, Slovakia, Turkey, and Hungary initially implemented DAMs, and only a few years later they introduced IDMs.

VOLODYMYR IEVDOKIMOV

DIRECTOR OF SC MARKET OPERATOR

None of this would have been possible without a strong team of SC Market Operator with whom I have the privilege to work. The most interesting thing happened in the first hours of the new market launching on July 1, when some companies were "testing" the market operator's bidding system for durability. That is why for three days, from June 30, our professionals literally spent their nights at work, but they were able to start in time and establish a sophisticated, high-tech bidding process.

My colleagues from energy sector call me the biggest optimist of power market reform. I am convinced that 2019 was a historic year for the Ukrainian electricity. We learned a new way of working - according to the principles of the European practice of electricity selling and purchasing. This step brings us closer to the market coupling with European countries, provides Ukraine with the opportunity to freely trade and increase electricity production.

I believe that 2020 will be even more eventful and productive. SC Market Operator has a lot ambitious ideas, among other things is the Strategy of Development of the Company that has been submitted to the shareholder for consideration. And we are optimists of the future Ukrainian energy market!



ARCHITECTS OF THE FUTURE

Electricity auctions

ARE CONDUCTED 24/7,

we buy and sell electricity for the next delivery day and during the delivery day, also we guarantee

100% DATLY PAYMENT

WHO WE ARE

The State Company SC Market Operator was established on June 18, 2019 in accordance with the Law of Ukraine "On the Electricity Market".

The Company is responsible for the organization of electricity sale and purchase on the "day ahead" and intraday market, assists in balancing of supply and demand on the electricity market.

PORTRAIT: OF EMPLOYEE

Currently the Company employs 95 specialists working in shifts, because electricity auctions are conducted on a round-the-clock basis. This is a young team of professionals who can work for the result and quickly solve complex problems.

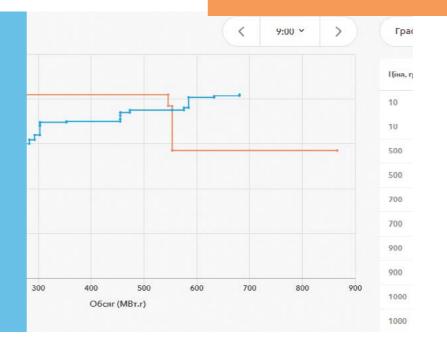
More than 400 companies are freely trading electricity at the platform of SC Market Operator. This is quite a large number of participants, more than in some European countries. And this demonstrates confidence to SC Market Operator as a reliable partner that fully calculates and registers tax invoices, what is equally important for companies.

All our staff members are the

have got diplomas of 2 or more enterprise is a Doctor of sciences, an experienced energy engineer and

On the "day-ahead" market, the purchase and sale of electricity is carried out on the next day after the day of auction. The price at this segment of the market is determined by the principle of marginal pricing, with the provision of price minimization and trade volume maximization. No participant sees stated prices and volumes of other players for either the sale or purchase of electricity. This technology of the contributes to the development of

On the intraday market, the purchase and sale of electricity is carried out continuously after completion of an auction on the "day-ahead" market and during the day of the physical supply of electricity. This segment of to adjust their trading positions and works on the principle of "each volumes and prices at which they want to sell/buy electricity, and wait for their



The price on the "day-ahead" market is determined by the principle of trade volume maximization and price minimization. No participant sees stated prices of other players for either the sale or purchase of electricity. This technology of the auction on the "day ahead" market contributes to the development of competition.

The intraday market allows market participants to adjust their trading positions and works on the principle of "each product has its own buyer". That is, sellers contract the volumes and prices at which they want to sell electricity, and wait for their buyer.

Such activity and implemented Anti-Corruption Program is positioning SC Market Operator as an enterprise of European model, and also meet the goals of the Cabinet of Ministers of Ukraine to make state-owned enterprises transparent and innovative.

OPERATOR

MARKET



5 ADVANTAGES OF SC MARKET OPERATOR

We work on the principle of the exchange. This contributes to the development of competition in the market and the decline in electricity prices

SC Market Operator is the first and the only state-owned enterprise in Ukraine that has implemented and makes payments through ESCROW accounts. And the first, whose payment system works on weekend

We operate transparently in compliance with the principles of free pricing. Electricity auctions are conducted 24/7 in automatic mode, without any manual process control

We enable electricity market participants to minimize imbalances and thus reduce their costs

We provide 100% daily payments between electricity traders. That is, nobody has any debts to anyone on the "day-ahead" market and intraday market

MAIN BUSINESS PROCESSES OF SC MARKET OPERATOR

OBSERVATION



Qualified Electronic Trust Services
Provider "Electric energy market
Certification Authority"

Unified information and technical complex.

High-tech, innovative equipment.





VOLODYMYR IEVDOKIMOV





VOLODYMYR NESTERUK



FIRST DEPUTY **DIRECTOR**

Volodymyr levdokimov is an energy specialist with 25 years of experience, who has been working in the power energy sector since 1995. He is a doctoral student at the Institute of Energy Modeling by G.Y. Pukhov of the National Academy of Sciences of Ukraine. He is responsible for the development of green energy in Ukraine and creation of a price forecasting system in conditions of the new electricity market. Also investigates the balance of interests of the State, business and society in the energy sector.

evdokimov@oree.com.ua



Volodymyr Nesteruk has been working in the energy sector since 2002. Responsible for financial discipline among SC Market Operator and electricity buyers and sellers; for formation of a company tariff policy and cooperation with the JSC "Oschadbank" on aspects of clearing settlements between market participants. Also coordinates technology questions, IT implementation of quality, and trading security on the "day-ahead" market and intraday market.

nesteruk@oree.com.ua



ANDRII CHAICHEVSKYI

DEPUTY DIRECTOR OF COMMERCIAL ISSUES

For 17 years he has been working in the energy sector of Ukraine. In SC Market Operator he is responsible for establishing the process of electricity trading in both segments of the new electricity market.

chaychevsky@oree.com.ua



OLGA LEPCHENKO

CHIEF ACCOUNTANT



She has 20 years of experience on the Ukrainian energy market. She has been working at SC Market Operator since July, 2019. Responsible for tax discipline and financial relationships between the Company and market participants.

lepchenko@oree.com.ua





HIGHLIGHTS OF THE YEAR



JUNE 18

SC Market Operator is granted state registration and the right to trade on the electricity market



JUNE 26

PJSC "EC"BARVINOK" is registered as the first participant of DAM and IDM. 50 other companies conclude their contracts the next day



JUNE 30

SC Market Operator conducts the first electricity auction on the DAM. The weighted average price on July 1, 2019 in the IPS of Ukraine is 1 594.19 UAH/MWh, in Burshtyn Power Island -1 776.03 UAH/MWh. 193 participants take part in the first auction on the "day-ahead" market.



JULY 30

SC Market Operator approves the Collective Agreement for 2019-2021 with the staff members



AUGUST 21

The Cabinet of Ministers of Ukraine approves the Financial plan of SC Market Operator for 2019 with the following financial indicators: net income from energy sale -18 553.7 mln UAH, net profit - 0.6 mln UAH, payments to the State - 37.7 mln UAH, capital investment - 10.8 mln UAH



The Cabinet of Ministers of Ukraine creates the state-owned enterprise SC Market Operator, in accordance with the Law of Ukraine "On the Electricity Market"



JUNE 25

The NEURC issues a license to SC Market Operator for the right to conduct business activities – the performance of a market operator functions



JUNE 27

The NEURC agrees on a fixed payment for participation on the DAM/IDM at the level of 2.91 UAH/MWh (excluding VAT), as well as the tariff for the electricity purchase and sale operations on the DAM and IDM at the level of 3 577 UAH (excluding VAT), that are calculated by SC Market Operator.



