SPE News Letter

April, 2022 **Issue: 2/2022**

SILVER JUBILEE YEAR [1996-2021]

Festival of Colours

Holi Dahan

Silver Jubilee Celebration Year

Society of Power Engineers (India)

Vadodara Chapter (Estd. 1996)

FF-48, Avishkar Complex,
Near Vidyutnagar, Old Padra Road,
Vadodara – 390 007

spevadodara01@rediffmail.com social.spevadodara@gmail.com
www.spevadodara.in M- 9328658594 Ph. 0265 2322355

Facebook Whatsapp LinkedIn Instagram Telegram

OFFICE BEARERS & EXECUTIVE COMMITTEE MEMBERS FOR 2021-22

1. Er. GV Akre	Chairman	7. Er. RS Shah	Member
2. Er. SM Takalkar	Vice-Chairman	8. Er. SM Godkhindi	Member
3. Er. YV Joshi	Secretary	9. Er. SP Trivedi	Member
4. Er. VB Harani	Jt. Secretary	10. Er. MN Pandya	Member
5. Er. NC Solanki	Jt. Secretary	11. Er. YD Mehta	Member
6. Er. NG Yadav	Treasurer	12. Er. PB Parmar	Member

ADIISORY COMMITTEE MEMBERS FOR 2021-22

1. Er. KN Rathod
2. Er. PA Shah
3. Er. DC Mehta
4. Er. BN Raval
5. Er. JK Surti
6. Er. DV Patel
7. Er. VJ Desai
8. Er. NV Lathia
9. Er. BT Dalwadi
10. Er. (Ms)HB Prajapati
11. Er. MN Pandya
12. Er. AA Marathe
13. Er. UV Parikh
14. Er. MG Mehta
15. Er. KN Velani

PATRONS

Er. PH Rana Dr. Shivani Sharma Er. Nihar Raj Er. HR Karandikar

EDITORIAL BOARD

Er. PH Rana Er. SM Takalkar Er. SM Godkhindi Er. JK Surti

SPECIAL INVITEE TO THE COMMITTEE

Er. N Dinker

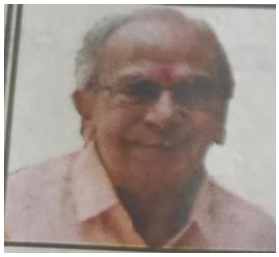
OFFICE ADMINISTRATION COMMITTEE

Er. NC Solanki Er. KN Rathod Er. NV Lathia Er. SP Trivedi Er. SM Godkhini

NEW LIFE / YEARLY MEMBERS ENROLLED

G.R. No.	Grade	Name
2379	LM	Amitkumar N Patel
2380	LM	Pradip P Shah
2381	AM (22-23)	Neeleshkumar D Anjara
2382	LM	Upendra K Pandya

OBITUARY



Er. Pravinchandra O Parikh, Retd. Add. CE(Dist.), GEB and **Life Member** of Society of Power Engineers (I) Vadodara Chapter passed away on **19 Feb 2022.**

He was an active Member of the Chapter

May God give peace to the departed soul and give strength to his family members to bear the impact.

FROM THE CHAIRMAN'S DESK

Dear Readers,

It gives me immense pleasure to present this issue of "SPE News Letter" during the Silver Jubilee Year of **The Society of Power Engineers (I).**

SPE (I) Vadodara Chapter was established in October-1996 and since then it grew in leaps and bounds. The journey of Vadodara Chapter of the Society of Power Engineers for the last 25 years has been an enduring one with the efforts of the committee members focused on nurturing it and achieving the status as the largest and most active SPE in India. SPE is a shining example of its success in meeting its goals of dissemination of knowledge in power engineering to its members and others in power industries. Last two years we have gone through the nightmare caused by the pandemic that has drastically changed our lives. However, we continued our activities in reaching to our members through digital media by organizing webinars.

The Society of Power Engineers (I), Vadodara Chapter is now poised for a great leap forward in its functioning towards spreading the knowledge not only in conventional energy but also in non - conventional energy fields like solar, wind, and other renewable energies. Our role in bringing awareness of India's commitments toward climate change and sustainable development has become more important now. This year we will be focusing on organizing seminars, conferences, and lectures on subjects including innovations and disruptive technologies in power engineering and other engineering fields, Smart Grid, Smart Cities, E-Mobility, Energy Storage Systems, Green Hydrogen as fuel etc. We have organized a **2-Day Conference** in association with **CBIP, GETCO** and **ERDA** on **25-26 May 2022**, and will follow by number of lectures on climate change, SDGs, Net-zero, and many other subjects during this Silver Jubilee year.

