Energy Community

UKRAINE ENERGY MARKET OBSERVATORY

13/2023

Assessment of NEURC Resolution No 1126 of 27 June 2023 on setting price caps on the day-ahead market, intraday market and balancing market

by the Energy Community Secretariat

July, 2023

PURPOSE STATEMENT

Assessment of recent decision of National Energy and Utilities Regulatory Commission (”NEURC”) No 1126 of 27 June 2023 (“Resolution No 1126”), establishing new levels of price caps on the day-ahead market (”DAM”), intraday market (“IDM”) and balancing market (“BM”).

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Ukraine Energy Market Observatory

Assessment 13/23

Assessment of price caps on electricity market of Ukraine established by the NEURC applicable since 1 July 2023

Introduction

The present assessment follows the recent decision of National Energy and Utilities Regulatory Commission (”NEURC”) No 1126[1] of 27 June, 2023 (“Resolution No 1126”), establishing new levels of price caps on the day-ahead market (”DAM”), intraday market (“IDM”) and balancing market (“BM”).

Background

In July 2019 the new electricity market model was launched in Ukraine enabling electricity trading on forward and short-term markets, namely DAM, IDM and BM. Ever since the market launch, bidding price caps (maximum and/or minimum bidding price limits) on DAM, IDM and BM were introduced as amendments to the Market Rules and DAM Rules.

In December 2019, the Law on the Electricity Market (”the Electricity Market Law”)[2], was amended to give NEURC the right to establish price caps. Namely, in case of significant price fluctuations in the DAM, IDM or BM, NEURC may establish temporary minimal and/or maximal price caps, based on a predefined methodology and with appropriate justification. The level of price caps should affect the formation of the market price to the least extent possible. The appropriateness of setting and the level of price caps must be reviewed by NEURC at least once every six months. Price caps are set by NEURC after consultations with the Antimonopoly Committee of Ukraine (“AMCU”).

A draft Methodology for determining significant price fluctuations and setting price caps (“the Methodology”) was developed by NEURC and submitted to the Secretariat for review. The Secretariat reviewed the draft Methodology and concluded:

- The draft Methodology does not determine a genuine methodology for setting/adjusting price caps but rather compiles the proposals of the Market Operator, the Settlement Administrator and the Ministry of Energy.
- The draft Methodology should allow for automatic adjustments of the price caps based on clearly defined criteria, data and calculation parameters related to price fluctuations.
- With further market development and preparing for market coupling with the EU, regulatory price caps should be removed.

[1] https://www.nerc.gov.ua/acts/pro-vstanovlennya-granichnih-cin-na-rinku-na-dobu-napered-vnutrishnodobovomu-rinku-ta-balansuyuchomu-rinku

[2] https://zakon.rada.gov.ua/laws/show/330-20/ed20191227#n24

The Secretariat's findings and recommendation were not reflected in the final version of the Methodology, adopted by NEURC in September 2022.

The level of price caps on the DAM, IDM and BM were adapted several times by amendments to NEURC's Covid-Resolution[3] and Martial Law Resolution[4]. The levels of maximum price caps are summarized in Figure 1.

Resolution No 1126

On 31 May 2023, NEURC adopted Resolution No 1007 abolishing the price caps established by the Martial Law Resolution with effect as of 30 June 2023. The decision was taken based on information provided by the Market Operator and the Settlement Administrator on the existence of a significant fluctuation of prices on DAM, IDM and BM. Subsequently, NEURC published a draft decision[5] proposing an increase of maximum DAM/IDM price caps by ~35% and a decrease of the minimum price cap (floor) to be set at the level of 10.00 UAH/MWh. This effectively widens the corridor between cap and floor. The explanatory note provided no information justifying the modifications and how the new caps were calculated. After the public consultations, the draft proposal was changed with the minimum price cap (floor) to be increased to 1152,08 UAH/MWh, following proposals of RES producers, the Guaranteed Buyer and *Ukrhydroenergo* aimed at ensuring a stable level of their revenue in complying with their public service obligations[6]. A broad number of stakeholders also proposed to completely eliminate the price caps on the market.

Upon request of NEURC, the Secretariat reviewed NEURC's draft decision and recommended that before taking a final decision, NEURC should thoroughly consider the impact of any cap on market liberalization, security of supply (by attracting imports in particular in peak hours and sustaining a stable sector revenue stream), beyond the aspects of affordability and risks of market manipulations by dominant market players.