JULY 1

A new energy market starts operating in Ukraine. Electricity producers, electricity suppliers, traders and large consumers begin their operation under market conditions where price is formed by competition for a buyer, not by manual management



AUGUST 16

SC Market Operator and USAID sign a Memorandum of Understanding within the Energy Security Project in order to improve information security and conduct in-depth market analysis of the DAM and IDM



AUGUST 22

A primary Trade Union organization is appeared in SC Market Operator



SEPTEMBER 5

The Anti-Corruption Program of SC Market Operator is approved and the Commissioner on Combating Corruption is appointed



OCTOBER 8

There are 100 days of activity of SC Market Operator. In three months, 12 251 862,2 MWh of electricity have been accepted on the DAM, and 334 396.6 MWh - on the IDM



NOVEMBER 1

SC Market Operator pays the first dividend (as a part of net profit) to the State budget in the amount of 14 799 147.00 UAH (for 9 months of 2019)



DECEMBER 8

The lowest price of electricity in 2019 is formed on the DAM in the IPS of Ukraine - 758.00 UAH/MWh



DECEMBER 31

Six months of uninterrupted work and 25.2 TWh of accepted electricity on the DAM and IDM



The highest price of electricity in 2019 is formed on the DAM in the IPS of Ukraine — 1727.27 UAH/MWh



OCTOBER 1

The tariff for the electricity purchase and sale operations on the DAM and IDM is reduced to 1.94 UAH/MWh (excluding VAT)



OCTOBER 17

SC Market Operator starts to provide Qualified electronic trust services (also so-called Electronic signature) to market participants



DECEMBER 3

SC Market Operator has the first positive judicial practice of collecting in its favor debt on payment of a fixed fee for participation in DAM/IDM

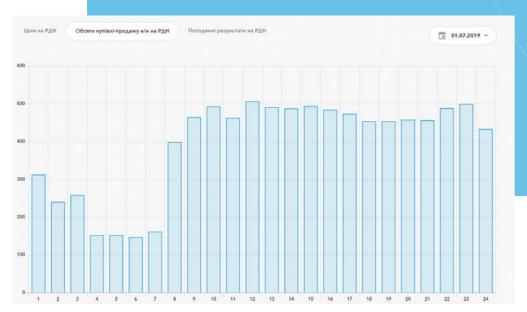


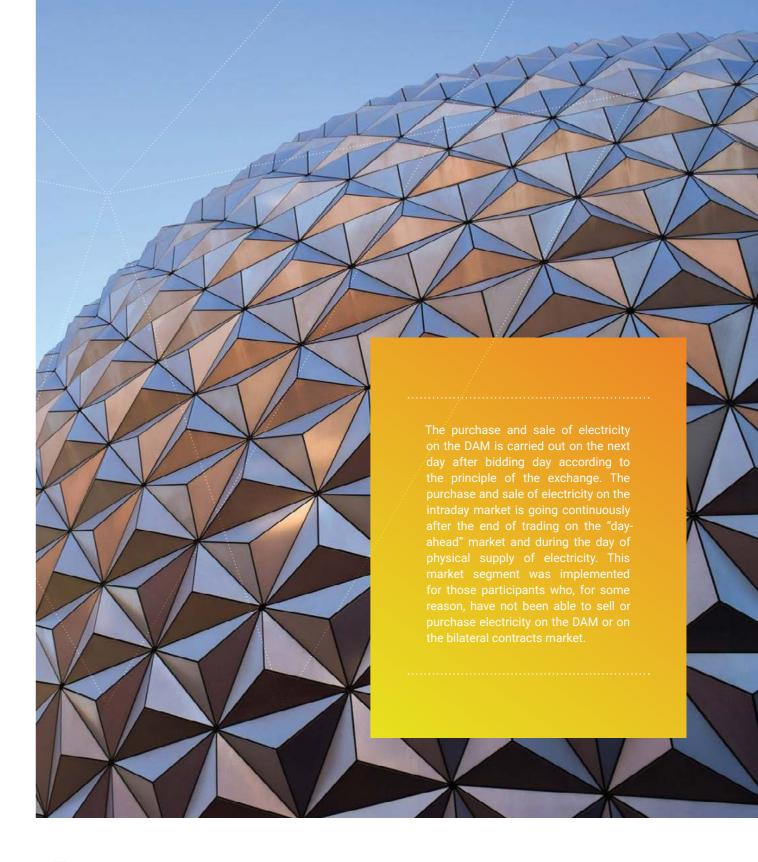
DECEMBER 20

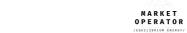
SC Market Operator signs a Memorandum of Understanding on Cooperation and Organization of Relations with the Slovak Electricity Market Operator — OKTE. The document provides the exchange of experience and collaboration on the issues of integration of the Ukrainian energy market with the Single European electricity market



The "day-ahead" market and the intraday market are the main to 40% of the total amount of electricity consumed by people price on the "day-ahead" market.







MAIN INDICATORS OF THE DAM AND IDM FOR 2019

THE "DAY-AHEAD" MARKET

INDICATOR	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Weighted average price on the DAM, UAH/MWh (excluding VAT)	1 643.48	1 679.09	1 623.41	1 562.20	1 367.55	1 239.05
Weighted average price on the DAM (IPS), UAH/MWh (excluding VAT)	1 639.71	1 669.44	1 604.67	1 533.16	1 320.35	1 207.80
Weighted average price on the DAM (BPI), UAH/MWh (excluding VAT)	1 698.34	1 856.24	1 911.38	1 875.85	1 787.53	1 606.35
Volume of purchase and sale of electricity on the DAM, MWh	4 347 655.70	3 815 428.30	4 088 778.20	3 659 916.50	4 137 077.00	4 434 350.40
Volume of purchase and sale of electricity on the DAM (IPS), MWh	4 068 398.50	3 618 449.80	3 838 965.80	3 349 827.00	3 719 083.80	4 086 649.60
Volume of purchase and sale of electricity on the DAM (BPI), MWh	279 257.20	196 978.50	249 812.40	310 089.50	417 993.20	347 700.80
Average daily volume of auction on the DAM, MWh	140 246.96	123 078.33	136 292.61	118 061.82	137 902.57	143 043.56
Cost of purchased and sold electricity on the DAM, thousand UAH (including VAT)	8 574 326.85	7 687 726.18	7 965 313.26	6 861 004.98	6 789 197.20	6 593 255.02
Cost of purchased and sold electricity on the DAM (IPS), thousand UAH (including VAT)	8 005 196.91	7 248 958.91	7 392 329.29	6 162 987.30	5 892 587.15	5 923 019.97
Cost of purchased and sold electricity on the DAM (BPI), thousand UAH (including VAT)	569 129.93	438 767.27	572 983.97	698 017.68	896 610.05	670 235.06

