Ndërmarrja e Elektrokosovës
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KOMPANIA KOSOVARE PER FURNIZIM ME ENERGJI ELEKTRIKE SH.A.
KOSOVO ELEKTRICITY SYPPLY COMPANY J.S.C.
KOSOVSKO PREDUZEĆE ZA SNABDEVANJE ELEKTRIČNOM ENERGIJOM D.D.
KESCO SH.A.
Nr. 42 Dt. 04.12.2015
HQ 1

Enver Halimi
Chairman of ERO Board

Serhat Dinç
KESCO Executive Director

04 December 2015

SUBJECT: WHOLESALE ELECTRICITY PRICE APPLICATION FOR THE YEAR 2016

Dear Mr. Halimi,

This application for wholesale electricity price is drafted by KESCO in both electronic form and hard copy, within the time frame set in Appendix 4 of the Public Electricity Supplier (PES) Pricing Regulation, and guidelines from ERO provided in the official letter dated 13 November 2015 regarding the process of annual updates.

This application contains necessary data with the aim of calculating wholesale costs, and as such fulfills the requirements from first phase of the process of annual updates for the Public Electricity Supplies (PES).

KESCO remains committed for cooperation with the aim of reaching appropriate conclusions, which are in the interest of all stakeholders involved in the energy sector.

Sincerely,

Serhat Dinç

Copy to:

Krenar Bujupi, Board Member

Petrit Pepaj, Managing Director

Ymer Fejzullahu, Head of Tariff and Pricing Department

KES|CO

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WHOLESALE ELECTRICITY PRICE APPLICATION FOR THE YEAR 2016 (Regular Adjustment Process)

December, 2015

Kosovo Electricity Supply Company
Bulevardi Bill Klinton nr 3
Prishtine 10000
Republika e Kosovës

Content

Ndërtesa e Elektrokosovës
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Introduction

This application for wholesale electricity price is drafted by KESCO in both electronic form and hard copy, within the timeframe set in Appendix 4 of the Public Electricity Supplier (PES) Pricing Rule, and ERO guidelines issued in the official letter dated 13 November 2015 regarding the annual adjustment process.

In this application KESCO present the forecast of all technical and financial data, which are necessary for calculating costs, respectively the wholesale electricity price, to fulfill the activities of the Wholesale Electricity Supplier.

KESCO remains committed for cooperation with the aim of reaching appropriate conclusions, which are in the interest of all stakeholders involved in the energy sector.

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1. Electricity Pricing Rule for the Public Supplier

This section describes the methodology for calculating wholesale costs conform Electricity Pricing Rules for the Public Supplier approved by the Energy Regulatory Office.

1.1 Determination of the Wholesale Costs

In order to determine the wholesale electricity price, first we need to know the wholesale capacity costs for purchasing electric ty. Estimation of these costs from the Public Supplier (KESCO) is done in accordance with article 13 of the Public Electricity Supplier Pricing Rules, based on which the allowed wholesale electricity cost should contain:

1.1. Allowed wholesale capacity costs

1.2. Allowed wholesale energy costs, and

1.3. Retail Margin on allowed wholesale capacity costs and wholesale energy costs.

In the following are explained the elements of the wholesale power costs:

$WHPC_t = (WHCC_t + WHEC_t) * (1 + RETM_t) + (WHPCa_{t-1} - WHPCf_{t-1}) * (1+ I_t)$.

1.1. Allowed wholesale capacity costs are those costs associated with the payment of capacity charges for domestic generating capacity which is contracted for the purposes of ensuring security of supply, and relates to supply Regulated Customers.

1.2. Allowed Wholesale energy cost, which are related to serving Regulated Customers, shall comprise the following:

- *Costs of purchases from domestic generation;*
- *Energy import costs;*
- *Energy export revenues (as a negative cost), subject to the Export Sharing Factor;*
- *Net imbalance costs, subject to the Imbalance Sharing Factor*

1.3. The Retail Margin shall be a fixed percentage that is applied to allowed wholesale energy costs and allowed wholesale capacity costs

The retail margin is specified at the input values, as 3% for this regulative period, and Public Supplier will use the same percentage for calculating wholesale electricity price.

From the formula above we can see that besides costs for the relevant year t, we also need data for the relevant year t-1, and in this application the relevant year t represents data for the year 2016, whereas relevant year t-1 represents data for the year 2015.

