

# **Transmission Corporation of Telangana Limited (State Transmission Utility)**



**Filings for  
ANNUAL PERFORMANCE REVIEW (True-Up)  
of Transmission Business for FY2022-23 w.r.t.  
Transmission Tariff Order dt. 20.03.2020**

**December 2023**

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**BEFORE THE HONOURABLE TELANGANA ELECTRICITY REGULATORY  
COMMISSION**

AT ITS OFFICE AT V<sup>th</sup> FLOOR, SINGARENI BHAVAN, RED HILLS, HYDERABAD.

FILING NO. \_\_\_\_\_/2023

CASE NO. \_\_\_\_\_/2023

**In the matter of:**

Filing of the Annual Performance Review (True up) for the FY2022-23 of Transmission Business of TSTRANSCO w.r.t. Transmission Tariff Order dated 20.03.2020 for the 4<sup>th</sup> Control Period i.e., for FY 2019-20 to FY 2023-24, read with Regulation No.5 of 2005 issued by the erstwhile APERC and subsequently adopted by TSERC as per Regulation No.1 of 2014.

**In the matter of:**

**TRANSMISSION CORPORATION OF TELANGANA LIMITED** ...Applicant

**AFFIDAVIT OF APPLICANT VERIFYING THE APPLICATION ACCOMPANYING FILING  
OF ANNUAL PERFORMANCE REVIEW (TRUE UP) FOR THE FY2022-23 OF  
TRANSMISSION BUSINESS OF TSTRANSCO**

I, S.A.M. Rizvi, S/o Dr. S.A.H. Rizvi, working for gain at the Transmission Corporation of Telangana Limited do solemnly affirm and say as follows:

1. I am the Chairman and Managing Director of TSTransco, the licensee company operating and controlling the Transmission & SLDC business of electricity in Telangana pursuant to the license granted by the Hon'ble Commission. I am competent and duly authorized by TS Transco to affirm, swear, execute and file this affidavit in the present proceedings.

2. I have read and understood the contents of the accompanying filing of Annual Performance Review (True up) for the FY2022-23. The statements made in the paragraphs of the accompanying application, now shown to me, are true to my knowledge derived from the official records made available to me and are based on information and advice received which I believe to be true and correct.

**DEPONENT**

VERIFICATION:

I, the above named Deponent solemnly affirm at Hyderabad on this **day of December, 2023** that the contents of the above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed there from.

**DEPONENT**

Solemnly affirmed and signed before me.

COMPANY SECRETARY  
TSTRANSCO/HYDERABAD

**BEFORE THE HONOURABLE TELANGANA ELECTRICITY REGULATORY  
COMMISSION**

AT ITS OFFICE AT V<sup>th</sup> FLOOR, SINGARENI BHAVAN, RED HILLS, HYDERABAD.

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**In the matter of:**

**TRANSMISSION CORPORATION OF TELANGANA LIMITED** .... Applicant

The applicant respectfully submits as under:

1. Hon'ble TSERC, as per Tariff Order dt. 20.03.2020 for Transmission Business for the 4<sup>th</sup> Multi-Year Tariff (MYT) period i.e., FY 2019-20 to FY 2023-24 directed TSTRANSCO to comply with the directives stipulated for each year of the MYT period.
2. As per the Directive No.3 of the Tariff Order dt.20.03.2020, TSTRANSCO is required to file Annual Performance Review (True up) for each year of the 4<sup>th</sup> Control Period before 31<sup>st</sup> December of the following year.
3. It is to submit that TSTRANSCO filed Annual Performance Review (True up) for the FY 2021-22 for Transmission Business dt. 29.12.2022 and the Hon'ble Commission issued order dt. 26.05.2023.
4. TSTRANSCO herein files petition on Annual Performance Review (True up) for the FY2022-23 for Transmission Business including the information in the booklet and in standard formats.
5. The Licensee submits the information (PCCs and FCCs) in compliance with the Directive No. 6 of the MYT Tariff order dt. 20.03.2020 along with the present petition.
6. The operational Performance parameters achieved by TSTRANSCO for the FY2022-23 are as follows.

- i) Transmission System Availability: 99.98%
  - ii) Transmission System Loss: 2.52%
7. In the aforesaid circumstances, the applicant respectfully prays the Hon'ble TSERC to:
- a) Take the accompanying petition on Annual Performance Review (True up) for the FY2022-23 for Transmission Business on record.
  - b)
    - i) consider the Surplus of Rs.252.33 Crores as pass-through by way of special appropriation in the next control period.
    - ii) consider the depreciation on addition during the Year from the date of capitalization during the Year from the date of capitalization as per CERC Regulation No.33, vide notification No. L-1/236/2018/CERC dt: 07.03.2019.
    - iii) allow the entire capitalization amount in Regulated Rate Base (RRB) computation
    - iv) consider to grant an incentive to the petitioner in terms of Clause 18(1) of Regulation No. 5 of 2005, for maintaining Transmission System losses below the approved loss bands during the last 4 years of the 4<sup>th</sup> MYT period.
  - c) Grant suitable opportunity to TSTRANSCO within a reasonable timeframe to file additional information if required.
  - d) Consider the facts and circumstances of the present petition and pass an appropriate order.

TRANSMISSION CORPORATION OF TELANGANA LIMITED  
(**APPLICANT**)

Through

Place: HYDERABAD

S.A.M. RIZVI

Dated: December, 2023

CHAIRMAN AND MANAGING DIRECTOR

## **1 Introduction**

With the enactment of Andhra Pradesh Reorganisation Act 2014, the Telangana State has been carved out from the undivided Andhra Pradesh State as the 29<sup>th</sup> state of the Republic India on 02.06.2014.

The erstwhile Regulatory Commission of undivided State of Andhra Pradesh had issued Regulation No. 3 of 2014 (Reorganization) Regulation, 2014 on 25.05.2014, consequent to the framing of Andhra Pradesh Reorganization Act 2014 notified by Government of India on 01.03.2014, where in clause 3 of the regulation says that, “All the regulations as well as their supplementary regulations/amendments, rules, orders, proceedings, guidelines, memos, notifications, other instruments issued immediately before 2<sup>nd</sup> June 2014 by the APERC for the conduct of business and other matters shall fully and completely apply to the whole of the states of Telangana and Andhra Pradesh and shall similarly apply in relation to all matters falling within the jurisdiction of the Commission until they are altered, repealed or amended by the respective State Electricity Regulatory Commissions”.

In accordance with the above regulation, all the regulations framed by erstwhile APERC will continue to apply for the state of Telangana. Subsequently, TSERC vide Telangana Official Gazette has issued its first regulation, Regulation No.1 of 2014 (adoption of Previously subsisting Regulations, Decisions, Directions or Orders, Licenses and Practice of Directions) wherein clause 2 says that “All regulations, decisions, directions or orders, all the licenses and practice directions issued by the erstwhile Andhra Pradesh Electricity Regulatory Commission (Regulatory Commission for States of Andhra Pradesh and Telangana) as in existence as on the date of the constitution of the Telangana State Electricity Regulatory Commission and in force, shall mutatis-mutandis apply in relation to the stakeholders in electricity in the State of Telangana including the Commission and shall continue to have effect until duly altered, repealed or amended, any of Regulation by the Commission with effect from the date of notification as per Notification issued by the Government of Telangana in G.O.Ms.No.3 Energy (Budget) Department, dt.26.07.2014 constituting the Commission”.



In compliance with the Regulations and Guidelines issued by the TSERC, TSTransco, the State Transmission Utility & Transmission Licensee managing the Transmission business herein submits the following in this Annual Performance Review (True-up) Petition:

- i. True-Up of Financial Performance for FY2022-23.
- ii. True-Up of Technical Performance for FY2022-23.

## **2 True-Up of financial performance for FY2022-23:**

Transmission Corporation of Telangana Limited (TSTRANSCO) had filed its Petition under Section 26(5) of the Andhra Pradesh Electricity Reform Act, 1998, Sections 61 to 64 of the Electricity Act, 2003 and relevant Guidelines and Regulations, before the Telangana State Electricity Regulatory Commission (TSERC) on 30.11.2019 for approval of Aggregate Revenue Requirement (ARR), Filing for Proposed Tariff (FPT) for Transmission Business for the 4<sup>th</sup> MYT Control Period from FY 2019-20 to FY 2023-24.

