13 October 2014

Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7

Final Report

Submitted on behalf of: *Optima Energy Consulting LLC and JW Eleconsult Inc*

Implemented by:

National Association of Regulatory Utility Commissioners

JWEC

optima ENERGY CONSULTING

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1 Introduction

JWEleconsult Inc. and Optima Energy Consulting LLC (the Consultant) have been contracted by the National Association for Regulatory Utility Commissioners (NARUC) as two primary responsible parties to assist in the implementation of the *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7* project.

The Contracting Agreement obliges Optima Energy Consulting to complete a final report which provides information on the implementation of the assistance envisaged in the terms of reference. While the contract does not specify a template of the final report, the consultant considers it reasonable to follow the template in Annex 2 of the Contract which was used in the interim report.

The final report offers progress on the implementation of all 5 tasks included in the terms of reference. The findings of the project as well as all deliverables are included in the Annex of this Report.

2 Task 1: Assist with Strengthening the Existing MAR Models

2.1 Task description

In a previous USAID project in 2012, the Energy Regulatory Office (ERO) were provided with an excel tool which was used to model the Maximum Allowed Revenue (MAR) calculations of the regulated segments of the electricity sector. The complete model comprised of five different components (Mine, Generation, Transmission, Distribution and Supply) each of which had a set of input sheets, interface sheets and MAR calculation sheets.

The consultants were tasked with building a more integrated model by combining the different components of the previous MAR model in order to improve the efficiency and the transparency of the existing MAR model and also reduce the probability of making erroneous data inputs.

2.2 Description of Work During the Period

Work has been completed on the updating of the MAR model including reducing the number of workbooks. The model now consists of three workbooks KEK, KOSTT and KEDS. The model may also be opened as a single model.

Additional features are the addition of buttons to move more easily between licensee data.

As a result of work carried out in the other task areas, the circularity issue has been addressed by making the entry of SO and MO loss data manual rather than a calculated value.

Additionally, the application of the retail margin has been modified to avoid allowing the retail margin to be applied to energy losses. The other two members of the team working on this assignment provide detailed checking and commenting on model functionality.

2.3 Deliverables submitted

The model was submitted to ERO for review and comment and their comments and suggestions incorporated in the model. This was completed on Friday 10 October.

Task 5 of the project addressed the circularities in the pricing rules and provided amended wording on the Pricing Rules to the regulator for consideration. The Pricing Rules have to be put in public consultation in order to approve the amended changes. If the proposed amendments get approved then ERO would have to change the MAR models in order to align them with the new pricing rules. In order to avoid this, the Consultant has provided ERO two versions of the model – one which matches the current version of the pricing rules and another one which is in line with the proposed adjustments to the pricing rules.

Since the work in the other task areas implies changes to the Pricing Rules, two versions of the updated model have been provided to ERO;

1. The original version that does involve circularity in the calculation of SO and MO losses.
2. The version that addresses circularity by making the SO and MO loss inputs manual entries.

A short model guide has been prepared also and submitted to ERO. All deliverables were submitted to ERO on the deadline – Friday, 10 October 2014.

2.4 Constraints

No constraint were encountered during the execution of this task and cooperation with the ERO tariff department staff was excellent.

2.5 Next steps and anticipated milestones

While this task is now complete we remain available for any additional comments or questions that ERO may have.

3 Task 2: Review of Transmission Use of System Applications and Rate Calculations

3.1 Task Description

The purpose of Task 2 was to review whether the application of the Transmission System and Market Operator of Kosovo (KOSTT) submitted to ERO to recover the pre-approved MAR was in line with the principles of the Pricing Rules, the Statement of Principles for TUOS/SO/MO Pricing and the associated methodologies for transmission charges.

3.2 Description of Work During the Period

The consultant analyzed all of the information provided by the TSO/MO in their application to ERO and reviewed whether the principles followed in the provided calculations were in line with the relevant legislation.

The findings of the Review were provided in a Report submitted to ERO and which can be summarized as follows:

- The application for SO and MO charges was largely in line with the principles of the pricing rules, ERO's statement of principles and the SO and MO Pricing Methodologies. One remark which was made by the consultant is that the application did not include sufficient information which would prove to ERO that the allocation of costs to different divisions of KOSTT was made according to the methodology approved by ERO. This remark was noted in the report.
- The application for TUOS charges applied by the Public Supplier also generally followed the approved secondary legislation. Nevertheless the application did not include information on the allocation of assets to the 400 kV and 220/110 kV networks which would prove that the allocation of costs followed the proportional share of asset composition in each voltage level.

Both of these comments were noted in the Report provided to ERO.

3.3 Deliverables submitted

The findings report summarizing a detailed review of all the calculations was provided to ERO on October 10, 2014.

3.4 Constraints

No constraints were reported at that time.

3.5 Next steps and anticipated milestones

All work related to the task has been completed and no future steps are anticipated.

4 Task 3: Review of Distribution Use of System Applications and Rate Calculations

4.1 Task Description

The objective of Task 3 was to review whether the DUOS charges application submitted to ERO for approval by the Distribution System Operator (DSO). The consultant was tasked to confirm that the application follows the guidelines of the DSO Pricing Rule, ERO's Statement of Principles for DUOS Charges and the associated DUOS Charging Methodology.

4.2 Description of Work During the Period

The DUOS application was checked for compliance with the applicable legislation and a written report on the findings of the review was provided to ERO for their consideration.

The review found that the application of the DSO largely follows the legislative package governing the calculation of DUOS charges. However the consultant found an unusual allocation of O&M costs to the energy allocation factor which implies that the DSO have assumed a full allocation of O&M costs to the variable component. It was highlighted in the report that, although the difference in costs is almost negligible, such an allocation of O&M costs is not in line with international best practice and may present a cross-subsidy between customer categories which is not allowed by the legislation.

It was also emphasized in the report that this does not change the total MAR value that the DSO will obtain from charging DUOS charges however it does affect which customer categories the MAR is collected from.

4.3 Deliverables submitted

The findings report summarizing detailed review of all the calculations was provided to ERO on October 10, 2014.

4.4 Constraints

No constraints were reported at that time.

4.5 Next steps and anticipated milestones

All work related to the task has been completed and no future steps are anticipated.

5 Task 4: Review and evaluate Retail Tariff Applications

5.1 Task Description

Under Task 4, the consultant was obliged to review the Public Electricity Supplier's (PES) retail tariff application after ERO's approval of PES MAR under ETR7. Specifically the consultant reviewed whether the application submitted to ERO for approval followed Schedule 4 of the PES Pricing Rule and the retail tariff calculation principles provided in ERO's secondary legislation.

5.2 Description of Work During the Period

The Review found that the application of the PES for retail tariff approval follows the principles of the Pricing Rules.

The findings report highlighted that the PES application had not indicated whether the cross-subsidies between customer categories have been removed in their proposal however noted that the cross subsidies appear to not have been removed. The elimination of cross subsidies by 31 December 2014 is an obligation imposed by the Law on Energy Regulator and by the PES Pricing Rule.

The importance of an open discussion between ERO, licensees and stakeholders on the detailed understanding of the cost of providing service to each category of customers was emphasized. The report also stated that the elimination of cross-subsidies will require targeted governmental policies which ensure adequate protection of vulnerable customers.

5.3 Deliverables submitted

The findings report summarizing detailed review of all the calculations was provided to ERO on October 10, 2014.

5.4 Constraints

No constraints were reported at that time.

5.5 Next steps and anticipated milestones

All work related to the task has been completed and no future steps are anticipated.

6 Task 5: Address circularities in the Pricing Rules

6.1 Task Description

Under Task 5, the consultant was obliged to identify and address the circularities which are generated by the current version of the Pricing Rules. More specifically, the consultant was tasked to address the circularity which occurs in calculating the wholesale power cost and the cost of losses and the one which occurs in calculating the SO charges in the Regulated Generator's MAR. The consultant was also asked to guide ERO in initiating the process of revising the circularities present in the Pricing Rules and recommending rectifying measures for removing them from the Pricing Rules.

6.2 Description of Work During the Period

During the last two weeks of the assignment the consultant worked with ERO by illustrating – in smaller, simplified versions of the Pricing Rules – how and where the circularities are generated.

It was confirmed that the circularities occur in two places:

- The first circularity occurs in the calculation of Wholesale Power Cost (WHPC) formula of the PES Pricing Rule. Article 13.5 of the PES Pricing Rule requires that the revenues PES receives from the sales of losses be removed from the Wholesale Power Costs in order to avoid recovering the cost of losses twice. However the cost of losses is calculated as the product of the lost volumes and the average wholesale power costs which – according to the current version of the Pricing Rules – includes the cost of losses. Therefore, a circularity arises.

- The second circularity occurs in the calculation of SO charges in the Generation MAR. This is because the Generation MAR includes payables which the Generator pays to the TSO for System Operator services. However the SO costs include the cost of losses which depend on the wholesale power costs which depends on the cost of generation. Therefore, another circularity arises.

A report of findings was provided to ERO in which the circularities were discussed and possible solutions were listed. For the first circularity, the consultant proposed two options and amended the Pricing Rule to match the first, recommended option. For the second circularity, the consultant admits it is a systematic circularity which would have to be resolved by continuing the current commonly accepted practice of entering the SO charges in the Generation MAR as a "hard" manual value.

6.3 Deliverables submitted

A findings report summarizing the findings of the consultant as well as an amended version of the PES Pricing Rule were provided to ERO on October 10, 2014.

6.4 Constraints

No constraints were reported at that time.

6.5 Next steps and anticipated milestones

All work related to the task has been completed and no future steps are anticipated.

7 Budget spent

Total budget spent	Primary responsible tasks	Amount
JW Eleconsult Inc.	Tasks 1, 4 and 5	$26,880.00
Optima Energy Consulting LLC	Tasks 2 and 3 Final Report	$11,340.00
Total Budget spent		$38,220.00

Other expenses related to the visit of Faruk Serdarevic Sep 28 – Oct 11 2014 includes following:

- Transportations from and to the airports: $ 76,2
- Per diems: $1,012.5

Details are provided in the expense report submitted separately by JW Eleconsult Inc.

8 Annex 1: Project Deliverables:

10 October 2014

Model guide notes

Submitted under Task 3 of: *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7*

Implemented by:

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1 Introduction

Under Task 1 of the Consulting Agreement, the Consultant was obliged to strengthen the existing MAR models in order to improve their usability for the Energy Regulatory Office. The purpose of this note is to provide basic guidance to ERO as to the changes which have been made in the current version of the model. ERO staff were already familiar with the principles of the previous MAR model.

The objective of Task 1 is inter-linked with Task 5 of the project which requires that the consultant address the circularities in the Pricing Rules. Under that Task the consultant produced an amended draft version of the PES Pricing Rule which, in the consultant's view, addresses the circularities generated by the current version of the Pricing Rules. As a result, two different versions of the Model are submitted to ERO. One which is in line with the current version of the Pricing Rule and an alternative version which is in accordance with the amended version of the Pricing Rules which is being proposed by the Consultant.

2 Model notes

The MAR model consists of three workbooks;

- KEK
- KOSTT
- KEDS

The KEK workbook incorporates the mine and generation stations Kosovo A and B. KOSTT includes KOSTT (transmission), system operator (SO), and the market operator (MO). KEDS includes the distribution system operator (DSO) and the public electricity supplier (PES)

3 Opening the model

There are two options for opening and running the model.

- Full model including KEK, KOSTT and KEDS
- Company model for any of KEK KOSTT and KEDS

3.1 Opening the full model (KEK, KOSTT and KEDS)

In the model folder cover the three companies, open them simultaneously and press update whenever it appears. If asked to "enable" content or macros, do so.

Once all three companies are opened the buttons allow you to move between companies and between the worksheets within that company. A listing of all the worksheets in each workbook is given below.

3.2 Opening individual companies

Any company can be opened on its own without being linked to the other two.

The buttons will allow moving between worksheets within that company but will not allow the other companies to be opened. A run error on the macro will appear. This may be ignored, or the other companies may be opened. The advantage of the separation of the three companies is that it allows ERO to share the relevant parts of the model with each company without sharing the full model.

If the full model is to be run simply open all three companies, starting with KEK.

4 Model organization

The three high level company workbooks (KEK, KOSTT and KEDS) and the individual companies (Mine, SO, PES etc.) are arranged in a similar way.

3.3 Workbooks

The individual companies are listed below.

KEK

- Mine
- Kosovo A station
- Kosovo B station

KOSTT

- TSO (transmission system operator)
- SO (system operator)
- MO (market operator)

KEDS

- DSO (distribution system operator)
- PES (public electricity supplier)

Work sheets

Each individual company (license) is modelled separately and in a similar format with some modification as required. The following worksheets are common to all companies (licensees).

- Input 1
- Input 2
- Smoothing and Profiling
- MAR
- MAR No Smoothing

MAR No smoothing is included as requested by ERO while the Pricing Rule allows the MAR results to be smoothed and profiled to avoid step changes in final tariffs.

KEK has an additional worksheet for Kosovo A+B – "Kosovo A+B No Smoothing". This is to allow the generation to be modelled as one rather than separating the A and B stations.

PES is arranged somewhat differently and has an additional worksheet – "Power Purchases". Following the Pricing Rules, there is no smoothing and profiling for PES.

5 Energy Balance

The energy balance is included in all three companies KEK, KOSTT and KEDS. However, changes to the Energy Balance should only be made in the KEK workbook as KOSTT and KEDS is updated from this worksheet. Once the KEK Energy balance is updated or modified the links between KEK, KOSTT and KEDS should be updated to ensure that the energy balance data is consistent through all companies. This can be done by simply opening the KOSTT and KEDS workbooks, or by updating the data links.

6 Running the Model

3.4 Inputs

Inputs should generally be entered only be in the Input worksheets – not in the calculation sheets. The exception to this is for data for 2012 and 2013 that has been set by previous tariff decisions.

