APPROVED
By the decision of the
Quotation Commission
of Ukrainian Energy Exchange Limited
Liability Company
Minutes of the meeting of the
Quotation Commission
dd December 30, 2021
Chairman of the
Quotation Commission

_____/ Ryvkevych R.

Methodological recommendations on the use of price and other indicators of exchange trading in untreated timber for the calculation of the starting price/start coefficient when organizing and conducting exchange trades in untreated timber on the commodity exchange - Ukrainian Energy Exchange Limited Liability Company

Kyiv– 2021

Section I. General part

1.1. These Methodological recommendations regarding the use of price and other indicators of exchange trade in untreated timber for the calculation of the starting price/start coefficient when organizing and conducting exchange trades in untreated timber on the commodity exchange - Ukrainian Energy Exchange Limited Liability Company (hereinafter - Methodological recommendations) developed in accordance with the Regulations on the organization and conduct of exchange trades for the purchase and sale of untreated timber and lumber on the commodity exchange - the Ukrainian Energy Exchange Limited Liability Company (hereinafter - the Regulations), other internal documents of the Ukrainian Energy Exchange Limited Liability Company (hereinafter referred to as the Exchange) and the legislation of Ukraine in order to enable the initiator of exchange trades (auction) when calculating the starting price / starting coefficient in periods of volatility of the value of untreated timber (corrections (decreases) in the price of untreated timber) to use price and other indicators of exchange trade in untreated timber calculated by the Exchange, namely: the monthly weighted average starting price of untreated timber per cubic meter and the growth rate of the price of untreated timber. Methodological recommendations are a document that is of a recommendatory nature and contains the procedure for calculating the monthly weighted average starting price of untreated timber per cubic meter and the coefficient of growth of the price of untreated timber, which can be used by auction initiators when calculating the starting price/starting coefficient per cubic meter of untreated timber when conducting exchange trading, according to the formula proposed below, during periods of correction (decrease) in the price of untreated timber on the Exchange.

1.2. Methodological recommendations, any changes and additions to them are posted on the official website of the Exchange on the Internet. If necessary, the Exchange may use other methods of publicizing information.

1.3. Methodological recommendations and changes/additions to them are approved by the relevant decision of the Quotation Commission of the Exchange.

1.4. For the purposes of these Methodological recommendations, the terms are used in the following sense:

- the starting price is the price for one cubic meter of raw wood according to the assortment, species, quality class, length and diameter group, which is calculated by the initiator of the auction according to the formula proposed by these Methodological recommendations, at the time of the beginning of the exchange trading (auction);

- starting coefficient - the value of the coefficient, which is calculated by the initiator of the auction according to the formula proposed by these Methodological recommendations, at the time of the start of exchange trading (auction)

1.5. Other terms used in these Methodological recommendations are used in accordance with the internal documents of the Exchange and the legislation of Ukraine.

1.6. Price indicators calculated by the Exchange in accordance with these Methodological recommendations are published on the official website of the Exchange. When applying these Methodological Recommendations by the participants of exchange trades in the "Untreated timber and lumber" direction, they use the latest published relevant price indicators.

Section II. Criteria and methods for calculating the starting price

2.1. The starting price for a cubic meter of untreated timber in accordance with the assortment, species, quality class, length and diameter group, which is applied to the exchange (auction), can be calculated taking into account the results of the exchange market trading of untreated timber in the previous month.

2.2. In this case, the starting price is calculated according to the formula:

$$\boldsymbol{Start\ (P) = Start(PL) - Start\ (P)_{M-1} * k_1 * k_{M-1}}, \text{ де}$$

$\boldsymbol{Start(PL)}$ – the starting price for untreated timber planned by the initiator of the auction, which is determined on the basis of the monthly index of weighted average prices;

$\boldsymbol{Start\ (P)_{M-1}}$ – the monthly weighted average starting price for untreated timber of the previous month per cubic meter, which is published by the Exchange on the official website every month.