The Petition was admitted by the Hon'ble TSERC and assigned O. P. No. 3 of 2019. The Hon'ble TSERC, in exercise of its powers under the Electricity Act, 2003 and the Andhra Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Transmission of Electricity) Regulation No. 5 of 2005 as adopted by Hon'ble TSERC vide its Regulation No. 1 of 2014, and after considering Petitioner's submissions, suggestions and objections of the other stakeholders, responses of Petitioner has issued ARR and Transmission Tariff Order for the 4<sup>th</sup> MYT Control period (i.e., FY 2019-20 to FY 2023-24 ) and is applicable with effect from 20.03.2020.

Hon'ble TSERC vide "Appendix B" has issued new directive No.3 wherein, the commission has directed the petitioner to file **Performance Review (True up)** for each year of the 4<sup>th</sup> MYT Control period.

In compliance to the directive No.3, TSTRANSCO here-by submits the following for Annual Performance Review (APR) of Transmission Business for FY 2022-23:

- Statement of variance with the Tariff Order for each item in the Aggregate Revenue Requirement and reasons for variation.
- Aggregate Revenue Requirement (ARR) for the year computed based on actual investments, interest and other costs.
- The Surplus/Deficit for the year has been arrived, based on the revenue earned for FY 2022-23.

**I) Operation and Maintenance (O&M) Expenses:**

The Actual O&M Expenses include 1. Employees Cost, 2. Administrative & General Expenses and 3. Repairs & Maintenance Expenses for FY 2022-23.

**Table 1: Variance in O&M Expenses:**

(Rs. in Crores)

Particulars	FY 2022-23		
	Tariff Order	Actuals	Deviation
<b>Gross O&amp;M Costs</b>	<b>1130.28</b>	<b>1410.15</b>	<b>279.87</b>
Employees Cost		1292.54	
Administrative & General Expenses		70.44	
Repairs & Maintenance Expenses		47.17	
<b>Less: O&amp;M Expenses Capitalised</b>	<b>160.89</b>	<b>142.49</b>	<b>-18.40</b>
<b>Net O&amp;M Expenses</b>	<b>969.39</b>	<b>1267.66</b>	<b>298.27</b>

- Net O&M Expenses for the year have been increased by Rs.298.27 Crores.
- The O&M cost as per Tariff Order is estimated amount and the same is computed based on O&M approved norms. Whereas, Company has submitted the actual O&M cost as per audited accounts for FY 2022-23. Employee cost has increased due to pay scale revision to the employees and terminal benefits as per actuarial valuation.
- Capitalisation of expenses have been decreased due to decrease in capitalisation during the year and also adoption of policy changes in capitalisation of Admin. & General expenses as per IND AS 12 commented by C&AG.

**II) Depreciation:**

In Compliance with Hon'ble TSERC Directive No.5, the Company has changed its accounting policy of charging depreciation rates as per CERC rates instead of rates notified by Ministry of Power with effect from FY 2020-21 onwards.

**Table 2:** (Rs. in Crores)

Particulars	FY 2022-23		
	Tariff Order	Actuals	Deviation
Depreciation	1245.29	1036.64	-208.65

- Actual depreciation amount has decreased due to i) Change in Depreciation methodology and rates ii) less capitalisation during the year.
- Depreciation has been arrived at as per the CERC depreciation rates under straight line method on the opening assets and also on additions to OCFA during the year proportionately in accordance with CERC Tariff Regulations, 2019.
- Hon'ble Commission is further requested to consider the depreciation on the addition during the Year from the date of capitalisation as per clause no. 33 of CERC (Terms & Conditions of Tariff) Regulations, 2019.

**III) Taxes on income:****Table 3:** (Rs. in Crores)

Particulars	FY 2022-23		
	TariffOrder	Actuals	Deviation
Income Tax	104.28	81.94	-22.34

Tax on income was calculated at current rate of Minimum Alternate Tax (MAT) on the Return on Equity (RoE) @14% on 25% of actual Regulated Rate Base.

**IV) Return on Capital Employed (RoCE):**

Return on Capital Employed (RoCE) is to cover the interest charges on the debt portion and Return on Equity on the actual Regulated Rate Base of TS TRANSCO in 75:25 Debt Equity Ratio. Company has computed the actual Return on Capital Employed (ROCE) for the years as per the methodology prescribed by the Hon'ble Commission vide Regulation 5 of 2005.

**Table 4:**

(Rs. in Crores)

Particulars	FY 2022-23		
	Tariff Order	Actuals	Deviation
<b>Assets</b>		<b>22900.11</b>	
Original Cost of Fixed Assets (OCFA)		21296.49	
Additions to OCFA		1603.62	
<b>Depreciation</b>		<b>8035.24</b>	
Opening Balance		6998.60	
Depreciation during the year		1036.64	
<b>Consumer Contributions</b>		<b>3769.01</b>	
Opening Balance		3590.02	
Additions during the year		179.00	
<b>Working Capital</b>		<b>156.29</b>	
<b>Change in Rate Base</b>		<b>193.99</b>	
<b>Regulated Rate Base (RRB)</b>	<b>14073.03</b>	<b>11058.15</b>	<b>-3014.88</b>
Cost of Debt (Interest & Finance Charges)	<b>1039.65</b>	<b>935.53</b>	<b>-104.11</b>
Return on Equity @ 14% on 25% of RRB	492.56	387.04	<b>-105.52</b>
<b>Return on Capital Employed (RoCE)</b>	<b>1532.20</b>	<b>1322.57</b>	<b>-209.63</b>

- The depreciation for the year has been calculated on straight line method considering the depreciation rates as notified in CERC (Terms and Conditions of Tariff) Regulations, 2019.
- In the Regulated Rate Base (RRB) calculation, Company has considered the actual asset addition to Fixed Assets tallying with the books of accounts. Hon'ble TSERC is requested to allow the entire capitalization amount in RRB computation.
- The additions to OCFA as per the audited accounts for FY 2022-23 is Rs.1603.62 Crores which is after adjustment of Asset withdrawal of Rs. 121.13 Crores during the Year.

- The Return on Capital Employed (RoCE) for the year is computed considering the net interest expenditure at actual (i.e., net interest capitalisation) and , Return on Equity (RoE) @14% on 25% of actual Regulated Rate Base as per Regulation No.5 of 2005.

**V) Revenue: The following is the position of Revenue for FY 2022-23:**

**Table 5 :**

(Rs. in Crores)

Particulars	FY 2022-23		
	Tariff Order	Actuals	Deviation
Revenue from Transmission Charges	3398.66	3415.79	17.13
Other Income	452.51	545.36	92.85
<b>Total:</b>	<b>3851.17</b>	<b>3961.15</b>	<b>109.98</b>

- The total revenue of the Company for the year has been increased to the extent of Rs.109.98 Crores due to increase in Non-Tariff Income (Other income). The increase in Non-tariff income is mainly on account of Interest on Inter corporate deposits for an amount of Rs. 112.43 Crores arranged to TS Discoms for working capital requirement by borrowing short terms loans from Banks and Financial Institutions.

**VI) Aggregate Revenue Requirement (ARR) True up (Tariff Order Vs Actuals) for FY 2022-23:**

- The Total Aggregate Revenue Requirement (ARR) approved by Hon'ble Commission for the year is Rs.3851.17 Crores, against actual ARR of Rs.3708.81 Crores. Whereas, the company has received Rs.3961.15 Crores by way of revenue including other Income. Thereby the company has earned a Surplus of Rs.252.33 Crores during FY 2022-23.

