STRATEGY AND THE CHALLENGES TO ACHIEVE 24X7 POWER SUPPLY

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ABSTRACT

Energy is one of the most important building blocks in human development and as such, acts as a key factor in determining the economic development of country. The development of the Power Sector is commensurate with the overall economic growth of the nation. In an effort to meet the demands of a developing nation, the Indian energy sector has witnessed a rapid growth. The demand for electricity in the country has been growing (due to rural electrification and large-scale energization of pump sets) at a rapid rate and is expected to grow further in the years to come.

"24x7 power supply with quality and reliable power is a key factor for economy growth of country" & is the government's priority, Access to electricity on 24X7 basis for all its citizens means much more than merely an act of infrastructure development to any nation as this has direct co-relation with the socio economic profile of the community. Thus this issue has acquired significant dominance on the national as well as state agenda.

To meet the requirement; Power Sector has grown tremendous over the past two decades in the areas of generation, transmission and distribution sector. With a total installed generation capacity of 395 GW (as on 31-01-2022), the country has transformed from a power deficit -12.7% in FY 2009-10 to -1.2 % in FY 2021-22).

Transmission network has been expanded to connect the whole country and inter regional transfer capacity of India's National Grid is over 1 lakh MW.

With the joint efforts of the Central and State governments, universal access has been achieved, with more than 90 per cent electrification of the villages and households.

Apart from the growth of power sector; if the government wants to fulfil its promise of "24x7 power", it must accelerate the process of installing electricity meters in all homes, replace defective meters, ensure unpaid bills are paid and stop electricity theft, reduce AT & C losses etc.

I. INTRODUCTION:

The Government of India has declared 24x7 power supply as one of the most important objectives of its policy for achieving economic growth. The Union Power Minister has given expression to this policy in the following words "…the Government is committed to bring about a transformative change in the power sector and ensure affordable 24x7 power for all homes, industrial and commercial establishments and adequate power for farms, in the next few years" (The Hindu, 8th September 2014).

The DISCOMs are committed to provide quality life to people of state. Electricity supply serves as an important means to achieve this. The programme of "24x7 power for all" is an important step in this direction and this programme is being implemented by Sate Government with the objective to connect the unconnected in phased manner to ensure supply of quality, reliable and affordable power to all category of consumers on 24x7x365 basis.

State Government ensure that all the necessary steps are taken up in terms of capacity addition, power procurement, strengthening the required transmission and distribution network, encouraging renewable, demand side management & energy efficiency measures, undertaking customer centric initiatives, reduction of AT & C losses, bridging the gap between ACS (Average Cost of Supply) & ARR (Average Revenue Realized), and following good governance practices in implementation of all central and state government schemes.

In order to achieve the objective of 24 x 7 power supply to All, the state would see an increase in peak demand with corresponding increase in energy requirement.

Under 24x7 power supply target; the following are the objectives:

(1) Quality and Reliable 24x7 power supply to domestic, industrial and commercial consumers;

(2) Power supply for irrigation pump for 8 to 10 hours per day depending upon the agro climatic factors in different States; and

(3) Access to all unconnected households.

The following may be the strategies to achieve the above objectives:

(1) Ensure adequate capacity additions for power procurement from conventional and renewable sources to meet the projected demand.

(2) Optimize energy mix and improve operational efficiency of state generation plants.

(3) Strengthen the transmission and distribution network to meet the demand of existing and future consumers.

(4) Reduce AT&C losses

(5) Make distribution utilities function as efficient service providers and improve their financial viability

II. GOVERNMENT SCHEMES:

APDP: The Government had approved a scheme "Accelerated Power Development Programme (APDP)". During the financial year FY 2000-2001; a provision of Rs.1000 crores had been made in the Expenditure Budget of Ministry of Finance. The amount provided in the Budget was to be released as additional Central Plan Assistance to the State Governments. The scope of the Scheme: were (1) Renovation & Modernization / Life Extension / Up rating of old power plants (thermal and hydel) (2) Up gradation of sub-transmission & distribution network (below 33 KV or 66 KV) including energy accounting & metering.