Eventually, NEURC adopted Resolution No 1126 on new levels of price caps to be applied on the DAM, IDM and BM as of 1 July, 2023. The Resolution increases the level of maximum price caps for the DAM/IDM for all hours (he highest cap during the newly introduced evening peak period), and sets a single minimum price cap (floor) at the level of the initial proposal. In the BM, the maximum price cap was set at 125% of the DAM price for each settlement period of the corresponding trading day, while the minimum price cap (floor) was fixed at 0.01 UAH/MWh. Figure 1 summarizes the levels of new and historical maximum DAM price caps, and the daily average market price achieved under the existing price caps[7] in the period before Resolution No 1126 took effect.

[3] NEURC Resolution No. 766 of 08.04.2020
[4] NEURC Resolution No. 332 of 25.02.2022
[5] https://www.nerc.gov.ua/news/oprilyudnyuyetsya-proyekt-postanovi-shchodo-vstanovlennya-granichnih-cin-na-rynku-na-dobu-napered-vnutrishnodobovomu-rynku-ta-balansuyuchomu-rynku
[6] https://www.nerc.gov.ua/storage/app/sites/1/Docs/Proekty%20postanov/2023/pr_75-2023/protokol_vidkr-obgovorennia_pr_75-2023.pdf
[7] www.oree.com.ua

Figure 1

in UAH/MWh	jan	feb	mar	apr	may	june	july	aug	sept	oct	nov	dec
2020 UA DAM Base	**1,347**	**1,183**	**1,358**	**1,212**	**1,146**	**1,197**	**1,178**	**1,260**	**1,441**	**1,270**	**1,471**	**1,459**
Price cap night	*959*	*959*	*959*	*959*	*959*	*959*	*959*	*1,229*	*1,229*	*1,229*	*1,229*	*1,229*
Price cap day	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*
price to cap ratio	*80%*	*70%*	*81%*	*72%*	*68%*	*71%*	*70%*	*71%*	*81%*	*72%*	*83%*	*82%*
2021 UA DAM Base	**1,407**	**1,612**	**1,316**	**1,394**	**930**	**1,362**	**1,284**	**1,959**	**2,109**	**2,517**	**2,916**	**2,820**
Price cap night	*1,229*	*1,229*	*1,229*	*1,229*	*1,229*	*1,229*	*1,244*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*
Price cap day	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,048*	*2,656*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*
price to cap ratio	*79%*	*91%*	*74%*	*79%*	*52%*	*77%*	*59%*	*59%*	*63%*	*76%*	*87%*	*85%*
2022 UA DAM Base	**2,606**	**1,974**	**2,225**	**2,224**	**2,224**	**2,224**	**2,555**	**2,864**	**3,200**	**3,302**	**3,307**	**3,291**
Price cap night	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*
Price cap day	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*
price to cap ratio	*78%*	*59%*	*67%*	*67%*	*67%*	*67%*	*77%*	*86%*	*96%*	*99%*	*99%*	*99%*
2023 UA DAM Base	**3,289**	**2,952**	**3,107**	**2,719**	**2,845**	**2,899**						
Price cap night	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*3000 (23:00-07:00)*					
Price cap day	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*4,000*	*5600 (07:00-19:00) 7200 (19:00-23:00)*					
price to cap ratio	*99%*	*89%*	*93%*	*82%*	*85%*	*87%*						