THE INTRADAY MARKET

INDICATOR	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Weighted average price on the IDM, UAH/MWh (excluding VAT)	1 819.64	1 802.71	1 766.90	1 700.73	1 260.10	1 259.54
Weighted average price on the IDM (IPS), UAH/MWh (excluding VAT)	1 835.27	1 754.57	1 772.94	1 692.10	1 242.67	1 256.75
Weighted average price on the IDM (BPI), UAH/MWh (excluding VAT)	1 733.01	1 940.57	1 746.58	1 729.25	1 450.99	1 279.28
Volume of purchase and sale of electricity on the IDM, MWh	104 369.70	121 307.60	108 719.30	97 262.80	202 365.80	103 427.40
Volume of purchase and sale of electricity on the IDM (IPS), MWh	88 411.90	89 912.00	83 799.10	74 674.70	185 429.50	90 601.00
Volume of purchase and sale of electricity on the IDM (BPI), MWh	15 957.80	31 395.60	24 920.20	22 588.10	16 936.30	12 826.40
Average daily volume of auction on the IDM, MWh	3 366.76	3 913.15	3 623.98	3 137.51	6 745.53	3 336.37
Cost of purchased and sold electricity on the IDM, thousand UAH (including VAT)	227 898.18	262 418.23	230 515.18	198 501.11	306 002.19	156 325.58
Cost of purchased and sold electricity on the IDM (IPS), thousand UAH (including VAT)	194 712.05	189 307.75	178 285.15	151 628.63	276 512.84	136 635.26
Cost of purchased and sold electricity on the IDM (BPI), thousand UAH (including VAT)	33 186.12	73 110.48	52 230.03	46 872.47	29 489.35	19 690.32



THE "DAY-AHEAD" MARKET

MAXIMUM WEIGHTED AVERAGE PURCHASE-SALE PRICE OF THE ELECTRICITY PER DAY

1 727.27 UAH/MWh (excluding VAT) **2 003.66** UAH/MWh (excluding VAT)

IPS of Ukraine | August 28, 2019

Burshtyn Power Island | September 26, 2019

MINIMUM WEIGHTED AVERAGE PURCHASE-SALE PRICE OF THE ELECTRICITY PER DAY

758.00 UAH/MWh (excluding VAT)

1 131.30 UAH/MWh (excluding VAT)

IPS of Ukraine | December 8, 2019

Burshtyn Power Island | December 29, 2019

MAXIMUM HOURLY PURCHASE-SALE PRICE OF ELECTRICITY

2 048 . 23 UAH/MWh (excluding VAT) : 2 048 . 23 UAH/MWh (excluding VAT)

IPS of Ukraine

Burshtyn Power Island

MINIMUM HOURLY PURCHASE-SALE PRICE OF ELECTRICITY

566.70 UAH/MWh (excluding VAT) 200.00 UAH/MWh (excluding VAT)

IPS of Ukraine

Burshtyn Power Island

MAXIMUM DECLARED SALES VOLUME OF ELECTRICITY PER HOUR

10 934, 40 MWh

1 726, 20 MWh

IPS of Ukraine | 17:00 — December 13, 2019

Burshtyn Power Island | 18:00 - December 26, 2019

MINIMUM DECLARED SALES VOLUME OF ELECTRICITY PER HOUR

2 925.30 MWh

IPS of Ukraine | 08:00 — October 2, 2019

Burshtyn Power Island | 05:00 — September 26, 2019

MAXIMUM DECLARED PURCHASE VOLUME OF ELECTRICITY PER HOUR

13 314.50 MWh

3 750.60 MWh

IPS of Ukraine | 08:00 — October 25, 2019

Burshtyn Power Island | 24:00 — December 20, 2019

MINIMUM DECLARED PURCHASE VOLUME OF ELECTRICITY PER HOUR

3 209.80 MWh

: 269.00 MWh

IPS of Ukraine | 22:00 — November 29, 2019

Burshtyn Power Island | 05:00 – July 3, 2019

MAXIMUM ACCEPTED VOLUME OF ELECTRICITY PER HOUR

7 876.00 MWh

: 1364.60 MWh

IPS of Ukraine | 15:00 — July 4, 2019

Burshtyn Power Island | 19:00 — November 30, 2019

MINIMUM ACCEPTED VOLUME OF ELECTRICITY PER HOUR

2 862.30 MWh

• 13.10 MWh

IPS of Ukraine | 08:00 — October 2, 2019

Burshtyn Power Island | 05:00 — September 26, 2019

MAXIMUM ACCEPTED VOLUME OF ELECTRICITY PER DAY

167 187.80 MWh

22 776 . 10 MWh

IPS of Ukraine | December 13, 2019

Burshtyn Power Island | November 30, 2019

MINIMUM ACCEPTED VOLUME OF ELECTRICITY PER DAY

90 776.90 MWh

MARKET

IPS of Ukraine | November 29, 2019

Burshtyn Power Island | July 5, 2019

THE INTRADAY MARKET

MAXIMUM WEIGHTED AVERAGE PURCHASE-SALE PRICE OF ELECTRICITY PER DAY

2 030 . 89 UAH/MWh (excluding VAT)

IPS of Ukraine

July 16, 2019

2 048.23 UAH/MWh (excluding VAT)

Burshtyn Power Island

August 26, 2019 October 31, 2019

MINIMUM WEIGHTED AVERAGE PURCHASE-SALE PRICE OF ELECTRICITY PER DAY

677.52 UAH/MWh (excluding VAT)

IPS of Ukraine

November 30, 2019

 $350.55\,\text{UAH/MWh}\,\text{(excluding VAT)}$

Burshtyn Power Island

December 29, 2019

MAXIMUM ACCEPTED VOLUME OF ELECTRICITY PER DAY

74 811.50 MWh

IPS of Ukraine

November 28, 2019

7 018.00 MWh

Burshtyn Power Island

July 5, 2019

MINIMUM ACCEPTED VOLUME OF ELECTRICITY PER DAY

176.90 MWh

IPS of Ukraine July 11, 2019

0.40 MWh

Burshtyn Power Island August 10, 2019

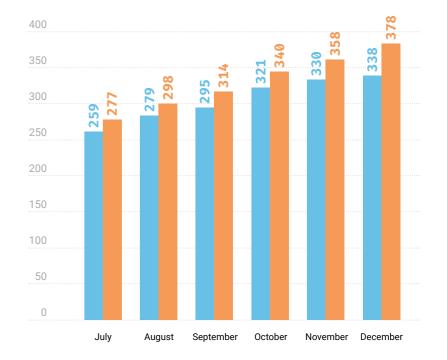
PARTICI-**PANTS** OF DAM AND IDM

SC Market Operator concluded 378 contracts for participation on the DAM and the IDM in 2019. There are 34 manufacturers, 32 distribution system operators, 304 suppliers, 6 traders, Transmission System Operator and Guaranteed Buyer.