APDRP: Objective of APDRP scheme were (1) targets towards the commercial viability of the utility by reducing their AT & C losses to 15%. (2) Improvement in quality and reliability of supply (3) improvement in consumer satisfaction.

R-APDRP: Ministry of Power, Government of India, had launched the Restructured Accelerated Power Development and Reforms Programme (R-APDRP) in July 2008 with focus on establishment of base line data, fixation of accountability, reduction of AT&C losses up to 15% level through strengthening & up-gradation of Sub Transmission and Distribution network and adoption of Information Technology during XI Plan. Projects under the scheme were taken up in two parts. Part-A include the projects for establishment of baseline data and IT applications for energy accounting/auditing & IT based consumer service centres. Part-B include regular distribution strengthening projects and cover system improvement, strengthening and augmentation etc. PFC had been designated as the nodal agency to operationalise the programme.

RGGVY: Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was launched in April-2005. Under the programme 90% grant was provided by Govt. of India and 10% as Loan by REC to the State Governments. The objective of RGGVY scheme was (1) Electrifying all villages and habitations (2) Providing access to electricity to all rural households (3) Providing electricity Connection to Below Poverty Line (BPL) families free of charge.

SAUBHAGYA: Saubhagya scheme was launched on 25th September 2017 to achieve universal household electrification covering every village and every district in the country. Universal household electrification requires creation of electricity access through last mile connectivity. The Scope of the Scheme: (1) Providing last mile connectivity and electricity connections to all un-electrified households in rural areas. (2) Providing Solar Photo Voltaic (SPV) based standalone system for un-electrified households located in remote and inaccessible villages/habitations, where grid extension is not feasible or cost effective. (3) Providing last mile connectivity and electricity connections to all remaining economically poor un-electrified households in urban area.

DDUGJY: Government of India with the objective to improve the quality and reliability of power supply in rural areas has launched the scheme Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), an integrated scheme covering all aspects of rural power distribution which was conveyed by the Ministry of Power on December 3, 2014. "The erstwhile Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) scheme for village electrification and providing electricity distribution infrastructure in the rural areas has been subsumed in the DDUGJY scheme. DDUGJY facilitates towards achievement of '24x7 Power for All' in the rural areas of India, through the following project components:
a) Separation of agriculture and non-agriculture feeders facilitating continuous quality power supply to non-agricultural consumers and adequate power supply to agricultural consumers; b) Strengthening and augmentation of sub-transmission & distribution infrastructure; c) Micro-grid and Off-grid distribution network; d) Metering of Distribution Transformers/Feeders/Consumers; and e) Rural Electrification component (including the RE projects) Under the scheme, 60% of the project cost (85% for special States) is provided as grant by Government of India and additional grant upto 15% (5% for Special Category States) is provided by Government of lndia on achievement of prescribed milestones. Under the Deen Dayal Upadhyaya Gram Jyoti Yojana and Integrated Power Development Scheme for strengthening the distribution system, 2,798 new substations have been set up, 3,930 substations have been upgraded and 2.5 crore meters had been provided, among others.

REVAMPED: Revamped Distribution Sector Scheme: A Reforms based and Results linked Scheme was launched in 2021. The revamped distribution sector scheme was the largest of its kind in the power sector and that there are enough funds to meet the requirements of the states/DISCOMs for distribution system strengthening and modernization.
For a major technological push by DISCOMs, the scheme envisages extensive use of Artificial Intelligence (AI) and Information Technology (IT) for system generated energy accounting to enable energy audit and modernization of distribution infrastructure for loss reduction as well as improvement in reliable power supply.

KUSUM: Among the others, the scheme provides for separation of agricultural feeders.

The target of the scheme is to bring down the Aggregate Technical and Commercial (AT&C) losses to 12-15 per cent at the all India level as well as to reduce the gap between Average Cost of Supply (ACS) and Average Revenue Realised (ARR) to zero by 2024-25.