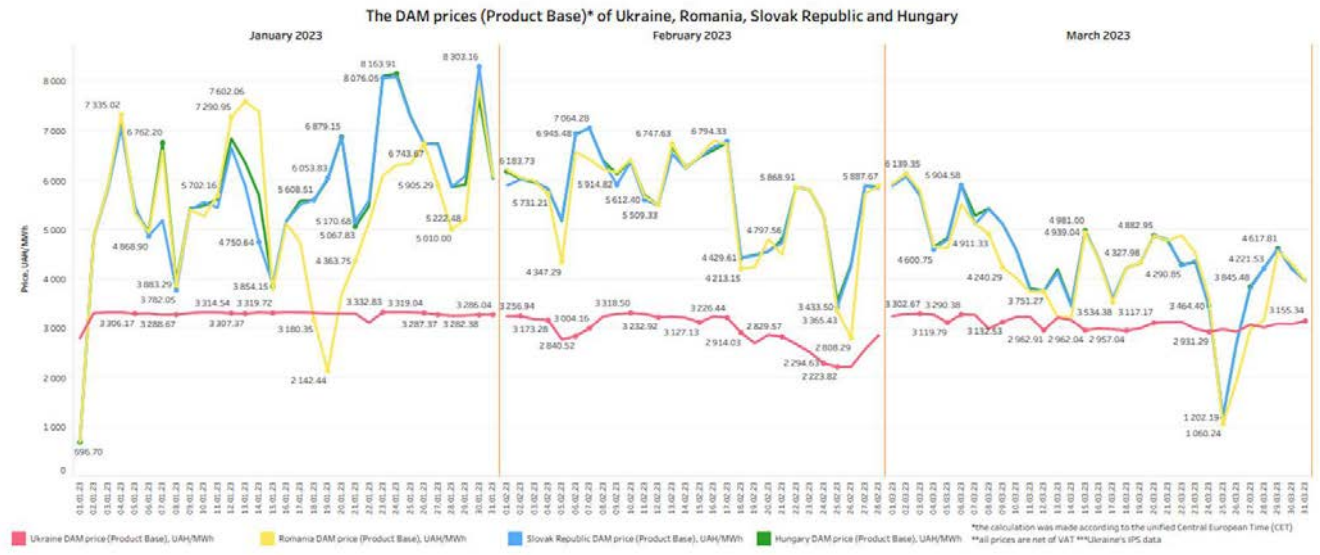
month in which new cap applied

Security of supply

Following Ukraine's emergency synchronization with the electricity network of Continental Europe, imports from the EU to Ukraine contributed to the functioning of the power system and security of supply in early 2023.

Ukrainian DAM base load prices are significantly lower than those of neighbouring EU Member States as presented in Figure 2 below. Ukrainian prices were higher than the EU's only during a few days/hours (for example in June and July 2023) due to high RES output and negative prices in EU, prevented in Ukraine by the price floors applied prior to 1 July 2023 and absence of negative prices.

Figure 2 Data by Market Operator[8]



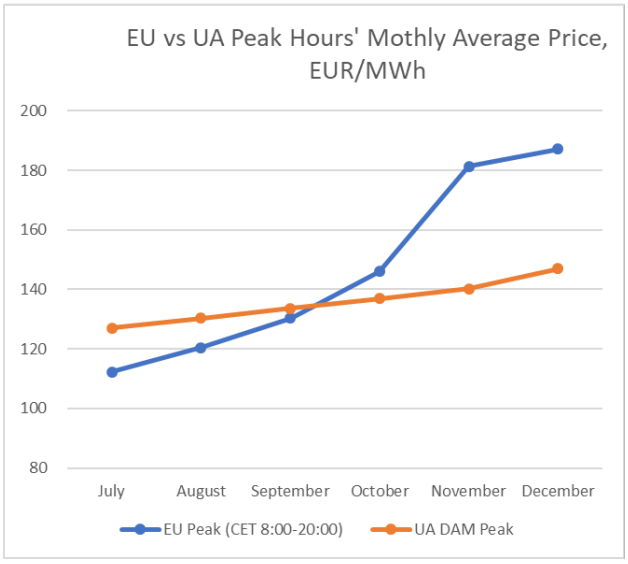
[8] https://www.oree.com.ua/index.php/web/10633?lang=english

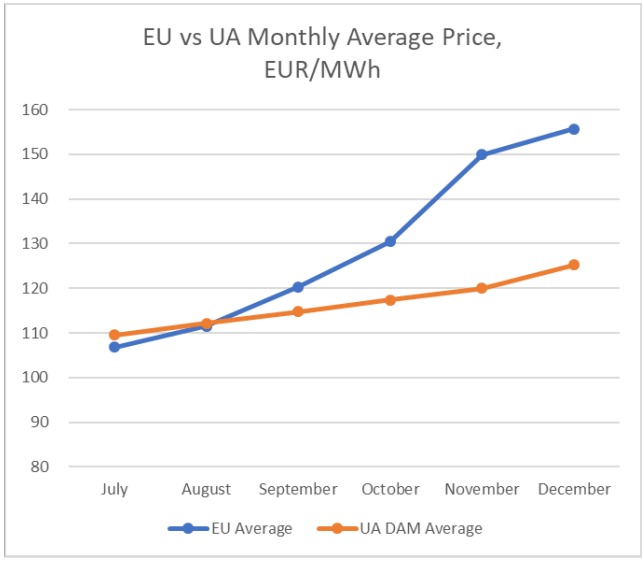
Continuing the practice of regulating price caps at the level much lower than in the neighbouring markets is expected to have a negative impact on attracting necessary investments and ensuring resource adequacy in the Ukrainian market. In addition, the current level of price caps constitutes a risk to security of supply in the coming autumn-winter period. According to the 2023-2024 electricity balance, Ukraine will require imports of electricity in autumn-winter period and, most likely, even earlier. However, for such imports to happen, price spreads between neighbouring markets and the Ukrainian market need to provide incentives for market participants to import electricity into Ukraine.