Table 6:

(Rs. in Crores)

Sl. No.	Particulars	FY 2022-23		
		Tariff Order	Actuals	Deviation
<b>A.</b>	<b>Expenditure ( i + ii + iii + iv + v + vi )</b>	<b>2479.85</b>	<b>2528.73</b>	<b>48.88</b>
i	O&M Costs	1130.28	1410.15	<b>279.87</b>
ii	O&M Carrying Costs	0.00	0.00	<b>0.00</b>
iii	Depreciation	1245.29	1036.64	<b>-208.65</b>
iv	Taxes	104.28	81.94	<b>-22.34</b>
v	Special Appropriation	0.00	0.00	<b>0.00</b>
vi	Other Expenses	0.00	0.00	<b>0.00</b>
<b>B.</b>	<b>Less: Expenses Capitalized ( vii + viii )</b>	<b>160.89</b>	<b>142.49</b>	<b>-18.40</b>
vii	IDC Capitalized	0.00	0.00	<b>0.00</b>
viii	O&M Exp. Capitalized	160.89	142.49	<b>-18.40</b>
<b>C.</b>	<b>Net Expenditure ( A – B )</b>	<b>2318.96</b>	<b>2386.24</b>	<b>67.28</b>
D.	Return on Capital Employed (ROCE)	1532.20	1322.57	<b>-209.63</b>
<b>E.</b>	<b>Gross ARR/Total Expenditure ( C + D )</b>	<b>3851.16</b>	<b>3708.81</b>	<b>-142.35</b>
ix	Non Tariff Income	452.51	545.36	<b>92.85</b>
x	Revenue from Tariff	3398.66	3415.79	<b>17.13</b>
<b>F</b>	<b>Total Revenue ( ix + x )</b>	<b>3851.17</b>	<b>3961.15</b>	<b>109.98</b>
<b>G</b>	<b>Surplus/(Deficit) ( F – E )</b>	<b>0.01</b>	<b>252.34</b>	<b>252.33</b>

- It could be seen from the above that, (i) the net expenditure of the Company has been increased by Rs.67.28 Crores mainly due to increase in O&M cost (ii) RoCE has been decreased by Rs.209.64 Crores due to reduction in RRB and thereby the Gross ARR decreased to the extent of 142.35 Crores. (iii) the total revenue of the Company increased to Rs.109.98 Crores on account of Non-tariff income which includes Interest on Inter corporate deposits for an amount of Rs. 112.43 Crores on account of inter corporate deposits arranged to TS Discoms for working capital requirement by borrowing short terms loans from Banks and Financial Institutions. In view of the above, the Company has incurred a surplus of Rs.252.33 Crores for FY 2022-23.

In view of the factual figures and reasons explained for the surplus incurred by TSTRANSCO for FY 2022-23, in compliance with the New Directive No.3 towards Annual Performance Review, the Hon'ble commission is requested to consider the surplus of Rs.252.33 Crores as pass-through by way of special appropriation in the next control period.

### 3. TRUE UP OF TECHNICAL PERFORMANCE FOR FY 2022-23

#### 3.1 PLANS FOR SYSTEM PERFORMANCE

##### (a) REPRESENTATIVE SYSTEM LOAD CURVES

##### 1) Requirement in the Guidelines:

Representative system load curves for weekdays and weekends for various seasons (such as summer, winter and monsoon). Indicate in case if any load restriction was imposed. Also provide expected system load curves for the ensuing year and indicate the expected supply curves in each case. (Guidelines – 10a).

##### 2) TSTRANSCO's Response:

##### 2022-23

Typical Full load details along with curves for three seasons representing Peak demand met on week day and Peak demand met on weekend day for the year 2022-23 are as follows:-

##### For 2022-23

Sl.No	Season	Date
1	Typical week end day in summer	04 <sup>th</sup> Mar'23
2	Typical full load day in summer	30 <sup>th</sup> Mar'23
3	Typical week end day in monsoon	03 <sup>rd</sup> Sept'22
4	Typical full load day in monsoon	26 <sup>th</sup> Sept'22
5	Typical full load day in winter	11 <sup>th</sup> Feb'23
6	Typical week end day in winter	28 <sup>th</sup> Feb'23

The highest system peak demand of 15497 MW was recorded on 30.03.2023 @ 11:01 AM for the FY 2022-23.

A brief analysis of system demand for all seasons of the year 2022-23 is furnished in the following sections:

**For 2022-23**

PEAK GRID DEMAND				
SEASON	Max MW	Max Date	Min MW	Min Date
SUMMER	15497	30.03.2023	4688	02.05.2022
MONSOON	13191	26.09.2022	3760	29.07.2022
WINTER	14794	28.02.2023	4266	30.11.2022

**1 Summer season****For 2022-23**

The highest System Peak Demand recorded during summer season is 15497 MW on 30.03.2023. From the system load curve (vide Graph 1) on the day when the highest system peak was recorded during summer season, it can be seen that the system load is continuously maintained above 8739 MW (minimum on 30.03.2023) throughout the day and the maximum demand recorded was 15497 MW. The **demand variation in summer was between 4688 MW and 15497 MW**. The minimum system demand met on 02<sup>nd</sup> May 2022 was 4688 MW and is the lowest recorded in this season.

**2 Monsoon season****For 2022-23**

The highest System Peak Demand recorded during monsoon season is 13191 MW on 26.09.2022. From the system load curve (vide Graph 2) on the day when the highest system peak was recorded during monsoon season, it can be seen that the system load is continuously maintained above 6003 MW (minimum on 26.09.2022) throughout the day and the maximum demand recorded was 13191 MW. The **demand variation in monsoon was between 3760 MW and 13191 MW**. The minimum system demand met on 29<sup>th</sup> July 2022 was 3760 MW and is the lowest recorded in this season.

