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VRA 2022 Tariff Proposal Stakeholder Engagement - May 11, 2022



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Presentation Outline



- Key Performance Improvement Projects



- Strategic Operational Matters



- Tariff Proposal



- Reactive Power Compensation

Key Performance Improvement Projects



Sea Water Reverse Osmosis Project at TTPS, Aboadze - Project is to ensure reliable water supply for combined cycle operations at TTPS. It involves engineering, procurement, installation and commissioning of a 3000m³/day Sea Water Reverse Osmosis (SWRO) plant. Project Cost is **US\$10.7 million**. **Commissioning is expected to be completed in Q2 2022.**



Aboadze Gas Interconnection Upgrade - Project was to upgrade the gas metering facility at Aboadze which serves all the VRA Thermal Plants at Aboadze and ensure accurate accounting for natural gas consumed. Project Cost was **GHS 7.38 million**. **Project has been completed.**



Power Connection to VRA Gas Regulating and Metering Facility in Tema – Project is to improve power supply reliability to the Tema R&M. Project Cost is **GHS 11.68 million**. **Project is ongoing.**

Key Performance Improvement Projects



Weather Protection enclosure for T1 Plant - Project is to seal off the generator from adverse weather conditions, prevent water leakages into the generator (during rains) and avoid damages which would impact on the availability of the combined cycle power plant. Project Cost was **GHS 5.86 million**. **Project has been completed**



KTPS UNIT 2 TYPE C Maintenance - Mandatory major maintenance to improve the life cycle of the turbine. Project Cost was **GHS 12.29 million**. **Project has been completed**

Expansion Projects

- **Rehabilitation, Modernization and Life Extension Project:**
Rehabilitation of T1 Power Plant to improve its efficiency and reliability (operational performance) at cost of US\$60 Million
- **T3 Repowering Project:** Rehabilitation T3 Power Plant at a cost of US\$100 Million
- **KTPP Expansion Project:** Conversion of existing 220 MW simple cycle KTPS power plant into a 315 MW combined cycle power plant at a cost US\$ 250 Million

Strategic Operational Matters

T1 Life extension study showed that the plant has attained less than 50% asset utilization despite being over 20 years old. Major components of the plant have also been replaced over the years. **The Plant has operated on a Take and Pay basis throughout the years**, and thus capital recovery has not been attained. PURC is therefore requested to maintain the TAPCO Capacity charge to enable the nation recoup the investment capital and further improve the reliability of the plant.

AMERI relocation is expected to be completed in 2022. Grid Impact Studies have confirmed the plant is key for national power stability. Commensurate dispatch of AMERI must be therefore be incorporated in the tariff determination to keep the plant operational and also settle outstanding and relocation infrastructure costs.

Tariff proposal on AMERI relocation has already been submitted to the PURC. VRA requests PURC to approved a tariff of **US\$0.09048/kWh** to be charged to the Electricity Company of Ghana (ECG) for power supply from AMERI

TARIFF PROPOSAL

KEY ASSUMPTIONS

	2022
Gas Prices	US\$/MMBtu
WACOG	6.08
Exchange Rate (GHS/USD)	7.52

Projected VRA Supply - 2022

GENERATION	GWh
Total VRA Hydro	6,500
Total VRA Non-Hydro	5,525
Total VRA Supply	12,025

Projected VRA Supply - 2022

Plant	GWh
Akosombo	5,513
Kpong	987
Total Hydro	6,500
T1	2,003
T2	2,299
TT1PP	348
KTPP	375
TT2PP	112
AMERI	354
VRA Solar	35
Total Thermal	5,525
TOTAL	12,025

Projected Customer Demand - 2022

REGULATED	GWh
ECG	4,879
NEDCo	1,927
EPC	239
TOTAL	7,045

TARIFF FOR DISCOs

Plant	GHp/kWh	GWh	%
Akosombo	19.5774	3,536.34	50.19%
Kpong	35.5889	633.00	8.98%
TAPCo	60.2050	2,002.88	28.43%
TT1PP	69.2243	347.52	4.93%
KTPP	70.0544	158.66	2.25%
AMERI	68.0410	354.00	5.02%
Navrongo	98.1053	3.00	0.04%
Lawra	67.6800	9.95	0.14%
		7,045.35	100.00%

Weighted BGC = GHp38.6879/kWh

TARIFF FOR DISCOs

The respective tariff requests are as follows;

ECG – GHp 33.6643/kWh

NEDCO – GHp 49.5207/kWh

EPCL – GHp 53.9037/kWh

REACTIVE POWER COMPENSATION

REACTIVE POWER COMPENSATION

Basic Reactive Power Price

$$\text{BRePoP (GHS/kVars/month)} = \text{CapCharge} \times \text{Pf}^* / (1 - \text{Pf}^{*2})^{1/2}$$

where:

BRePoP - Basic Reactive Power Price (GHS/kVars/month)

CapCharge – Capacity Charge for Power Plant (in GHS/kW/month) as determined by PURC

Pf* – Name Plate Power Factor

Source: PURC's Electricity Transmission Ancillary Services Pricing Policy and Guidelines

Justification for Tariff Increase

To recover the cost of:

- Power supply to the DISCOs and ensure the sustainability of VRA.
- Ancillary services provided by VRA.
- Investments in Improvement and Expansion Projects
- Ensuring grid stability and uninterrupted power supply in the nation.

Conclusion

Tariff Proposal seeks to request the PURC to increase the VRA BGC from GHp 28.2273/kWh to **GHp 38.6879/kWh**, representing **37%** increase, to enable VRA recover the cost of power generation to the DISCOs.

The respective tariff requests are as follows;

- ECG – GHp 33.6643/kWh
- NEDCO – GHp 49.5207/kWh
- EPCL – GHp 53.9037/kWh

Conclusion

The Tariff Proposal also seeks to request PURC to consider the following prices for reactive power compensation:

- Akosombo - GHS 426.18/kVar/month
- Kpong - GHS 475.54/kVar/month



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Thank you



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