The high-level analysis performed by the Secretariat, as summarized in Annex 1, compares forward electricity prices in the neighbouring EU Member States against the possible scenarios of price formation in the Ukrainian DAM under the new price caps. The results indicate that a market incentive for commercial imports in the autumn-winter period is still questionable. While it can be expected that in the immediate future, namely during the summer months, the commercial incentives for imports are achieved, with EU prices increasing towards autumn-winter season and the Ukrainian DAM price remaining comparatively low, such incentives are diluted.

Figure 3 below demonstrates that forecasted prices in the Ukrainian DAM are likely to remain lower than forward prices in neighboring EU Member States, thus minimizing commercial incentives for electricity imports from the neighboring EU Member States to Ukraine but rather make exports more attractive. Figure 3 compares the dynamics of the EU Members States forward prices vs a forecast of UA DAM price until end of 2023 separately for peak and average price.

Figure 3
The detailed calculations and methodology are presented in Annex 1.





A deficit of capacity/energy may appear in the system in any hour of the day as impacted by multiple factors (weather, new attacks on infrastructure, availability of generation, network capacity). Thus, maximum price caps of 180 EUR/MWh set for only four evening hours of the day may not fully address this need. Therefore, a higher level of price caps during a longer period (including both peak and off peak hours) would contribute to Ukraine's ability to import electricity at any hour of the day at times of scarcity.

There are only two alternatives to commercial imports that would ensure maintaining the electricity balance in Ukraine: the emergency supply from adjacent power systems and/or demand reduction. While emergency supply is to come at a price higher even than the DAM price in the EU markets, price caps are also expected to limit the incentive to end-users to reduce demand, in particular in the hours when import is needed, and thus help the system in times of scarcity. Curtailments of supply should only be ultima ratio.

In this context, the Secretariat recalls that in early 2023, under forced conditions of load shedding following destruction of infrastructure, the Governmental took a decision ensuring the protection of those consumers who import electricity from disconnections.[9] This indicates that at that time, addressing the absence of imported electricity was the first priority, while the concern about higher electricity price corresponding to the level of EU Member State was the second. In other words, ensuring the security of supply, even at higher prices, was deemed important.

Impact on the market

a) Supply side

The increase of the maximum price cap, by an average by 50% and including an increase of 80% for four hours of maximum evening load (19:00-23:00), is expected to contribute to an additional revenue flow for all electricity producers active on the market. This includes those producers who perform public service obligation especially for HH, and will support their financial liquidity suffering from the PSO mechanism. By contrast, the decrease of price floor is likely to decrease the RES offtaker's (the Guaranteed Buyer) revenues. This can be partially compensated by the Guaranteed Buyer's trading activities during other hours of the day, where price caps and hence prices are higher.

Moreover, the direct linkage between the price cap for the BM to the hourly actual DAM prices leads to unpredictability related to the level of prices for balancing energy, and creates a risk of not providing for the full coverage of balancing costs to balancing service providers. Price regulation is present in the ancillary services market, which precedes the BM segment: maximum prices for ancillary services are administratively set at the level of the previous year[10]. Price regulation in the BM and the ancillary services market may limit TSO's ability to activate necessary volume of the balancing services and form the budget necessary for their remuneration. The TSO should be able to act in each hour of the day based on technical criteria and state of the system, without any limitations stemming from levels of price caps, be it in the DAM or the BM.