	CHPP and others	25
PRODUCERS	HPP	3
PRODUCERS	NPP	1
	ТРР	5
SUPPLIERS	USS	25
SUPPLIERS	ES	279
TRADERS	6	
DSO	32	99
TS0	1	
GB	1	S

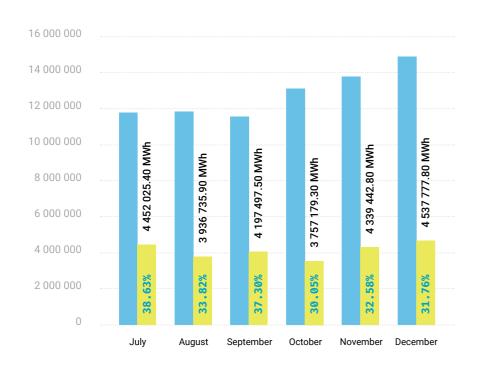
DAM AND IDM **PARTICIPANTS**

Total contracts participants for participation



MARKET OPERATOR MARKET OPERATOR

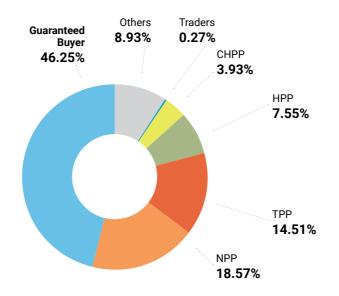
VOLUMES AND COSTS OF PURCHASE AND SALE OF ELECTRICITY ON THE DAM AND IDM RELATIVE TO CONSUMPTION FOR 6 MONTHS OF 2019

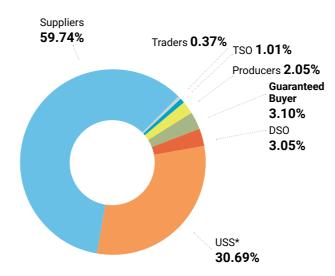


25 220 658.70 MWh of electricity with price 45 852 483.96 thousand UAH (including VAT) was sold and purchased on the "day-ahead" market and on the intraday market for 6 months of 2019. The DAM and the IDM monthly accept up to 40% of the total amount of electricity consumed in Ukraine.



STRUCTURE OF VOLUMES OF SALE AND PURCHASE OF ELECTRICITY ON THE "DAY-AHEAD" MARKET FOR 6 MONTHS OF 2019





STRUCTURE OF VOLUMES OF SALE

STRUCTURE OF SALE	07/19	08/19	09/19	10/19	11/19	12/19
Guaranteed Buyer	48.42%	51.77%	52.90%	37.19%	50.62%	36.62%
NPP	15.82%	15.13%	19.62%	27.71%	12.22%	21.62%
TPP	18.76%	12.98%	11.59%	9.26%	16.23%	17.06%
HPP	8.16%	8.43%	5.85%	7.88%	8.53%	6.58%
CHPP	3.90%	3.26%	2.42%	3.91%	3.92%	5.96%
Traders	-	-	-	-	0.08%	1.42%
Others	4.94%	8.43%	7.63%	14.04%	8.40%	10.75%
Total	100%	100%	100%	100%	100%	100%

STRUCTURE OF VOLUMES OF PURCHASE

STRUCTURE OF PURCHASE	07/19	08/19	09/19	10/19	11/19	12/19
Guaranteed Buyer	2.86%	2.33%	2.76%	3.66%	3.90%	3.09%
TS0	1.36%	0.87%	1.16%	1.51%	0.75%	0.47%
DSO	5.22%	3.89%	1.70%	2.38%	2.46%	2.53%
Suppliers	52.47%	51.72%	66.59%	65.20%	57.76%	64.79%
USS*	36.09%	38.78%	25.83%	23.71%	30.87%	28.54%
Producers	2.02%	2.41%	1.95%	3.55%	2.44%	0.25%
Traders	-	-	-	-	1.82%	0.33%
Total	100%	100%	100%	100%	100%	100%



MARKET

OPERATOR

^{*} Universal Services Suppliers also conduct electricity purchase transactions as electricity suppliers.

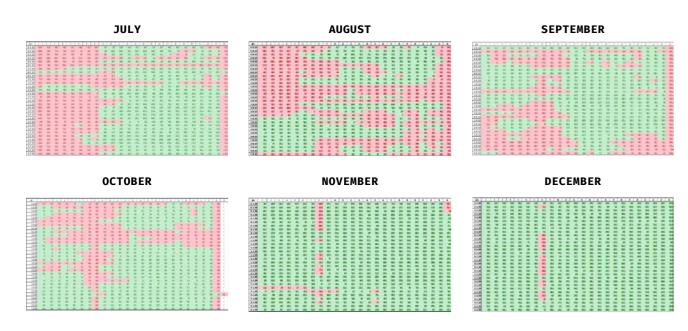
THE DEMAND AND SUPPLY RATIO ON DAM

Interesting dynamics are observed on the "day-ahead" market. If in the first four months of operation of the new electricity market in the IPS of Ukraine there was a shortage of electricity supply proposals, in November and December the surplus prevailed. Instead, in Burshtyn Power Island the shortage of orders for electricity sales prevailed for almost all 6 months of last year. There is a shortage of orders in both trading areas at 8 am.

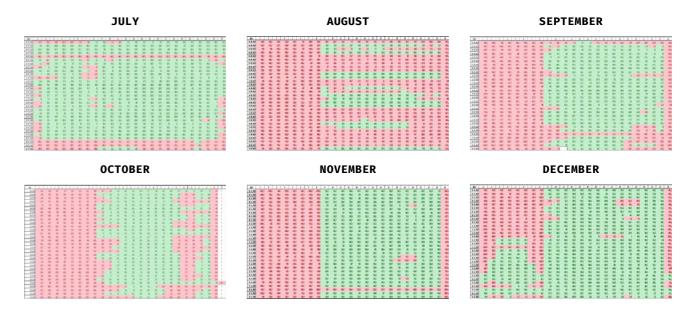


Supply surplus

ORDERS. DEMAND AND SUPPLY ON THE DAM (IPS) FOR 6 MONTHS OF 2019



ORDERS. DEMAND AND SUPPLY ON THE DAM (BPI) FOR 6 MONTHS OF 2019



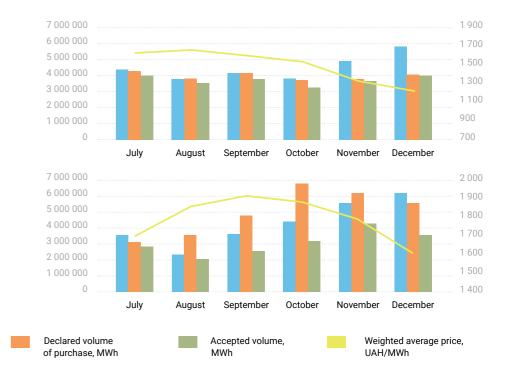
CONSOLIDATED ORDERS FOR SALE AND PURCHASE ON THE DAM

Volumes of purchase and sale, as well as weighted average price of electricity on the DAM (IPS).

Volumes of purchase and sale, as well as weighted average price of electricity on the DAM (BPI).