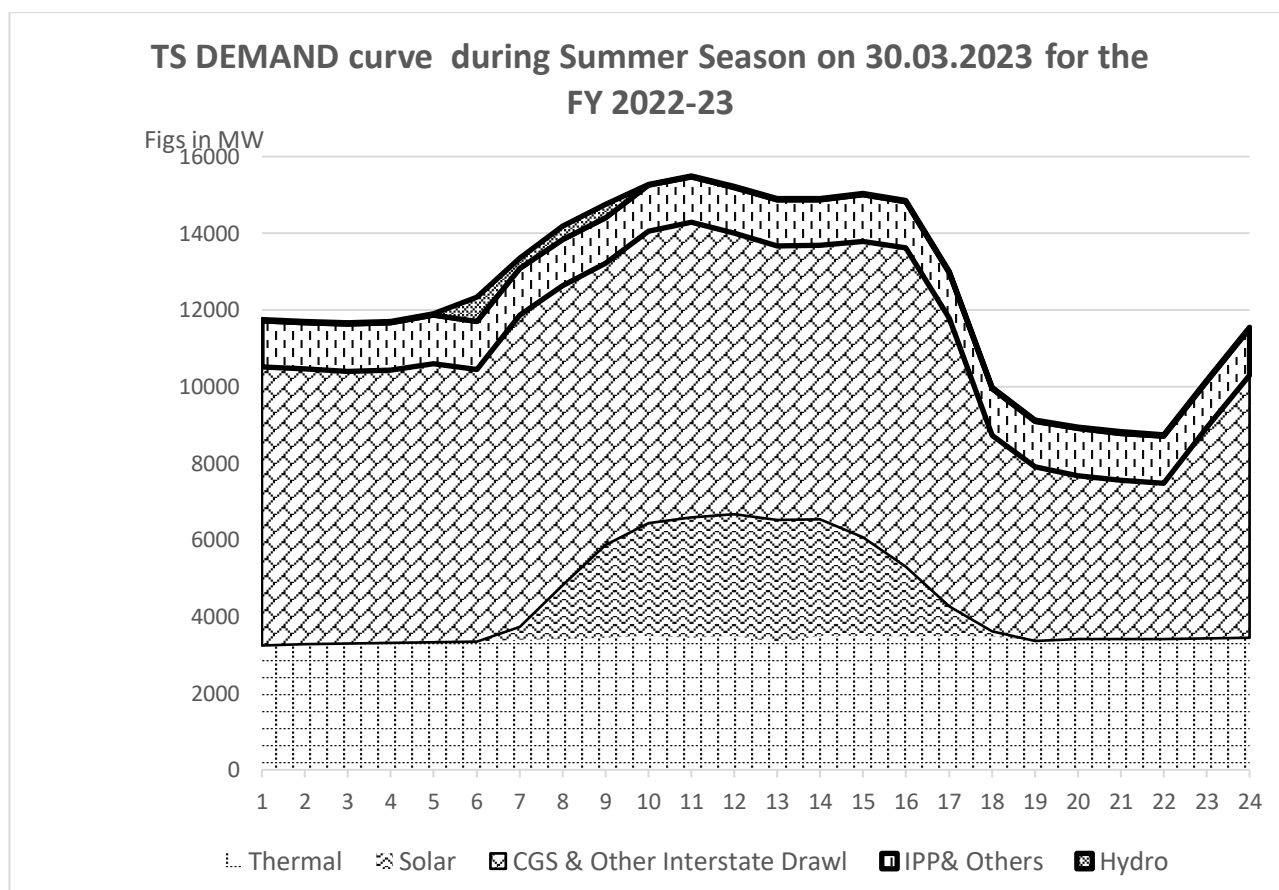


### 3 Winter season

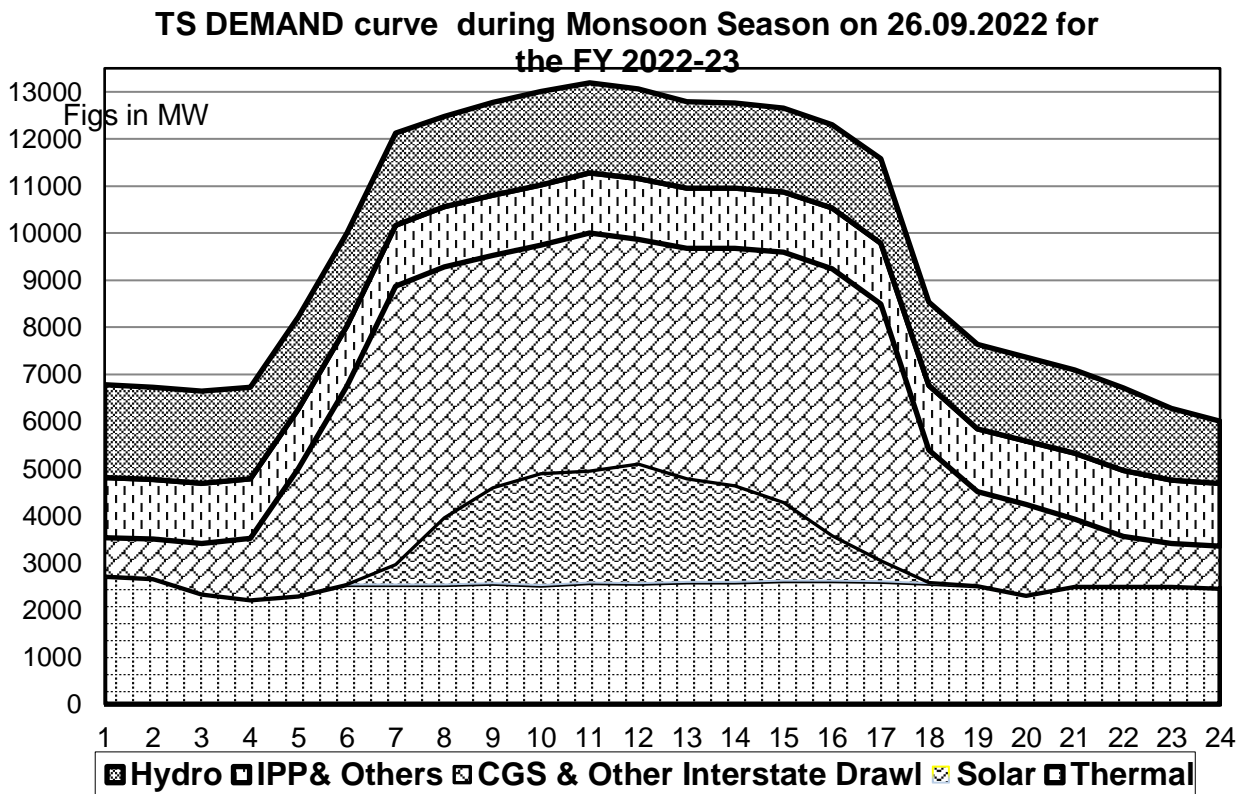
#### For 2022-23

The highest System Peak Demand recorded during winter season is 14794 MW on 28.02.2023. From the system load curve (vide Graph 3) on the day when the highest system peak was recorded during winter season, it can be seen that the system load is continuously maintained above 7232 MW (minimum on 28.02.2023) throughout the day and the maximum demand recorded was 14794 MW. The **demand variation in dry winter was between 4266 MW and 14794 MW**. The minimum system demand met on 30<sup>th</sup> November 2022 was 4266 MW and is the lowest recorded in this season.

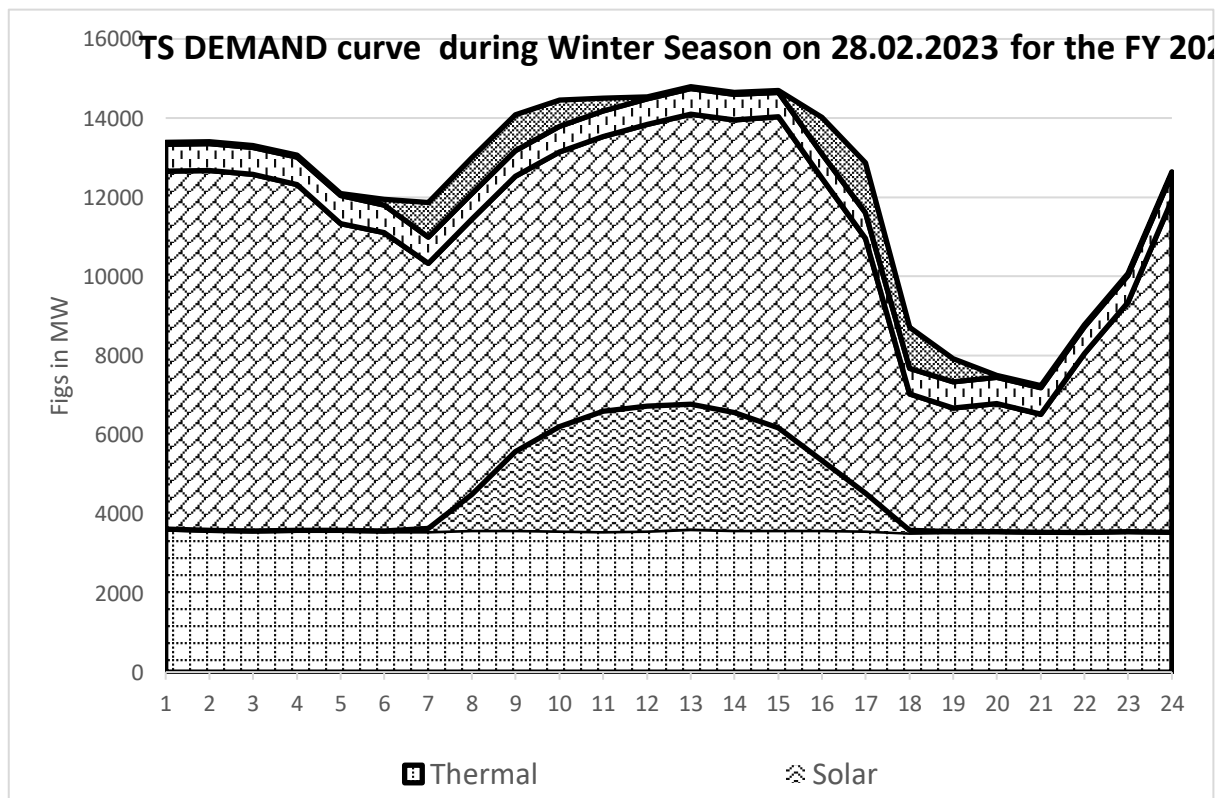
#### Graph 1:



**Graph 2:**



**Graph 3:**



**(b) LOAD DURATION CURVES**

**1. Requirement in the guidelines**

Load duration curves for the past year and current year and expected load duration curve for the ensuing year. Indicate energy unserved on the load duration curves.  
(Guidelines – 10b)