On the Silver Jubilee Celebration, several programmes are organized. In January-2022, the Musical Night programme was organized which was enjoyed and appreciated very much by members with their families.

In April two programmes are scheduled, namely, the "**SPE has Talent"** programme for members to show their talent and "Expression **of Gratitude and Felicitation"** for all those who have helped SPE during the last 25 years to achieve the present status.

You will all agree that any institution gets the name fame and face because of the contribution of the people in operation there. I am very much grateful to all those engineers associated with SPE who relentlessly worked for its progress over the last 25 years. I also thank all the donors, sponsors, and well-wishers who contributed valuable funds and help to SPE. You are aware that we are planning to shift existing office to new premises with a larger area, where we can accommodate office, lecture room, library, and other facilities which will need raising the funds through donations apart from surplus fund generated through seminars and workshops.

We must induct qualified members willing to work selflessly for the efficient growth of SPE. We appeal to all members to join our drive for new enrolment of SPE membership

Our website "www.spevadodara.in" is fully functional now and request all members to visit and offer their comments and recommendations for enrichment of its content. There are two SPE WhatsApp groups formed for proper and quick communication among all the members. Apart from the live chat, several technical articles and videos about the innovations and modern trends in technology are being posted in these groups. The information is very interesting and useful for members to enrich their knowledge. I appeal to all members to participate in the technical communication in these groups.

I once again congratulate all members of SPE(I), Vadodara Chapter, and wish them very healthy and happy time ahead.

Thank you,

GV Akre
Chairman

EDITORIAL

Dear Readers,

In one of the Editorials, I had written about friction. The theme was "Let the friction work for you and not against you".

The present war between Russia and Ukraine is a live and latest example of friction working against humanity. Was the war inevitable? Will it establish some one's supremacy? What is the cost of war in terms of loss of life and infrastructure? The questions are innumerable. Even though our country is saved from direct perils, indirectly it has impacted our economy and internal/external trade. Prices of oil and metals have soared beyond expectations. There was a huge burden on public exchequer in air lifting the Indian students and citizens from Ukraine. The prospects of world war looming large, polarization of countries has started surfacing. Import of oil has a lion's share in inflation and trade deficit. The Main electrical equipment manufacturers, the ancillary suppliers, the EPC contracts and many others have received a beating to such an extent that their survival is difficult. The main reason behind this is the supply and EPC contracts awarded on fixed prices with no room for extra payment. The force majeure clause can't be operated as the war has not erupted in India. Most of the businesses run on financial credit. Erratic variations in input cost have sent the power sector developers and contractors reeling under mountain of debt and loss of opportunities. There has been a temporary setback to the employment generation and export of electrical goods.

I remember the days when I passed out from the college (in 1971) and a war in Bangladesh broke out. Even though the war ended in less than 3 weeks, it had shattered our dreams of good placement. No one was prepared to offer a job even at Rs.250 per month. The impact of the war lasted for almost 10 years. I had no option but to join GEB for a gross salary of Rs.373 only. There was negligible development in power sector. Thus there was no development in industries. Vapi and Ankleshwar were just big planned industrial estates. Petrochemical projects had also just started. Earlier a war with China(1962) and with Pakistan (1965) had a devastating effect on economy of the country. I have been witness to all those wars. The war with China and Pakistan took place within two decades of the independence. The foreign policy was not crystalized due to lack of communication and resources. Literacy was hardly 40%. If predictions of a former French Astrologer Nostradamus are to be believed, the present war between Russia and Ukraine may lead to World War III in 7 months from now. Let us pray God to avert the crisis. The world war affects small countries in a very big way due to shrinkage of economy. However, no country is spared from the side effects of world war. This is for a simple reason that import and export is vital for any country. Standalone economy is next to impossible in today's world. The economic sanctions are being used economically powerful nations against dependent countries.

In the present scenario the popular Government in this country may have to form a strategy to help the sagging industries and the service providers.

Er. SM Takalkar
Vice-Chairman

CHAPTER'S ACTIVITIES

➢ On **12 Mar 2022,** the **Chapter** organized a **Symposium** on the topic of **"Pow er Reforms and its Effects on Development"** in the Vasvik Auditorium, Institution of Engineers (I). This event was organized as a part of Silver Jubilee Celebration of Vadodara Chapter of SPE(I). The symposium was a curtain raiser for the forthcoming national conference on the topic of **"Power Reforms – Process, Expectation & Achievements"** being organized by the Central Board of Irrigation and Power at Laxmi Vilas Palace, Vadodara on **25 & 26 May 2022**. The eminent speakers expressed their views and made presentation on various topics, detailed as under.