Declared volume of sale,

MWh

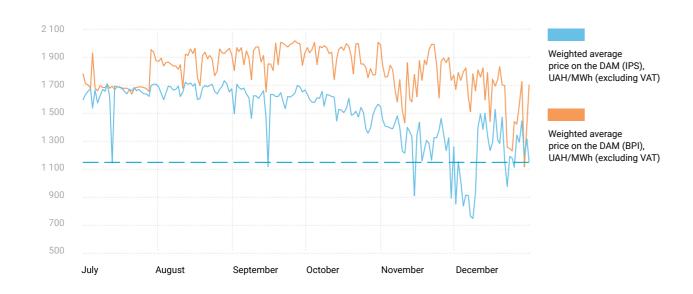


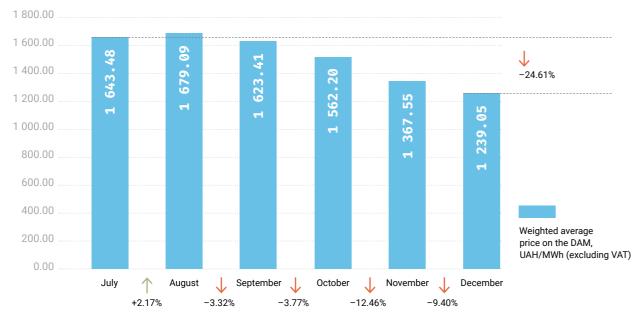


PRICES

28

WEIGHTED AVERAGE PRICES ON THE DAM FOR 6 MONTHS OF 2019

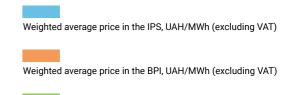




ANNUAL REPORT OF SC MARKET OPERATOR

WEIGHTED AVERAGE PRICE ON THE DAM

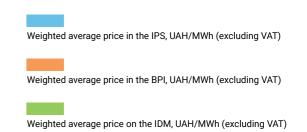




Weighted average price on the DAM, UAH/MWh (excluding VAT)







The prices for DAM and IDM are regulated by the market. The weighted average price is formed and based on supply and demand for the sale of electricity. If in the first month of operation of the new energy market of Ukraine the average weighted price was 1 643.48 UAH/MWh (excluding VAT), in

MARKET OPERATOR December the producers and buyers already accepted the electricity at the price of 1239,05 UAH/MWh (excluding VAT). After six months, prices have been fallen by almost 25% under the influence of market factors and relatively warm winter.

MARKET OPERATOR PRICES 29

DEVIATION OF AVERAGE HOURLY PRICES FROM PRICE CAPS

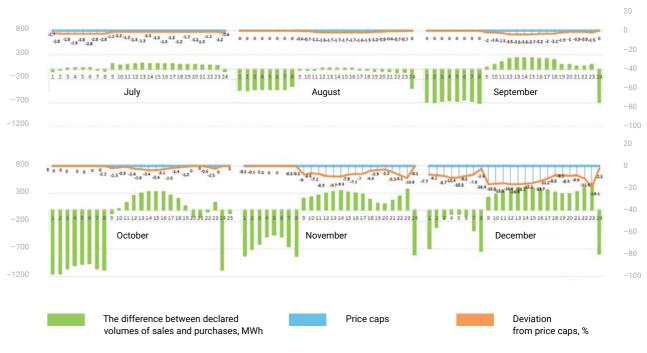
Price restrictions, so-called price caps, apply to almost every country in the world. Some countries applied price caps in few transition years, some have price caps on a permanent basis, and others applied only in the first months of the introduction of a new market. Price caps are necessary in order to ensure that producers do not inflate prices for the sale of electricity on the "day-ahead" market and on the intraday market.

The Rules of the "day-ahead" market and the intraday market, approved by the NEURC on June 24, 2019, provided a 9-month transition period since the moment of the new electricity market started his work with certain price restrictions. During this period, energy producers must indicate in their electricity orders a price not exceeding the maximum value of average cost of electricity over the last three months before the new segments introduction.

DEVIATION OF AVERAGE HOURLY PRICES FROM PRICE CAPS ON THE DAM FOR 6 MONTHS OF 2019 (IPS)



DEVIATION OF AVERAGE HOURLY PRICES FROM PRICE CAPS ON THE DAM FOR 6 MONTHS OF 2019 (BPI)



For the first four months of the new energy market, hourly purchase-sale prices of electricity on the DAM both in the IPS of Ukraine and in the Burshtyn Power Island were mostly close to the price caps of the Regulator. The trend has changed in the last two months of 2019, and the prices on the DAM were much lower than the price caps.



MARKET

OPERATOR



OKSANA KUCHEVA

HEAD OF MONITORING SECTION



European market operators output DAM indexes in three time periods per day. In different countries these periods are different, but in the BASE period — all 24 trading hours are universal. That's why, in order to compare prices in Ukraine with prices in Europe, SC Market Operator also monitors the DAM indexes. Our task for 2020 is also to implement the monitoring of the DAM and the IDM in accordance with the requirements of REMIT.

* REMIT — Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency.

By the way, market participants have the opportunity to apply orders for the purchase and sale of electricity (block orders) in one of these three pro-European periods. In the future, when the market coupling starts working with the countries of South-Eastern Europe, there will be no difficulties in electricity trading in Ukraine.

Base load period

Peak load period

OFFPEAK

Off-peak period



PRICES OF PRODUCTS ON THE DAM (IPS) IN JULY-DECEMBER OF 2019 (UAH/MWH, EXCLUDING VAT)



PRICES OF PRODUCTS ON THE DAM (BPI) IN JULY-DECEMBER 2019 (UAH/MWH, EXCLUDING VAT)