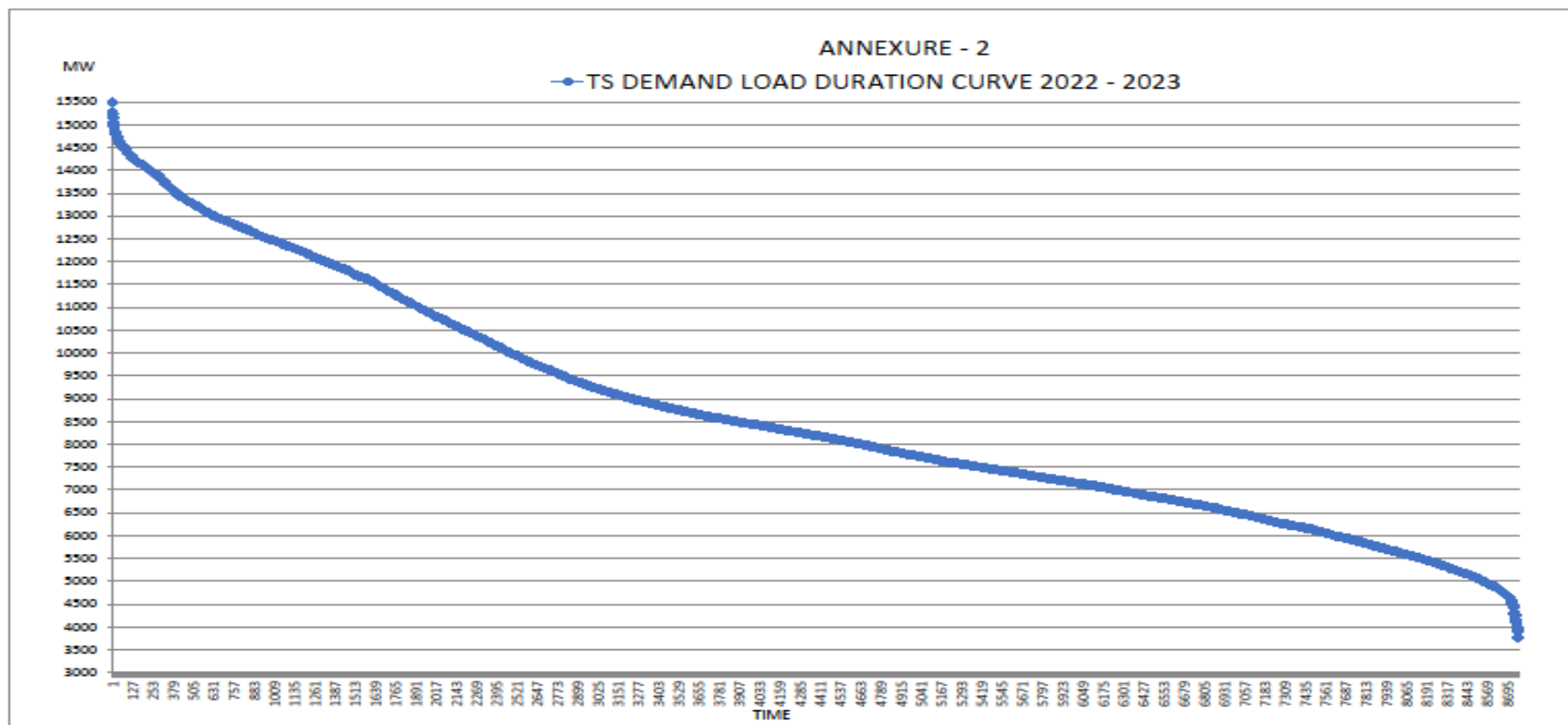
**2. TSTRANSCO's Response:**

The energy availability in FY 2022-23 is 100% of the total energy requirement.

Load duration curve for the FY 2022-23 is enclosed as Graph-4.

**Graph 4:**

**TS Demand Load Duration curve for the FY: 2022-23**



**(c) PLANS TO IMPROVE TRANSMISSION SYSTEM PERFORMANCE****1. Requirement in the Guidelines:**

Plans to improve Transmission System Performance. (Guidelines – 10d)

**2. TSTransco's Response:**

The transmission system of TSTransco as of March 31, 2023 consists of 6357 Circuit KMs of 400 kV lines, 9317 Circuit KMs of 220 kV lines, 12141 Circuit KMs of 132 kV lines, 25 Nos. 400 kV sub-stations, 101 Nos. 220 kV sub-stations and 250 Nos. 132 kV sub-stations.

During 2022-23, an expenditure of Rs. 981.47 Crs. was incurred by TSTRANSCO towards strengthening of Transmission network, which resulted in the addition of the following assets (incl. LIS). Rs. 949.18 Cr for LIS Schemes funded by I&CAD dept., GoTS.

(Incl. LIS)

400 kV lines	44.00 Ckm.
220 kV lines	259.00 Ckm.
132 kV lines	171.00 Ckm.
400 kV sub-stations	2 Nos.
220 kV sub-stations	3 Nos.
132 kV sub-stations	3 Nos.

**Plans to improve Transmission System performance.-**

- i. 2<sup>nd</sup> set of Battery set is being installed in all 220KV Sub-stations to have reliable transmission network.
- ii. All the static relays in the Control and relay panels are being replaced with numerical relays in the Control & Relay Panels in a phased manner.
- iii. Old conductor is being replaced with HTLS Conductor to improve transfer capacity of Transmission lines using existing towers
- iv. ERS (Emergency restoration System) is being introduced for transmission lines

- v. SPS (Special protection scheme) are being introduced to avoid the cascade tripping in the important Grid Connected Sub-Stations.
- vi. Installation of capacitor Banks in the Transmission system for reactive power compensation.

**(d) PLANS FOR CAPITAL EXPENDITURE**

**1. Requirement in the Guidelines.**

Plans for all Capital Expenditure. (Guidelines – 10g)

**2. TSTransco's Response**

**A. Plans for Capital Expenditure for 400kV Schemes**

**(i) 400kV Transmission Projects works completed during 2022-23**

**A. Rayadurg System Improvement Scheme :**

- 1 LILO of Gachibowli – Shivarampally 220kV Line to Rayadurg SS - UG cable (5.16 km) charged on 06.04.2022
- 2 LILO of Jubilee Hills – Shivarampally 132kV SC Line to Rayadurg SS - UG cable (2.663 km) charged on 06.04.2022

**B. YTPP Thermal Power Evacuation Scheme :**

- 1 400/220 kV Damaracherla Substation (2x500 MVA) charged on 30.12.2022 :
- 2 400kV QMDC Line from Yadadri TPP Switchyard to Damaracherla 400/220kV Substation - 9.864 ckm charged on 30.12.2022 (up to Terminal Tower of YTPP)
- 3 LILO of Khammam-Mamidipally 400kV DC Line to Choutuppal 400kV Substation - 33.376 ckm charged on 15.03.2023
- 4 400/220/132kV Choutuppal Substation charged on 16.03.2023 (with 1x500 MVA ICT)

**C. Augmentation Scheme-IV (Transformation capacity addition)**

- 1 500 MVA, 400/220kV ICT at existing Veltoor 400kV Substation ( in place of 315MVA ICT ) charged on 08.02.2023
- 2 500 MVA, 400/220kV ICT at existing Gajwel 400kV Substation ( in place of 315MVA ICT ) charged on 25.02.2023

**D. Reactors Scheme - III :**

- 1 125MVAR Bus Reactor at Kamalapuram 400kV SS charged on 11.04.2022

**(ii) 400kV Transmission Schemes under Progress during FY:2022-23**  
**(ongoing):**

**A. YTPP Thermal Power Evacuation Scheme :**

- 1 400kV Yadadri TPP - Choutuppal QMDC Line
  - i) No. of Foundations completed : 259 / 259
  - ii) No. of Towers Erected : 252 / 259
  - iii) Stringing completed (in ckm) 63.726 / 184.754
- 2 400kV Yadadri TPP - Dindi QMDC Line
  - i) No. of Foundations completed : 290 / 290
  - ii) No. of Towers Erected : 286 / 290
  - iii) Stringing completed (in ckm) 143.206 / 207.58
- 3 400kV Yadadri TPP - Janagaon QMDC Line
  - i) No. of Foundations completed : 367 / 402
  - ii) No. of Towers Erected : 283 / 402
  - iii) Stringing completed (in ckm) 43.834 / 278

**B. KTPP System Improvement Scheme :**

- 1 Bhoopalapally 400/220/132kV Substation:
 

Switchyard ->	<u>400 kV</u>	<u>220 kV</u>	<u>132 kV</u>
i) Foundations completed (Nos.)	195/207	230/232	58/58
ii) Structures Erected (Nos.)	194/207	215/232	40/58
iii) Equipment Erected (Nos.)	192/207	212/232	40/58

  - iv) Work awarded to contractor on 22.05.2020.  
 ICTs, Reactor, PTR Foundations works are completed. Control Room Building, DG Building, store cum office, Kiosk, Roads and Drains, Firewall, Earthing, cable trench works are under progress

**C. Augmentation Scheme-IV :**

- 1 Veltor 400/220 kV Substation :  
 2nd 500 MVA ICT works to be taken up at Veltor Substation in place of existing 315 MVA ICT.
- 2 Suryapet 400/220 kV Substation :  
 Equipment Foundations & Erection works under progress for installation of new 500 MVA ICT.



