

**NOTE ON  
HOW TAIL END SUPPORT TO GRID LOAD ENABLES 24X365 SUPPLY  
OF BIOELECTRICITY TO VILLAGES**

Tail End Support to Grid Load is possible in Decentralised Distributed Generation which is essentially a Bottom Up Generation. In the DDG BUG small loads are generated at 415 volts & stepped up to 11kv & fed into the 11kv grid & transmitted /distributed to short distances only.

In conventional generation, a large load of electricity is generated at 11kv & stepped up to 440 or 220 kv & fed into the 440 or 220 kv grid. This load is transmitted to long distances, & stepped down to 110kv, then to 66kv, then to 11 kv & then to the 440 v & 220 v rural feeder/grid. This is Top Down Generation. When the 440 or 220 kv line is opened for load shedding / maintenance, there will be no power in the 110 kv, 66 kv, 11kv & the 440 v /220v lines. When the 110 kv line is opened, there will be no power in the 66 kv, 11 kv & the 440 v & 220v. Likewise, when the 66 kv or 11 kv line is opened there will be no power in the lower lines, resulting in blackouts in the villages which are serviced by 440 v & 220 v lines.

As there is a deficit of base load generation, the 11 kv & above lines are opened regularly for load shedding. These lines are also opened regularly for maintenance & unscheduled break downs. This results in frequent & long duration power blackouts in the 440 v & 220 v rural lines & consequentially the villages. Urban area 440 v & 220 v lines do suffer, but not much as the villages, due to population pressure. The industries & manufacturing units in urban areas suffer due to these outages.

In the DDG BUG model, during 11 kv & above outages, the bioelectricity generated, by a Load Shift Mechanism, can be shifted to the rural 440 v & 220 v grid. This enables / ensures power to the villages even when the ESCOM power is not available. Bioelectricity can be generated 24x365 enabling round the clock power to the villages.

This advantage is not available with wind energy as it is essentially a Top Down Generation. This advantage may be available with solar energy, but the capital & the environmental costs are very high.

In the BERI Project, this model of DDG BUG, to give Tail End Support to BESCOM load, through the Load Shift Mechanism, has been developed.

In a developing economy, even with increase in the base load capacities, there will always be power shortages & the suffering will be felt in the rural areas. The ESCOMS will sell the power to commercial & industrial users at higher tariffs. This is good business practise for the ESCOMS, for breaking even. In 64 years of post independence, the country is unable to meet rural electricity requirements satisfactorily, primarily due to generation deficits, & the situation is not likely to improve, in developing economies, even in the next 50 years.

Tail End Support by DDG BUG is the only option now available for meeting rural electricity demands.

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