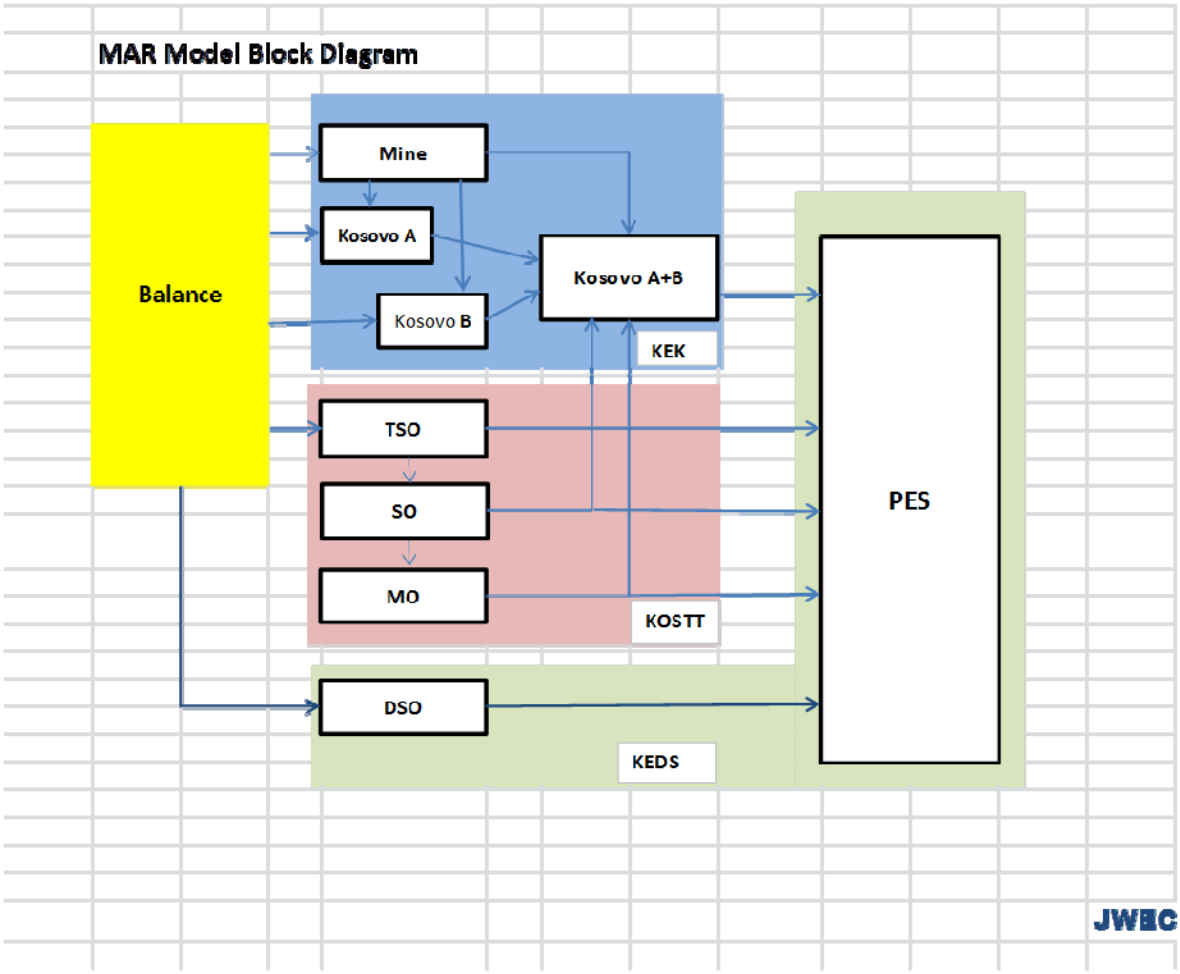
To reduce the amount of zero value data or to summarize the total cost of an item such as O&M costs, the left hand side of the worksheet has a number of "group" buttons. The "+" button expands the data to show all values and the "–" button collapses the data so that only the subtotal is shown.

3.5 Protection

Calculated values are colour coded to flag that they are calculated values and should not be overwritten.

Eventually the calculated values should be protected with a password to avoid inadvertent overwriting of formula cells. During the development stage the protection has not been applied and can be implemented on completion of model testing.

Note that there are a number of manual inputs in the model that have been added by ERO, it is strongly recommended that all manual adjustments be made only through the input sheets.



10 October 2014

Review of Transmission Use of System Tariff Application and Rate Calculations

Submitted under Task 2 of: *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7*

Implemented by:

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1 Introduction

JWEleconsult Inc. and Optima Energy Consulting LLC (the Consultant) have been contracted by the National Association for Regulatory Utility Commissioners (NARUC) as implementing parties for the *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7* project.

The Energy Regulatory Office (ERO) is the independent regulatory authority responsible for regulating the electricity, district heating and natural gas markets in Kosovo. The electricity Pricing Rules adopted in 2011 apply revenue-cap regulation to the regulated segments of the electricity market for a Regulatory Period of 5 years. Following the provisions of the Rule on Transmission, System and Market Operator Pricing (the TSMO Pricing Rule), ERO set the Maximum Allowed Revenues of the Transmission, System and Market Operator (KOSTT) which are to be recovered in the second Relevant Year of the Regulatory Period. The MAR set by ERO is to be recovered from a set of charges applied by KOSTT which are subject to ERO's approval.

KOSTT submitted to ERO their application for the approval of the TUOS/SO/MO charges. The Consultant has been tasked to check whether the proposal sent by KOSTT follows the principles reflected in the principles of the TSO/MO Pricing Rule and the relevant charging methodologies for TUOS, SO and MO charges. The findings of the consultant are presented in this report.

2 Structure of this Report

This Report is structured as follows:

- Section 3 covers the principles of calculating the charges levied by KOSTT to recover the MAR approved by the Regulator;
- Section 4 reviews the calculation of System Operator (SO) Charges;
- Section 5 reviews the calculation of Market Operator (MO) Charges;
- Section 6 reviews the calculation of Transmission Network Use of System (TUOS) Charges;

3 Transmission Charging Principles

The Energy Regulatory Office, as the responsible party for the economic regulation of the regulated segments of the electricity sector, is responsible by the Law on Energy Regulator to adopt secondary legislation which defines how the reasonable costs of providing regulated service by the transmission system and market operator will be calculated. These principles are provided in the Rule on Transmission, System and Market Operator Pricing which stipulates a multi-year revenue cap regulation.

The Maximum Allowed Revenues of the TSO/MO are calculated during Periodic Reviews which entail detailed analysis of the operating, maintenance and capital costs of the TSO/MO. After prudent assessment of the reasonable costs for providing regulated service, ERO sets the Maximum Allowed Revenues for the length of the Regulatory Period which – during the last periodic review – was set to be five years. The MAR of the TSO/MO is updated between each Relevant Year of the Regulatory Period, during Regular Adjustments, to reflect differences between forecast and actual costs which were outside of the control of the TSO/MO. The Regulator re-sets the MAR upon review of such costs.

The TSO/MO is responsible for drafting a methodology for converting the MAR set by the Regulator into TUOS, SO and MO charges which will be charged by the TSO/MO for providing electricity transmission, system operation and market operation services. The TSO/MO Pricing Rule requires the TSO/MO to submit to ERO three separate methodologies for each of these charges. These methodologies were approved by ERO in May 2013. After receiving ERO's decision for the allowed MAR for the upcoming Regulatory Period, the TSO/MO submits their TUOS, SO and MO charges which are calculated at a level to recover no more or less than the allowed MAR of the TSO/MO.

Transmission Network charges are calculated upon the allocation of Maximum Allowed Revenues to costs related to electricity transmission, system operation and market operation. Article 15 of the Rule on TSO/MO Pricing stipulates the following:

- System operator costs, including the allowed cost of losses, are to be recovered from System Operator Charges according to a methodology developed by the TSO/MO which will specify how costs are allocated to the system operator function;
- Market operator costs will be recovered from Market Operator Charges according to a methodology which specifies how these costs will be allocated to the market operator function;
- All remaining allowed revenues which are not recovered from SO charges or MO charges will be recovered from charges levied for the use of the transmission system (TUOS).

3.1 TSO/MO MAR cost allocation

The first step in calculating the TUOS/SO/MO charges levied by the TSO/MO is to allocate the MAR calculated by ERO during periodic reviews (5 year) to costs related to the transmission of electricity in the system, costs related to system operation and costs related to the operation of the electricity market.

The MAR allowed to the TSO/MO is split into costs which can be directly allocated to a cost category and costs which cannot be directly allocated to a particular cost category (such as shared HQ costs, administration costs, etc.).

The total costs allocated to a particular function of the TSO/MO therefore comprise of costs which can be directly allocated and costs which cannot be directly allocated. Those costs which cannot be directly allocated to particular function are allocated pro rata based on the number of employees of each function of the TSO/MO.

The TSO applies different TUOS charges to customers transmitting electricity in different voltage levels. For instance, the customers connected to the 110kV voltage level are charged a TUOS charge for using both the 110kV transmission system and the 400/220kV transmission system whereas a customer connected in the higher voltage – say to the 220 kV level – is not charged a TUOS for the lower 110 kV system. The costs of transmitting power in different voltage levels are allocated based on the value of the assets belonging to each voltage level.

4 System Operator (SO) charges

The provisions for calculating System Operator charges are provided in Article 19 of the Rule on TSO/MO Pricing which stipulates that the SO charges should be set such that:

- The TSO/MO recovers their system operator costs, for the provision of system operator services as authorized under their TSO license;
- The allowed cost of losses are included in the system operator costs and recovered from System Operator charges; and
- System Operator Charges are in accordance with a methodology developed by the TSO/MO and approved by the regulator which will specify how costs will be allocated to the system operator function and shall be in accordance with the Transmission Charging Principles (the Principles) issued by the Regulator.

Article 8 of the Transmission Charging Principles, issued by the Regulator in 2012, states that the TSO shall recover system operation costs through a 50% generation and 50% demand coefficient. SO charges will be used to recover the following costs of the Transmission System Operator laid out in the TSO Licence and the Law on Electricity:

- Planning of system operation;
- Generation dispatch;
- Creating and maintaining safety operation standards;

- Procuring ancillary services and necessary reserve for system operation;
- Procuring power to recover electricity losses in the transmission system; and
- Managing interconnection capacities with neighboring countries, imports, exports and transit through these interconnectors.

The System Operator levies three types of charges for providing their services to generators and suppliers in the system:

- System Operation Charge levied to transmission-connected generation;
- System Operation Charge levied to distribution-connected generation; and
- System Operation Charge levied to suppliers.

4.1 SO Charges levied to transmission-connected generation

The SO charge levied to the transmission connected generation is calculated as the sum of:

the ratio of half of all SO allowed costs (excluding losses and ancillary services) to the the sum of transmission and distribution connected generation

plus

the ratio of half of cost of losses and ancillary services to transmission-connected generation.

The calculation provided by KOSTT in their application largely follows the formula laid out above with the exception that they neglect to deduct the cost of ancillary services since no such cost was allowed by the regulator in the first place.

The calculation provided by KOSTT for the SO charge levied to transmission-connected generation is as follows:

$$SO\ T-connected\ generation = \frac{\frac{5{,}437-3{,}269}{2}}{(5{,}606+46)} + \frac{3{,}269}{5{,}606} = 0.483\frac{€}{MWh}.$$

The following table provides clarifications on the variables used in calculating the SO charge levied to transmission-connected generation:

Table 1 Description of variables for the calculation of the SO charge levied to Transmission-connected generation

Variable	Unit	Description	Value
Total SO costs	€000	Total value of allowed costs of the System Operator. The value is provided in the MAR	5,437

		calculation.	
Cost of losses	€000	The euro value of the cost of losses allowed by the Regulator. The value is provided in the MAR calculation.	3,269
Generation (Transmission)	GWh	The total volume of transmission-connected electricity generated and entering transmission. The value is provided in the approved Energy Balance.	5,606
Generation (Distribution)	GWh	The total volume of Distribution-connected generation. The value is provided in the approved Energy Balance.	46.3

4.2 SO Charges levied to distribution-connected generation

The SO charge levied to distribution connected generation is calculated as half the ratio of total SO costs (excluding ancillary services and cost of losses) to the sum of transmission and distribution connected generation.

The calculation provided by KOSTT follows this principle. As in the case of T-connected SO charges, KOSTT neglected to deduct the Ancillary Services costs as no such costs were allowed by the regulator.

The calculation provided by KOSTT is as follows:

$$SO\ D-connected\ generation = \frac{\frac{5{,}437-3{,}269}{2}}{(5{,}606+46)} = 0.192\ \frac{€}{MWh}$$

Table 2 Description of variables for the calculation of the SO charge levied to Distribution-connected generation

Variable	Unit	Description	Value
Total SO costs	€000	Total value of allowed costs of the System Operator. The value is provided in the MAR calculation.	5,437
Cost of losses	€000	The euro value of the cost of losses allowed by the Regulator. The value is provided in the MAR calculation.	3,269
Generation (Transmission)	GWh	The total volume of transmission-connected electricity generated and entering transmission. The value is provided in the approved Energy Balance.	5,606
Generation (Distribution)	GWh	The total volume of Distribution-connected generation. The value is provided in the approved Energy Balance.	46

4.3 SO Charges levied to suppliers

The SO charge levied to the public electricity supplier in Kosovo is calculated as half the ratio of total costs of the SO (including losses and ancillary service costs) to the total energy entering the transmission system.

The calculation provided by cost follows the principle and is provided below:

$$SO - Public\ Supplier = \frac{\frac{5{,}437}{2}}{6{,}057} = 0.449 \frac{€}{MWh}$$

Table 3 Description of variables for the calculation of the SO charge levied to suppliers

Variable	Unit	Description	Value
Total SO costs	€000	Total value of allowed costs of the System Operator. The value is provided in the MAR calculation.	5,437
Cost of losses	€000	The euro value of the cost of losses allowed by the Regulator. The value is provided in the MAR calculation.	3,269
Transmission generation plus imports	GWh	The sum of transmission-connected electricity generation and imports. The values are provided in the approved Energy Balance.	6,057

5 Market Operator (MO) Charges

The General Principles of calculating Market Operator charges are provided in Article 21 of the Rule on TSO/MO Pricing which stipulates that the TSO/MO should set the Market Operator charges such that:

- The TSO/MO recovers their market operator costs for the provision of services as authorized under the Market Operator License; and
- MO charges are in accordance with a methodology developed by the TSO/MO and approved by the regulator which specifies how costs are allocated to the market operator and how these costs are recovered from charges. The methodology drafted by the TSO/MO should be in line with The Principles approved by the Regulator.

Article 8 of the Principles states that the TSO/MO should recover the Market Operator costs by applying an allocation coefficient of 50% generation and 50% demand. The charges are applied to each MWh unit and billed on a monthly basis. The costs associated with the MO charges are not related to the location in the transmission system or the voltage level. The market operator charge will be applied to producers and to transmission connected demand.

Article 5.3 of the Market Operator Charging Methodology stipulates that the MO charges will be calculated as follows:

- The MO charge levied to producers will be calculated as half the ratio of total allowed revenues of the Market Operator to the total volume of transmission and distribution connected generation;
- The MO charge levied to suppliers will be calculated as half the ratio of total allowed revenues of the Market Operator to the total demand in the transmission system.

