

## **APPENDIX 3A**

**DETAILED TARIFF CALCULATIONS FOR YEAR 2015**  
**FOR THE SALE OF ELECTRICITY TO THE MAIN GRID**  
**IN TANZANIA**  
**UNDER**  
**STANDARDIZED SMALL POWER PURCHASE AGREEMENTS**

**JANUARY 2015**

This is one of five documents that guide the Small Power Purchase Scheme in Tanzania for the Main Grid.

1. Standardised Small Power Purchase Agreement (SPPA) for the Main Grid
2. Standardised Tariff Calculation Methodology (STM)
3. Detailed Tariff Calculations under the SPPA for year 2015 [\[this document\]](#)
4. Electricity (Small Power Development) Rules, and
5. Electricity (Small Power Development) Guidelines.

**DETAILED TARIFF CALCULATIONS FOR YEAR 2015**

**FOR THE SALE OF ELECTRICITY TO THE MAIN GRID**

**IN TANZANIA**

**UNDER**

**STANDARDIZED SMALL POWER PURCHASE AGREEMENTS**

Mathematical symbols have the same meaning as defined in the approved “Standardised Tariff Methodology”.

**1. Calculation of LRMC for the Main Grid**

**Special Note:**

The Ministry of Energy and Minerals has submitted the "Power System Master Plan Study, 2012 Update", which contains an updated calculation of Long-run Marginal Costs, using a different approach, which is acceptable. Therefore, steps 1, 2 and 3 given in the approved Standardised Tariff Methodology were not conducted in this calculation. Instead, the LRMC as calculated in the 2012 PSMP Updated was used.

<b>Small Power Purchase Tariff Calculation for the Main Grid for year 2015</b>			
<b>A: Calculation of LRMC at the Generation Level</b>	<b>Unit</b>	<b>Value</b>	<b>Basis/Source</b>
Generation Investment	UScts/kWh	5.29	Economic
Energy at Generation	UScts/kWh	3.81	Economic
<b>Total Generation Busbar</b>	<b>UScts/kWh</b>	<b>9.10</b>	<b>PSMP-2012</b>
<b>B: Converting LRMC from Economic to Financial Costs</b>			
Average Taxes for Generation Investments	Estimate	30%	Excl VAT if any
Average Taxes on Fuel	Estimate	19%	Excl VAT if any
<b>LRMC</b>			
Generation Investments	UScts/kWh	6.87	Fin /Calculated
Energy at Generation	UScts/kWh	4.54	Fin /Calculated
<b>Total Generation Busbar</b>	<b>UScts/kWh</b>	<b>11.41</b>	<b>Fin /Calculated</b>
Financial LRMC at Generation Level	UScts/kWh	11.41	
Average selling price of USD from Sept 2013 to Aug 2014	TZS/USD	1,632.20	
<b>Generation LRMC</b>	<b>TZS/kWh</b>	<b>186.24</b>	

Please see Annex 1 for the average spot selling rate for USD for one year until the end of August 2013, from which the average selling rate above was calculated.

Therefore, financial LRMC at generation level,  $CA_G = 186.24 \text{ TZS/kWh}$

## 2. Adjustment to Reflect Costs of the Existing System

<b>C: Calculation of Costs of the Existing Generation System</b>			<b>Source</b>
Total Forecast Thermal Gen to TANESCO grid	GWh	<b>4,364.66</b>	2013 Tariff Model
2015 Forecast Cost of Thermal Generation on Grid			
Own Capacity Charges	million TZS	58,564.12	2013 Tariff Model
IPP Capacity + Energy Charges	million TZS	224,973.16	2013 Tariff Model
EPP Capacity + Energy Charges	million TZS	4,276.80	2013 Tariff Model
Fuel and Variable O&M for TANESCO's Plants	million TZS	269,368.78	2013 Tariff Model
<b>Total Cost of Thermal Generation</b>	million TZS	<b>557,182.86</b>	Calculated
2015 Forecast Average Thermal Generation Cost	TZS/kWh	127.66	
Exchange Rate used in 2013 Tariff Model	TZS/USD	1,600.00	
<b>Corrected for the mismatch btn Exchange Rates</b>	TZS/kWh	<b>130.23</b>	