- 3 Dichpally 400/220 kV Substation :  
Equipment Foundations & Erection works under progress for installation of new 500 MVA ICT.
- 4 Asupaka 400/220 kV Substation :  
315 MVA ICT to be transported after dismantling at Veltoor 400kV SS and to be erected at Asupaka  
Kamalapuram 400/220 kV
- 5 Substation :  
Dismantled 315 MVA ICT at Gajwel transported to Kamalapuram;  
Erection works to be taken up at Kamalapuram 400kV SS.

**d. Reactors Scheme-III :**

SI No	400kV Substation	Status of Works Progress as on 31.03.2023
1	Maheswaram - 125 MVAR Bus Reactor	Reactor Bay Extension : Site handed over to the contractor on 01.07.2021
		Reactor Equipment Bay charged on 10.02.2023.
		125 MVAR Reactor yet to be received.
2	Dindi - 125 MVAR Reactors - 2 Nos.	Reactor Bay Extensions : Site handed over on 01.07.2021.
		Reactor Equipment Bays charged on 03.03.2023.
		125 MVAR Reactors yet to be received.
3	Choutuppal - 125 MVAR Bus Reactor	Reactor Bay Extension : All works completed
		Reactor Equipment Bay test charged on 15.03.2023.
		125 MVAR Reactor yet to be received.
4	Asupaka - 80 MVAR Bus Reactor & 63 MVAR Line Reactor	Reactor Bay Extensions : Site handed over on 01.07.2021.
		Erection works of Reactor & Bay Equipment completed
		Testing of Bus and Line Reactors under progress
5	Suryapet 125 MVAR Bus Reactor	Site handed over to the contractor on 01.07.2021
		All the Equipment & Tower Foundations completed.
		Equipment erection completed
		Bus reactor foundation: Main plinth completed.
		Auxiliary foundation works and Pit wall works completed
		Cable laying works are under progress
		Kiosk: Wall paneling, door, window fixing and false ceiling

		works completed. Roads works under progress
6	Jangaon 125 MVAR Bus Reactor	Site handed over to the contractor on 01.07.2021
		Equipment foundation and erection works are completed
		Bus reactor foundation: Main plinth completed. Auxiliary, foundation completed. Grade slab works completed. Cable laying works completed
		Kiosk: All the works are completed
		IPS Tube Erection: Completed. Testing yet to be taken up
7	Kethireddypally - 125 MVAR Bus Reactor	Site handed over on 13.06.2022
		Bay Equipment foundations & Erection completed except 1 set of CTs (Tie bay)
		Cable laying and Termination works completed
		Reactor Main plinth, Rail Track & Pitwall works completed. Auxiliary foundations yet to be started; Fire wall completed
8	Narsapur - 125 MVAR Bus Reactor	Site handed over on 13.06.2022
		Bay Equipment foundations & Erection completed except 1 set of CTs (Tie bay); Cable laying and Termination works completed
		Reactor Main plinth, Rail Track PCC and TMT works completed. Fire wall - I & II works completed. Rail wall works under progress

## **B. PLANS FOR CAPITAL EXPENDITURE FOR 220KV AND 132KV SCHEMES**

Capital works are being taken up for catering to new loads of distribution licensees, open access consumers, captive power plants and for evacuation of power from the up-coming Generating Stations. Strengthening of the Transmission System is being planned to improve the system voltage profile, decrease losses and to enhance the reliability of the system. The construction of new 220 KV & 132 KV Sub-stations and connected lines are being executed with the funding from M/s REC, M/s PFC and internal (TSTransco) funding.

**(i) Write up of completed works**

**1. Erection of 132/33kV Substation at Kotagiri in Nizamabad District.**

- The scheme is formulated under “System Improvement Transmission Scheme to meet the load growth and to improve the voltage regulation in the surrounding (Kotagiri, Bhiknoor, Madnoor, Varni & Bodhan Mandals).
- The administrative approval was accorded vide T.O.O.(CE-Transmission) Ms.No.88, Dt:30.06.2016.(Amount Rs.15.05 Crores).
- The Work envisages the following.
  - (i) Erection of 132/33 kV Sub-Station at Kotagiri in Nizamabad District with 3 X 10/16 MVA PTRs (Released).
  - (ii) Erection of 132 kV DC/SC line on Galvanised Towers with Panther ACSR from 132/33 kV Sub-Station, Jakora to the proposed 132kV Sub-Station at Kotagiri-12KM.
  - (iii) 132 kV Bay extensions at 132/33 kV Sub-Station, Jakora – 1 No.
- Funding tie up with M/s PFC Ltd & amount Rs.12.97 Crores
- Date of commissioning: 12.05.2022.

**2. Erection of 132/33 kV Gas insulated Substation (GIS) at Manikonda in Rangareddy district.**

- The scheme is formulated under “System Improvement Transmission Scheme to overcome the low voltage problems, to cater to the upcoming loads and also to provide quality power supply to the consumers.”
- The revised administrative approval was accorded vide T.O.O (CE-Transmission) Ms.No.402, Dated: 08.07.2019,(Amount Rs: 107.18Crores).
- The Work envisages the following.
  - (i) Erection of 132/33 kV Gas Insulated Substation at Manikonda with 2X80 MVA PTRs.

- (ii) Making LILO of 132kV Raidurg – Shivarampally line to proposed 132/33kV GIS Substation Manikonda with 132kV 1200sqmm XLPE UG Cable- 2.2KM.
- Funding tie up with M/s REC Ltd & amount Rs.96.46 Crores.
- Date of commissioning: 15.09.2022.

### **3. Erection of 220kV DC line from 400kV SS Damaracherla to 220kV SS Miryalaguda.**

- The scheme is formulated under “Yadadri power evacuation Scheme.”
- The administrative approval was accorded vide T.O.O(CE-400kV) MS.No.451 Dated:10.10.2019 (Amount Rs.2354.35 Crores).
- The Work envisages the following.
  - (i) Erection of 220kV TMDC line from 400/220 kV SS Damaracherla to 220kV SS Miryalaguda – 25 km.
  - (ii) 220kV Bay extensions at Miryalaguda SS- 2No's.
- Date of Commissioning:29.08.2022 (Circuit-I) & 29.12.2022 (Circuit-II).
- Funding tie up with M/s. PFC Ltd & amount Rs.1102.26 Crores (for total scheme)

### **4. LILO of both circuits of existing Malkaram-Narketpally DC line to 400/220/132kV Choutuppal SS on multi circuit towers in Nalgonda district.**

- The scheme is formulated under “Yadadri power evacuation Scheme.”
- The administrative approval was accorded vide T.O.O(CE-400kV) MS.No.451 Dated:10.10.2019 (Amount:Rs.2354.32 Crores).
- The Work envisages the following.
  - (i) Making LILO of both circuits of existing 220kV Malkaram-Narketpally DC line to 400/220/132kV Choutuppal SS on Multi circuit Towers – 15 km.
- Date of Commissioning: 20.03.2023 (Circuit-II) & 23.03.2023 (Circuit-I).

- Funding tie up with M/s. PFC Ltd & amount Rs.1102.26 Crores (for total scheme)

**5. Erection of 220KV DC line from 400/220/132kV Gajwel SS to 220/132kV Siddipet SS.**

The scheme is formulated to improve the power flow to Medak District for meeting the 9.00 Hours day time agricultural supply.

- The administrative approval was accorded vide T.O.O (CE-Transmission) Ms. No. 225, Dated: 10.12.2015. (Amount Rs 38.12 Crores).
- The work envisages the following.
  - (i) Erection of 220 kV DC line on Galvanised Towers with Moose ACSR from 400/220/132 kV SS Gajwel to 220/132 kv SS Siddipet – 32.41 kM.
  - (ii) 220KV Bay Extensions at 400kV Gajwel- 2No's & 220kV Bay Extensions at 220kV SS Siddipet- 2No's.
- Funding tie up with M/s REC Ltd & amount Rs.56.95 Crores (including other work)
- Date of Commissioning: 19.11.2022.

**6. Erection of 132kV DC line from 400/220/132kV SS KTPP to 132/33 kV SS Chelpur in Warangal District.**

- The scheme is formulated under KTPP system improvement scheme.
- The administrative approval was accorded vide T.O.O (CE-400kV) Ms. No. 297, Dated: 09.02.2019, (Amount Rs.454.23 Crores)
- The work envisages the following.
  - (i) 132kV single Moose DC line from proposed 400/220/132kV KTPP SS to 132 kV Chelpur SS on 220kV multi circuit towers - 2 KM.
  - (ii) 132kV Bay extension at 132/33kV SS Chelpur.- 2 No's.
- Funding tie up with M/s. PFC Ltd & amount Rs. 405 Crores (for total scheme)
- Date of Commissioning: 24.09.2022.