The calculations provided by KOSTT of both these charges follow the principles of the Market Operator Charging Methodology. Their calculation is provided below:

$$MOp = \frac{\frac{334.7}{2}}{5{,}606.97 + 46.30} = 0.030 \frac{€}{MWh}$$

$$MOs = \frac{\frac{334.7}{2}}{6{,}057.25} = 0.028 \frac{€}{MWh}$$

Table 4 Description of variables for the calculation of the MO charge levied to Producers and Suppliers

Variable	Unit	Description	Value
Total MO costs	€000	Total value of allowed costs of the Market Operator. The value is provided in ERO's MO MAR determination.	334.7
Generation (Transmission)	GWh	The total volume of transmission-connected electricity generated and entering transmission. The value is provided in the approved Energy Balance.	5,606.97
Generation (Distribution)	GWh	The total volume of distribution-connected electricity generation. The value is provided in the approved Energy Balance.	46.30
Transmission generation plus imports	GWh	The sum of transmission-connected electricity generation and imports. The values are provided in the approved Energy Balance.	6,057

6 Transmission Network Use of System Charges (TUOS)

Article 17 of the Rule on TSO/MO Pricing states that TUOS charges should be set as follows:

- TUOS charges should recover all allowed revenues which are not recovered from other charges (i.e. from MO and SO charges);

- TUOS charges should be in accordance with a methodology developed by the TSO/MO and approved by the regulator which, in turn, should be in accordance with the Transmission Charging Principles which are issued by the Regulator.

Article 8 states that the TSO will apply the TUOS charge with an allocation coefficient of 100% on demand and 0% on generation which implies that all of the costs related to the transmission of electricity will be recovered from demand and none from generation.

KOSTT have allocated 53% of the costs to the 400/200kV transmission level with the rest being fully allocated to the 110kV transmission level. The total allowed cost of the transmission operator of €14.4 million has therefore been allocated as such:

- €7.6 million have been allocated to the 400/220 kV transmission level;
- €6.7 million have been allocated to the 110 kV transmission level.

The Methodology for calculating Transmission Use of System Charges stipulates that the TUOS charge applied to the 400/220 kV transmission level should be calculated as the ratio of total costs allocated to that level to the sum of the demand in the 400/220 kV and the 110 kV transmission level. The peak demand in the 400/220 kV and 110 kV transmission level has been forecasted to be 85 MW and 1088 MW, respectively.

The calculation provided by the TSO/MO follows the principle of the Methodology for calculating TUOS charges. However the TSO/MO application should have included a thorough explanation of the calculation of the allocation factors. Although this affects the allocation of the revenues and not the total volume of the revenues, it is important for the TSO/MO to provide information to the satisfaction of the Regulator that the costs are being allocated according to the approved principle in the methodology.

$$TUOS\ 400/220\ kV\ = \frac{7{,}635.3}{1088 + 85} = 6.509 \frac{€}{kW}$$

The TUOS Charging Methodology also stipulates that the charge levied on demand in the 110 kV transmission level should be calculated as the ratio of all costs allocated to the 110 kV transmission level to the total demand in the 110 kV transmission level, which in this case has been forecasted to be 1088 MW, plus the charge levied to 400/220 kV transmission demand.

Again, the calculation of the TSO/MO follows the Charging Methodology. Nevertheless the Regulator has not been provided with information which shows exactly how the allocation keys have been calculated:

$$TUOS\ 110\ kV = \frac{6{,}770.9}{1088} + TUOS\ 400/220\ kV = 12.732 \frac{€}{MWh}$$

The variables used in the calculation of the 400/220 kV and 110 kV TUOS charges are described in the table below.

Table 5 Description of variables for the calculation of the TUOS charge levied to suppliers

Variable	Unit	Description	Value
KOSTT MAR less SO, MO costs allocated to 400/220 kV	€000	Total value of KOSTT MAR, less SO and MO costs which is allocated to the appropriate transmission level according to asset values	7,635.3
400/220 kV demand	MW	The total value of forecast system demand in the 400/220 kV network.	85
110 kV demand	MW	The total value of forecast system demand in the 110 kV network.	1,088
KOSTT MAR less SO, MO costs allocated to 110 kV	€000	Total value of KOSTT MAR, less SO and MO costs which is allocated to the appropriate transmission level according to asset values	6,770.9

7 Summary of report and findings

This report is completed under Task 2 of the Consultancy Agreement and aims to review the transmission use of system, system operator and market operator charges application provided by the TSO/MO to recover the MAR set by the Regulator during the Regular Adjustment. Specifically, the report reviews whether the calculations of the charges provided by the TSO/MO are in accordance with the secondary legislation governing the principles of calculating such charges.

We find that the System Operator charges and Market Operator charges have been calculated in full accordance with the Methodology for System Operator Pricing and Methodology for Market Operator Pricing, respectively. We note, however, that the TSO/MO has not provided ERO with sufficient verifiable information on how the costs which cannot directly be allocated have been categorized to the different functions of the TSO/MO. The application states that these costs have been allocated according to employee numbers however the values are entered as inputs and are therefore not possible to verify. We note, nevertheless, that the allocation of revenues towards different functions of the TSO/MO does not affect the overall level of revenues which would be obtained by the TSO/MO by applying the SO and MO charges.

We also find that the Transmission Use of System charges have been calculated in accordance with the Methodology for TUOS charges approved by the Regulator.

However the TSO/MO has not included sufficient information in their application which would enable the Regulator to verify how the costs of transmitting power have been allocated to the 400/220 kV level and to the 110 kV level. Again, the calculation appears to follow the principle of Annex 1 of the Methodology for TUOS charges which allocates costs on the asset value attributed to each transmission level however there is insufficient information for ERO to verify that this is the case. Again, it has to be emphasized that the allocation of costs to different levels of the transmission system does not affect the overall level of MAR of the TSO/MO. Despite this, the application of the TSO/MO should have included verifiable information about the allocation factors in a way which ERO would be satisfied that costs are being allocated in an efficient manner and according to transparent and non-discriminatory criteria.

10 October 2014

Review of Distribution Use of System Tariff Application and Rate Calculations

Submitted under Task 3 of: *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7*

Implemented by:

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1 Introduction

JWEleconsult Inc. and Optima Energy Consulting LLC (the Consultant) have been contracted by the National Association for Regulatory Utility Commissioners (NARUC) as implementing parties for the *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7* project.

The Energy Regulatory Office (ERO) is the independent regulatory authority responsible for regulating the electricity, district heating and natural gas markets in Kosovo. The electricity pricing rules adopted in 2011 apply revenue-cap regulation to the regulated segments of the electricity market in Kosovo. Following the provisions of the Rule on Distribution System Operator Pricing (the DSO Pricing Rule), ERO sets the Maximum Allowed Revenues of the Distribution System Operator (DSO) which are to be recovered in the second Relevant Year of the Regulatory Period. The MAR set by ERO is to be recovered from a set of charges applied by the DSO which are subject to ERO's approval.

The DSO submitted to ERO their application for the approval of the DUOS charges. The Consultant has been tasked to check whether the proposal sent by the DSO follows the principles reflected in the principles of the DSO Pricing Rule and the relevant statement of principles and methodology for setting DUOS charges. The findings of the consultant are presented in this report.

2 Structure of this Report

This Report is structured as follows:

- Section 3 covers the principles of calculating the charges levied by the DSO to recover the MAR approved by the Regulator;
- Section 4 reviews DSO's application for DUOS charges;

3 Distribution Charging Principles

The main principles for setting distribution use of system charges are set in the Rule on Distribution Use of System Pricing (DSO Pricing Rule). However, following the DSO Pricing Rule, the ERO issues and approves the Statements for Distribution Charging Principles. These Charging Principles serve as a basis for the Methodology for Setting Distribution Use of System Charges which in turn is drafted by the DSO and submitted to ERO for approval.

3.1 DSO Pricing Rule

Article 15 of the DSO Pricing Rule states that the DSO shall set DUOS charges such that:

1. It recovers the allowed revenues which are not recovered from other charges or from excluded services;

2. DUOS charges are in accordance with a methodology developed by the DSO and approved by the Regulator which should be in line with the Statement of Distribution Charging Principles which are issued and approved by the Regulator.

3.2 Statement of Distribution Charging Principles

The Statement of Distribution Charging Principles is a Document issued by ERO as part of their secondary legislation which sets the basis upon which the DSO sets the Methodology for setting the distribution use of system charges.

The policy principles stipulated by the Statement issued by ERO are the following:

3. The DSO should recover their charges by weighing 0% of the costs to generation and 100% of the costs to demand;
4. Charges should be set in order to reflect the costs of providing and maintaining the distribution system available at different voltage levels;
5. Users should not pay for the assets they do not use. For example, a customer connected to a higher voltage level should not be expected to pay for the costs which can be solely attributed to customers connected to a low-voltage level;
6. Charges should reflect the costs imposed on the system by a user or class of user at the time of system peak.

3.3 Methodology for setting Distribution Use of System (DUOS) charges

The Methodology for setting DUOS charges is a document prepared by the DSO which reflects the Statements of the Distribution Charging Principles adopted by ERO and which provides the detailed guidelines about the design of the DUOS charge, the principles of allocating fixed and variable costs incurred by the DSO and the procedures which should be followed during the approval of DUOS charges.

The rest of the Document reviews specifically whether in submitting their proposal for DUOS Charges, the DSO followed the Methodology approved by ERO.

4 Allocating costs

According to the Methodology for setting DUOS charges, total DSO costs allowed by the regulator will be allocated to the three voltage levels in the distribution system (35 kV, 10 kV and 0.4 kV) based on the cost allocation factors (expressed in percentage terms).

By definition, fixed costs include the costs of allowed return, depreciation and the fixed component of the operating and maintenance costs. Similarly, variable costs include the sum of total costs less the fixed costs.

It should be noted that the current Methodology for allocating costs does allocate costs to different voltage levels through their fixed and variable allocating factors however this allocation does not yield to fixed and variable charges as one would expect it to. The Methodology (Article 4.1.1) states that this is a methodology which will be applied for a limited time only and the "Coincident Peak" methodology will be applied in the future. This is due to the fact that most of the customers have simple electronic meters with no demand metering component.

4.1 The load allocation factor

The load allocation factor, which will be used in allocating the fixed costs, will be determined from five maximum peaks (in 15 minute intervals) per year in the total distribution system. The average yearly contribution to peak has been determined as the ratio of the maximal load of a particular voltage system to the total system load. For example, the Load Allocation Factor for the 35 kV network (FAF 35kV) is the ratio of the maximum load of the 35 kV network to the maximum load of the total system.

The sum of fixed costs can then be allocated to the different voltage levels by multiplying the Fixed Allocation Factor of each voltage level with the total allowed fixed costs.

4.2 The energy allocation factor

The energy allocation factor, which will be used to allocate the variable costs, is determined from the ratio of total consumption of customers in any voltage level to the total consumption level in the distribution system. Thus the energy-related costs allocated to the 10 kV network, for example, can be calculated as the ratio of total energy consumption in the 10 kV network (expressed in kWh) to the total consumption in the distribution system.

The sum of variable costs can then be allocated to different voltage levels as the product of the Energy Allocation Factor (FAE) of a particular voltage level with the total allowed variable costs.

4.3 Allocating the cost of technical losses

According to the Methodology for Setting Distribution Use of System Charges, technical losses are allocated to different voltage levels (35 kV, 10 kV and 0.4 kV) based on the Loss Allocation Factors (FAH) which are calculated based on the relative consumption of the energy in a particular voltage level to the total electricity consumption in the distribution system. The allocation of losses to the sum of the 10 kV and 0.4 kV voltage level is calculated as the ratio of these two

individual voltage levels to the total consumption in the 10 kV and the 0.4 kV levels. The total cost of losses is then allocated to 35 kV lines, 35/10 kV transformers, 10 kV lines, 10/0.4 kV transformers and finally to 0.4 kV lines. For example, the losses of 35 kV lines are allocated between 35 kV, 10 kV and 0.4 kV lines proportionally based on the consumption of billed energy of each voltage level relative to the total energy consumption in the distribution system.

The allocation of total technical losses as submitted by KEDS is provided in the following table:

Table 6 The allocation of total technical losses to voltage levels

Voltage level	Total losses before allocation GWh	Allocated percentage %	Total losses after allocation GWh	Allocated percentage %
35 kV	33,148	4.3%	346	0.05%
35/10 kV transf.	12,232	1.6%	-	-
10 kV	162,022	21.1%	14,136	1.84%
10/0.4 kV transf.	61,276	8.0%	-	-
0.4 kV	498,298	65%	752,494	98.11%
Total losses	766,977	100%	766,977	100%

The total losses at the 10 kV level include the contribution of the 10 kV consumption to 35 kV losses, the 35/10 kV transformer losses allocated to 10 kV consumption and the contribution of the 10 kV system to the losses in 10 kV lines.

The total losses allocated to 0.4 kV (752.4 GWh) comprise of the contribution of the 0.4 kV voltage system to the 35 kV losses, the losses at the 35/10 kV transformer allocated to the 0.4 kV system, the contribution of the 0.4 kV voltage system to the 10 kV losses and the 10/0.4 kV transformer losses allocated to the 0.4 kV system and finally the total 0.4 kV losses.

4.4 Allocating the cost of commercial losses

According to the Methodology for setting distribution use of system charges, the level of commercial losses – defined as energy supplied but not billed – in the 35 kV and 10 kV level is allocated between these two levels based on the billed energy. The level of commercial losses allocated to the 0.4 kV level is calculated as the total level of commercial losses minus the losses allocated to the 35 kV level and the 10 kV level.

The calculation provided by the DSO assumes that the levels of losses at the 35 kV and 10 kV level are 3% and 5% of the energy billed in their respective distribution voltage levels. The losses allocated to the 0.4 kV level have been calculated as the difference of total losses and the sum of 35 kV and 10 kV losses, as stipulated in the Methodology.

5 Tariff design principles

The tariffs will be based on the measured energy in each respective voltage level and will be expressed in €c/kWh and will have no other billing component. The tariff will not have a fixed (demand) component as most of the meters in the distribution system are simple electronic meters with no demand metering capability. There will therefore be one energy charge for each voltage level in the distribution system (35 kV, 10 kV and 0.4 kV).