2. Predetermined Input Values

Having in mind that the schedule set in the Public Electricity Supplier Pricing Rule regarding Wholesale Application is at the same time as the schedule set for the Regulated Generator for MAR and tariff applications, as a result we don't have the approved MAR for the Regulated Generator and the cost-classification for the year 2016, therefore in this application we will use some input values predetermined from ERO, which are needed to calculate the Wholesale Electricity Price.

In order to forecast costs for purchasing electricity in the year 2016 some inputs are used as approved by the regulator in the first periodic review, some data from the last tariff review, moreover feed-in tariffs and other realistic estimations of the Public Supplier were considered.

Approved input values from ERO for the first period review[1] and Feed-in Tariffs

Maximum Allowed Revenues for the Regulated Generator[2]	mil €	142.4
Price for purchasing electricity from Ujmani	€/MWh	27.5
Price for purchasing electricity in the distribution level	€/MWh	43.8
Photovoltaic Energy Price	€/MWh	136.4
Price for the Wind-power	€/MWh	85.0
Price for the other small Hydro power-plants	€/MWh	63.3

Table 1

Any possible change from ERO for predetermined input values should be reflected in the final power purchased cost, which is used to determine the wholesale price.

[1] Source : ERO Multi-year Tariff Review Model (2013 – 2017) "*ERO MYT - Summary Model - v29_220313*"

[2] Calculated as : Approved price from ERO for KEK for the year 2015 multiplied with the electricity value forecasted to be generated in the year 2016

Besides the predetermined input values, with the aim of determining wholesale costs, the Public Supplier has also used data approved by ERO in the last periodic review, and they are:

Data approved in the last tariff review[3]		
Interest Rate for WHPC Adjustments	%	10.72
Approved average price for KEK	€/MWh	26.47
Classification of costs for the Regulated Generator		
a. Fix	%	70
b. Variable	%	30

Table 2

Since changing these data is in the competence of the regulator, and since we don't expect any changes until the application of PES, these data will be used as such in this application of PES.

3. Wholesale Cost Components

This section explains calculations for wholesale capacity costs and wholesale electricity costs for the year 2016.

3.1 Capacity Costs $WHCC_t$

Fix component of the wholesale costs is composed from fixed costs of the regulated generator. Forecast of the wholesale capacity cost (fixed component) for the Regulated Generator is based on the cost classification done in the year 2015; respectively 70% of the total costs were accounted as fixed costs. The same percentage will be applied in the estimated revenues for KEK, which were calculated by applying the approved price from ERO for KEK for the year 2015 multiplied with the electricity value forecasted to be generated in the year 2016. Any other cost that will be approved for

[3] Source : ERO Model for the year 2015 for KEDS and KESCO "*ETR9 Modeli per KEDS_DSO_MAR*"

KEK, as a result of new circumstances, PES will consider when calculating the final wholesale costs.

The table below represents KEK's fixed cost component, which is calculated as 70% of the fixed costs of the MAR of €142.4 mil.

Capacity Costs (WHCC)	
MAR of KEK	142.4
Fixed Component %	70%
Fixed Costs	**99.7**

Table 3

3.2 Energy Cost $WHEC_t$

In order to evaluate energy cost, information related to power balance forecast for the year 2016 will be used, as are represented in the table 4. In this table table, energy production from the regulated generator is represented as net production, without including self-consumption for his needs, because Regulated Generator should cover these energy cost when designing its charges.

Moreover, while evaluating energy costs, the following assumptions were considered:

1. Clients connected in the transmission level continue buying at regulated tariffs. This is an uncertainty as we are unaware when the market will be open, and whether they will be willing to opt of buying on the free market.
2. In the energy balance forecast, the North consumption and losses are treated similarly to the previous electricity tariff reviews, respectively north Kosovo consumption and losses are considered as purchase obligation by PES. At the moment, the supplier for the north is still not registered, not licensed, and in addition no information for clients and their consumption have been made

available to PES and DSO, therefore we can't make any prediction going forward.

3. Purchases of energy considers expected level of losses of DSO, based on the DSO real expectations with the correctior for quantities above ERO target, thus eliminating the cost of excess losses to be charged as a wholesale cost to the end user.

The table below summarizes the volumes of energy for the year 2016 by taking into consideration the above stated arguments. The estimated data for the year 2015 represent actual data for 10 months and forecasted data for the months of November and December.