b) Demand side

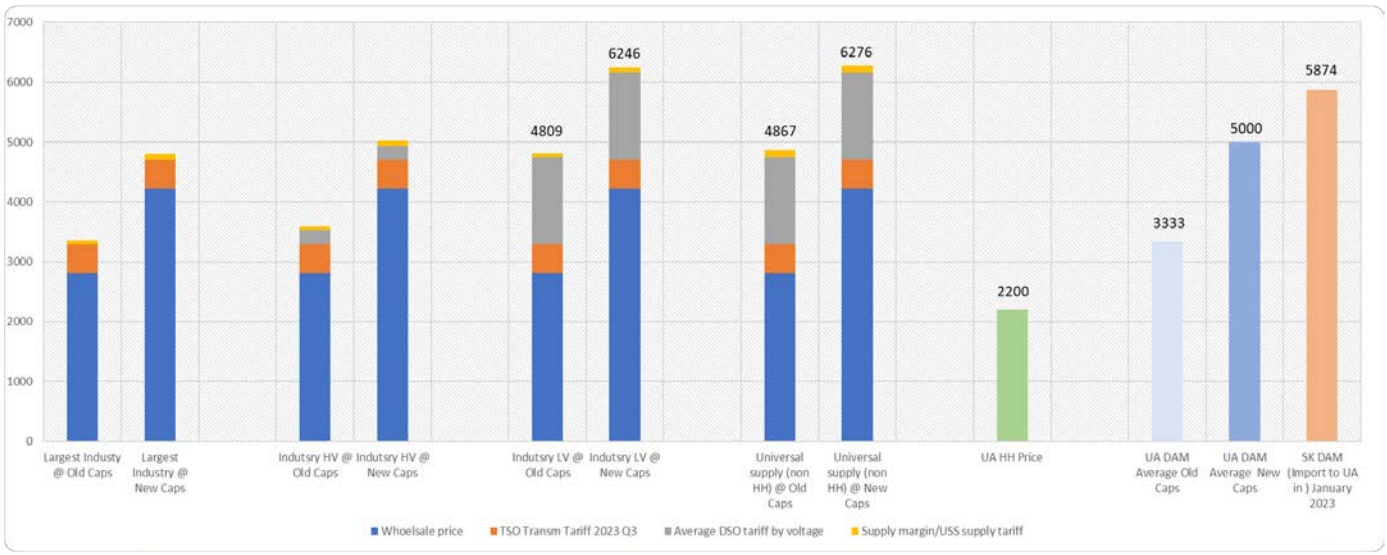
While it is difficult to predict how exactly the average wholesale electricity prices in Ukraine will develop following the increase of maximum price caps and the decrease of lower price caps (floors), as well as other key factors (weather, impact of military action, technical condition of producers, fuel stock), Figure 4 demonstrates the potential price development for non-household ("HH") end user prices by consumer category – largest industry, high and low voltage industry, and non-HH consumers under universal supply. For the largest industry, with its unique load profile, high consumption volumes, better contracting opportunities including in the forward market, would allow to achieve a lower than average wholesale market price.

[9] CMU Resolution No.1 dated 03.01.2023
[10] NEURC Resolution No.1958 dated 30.12.2022

Generally speaking, no immediate effect is expected on end-user prices but rather a gradual effect in the coming months. In the most extreme scenario, the dynamics of the market price under new price caps can lead to a situation where prices for non-HH consumers in Ukraine will increase in the range of 30%-40% by the end of 2023. For HH-consumers, it should be recalled, that prices are regulated through a public service obligation mechanism[11]. Therefore, they will not be directly affected by the decision on price caps. By its recent decision of May 2023, the Government[12] increased HH prices by more than 57%. Figure 4 refers to the historical import price based on the price of Slovakia of January 2023. It can be seen that even with the new price caps in place, the conservatively forecasted wholesale price for non-HH consumers of ~4200 UAH/MWh is way below historical import levels of almost 5900 UAH/MWh at times of scarcity.

Figure 4 in UAH/MWh

The detailed methodology for the calculation is described in Annex 2 below.



The Secretariat's analysis is based on a historical average difference between maximum DAM price caps and the actual DAM price achieved in 2022-2023 (as presented in Figure 1 above). The reduction of the DAM price floor will contribute to a lower DAM price especially in the summer months, which will be passed through to end users. Thus customers may benefit from the lower prices during minimal load periods.

In any event, the Secretariat reserves the right to update is forecasts based going forward.

Compliance assessment

Ukraine has committed to the process of further integration of its electricity market with the EU internal market following the adoption of the Electricity Integration Package in the Energy Community in December 2022. The deadline for transposition of this package consisting of the Clean Energy Package and a number of network codes and guidelines is 31 December 2023. The implementation of the package requires that the Ukrainian electricity market operates under the same principles as applied in the EU. To ensure a level playing field, the free price formation should not be affected by caps much lower than those applicable in the EU (which are not meant to limit price formation but constitute technical bidding limits).

[11] https://zakon.rada.gov.ua/laws/show/1-2023-%D0%BF#Text
[12] CMU Resolution No 544 dated 30.05.2023.

The application of price caps in the electricity market of Ukraine was used, at the beginning of the introduction of an organized market, as a tool for wholesale price containment and to ensure a smooth transition from the previously applied Single Buyer model. While the Secretariat recognizes that it may still not be feasible for Ukraine, especially under conditions of martial law, to immediately achieve the operational parameters of the liberalized EU markets, steps in this direction are advisable already now.

a) Third Energy Package

While Directive 2009/72/EC, does not contain explicit provisions on price caps on electricity markets, Article 36 of the Directive defines the general objectives to be followed by the regulatory authorities. They shall take all reasonable measures, among other, to

- develop competitive and properly functioning regional markets within the Energy Community;
- eliminate restrictions on trade in electricity between Contracting Parties;
- helping to achieve, in the most cost-effective way, the development of secure, reliable and efficient non-discriminatory systems that are consumer oriented, and promoting system adequacy and, in line with general energy policy objectives, energy efficiency as well as the integration of large and small-scale production of electricity from renewable energy sources and distributed generation in both transmission and distribution networks;
- ensuring that system operators and system users are granted appropriate incentives, in both the short and the long term, to increase efficiencies in system performance and foster market integration; and
- ensuring that customers benefit through the efficient functioning of their national market, promoting effective competition and helping to ensure consumer protection.