- The 35 kV tariff will be calculated as the ratio of the sum of all costs allocated to the 35 kV distribution level to the total forecasted energy to be billed in the 35 kV level;
- The 10 kV tariff will be calculated as the ratio of the sum of all costs allocated to the 10 kV distribution level to the total forecasted energy to be billed in the 10 kV level; and,
- The 0.4 kV tariff will be calculated as the ratio of the sum of all costs allocated to the 0.4 kV distribution level to the total forecasted energy to be billed in the 0.4 kV level.

6 Calculations provided by the DSO

This section of the Report reviews the calculations provided by the DSO and analyses the extent to which these calculations follow the Methodology approved by ERO.

The calculation of the 35 kV charge takes into account total costs of the DSO allocated to the 35 kV network and divides this by the total billed energy in the 35 kV network as required by the Methodology. The same follows for the 10 kV and 0.4 kV charge. Fixed costs such as costs of asset depreciation and allowed return have been allocated between the various voltage levels according to the Demand Allocation Factors as stipulated in Section 3.1, above. The volume of technical losses and commercial losses appear to have been allocated according to the methodology as well.

The Operating and Maintenance costs, however, seems to have been fully allocated based on the energy allocation factor despite the Methodology for setting DUOS charges stating that the fixed component of O&M costs should be

allocated with the demand allocation factor, implying that only the variable component should be allocated with the fixed allocation factor.

In doing so the DSO may have assumed that all O&M costs are variable. The Consultant highlights that this is an unusual situation as in most cases a large portion of Operating and Maintenance costs of distribution companies are fixed (excluding the cost of losses). Nevertheless should the DSO wish to make the case that all of the O&M costs are variable, they should have provided the regulator with a written report in which they justify the assumptions made. As submitted, it is not possible for the Regulator to justify the unlikely allocation principles assumed by the DSO.

It should be emphasized that the allocation of O&M costs provided in the DSO application has no effect on the overall MAR of the licensee but it does affect the level of tariffs charged for distributing energy to different voltage levels. In this case this allocating practice appears to have favoured customers connected to the 0.4 kV voltage level as the energy allocation factor for this group of customers is lower than the demand allocation factor at 91.7% and 94.6%, respectively.

7 Summary of the report and findings

This report is completed under Task 3 of the Consultancy Agreement and aims to review the distribution use of system charges application provided by the DSO to recover the MAR set by the Regulator during the Regular Adjustment. Specifically, the report reviews whether the calculations of the charges provided by the DSO are in accordance with the secondary legislation governing the principles of calculating such charges.

While the overall application largely follows the principles of the DSO Pricing Rule, the Statement of Principles issued by the Regulator and the Methodology for setting DUOS charges, the application has neglected to justify their full allocation of the O&M costs to variable costs as they appear to have allocated the O&M costs to the various voltage distribution levels based on the energy allocation factor. The Consultant highlights this is inconsistent with common practice of allocating operating and maintenance costs and argues that, in most cases, a large portion of these costs is fixed and would therefore have to be allocated through the demand allocation factor.

It should be emphasized, nevertheless, that the allocating practice provided by the licensee does not affect the overall MAR of the DSO but rather the customer base from whom the MAR approved by the regulator is recovered through the DUOS charges. In this particular case, the allocation practice appears to have been in favour of 0.4 kV customers as these customers would have been charged with a higher share of O&M costs if part of these costs were to be allocated through the demand allocation factor. The 0.4 kV connected customers generally

comprise of household customers with a power factor which is lower than that of non-household customers. The data provided by KEDS shows that the demand allocation factor of 94.6% is higher than the energy allocation factor of 91.7% for these customers. The consultant agrees the difference is not significant however does note that the allocation principle may have yielded to a certain level of cross-subsidization in favour of household customers which is not in line with the principles reflected in the secondary legislation.

10 October 2014

A review and an evaluation of Retail Tariff Calculations

Submitted under Task 4 of: *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7*

Implemented by:

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1 Introduction

JWEleconsult Inc. and Optima Energy Consulting LLC (the Consultant) have been contracted by the National Association for Regulatory Utility Commissioners (NARUC) as implementing parties for the *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7* project.

The Energy Regulatory Office (ERO) is the independent regulatory authority responsible for regulating the electricity, district heating and natural gas markets in Kosovo. The electricity Pricing Rules adopted in 2011 apply revenue-cap regulation to the regulated segments of the electricity market for a Regulatory Period of 5 years.

The Regulatory Period MARs for Generation, Transmission, Distribution and Supply were set in the last Periodic Review conducted by ERO in 2013. ERO defined a five year regulatory period for generation, transmission and distribution and a one year regulatory period for the Public Electricity Supplier (PES). The input values used for calculating PES MAR are set during Input Values Reviews which are initiated by the Regulator whenever ERO considers that the changes in circumstances merit such a review.

The last Annual Update was conducted in ERO during the first Regular Adjustment under the framework of the seventh electricity tariff review (ETR7). This report reviews whether the tariff application submitted by the PES during the regular Annual Update process is in line with the principles of the Rule on Public Electricity Supplier Pricing (PES Pricing Rule).

2 Structure of this Report

This Report is structured as follows:

- Section 3 covers the principles of calculating the retail tariffs charged by PES;
- Section 4 reviews PES' application;
- Section 5 provides a summary of findings and results.

3 Principles of calculating Retail Tariffs

The PES MAR set during Periodic Reviews using approved Input Values is updated during Annual Updates in order to reflect the allowable difference in MAR which may have resulted due to changes between forecast and actual cost of the PES. This may include differences between forecast and actual power purchase, import, and export costs and volumes. The purpose of Annual Updates is to allow ERO to compensate PES and electricity customers for excess costs or profits which are not under the reasonable control of PES.

The Retail Tariff calculations which are approved by ERO are based on the Methodology for structuring the regulated retail tariff which is provided in Article 16 of the PES Pricing Rule and which can be summarized as follows:

- A single set of prices will apply to any customer group and no cross-subsidization shall be allowed except during a pre-set transitional period;
- Block Tariffs may be used to encourage efficient consumption or for social concerns but only when the Regulator is not satisfied that other subsidy mechanisms are providing adequate protection for vulnerable customers;
- The retail tariff will vary based on the seasonal cost of service and will include a time-of-use component as long as adequate metering is available for this purpose and it is warranted by the load profile of the customers;

4 PES' Retail Tariff Application

According to the PES Pricing Rule, the PES submits their MAR application and the associated Retail Tariff to the Energy Regulatory Office for approval at least 20 business days prior their entry into force. The Retail Tariff should be set at such a level that the Public Electricity Supplier recovers all their costs of supply by serving the forecast demand through their billing determinants. The final average tariff for each customer category is calculated by dividing the total costs of service allocated to that customer category by the expected (forecast) sales (kWh) to the same customer category.

4.1 Single set of prices with no cross-subsidization

The tariff structure proposed by PES has not changed from the previously approved and applied structure. The tariff structure provided by the PES in their retail tariff application applies a single set of prices to each customer category as required by the PES Pricing Rule. This does not imply, however, that all customers pay the same price as the average price paid by a customer can vary based on the consumption of that customer. Household customers with Time-Of-Use (TOU) metering devices, for instance, pay 12 different tariffs during the year. They are all paying a single set of prices as a category however individually their average tariff billed will differ because some customers who are more energy efficient may consume only on the first two blocks and avoid the third block of tariffs. Other customers may be more aware and consume electricity at night when there are generally lower prices. All customers face a single set of prices with which they can be charged and this is consistent with the previous tariff structure.

The current retail tariffs include a level of cross-subsidization between customer categories. This implies that costs that should otherwise be allocated to one customer category are currently allocated to another customer category. The

current level of cross-subsidization has been inherited from the previous level of tariffs as there was a general attempt to keep household customer tariffs at a low level by having the costs they impose on the system paid by other customer classes. As ERO applied linear increases in tariffs in the recent years this has contributed to an increase in the level of cross subsidization and it implies that household customers are paying a relatively low electricity price compared to other non-household customers.

Article 16 of the PES Pricing Rule stipulates that there is a transition period until when all cross-subsidies between customer categories are removed and that period of transition lasts until 31 December 2014 implying that the current tariff level should remove cross-subsidies. The date was aligned with the opening of the retail tariffs market when all customers, including households, are eligible to choose a supplier other than the public supplier. The existence of cross-subsidies in open-market conditions would cause the regulated supplier to retain only those customers which are being cross-subsidized from other customers which have an incentive to switch to alternative supplier.

The current PES application does not provide sufficient information on the cost allocation principles which have been followed in preparing the application and which would allow ERO to assess the existing level of cross-subsidization between household categories. Nevertheless the relative level of household customer retail tariffs to that of other categories suggests household customers are still cross-subsidized from other customer categories.

The proper elimination of the current level of cross-subsidization requires a thorough understanding of all costs or providing regulated service to different customer categories which would result from a detailed cost of service study. However a social dimension must also be taken in to consideration as any attempts to reduce the level of cross-subsidization have to be coupled with targeted social protection schemes which enable vulnerable customers to be adequately protected from sharp increases in prices.

4.2 Block tariffs in the tariff structure

The principles of the Pricing Rules state that the Regulator may use block tariffs to encourage efficient consumption or to protect vulnerable customers. If the Regulator wishes to use such block tariffs for social purposes, they may do this if they are not convinced that other governmental protection mechanisms are not adequately protecting vulnerable customers.

The PES Tariff Application, and the inclusion of block tariffs, did not include any analysis which would suggest that the governmental lump-sum subsidy of €4.5 million does not adequately protect vulnerable customers. Despite this there many stakeholders in the sector have voiced their concerns that the current level of tariffs is not affordable for many customers and it is largely believed that the

first block of tariffs – which provides 200 kWh of electricity below cost of service – enables that a certain amount of electricity required for basic household needs be consumed at a reasonable price. The continued implementation of such a tariff structure is, therefore, considered reasonable.

Nevertheless the suggestion of the methodology that the block tariff can be used to encourage efficient consumption is highly debatable. One could argue that the fact that a significant part of the monthly consumption is below cost - and this gets applied to all customers – would suggest that the block tariff results in a lower average tariff for all customers under a block tariff rather than a flat tariff. The suggestion of the Methodology must be referring to the fact that the highest block of consumption is higher therefore customers have an incentive to avoid it however the fact that they are receiving a lower average tariff would make the same customers consume more electricity until the increase in consumption offsets the savings from the first block of consumption.

4.3 Time of Use (TOU) component

The methodology for structuring the Retail Tariff obliges ERO to approve a tariff methodology which allows tariffs to change in order to reflect the seasonal cost of service and a time of use component if metering is adequate to support such a tariff system.

The tariff structure proposed to ERO for approval includes winter (high season) and summer (low season) tariffs which reflect the higher cost of providing service during winter months when electricity demand is high. Time of Use components in tariffs are included in all customer categories other than 220 kV-connected customers (Ferronikeli), unmetered household customers (Category 7) and public lighting customers (Category 8).

5 Summary of the report and findings

This report is completed under Task 4 of the Consultancy Agreement and aims to review whether the Retail Tariff application submitted to the Energy Regulatory Office for approval by the Public Electricity Supplier follows the principles of the PES Pricing Rule.

One of the findings of the review is that the PES have not indicated whether the cross-subsidization between customer categories has been carried over in the current tariff proposal. A revision of the relative level of household customer tariffs compared to the tariffs of other customer categories one can conclude that the cross-subsidization level has not been eliminated.

Eliminating cross-subsidies would require precise information on the cost of providing service to each category of customers followed by a public discussion on the cost allocation principles which should be implemented in calculating retail

tariffs. Considering the level of cross-subsidisation which would have to be overcome, any measures to remove cross-subsidies would have to also be coupled with targeted governmental protection measures which ensure that vulnerable electricity customers are adequately protected.

22 September 2014

Review of circularities generated in the Electricity Pricing Rules

Submitted under Task 5 of: *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7*

Implemented by:

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Introduction

JWEleconsult Inc. and Optima Energy Consulting LLC (the Consultant) have been contracted by the National Association for Regulatory Utility Commissioners (NARUC) as implementing parties for the *Electricity Tariff Consultancy to the Energy Regulatory Office of Kosovo in the Framework of ETR7* project.

The Energy Regulatory Office (ERO) is the independent regulatory authority responsible for regulating the electricity, district heating and natural gas markets in Kosovo. The electricity Pricing Rules adopted in 2011 apply revenue-cap regulation to the regulated segments of the electricity market for a Regulatory Period of 5 years.

The implementation of the Pricing Rules on the Seventh Electricity Tariff Review (ETR7) and on the subsequent Regular Adjustment and Annual Update processes identified two circularities which are generated by the Pricing Rules. The first of these circularities is generated in the calculation of the Wholesale Power Costs (WHPC) of the Public Electricity Supplier (PES) and the other is generated in the calculation of System Operator (SO) charges of the Regulated Generator.

This Report reviews the identified circularities and provides solutions as to how these can be resolved.

Structure of this Report

This Report is structured as follows:

- Section 3 reviews the identified circularities;
- Sections 4, 5 and 6 provide solutions to the identified circularities;
- Section 7 provides a summary of the findings;
- Annex 1 provides an amended version of the PES Pricing Rule.

Circularities in the Pricing Rules

The current version of the Pricing Rules generates a number of different circularities and they relate to the calculation of the Wholesale Power Costs of the PES and the calculation of SO costs of the Regulated Generator.

3.1 Wholesale Power Costs Circularity

The Wholesale Power Costs of the Public Electricity Supplier are defined in Schedule 1 of the PES Pricing Rule as the sum of wholesale energy costs and wholesale capacity costs. Wholesale energy costs are defined in Article 13.5 of the PES Pricing Rule as the sum of Generation costs, costs of imports, costs of distribution-connected domestic generation less exports, subsidies and cost of losses:

> *Allowed revenues relating to transmission and distribution losses shall comprise the actual amount invoiced by the PES to the DSO and TSO (as determined in accordance with the Market Rules) to compensate for the difference between metered energy sent out by generators or imported and energy delivered to eligible and non-eligible customers.* (Article 13.5 of the PES Pricing Rule).

However, Schedule 1 of the DSO Pricing Rule defines the cost of losses as the product of the percentage of allowed losses, the volume of energy entering the distribution system and the average wholesale energy costs (WHEA).