Updated Power Balance for the year 2016			
Line	Approved 2015	Estimated 2015	Update 2016
Kosovo A (Net, without self-consumption)	1,621	5,123	1,868
Kosovo B (Net without self-consumption)	3,677		3,649
KEK Total	5,299	5,123	5,517
Mines	(138)	(138)	(138)
Import	508	707	520
Export	(638)	(617)	(786)
HPP Ujmani	84	114	95
Renewable energy in the transmission level with Feed-in Tariffs			63
Generation in DSO Level with regulated tariffs	47	40	19
Renewable energy in the distribution level with Feed-in Tariffs			45
DSO Losses above the ERO target			(216)
Total GWh	**5,161**	**5,229**	**5,120**

Table 4

In the following table is described the quantity which needs to be bought in the transmission level, in order to cover the gross consumption in the transmission and distribution levels.

Energy to be purchased at wholesale level	GWh
Consumption in TSO	
New Feronikeli CO	586
Direct Consumers	91
TSO losses	114
Total TSO level consumption	**791**
Consumption in DSO	
Sales to final DSO customers	3,196
DSO losses expected	1,096
Less: losses above ERO target	(216)
DSO losses at ERO target	880
North Kosovo	243
Surplus/Deficit	10
Total DSO consumption	**4,329**
Total consumption	**5,120**

Table 5

KESCO evaluates that the right approach for calculating losses in regards to non-achievement of targets set by ERO, should be done in the wholesale costs, and not by balancing through export, since such a balance would represent export values only on numerical values but not on real basis. Therefore, KESCO has evaluated that it is more justifiable to balance these costs in a separate line "*DSO losses above the ERO target*", by which customers will benefit only by the level of ERO approved losses, and not losses above this target, respectively the calculated cost of losses above the ERO target will be removed from the wholesale power purchase costs. In the meantime estimation for export and import will be more realistic, since it will be based only on available capacities (MW) declared in the energy balance forecast for the year 2016.

The details of these calculations are represented below:

Calculation of losses above ERO target	Unit	Total
Demand at DSO level	GWh	4,535
DSO expected losses	%	24.16%
ERO target for DSO losses	%	19.40%
DSO expected losses	GWh	1,096
ERO target for DSO losses	GWh	880
Volume of losses above ERO target	**GWh**	**216**

Table 6

DSO cost of losses above the ERO target are calculated by applying the initial wholesale price for the year 2016, which is 30.4 €/MWh. As a result, after applying this price on quantities of 216 MWh, results that the costs of losses which should be decreased from the wholesale power purchased costs for the year 2016 is € 6.6mil.

3.3 Assumptions for determining wholesale price

This sub-section describes wholesale energy costs, respectively energy costs for the regulated generator, HPP Ujmani, import, export, energy purchases in the distribution level and imbalance – cost.

3.3.1 Energy costs for the regulated generator – KEK represent 30% of the KEK's cost, as classified by ERO during cost allocation for the year 2015. From this classification results that energy costs for the Regulated Generator for the year 2016 will be € 42.7mil.

3.3.2 Energy costs for generators connected in the transmission level – are calculated in two parts. For old generators connected in the transmission level (Ujmani) a price of 27.5 €/MWh is applied, as approved by ERO in this periodic review. For other generators connected in the transmission level, which produce electricity from renewable

resources, feed-in tariffs are applied, as approved by the Energy Regulatory Office. The total value for generator connected in the transmission level is € 6.6mil.

Electricity Production from Renewable Sources in TSO level

Plant	MWh	€/MWh	€000s
HPP UJMAN	95,000	28	2,613
HPP Lumbardhi 1	21,680	63	1,372
HPP EGU Belaje	17,731	63	1,122
HPP EGU Deçani	23,803	63	1,507
RES connected in TSO	**158,214**	**42**	**6,614**

Table 7

3.3.3 Energy costs for generators connected in the distribution level – are calculated in two parts. For old generators connected in the distribution level a price of 43.8 €/MWh is applied, as approved by ERO in this periodic review. For other generators connected in the distribution level, which produce electricity from renewable resources, feed-in tariffs are applied, as approved by the Energy Regulatory Office. The total value for generator connected in the distribution level is € 3.7mil.