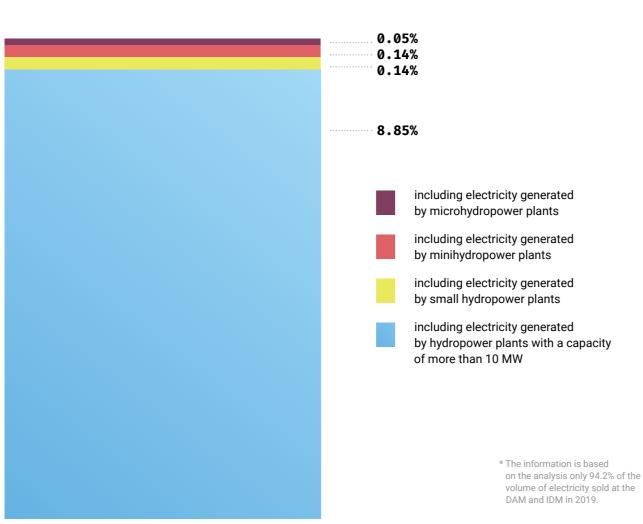


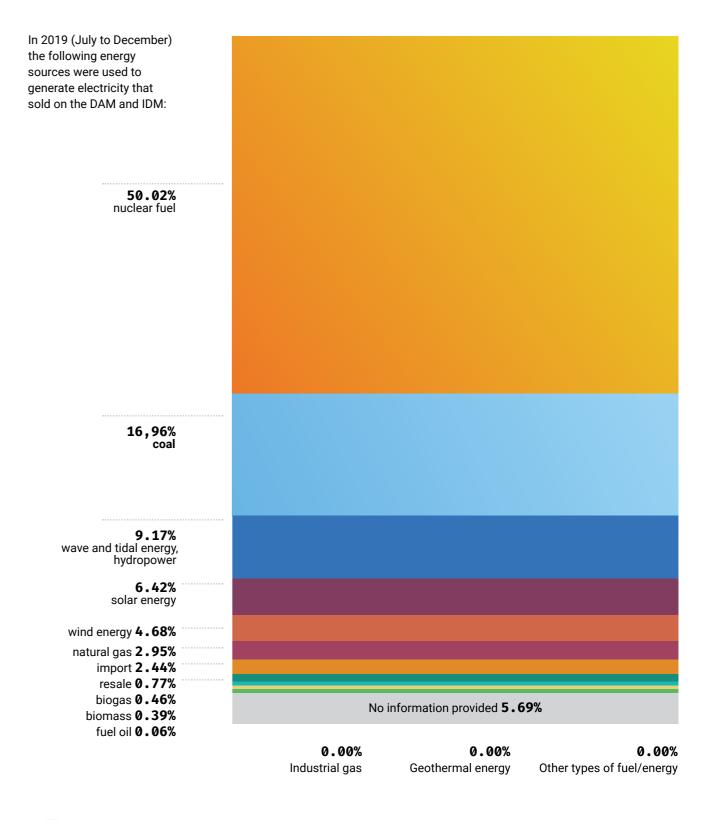
OPERATOR



ENVIRONMENTAL ASPECTS







MARKET OPERATOR

MARKET OPERATOR

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OPERATIONAL ACTIVITIES



ANNUAL REPORT OF SC MARKET OPERATOR



VOLODYMYR NESTERUK



FIRST DEPUTY
DIRECTOR

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With the launch of the new energy market, we all have learned how to work in a new way, according to European standards for the purchase and sale of electricity. We have built the work of SC Market Operator based on the activities of European Union market operators. SC Market Operator business processes are similar to Slovakia, Hungary, Romania. Nevertheless, these countries have twice less electricity accepted per year on the DAM than we do in Ukraine.

In cooperation with the authorized state bank of the electricity market "Oschadbank" JSC, within the functioning of the electricity market, SC Market Operator introduced ESCROW accounts — the financial mechanism of payments used in European countries and in the USA.

AN ESCROW ACCOUNT OR A CONDITIONAL STORAGE ACCOUNT

is a current account where funds are saved until both parties fulfill all contractual obligations. However, a feature of an ESCROW account is that neither the account holder nor the other party of the contract can directly dispose of the funds held in such account, except the conditions specified in the contract.

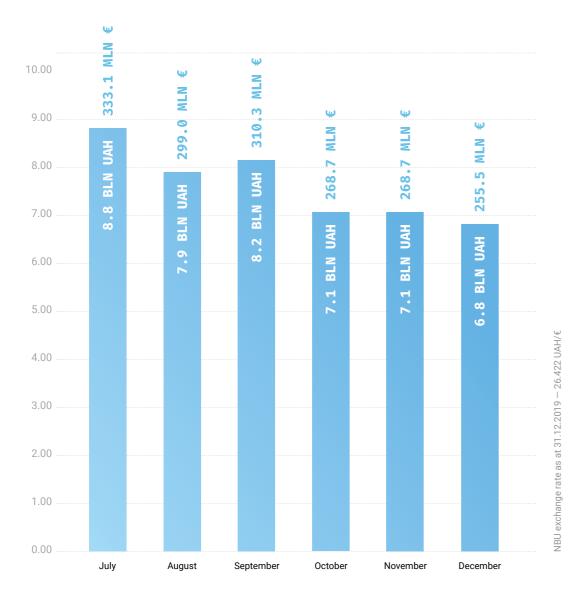
ESCROW accounts prevented the emergence of debt in the segments of the new DAM and IDM energy markets, minimized risks for SC Market Operator, and ensured of fulfillment of financial obligations by market participants. There is no debt to anybody for any electricity that is accepted for DAM and IDM. Since July to December 2019, SC Market Operator provided 100% of the calculations for electricity on the "day-ahead" market and on the intraday market.

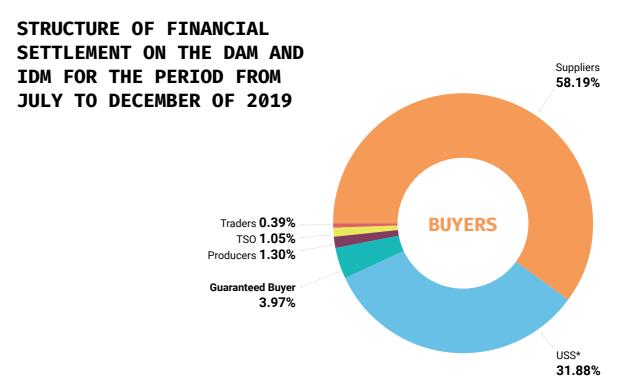
Another competitive advantage of SC Market Operator is the daily calculations with the market participants for the purchased and sold electricity on the DAM and the IDM, including weekends and holidays.

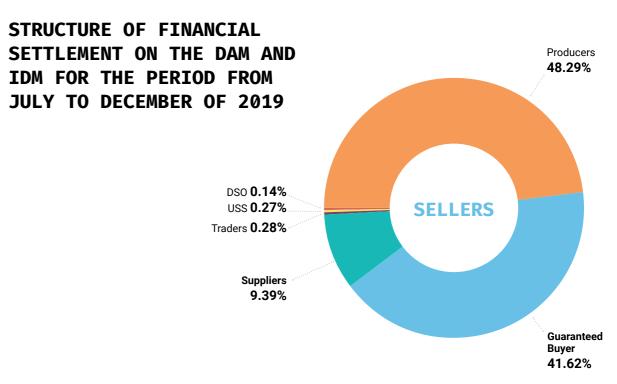


PAYMENT ON THE DAM AND IDM FOR THE PERIOD FROM JULY TO DECEMBER OF 2019

TOTAL AMOUNT - 45.9 BLN UAH (1.7 BLN €)







MARKET

OPERATOR



In the short term, the accounting policy of the company was created and agreed by the Cabinet of Ministers of Ukraine on August 14, 2019, which allowed to maximize the balance of expenditures and incomes in the company, it was also enabled market participants to receive impartial information of the main indicators of the company activity. Accounting programs have also been optimized to meet the needs of the new electricity market in the short term, which has ensured effective accounting and tax accounting of the company.

YULIIA LYTVYNCHUK

DEPUTY CHIEF ACCOUNTANT

FINANCIAL INDICATORS

all documents and has done their extraction.

electricity buyers and sellers, promptly and full has paid for and end consumers have time to submit their tax invoices

Net income for 2019

38 339 MLN UAH

1 451 MLN €

Taxes and fees paid in 2019

59 MLN UAH

2 MLN €

Part of the net profit (income) paid to the state budget in 2019

27 MLN UAH

MLN €

* Euro exchange rate as at 31.12.2019.

23.7 MLN UAH

EBITDA

MARKET OPERATOR MARKET OPERATOR



EKSANDR ICHUPKIN

HEAD OF ECONOMICS AND FINANCE DEPARTMENT

Markets analysis with in-depth bidding results research is our daily mission. Based on this, in case of change of the volumes of accepted electricity on the DAM and IDM, we have the opportunity to ask the NEURC to change the tariff for market participants.

TARIFF POLICY

The cost of the services in SC Market Operator consists of two components — a fixed payment for participation on the "day-ahead" market and on the intraday market, and as well as the tariff for the electricity purchase and sale operations on these market segments.

In 2019, the fixed payment for participation on the DAM/ IDM amounted to 3 577 UAH (excluding VAT). Electricity purchase and sale tariff is 2.91 UAH/MWh (excluding VAT).

In September, SC Market Operator analyzed the actual volumes of accepted electricity on the DAM and the IDM and initiated with NEURC a reduction electricity purchase and sale tariff on the DAM/IDM for the market participants.

Since October 1, 2019, instead of 2.91 UAH per MWh (excluding VAT), the participants have paid 1.94 UAH per MWh (excluding VAT) for the purchase and sale of electricity on the DAM and the IDM. The tariff decreased by 33%.