The definition of the cost of losses – stated in Paragraph 2.2 of Schedule 1 of the DSO Pricing Rule – is provided below1:

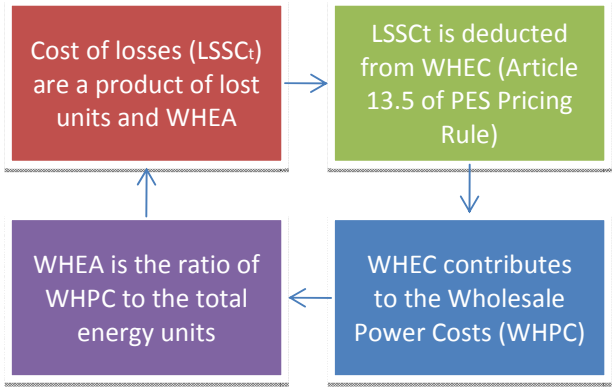
> *Allowed cost of losses ($LSSC_t$) shall be calculated at Regular Adjustments using the following formula:*
>
> $$LSSC_t = LSSA_t * REUE_t * WHEA_t + (LSSCa_{t-1} - LSSCf_{t-1}) * (1+ I_t) + (LSSCa_{t-1} - LSAC_{t-1}) * LSSF_t$$
>
> *Where*

$LSSC_t$	*is allowed cost of losses in Relevant Year t*
$LSSA_t$	*is the Loss Allowance, which is a percentage of energy entering the Transmission System, in Relevant Year t*
$REUE_t$	*is the energy units (in MWh) entering the Distribution System in Relevant Year t*
$WHEA_t$	*is the average wholesale energy cost(in €/MWh) as determined using the allowed wholesale energy cost for the PES in Relevant Year t*

Attention should be paid to the definition of WHEA in the DSO pricing rule as it states that the average wholesale energy cost should be calculated as the WHEC calculation in the PES Pricing Rule. As stated above, Article 13.5 of the PES Pricing Rule requires that the cost of losses be deducted when calculating WHEC.

[1] The definitions of the formula elements after WHEA have been left out for conciseness as they have to do with reconciling differences between actual and allowed losses in the past and therefore do not add relevant information to the arguments made.

Figure 1 WHPC Calculation circularity



This therefore presents a circular reference: Wholesale energy costs are calculated by deducting the cost of losses however the cost of losses depends on the average wholesale energy costs which depends on the cost of losses.

3.1.1 The WHPC circularity and its effect on the Retail Margin

According to Schedule 1 of the PES Pricing Rule, the Wholesale Power Costs of the Public Electricity Supplier include a Retail Margin which is a percentage of the sum of wholesale energy and capacity costs.

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

Where

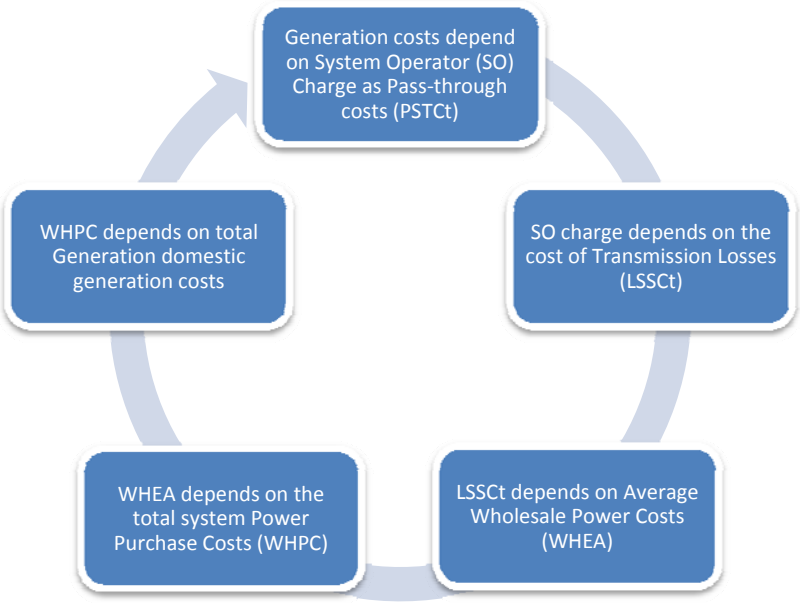
$WHPC_t$	*is allowed wholesale power costs in Relevant Year t*
$WHCC_t$	*is allowed wholesale capacity costs in Relevant Year t*
$WHEC_t$	*is allowed wholesale energy costs in Relevant Year t*
$RETM_t$	*is the Retail Margin in Relevant Year t*
$WHPCa_{t-1}$	*is actual allowed wholesale power costs in Relevant Year t-1*
$WHPCf_{t-1}$	*is forecast allowed wholesale power costs as determined in Relevant Year t-1*
I_t	*is the interest rate for the Relevant Year t calculated based on EURIBOR plus S%, where S is a value to be determined by the Regulator at Annual Updates and which reflects the premium payable by the licensee for short-term loans.*

The circularity arises as the Wholesale Power Costs are used to calculate the Average Wholesale Power Costs which include the cost of losses, which is related to the first circularity.

3.2 The circularity related to the calculation of SO Charges

One of the allowed pass-through costs of the Regulated Generator are the costs of System Operation which are part of the Regulated Generator' Maximum Allowed Revenues (MAR).

Figure 2 Circularity in calculating Generation MAR which includes SO charges



The circularity arises in the Generation MAR during the calculation of the wholesale power costs. Generation costs, which are part of WHPC, include an SO Charge payable to the System Operator which includes a component of the cost of transmission losses (LSSCt). However the cost of transmission losses is dependent on the wholesale power costs which includes the costs of Generation. There is therefore a circularity: Generation costs depend on cost of losses which depend on generation costs.

8 Resolving the circularity related to the WHPC

There are a number of ways to resolve the circularity related to the wholesale power costs. The Consultant presents and discusses the two possible solutions provided below. The first option is recommended as it is considered the simpler of the two.

8.1 Option 1: Amending the PES Pricing Rule

Under the first option, the consultants propose to remove Articles 13.5 and 13.13 of the current version of the Pricing Rule as all of Article 13 refers to the calculation of Wholesale Power Purchase Costs and insert a new Article 14 which is outside of the WHPC calculation and which deducts the revenues from losses out of the total PES MAR but not specifically out of the wholesale power costs of PES:

Article 14

Revenues from sales of losses

1 *Revenues relating to the sale to the TSO and DSO of energy to cover transmission and distribution losses shall be deducted from allowed wholesale energy costs, to avoid recovering the cost of energy losses twice.*

2 *Allowed revenues relating to transmission and distribution losses shall comprise the actual amount invoiced by the PES to the DSO and TSO (as determined in accordance with the Market Rules) to compensate for the difference between metered energy sent out by generators or imported and energy delivered to eligible and non-eligible customers.*

It is the Consultant's view that the revenues from losses should not have been deducted from the Wholesale Power Costs in the first place as the Wholesale Power Costs should represent the total costs of the energy entering the system to serve regulated customer demand. The solution proposed by the consultant deducts revenues from sales of losses as other non-tariff revenues of the PES and avoids the circular reference calculation.

8.2 Option 2: Amending the DSO and TSO/MO Pricing Rules

Under the second option, the first circularity can be resolved by changing the definition of the average wholesale energy costs (WHEA) in the DSO and TSO/MO Pricing Rules.

The current version states:

$WHEA_t$	*is the average wholesale energy cost(in €/MWh) as determined using the allowed wholesale energy cost for the PES in Relevant Year t*

An alternative version, which would remove the circularity, is:

$WHEA_t$	*is the average wholesale energy cost(in €/MWh) calculated as the ratio of total power purchase costs required to meet demand of*

regulated customers less subsidies and exports to the total energy purchased to meet the demand of regulated customers.

The consultant considers this option to be second best compared to the one presented in section 4.1 above.

8.3 Resolving issues related to the Retail Margin

It should be noted that the option provided in Section 4.1 of the Report also resolves the circularity issue related to the Retail Margin. Nevertheless the consultant advises ERO to consider restructuring the WHPC formula in Paragraph 2.2 of Schedule 1 of the PES Pricing Rule such that the Retail Margin is placed out of the calculation of the WHPC but still remains an allowable of the PES dependent on the calculation of the WHPC.

The purpose of the Wholesale Power Costs – other than calculating the power purchase costs of the Public Electricity Supplier for meeting regulated customer demand – is to calculate the average cost of losses incurred in the system. Such losses include technical and commercial losses of the DSO and transmission losses of the TSO. These losses will be paid by suppliers other than the Public Electricity Supplier and the cost of losses should therefore not include the Retail Margin allowance of the PES.

This can be resolved by rewording the first paragraph of Article 13 to remove the Retail Margin allowance on the sum of the Wholesale Energy Costs and Wholesale Capacity Costs. The new version of this paragraph would therefore be:

Article 13

Allowed Wholesale Power Costs

1 Allowed wholesale power costs shall comprise:

1.1 Allowed wholesale capacity costs; and

1.2 Allowed wholesale energy costs;

In addition, a new Article 15 would be added to add back the Retail Margin as an allowed MAR component of the PES but which is excluded from the Wholesale Power Costs:

Article 15

Retail Margin

1 The Public Electricity Supplier shall be entitled to recover a Retail Margin on the Wholesale Power Costs.

2 The Retail Margin shall be a fixed percentage that is applied to allowed wholesale energy costs and allowed wholesale capacity costs. It shall be set at such a level such that it:

2.1 Provides the PES with a reasonable return that compensates it for the risks it assumes in providing Standard Service to Regulated Customers. This shall be calculated with reference to the margins earned by similar utilities in countries elsewhere in Europe, taking account of the similarities between the electricity industry in those countries and that of Kosovo; and

2.2 Provides the PES with a reasonable return on its net fixed assets used in providing Standard Service to Regulated Customers. This shall be calculated with reference to the cost of capital of other licensees in Kosovo.

Additionally, the MAR formula in Paragraph 2 and the WHPC formula in paragraph 2.2 of Schedule 1 of the PES Pricing Rule would have to be amended as follows:

The new paragraph 2 of Schedule 1 of the PES Pricing Rule:

$$MAR_t = (RETR_t + WCLC_t + WHPC_t + WHPC_t \times RETM_t + PSTC_t - NTFR_t + KREV_t) / (1-BDTA_t)$$

Where

MAR_t	*is Maximum Allowed Revenues in Relevant Year t*
$RETR_t$	*is allowed retail costs in Relevant Year t, which is set at Annual Updates*
$WCLC_t$	*is allowed working capital costs in Relevant Year t*
$WHPC_t$	*is allowed wholesale power costs in Relevant Year t*
$RETM_t$	*is the allowed Retail Margin in Relevant Year t*
$PSTC_t$	*is Pass-Through Costs in Relevant Year t*
$NTFR_t$	*is non-tariff revenues in Relevant Year t*
$KREV_t$	*is the revenue correction factor in Relevant Year t*
$BDTA_t$	*is the Bad Debt Allowance in Relevant Year t, set as a percentage (%) value*

The new paragraph 2.2 of schedule 1 of the PES Pricing Rule is:

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

Where

$WHPC_t$	*is allowed wholesale power costs in Relevant Year t*
$WHCC_t$	*is allowed wholesale capacity costs in Relevant Year t*
$WHEC_t$	*is allowed wholesale energy costs in Relevant Year t*
$WHPCa_{t-1}$	*is actual allowed wholesale power costs in Relevant Year t-1*
$WHPCf_{t-1}$	*is forecast allowed wholesale power costs as determined in Relevant Year t-1*
I_t	*is the interest rate for the Relevant Year t calculated based on EURIBOR plus S%, where S is a value to be determined by the Regulator at Annual Updates and which reflects the premium payable by the licensee for short-term loans.*

9 Resolving the circularity related to the SO charge

The circularity related to the calculation of SO Charges in the Generation Maximum Allowed Revenue (MAR) is systematically generated as long as part of the System Operator costs are allocated to the Generation component of the sector.

ERO's approach until now has been to include SO costs as a "hard value" (not linked with the calculations of the model) into the Generation MAR after an assessment of total SO costs. This approach has been accepted by the licensees – both KOSTT and KEK as a solution to the circularity and should therefore continue to be applied without altering the Pricing Rules.

10 Summary of report and findings

The purpose of this report was to review a number of circularities which were generated by the current draft of the pricing rules and which were identified by ERO and the licensees during the Periodic Review and the Annual Update and Regular Adjustment processes.

The findings of the review can be summarized as follows:

The first circularity is generated from the deduction of losses (Article 13.5 of the PES Pricing Rules) from Wholesale Power Costs. This is due to the fact that the cost of losses depend on the average cost of wholesale power. This therefore generates a circular reference. While there are alternative remedies to resolve the circularity, two options were provided in this report and the Pricing Rules were amended to include the first recommended option. The first option recommended that clause 13.5 be removed from Article 13 and included in a separate article which would require the deduction of losses from total PES MAR

to avoid recovering the cost of losses twice. Additionally, the retail margin allowed to PES was removed from the wholesale power cost calculation in order to avoid other alternative suppliers in the market to pay for the return of the regulated supplier in their payments of cost of losses.

An additional circularity occurs in the Regulated Generator MAR from the inclusion of charges payable to the System Operator which includes the cost of Transmission Losses. However the cost of transmission losses depend on average wholesale power costs which depend on the total system costs which subsequently depend on generation costs. It should be noted that this is a systematic circularity which has until now been resolved by including the SO charges payable to the Generation MAR as a hard value in the modelling, an approach commonly accepted thus far which should not require altering.

The amended PES Pricing Rule which follows the recommendations of Option 1 in Section 4.1, above is provided in the annex of this document.