Electricity Production from Renewable Sources in DSO level

Plant	MWh	€/MWh	€000s
HPP Brodi 2	21,164	63	1,340
HPP Restelica 1&2	1,945	63	123
Hydroline-Albaniku III	20,000	63	1,266
HPP Dikance	12,461	44	546
HPP Radavci	4,771	44	209
HPP Istogu	2,010	44	88
LED LIGHT Technology (LLT)	136	136	19
WindPower Generator (WP)	1,739	60	104
RES connected in DSO	**64,226**	**58**	**3,695**

Table 8

3.3.4. Import cost - the balancing of the energy entering distribution is done based on capacity, on monthly even hourly basis as local generation is majority of the time sufficient during off peak hours, and respectively, import is done on modulated

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principle not on base load. For the purposes of Energy balance, KESCO is predicting the loads on bi weekly basis, and based on the predicted work plan of the units (available capacity) we forecast the volumes of mport and export, in order to balance the loads in MW. It should be also noted that hourly trades are not possible since they are much more expensive.

The essential import needed to cover the customer request forecasted for the year 2016 is 520GWh. This import amount is updated with the aim of covering the lack of energy production from local generation. Nonetheless, besides the amount of regular import, it might result also a need for emergency import due to the unplanned outages of the generation units. In order to cover needed cost for import, Public Supplier forecasts that the price for import is 55€/MWh, which further results that the import costs for 2016 will be € 28.6mil. It shoulc be emphasized, that this import price doesn't consider cross border charges for capacities allocated from Transmission System Operator.

Months	Projected demand	IMPORT				Total available
		07-23 h		16-23 h		
	Power (MW)	Power (MW)	Energy (MW)	Power (MW)	Energy (MW)	Power MW)
January	1020-1050	80-100	44 480	100	21 700	977-997
February	990-1010	50-60	25 600	100-110	21 350	947-967
March	950-960	0-30	7 200	80-100	19 600	897-907
April	820-950	0-160	46 080	110-120	23 940	802-917
May	680-700	0	-	0	-	797-977
June	680-690	0	-	0	-	797-977
July	670-690	0-70	31 360	0-80	15 680	682-797
August	670-690	70-310	66 080	50-100	13 860	657-682
September	640-730	50	10 400	50	4 550	637-797
October	770-870	0	-	50	5 600	797-847
November	920-940	50-170	58 560	80-200	31 920	907-927
December	960-1100	50-130	47 360	80-140	25 060	927-1067
Total 2016			337 120		183 260	
					Total	520 380

Table 9

3.3.5 Export costs – When updating power balance, the needed amount for export is calculated as balancing number, with the aim of balancing energy production and consumption in real time. KESCO requires from ERO to consider setting the Export Sharing Factor for the year 2016 on 20% -80% and not 100% as it was used in previous years, where 100% of the export costs were given back to customers. Setting the Export Sharing Factor at a lower than 100% leve will give incentive to KESCO to export energy even at prices below the purchased price from KEK, thus ensuring even further revenues, from which customers will benefit. If ERO continues with the same approach and uses Export Sharing Factor as 100% than ERO automatically ignores incentives for KESCO to export low electricity amount with the aim of balancing the system.

It should be emphasized that similar approach is used for export forecasting, as it is used for import that is predicted on various bands with predominantly on night quantities. By applying the price of 30.8€/MWh as it is approved by Regulator for the year 2015 in the periodic review, to the energy amount of 786GWh, and sharing factor of 80% results that export cost for the year 2016 will be € 19.4mil. Revenues collected from export are unregulated revenues, therefore they will be presented as negative while determining the wholesale electricity costs.

Months	Projected demand	Export			
		00-24 h		00-07 h	
	Power (MW)	Power (MW)	Energy (MW)	Power (MW)	Energy (MW)
January	1020-1050			100-150	30 450
February	990-1010			120-180	35 490
March	950-960			300-350	72 800
April	820-950			100-300	39 480
May	680-700	90-100	70800	350-400	88900
June	680-690	100-120	81600	350-390	81900
July	670-690	120	8640	100-300	16870
August	670-690			50-80	13160
September	640-730	90	36720	100-200	35280
October	770-870	30-70	36720	250-280	60760
November	920-940			70-180	23940
December	960-1100			200-250	52150
Total 2016			234 480		551 180
				Total	**785 660**

Table 10

3.3.6 Imbalance cost –

Membership of KOSTT in ENTSO increases its responsibility for managing imbalances in the system, which circumstances expose also KEDS and KESCO as responsible parties for imbalances, and for which they are charged with financial obligations for caused deviations. Since power balance forecast is based in the concept that energy balances are zero, but at the time of realization they will not be so, KESCO requests to include a financial value of € 4.9 mil[4], as it is estimated from KOSTT for the financial guarantee needed for KESCO for imbalance costs. Parallel with what is said above, KESCO will be continuously in contact with big customers with the aim of disciplining them to lower imbalances that they might cause in the system.