IPDS: The "Integrated Power Development Scheme" (IPDS) was launched by Ministry of Power, Government of India with the objectives 1. Strengthening of sub-transmission and distribution network in the urban areas; 2. Metering of distribution transformers /feeders / consumers in the urban areas.3. IT enablement of distribution sector and strengthening of distribution network as per targets laid down under Restructured Accelerated Power Development and Reforms Programme (R-APDRP) for 12th and 13th Plans by carrying forward the approved outlay for R-APDRP to IPDS.
The scheme help in reduction in AT&C losses; establishment of IT enabled energy accounting / auditing system, improvement in billed energy based on metered consumption and improvement in collection efficiency.
The component of IT enablement of distribution sector and strengthening of distribution network approved in the form of R-APDRP for 12th and 13th Plans is subsumed in this scheme.

III. CAPACITY ADDITION & STRENTHNING OF SYSTEM

The requirements of 24x7 power supply will be met if (a) The generation capacity is augmented as envisaged in the National Electricity Plan. (b) Availability of sufficient transmission capacity (c) The distribution utilities are able to contract power to meet the full demand in their area of supply. (d) The T&D losses are reduced (e) Energy efficiency measures are implemented to significantly moderate energy consumption and peak demand

GENERATION: In the above context, the following factors need to be considered to increase generation from thermal plants and also add renewable generation capacity:

(1) Generation Projects: The generation projects need to get initiated immediately and envisaged for completion on priority basis in ensuring fuel linkage.

(2) Domestic Coal Supply: India is heavily dependent on coal based power for its electricity needs, 79 % of total electricity generation is from coal/thermal based. This is not expected to change drastically in the near future. Domestic coal supplies have supported power generation in a major way despite heavy monsoons, low coal imports and a steep hike in power demand due to economic recovery. The domestic coal based power generation has grown by nearly 24% in this year (till September 2021) based on a robust supply from the coal companies. The daily average coal requirement at the power plants is about 18.5 Lakh tonnes of coal per day whereas the daily coal supply has been around 17.5 lakh tonnes per day.

(3) Gas Based Power Plants: Gas based generation for meeting the peak demand may be bundled with other sources of energy to make peak power affordable for distribution companies.

(4) Renewable Based Generation: Considering that the renewable have a short gestation period, there should be emphasis on renewable capacity addition particularly in solar and wind energy. Payment security to RE generators is critical to investment promotion. For this, it would be desirable to have suitable policy / regulatory mandate for the distribution companies to provide payment security to RE generators

(5) Operationalize and augment pumped storage capacity: There is a need to operationalize the existing pumped storage capacity and plan for additional capacity of about 5,000 MW over the next five years to more effectively meet the peak demand and manage the variability of renewable energy sources.

(6) Renewable Energy Management Systems: It is recommended to establish "Renewable Energy Management Systems" to begin with to monitor and manage renewable energy generation on real time basis.

(7) Ancillary Services: In order to have higher penetration of the renewable energy generation, ancillary services like frequency balancing mechanisms through gas based power plants, hydro plants, pumped storage plants and also emerging cost effective storage technologies should be promoted.

Transmission: It is important to develop adequate transmission infrastructure to meet the growing energy needs of different parts of the country. Though all the regions are interconnected, there are persisting congestion problems and corridor bottlenecks constraining the exchange of power from surplus regions to deficit regions. The present transmission capacity in the country does not adequately match the generation capacity, load requirements and market transactions. This impacts the market transactions and creates bottlenecks in the flow of power from power surplus regions to power deficit regions and between states. The recommendations for planning for the required transmission system are as follows:

(1) There is scope to reduce the conceptualization-to-award process from ~21 months to ~5-6 months under the competitive bidding framework. Additionally, the Ministry of Power can save ~5-6 months from the project development time by acquiring some key clearances in parallel to the project bidding phase.