Annex 1: Draft PES Pricing Rule

Energy Regulatory Office

Rule on Public Electricity Supplier Pricing
(PES Pricing Rule)

2011

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Pursuant to the authority given under Article 8paragraph 1, subparagraph 1.6, Article 14, paragraph 2, subparagraph 2.16, Article 25 and Article 42, paragraph 1 of the Law No.03/L-185 on Energy Regulator, the Board of the Energy Regulatory Office on a session held on 30.09.2011has adopted the:

Rule on Public Electricity Supplier Pricing
(PES Pricing Rule)

CHAPTER I GENERAL PROVISIONS

Article 1

Scope and Purposes

1 This Rule sets:

1.1 The methodology for determining the Regulated Retail Tariff that is charged by the Public Electricity Supplier ("PES") for the retail supply of electricity; and

1.2 The process for reviewing and adjusting the Regulated Retail Tariff.

2 This Rule applies to any customer being charged a regulated electricity tariff ("Regulated Customers"). In accordance with the Law on the Energy Regulator, Regulated Customers include:

2.1 All non-eligible customers; and

2.2 Eligible customers where the Regulator is not satisfied that competition in the supply of electricity is effective.

Article 2

Definitions and Interpretations

1 The following terms are used in this Rule and have the following meanings:

1.1 "Actual Regulated Revenues" means the revenues recovered by the PES by charging the Regulated Retail Tariff to Regulated Customers, measured on an accruals basis;

1.2 "Annual Update" means the adjustment to Maximum Allowed Revenues and the Regulated Retail Tariff undertaken towards the end of each Relevant Year;

1.3 "Bad Debt Allowance" has the meaning give to it in Article 102 paragraph 1;

1.4 "Business Days" means all working days of the week as defined in Kosovo law;

1.5 "Customer Category" means the classification of different types of customers for the purposes of charging retail tariffs. The classification should have regard to customers' manner of active energy and capacity measuring, manner of electricity consumption, peak load, supply voltage, and other characteristics that impact on the cost of supply;

1.6 "Distribution System Operator" or "DSO" means the holder of the Distribution System Operator Licence;

1.7 "Distribution Use of System charge" or "DUOS charge" means the regulated charge by the DSO for the conveyance of electrical energy across its system;

1.8 "Economic Asset Lives" means the asset lives used to calculate allowed depreciation on the Regulatory Asset Base;

1.9 "Export Sharing Factor" has the meaning given to it in Article 113 paragraph 9;

1.10 "EURIBOR" means the European Banking Federation Interbank Offer Rate for Euro deposits for a period equal to 3 months which appears on the appropriate page of the Reuters service at or about 11:00 a.m. Central European Time, or in the event that the Reuter's service, or any successor thereto, no longer provides such information, such other service as agreed by the PES and the Regulator. For the avoidance of doubt it shall be an annual rate;

1.11 "Export Penalty" has the meaning given to it in Article 1113 paragraph **Error! Reference source not found.**4;

1.12 "Extraordinary Adjustment" has the meaning given to it in Schedule 5;

1.13 "Extraordinary Event" has the meaning given to it in Schedule 6;

1.14 "Extraordinary Review" has the meaning given to it in Article 66;

1.15 "Final Decision" has the meaning given to it in Schedule 3 paragraph9;

1.16 "Force Majeure Event" has the meaning given to it in Schedule 7;

1.17 "Input Values" has the meaning given to it in Article 77;

1.18 "Input Values Review" means the review by the Regulator to determine Input Values;

1.19 "Licence Fee" means the amount payable under the terms of Article 7 of the Schedule of Fees issued by the Regulator and amended from time to time;

1.20 "Market Operator" or "MO" means the holder of the Market Operator Licence;

1.21 "Market Operator Charges" or "MO Charges"means the regulated set of charges applied by the MO for the provision of market operator services;

1.22 "Materiality Threshold" has the meaning given to it in Schedule 5;

1.23 "Maximum Allowed Revenues" or "MAR" means the maximum amount that can be recovered in an Relevant Year by the PES through the Regulated Retail Tariff, the revenues from which are regulated under the formulae in Schedule 1 of this Rule;

1.24 "Net Present Value" means the sum of discounted future net cash flows;

1.25 "Pass-Through Costs" means the costs established in accordance with Article 16;

1.26 "Proposal" has the meaning given to it in Schedule 3 paragraph 4;

1.27 "Provisional Evaluation" has the meaning given to it in Schedule 3paragraph 0;

1.28 "Public Electricity Supplier" or "PES" means the holder of the Public Supply Licence;

1.29 "Regulated Customers" has the meaning given to it in Article 13 paragraph1;

1.30 "Regulated Retail Tariff" means the set of prices charged by the PES to Regulated Customers for providing Standard Service, as determined by the Regulator;

1.31 "Regulator" means the Energy Regulatory Office;

1.32 "Regulatory Asset Base" has the meaning given to it in Schedule 2;

1.33 "Relevant Year" means the period of 12 successive calendar months between Annual Updates;

1.34 "Retail Margin" has the meaning give to it in Article 105;

1.35 "Standard Service" means the service provided to customers supplied electricity by the PES as defined in the Public Supply Licence and General Conditions of Electricity Supply;

1.36 "Statement of Financial Impact" has the meaning given to it in Schedule 5;

1.37 "System Operator Charges" or "SO Charges" means the regulated set of charges applied by the TSO for the provision of system operator services;

1.38 "Transitional Period" has the meaning given to it in Schedule 8;

1.39 "Transmission Network Use of System charge" or "TNUOS charge" means the regulated charge by the TSO for the conveyance of electrical energy across its system;

1.40 "Transmission System Operator" or "TSO" means the holder of the Transmission System Operator Licence;

1.41 "Unregulated Customers" means any customers of the PES's business that are not Regulated Customers;

2 The other terms in this rule shall have the meanings specified in the Law on the Energy Regulator, in the Law on Electricity, or in the Law on Energy.

CHAPTER II REGULATED RETAIL TARIFF

Article 3

General Principles

1 The PES shall charge no more or less than the Regulated Retail Tariff to Regulated Customers.

2 The Regulated Retail Tariff shall be set and approved at each Annual Update such that:

2.1 Within each Relevant Year the revenues that the PES expects to earn from the Regulated Retail Tariff are equal to Maximum Allowed Revenues (Chapter III); and

2.2 The Regulated Retail Tariff is consistent with the Tariff Structure Methodology (Chapter V).

3 Maximum Allowed Revenues shall be determined as follows:

3.1 Maximum Allowed Revenues shall be set at Annual Updates (Article 45):

3.2 The calculation of Maximum Allowed Revenues shall use Input Values set at Input Values Reviews; and

3.3 Extraordinary Reviews (Article 6), which involve an adjustment to Maximum Allowed Revenues for material changes in costs and/or revenues caused by an Extraordinary Event, shall be made as necessary.

4 Transitional provisions given in Schedule 8 shall apply until 31 March 2015.

Article 4

Input Values Reviews

1 At Input Values Reviews the Input Values used to calculate Maximum Allowed Revenues of the PES shall be set.Changes to Input Values shall only be made to the extent that those changes are reasonable, justified, and prudently asserted.

2 An Input Values Review shall be held at the initiation of the Regulator, when changes in circumstances are considered to merit such a review.

3 The PES may propose at any time to the Regulator that an Input Values Review be initiated. The Regulator is required to respond to such a proposal with written reasons for its decision to initiate or not initiate such a review.

4 The process for undertaking Input Values Reviews is given in Schedule 3.

Article 5

Annual Updates

1 At Annual Updates the permitted change in Maximum Allowed Revenues shall be calculated and the resulting Regulated Retail Tariff determined accordingly.

2 An Annual Update shall be held prior to each forthcoming Relevant Year.

3 The change in Maximum Allowed Revenues at each Annual Updated shall be based on the following:

3.1 Updated forecasts of all allowed costs;

3.2 Under or over-recovery of Maximum Allowed Revenues in the current (soon to be competed) Relevant Year, due to differences between forecast and actual billed electricity;

3.3 Under or over-recovery of allowed wholesale power costs and pass-through costs due to differences between forecast and actual costs, subject to any sharing of net imbalance costs and export revenues between the PES and Regulated Customers.

4 The formulae for calculating Maximum Allowed Revenues at Annual Updates are given in Schedule 1.

5 The process for making Annual Updates is given in Schedule 4.

Article 6

Extraordinary Reviews

1 Extraordinary Reviews shall be triggered by Extraordinary Events, as defined in Schedule 6.

2 At Extraordinary Reviews the impact of the Extraordinary Event on Maximum Allowed Revenues for the remainder of the current Relevant Year shall be calculated. If the impact is greater than the Materiality Thresholdthen an Extraordinary Adjustment to Maximum Allowed Revenues shall be made. The Material Threshold shall be 5% of revenues, unless determined otherwise at Input Values Reviews on the mutual agreement of the PES and the Regulator.

3 The calculation of the impact on Maximum Allowed Revenues and the associated Extraordinary Adjustment shall not account for any factors that are not directly affected by the Extraordinary Event.

4 For the avoidance of doubt, the Regulator shall also take account of the on-going impacts of Extraordinary Events (that pass the Materiality Threshold) at future Annual Updates.

5 The process for undertaking Extraordinary Reviews is given in Schedule 5.

CHAPTER III INPUT VALUES

Article 7

Definition of Input Values

1 Input Values are key parameters used in the calculation of the Maximum Allowed Revenues of the PES.

2 Input Values comprise the following:

2.1 Economic Asset Lives;

2.2 Retail Margin;

2.3 Bad Debt Allowance;

2.4 Balancing Sharing Factor; and

2.5 Export Sharing Factor.

Article 8

Specifying Input Values

1 The following values are specified as fixed values, to apply in all Relevant Years until a further Input Values Review is conducted:

1.1 Economic Asset Lives.

2 The following values may be specified as either fixed values or as a schedule of values, with a different value to apply in each Relevant Year from the current Relevant Year until a further Input Values Review is conducted:

2.1 Retail Margin;

2.2 Bad Debt Allowance;

2.3 Imbalance Sharing Factor;

2.4 Export Sharing Factor.

CHAPTER IV MAXIMUM ALLOWED REVENUES

Article 9

General Principles

1 Maximum Allowed Revenues shall equal the reasonable costs of the PES in providing Standard Service to Regulated Customers, to the extent that those costs are justified and prudently incurred.

2 The reasonable costs of the PES shall comprise:

2.1 Allowed retail costs (Article 100);

2.2 An allowance for reasonable working capital costs (Article 11);

2.3 An allowance for reasonable bad debts (Article 122);

2.4 Allowed wholesale power costs (03), which shall be passed-through based on the Imbalance Sharing Factor and Export Sharing Factor at Annual Updates;

2.5 Allowed Retail Margin (Article 15);

2.6 Pass-Through Costs (Article 166), including the MO charge, SO charge, TNUOS charge, DUOS charge, and Licence Fee, which shall be fully passed-through at Annual Updates.

3 In determining reasonable costs, the Regulator shall refer to, but is not bound by or limited to:

3.1 Past volume, cost and service quality information relating to the PES;

3.2 Projected volumes, costs and service quality relating to the PES;

3.3 Comparisons with similar utilities in Kosovo and in countries elsewhere in Europe, taking account of the similarities between the electricity industry in those countries and that of Kosovo; and

3.4 Comparisons with the costs of similar activities in Kosovo and in countries elsewhere in Europe, taking account of the similarities between the electricity industry in those countries and that of Kosovo.

4 The resulting reasonable costs shall be allocated to Regulated Customers as described in Article 177.

5 Any non-tariff revenues that relate to providing Standard Service to Regulated Customers shall be deducted from Maximum Allowed Revenues, including any difference between the disposal value of assets and their regulatory value.

Article 10

Allowed Retail Costs

1 Allowed retail costs shall comprise the following allowed costs as they relate to supplying Regulated Customers:

1.1 Operating and maintenance costs;

1.2 Corporate costs;

1.3 Depreciation costs; and

1.4 Any other costs that are reasonably incurred by the PES in providing retail services to Regulated Customers.

2 Allowed operating and maintenance costs shall not include:

2.1 The costs of advertising and other marketing for the purposes of encouraging consumption because the PES does not compete for Regulated Customers; andAny taxes or duties that are intended to be recovered through the Retail Margin.

3 Allowed corporate costs shall comprise costs (or a proportion of total corporate costs where the PES is a subsidiary or affiliate of another entity) that are necessary and attributable to the continued functioning of the PES using normal and customary accounting practices but which are not directly associated with providing Standard Service to Regulated Customers.

4 Public communications for safety, conservation, encouraging prompt payment and discouraging unauthorised use are allowable costs; and

5 Allowed depreciation costs shall be calculated on a straight-line basis as a function of Economic Asset Lives and the Regulatory Asset Base, as described in Schedule 2.

Article 11

Allowed Working Capital Costs

1 Working capital costs shall be calculated as the cost of financing working capital for the PES multiplied by the allowed working capital value.

2 The cost of financing working capital shall be calculated as EURIBOR plus S%, where S is a value to be determined by the Regulator at Annual Updates and which reflects the premium payable by the licensee for short-term loans.

3 The allowed working capital value shall be calculated as 1/12th of the sum of allowed retail costs, allowed wholesale energy costs, allowed wholesale capacity costs, and pass-through costs.

Article 12

Allowed Bad Debt Costs

1 Allowed bad debt costs shall be calculated by applying the Bad Debt Allowance as per the formulae given in Schedule 1.

2 The Bad Debt Allowance shall be an estimate of the reasonable level of bad debts incurred by the PES.

Article 13

Allowed Wholesale Power Costs

1 Allowed wholesale power costs shall comprise:

1.1 Allowed wholesale capacity costs; and

1.2 Allowed wholesale energy costs;

2 Maximum Allowed Revenues shall be adjusted for changes in allowed wholesale power costs at each Annual Update, as per the formulae given in Schedule 1.

3 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.

4 Allowed wholesale energy costs shall comprise the following allowed costs as they relate to supplying Regulated Customers:

4.1 Costs of purchases from domestic generation;

4.2 Energy import costs;

4.3 Energy export revenues (as a negative cost), subject to the Export Sharing Factor;

4.4 Net imbalance costs, subject to the Imbalance Sharing Factor.

5 Allowed costs of purchases from domestic energy generation shall comprise the actual costs incurred by the PES in purchasing energy from generators in Kosovo (whether regulated or unregulated) for supplying to Regulated Customers, as determined in power purchase agreements or otherwise, less any allowed wholesale capacity costs.

6 Allowed costs of purchases from domestic energy generation shall exclude any additional costs of generation that are recovered under separate mechanisms, such as the difference between feed-in-tariffs and average wholesale power costs for purchases from renewable generation.

7 Allowed energy import costs shall be the actual costs incurred by the PES in purchasing imported energy, as determined in import contracts, less any import subsidies provided by the Government of Kosovo.

8 Allowed energy export revenues shall be the actual revenues earned by the PES in selling exported energy.

9 The Export Sharing Factor shall be a fixed percentage that is applied to export revenues to determine the sharing of these revenues between the PES and Regulated Customers. The Export Sharing Factor shall be sufficient to encourage the PES to maximise export revenues, but not result in excessive returns for the PES.

10 Allowed net imbalance costs shall comprise the actual costs incurred less the actual revenues earned (as determined in accordance with the Market Rules) that result from imbalances between actual demand from Regulated Customers and the contracted supply of energy.

11 The Imbalance Sharing Factor shall be a fixed percentage that is applied to net imbalance costs to determine the sharing of these costs between the PES and Regulated Customers, where a value of 0% means that all net imbalance costs are allocated to the PES and a value of 100% means that all net imbalance costs are allocated to Regulated Customers. In setting the Imbalance Sharing Factor, the Regulator shall consider the extent to which the PES is able to manage imbalances and, in particular, the balance between supplies from domestic generation and firm imports and the demand served by the PES. The Regulator shall set the Imbalance Sharing Factor at 100% until such time as it considers that supply is generally adequate to meet demand.