[4] KOSTT, 'Metodologjia për llogaritjen e çmimit të jobalanceve, pagesave dhe problemet me matje', July 2015

Estimation of imbalance costs should be done in a way to reflect costs incurred by stakeholders, in order for System Operator to balance imbalances in the system.

Table below represents a summary of wholesale energy costs:

Description	2016 Updated (mil €)
KEK Generation (variable costs)	42.7
Generation from renewable sources in transmission level	6.6
Import	28.6
Export	(19.4)
Generation from renewable sources in distribution level	3.7
Imbalance costs estimated by KOSTT	4.9
DSO Losses above the ERO target	(6.6)
Variable Costs **WHEC$_t$**	60.6

Table 11

4. Adjustment for the Year 2015 (t-1)

This section of this application represents adjustments for the year 2015, in order to reflect the difference between the actual wholesale costs and the ones allowed from the regulator for the year 2015, conform the second part of the expression for calculating wholesale electricity costs $(WHPCa_{t-1} - WHPCf_{t-1})*(1+I_t)$.

The value of costs after adjustments, which will be considered when calculating final wholesale electricity costs for the year 2016, are presented in the table 12.

Line	Allowed Costs (mil€)	Actual Costs (mil€)	Difference (mil€)
KEK Generation (Fix and variable)	140.3	134.8	(5.5)
Ujmani	2.3	2.7	0.3
Import	27.9	37.6	9.7
Export	(19.7)	(17.7)	1.9
Generation from renewable sources in distribution level	2.0	1.8	(0.2)
Interest Rate (It)			10.72%
Total (€)	**152.9**	**159.1**	**6.9**

Table 12

It should be emphasized that adjustments for the year 2015 are forecast, and will be reviewed after receiving final bills for the months of November and December for: KEK, local generation at transmission and distribution level, as well as data for import and export.

Interest rate applied in the year 2015 is 10.72%, as it was used by ERO during WHPC determination for the year 2015. The cost of adjustments for the year 2015 without updated data for the months or November and December is € 6.9mil.

5. Determination of the Wholesale Electricity Costs for the Year 2016

Calculation of wholesale electricity cost for the year 2016 is done conform expression $WHPC_t = (WHCC_t + WHEC_t) * (1 + RETM_t) + (WHPCa_{t-1} - WHPCf_{t-1}) * (1+ I_t)$, as it is set in the PES Pricing Rule, Appendix 1.

After calculating initial costs for wholesale energy for the year 2016 (the first part of the expression) and adjustments for the year 2015 (second part of the expression), the final costs for purchasing wholesale electricity for the year 2016 is € 172mil, as it is represented in the following table:

Wholesale price for the year 2016

Line	Energy GWh	Costs mil€	Price €/MWh
KEK Energy Cost (1)		42.7	7.87
KEK Capacity Cost (2)		99.7	18.60
KEK Generation (Energy and Capacity costs)	**5,379**	**142.4**	**26.47**
Import (1)	520	28.6	55.00
Export (1)	(786)	(19.4)	30.80
HPP Ujmani (1)	95	2.6	27.50
Renewable energy in the transmission level with Feed-in Tariffs (1)	63	4.0	63.30
Generation in distribution level with regulated tariffs (1)	19	0.8	43.80
Renewable energy in the distribution level with Feed-in Tariffs (1)	45	2.9	63.39
DSO Losses above the ERO target (1)	(216)	(6.6)	30.35
Imbalance Costs (1)		4.9	
Wholesale power cost	**5,120**	**160.3**	
Wholesale energy costs - $WHEPC_t$ (sum of 1)		**60.6**	
Wholesale capacity costs - $WHCC_t$ (sum of 2)		**99.7**	
Retail Margin- RETM (3% of wholesale power cost)		4.8	3%
WHPC Adjustments for the year 2015		6.9	
Total Wholesale costs (WHPCC)	**5,120**	**172.0**	**33.59**

Table 13

By knowing the final wholesale costs and energy balance, the average wholesale price for the year 2016 is 33.59€/MWh.

Public Supplier besides this application, which is a requirement from Public Electricity Supplier (PES) Pricing Rules and ERO guidelines issues on 13 November 2015, after the end of 2015 will send to ERO all necessary technical and financial updates for the months of November and December.

Determining wholesale electricity price represents a decisive contribution for distribution use of system charges (DUOS), transmission system (TUOS) and retail tariffs for the public supplier for the year 2016.