In addition, Article 37(16) of Directive 2009/72/EC provides that "*decisions taken by regulatory authorities shall be fully reasoned and justified to allow for judicial review, shall be available to the public while preserving the confidentiality of commercially sensitive information*." The Secretariat notes that the final levels of price caps were proposed during the NEURC hearings, with no calculations or reasoning.

b) Electricity Integration Package

Regulation (EU) 2019/943 on the internal market for electricity ("the Electricity Regulation") adopted by Ministerial Council Decision 2022/03/MC-EnC of 15 December 2022 in Article 10(1) clearly states that there shall be neither a maximum nor a minimum limit to the wholesale electricity price formation in all timeframes (including balancing energy and imbalance prices) without prejudice to the application of technical price limits which may be applied in the DAM, IDM and BM. Article 10(2) of the Electricity Regulation requires that any such limits in the DAM and IDM shall be sufficiently high so as not to unnecessarily restrict trade, shall be harmonised for the internal market and shall take into account the maximum value of lost load. Furthermore, the Electricity Regulation requires the implementation of a '[…] *transparent mechanism to adjust automatically the technical bidding limits in due time in the event that the set limits are expected to be reached. The adjusted higher limits shall remain applicable until further increases under that mechanism are required'*.

In addition, Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management ("the CACM Regulation") defines the application of technical bidding limits in the DAM and IDM by means of two terms, conditions and methodologies ("TCMs"), one for the DAM (Article 41) and one for the IDM (Article 54). The CACM Regulation requires the NEMOs of Contracting Parties to apply, in cooperation with the relevant TSOs, the maximum and minimum prices according to these TCMs which are developed by all NEMOs on EU level and approved by the Agency for the Cooperation of Energy Regulators ("ACER"). For the DAM, Article 41 requires this application upon integration into the single day-ahead coupling ("SDAC") while for the IDM no specific implementation date is set beyond the general deadline for implementation of

the Electricity Integration Package (end of 2023). The current levels[13] of the harmonized minimum and maximum price for the SDAC and the single intraday coupling ("SIDC") were approved by ACER[14] in January 2023, together with an adjustment mechanism automatically triggered in case the limits are expected to be reached to ensure free price formation and prevent the technical bidding limits to function as actual price caps. A separate ACER decision[15] under Article 30 of the Regulation (EU) 2017/2195 establishing a guideline on electricity balancing ("the EB GL") defines technical price limits for both positive and negative balancing energy,[16] with a transitional period with lower limits for the first four years of the European balancing platforms' operations.[17] In its decision, ACER finds that balancing price limits are not (and shall not be) lower than the harmonized maximum and minimum prices defined for the DAM and the IDM. i The EB GL adapted and adopted in the Energy Community provide that TSOs shall apply this harmonized methodology within one year after entry into force of the EB GL, i.e. by 15 December 2023.

The Electricity Regulation, the CACM Regulation and the EB GL are yet to be transposed and implemented in Ukraine, namely by 31 December 2023. This will require amendments to the Methodology by the end of this year to ensure its compliance with the principle of free price formation and the maximum/minimum IDM and balancing prices (as the first step) and with the integration into the SDAC the application of harmonized maximum and minimum clearing prices approved by the ACER for the DAM (as a second step). The EB GL also need to be implemented to ensure the TSO's participation in the cross-border balancing process, namely the European balancing platforms for the exchange of balancing energy.

Conclusions and recommendations

Considering the assessment above, the Secretariat recommends the following:

1) The revision of maximum and minimum price caps on the different wholesale market segments in their present form is an indispensable condition for the integration of the electricity market of Ukraine in the European Union's. It should allow for free price formation necessary to ensure the provision of price signals needed for energy demand reduction and investments, especially in RES.
2) NEURC should develop a strategy (roadmap) for further price caps liberalization as defined by the 'Roadmap for further market integration following the synchronisation of the Ukraine (and Moldova's) electricity networks with the Continental European Network'. The application of the harmonised minimum and maximum price limits based on the value of lost load and the corresponding adjustment mechanism in the EU should be ultimate goal.
3) Any temporary solution on price caps, such as the one under assessment, should:
    - allow for imports and exports to Ukraine necessary for security of supply and fostering integration with other Contracting Parties and Member States;
    - reflect the sequence of markets, meaning that the caps should increase on markets closer to real-time (as in the EU); and
    - include an automatic mechanism for adjustment of the price caps based on a transparent methodology and including a pre-defined and sufficiently long lead-time for the actual application after its announcement.

