USAID
FROM THE AMERICAN PEOPLE

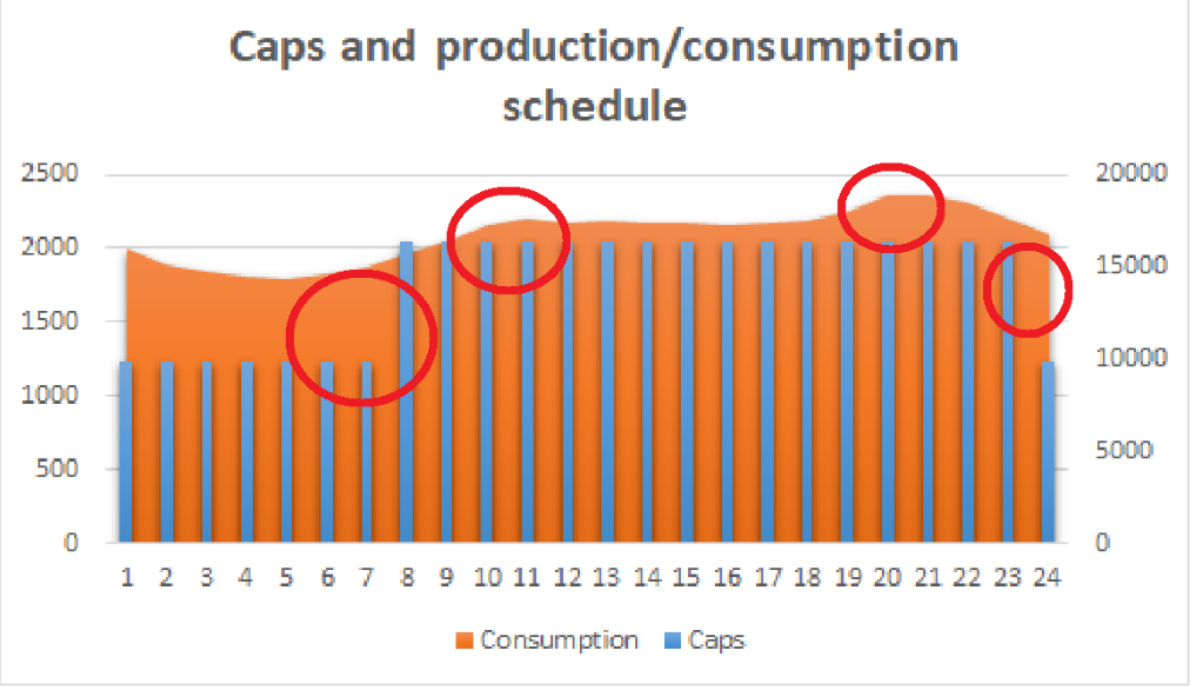
Energy
Security
Project

Analysis for DAM/IDM/BPM Bidding caps

Kyiv, Ukraine
September 09, 2020

Single Bidding Cap Introduction

Results on DAM (especially in night hours) shows that pricing might not been entirely market-driven during night hours (compared to daytime hours with similar demand levels) and is constrained through imposed restrictions. Thus two bidding caps, divided into caps for minimum and maximum load, might not accurately reflect generation/consumption schedule, especially in ramping periods from max to min load and vice versa, morning and evening peaks, etc. (these periods are marked as red in the graph below).



Average price calculated based on current caps is **1775,13 UAH/MWh**, whereas actual prices through whole DAM results in 2020 are in the range **≈1250-1450 UAH/MWh** (≈1200-1400 UAH/MWh for IPS and ≈1500-1720 UAH/MWh for BEI).

Current night cap is 60% of the day cap, meanwhile current minimum load is ≈ 70-75% of the maximum load.

Taking into account all above, revision of the day-time and night-time bidding caps by introduction of **one single bidding cap** for all 24 hours can be considered.

Approaches for the Bidding Caps

Considering the analysis of DAM prices in Ukraine and neighboring EU countries, below options for the bidding caps methodology are discussed in the presentation:

1. Based on price levels in the DAM markets of HU, SK, RO and PL
2. Based on the efficiency assessment and benchmarking of thermal power plants
3. Based on current bidding caps with indexation

Approach Based on Benchmarking EU Prices

The approach could be based on different indicators (maximum, median, average), defined from prices in the spot markets of HU, SK, RO and PL for some previous period (month, quarter, etc). Caps could be defined as caps for minimum and maximum load, 24 caps for each hour or single cap for the whole day.