**7. 132KV DC line from 220/132kV SS Yeddumailaram to 132/33kV SS Pashamailaram in Sangareddy District.**

- The scheme is formulated under System Improvement Transmission Scheme for strengthening of 132 kV system since the loads fed from Pashamailaram substation are very important and for supply of power without interruption to these loads.
- The administrative approvals were accorded vide (i) T.O.O. (CE-Construction-I) Ms.No.61, Dated: 25.05.2012 (Rs.9.31 Crores) and (ii) TOO (CE\_Construction) Ms.no. 1252. Dated: 25.11.21.(Total cost Rs. 3.98 Crores).
- The work envisages the following.
  - (i) 132kV DC line with narrow based towers from 220/132 kV Yeddumailaram SS to 132/33kV SS Pashamailaram - 7 KM.
  - (ii) 132 kV Bay extensions at 220/132kV SS Yeddumailaram – 1 No. & 132kV Bay extensions at 132kV SS Pashamailaram SS -1No.
- Funding from NABARD (1<sup>st</sup> T.O.O), amount Rs. 8.38 Crores,TSTRANSCO funds (2<sup>nd</sup> T.O.O).
- Date of commissioning: 27.09.2022.

**8. Making LILO of 132kV Khammam-Chilakallu and Chilakallu- kusumanchi to 220kV Peddagopathi SS on multi circuit towers.**

- The work is covered in the Bhadradi Thermal Power Transmission Scheme.
- The administrative approval was accorded vide TOO (CE-projects) MS.No.15, Dated:29.04.2016.(Total cost Rs.1304.36 crores)
- The work envisages the following.
  - (i) Making LILO of 132kV Khammam-Chilakallu and Chillakallu - Kusumanchi on multi circuit towers to 220kV Peddagopathi SS - 20.5 KM.
- Funding tie up with M/s. PFC Ltd & amount Rs.1150.16 Crores (for total scheme)

- Date of commissioning: 23.12.2022.

**(ii) Write up of works under progress (ongoing)**

**1. 132 kV DC line from the proposed 220/132/33 kV SS Parigi to 132/33 kV SS Dharmasagar**

- The work is covered in 132KV SS Donthanpally.
- The administrative approval was accorded vide T.O.O.(CE-Construction) Ms.No.82, Dt:18.04.2018, Amount: 3215.00 Lakhs
- The scheme envisages the following work  
132 kV DC line from the proposed 220/132/33 kV SS Parigi to 132/33 kV SS Dharmasagar- 36KM (Rs.1836.00 Lakhs)
- The investment approval No.CRN.No.TST/TS erection of 132 kV SS at Donthanpalli in Rangareddy District /F-Revised approval/ INVST-12/18/2018-19, dt.10.09.2018, Amount in Rs.3215.00 Lakhs
- Funding tie up with M/s. REC Ltd & amount Rs.1926.27 Lakhs.

**2. 132 kV SS Kandukuru & connected lines in Rangareddy District**

- The scheme is formulated under “System Improvement Transmission Scheme to meet increased load on 33/11 kV substations and also to reduce 33 kV line losses”.
- The administrative approval was accorded vide T.O.O (CE-Construction-I) Ms.No. 347, Dated: 13.02.2013, Amount: Rs. 2275 Lakhs
- The scheme envisages the following work
  - (i) 132/33 kV Substation at Kandukuru with 1x31.5 + 1 x 16 MVA(Released) PTR Capacity
  - (ii) 132 kV DC/SC line from proposed 220/132 kV Fab city substation to the proposed 132/33 kV Kandukuru substation on narrow based towers and Normal towers- 18KM
  - (iii) 132KV Bay extension at 132/33KV SS Fabcity- 1No.
- The investment approval No TST/TS/132 kV SS-Kandukuru/ F-INVST-05/2015.Dt.08.10.2014, Amount in Rs.22.74 Cr
- Funding tie up with M/s. REC Ltd.& amount Rs.2005.78 Lakhs

### **3. 220/132/33 kV Substation at Borampet in Ranga Reddy district**

- The scheme is formulated “for evacuation of power from 2 X 800 MW Telangana STPP to be established by NTPC at Ramagundam”.
- The administrative approval was accorded vide T.O.O (CE-Transmission) Ms. No. 72 Dated: 13.05.2016, Amount: Rs.212.20Crores
- The scheme envisages the following works
  - (i) Erection of 220/132/33 kV Sub-Station at Borampet with 2 X 160 MVA + 2 X 80 MVA PTR Capacities.
  - (ii) 220 kV Multi Circuit OH line on MC Towers with Moose ACSR from 400 kV Narsapur SS to proposed 220 kV Borampet SS-38 KM
  - (iii) 220 kV DC line with UG Cable from 400 kV Narsapur SS to proposed 220 kV Borampet SS – 5 KM.
  - (iv) Erection of 220 kV Bays at 400 kV Narsapur-2 Nos.
- The investment approval CRN No. TST/TS/ 220/132/33 kV SS, Borampet RR District/ INVST- No. 07/16 - 2016-17.date.19.10.2016, Amount.Rs.212.20 Cr
- Funding tie up with M/s PFC Ltd & amount Rs. 182.98 Crores

### **4. Erection of 132kV DC line from under construction 220/132kV SS Ammavaripet to the existing 132/33kV SS Geesukonda and Erection of 220/132kV SS Ammavaripet & LILO one circuit of 220kV Manoharabad-Warangal DC line to proposed 220/132kV SS Ammavaripet in Warangal District.**

- The scheme is formulated under “System Improvement Transmission Scheme to feed the upcoming industrial corridor at Madikonda and a Textile Park at Geesugonda”.
- The administrative approval was accorded vide T.O.O (CE-Construction) MS.No.294,Dt:29.01.2019, Amount: Rs.126.86 Crores
- The scheme envisages the following works
  - (i) Erection of 220/132 kV Sub-Station at Ammavaripet with 2X100 MVA PTR Capacity in Warangal Dist
  - (ii) Erection of 220 kV DC Line on Galvanized Towers with Moose ACSR Conductor for LILO of one circuit of 220 kV Mahabubabad - Warangal line to proposed 220 kV Ammavaripet SS- 31KM



- (iii) Erection of 132 kV DC Line on Galvanized Towers with Panther ACSR Conductor from the proposed 220/132 kV Sub-station Ammavaripet to the existing 132/33 kV Sub-Station, Geesukonda- 23KM
  - (iv) Erection of 132 kV Line on Multi-circuit Towers with Panther ACSR Conductor for accomdation of 132 KV Line to 132KV SS Inavole and 132KV Line to 132KV SS Wardhannapet from the proposed 220/132 kV Sub-station Ammavaripet to AP 8- 6.98KM
  - (v) Erection of 132 kV DC/SC Line on Galvanized Towers with Panther ACSR Conductor from the AP.8 to the 132/33 kV SS Inavole-2.32KM
  - (vi) Erection of 132 kV DC/SC Line on Galvanized Towers with Panther ACSR Conductor from the AP.8 to the 132/33 kV SS Wardhannapet- 16.25KM
  - (vii) Erection of 132 kV Bays (2 Nos at 132 kV Geesukonda, 1 No at 132 KV Wardannapet& 1No at 132 kV Inavole)- 4Nos.
  - (viii) The investment approval No. CRN No: TST/TS/Erection of 220/132 kV Substation at Ammavaripet, Kazipet(M) in Warangal Urban District. Approval/ No.02/2019-20, Date. 10.08.2018, Amount.Rs.126.91 Cr
- Funding tie up with M/s PFC Ltd & amount Rs.87.24Crores

#### **5. 132/33kV SS at Padmanagar in Karimnagar District**

- The scheme is formulated “to meet the existing & upcoming load demand in the Karimnagar town.”
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.254, Dated:26.11.2018. Amount: Rs.19.29 Crores
- The scheme envisages the following works.
  - (i) Erection of 132/33 kV Sub-Station Padmanagar (V) in Karimnagar District with 2x10/16 MVA capacity
  - (ii) LILO of 132 KV Line (one circuit) from 220/132 KV SS Durshad to the 132/33 KV SS Siricilla to proposed 132/33 KV SS Padmanagar-7 KM
- Funding tie up with M/s PFC Ltd & amount Rs. 14.20 Crores.