[13] SDAC: -500/4000 EUR/MWh; SIDC: -9999/+9999 EUR/MWh
ACER Decision 01-2023 on HMMCP SDAC - Annex 1.pdf (europa.eu)
ACER Decision 02-2023 on HMMCP SIDC - Annex 1.pdf (europa.eu)
[14] ACER Decisions 01-2023 and 02-2023
[15] https://eepublicdownloads.entsoe.eu/clean-documents/nc-tasks/220225_EB%20Regulation_Art.30_Amendment_ACER%20Decision_Annex%20I%20(1).pdf
[16] at the level of 99 999€/MWh and -99 999€/MWh
[17] 15000 €/MWh and - 15000 €/MWh during up to 48 months of the operation of the European balancing platforms with the participation of all the TSO.

4) NEURC should preserve its independence in the decision-making process in compliance with the Energy Community *acquis* and Ukrainian law. Asking the Ministry or other public or private bodies for "suggestions for price cap levels", encroaches upon the requirements of the *acquis* on independence of the regulatory authority. Furthermore, transparency should be improved, in particular by a substantiation of the proposed figures, including the input by the stakeholders consulted.
5) Price regulation should not be used as a tool aimed at preventing market manipulation. The key mechanism to address market manipulation is Regulation (EU) 1227/2011 on wholesale energy market integrity and transparency ("the REMIT Regulation"),[18] which gives ample authority and meaningful tools to NEURC for taking measures against market abuse, and giving incentives for the prevention of such manipulations. The recently transposed REMIT Regulation should be used swiftly and to the fullest extent in Ukraine.
6) Even before the REMIT toolbox is fully in place, the NEURC has the authority to closely monitor the behaviour of market participants, and launch investigations in case of suspicions of market dominance abuse (together with the national competition authority), The Methodology should be amended to be aligned with the new Electricity Integration Package by the end of 2023.

[18] adopted and adapted by Decision 2018/10/MC-EnC of the Energy Community Ministerial Council in November 2018

Annex 1

Rate UAH/EUR NBU exchange rate	39.9

EUR/MWh		Forward/Futures						
		July	August	September	October	November	December	
Poland	Base	111	108	111	111	111	124	Source: https://tge.pl/electricity-cfim?dateShow=23-06-2023&dateAction=
	Peak	127	129	135	141	147	161	Source: https://tge.pl/electricity-cfim?dateShow=23-06-2023&dateAction=
	Average	**117**	**115**	**120**	**122**	**124**	**137**	
Slovakia	Base	100	106	113	121	151	150	Source: Futures (eex.com)
	Peak	107	116	126	139	193	195	Source: Futures (eex.com)
	Average	**102**	**110**	**117**	**127**	**166**	**166**	
Hungary	Base	106	117	123	133	158	158	Source: https://www.eex.com/en/market-data/power/futures#%7B%22snippetpicker%22%3A%2230%22%7D
	Peak	111	123	129	146	199	203	Source: https://www.eex.com/en/market-data/power/futures#%7B%22snippetpicker%22%3A%2230%22%7D
	Average	**108**	**119**	**125**	**138**	**173**	**174**	
Romania	Base	100	107	120	132	145	149	Source: https://www.eex.com/en/market-data/power/futures#%7B%22snippetpicker%22%3A%2230%22%7D
	Peak	105	115	132	159	186	190	Source: https://www.eex.com/en/market-data/power/futures#%7B%22snippetpicker%22%3A%2230%22%7D
	Average	**101**	**110**	**124**	**142**	**160**	**163**	
EUR/MWh	**EU Base**	**104**	**109**	**116**	**125**	**141**	**145**	
UAH/MWh		4,158	4,367	4,651	4,971	5,643	5,804	
	EU Peak (CET 8:00-20:00)	**112**	**121**	**130**	**146**	**181**	**187**	Source: https://www.eex.com/en/glossary
		4,482	4,812	5,206	5,831	7,241	7,474	
	EU Average	**107**	**111**	**120**	**130**	**150**	**156**	
		4,264	4,451	4,802	5,206	5,985	6,213	
Ukraine	**UA DAM Peak**	**127**	**130**	**134**	**137**	**140**	**147**	
UAH/MWh		5069	5202	5335	5468	5601	5867	
	UA DAM Average	**109**	**112**	**115**	**117**	**120**	**125**	
		4371	4476	4580	4685	4790	5000	
	Import Gross Margin Peak	**15**	**10**	**3**	**(9)**	**(41)**	**(40)**	
		588	390	129	(363)	(1,640)	(1,607)	
	Import Gross Margin Average	**3**	**1**	**(6)**	**(13)**	**(30)**	**(30)**	
		106	25	(221)	(521)	(1,195)	(1,213)	

Peak load

This refers to a load profile for power deliveries with a constant output over twelve hours from 8 a.m. to 8 p.m. on any business day of the delivery period.