1. Er. PH Rana, Independent Director, MGVCL
His presentation revolved round the events which preceded before the enactment of **Electricity Act–2003**.
He spoke about Evolution of the Institutional framework, Problems of Power Sector, Energy conservation Act, Electricity Act–2003, Distribution of Electricity, Tariff, Open Access and Trading, Role of Regulatory Bodies & Regulations notified by GERC and CEA.

2. **Er. SM Takalkar,** Managing Director, M/s Takalkar Power Engineers & Consultants Pvt. Ltd.
He made presentation on the topic of **Power Reforms – Bonanza to the Service Sector**.
In his presentation he covered the following:

- **Scenario before Reforms**
- **Change in Scenario after Reforms**
- **Bonanza to Service Sector**
- **Author's Experience**

He went on to explain as to how various service sector were benefitted due to reforms in power sector which include EPC contractors, IT Personnel, Testing & Certification Agencies, Consultants, Security Agencies, HR Agencies, Accounting Agencies etc.

3. Er. Upendra Pande
MD, GETCO
He delivered lecture on the topic of **Development of Power Transmission in the State of Gujarat**. He explained about Evolution of Electricity Sector in India, History of Electricity Sector in India, Legal Framework, Major Amendments to the Act, National Grid – Development & Evolution, RE Integration status – India, Reforms in Gujarat & Way forward, Electricity Act-2003, Reforms in Gujarat Electricity Sector, Gujarat Power Sector Overview, Comparison of Demand in Gujarat, Rapid Development: Adoption of State of Art Technology etc.

4. Mr. KP Jangid
GM (Commerce), GUVNL
He spoke on the topic of **Gujarat Power Sector – Impact of Reforms**.
His presentation covered the following

- **Impact of Reforms on Generation, Open Access, Tariff, Trading of power, Financial Restructuring & Distribution sector**
- **Present Scenario of Power Sector**
- **Highlights – Indian Power Sector**

5. Er. Prasanna Kumar
MD, GSECL
He covered the topic of **Gujarat Power Sector Development after Power Sector Reforms related to Power Generation**.
In his presentation he described the following:

- **Pre–Reforms Scenario**
- **Power Sector Challenges**
- **Objectives of Reforms / Unbundling**
- **Outcome of Reforms**
- **Generation – Issues & Challenges**
- **RE Capacity Addition Status**
- **Future Energy Transition**
- **Challenges for Generation Companies**
- **Achievements of GSECL**

6. Ashwin Khambhatta
Retd. ACE, GUVNL

He gave lecture on **Power Sector Reform and its impact in State of Gujarat.** His presentation covered the following topics:

- **Structural overview – Power Sector**
- **Indian Electricity Act-1910**
- **Electricity (Supply) Act-1948**
- **Electricity Regulatory Commissions Act-1998**
- **Electricity Act-2003**
- **Functional Unbundling**
- **Tariff Structure**

In the beginning, **Er. GV Akre,** Chairman–SPE (I), Vadodara, gave welcome speech and briefed about the activities of chapter

FUTURE PROGRAMMES

The Chapter has planned following programmes in near future.

1. Cultural programme "SPE has got talent" by the members and spouse of the Chapter (with spouse Lunch/Dinner) on **10 Apr 2022**
2. Silver Jubilee celebration and felicitating the Well Wishers & contributors responsible for the growth of the Chapter (with spouse Lunch / Dinner) **17 Apr 2022**
3. Product Demonstration programme on 22 Apr 2022 on UGA Cable Sealing Products & benefits to Power Sector
4. Supporting CBIP in organizing a national event on "**Power Reforms**" (**25 & 26 May 2022**) at LV Palace, Vadodara.
5. All India AGM of SPE (I). The detailed information will be given from time to time

MEMORABLE MOMENTS DURING AN EVENING SYMPOSIUM ON POWER REFORMS

August Gathering
Front row: L to R
Mr. KP Jangid, GM (Cmm), GUVNL
Er. Upendra Pande, MD, GETCO
Er. Prasanna Kumar, MD, GSECL
Er. GV Akre, Chairman, Er. SM Takalkar, Vice-Chairman, SPE(I), Vadodara