(2) Policy for Realistic Compensation for land acquisition: Land acquisition for ROW to build transmission lines should be facilitated by evolving a policy for payment of compensation to land owners based on the present market value.

(3) Optimum utilization of existing ROW: Possibility of more optimal utilization of existing ROWs should be explored by construction of multi circuit lines, upgrading of existing power transmission corridor on the same route. Up-gradation and re-conductoring of

existing lines can save valuable time, cost, ROW and forest cover

(4) Use of High Performance Conductors in Existing & New Lines: Use of High Performance Conductors - HTLS needs to be taken up to increase power transfer intensity.

(5) The loadability of the existing transmission system should be increased by adding adequate reactive power compensation through series compensation, dynamic shunt compensation, FACTS and mechanically switched capacitor banks.

(6) Underground lines should be considered for all transmission below 220 kV.

(7) It is recommended that the transmission infrastructure be developed at intra-state, interstate and inter-regional levels to evacuate additional capacities of renewable energy and remove the transmission constraints.

Distribution Sector: It is necessary to expand the country's distribution networks substantially in order to ensure electricity supply to the un-electrified households. The financial viability of the distribution utilities is adversely affected by the high Aggregate Technical and Commercial losses (AT&C losses). The distribution sector accounts for nearly 21.83 % of the losses at national level during FY 2019-20. A 10% reduction in distribution losses per annum can augment the supply of electricity by nearly 100 BU per year. This will be equal to a generation capacity of about 15,000 MW of coal based plants.

Recommendations for reforms in the Distribution sector are as follows:

(1) Accurate estimation of demand considering increased electrification of rural areas, demand side management measures, is the basic requirement for any policy design on 24x7 power supply to consumers. For this each state would need to undertake an intensive study to focus not only on load estimation / growth but also on assessing the actual level of transmission and distribution losses. It is only when we have accurate load profile and system losses that we can plan and project for adequate procurement of power to meet the demand.

(2) The strategy for 24x7 power supply must include universalization of consumer level and DTC level metering. The SERCs should mandate implementation of DTC metering with Advanced metering systems as part of the capital expenditure of the distribution utilities.

(3) Achieving 100% electrification of un-electrified households should receive the highest priority in the strategy for 24x7 power supply. A mission mode approach should be adopted to implement this programme, particularly in states, which have less than the national average proportion of electrified households.

(4) A special programme should be launched for aggressive reduction of AT&C losses to reduce the losses at the rate of 2% per year over the next five years. The distribution companies should be supported in strengthening the distribution networks by adopting High Voltage Distribution System (HVDS) and by improving the metering system in the rural areas. The following are some technique for distribution system loss reduction

- Installation of HT/LT capacitor
- Network reconfiguration
- Network re-conductoring
- Feeder bifurcation
- Building of new substations
- Adoption of HVDS
- DTC relocation
- Replacement of meter
- Substituting cables with conductors
- Replacement of overloaded transformer
- Distribution transformers to locate at load center
- Load balancing of DTR
- Energy Accounting Transformer wise
- Theft drives
- 100% sealing of meters
- Meter box to be provided
- Improvement in reactive power of feeder
- Shifting meter outside premises
- Faulty meter and slow meter replacement

(5) Feeder segregation to separate agricultural feeders from other rural feeders should be taken up in all states, which have significant electricity consumption for irrigation purposes.

(6) Replacement of inefficient irrigation pumps with star rated pumps should be made mandatory where agricultural consumption exceeds 10% of the total electricity consumed in a state. Adoption of solar irrigation pumps should be encouraged by providing some cost as subsidy.

(7) The availability of adequate institutional finance, timely payment of subsidies by State Governments and adequacy and regularity of tariff revision by the State Regulatory Commissions are essential for ensuring financial health of not only the distribution companies but the entire electricity sector in the country.

(8) The management culture of distribution utilities should be altered to make every level in the organization accountable for sale of power (instead of merely supplying power). These utilities must be made to function as commercial entities instead of continuing with the culture of departmental undertakings providing service without regard for financial returns.