Pros	Cons
EU market prices are a well-known benchmark for Ukrainian consumers	Different market and system structure that could not be compared with the Ukrainian case
	EU markets are coupled (market coupling could significantly reduce total price) and have free cross-border competitive trading unlike Ukrainian electricity market
	IPS operates isolated from EU grid, there is no physical or commercial connection, BEI operates synchronously with neighboring EU grids, but markets are not coupled
	HU, SK, RO and PL have different levels of economical growth and energy intensity

Approach Based on Benchmarking of TPPs

The approach could be based on the costs for the most expensive dispatched generator in IPS and BEI for some previous period (month, quarter, etc).

Pros	Cons
Bidding cap can cover all costs of generators	Large space for manipulations (fuel costs, unit costs etc.)
Principle similar to the existing mechanism of clearing price for DAM	Possible bad background in media – such approach could be easily perceived as "New Rotterdam+" and/or return to old market model (tariff-based)
	Fuel costs are variable, so bidding caps definition might require frequent recalculations
	Complicated to define reasonable margin for the most expensive dispatched generator

Approach Based on Current Bidding Caps with Indexation

The approach could be based on the current bidding caps and its indexation. The approach envisages the establishment of one bidding cap during all settlement periods of the day (according to the baseload with the current bidding caps) with subsequent indexation quarterly taking into account the fuel price, used by Ukrainian producers, on world markets according to their share in the country's physical energy balance and indexation of the total fixed costs of producers by inflation indices in accordance of its share in all producers cost.

Pros	Cons
Currents bidding caps are not reached in most settlement periods, indicating their sufficiency	Complicated calculation of many indexes and a large amount of data
Considers fluctuations in fuel prices for all producers	A clear list of data sources on price indices for different fuels is needed
Even sharp price fluctuations will be limited by share of the corresponding fuel in the physical balance	

Approach and Simulation Results for Bidding Caps Based on Benchmarked EU prices

Possible approach for calculation of caps using EU prices (for HU, RO,PL, SK) could be next:

- For the calculations, take DAM prices for the previous year of the neighboring countries.
- Calculate maximum prices for each hour upon HU, RO,PL, SK DAM results.
- Find average price from hourly maximum prices.
- Adjust defined yearly price based on the PPI index.

Calculated cap using this approach is **1698,32 UAH/MWh**

Other possible approach using EU prices is to calculate caps (take average from maximum EU prices, as in the previous option), divided into quarters based on data from previous year, adjusted based on the actual yearly PPI.

Quarter	Price	Actual PPI (2020)	Cap
1	1707,265	102,3	1746,533
2	1646,708	102,3	1684,582
3	1880,526	102,3	1923,778
4	1558,438	102,3	1594,282
Yearly	1698,325	102,3	1737,386

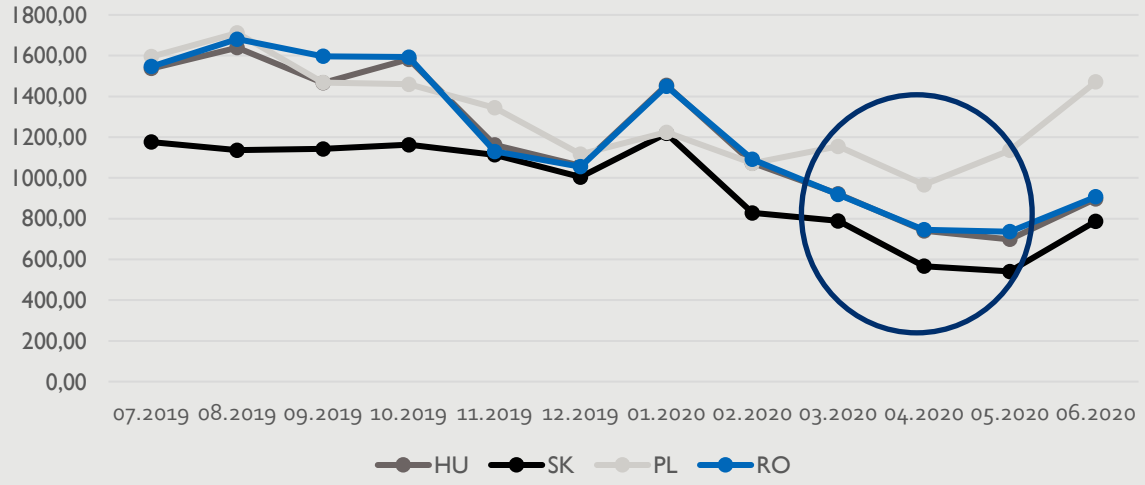
Approach and Simulation Results for Bidding Caps Based on Current Caps with Indexation