$\boldsymbol{k_{M-1}}$ – the monthly rate of growth of the price of untreated timber is the average value of the growth of the price of untreated timber per cubic meter based on the results of the previous month's auctions, which takes on the values of (0;+∞) (at 1% = 0.01) and is determined by the formula:

$$\boldsymbol{k_{M-1}} = \frac{\sum(\boldsymbol{h}*\boldsymbol{v})}{\sum \boldsymbol{v}}, \text{ де}$$

$\boldsymbol{h}$ – increase in the price expressed in the coefficient (1% = 0.01) of a certain exchange agreement according to the relevant characteristics of the untreated timber declared for sale;

$\boldsymbol{v}$ – the volume of a certain exchange agreement according to the relevant characteristics of the untreated timber declared for sale.

$\boldsymbol{k_1}$ – additional coefficient, which is equal to:

$$\begin{cases} 1.25, \text{when } k_{M-1} \leq 0.25; \\ 1, when\ 0.25 < k_{M-1} < 1, \text{and} \\ 0.5, when\ k_{M-1} \geq 1. \end{cases}$$

2.3. The monthly rate of increase in the price of untreated timber (k_M) is published by the Exchange on the official website every month.

2.4. Monthly weighted average starting price for untreated timber of the previous month $\boldsymbol{Start(P)_{M-1}}$ and the monthly rate of increase in the price of untreated timber for the previous month ($\boldsymbol{k_{M-1}}$) are calculated in the section of firewood (general calculated values) and round timber (general calculated values, as well as by individual species).

2.5. When calculating the starting price, it is necessary to use calculated values $\boldsymbol{Start(P)_{M-1}}$ (in accordance with the characteristics of untreated timber (species) offered for exchange trading (auctions), and in the event that such calculated values are not available, general calculated values are used in the section of firewood and round timber.

2.6. An example of the starting price calculation is provided in Appendix No. 1 to these Methodological recommendations.

Section III. Criteria and methods for calculating the starting coefficient

3.1. The starting coefficient, which is applied for exchange trading of untreated timber of the appropriate assortment, species, quality class, length and diameter group can be calculated taking into account the results of the exchange market trading of untreated timber in the previous quarter.

3.2. In this case, the starting factor ***Start(k)*** is calculated according to the formula:

$$\boldsymbol{Start(k) = 1 - (Start(P)_{Q-1} / ex(P)_{Q-1}) * k_1 * k_{Q-1}}, \text{ де}$$

$\boldsymbol{Index(P)_{Q-1}}$ – the arithmetic mean quarterly value of the monthly indices of weighted average prices for untreated timber of the previous quarter;

$\boldsymbol{Start\ (P)_{Q-1}}$ – the arithmetic average quarterly value of the monthly weighted average starting prices for raw wood of the previous quarter per cubic meter, which is published by the Exchange on the official website every quarter;

$\boldsymbol{k_{Q-1}}$ – quarterly rate of increase in the price of untreated timber - the arithmetic mean value of the monthly rate of increase in the price of untreated timber for the previous quarter;

$\boldsymbol{k_1}$ – additional coefficient, which is equal to:

$$\begin{cases} 1.25, \text{when } k_{Q-1} \leq 0.25; \\ 1, when\ 0.25 < k_{Q-1} < 1, \text{and} \\ 0.5, when\ k_{Q-1} \geq 1. \end{cases}$$

3.3. An example of calculating the starting coefficient is given in Appendix No. 1 to these Methodological Recommendations.

Annex #1
to Methodical recommendations on the use of price and other indicators of exchange trade in untreated timber for the calculation of the starting price/start coefficient when organizing and conducting exchange trades in untreated timber on the commodity exchange - Ukrainian Energy Exchange Limited Liability Company

Examples of calculation of starting price and starting coefficient

1. Example of calculating the starting price per cubic meter of untreated timber for December 2021.

1.1. The results of the calculation of the weighted average starting price for untreated timber for the previous month **(Start 〖(P)〗_(M-1)):**

	Weighted average starting price, hryvnias/cubic m.				
	Firewood	Round timber			
	General value	General value	Common Pine	Common Oak	Europeane Spruce
November 2021	1100	5000	3300	12300	2300