(9) Power Planning Cells should be established in each state to undertake long term planning and coordination of the development of the power sector.

IV. CHALLENGES IN TIMELY COMPLETION OF PROJECT

(1) ROW Issues:

The Right of Way (ROW) is a strip of land where the distribution line is constructed, erected, operated and maintain. The right of way clears all the trees, structure and construction which interference the distribution lines. Many distribution lines in project are grossly delayed The DISCOM ascribes the cause of these delays to the necessity of extensive coordination and cooperation between various stakeholders like DISCOM, individual landowners and contractors. This leads to stand-off on crucial issues like ROW and consequently to unpredictable time overruns. Once projects are delayed, more working capital is needed, increasing the cost of project.

(2) SHORTAGE OF MATERIAL:

Resource requirements involve determining what resources (people, equipment, services, and material) and the quantities of those resources are required to complete the project.

The limited availability of resources such as material are the second reason for untimely completion of project. The most common impact of the shortage of materials entails increased lead times. Planning stands as the most ideal solution to counter the shortage of material. The planning should consider the unforeseeable future. DISCOM may look for additional vendors. These solutions will help DISCOM to overcome the issue of long lead times.

One measure that can reduce project hold ups is ensuring that procurement of material is taken care of as early as possible. It is incredibly frustrating when final work and payment for the job is held up due to material that haven't yet arrived.

A solution is to sit down at the beginning of the project with Turnkey Contractor (TKC) and go through the specifications and original BOQ derived from DPR for the project. Highlight any items that might be unusual, require special order, or are known to have long delivery times. These are the things to get look after immediately so that your final completion of work isn't held up.

(3) LABOUR CHALLENGES

Effect of delays are costly to all parties concerned (DISCOM, CONTRACTORS AND CONSULTANT) and very often it will result in disagreement, cost overrun, arbitration, litigation, total abandonment, and project infeasibility.

Today, the biggest challenge for the contractor is competent labour. Labour are leaving the organization frequently and then new labour join and it required to train the labour. The workshop at regular interval is proposed to develop skill for the labour.

Contractor will have to follow the schedule of erection & commissioning work. Prior planning is required for the resources like manpower & material required.

(4) Lack of Sufficient Budget

Running short on cash can be costly in more ways than one. The process of electric power distribution normally, from planning to completion and commission, will take two to three years. Therefore, advance planning for funds becomes a vital important in electric power network development

Some jobs are shut down for weeks, months or even dropped altogether if DISCOM is facing issue of funds. Contractor will have to pay for procurement of material & paying to labor.

(5) APPROVALS:

Carry out the Electrical Installation works as per nodal agency like rural electrification corporation (REC), Utility guideline etc (Measures relating to safety and electric supply), as per approved drawings. Completed electrical installation work should be got inspected by concerned officers of Electrical Inspectorate dept. After inspection if an inspecting officers ensures that the said electrical installation is in general conformity with guidelines (Measures relating to safety and electric supply), necessary approval will be issued else, defects if any intimated by the officer shall be complied within specified period to obtain the same. Further, on verification of compliance report the inspecting officer himself or the concerned officer will issue the safety certificate or he may reissue defect notice along with the re-inspection fee.

Some time it is time consuming to get approval from various stake holder (Government & Non-Government).

(6) LACK OF EFFECTIVE COMMUNICATION

Among the various level of stake holder; there should be updated progress of work so that advance planning of resources or any other issues can be resolved in advance.

If there isn't a clear line of and project managers, delays are inevitable. Delays lead to cost overrun. There is too great a risk work will start on the wrong thing at the wrong time. This wasted time threatens to send the whole project off track. Stakeholders as well as teams need proper communications, but each should get the right information. Project teams and stakeholders want to make sure the project is progressing as planned.

