

**BANGLADESH RURAL ELECTRIFICATION BOARD
DHAKA, BANGLADESH**

PBS INSTRUCTION 300-49/100-19

SUBJECT : LOAD MANAGEMENT

Date of Approval : 30-01-1986

Date of Last Revision : 19-02-2020

PURPOSE :

In an electrical system demand of various consumers occur at different time, at different monsoon, As a result load is not constant throughout the day or throughout the year. In the PBVS's all lighting loads come on at the evening and decrease at late night; irrigation load come on seasonal basis, small industrial loads normally come at day time and evening hours specially at Hats and Bazars. To decrease the load variation i.e. to run the electrical system more efficiently load management is necessary. To outline efforts which must be made in order to:

- A. To made maximum productive use of the electrical capacity of the PBS's and the BPDB's Distribution, Transmission & Generating System; and
- B. Reduce the need for load shedding to the maximum degree possible: overloading of power supply facilities and thereby improving operational efficiency that would reduce future investment and
- C. Reduce system technical losses which are partially a function of the square of the current; and

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- D. In effect, allocate scarce electrical capacity to consumers in accordance with their real need, avoid excessive and un-necessary peaks in the systems demand caused by loads which might easily run during off-peak hour.,

GENERAL :

It is not economically feasible to make the investments necessary to supply sufficient capacity in electric plant to serve 100% of the electric loads in Bangladesh at the same time, and for the volume of electric energy used during other times to be only a fraction of the PBS's ability to supply electric capacity. If investments were made to carry the entire load simultaneously, the tariffs necessary to support the investment would made the cost of electricity prohibitive for most uses.

In the more developed nations, the natural diversity of millions of loads tends to provide a base of electric consumption to power automatic refrigerators, water pumps, water heaters, air conditioners and /or electric heat for homes & business. These appliances cycle on & off automatically 24 hours per day 7 days a week and thus provides a base load with a very high annual load Factor(high utilization of the investment made to provide electric capacity). However in the village of rural Bangladesh the typical domestic consumers now uses electric service primarily for lighting, and mostly between the hours from 6:00 PM to 9.00 PM. Electric service to these Domestic consumers has very little value during other hours of each day. Thus the Load Factor of these consumers is very low, the utilization of investment made to serve these consumers is very low. However, the return on the investment to serve these consumer class is a social value and not a Cash Value. Whenever there is any shortage of electrical capacity, the PBS systems must be hold capacity primarily for Domestic and all commercial consumers from 6:00 PM until 10:00 PM daily.

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Domestic consumers are consuming approximately 29% -30% of total PBS consumption.

In rural hats and bazaars, commercial shops operate from 9.00 AM to 8.00 PM. Commercial consumers are using approximately from 8% to 9% of total PBS consumption and it has got upward trend. Though it very little, still if these shops are closed down by 6 PM, substantial amount of load would be reduced.

The next most important loads to the PBS's are the General Power Consumers who use large quantities of Power and Energy for operations such as Rice Mills, Jute Mills, Weaving & Spinning Mills, Tea plantations and Cold Storage Plant. These loads normally operate during the daylight hours, with a reduced demand for Power after sunset. Capacity as required must be reserved for these plants to process the products of Bangladesh which creates jobs for the people of Bangladesh

The third most important category of loads would be electric irrigation pumps which are seasonal load. These increase the productivity of the land and thus provide additional income for the farm owners and laborers, and foreign exchange when the agricultural products are exported. Irrigation is best done at night, after the domestic peak load time, and after the ground has cooled from the days sun. During the hours from 10:00 PM until 8:00 AM the electrical capacity can be largely reserved for irrigation loads, Electric capacity is available at lower cost during these hours, as it is not required for other loads. By following this arrangement there should be adequate electrical capacity for all requirements without the need for excessive load-shedding and without the need for excessive investment to build new capacity unless the new capacity can operate at a high load factor.

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POLICY:

It has always been the implied policy for capacity to be reserved largely for Domestic, small commercial and street lighting consumers during the systems peak load hours. This policy has been implied by restrictions in the contracts for service to Irrigation and General power consumer rather than in a PBS policy Instruction, it is now necessary to place emphasis and priority to ensure that these restrictions are enforced. In addition the following policy is established:

A. General Power Consumers:

Whose operation cannot be limited to the hours from 6:00 AM to 6:00PM, when required for the PBS to maintain an annual Load Factor of at least 55%, the following shall apply:

1. Annual Demand Charge:

Pay an annual demand charge which reflects the full cost of reserving generating, transmission & distribution capacity exclusively for their use, or

2. Time of Day Tariff:

At the option of the PBS, and /or as directed by BREB, have a Time of Day meter installed and pay for service under a rate schedule established to recover the cost of reserving capacity in generation, transmission and distribution exclusively for their use during the Peak Load Hours. Some PBSs have already installed TOU Meters.

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3. Time Switch :

During dry season, irrigation pump run by electricity should remain off during evening peak hour. The pumps may be fed through time switch. To implement this distribution line should be built with time switch.

4. For industrial plants which operate a full 3 shifts per day, paragraphs IIIA 1 & 2 above shall be applicable.

B. Irrigation Consumers:

Whose operation cannot be limited to the hours from 10 PM until 8:00 AM each day, shall be required to:

1. Pay an annual capacity charge which reflects the full cost of reserving generation, transmission & distribution capacity exclusively for their use, except.

At the option of the PBS, and/or as directed by BREB, have a Time of Day meter installed and pay for service under a rate schedule established to recover the cost of reserving capacity in generation, transmission and distribution exclusively for their use during the Peak Load Hours.

2. For so long as the Peak demand on the PBS substation is from 8:00 AM to 6:00 PM does not equal the Peak Demand during the hours from 6:00 PM to 10PM, Irrigation Consumers may be allowed to operate at any time except from 6:00 PM to 10:00 PM without being billed for the Annual Capacity Charge in III B1 above, and

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