

Speech by Dr. Ketan Shukla, IFS, Secretary, GERC

Workshop on Demand Side Management and Renewable Energy

Demand Side Management is described as the planning, implementation and monitoring of utility's activities designed to encourage customers to amend their electricity consumption patterns, both with respect to timing and level of electricity demand so as to help the customers to use electricity more efficiently. DSM measures yield reduction in peak power demand, reduction in distribution losses and increase in reliability of the service of the Distribution Companies, all of which provide opportunity to the power supply companies to reduce cost of operation, increase revenue from operations and reduce risk of operation. Proper selection of technology and implementation of DSM programme helps Distribution Companies to avoid the additional (costly) power purchase during the peak period. Integrating demand side option with supply side option will help distribution companies to avoid need for addition of generation capacity in short to medium term. As far as consumers are concerned, DSM brings more reliable and cheaper power to the consumers thus providing an opportunity for consumers to reduce their electricity bills and hence become more competitive (specifically for energy intensive commercial and industrial sector consumers).

In India, sharp increase in electricity demand and inadequate generation capacity has led to huge demand supply gap in the country. India faced a peak power capacity shortage of around 12.7% and approximately 10.1% of its energy requirement in the year 2009-10. Almost all the States are not able to meet the electricity demand of the electrified areas, and this situation will further deteriorate if the efforts for covering all the households by electrification by 2011-12 as targeted by the Ministry of Power are not matched with the required capacity addition. The situation is further aggrieved by the high T&D losses, fuel constraint, environmental concern, and financial constraint. Various factors such as increasing economic activity and population growth are resulting in additional pressure on even increasing power demand. Also a study conducted by Asian Development Bank puts the DSM potential in today's system at the level of about 9400 MW, the Integrated Energy Policy Report (IEPR) estimates the electricity demand reduction potential of DSM to be about 15% of the total electricity demand in the country. Because of its huge potential for reduction of electricity demand on the one hand and the poor energy resource endowment of India on the other, IERP identified DSM as a critical and a strategic element for enhancing long term energy security of India.

Fast economic growth of the State has resulted into increase in the electricity consumption by the industrial and commercial sector. With the current available capacity, many states are not in position to meet its requirement either in energy requirement terms or on peak capacity requirement terms. The demand supply gap has been reducing considerably in the recent three years where the gap has reduced from 11133 MU in FY 2007-08 to just 3149 MU in FY 2009-10.

Though the peak demand in Gujarat was 10406 MW during FY 2009-10, the State was able to meet only 9515 MW.

Considering the fact that the existing generation resources are not sufficient to cater the State energy needs, electricity distribution companies are resorted to adopt the measures of load shedding during the different time periods of day. Though the peak deficit of Gujarat has reduced considerably and is at 8.6% in FY 2009-10, which is considerably lower than overall India's figure. Gujarat is one of the few states in India which provides round-the-clock power supply in most of its towns, and cities. It is assumed that Gujarat will become power surplus State within one year and when new additional capacity come into existence the total capacity will become about 25,000 MW in 2017 against demand of 19,900 MW, Gujarat will be power surplus State. Most of the Distribution Companies have undertaken various EE and DSM projects such as power factor improvement & penalties, Time of Day Tariff, efficient lighting programme, Ag. Pump sets efficiency improvement programme in order to reduce the demand supply gap. In the State of Gujarat the Government of Gujarat formulated a policy namely Jyoti Gram by which in rural areas 24 hours power supply is provided to the consumers. By adopting the above policy the rural feeders are segregated from the agriculture feeders. The agriculture feeders are supplying power to the agriculture pump sets for eight hours in a day. Moreover, the power supply period is also grouped in different time zone of a day and same is also varying throughout the State. It will be helpful to provide power supply in agriculture sector during the night which is helpful to reduce the peak demand and demand during the normal hours of a day because the Agriculture load which is about 35% of total load of the State and consumption is also about 35 to 40% of the total consumption. It will be helpful to flatten the load curve of the State. The utilities have to supply power in different groups in the local area which is helpful in reducing the demand at the same time. GERC has also provided necessary mechanism for shifting the load by the industries during the night time. The necessary provisions in the Industrial Tariff are provided for this purpose. The industries which are utilizing electricity exclusively during the night hours are able to reduce their electricity bill as the tariff rate are quite cheaper than the normal tariff rate of the same group of the industries.

For successful implementation of DSM and energy conservation measures, involvement of all stakeholders such as Regulatory Commission, Distribution Utilities, State Government and Consumers are important. Primarily, it will be the responsibility of the Distribution Companies to carry out load research, market research, design, development and to implement the identified DSM measures. Whereas, it is the responsibility of regulatory commission to ensure efficient and economical utilisation of resources by putting enabling framework for the implementation of large scale DSM programme through issuing of Regulations (DSM Regulations) and various guidelines (cost benefit & E,M&V).

However, it is equally important to build the capacity and awareness of the consumers for the large scale deployment of the DSM programme in the State. Large scale information campaign may have to be developed and run, to ensure that consumers are aware of the initiatives being

undertaken by Distribution Companies, Regulatory Commissions, State Designated Agencies and BEE.