(7) POOR WEATHER:

One thing that can't be controlled is the weather

(8) SLOW PROGRESS BY TURNKEY CONTRACTOR

Turnkey contractor need to ensure continuous progress when required material & manpower are available to meet the intended objective. TKC can discuss for any obstacles towards achieving intended objective identified and mitigate the same. The feedback to be provided to all those involved in the system.

(9) COST OVERRUN:

Cost overrun, or any sort of expense that pushes a project past the agreed-upon budget, is something of which a project manager must be constantly vigilant about. There are several ways one can prevent cost overrun.

The best way to stop cost overrun is to plan against it before executing a project. The more thorough and accurate your estimates, the more likely you'll stay within budget.

A project budget is the total sum of money allocated for the particular purpose of the project for a specific period of time. The goal of budget management is to control project costs within the approved budget and deliver the expected project goals. The definition of a successful project is one that meets success criteria: that (1) the project's scope is delivered on schedule, (2) it is delivered within budget and, once delivered, (3) it meets the quality expectations of the stakeholder and the beneficiaries. For project managers to be truly successful they must concentrate on meeting all of those criteria.

V. DEMAND SIDE MANAGEMENT AND ENERGY EFFICIENCY:

Energy efficiency and demand side management are important options for reducing the overall energy requirement and peak demand. In the lighting sector, Compact Fluorescent Lamps (CFL) and Lighting Emitting Diodes (LED) lights are already being adopted in many states. Similarly, it is necessary to accelerate the adoption of energy efficient electrical appliances like fans, refrigerators and air conditioners. A very important option is to replace existing irrigation pumps with more efficient devices. At present, nearly 20% of electricity is being used in the agriculture sector for pumping water. By replacing the inefficient irrigation pumps with star rated efficient pumps can save about 25–30%, or nearly 50 BU of electricity per annum. This is equivalent to avoiding about 10,000 MW of generation capacity. Since energy efficiency measures have very low recurring costs, the payback period on investments made in energy efficiency is short and yields lasting benefits.

VI. ADDITION OF RENEWABLE CAPACITY:

(1) The present installed capacity of renewable energy is around 150 GW. Out of this, wind contributes more than 40 GW. Most of the investments in renewable energy generation are made by the private sector, which enables the augmentation of renewable capacity without any direct financial burden on the exchequer. The gestation period for most renewable plants ranges from 12 to 24 months. These aspects of renewables make it an attractive proposition for augmenting energy generation within a short period of time. Distributed generation is another attractive way of utilizing renewable energy to provide power supply to remote locations without huge investments for installing T&D networks for the purpose.

(2) India has an estimated potential of over 100,000 MW of wind power. The Wind industry in India has reached maturity and India has manufacturing capability to produce about 10,000 MW of wind turbines and other equipment every year. Therefore, it should be possible to add about 50,000 MW of wind capacity over the next five years. This would require an aggressive policy of incentivizing wind generation by providing a combination of soft loans, accelerated depreciation, generation based incentive schemes and cost reflective tariffs.

(3) The cost of solar energy has been rapidly declining in recent years. This provides an opportunity to swiftly augment solar power to about 50,000 MW. The government needs to facilitate this by enforcing Renewable Purchase Obligations (RPO) and also continuing with the scheme for viability gap funding. This should be coupled with support to roof top solar generation with net metering.

