

## **1.0 SUPPLY IMPROVEMENT TO BEREKUM**

### **Background**

Berekum was connected to the national grid in 1992. The load on the Sunyani - Berekum transmission line has increased to approximately 7.5MW and keeps growing at an average rate of 9% per annum. The town is 43.5km from Sunyani and served from the two (2) 161/34.5/11.5kV, power transformers at the Sunyani Bulk Supply Point via a standard 34.5kV line.

Apart from serving the local demand at Berekum, the line also provides supply to Dormaa Ahenkro and Sampa, which are 44km and 73.5km respectively from Berekum, through 34.5kV lines. The settlements between Berekum and these towns are also supplied using 34.5/415kV transformers. A 5MVA, 34.5/11kV transformer supplies power to Berekum and its immediate environs.

The Sunyani-Berekum line was strung with a 120sqmm ACSR conductor on self-supporting steel lattice structures. However, the line was initially not equipped with vibration dampers causing the line to break frequently at the points the conductor is clamped to the insulator strings. Spare dead-end pre-forms were not readily available and anytime the line snapped, steel pre-forms were used to repair the line. This practice has introduced several loose joints on the line thus increasing technical losses and also resulting in poor voltages. At peak, the difference in voltage between Sunyani and Berekum can go to as high as 25%. This subsequently affects the voltages at Dormaa Ahenkro, Sampa and surrounding towns.

As part of the potential solutions to improving the quality of supply to Berekum, it is proposed to construct a 161kV transmission line from Sunyani to Berekum. This would require the construction of a 161/34.5kV substation at Berekum and the expansion of the Sunyani Substation for the termination of the new 161kV line.

With the implementation of this project, the transformers at Sunyani will be relieved of the power transmitted to Berekum and delay any future increase in transformation capacity at Sunyani.

### **Project Objective**

The objective of the project is to improve the quality of supply to Berekum, Dormaa Ahenkro, Sampa and all localities that are served from the Berekum 34.5kV substation. It has been determined that the poor nature of the power supply to this region is due to the severe voltage drops encountered along the 34.5kV line. Voltage at the receiving end has been as low as 26kV with sending end of 34kV. In order to achieve this objective GRIDCo intends to construct a 161kV transmission line from Sunyani to Berekum and also construct a 161/34.5kV substation at Berekum. The substation would be initially configured as a single bus arrangement to be converted, in the future, into a ring bus.

## **Scope of Works**

The scope of works is as follows:

- Design and construction of approximately 40km of 161kV transmission line on steel lattice structures. The line would be equipped with OPGW.
- Design and construction of a 161/34.5kV substation configured as single busbar scheme, with 3Nos. bays for a line and 2Nos. Power Transformers. This will involve the design, supply and installation of balance of plant including but not limited to 161kV circuit breakers, 161kV disconnect switches, 161kV current and voltage transformers, 161kV surge arrestors, 34.5kV feeder equipment complete, protection and control system, AC/DC station auxiliary, metering equipment, buswork, associated civil work, etc.
- Supply and installation of 1Nos. 161/34.5kV, 25/33MVA Power Transformers.
- Supply and installation of 1Nos. 250kVA, 34.5/0.433-0.25kV Grounding/Auxiliary transformers.
- Expansion of existing Sunyani substation to install line terminal equipment for the new Sunyani outgoing line to Berekum.
- Provision of communication and SCADA system at Berekum substation and upgrade of the SCADA and Communication systems at Sunyani substation.
- All civil works associated with the above works including but not limited to survey, substation site clearing, leveling, filling and compaction, control building, drainage, fencing with gates, equipment plinths, tower foundations, etc.

## **Duration for Contract Implementation**

The duration for contract implementation shall be 15 months.

## **Project Status**

Only project identification has been carried out.

Preliminary designs, surveys and line route acquisition, environmental impact assessment and the bidding process activities are yet to commence.

## **Funding**

No funding has been secured for this project.