1.2. Results of calculation of monthly price growth factors for November 2021. (k_{M-1}):

	Monthly price growth rate				
	Firewood	Round timber			
	General value	General value	Common Pine	Common Oak	Europeane Spruce
November 2021 (%)	20%	24%	17%	31%	22%
November 2021 (abs. value)	0.2	0.3	0.17	0.31	0.22

1.3. Monthly indices of the weighted average price of untreated timber for the previous month $Index\ (P)_{M-1}$:

	Monthly index of weighted average prices, hryvnias/cubic m.				
	Firewood	Round timber			
	General value	General value	Common Pine	Common Oak	Europeane Spruce
November 2021	1320	6500	3861	16113	2806

1.4. (Example 1) The seller puts a pine tree up for auction. Then the starting price per cubic meter of untreated timber in the auction application will be calculated as follows:

Start(P) = $Start(PL) - Start\ (P)_{M-1} * k_1 * k_{M-1}$ = 3861 – 3300*1,25*0,17 = 3159,75 UAH/cubic m.

(Example 2) The seller auctions European larch (for which the monthly weighted average starting price and the monthly price growth factor are not calculated). Then, the starting price per cubic meter of raw wood in the auction application will be calculated as follows:

Start(P) = $Start(PL) - Start\ (P)_{M-1} * k_1 * k_{M-1}$ = 6500 – 5000*0,3 = 5000 UAH/cubic m.

2. Example of calculating the starting coefficient per cubic meter of untreated timber for January 2022.

2.1. The results of calculating the arithmetic mean quarterly value of the monthly weighted average starting price of untreated timber for the previous quarter ($\boldsymbol{Start(P)_{Q-1}}$):

	Monthly weighted average starting price, hryvnias/cubic m.				
	Firewood	Round timber			
	General value	General value	Common Pine	Common Oak	Europeane Spruce
October 2021	1000	4800	3000	12000	2100
November 2021	1100	5000	3300	12300	2300
December 2021	1300	4000	3100	12350	2100
Summary of the IV quarter. 2021 (quarterly value of monthly weighted average starting price ($\boldsymbol{Start(P)_{Q-1}}$):	**1000**	**4600**	**3133**	**12300**	**2166**

2.2. The results of the calculation of the quarterly coefficient of growth of the price of untreated timber for the previous quarter ($\boldsymbol{k_{Q-1}}$):

	Quarterly price growth rate				
	Firewood	Round timber			
	General value	General value	Common Pine	Common Oak	Europeane Spruce
October 2021	0.35	0.3	0.23	0.36	0.32
November 2021	0.2	0.3	0.17	0.31	0.22
December 2021	0.4	0.24	0.2	0.2	0.26
Summary of the IV quarter. 2021 (quarterly rate of price growth ($\boldsymbol{k_{Q-1}}$):	**0.32**	**0.28**	**0.2**	**0.29**	**0.27**

2.3. Arithmetic average quarterly value of monthly indexes of weighted average prices for untreated timber of the previous quarter ($\boldsymbol{Index(P)_{Q-1}}$):

	Monthly index of weighted average prices, hryvnias/cubic m.				
	Firewood	Round timber			
	General value	General value	Common Pine	Common Oak	Europeane Spruce
October 2021	1350	6240	3690	16320	2772
November 2021	1320	6500	3861	16113	2806

December 2021	1625	4960	3720	14820	2646
Summary of the IV quarter. 2021 (Arithmetic average quarterly value of monthly indexes of weighted average prices ($Index(P)_{Q-1}$)**:**	**1435**	**5888**	**3760**	**15760**	**2744**

2.4. (Example 1) The seller puts Common Pine on the exchange market (auction).
Then the starting coefficient per cubic meter of untreated timber in the auction application will be calculated as follows:

Start(k) = *1- (*$\boldsymbol{Start(P)_{Q-1} / Index(P)_{Q-1}) * k_1 * k_{Q-1}}$ = 1 – (3133/3760)*1*0.2 = 1 – 0,167 = 0,83.