12 Forecasts of allowed wholesale energy costs at Annual Updates shall have regard to:

12.1 Recent and historic changes in import prices, export prices, the cost of domestic generation, and revenues relating to transmission and distribution losses;

12.2 The seasonality of import and export prices;

12.3 Relevant contract prices on power exchanges; and

12.4 Other factors that provide a reasonably reliable means for forecasting wholesale energy costs.

13 The Regulator may, at its discretion, introduce an export penalty that is deducted from Maximum Allowed Revenues. The penalty would apply if the PES sells energy exports when there is unserved domestic demand for energy due to inadequate generation or imports, as evident in the settlements data produced by the TSO. The penalty per unit would be

sufficient to ensure that the PES has a strong incentive to serve domestic demand before exporting, but should not threaten the financial position of the PES. Any such penalty shall only be introduced if and when the Regulator considers that there is evidence of significant volumes of exports by the PES taking place at times of domestic load shedding.

Article 14

Revenues from sales of losses

1 Revenues relating to the sale to the TSO and DSO of energy to cover transmission and distribution losses shall be deducted from PES MAR, to avoid recovering the cost of energy losses twice.

2 Allowed revenues relating to transmission and distribution losses shall comprise the actual amount invoiced by the PES to the DSO and TSO (as determined in accordance with the Market Rules) to compensate for the difference between metered energy sent out by generators or imported and energy delivered to eligible and non-eligible customers.

Article 15

Retail Margin

1 The Public Electricity Supplier shall be entitled to recover a Retail Margin on the Wholesale Power Costs.

2 The Retail Margin shall be a fixed percentage that is applied to allowed wholesale energy costs and allowed wholesale capacity costs. It shall beset at such a level such that it:

2.1 Provides the PES with a reasonable return that compensates it for the risks it assumes in providing Standard Service to Regulated Customers. This shall be calculated with reference to the margins earned by similar utilities in countries elsewhere in Europe, taking account of the similarities between the electricity industry in those countries and that of Kosovo; and

2.2 Provides the PES with a reasonable return on its net fixed assets used in providing Standard Service to Regulated Customers. This shall be calculated with reference to the cost of capital of other licensees in Kosovo.

Article 16

Pass-Through Costs

1 The PES shall full pass-through all Pass-Through Costs at each Annual Update, which shall comprise the following:

1.1 MO charges that are invoiced by the MO and relate to Regulated Customers;

1.2 SO charges that are invoiced by the TSO and relate to Regulated Customers;

1.3 TNUOS charges that are invoiced by the TSO and relate to Regulated Customers;

1.4 DUOS charges that are invoiced by the DSO and relate to Regulated Customers; and

1.5 The share of the Licence Fee that relates to Regulated Customers.

Article 17

Allocation of Costs

1 To determine allowed costs to be recovered from Regulated Customers and, thereby, Maximum Allowed Revenues, the reasonable costs calculated according to this Chapter shall be allocated as follows:

1.1 Allowed retail costs and allowed working capital costs shall be allocated in proportion to customer numbers. To do so, the average cost per customer shall first be calculated by dividing total retail costs and working capital costs by the total number of customers (both regulated and unregulated), weighted according to the different costs of providing retail service to different Customer Groups. This average cost per customer shall then be multiplied by the weighted number of Regulated Customers, to obtain the allowed retail costs and working capital costs to be recovered from Regulated Customers.

1.2 Allowed wholesale energy costs and wholesale capacity costs shall be allocated to Regulated Customers in a way that does not distort competition for Unregulated Customers. During the Transitional Period special provisions shall apply, as given in Schedule 8.

1.3 Pass-ThroughCosts shall be allocated to Regulated Customers in a way that preserves, to the extent possible, the price signals in the charges.

1.4 There is no need to separately allocate bad debt costs to Regulated Customers, as this allocation follows from the application of the Bad Debt Allowance as per the formulae given in Schedule 1.

CHAPTER V TARIFF STRUCTURE METHODOLOGY

Article 18

Methodology for Structuring the Regulated Retail Tariff

1 The structure of the Regulated Retail Tariff shall be consistent with the methodology set out in this article and in any further guidance issued by the Regulator.

2 A single set of prices shall apply to any Customer Group.

3 The Regulated Retail Tariff shall not include any cross subsidisation between Customer Groups, except during the Transitional Period as given in Schedule 8.

4 The Regulated Retail Tariff shall take into account environmental concerns.

5 Block tariffs may be used to encourage efficient consumption. They may also be used for social reasons, but only in the circumstance where the Regulator is not satisfied on the basis of the available evidence that other subsidy mechanisms are adequately protecting vulnerable customers.

6 The Regulated Retail Tariff shall include time-of-use tariffs to encourage efficient consumption, so long as metering is adequate for this purpose and if it is warranted by the load profile of the customer.

7 The Regulated Retail Tariff shall vary based on the seasonal cost of service to encourage efficient consumption.

8 The Regulated Retail Tariff shall reflect the costs of supplying different Customer Groups and shall be set so as to:

8.1 Accurately preserve the price signals of the MO charges, SO charges, TNUOS charges, DUOS charges, and the Licence Fee, to the extent allowed by limitations on customer metering;

8.2 Recover the retail costs and working capital costs associated with supplying each different Customer Group; and

8.3 Reflect the costs of supplying different Customer Groups during different seasons and times of the day, to the extent allowed by limitations on customer metering.

CHAPTER VI TRANSITIONAL AND FINAL PROVISIONS

Article 19

Official Language of the Rule

This Rule is issued in the Albanian language and shall be translated into Serbian and English language. In the event of discrepancies between versions, the Albanian version shall prevail.

Article 20

Changes

1. ERO retains the right to change or modify any provision of this Rule.
2. Procedures for amendment or modification of this Rule will be the same as for its approval.

Article 21

Interpretation

If there is uncertainty about the provisions of this Rule, the Board will issue disclosure.

Article 22

Repeal

This Rule repeals the" Rule on Principles of Calculation of Tariffs in the Electricity Sector (Pricing Rule)" and "Tariff Methodology for the Electricity Sector " approved by the Board of ERO on 15th December 2005, and amendments made on 29th November 2006 of Tariff Methodology, issued in accordance with the Law No.2004/09 on Energy Regulator.

Article 23

Entry into force

This Rule comes into force upon its adoption by the ERO Board and will be published in the official website of the ERO.

Board of the Energy Regulatory Office:

_____

Dr. Ali Hamiti, Chairman

_____

PërparimKabashi, Member

_____

BlerimKoci, Member

SCHEDULE 1 MAXIMUM ALLOWED REVENUES CALCULATION

This schedule sets out the formulae for calculating Maximum Allowed Revenues of the PES. This schedule is intended to complement the principles set out in the main body of the Rules.

Maximum Allowed Revenues *(MAR_t)* shall be calculated at Annual Updates using the following formula:

$$MAR_t = (RETR_t + WCLC_t + WHPC_t + WHPC_t \times RETM_t + PSTC_t - NTFR_t + KREV_t) / (1-BDTA_t)$$

Where

MAR_t	*is Maximum Allowed Revenues in Relevant Year t*
$RETR_t$	*is allowed retail costs in Relevant Year t, which is set at Annual Updates*
$WCLC_t$	*is allowed working capital costs in Relevant Year t*
$WHPC_t$	*is allowed wholesale power costs in Relevant Year t*
$RETM_t$	*is the allowed Retail Margin in Relevant Year t*
$PSTC_t$	*is Pass-Through Costs in Relevant Year t*
$NTFR_t$	*is non-tariff revenues in Relevant Year t*
$KREV_t$	*is the revenue correction factor in Relevant Year t*
$BDTA_t$	*is the Bad Debt Allowance in Relevant Year t, set as a percentage (%) value*

1.1 Allowed working capital costs ($WCLC_t$) shall be calculated using the following formula:

$$WCLC = (1 / 12) * I_t * (RETR_t + WHPC_t + PSTC_t - NTFR_t)$$

Where

I_t	*is the interest rate for the Relevant Year t calculated based on EURIBOR plus S%, where S is a value to be determined by the Regulator at Annual Updates and which reflects the premium payable by the licensee for short-term loans*
$RETR_t$	*is allowed retail Costs in Relevant Year t*
$WHPC_t$	*is allowed wholesale power costs in Relevant Year t*
$PSTC_t$	*is Pass-Through Costs in Relevant Year t*

$NTFR_t$ *is non-tariff revenues in Relevant Year t*

1.2 Allowed wholesale power costs (*$WHPC_t$*) shall be calculated using the following formula:

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

Where

$WHPC_t$ *is allowed wholesale power costs in Relevant Year t*

$WHCC_t$ *is allowed wholesale capacity costs in Relevant Year t*

$WHEC_t$ *is allowed wholesale energy costs in Relevant Year t*

$WHPCa_{t-1}$ *is actual allowed wholesale power costs in Relevant Year t-1*

$WHPCf_{t-1}$ *is forecast allowed wholesale power costs as determined in Relevant Year t-1*

I_t *is the interest rate for the Relevant Year t calculated based on EURIBOR plus S%, where S is a value to be determined by the Regulator at Annual Updates and which reflects the premium payable by the licensee for short-term loans.*

1.3 Allowed wholesale energycosts (*$WHEC_t$*) shall be calculated using the following formula:

$$WHEC_t = GENC_t + IMPC_t - EXPR_t * EXPF_t + IMBC_t * IMBF_t$$

Where

$GENC_t$ *is allowed costs of purchases from domestic generation in Relevant Year t*

$IMPC_t$ *is allowed energy import costs in Relevant Year t*

$EXPR_t$ *is allowed energy export revenues in Relevant Year t*

$EXPF_t$ *is the Export Sharing Factor in Relevant Year t*

$IMBC_t$ *is allowed net imbalance costs in Relevant Year t*

$IMBF_t$ *is the Imbalance Sharing Factor in Relevant Year t*

1.4 The revenue adjustment factor (*$KREV_t$*) shall be calculated using the following formula:

$$KREV_t = (MAR_{t-1} - ARR_{t-1}) * (1 + I_t)$$

Where

ARR_{t-1}	*is the Actual Regulated Revenues in Relevant Year t-1*
MAR_{t-1}	*is Maximum Allowed Revenues as determined in Relevant Year t-1*
I_t	*is the interest rate for the Relevant Year t calculated based on EURIBOR plus S%, where S is a value to be determined by the Regulator at Annual Updates and which reflects the premium payable by the licensee for short-term loans*

SCHEDULE 2 REGULATORY ASSET BASE

1 This schedule describes the determination of the Regulatory Asset Base for the purpose of calculating allowed depreciation.

2 The Regulatory Asset Base shall be a regulatory value of the PES's used and useful fixed assets that are necessary for the provision of Standard Services. It shall distinguish between different classes of assets.

3 The Regulator shall define the opening Regulatory Asset Base (as at 1 April 2012) prior to the start of the first Relevant Year.

The Regulatory Asset Base shall be updated annually as follows:

3.1 Allowed depreciation costs during the current Relevant Year shall be subtracted from the Regulatory Asset Base, calculated on a straight-line basis using Economic Asset Lives;

3.2 Asset disposals during the current Relevant Year shall be subtracted from the Regulatory Asset Base at their disposal value;

3.3 Allowed capital expenditure during the current Relevant Year shall be added to the Regulatory Asset Base as from the date when the asset is brought into service and at the cost allowed by the Regulator at the most recent Annual Update. At Annual Updates the licensee may request that the actual rather than allowed cost of an investment be added to the Regulatory Asset Base. The Regulator shall accept the request if the licensee can clearly demonstrate that the difference between allowed and actual costs is due to factors outside of the licensee's control and that its best efforts were made to minimise cost increases. For the avoidance of doubt, the Regulator shall not make any retroactive reduction in revenues earned during the current (recently completed) Relevant Year to account for differences between the allowed and actual costs. The Regulator shall consider actual costs at future Annual Updates as a means of forecasting the cost of future investments;

3.4 If a capital project allowed by the Regulator at the most recent Annual Update is not brought into service in the current Annual Update, its allowed cost shall not be added to the Regulatory Asset Base at the next Annual Update and any revenues earned from the project in the current Relevant Year Period (relating to its inclusion in the Regulatory Asset Base and the associated determination of Maximum Allowed Revenues) shall be deducted from revenues in the following Annual Update;

3.5 Where any maintenance cost is or has previously been included in allowed operating costs it shall not be capitalised, nor shall it be included in the Regulatory Asset Base; and

3.6 The Regulatory Asset Base shall be adjusted to take into account inflation over the previous Relevant Year, using the Harmonised Indices of Consumer Prices - All Items for the Eurozone area as published by Eurostat as the relevant measure.

Economic Asset Lives for different asset classes shall be used to calculate depreciation on the Regulatory Asset Base. Economic Asset Lives shall be determined at Input Values Reviews such that they reflect the technical lives of assets, except where there is demonstrable reason why the technical life of an asset shall vary from the useful economic life of an asset.

4 Allowed capital expenditures shall be determined at Annual Updates based on submissions by the licensee to the Regulator. These submissions shall take the form of a rolling Allowed Investment Plan which shall be updated annually. The Allowed Investment Plan shall:

4.1 Comprise the capital projects reasonably required to provide Standard Services;

4.2 Identify each capital project ranked in priority order;

4.3 Show the benefit that each capital project is reasonably expected to deliver, with reference where appropriate to the meeting of any relevant standards as may be required by the PES's licence; and

4.4 Be developed using an analysis of the discounted costs and benefits of the capital project.

The allowed capital projects shall be implemented as follows:

4.5 The PES shall use all reasonable endeavours to ensure the implementation of the allowed capital projects in line with its allowed timetable;

4.6 If the PES shall be or is unable to, for reasons beyond its control, undertake a capital project in accordance with the allowed timetable, it shall notify the Regulator. The PES shall also detail the reasons for the delay and the revised timetable;

4.7 The PES may at any time apply to the Regulator to substitute an alternative capital for an allowed capital project; so long the alternative project can be shown to be expected to result in the same or greater net benefits to customers (taking account of the expected outcomes and lifetime costs). If the Regulator approves the substitution, the alternative project shall be added to the Regulatory Asset Base at the next Annual Update. For the avoidance of doubt, Maximum Allowed Revenues in the current Relevant Year shall not be adjusted; and

4.8 If the PES substitutes an alternative capital project for an alternativeproject without the prior approval of the Regulator, the Regulator shall consider whether to approve the substitution at the next Annual Update but is not bound to do so.