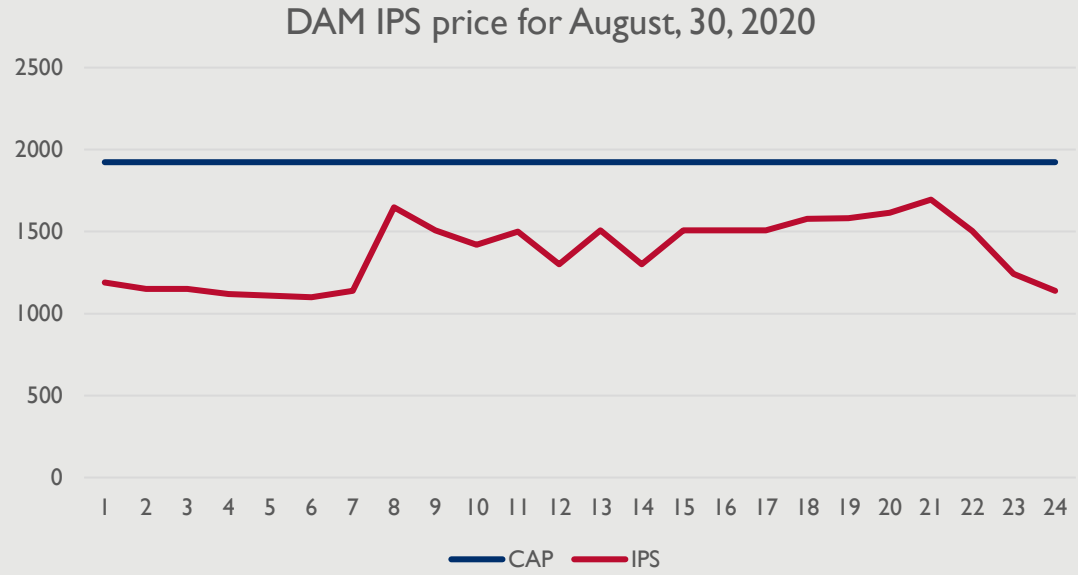
- The base for indexing could be current bidding caps, as they showed their worth during the first year of the new model of the market functioning, except night bidding caps which were updated after the first year of the new model of market functioning.
- Transition to the one bidding cap could be provided through baseload for the former bidding caps in different time zones .The one bidding cap thorough all time zones would be 1 775.13 UAH/MWh.
- The next step is to index the bidding cap by deviations of world indices on energy sources used by Ukrainian producers (nuclear, coal, gas) and by inflation index.
- These indices should be taken in the proportion of the corresponding generation ratio in the country's physical balance and the inflation index should be taken in the proportional ratio for fixed costs in the general cost of producers.

Period	Cap
2019 Q3	1775,13
2019 Q4	1884.06
2020 Q1	1848.78
2020 Q2	1833.39
2020 Q3	1906.14

Recommendations for Description of Bidding Caps

- USAID ESP recommends to use an approach, based on **quarterly DAM prices from previous year** in the neighboring EU countries (HU, RO,PL, SK - including Poland, as Poland and Ukraine both have similar generation structures – the dominance of not flexible base-load generation, fuel-oriented energy mix, thermal generation as price setters). Quarterly calculations could better reflect transition periods, weather conditions, consumption changeability, etc.
- 2019 is taken as the reference year due to extraordinary circumstances in 2020 (impact of Covid-19 measures on the economies, and hence DAM price levels, which happened to be extremely low in EU during the 2020 Q1 and Q2)
- Details such as PPI indexation period could be defined in further discussions.
- New approach will create a stress on **IPS DAM prices** and curb effect of supply-demand dynamics on price formation – e.g., in August 2020 DAM prices started to be high and proposed caps allows this).