Further, specific information programmes that inform the specific target consumers about the energy efficiency improvement and conservation possibilities in specific end-use and specific technology may have to be developed. For example, programme like S&L (Standards & Labeling) initiated by BEE for the promotion of efficient appliances in residential and commercial sectors, information and awareness campaign will play a key role for the success of the programme. Also, large scale energy conservation cum DSM measures such as Bachat Lamp Yojna impacts large sections of consumers, some DSM measures especially implemented through DSM Resource Acquisition technique impact limited number of consumers connected to a particular feeder. As a result, information about such DSM Resource Acquisition programmes needs to be provided to only those consumers. Distribution Utilities will have to undertake consumer awareness programmes for the target consumers categories at regular interval for the better participation and success of the DSM programme.

Smart grid

The management of transmission and distribution networks which uses robust two-way communications, advanced sensors, and distributed computers to improve the efficiency, reliability and safety of power generation, delivery and use. Additionally it can support services, such as demand response, to consumers. The concept encompasses a wide range of technologies, such as advanced meter reading, substation automation and energy management systems. Smart grid development for the most part can use existing technologies, applying them in new ways to grid operations. It is also helpful in distribution generation to bring in the grid system.

In the context of the CERC regulation on Renewable Energy Certificate (REC), GERC was the first Commission in the country to incorporate the provisions of REC in its Regulations. The REC Mechanism is extremely important in the context of Renewable Power Purchase Obligation (RPO) so as to provide wider choice to generators, utilities and other entities and also to create a market mechanism for renewable energy. The Commission has revised the RPO percentage from 2 to 5, 6 and 7 percentages respectively for the years 2010-11, 2011-12 and 2012-13.

GERC has notified the regulations on Procurement of Energy from Renewable sources vide notification no.3 of 2010. According to the regulations the Renewable Power Purchase Obligation applicable to Distribution licensees for purchase of power from the renewable energy sources has been revised from 2% in FY 2008-09 to 5%, 6% and 7% for the years 2010-11, 2011-12 and 2012-13 respectively. The Commission has provided separate Renewable Purchase Obligation (RPO) provisions for wind, solar and other renewable energy sources keeping in view the availability of such sources, nascent stage of Solar Power generation technology and expected energy available from them. The RPO is also made applicable to the Captive and Open

Access consumers/users. However, the same will be applicable to these entities from a date to be separately notified by the Commission. The Commission has also made necessary provisions in the Regulations for Renewable Energy Certificate (REC). Tariff rates were also determined for purchase of power by distribution licensees from different renewable energy sources. While deciding the tariff, encouragement to project developers and protection of consumer interest, both have been taken into account.

GERC is the first SERC in the country to bring out a comprehensive tariff order for Solar Energy in the State. It will be helpful to the project developers to establish projects in the state and sell the energy generated from it to distribution licensees. Distribution Licensees are under obligation to purchase energy generated from solar projects towards fulfillment of RPO.

In addition, the power generating capacity from conventional sources the additional generation from renewable sources like Solar, Wind , Biomass and Bagasse based cogeneration is also helpful to met out the demand of the consumers during peak as well as off peak hours looking to characteristics of the above generation technology. The wind generation in the State is about 2000 MW at present. GUVNL which has signed PPA with no. of solar project developerers for about 986 MW.

Gujarat has taken significant initiatives in the past to harness solar energy. GERC is the first State Regulatory Commission to issue a comprehensive tariff order on solar energy. GERC is the first SERC to provide for Renewable Energy Certificates in its Regulations on procurement of energy from renewable sources. First project for REC Mechanism has been registered in Gujarat. Gujarat is on only state to have Solar Power generation capacity in double digit.

Under the Solar Power Policy 2009, the State Govt. allotted 968.5 MW of Solar Power Capacity to 84 national and international project developers. Out of 968 MW, the share of Solar Thermal Technologies is 25 MW. Developed plan to strength the transmission network and infrastructure for power evacuation of large capacity solar power projects. Introduced Master course on Solar Energy at Pandit Dindayal University, Gandhinagar and interaction of industries with ITI's to introduce new curriculum for solar energy. Government of Gujarat declared Gujarat Power Corporation Limited (GPCL) as Nodal Agency for development of Solar Power Parks in Gujarat. Clinton Climate Initiative (CCI) have initiated and announced to implement a 3,000 MW Solar Park Project in the state. In Gujarat, Lanco and government of Gujarat operates 5 MW and 1 MW of Solar power generation capacity respectively, besides an additional 5MW by Azure Power. With Azure Power Commissioning Solar Photovoltaic unit of 5MW, the Solar Power generation capacity in Gujarat has now touched 11 MW.

Lanco completed its first 5MW project in Gujarat. The project located in Patan, Gujarat is one of the largest solar power plants (SPP) in the country and the first for the state. Lanco Infratech Limited is developing an overall of 35MW in Gujarat under Gujarat State Policy.

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“Sun is present everywhere, his countless rays reaches all places, Sun is the force, The destroyer of darkness & bestows happiness & wealth Sun infuses life and removes all problems”.

- Aditya Hridyam