Fixed payment for participation in the DAM/IDM is a targeted monthly payment for support services and the entitlement to use the Software of SC Market Operator. The amount of this payment is agreed by resolution of the NEURC.

Buyers and sellers of electricity make daily payment for the sale and purchase operations on the DAM and the IDM that based on the bidding results. Its value depends on the volume of purchases and sales of electricity on the DAM and IDM and the size of the tariff for the operation of purchase and sale of electricity on the DAM/IDM, which is approved by the NEURC.



In the second half of 2019 about 40%





is carried out through multilevel secure remote access is used to ensure uninterrupted operation

ANDRII **CHAICHEVSKYI**

DEPUTY DIRECTOR FOR COMMERCIAL ISSUES



It was a pleasant surprise for us not to receive any complaints from market participants in December. We are grateful to the companies we collaborate with for our ongoing feedback. We analyze each appeal and it helps us to improve the work of SC Market Operator, we often have a proactive role in many processes. After all, coordinated, efficient cooperation is the key to effective work of the Ukrainian energy market.

COOPERATION WITH MARKET **PARTICIPANTS**

Near 400 companies sell and purchase electricity at SC Market Operator trading platform. These are such large state-owned companies as Energoatom, Ukrhydroenergo, Centrenergo, Guaranteed Buyer, Ukrenergo, and also traders, distribution system operators, electricity suppliers.

The company works 24/7, and specialists are always on the phone with market participants. On the initiative of SC Market Operator, a Working Group has been set up to develop proposals for the NEURC to improve the "day-ahead" market and the intraday market. Such cooperation enables SC Market Operator to form an objective vision for solving certain issues.

A lot of time SC Market Operator team dedicated to communications with market participants in the last vear. For efficient work of the DAM and IDM, it was important to bring to everyone new rules of trading, explain functioning of the new high-tech software complex developed by Slovak specialists.



EXCHANGE

randum of cooperation with the Slovak electricity market operator (OKTE) in December 2019. This gives the opportunity to SC Market Op-

erator to gain a better experience and to cooperate with the Slovaks in integration issue of the Ukrainian energy market with the single

European electricity markets, in particular on the day-ahead market and intraday market.

leagues from Hungary and Romania. Experts an experience in providing of the REMIT monitoring system and clearing calculations in the electricity market in Ukraine since 2020.









Proper performance of SC Market Operator's own functions is impossible without use of the modern information technologies in the business processes.

Accordingly, since the beginning of the company's activity, all necessary measures were taken to create and develop its own separate information network, which is based on modern information technologies. High-speed networking equipment, high-performance servers and storage systems were used to build it. In order to ensure the flexibility, reliability and resiliency of the main information resources of the company widely used storage area networks, virtualization tools, and high availability server clustering.

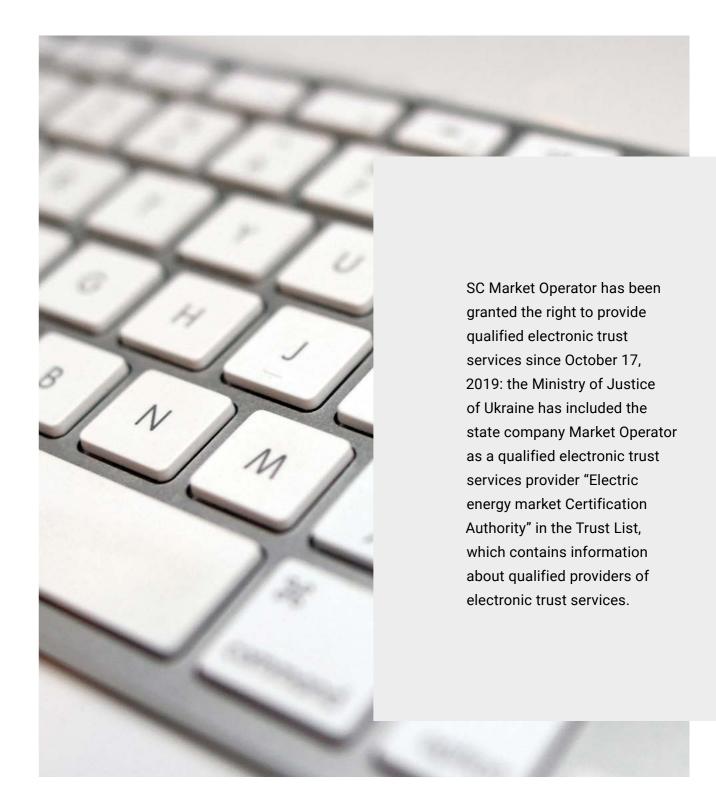
The necessity of ensuring uninterrupted operation of the "day-ahead" market and the continuity of the intraday market 24 hours a day and 7 days a week implies high requirements for the reliability of server and network equipment, communication channels and data transmission. In order to meet these requirements, backup of all critical elements of the IT infrastructure, data backup and high-tech software backup are used.

According to the paragraph 1.6.1 of the "day-ahead" market and intraday market Rules, information exchanges with market participants proceed through SC Market Operator software - high-tech innovative software package XMtrade/ PXS that use a qualified electronic signature (QES).

Qualified Electronic Trust Services Provider "Electric energy market Certification Authority" (CA EEM) that provides electronic trust services in the 24/7 mode since its start, operates in the company to ensure stable information exchange with the use of QES through high-tech software of SC Market Operator, in particular to submit orders for the purchase and sale of electricity on the DAM and IDM.

December 2019. The website publishes upto-date information about the trading process in the above mentioned segments of the electricity market: hourly electricity purchase/ the indexes of other neighboring Eastern

European "day-ahead" markets (Poland, Slovakia, Romania, Hungary); register of reports of the working results on the DAM and IDM, public procurement information, news, instructions, regulations and other information that provides full transparency of the activities of SC Market Operator and is useful for market participants.





The QES of the CA EEM is actively used by the enterprises of the fuel and energy complex not only for work on DAM and IDM. With its help it is also possible to submit electronic reporting to the State Tax Service of Ukraine, to certify technological information, to submit electronic reporting, including to the statistical authorities, to publish information in the public procurement system "ProZorro" and publish information in the single portal of use of public funds E-data, to file declarations in electronic form and receive documents on the portal of electronic services of the Pension Fund of Ukraine.

QES OF THE CA EEM USING

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CYBERSECURITY

IT-specialists of company have implemented a modern software appliance for detecting serious threats (Sandbox) and software appliance for managing information security events (SIEM). This significantly increased the level of information security of the enterprise and made it possible to:



MARKET

perform centralized automated collection and analysis of events in the local network



promptly detect attempts of unauthorized access to the software and data, attempts of remotely access to the local computer network, hidden signs of malicious malware before such malicious acts are committed



organize effective protection against threats that are not detected by existing antivirus tools that based on signature analysis: malicious software, which signatures are missing in the databases of antivirus software complexes, new viruses and malicious software that is designed to carry out targeted "hackers" attacks and exploits unposted vulnerabilities

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ANNUAL REPORT OF SC MARKET OPERATOR



CYBERSECURITY



IT-specialists of SC Market Operator systematically implement measures to improve the level of information security of the company. A cluster of modern firewalls is operated to counter threats of information security from the Internet. Access to the XMTrade/PXS platform is via two-factor user authentication using secure electronic keys (tokens). The company prohibit the launch of third-party software and automatically controls the use of external storage media.

of the best industry experts with many years of experience in the energy field. There are programmers who are able to create sophisticated information systems and websites, system administrators who responsible for information security and information infrastructure of the company and experienced engineers who technically support the work of the DAM and IDM.