Dignitaries on Dais
L to R Er. PH Rana, Ind. Dir., MGVCL
Er. Ambikesh Padhya, Chairman, IE (I), Vadodara
Er. Upendra Pande, MD, GETCO,
Er. Prasanna Kumar, MD, GSECL
Er. GV Akre, Chairman, SPE (I) Vadodara

Welcome address by Er. GV Akre, Chairman SPE(I), Vadodara

Welcome address by Er. Ambikesh Padhya, Chairman, IE(I), Vadodara

Er. VB Harani presenting memento to
Er. PH Rana, Ind. Dir., MGVCL

Er. PH Rana (extreme right) delivering lecture
On the dais L to R Er. Ambikesh Padhya,
Er. Upendra Pande, Er. Prasanna Kumar,
Er. GV Akre

Er. SM Takalkar, Vice-Chairman, SPE(I),
Vadodara delivering lecture

Er. Keyur Thakkar, Hon. Secretary, IE(I)
Vadodara presenting bouquet to
Er. SM Takalkar, Vice-Chairman, SPE(I)

Er. SM Godkhindi presenting memento to
Er. SM Takalkar, Vice-Chairman, SPE(I)

Er. Ambikesh Padhya presenting bouquet to
Er. Upendra Pande, MD, GETCO

Er. Upendra Pande, MD, GETCO
delivering lecture

Er. PB Parmar presenting bouquet to
Er. Upendra Pande, MD, GETCO

Er. YD Mehta presenting memento to
Er. Upendra Pande, MD, GETCO

Er. SP Trivedi presenting memento to
Mr. KP Jangid, GM (Comm.), GUVNL

Mr. KP Jangid, GM (Comm.), GUVNL
delivering lecture

Er. PA Shah presenting bouquet to
Er. Prasanna Kumar, MD, GSECL

Er. Prasanna Kumar, MD, GSECL
delivering lecture

Er. NG Yadav, Treasure, SPE(I) Vadodara
presenting bouquet to Er. Ashwin Khambhatta,
Retd. Addl. CE, GUVNL

Er. PH Rana, Ind. Dir., MGVCL presenting
memento to Er. Prasanna Kumar, MD, GSECL

Er. NC Solanki, Jt. Secy.
presenting bouquet to
Er. PH Rana, Ind. Dir.
GUVNL

Power Sector Reform and its impact in State of Gujarat

Er. Ashwin Khambhatta, Retd. Addl. Chief Engineer, GUVNL

Prior to Power Sector Reforms, the major Rules that regulated the Electricity Sector were:

- Indian Electricity Act-1910
- Electricity Supply Act-1948
- Electricity Rules-1956
- Electricity Regulatory Commission Act-1998

The Electricity Industry was mainly operated / controlled through State Government Under-takings /Entities.

Tariffs were pre-dominantly decided by State Government and State Electricity Board.

The provisions in Indian Electricity Act-1910 were

(i) Basic framework for electricity supply industry in India.
(ii) The growth of the sector through private licensees.
(iii) The license was granted by State Government.
(iv) The license was issued for supply of electricity in a specified area only.
(v) Under license, the licensee has legal frame work for laying down of wires & network. The area of supply was well defined.
(vi) One more provision was to build up relationship between Licensee & Consumer.

Electricity Supply Act-1948 was important in which it was mandated creation of State Electricity Boards (SEBs). Secondly it provoked on the States to step in (through SEBs) to extend electrification across the State i.e. rural areas and all villages, well electrifications etc. This was the beginning of controlled power system. The system somehow or the other, started reaching out to towns and villages. However, due to state control, the development was limited. Generation always chased the demand. Most of the SEBs were sick.

The Electricity Regulatory Commission Act-1998 provides for setting up of Central/State Electricity Regulatory Commissions with powers to determine tariffs and also implementation. The main aim of ERC is to enable appropriate mechanism of tariff determination-reducing influence of State Govt. in tariff determination.

Then Electricity Act-2003 came in force. Consolidated laws regarding power sector covering Generation, Transmission, Distribution, Power Trading etc. were included in the Act. The objective of the Act is rapid development of Power Sector, promoting competition, protecting consumer interests, tariff and environmental protection. Other aims were Functions and Roles of Central and State Agencies, constitution of Regulatory Commission and Appellate Tribunal. The Act also includes governing regulations like Terms & Conditions of Tariff, Grid Code, Electricity Supply Code, Distribution Code, Open Access, Renewable Energy Regulations etc.

