

Article # 5

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Demand Side Management. Who benefits?

Demand Side Management (DSM) is a catch word in India, with lobbyists claiming that it is highly successful overseas, particularly in the USA. However, DSM has come to mean different things to different people, and those talking about DSM today often do not even know the original meaning of DSM coined by Gilling (EPRI) in 1972:

“The planning and implementation of those utility activities designed to influence customer use of electricity in ways that will produce desired changes in the utility’s load shape.”

In other words, one aspect of DSM is summarized by the catch phrase, “cut the peaks and fill up the valleys” of the daily demand curve. Another special form of DSM, the reduction of reactive power, is done by almost every power utility, good or bad, because high reactive power prohibits an utility from full utilization of installed capacity.

Furthermore, the original reason for DSM has faded away as well:

“Any profitable utility efficient in the generation and distribution of power is most likely better off investing in changing electrical load patterns instead of spending money on improving an already efficient operation.”

To understand why the traditional implementation of DSM may be inappropriate for the Indian context, consider the following table, which compares the vital parameters of a typical European utility with most (but not all) Indian State Electricity Boards (SEB):

Performance	Typical European Utility	SEB India
Station power use	6% - 8%	6% - 12%
Frequency fluctuations	0.1 Hz	2 Hz
Voltage fluctuations	5% - 10%	10% - 40%
Statistical unavailability	0.1 hours per year	About 200-800 hours per year
Thermal efficiency	41%	37% (because of high ash coal)
Technical transmission and distribution losses	7% - 9% from 440kV to 200V (entire national grid)	Estimated 30% from 440 kV to 220V
Commercial losses	<1%	>20%
Financial standing	Profitable	Technically bankrupt

The rather dramatic difference in utility performance may convince even the staunchest DSM supporters that there is no room for DSM until vital performance parameters of SEB’s improve.

On the other hand, the hemorrhaging financial condition of SEB’s can be only checked if the electricity consumption of non-paying or below-cost-paying customers is curtailed.

Before we discuss what curtailing means in the Indian context let us identify “non-paying” and “below-cost-paying” customers: The most prominent “non-paying” customers are “Mr. Power Station Use”, who accounts for about 9% of the all Indian power consumption, and “Miss Transmission and Distribution Loss”. This lady accounts for at least another 20%, although nobody

really knows. Another prominent group is Mr. "IPUFA", the group of farmers operating irrigation pumps. Most IPUFA are still getting power for free or below 20% of the supply cost. This group accounts for another 20% of non-paid power. The fourth group is "Mr. Theft and Pilferage," who resides in all sectors of society from rich to poor. Overall 50% of the power generated in India is not paid for, which may explain why the system is morally, technically and financially bankrupt and requires a complete overhaul.

Complete overhaul takes time, and requires political consensus and even more political will. The most prominent proposal to overhaul the system is the "big bang theory" of wholesale unbundling, incorporation, and privatization of SEB's. No cherry picking is allowed in theory.

While we wait for the "big bang", a little DSM may meanwhile be useful with the previously defined non-paying customers.

In fact, some State Electricity Boards have already been practicing DSM with the third group of "non paying" customers, the IPUFA, for decades. They typically only receive 4-8 hours of power a day. The official excuse is often lack of power capacity. While that may be true in some cases, more often there is power available but at a high price of 3-5 Rs/kWh, which is not made available to farmers who only pay between 0.0 - 0.5 Rs/kWh. In other words, a SEB shutting off power to legally non-paying customers is DSM! It makes perfect sense and is an act of self-defense to avoid total bankruptcy.

The trouble with DSM is therefore not its merit but the way it is delivered and institutionalized.

DSM is a helpful tool to reduce a SEB's commercial and technical losses by minimizing non-paying use of electricity, but it makes little sense with well paying customers or even to level the daily demand profile. Even if some marginal opportunities exist to "shift loads or cut peaks", it is not worth the effort as long as very attractive reductions in a utility's own technical and commercial losses exist.

In other words, establish DSM cells in utilities to reduce the SEB's own technical and commercial loss, but don't ask them venture beyond to reduce kWh consumption of well paying consumers.