Recommendations and Concerns on Deviation Level

- Estimation of deviations in the market is market monitoring function, with the results in investigation of behavior of market participants, which are suspected in market manipulations and abuse.
- Bidding caps, which affects the whole market, could not be considered as a consequence of individual MP's behavior.
- However, deviations definition is requirements of the Electricity Market Law. In this case, taking into account linking between Ukrainian bidding caps and EU prices, the recommendation is to introduce "reasonably high" level for the deviation, e.g. **15%,** as it is an average deviation in the neighboring countries starting from July 2019 year till July 2020. Otherwise, the design of the caps might lead to misguiding caps creating distortions for the price, even practically leading to kind of "price regulation" for DAM, which is not desired.

Month	Prices (EUR/MWh)				Deviations %				
	HU	SK	RO	PL	HU	SK	RO	PL	Average
July	54,95	42,04	55,29	57,01					
August	58,69	40,66	60,19	61,27	7%	3%	9%	7%	7%
September	55,70	43,39	60,64	55,76	5%	7%	1%	9%	5%
October	57,01	41,89	57,38	52,59	2%	3%	5%	6%	4%
November	43,93	42,10	42,71	50,82	23%	0%	26%	3%	13%
December	41,08	38,92	40,89	43,25	6%	8%	4%	15%	8%
January	52,96	44,37	52,80	44,56	29%	14%	29%	3%	19%
February	39,85	30,77	40,52	39,79	25%	31%	23%	11%	22%
March	29,77	25,49	29,68	37,31	25%	17%	27%	6%	19%
April	25,33	19,37	25,51	33,05	15%	24%	14%	11%	16%
May	23,59	18,27	24,86	38,32	7%	6%	3%	16%	8%
June	29,97	26,29	30,32	49,12	27%	44%	22%	28%	30%
Average	**42,74**	**34,46**	**43,40**	**46,90**	**16%**	**14%**	**15%**	**11%**	**14%**

USAID ESP Recommendations for BPM Caps Definition

- In order to avoid artificial trading by producers or suppliers during the quarantine, establishment of downward regulation bidding cap at level 80-90% and upward regulation bidding caps down at level 105% **of DAM actual prices** can be considered.
- Bidding caps restrictions should be gradually removed after the quarantine based on market trends to **previous bidding cap levels** of 115% for upward regulation and 55% for downward regulation **of DAM actual prices.**
- Decisions should be based on supply-demand trends and carefully checked against possible cost recovery problems for balancing service providers upon dispatch orders.

Recommendations for Description of Bidding Caps

- "Bidding caps" were designed as a safe-guard for WEM opening and does not aim to introduce price regulation. Therefore, instead of introducing strict restrictions (e.g., hourly caps), the methodology should aim to achieve "market-based" price formation for reliable price signals in the market.
- Distortions on price formation during night or day zones could be mitigated by introduction of a single bidding cap. In order to avoid abrupt price levels, the calculations must be made carefully. Furthermore, a dynamic approach (e.g., a triggering mechanism based on average DAM price levels) can be considered.
- BEI trading zone demonstrates a different character and suffers from market concentration due to reduced imports. Therefore, approach to bidding caps must be differentiated as well.
- Avoiding information asymmetry and ensuring transparency to achieve a level playing field for all players are key for fair price formation at DAM, which provides the reference market prices. Therefore, (1) Development of a Bilateral Market with physical delivery through licensed platforms offering standardized products, and (2) Establishment of a Market Data/Transparency Platform are also recommended.

Energy Security Project

THANK YOU!

USAID ESP CONTACT

For this Analysis and to get more information, please contact esi.kyiv.electricity@tetratech.com

USAID UKRAINE CONTACT

To get more information, please contact Senior Energy Advisor Sukru Bogut, sbogut@usaid.gov

USAID
FROM THE AMERICAN PEOPLE

This Analysis is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this Analysis are the sole responsibility of Tetra Tech, Inc., and does not necessarily reflect the views of USAID or the United States Government.
This Analysis was prepared by Tetra Tech, Inc., for the USAID Energy Security Project (ESP).