(4) In order to integrate renewable energy successfully into the grid, the following measures need to be undertaken on priority: : (a). Establishment of a "Renewable Energy Management System" to monitor the renewable energy generation on real time basis and perform forecasting and scheduling of renewable power in 15 minutes blocks. This center will give one single consolidated renewable power generation value every 15 minutes to the state load dispatch center for each hour, on a 24 hour rolling basis. This will enable the proper scheduling of the rest of the generation in the state. (b). In order to have a higher penetration of renewable energy generation, ancillary services like frequency balancing mechanisms and hour-ahead markets should be developed. Frequency balancing is possible through gas-based power plants, hydro plants, pumped-storage plants and also emerging cost-effective storage technologies. (c). One of the issues for renewable-energy rich states is the deviation settlement mechanism. It is argued that the present deviation mechanism restricts the deviation to be less than 150 MW and UI charges are imposed accordingly. However, renewable energy generations being variable in nature, it is difficult to balance their variation within individual states. With high penetration of renewables, balancing may occur within the regional boundary or sometimes beyond the regional boundary. There is a need to review the present scheduling and balancing mechanism enabling higher penetration of renewable energy sources. For example, for wind variation in Tamil Nadu and Karnataka, hydro resources in Karnataka, Kerala and Andhra Pradesh can be used for balancing services. The hydro capacity in the southern region can manage about 9000 MW of variation in wind and solar generation, provided an accurate forecasting and management system is put in place. (d).The power number of the interconnected system in the country being about 4000 MW as on date (it continues to increase over a period with the increase in demand), for 4000 MW of sudden variation in renewable energy, there will be frequency variation. With the help of frequency balancing mechanism, this variation can be corrected. In order to mitigate network congestion during variation in renewable energy power generation, it is advised to strengthen the inter-regional and inter-state network to accommodate higher renewable power in renewable rich states. (e). Availability of adequate investment credit is crucial to the expansion of renewable capacities. Besides increasing the corpus of IREDA (Indian Renewable Energy Development Agency), Government should consider refinancing arrangements for loans extended by banks and other infrastructure finance companies, rather than lending through one nodal agency. Also, the loan tenure for renewable generating projects can be extended to 20 years as against the prevailing 12 year repayment schedule with a moratorium of two years.

(5) The absence of adequate payment security is one of the factors inhibiting the growth of the renewables in some states. The distribution utilities do not give adequate priority to payments for procurement of renewable energy which makes it difficult for the generating companies to service their debt financing. The Electricity Act, 2003 should be suitably amended to ensure that all distribution companies provide adequate payment security to RE generators in the form of Letters of Credit or Escrow payments. This is also likely to contribute to a reduction in the procurement cost of renewable energy by reducing the interest burden of the generating companies

VII. CONCLUSION

(1) The state government may prepare road map for 24x7 power supply & implement the same to fulfill the Government of India objective of 24x7 power supply. This is essential for achieving economic growth of country.

(2) Central Government schemes like R-APDRP, DDUGJY, IPDS, SAUBHAGYA, KUSUM etc help in achieving the objective of 24x7 power supply to all by village electrification, households electrification, strengthening of distribution system, reduction in AT&C losses etc.

(3) To meet the requirement; Power Sector has grown tremendous over the past two decades in the areas of generation, transmission and distribution sector.

(4) Measures are required to be taken by DISCOMs to reduce technical & commercial losses of system. This will improve the financial health of the DISCOM.

(5) Adopt energy efficiency and demand side management for reducing the overall energy requirement and peak demand. It is necessary to accelerate the adoption of energy efficient electrical appliances like fans, refrigerators and air conditioners. A very important option is to replace existing irrigation pumps with more efficient devices.

(6) Encourage the RE generators. Payment security to RE generators is critical to investment promotion. For this, it would be desirable to have suitable policy / regulatory mandate for the distribution companies to provide payment security to RE generators.

(7) India is heavily dependent on coal based power for its electricity needs. Hence it is essential to reduce the uncertainty of availability of coal. Domestic coal supplies will have to support power generation in a major way in the situation like heavy monsoons, low coal imports and a steep hike in power demand.

(8) Land acquisition for ROW to build transmission lines should be facilitated by evolving a policy for payment of compensation to land owners based on the present market value. It is suggested optimum utilization of existing ROW by construction of multi circuit lines, upgrading of existing power transmission corridor on the same route. Up-gradation and re-conductoring of existing lines can save valuable time, cost, ROW and forest cover.

(9) There is scope to reduce the award time, timely completion of erection commissioning projects, reduction in time for acquiring some key clearances in parallel to the project bidding phase.

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