CORPORATE CULTURE

ANTI-CORRUPTION **COMPLIANCE**

The enterprise's anti-corruption program was developed in accordance with the Law of Ukraine "On Prevention of Corruption" and approved by the order of the company on September 5, 2019.

The program includes the obligation of the management and all employees of SC Market Operator in their relations with state authorities and participants of the electricity market to be guided by the principle of "zero tolerance» to any manifestations of corruption.

SC Market Operator is dominated by ambitious tasks to implement pro-European rules and regulations. One of the main tasks of the authorized person is the implementation of the OECD's compliance risk management system, implementation of anti-corruption policies and a number of provisions on corporate behavior, avoidance of conflicts of interest, protection of personal data and confidential information.

YAROSLAV PAVLIUK,

the authorized person for Anti-Corruption, has extensive experience in law enforcement and state-owned enterprises in the energy sector in Ukraine.

HOTLINE +38 (044) 205-01-78





SOCIAL RESPONSIBILITY

SC Market Operator adheres to the principles of good corporate governance, which are reflected, in particular, in the Principles of Corporate Governance of the Organization for Economic Co-operation and Development and the Principles of Corporate Governance, approved by the National Securities and Stock Market Commission of Ukraine.

The main areas of social responsibility of SC Market Operator are:

Responsibility to employees for creating the best conditions for working, developing and realizing their own potential. In its relations with the labor collective. SC Market Operator is guided by the Collective Agreement, which is the result of social partnership at the local level. An important task for the company is to educate employees, save, develop existing ones and create new jobs.

Responsibility to market participants for honest and diligent partnership. With the start of the new electricity market, the company builds partnerships with electricity sellers and buyers, timely and fully pays and prints all documents, registers its tax invoices in advance.

Responsible and transparent procurement, which allow to increase the financial efficiency of the process of providing works, goods and services through competitive selection of suppliers.

The collective agreement of SC Market Operator, based on corporate ethics, social guarantees, training of employees, preservation and development of existing jobs, was adopted by the general meeting of employees of the company - on July 30, 2019.

STAFF DEVELOPMENT

In December 2019 a training was held for the heads of the structural divisions of SC Market Operator on the issues of internal communications development and improvement of managerial functions. During the 6 months of 2019, 134 purchases were made for the needs of the company, of which 41 purchases totaling 14.2 million UAH were announced in the ProZorro e-procurement system. In 2019, ProZorro's savings for SC Market Operator amounted to UAH 1.3 million.

Procurement activities of SC Market Operator adhere to the main principles of public procurement - maximum economy and efficiency, openness and comprehensive, objective and impartial evaluation of tenders.

Responsible corporate volunteering, support for workers in need.

Responsibility and care for employees' health. SC Market Operator provides employees with full health insurance and safe working conditions, which are described in the current regulations on occupational safety, fire safety and civil defense of SC Market Operator.

In accordance with the law of Ukraine "On the basics of social protection of persons with disabilities in Ukraine" the share of persons with disabilities in the enterprise is 4% of the average number of full-time employees.

52 CONTRACTS FOR THE PURCHASE OF GOODS, WORKS AND SERVICES HAVE BEEN **CONCLUDED**

21.60% **SERVICES**

78.40% **GOODS**

MARKET OPERATOR

MARKET

GENDER POLICY

SC Market Operator, in accordance with the Law of Ukraine "On Equal Opportunities for Women and Men", the UN Convention on the Elimination of All Forms of Discrimination and the UN Declaration of Human Rights, has implemented a gender policy at the enterprise.

People and their rights are of the highest value and they are universal, natural, indivisible and inalienable to the whole SC Market Operator team. The company ensures equal legal status for women and men and cares for equal opportunities for its implementation.

SC Market Operator upholds the principles of gender equality in the management process, guarantees equal opportunities and attitudes in employment relations, equal remuneration for equal work, equal access to safety and social security, equality in career development and a balance between work and family life, fair for both men and women.

The company employs 42 men and 53 women. Women actively participate in the IT-development of the company, relations with tax and banks, for the legal, personnel and financial policy of SC Market Operator.

The gender balance contributes to the development of SC Market Operator as a European-level company dominated by the democratic principle of governing and respect for fundamental civil liberties.





The head of the department of information technologies and systems of SC Market Operator Taisiia Boldyrieva entered the final of the competition "Women of Ukrainian Energy 2019". As a gender-balanced company, SC Market Operator entered the semi-finals of the competition, ranking third place in the Enterprise of the Year nomination

Taisiia Illivna has been working in the Ukrainian energy market for over 45 years. At SC Market Operator, she is responsible for the IT development of the company, for the cyber security of electricity trading. Introduced a sophisticated, high-tech process of buying and selling electricity, which is provided with a software-technical complex of innovative nature. She is the only Ukrainian woman in the field of information technology and security of the Ukrainian energy market.

STRATEGY FOR DEVELOPMENT OF SC MARKET **OPERATOR**

SC Market Operator has ambitious plans outlined in the Company Development Strategy for 2024, which was submitted for approval by the Cabinet of Ministers of Ukraine on October 22, 2019.

The strategic goals of the company in the short term are the corporatization of the state company SC Market Operator, in the medium term - trade synchronization with the work of the European energy market, the integration of trading platforms for electricity trading and the creation of an administrator of energy market monitoring at the national level.

In view of the strategic course adopted by Ukraine for joining the Ukrainian IPS to the **ENTSO-E synchronous** zone, market coupling with the countries of South-Easternt Europe will create the preconditions for increasing competition between all market participants, more effective interaction in the process of production, transfer, distribution, purchase and sale, and secure supply of electricity to Ukrainian consumers.

In the future, SC Market Operator sees itself as an administrator of energy market monitoring. More efficient monitoring of the state's energy market, in accordance with the requirements of REMIT, will enable all market participants to comprehensively assess the overall supply and demand situation and, as a consequence, to identify the main causes of wholesale electricity price fluctuations.



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TECHNICAL SUPPORT PHONES FOR CONSULTATION

ACCESS TO THE SYSTEM XMTRADE®/PXS

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+38 (044) 205-01-31 (телефонна розмова записується в автоматичному режимі)

CONTRACTS CONCLUSION

+38 (044) 205-01-34 | +38 (044) 205-01-42 +38 (044) 205-01-43

USE OF A QUALIFIED ELECTRONIC SIGNATURE

+38 (044) 205-01-12 | +38 (044) 205-01-80

FORMATION OF ACTS AND INVOICES FOR SALES TRANSACTIONS

+38 (044) 205-01-37 | +38 (044) 205-01-57 (phone conversation is recorded automatically)

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CALCULATIONS ON DAM/IDM

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CARRYING OUT FINANCIAL CALCULATIONS FOR SERVICES OF SC MARKET OPERATOR

+38 (044) 205-01-18

EXCHANGE OF TAX INVOICES

+38 (044) 205-01-19

CREATING ORDERS FOR IDM

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CREATING ORDERS FOR DAM

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DISCLAIME

This English language Report is a translation of the corresponding Ukrainian language Report of SC Market Operator for 2019.
All questions regarding the content of this document should be directed to SC Market Operator. The Ukrainian language Report is the primary document.



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