As shown above,

$$(C+E)_{IPP} = 224,973.16 \text{ million TZS}$$

$$(C+E)_{EPP} = 4,276.80 \text{ million TZS}$$

$$C_{TANESCO} = 58,564.12 \text{ million TZS}$$

$$F_{TANESCO} = 269,368.78 \text{ million TZS}$$

$$E_T = 4,364.66 \text{ GWh}$$

$$\text{Average thermal generation costs of 2015 } C_T = \frac{C_{IPP} + C_{EPP} + C_{TANESCO} + F}{E_T} \text{ TZS/kWh}$$

$$= 127.66 \text{ TZS/kWh}$$

The Tariff Model applied a forecast exchange rate of 1,600.00 TZS/USD. Therefore, the average thermal cost calculated above is corrected to the average exchange rate until the end of August 2014.

$$\text{Average thermal generation cost 2015 } C_T \text{ corrected} = 130.23 \text{ TZS/kWh}$$

<b>D: Calculation of Avoided Cost of Generation</b>			
LRMC	Avoided Generation Cost	TZS/kWh	186.24
2015	Average Thermal Generation Cost	TZS/kWh	127.66
	Average Generation Cost	TZS/kWh	158.24

### **3. Adjustment to Reflect Avoided Transmission Losses**

<b>E: Adjustment for Avoided Transmission Losses</b>		
Energy loss on the HV Transmission Network		5.2%
Adjusted Avoided Cost at MV Distribution Level	TZS/kWh	<b>166.92</b>

<b>F: Three Year Rolling Average</b>		
Calculated SPP Tariff for year 2013	TZS/kWh	201.43
Calculated SPP Tariff for year 2014	TZS/kWh	197.31
Calculated SPP Tariff for year 2015	TZS/kWh	166.92
<b>Standardised SPP Tariff for year 2015</b>	<b>TZS/kWh</b>	<b>188.55</b>

### **4. Adjustment to Reflect Seasonality**

<b>G: Adjustment to Reflect Seasonality</b>		
Seasonality Adjustment		
Dry Season (August - November)		120%
Wet Season (Jan - Jul and December)		90%
<b>Standardised Small Power Purchase Tariff</b>	<b>TZS/kWh</b>	<b>188.55</b>
Dry Season (August - November)	TZS/kWh	<b>226.26</b>
Wet Season (Jan - Jul and December)	TZS/kWh	<b>169.70</b>

Tariff paid to all SPPs operating during the year will be the above standardised tariff, subject to the floor price and the cap defined in the next section.

### **5. Floor Price and the Price Cap**

The Floor Price for all SPPAs executed in year 2015 shall be the above tariffs. If the above tariffs are less than the floor prices stated in any SPPA, the floor price stated in such SPPA shall be paid.

The Price Cap shall be calculated as follows: The five-year moving average of the change in Tanzania Consumer Price Index (CPI), for the adjustment of the price cap of SPPs is [10.19%]. The price cap stated in any SPPA signed in a previous year (already adjusted to account for any price cap adjustments announced in subsequent years prior to 2014) remaining valid as of 1<sup>st</sup> January 2015 shall be further increased by [10.19%].

## 6. Annual Tariff Announcement

Press Announcement: Tariffs to Small Power Producers on the Main Grid of Tanzania		2015	
Prices payable to Small Power Producers operating under the standardized Small Power Purchase Agreements (SPPAs) with TANESCO shall be as follows:			
<b>Standardized SPP Tariff for year 2015</b>	<b>188.55</b>	TZS/kWh	
Dry Season (August to November)	<b>226.26</b>	TZS/kWh	
Wet Season (January to July, and December)	<b>169.70</b>	TZS/kWh	
For new SPPAs signed during the year,			
-	The floor price will be the tariffs stated above.		
-	The price cap will be 1.5 times the tariffs stated above, subject to adjustment for inflation on the basis of the five-year moving average of Tanzania Consumer Price Index.		
Accordingly, for SPPAs that remain valid as of 1 <sup>st</sup> January, the price cap shall be adjusted by <b>[10.19%]</b> .			

**Annex 1: Average Selling Rate for USD for one year until 31 August 2014**

<b>Summary of average rate per Month</b>	
	<b>Spot Selling</b>
August'14	1,665.48
July'14	1,663.70
June'14	1,658.94
May'14	1,646.72
April'14	1,637.10
March'14	1,634.01
February'14	1,625.63
January '14	1,609.77
December'13	1,603.28
November'13	1,612.38
October'13	1,611.79
September'13	1,617.65
<b>Total</b>	<b>19,586.45</b>
<b>Average</b>	<b>1,632.20</b>