Base load

Base load refers to the load profile of power deliveries with a constant output over 24 hours of every day of the delivery period.

Ukraine			FW	FW	FW	FW	FW	FW
UAH/MWh	UA Caps 2023H2 -> Europe Hours		July	August	September	October	November	December
	Off-peak 21:00-9:00	4,133	3672	3749	3826	3903	3980	4133
	Peak 9:00-21:00	5,867	5069	5202	5335	5468	5601	5867
	(Kyiv timezone +1H to CET)	**Average**	**4371**	**4476**	**4580**	**4685**	**4790**	**5000**

Methodology Applied to Evaluation (Figure 2)

The methodology underlying presented analysis is as following. It compares prices of neighboring to Ukraine Member States (Poland, Slovakia, Hungary and Romania) – the most likely candidates of import sources for Ukraine – to the forecast of the development of Ukraine DAM prices in conditions of new price caps and price floors. The analysis does not include potential import from Moldova as historically its volumes were very small and contract price was not public. Moreover, it is unlikely to expect that Moldova, facing its own security of supply challenges, would be a major source of imports for Ukraine.

The prices for Slovakia, Poland, Hungary and Romania are based on quotes for base and peak forward and futures contacts for moths of Q3 and Q4 2023 at power exchanges - TGE (Poland only) and EEX (the rest). The average estimate is then derived for each of the country of the quotes of base and peak forwards/futures prices taking into account the period of the day covered by each contact type. Then, the averages for base, peak and average quotes is derived for all four countries.

The forecast for prices in Ukraine DAM is derived separately for peak and off peak hours of the day and is based on the assumption of how quickly actual Ukraine DAM prices will reach the new maximum price caps levels. The average of Ukraine DAM price is then derived as an average of prices for peak and off peak hours: peak being 8:00-20:00 CET (9:00-21:00 Kyiv time) and off-peak being 20:00-8:00 CET (21:00-9:00 Kyiv time) respectively.

The price forecast analysis is not based on the data of the forecasted electricity balance for Ukraine for Q3 and Q4 2023 (supply, demand, availability of major generation units, RES generation volumes) as information is not public due to limitations of Martial Law applied in Ukraine. It is assumed, that mainly due to RES output and decrease of day price caps, average UA prices will be gradually reaching maximum price caps towards the end of 2023. In particular, it is assumed that from actual prices in June 2023 70% of “price distance” towards price caps, will be reached in course of July, while remaining 30% - during the following months until the end of 2023.

The “import gross margin peak” indicator is derived as a difference between respective forecasts of peak prices of EU Member States neighboring to Ukraine and forecasted Ukraine DAM peak prices. The “import gross margin average” indicator is derived as a difference between respective forecasts of average prices of countries adjacent to Ukraine and forecast of Ukraine DAM average prices.

Negative values (in red) of import gross margin mean that prices in UA DAM would be lower than expected prices in EU Member States neighboring to Ukraine. This in turn means that commercial conditions for import are not in place. The result of the analysis shows that import in peak hours becomes problematic starting in October, while for average prices - already in September 2023.

Annex 2

Methodology Applied to Evaluation (Figure 3)

In evaluation of impact from new price caps on prices of end users - non HH consumers - the following approach was applied.

Impact on non-HH consumers' prices was evaluated for the following categories:

- Largest industry connected to TSO,
- Industry connected to high voltage DSO networks
- Industry connected to and low voltage DSO networks
- Small industry, who are clients of Universal suppliers

The wholesale component of end user non HH consumers prices was evaluated under the scenarios of old and new price caps. The level of wholesale price in the end user non HH prices was estimated based on the average ratio of how actual Ukrainian DAM prices reached levels of established price caps on average in 2022 and 2023 as presented in Figure 1. All other elements of end user prices, for each of four non-HH consumer categories, such as supply margins, supply regulated tariffs in case of universal supply, DSO tariffs remained the same for comparison purposes. The levels of end user prices were recalculated based on new values of wholesale price component in the end user price. The change in percent between prices under two scenarios were derived.