SCHEDULE 3 INPUT VALUES REVIEW PROCESS

1 The Regulator shall, in order to promote transparency, publish all submissions, comments, and other documentation received from the PES or other interested parties in relation to the Input Values Review on its official website within 5 working days of its receipt and the Regulator shall disclose all material information submitted to it by the PES, excluding any information that the Regulator acknowledges as being commercially confidential.

2 The Regulator shall initiate an Input Values Review from time to time. When aInput ValuesReview is initiated, it shall commence no later than 120 Business Days prior to the start of the next Relevant Year. Different timing shall apply during the Transitional Period as given in Schedule 8.

3 The timetable for the overall review process shall be submitted to PES during the initiation of the review process.

4 The Regulator shall initiate the Input Values Review by notification to the PES of:

4.1 The years for which actual, estimated forecast data is required;

4.2 The format in which the data is required to be submitted;

4.3 The timetable for submission of the PES's Proposal for revisions to Input Values.

5 The PES' Proposal shall contain the following information and address the following matters (without limitation):

5.1 Actual Regulated Revenues earned from the Regulated Retail Tariff during the current Relevant Year (using a reasonable estimate for the remaining months where necessary);

5.2 Actual costs of providing Standard Service to Regulated Customers during the current Relevant Year, in line with the definition of costs that was used for calculating Maximum Allowed Revenues;

5.3 The annual report and audited financial statements for each financial year that ended in the current Relevant Year when these are available as required by the reporting requirements contained in the PES's licence;

5.4 Actual electricity consumption during the most recent 12-month period;

5.5 Forecast electricity consumption for the forthcoming Relevant Year;

5.6 Actual number of Regulated and Unregulated Customers during the current Relevant Year;

5.7 Forecast number of Regulated and Unregulated Customers for the forthcoming Relevant Year;

5.8 Forecast Maximum Allowed Revenues, reporting each of the allowed cost components separately, for the forthcoming Relevant Year;

5.9 Actual billing determinants for the most recent 12-month period and forecast billing determinants for the forthcoming Relevant Year, based on forecast demand, energy and number of customers for each Customer Group;

5.10 The proposed Input Values for the forthcoming Relevant Year; and

5.11 Any studies commissioned by the PES relating to any of the matters to be contained in the PES's Proposal; and

5.12 Any other additional material that the Regulator reasonably considers should be included in the PES's proposal, so long as the Regulator has notified the PES a reasonable time prior to the deadline for the PES's proposal.

The PES shall, to the fullest extent possible, apply the principles set out in this Rule in preparing its Proposal. It shall disclose any areas where it has not applied these, the reason for not applying them, the reasons supporting the alternative approach, and provide an estimate of the impact of using the alternative approach.

Upon receiving the PES's Proposal, the Regulator shall determine its accuracy, relevance and reasonableness, including determining whether:

5.13 The proposed Input Values reflect the reasonable costs of providing Standard Service to Regulated Customers; and

5.14 The proposed Input Values represent a fair balance between the interests of the PES and of Regulated Customers.

The Regulator shall prepare a Provisional Evaluationwithin a reasonable time (set forth in the paragraph 3 of this Schedule) before the start of the forthcoming Relevant Year, after reviewing the submission of the PES and then consulting with the PES. The Provisional Evaluation shall set out the Regulator's proposals on the Input Values and the justification for these. The Regulator, in preparing its Provisional Evaluation, may amend, remove or replace any part of the PES's Proposal as it considers appropriate provided that it shall identify such amendments, removals or replacements and provide justification for these.

Following notification of the PES of its Provisional Evaluation, the Regulator shall launch a public consultation on its Provisional Evaluation, in accordance with the Law on the Energy Regulator.

Following completion of the public consultation within a reasonable time (set forth in the paragraph 3 of this Schedule) before the start of the forthcoming Relevant Year, the Regulator shall

make its Final Decision on Input Values. Its decision shall be consistent with this Rule.Different timing shall apply during the Transitional Period as given in Schedule 8.

The PES may dispute or appeal any decision by the Regulator in accordance with applicable legislation.

SCHEDULE 4 ANNUAL UPDATE PROCESS

6 The Annual Update process for the PES comprises three phases:

6.1 Phase 1: Determination of Import Costs.

6.2 Phase 2: Determination of retail costs.

6.3 Phase 3: Determination of Maximum Allowed Revenues and Regulated Retail Tariff.

Phase 1: Determination of Import Costs:

6.4 The PES shall submit the proposed Import Costs to be included in the calculation of Wholesale Energy Costs for the forthcoming Relevant Yearto the Regulator at least 80 Business Days before the start of the forthcoming Relevant Year. The PES shall also include in its submission all relevant documents and evidence.

6.5 The Regulator shall advise the PES at least 60 Business Days before the start of the forthcoming Relevant Year whether or not it approves the PES's proposed Import Costs.

6.6 If the Regulator does not approve the proposed Import Costs, it shall provide an alternative value for Import Costs to be included in the calculation of Wholesale Energy Costs for the forthcoming Regulatory Year. Reasons and evidence for the alternative value shall be provided in accordance with this Rule.

Phase 2: Determination of retail costs

6.7 The PES shall submit the proposed retail costs to be included in the calculation of Maximum Allowed Revenues for the forthcoming Relevant Yearto the Regulator at least 50 Business Days before the start of the forthcoming Relevant Year. The PES shall also include in its submission all relevant documents and evidence.

6.8 The Regulator shall advise the PES at least 40 Business Days before the start of the forthcoming Relevant Year whether or not it approves the PES's proposed retail costs.

6.9 If the Regulator does not approve the proposed retail costs, it shall provide determine an alternative value for retail costs to be included in the calculation of Maximum Allowed Revenues for the forthcoming Regulatory Year. Reasons and evidence for the alternative value shall be provided in accordance with this Rule.

Phase 3: Determination of Maximum Allowed Revenues and Regulated Retail Tariff

6.10 The PES shall submit the proposed new Maximum Allowed Revenues and associated adjustment to the Regulated Retail Tariff for the forthcoming Relevant Yearto the Regulator at least 20 Business Days before the start of the forthcoming Relevant

Year. The PES shall also include in its submission all relevant documents and evidence including the values relating to all the components of the Annual Update formulae given in Schedule 1 and any other items notified by the Regulator.

6.11 The Regulator may reasonably require the PES to further explain its method of calculating the proposed Maximum Allowed Revenues and Regulated Retail Tariff, and if so required, the PES shall promptly provide to the Regulator any further information or explanations sought.

6.12 The Regulator shall advise the PES before the start of the forthcoming Relevant Year whether or not it approves the PES's calculation of the proposed Maximum Allowed Revenues and Regulated Retail Tariff.

6.13 If the Regulator approves the proposed Maximum Allowed Revenues and Regulated Retail Tariff, they shall become the Maximum Allowed Revenues and Regulated Retail Tariff for the forthcoming Relevant Year.

6.14 If the Regulator does not approve the proposed Maximum Allowed Revenues and Regulated Retail Tariff, it shall provide reasons and evidence why, in accordance with this Rule. The Regulated Retail Tariff shall not be adjusted until the Regulator approves a proposal or provides its own calculation of Maximum Allowed Revenues and associated adjustment to the Regulated Retail Tariff.

6.15 Any difference in revenues that arises from incorrect calculations, misreporting of Actual Regulated Revenue, or disputes relating to Annual Updates shall be recovered in subsequent Relevant Years.

6.16 The PES may dispute or appeal any decision by the Regulator in accordance with applicable legislation.

SCHEDULE 5 EXTRAORDINARY REVIEW PROCESS

7 If an Extraordinary Event has occurred, the PES may request an Extraordinary Review.

An Extraordinary Review cannot be launched within three months of anInput Values Review or the completion of a previous Extraordinary Review.

An Extraordinary Review may relate to more than one Extraordinary Event, in which case this schedule addresses the cumulative financial effect of those events.

Within 20 Business Days of the PES requesting an Extraordinary Review, it shall submit to the Regulator a Statement of Financial Impact that includes the following matters:

7.1 A description of the Extraordinary Event that is the reason for requesting the Extraordinary Review;

7.2 A summary of the impact of the Extraordinary Event on the PES's business;

7.3 An estimate of the change in the PES's costs of providing Standard Service to Regulated Customers in each year from the date that the Extraordinary Event occurred (or began) to the end of the current Relevant Year;

7.4 An estimate of the change in forecast revenues from the Regulated Retail Tariff resulting from the Extraordinary Event, in each year from the date that the Extraordinary Event occurred (or began) to the end of the current Relevant Year;

7.5 A calculation of the financial impact on the PES of the Extraordinary Event, calculated as the sum of the change in the PES's costs and revenues above. Revenues shall be treated as positive numbers and costs treated as negative numbers; and

7.6 A calculation of whether the financial impact is expected to be greater than the Materiality Threshold multiplied by the revenues received by the PES (in the year before the Extraordinary Event) multiplied by the percentage of the Relevant Year remaining between the date of the Extraordinary Event and the end of the Relevant Year.

If the PES determines that the financial impact is greater than the Materiality Threshold, it shall include in its Statement of Financial Impact a proposed Extraordinary Adjustment to Maximum Allowed Revenues and Regulated Retail Tariff. The proposed Extraordinary Adjustment shall meet the following conditions:

7.7 The Extraordinary Adjustment shall change Maximum Allowed Revenues and the Regulated Retail Tariff in such a manner that the forecast change is equal to the financial impact of the Extraordinary Event;

7.8 The new Regulated Retail Tariff is consistent with the Tariff Structure Methodology and, where possible, is consistent with the tariff structure in place before the Extraordinary Event occurred; and

7.9 The timing and structure of the Extraordinary Adjustment shall, where possible, reduce the tariff shock to any Customer Group (for example by smoothing the effect of the Extraordinary Adjustment over a number of years).

The Regulator may also launch an Extraordinary Review without the request of the PES. If so, the Regulator shall notify the PES and include a description of the Extraordinary Event and a summary its expected impact. The PES shall then prepare a Statement of Financial Impact as per the process described above.

The Regulator may reasonably require the PES to further explain its method of calculating the Statement of Financial Impact and Extraordinary Adjustment, and if so required, the PES shall promptly provide to the Regulator any further information or explanations sought.

The Regulator shall advise the PES within 20 Business Days of receiving the Statement of Financial Impact whether or not it approves the PES's proposed Extraordinary Adjustment. The Regulator shall approve the proposal if it:

7.10 Meets the conditions provided above;

7.11 Is calculated correctly; and

7.12 Takes into account all material information reasonably available at the time.

If the Regulator approves the proposed Extraordinary Adjustment, the new Regulated Retail Tariff shall become effective immediately.

If the Regulator does not approve the proposed Extraordinary Adjustment, it shall provide reasons and evidence why, in accordance with this Rule. The Regulated Retail Tariff shall not be adjusted until the Regulator approves a proposal.

The PES may dispute or appeal any decision by the Regulator in accordance with applicable legislation.

SCHEDULE 6 EXTRAORDINARY EVENTS

1 An Extraordinary Event shall be the occurrence of any one of the following:

1.1 Any change in the tax rate applicable to the PES that shall not be fully recovered through Annual Updates;

1.2 Any force majeure events as defined in Schedule 7;

1.3 Any other event, which meets all of the following conditions:

(i) Was not reasonably under the control of the PES;

(ii)

(iii) Shall not be fully recovered through Annual Updates; and

(iv) Shall significantly change the revenues and/or costs of the PES over any 12 month period, such that it seems reasonable that the Materiality Threshold (described in Schedule 5) may be breached.

2 The occurrence of an Extraordinary Event is sufficient to trigger an Extraordinary Review, however as described in Schedule 5, the event must still breach the Materiality Threshold before Maximum Allowed Revenues and Regulated Retail Tariff shall be adjusted.

SCHEDULE 7 FORCE MAJEURE EVENTS

8 A force majeure event shall be an exceptional event or circumstance which is all of the following:

8.1 Is beyond the PES's control;

8.2 The PES could not reasonably have provided against;

8.3 Having arisen the PES could not reasonably have avoided or overcome; and

8.4 Is not substantially attributable to the PES.

A force majeure event may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as the conditions above are satisfied:

8.5 War, hostilities (whether war be declared or not), invasion, act of foreign enemies;

8.6 Rebellion, terrorism, sabotage by persons other than the PES's employees, contractors or subcontractors, revolution, insurrection, military or usurped power, or civil war;

8.7 Riot, commotion, disorder, strike or lockout by persons other than the party's employees, contractors or subcontractors;

8.8 Munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the party's use of such munitions, explosives, radiation or radio-activity; and

8.9 Natural catastrophes such as earthquakes or flooding.

SCHEDULE 8 TRANSITIONAL PROVISIONS

9 The Transitional Period is from 1 April 2012 until 31 March 2015.

The allowed wholesale energy costs shall be calculated as follows during the Transitional Period:

9.1 The PES's total wholesale energy costs should be allocated between Regulated Customers and Unregulated Customers equally based on consumption, except where there is an obligation on an entity that is separate to the PES to import energy for the purposes of supplying non-eligible customers, as per the Law on Electricity. In this case the costs of importing by the entity holding the obligation, as charged to the PES, shall be allocated fully to non-eligible customers.

In accordance with the Law on the Energy Regulator, cross subsidisation between Customer Categories shall be allowed during the Transitional Period as follows:

9.2 Where substantial historic price distortions exist, the Regulated Retail Tariff may include cross subsidisation between Customer Groups;

9.3 Cross subsidies shall be rebalanced gradually until 31 December 2014, from which point onwards there shall be no cross subsidies; and

9.4 For the purposes of rebalancing during the Transitional Period, the structure of the Regulated Retail Tariff may change within Relevant Years. Changes shall be defined by the Regulator at Input Values Reviews in a way that smooths rebalancing. Changes to the tariff structure shall be implemented at the same time as Annual Updates.

10 The following timing shall apply for the first Values Review and Annual Update:

10.1 The Regulator shall initiate the Values Review no later than 60 days prior to the start of the first Relevant Year of the Transition Period.

10.2 The Regulator shall prepare a Provisional Evaluation no later than 45 days prior to the start of the first Relevant Year of the Transition Period.

10.3 The Regulator shall make its final decision no later than 30 days prior to the start of the first Relevant Year of the Transition Period.

10.4 The PES shall submit its proposed retail costs, Maximum Allowed Revenues and Regulated Retail Tariff simultaneously no later than 25 days prior to the start of the first Relevant Year of the Transition Period.

The Regulator shall make its Final Decision prior to the start of the first Relevant Year of the Transition Period.