After unbundling of Power Sector, the Power Generation is known as **GENCO**. Power generation is made free from licensing. It also includes Captive Generation and self-consu-mption through Open Access is permitted. The generation from Renewable Energy promoted through minimum purchase requirement (RPO) is one of the aims. The State Load Despatch and Area Load Despatch Centres have to work independently. Tariffs for sale of energy to regulated utilities, is brought under the juris-diction of appropriate regulators.

The role of Power Transmission (TRANSCO) in Power Sector is Transmission Licensee as defined by the Regulatory Commission. The Central/State transmission utilities are entrusted with responsibility of transmission system planning & development. The co-ordination with States for development of transmission system for larger interest of consumers. The Load Despatch and transmission planning identified as separate functions is also one of the aims. The transmission licensees are barred from trading to facilitate genuine competition. Non-discrimi-natory **Open Access** to transmission Lines for flow of power for generators as well as consumers is the theme.

The role of Power Distribution (DISCOM) in Power Sector is Distribution License by SERCs. The retail tariff structure is to be determined by SERCs. Open Access in distribution system is allowed on payment of charges such as energy, demand, reactive energy etc. Cross subsidies are part of Tariff and must be reduced from time to time. Universal supply obligation throughout India is one of the aims of Act-2003. Consumer has choice to source power. Of course, it has to pay line charges and losses. Procurement of power by Distribution licensee through Cost plus or Competitive Bidding Route is established. For Power Trading, a distinct activity, license is required. The interstate & intrastate license, deemed licensees etc. is part of the Act. Trading can facilitate to generator by easier distribution of surplus, product differentiation (firm/non-firm,

peak/off-peak) and economic pricing. Presently, there are two (2) Power Exchanges functioning in India.

The Tariff Structure of SEBs during pre & post ABT regime, a cost plus electricity pricing mechanism, is as under:

Prior to 1991: Flat Rate – single part (P/kWH). The demerit is generation irrespective of system requirement leading to poor/high grid frequency.

After 2002: Availability Based Tariff introduced which has Fixed charges linked to Plant Availability and variable charges linked to utilization/schedule. Also frequency linked charges for deviation from generation / schedule (deviation settlement mechanism) is included in ABT.

The elements for 2-Part Tariff for generator are:

- **Fixed charges:**
  - Interest on loan capital
  - Return on equity
  - Interest on working capital
  - Depreciation
  - O&M expenses
  - Incentive
- **Variable charges:**
  - Cost of primary fuel(Coal/ Gas/ Liquid)
  - Cost of secondary fuel

The framework for power purchase:
Electricity Act-2003 provides 2 modes for tie up of power; one is Section-62, determination of Tariff by Commission based on cost plus basis – Generation, Transmission & Retail Sale and the other is Section-63, adoption of Tariff by Commission if discovered through competitive bidding conducted as per guidelines.

The National Tariff Policy-2006 & 2016 mandates long term power procurement by Distribution Licensee through competitive bidding.

GEB was unbundled in to 7 Companies, 1 GENCO, 1 TRANSCO, 4 DISCOMS and 1 residual GUVNL for Power Trading and coordination between Government and Utilities of Gujarat. They are listed below:

Erstwhile Gujarat Electricity Board (GEB) was unbundled w. e. f. 01.4.2005 with an aim of restructuring power sector into three different segments

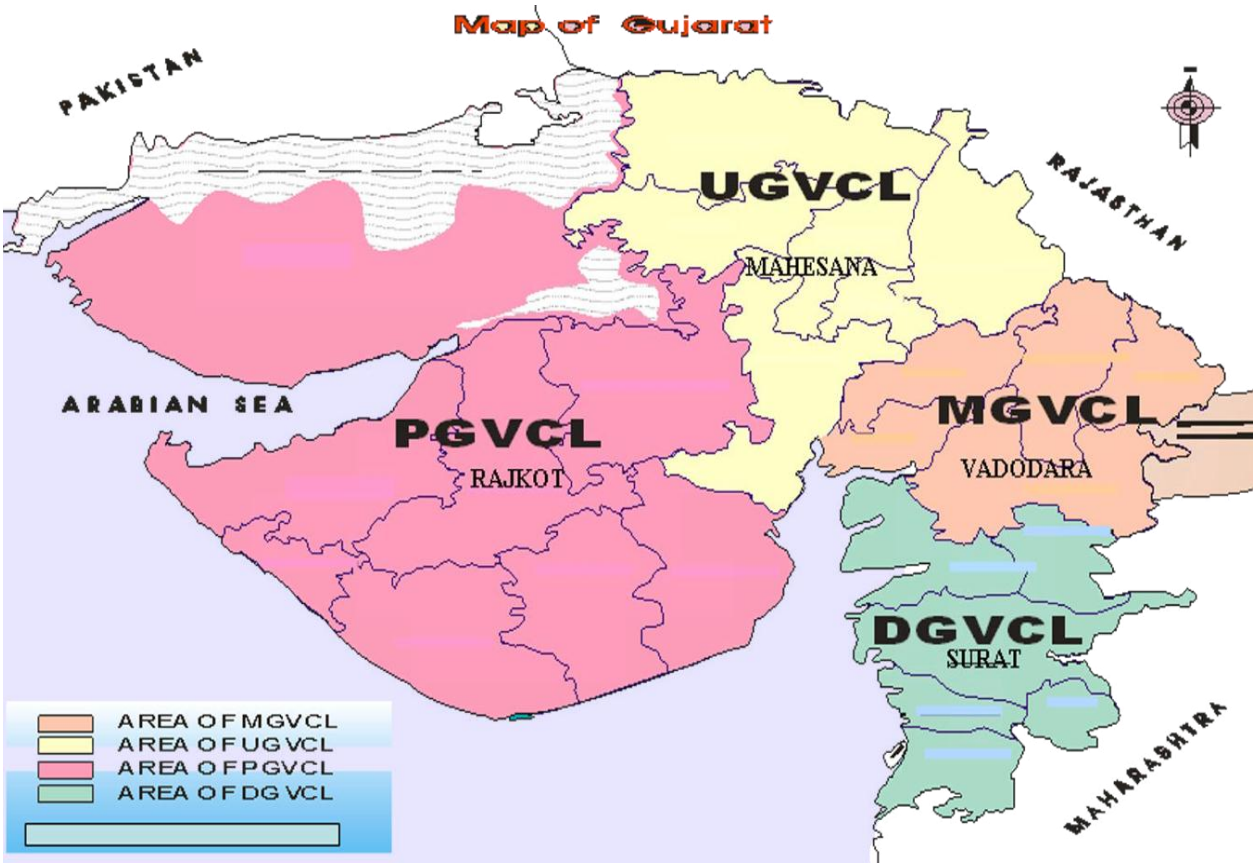
(i) Generation
(ii) Transmission
(iii) Distribution

Gujarat Electricity Board

The main aim of restructuring is to ensure long term viability & sustainability of sector, effective monitoring and decision making and to gain advantage of efficiencies of decentralized structure

- **Gujarat Urja Vikas Nigam Limited** (Trading/Holding Company)
- **Gujarat State Electricity Corporation Limited** (Generating Company)
- **Gujarat Energy Transmission Corporation** (Transmission Company)
- **Uttar Gujarat Vij Company Limited** (Distribution Company)
- **Paschim Gujarat Vij Company Limited** (Distribution Company)
- **Madhya Gujarat Vij Company Limited** (Distribution Company)
- **Dakshin Gujarat Vij Company Limited** (Distribution Company)

A photograph showing area of licensee and name of companies is exhibited below



Best practices for power purchase in Gujarat

GUVNL prepares Merit Order on 15 days basis in which generators stacked in order of their marginal cost and reflects updated marginal cost – cost optimization.

Load forecasting is done by Area Load Despatch Centres on daily basis which enables efficient generation planning by SLDC/DISCOMs.

SLDC does Real Time operation observing State Merit order.

Power purchase based on incremental marginal cost minimizes power purchase cost.

The implementation of Intra State ABT (Availability Based Tariff) is implemented.

The earning rebate is given for timely payment of bills by the selling constituent.

Tie up of adequate power on long term basis through competitive bidding and cost plus basis for meeting existing as well as upcoming demand is observed. This helps in ensuring confirmed availability of quantum of power.

State having diversified fuel mix with coal/lignite contributing to more than 80% of annual purchase followed by RE(10%).

The Fuel Price & Power Purchase Adjustments (FPPPA) is a mechanism against any change in cost of power purchase after tariff determination is ensured through Fuel & Power Purchase Adjustment (FPPPA) formula.
This enables the DISCOMs to recover tariff as per actual power purchase cost pending tariff revision.

Er. Ashwin Khambhatta
Retd. Addl. Chief Engineer
GUVNL

THE END