#### **6. 132/33 KV Gas Insulated Sub-station (GIS) at Seetharambagh**

- The scheme is formulated “to reduce overloading of PTRs at 220/132/33 kV Shivarampally Sub-Station & 132/33 kV Imlibun Sub-Station, to reduce the length

of 33 kV lines feeding the scheme area, thereby reducing the time taken in locating faults, attending breakdowns & restoration of supply, to provide reliable & uninterrupted power supply, to reduce the overall energy losses in the system”.

- The administrative approval was accorded vide T.O.O(CE-Transmission) MS.No.28 Dated:27.02.2017, Amount:Rs.63.63 Cr.
- The scheme envisages the following works
  - (i) Erection of 132/33 kV GIS substation at Seetharambagh with 2X80 MVA PTRs
  - (ii) Erection of 132 kV DC line with 630 Sqmm 132 kV UG cable from Asifnagar Sub-Station to the proposed 132/33 kV GIS substation at Seetharambagh- 4kM
  - (iii) 132 kV Bay extensions at Asifnagar substation-2 No.s
- The investment approval No. CRN TS/TST/132/33 KV, GIS, Seetharambagh/ Invest.Approval No.6/17-2017-18. date.August-2017, Amount.Rs.63.63 Cr
- Funding tie up with M/s REC Ltd & amount Rs. 57.27Crores

#### **7. 132 kV features at 220 kV Thimmajipet Switching Station in Mahaboobnagar District and extending connectivity to 132 kV Jadcherla Sub-Station from Thimmajipet**

- The scheme is formulated as part of “Comprehensive Transmission Requirement Scheme for the years 2012-2017”
- The administrative approval was accorded vide T.O.O(CE-Construction) MS.No.103 Dated:11.07.2017, Amount:Rs.29.32 Cr.
- The scheme envisages the following works
  - (i) Erection of 132kV features at 220 kV Thimmajipet Switching Station in Mahaboobnagar District with 2x100 MVA PTRs.
  - (ii)Erection of 132 kV DC line on Galvanised Towers with Panther ACSR from the existing 220/132 kV Thimmajipet Sub-Station, to the existing 132/33 kV Jadcherla Sub-Station -18kM.
  - (iii) 132 kV Bay extensions at 132/33 kV Sub-Station, Jadcherla- 2 No.s
- The investment approval No. CRN/TS/TST/220/Switching Station/ Mahaboobnagar / 132 KV Features /InvestApproval No.14/17-2017-18. date. December-2017, Amount.Rs.29.32 Cr
- Funding tie up with M/s REC Ltd & amount Rs.26.39 Cr

**8. 33kV Features at upcoming 220/132 KV Sub-Station, Ammavaripet in Kazipet (M), Warangal Urban (District).**

- The scheme is formulated “to meet the growing demand of the Warangal city with reliable supply and reduced line losses.”
- The administrative approval was accorded vide T.O.O(CE-Construction)MS.No.341 Dated:02.04.2019,Amount:Rs.8.10 Cr.
- The scheme envisages the following work
  - (i) Providing of 33 kV Features at upcoming 220/132 KV Sub-Station, Ammavaripet in Kazipet (M), Warangal Urban (District) with Released 2X50 MVA PTRs.
- Funding from TSTransco funds

**9. 132/33kV SS at Pammy in Khammam District.**

- The scheme is formulated “to feed the supply to existing 6Nos 33/11KV Substations.”
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.14, Dated:20.01.2018. Amount: Rs.23.39 Crores
- The scheme envisages the following works
  - (i) Erection of 132/33 kV Sub-Station at Pammy in Khammam District with 2 X 31.5 MVA PTRs.
  - (ii) Erection of 132 kV DC line for LILO of 132 kV Kusumanchi-Chilakallu line at the proposed 132/33 kV Pammy Sub- Station -8Km.
- The investment approval No. CRN No. TST/TS/Erection of 132/33 KV SS at Pammy in Khammam Dist. Approval/No.03/2018-19, date. 01.06.2018 Amount.Rs.23.39 Cr
- Funding tie up with M/s REC Ltd& amount Rs. 20.64Crores

**10.132/33 kV SS at Peechara in Warangal Dist.**

- The scheme is formulated “to meet the load demand and to improve the voltage profile”
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.43, Dated:06.03.2018. Amount: Rs.43.92 Crores
- The scheme envisages the following works

- (i) Erection of 132/33 kV Sub-Station at Peechara, Warangal Dist with 2 X 31.5 MVA PTRs.
- (ii) Erection of 132 kV DC line with HTLS Conductor on Galvanised Towers by making LILO of existing 132 kV line from 220/132/33KV Waranagal SS to 132/33KV Jangaon SS at proposed 132/33KV Peechara SS-12 KM
- The investment approval No. CRN No.TST/TS/Erection of 132/33 KV Substation at Peechara in Warnagal District. Approval No. 05/2018-19.date. 19.07.2018, Amount.Rs.43.92 Cr
- Funding tie up with M/s REC Ltd.& amount Rs. 39.11 Crores

**11.132 kV DC line from 400/220/132 kV SS Narsapur to 132/33 kV SS Yeldurthy in Medak District**

- The scheme is formulated “to mitigate overloading on 132 kV Gajwel – Chegunta DC line”.
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.1208, Dated:04.10.2021, Amount: Rs.30.58Crores
- The scheme envisages the following works
  - (i) Erection of 132kV DC line on Galvanized Towers with Panther ACSR conductor from 400/220/132 kV SS Narsapur to 132/33 kV SS Yeldurthy.– 23km.
  - (ii) Erection of 132 kV feeder bays ( 2 Nos at Narsapur& 2 Nos at Yeldurthy)
- Funding from TSTransco funds.

**12.132/33 kV Sub-Station at Nuthankal (V) & (M) in Suryapet District instead of 132/33 kV Aipoor SS in Suryapet District**

- The scheme is formulated “to overcome the low voltage problems, to cater to the upcoming loads and also to provide quality power supply to the consumers”.
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.1330, Dated:10.03.2022, Amount: Rs.30.55Crores
- The scheme envisages the following works
  - (i) Erection of 132/33kV Sub-station at Nuthankal in Suryapet District with PTRs capacity of (2x50 MVA) + (1x10/16 MVA Released.)

- (ii) Stringing of 2nd circuit from Loc.No.16 to Loc.No.75 (Tapping Tower) on existing 132kV DC/SC line from 400/220/132 kV SS Suryapet to 132/33kV SS Thungathurthy towers– 16.5kM
- (iii) Erection of 132kV DC/SC line from Loc.No.75 (Tapping tower) to proposed to 132/33kV SS Nuthankal on Galvanised towers – 9.5kM
- (iv) 132 kV Bay extension at 400/220/132kV SS Suryapet-1No.
- The investment approval No: TST/TS/ Erection of 132/33kV Sub station at Nuthankal (V) & (M) in Suryapet District instead of 132/33 kV Aipoor SS in Suryapet district. Approval No. 02/2022-23
- Funding tie up with M/s REC Ltd. & TSTransco funds

**13.Erection of 220kV SMDC line from proposed 400/220kV SS Damaracherla to existing 220/132/33kV SS Huzurnagar in Nalgonda District.**

- The scheme is formulated under Yadadri Thermal Power (5X800MW) Evacuation Scheme.
- The administrative approval was accorded vide T.O.O (CE-400KV) Ms. No.451, Dated:10.10.2019, Amount: Rs.2354.35Crores
- The scheme envisages the following works
  - (i) 220kV SMDC line from proposed 400/220kV SS Damaracherla to existing 220/132/33kV SS Huzurnagar-45 KM.
  - (ii) 220kV Bay extensions at 220/132/33kV SS Huzurnagar-2No's
- Funding tie up with M/s PFC Ltd. & amount Rs.1102.26 Crores.

**14.Erection of 132kV DC line from proposed 400/220/132kV SS Choutuppall to 132kV SS Choutuppall.**

- The scheme is formulated under Yadadri Thermal Power (5X800MW) Evacuation Scheme.
- The administrative approval was accorded vide T.O.O (CE-400KV) Ms. No.451, Dated:10.10.2019, Amount: Rs.2354.35Crores
- The scheme envisages the following works
  - (i) 132kV DC line from proposed 400/220/132kV SS Choutuppall to 132kV SS Choutuppall.-9.961KM on Multicircuit towers & 4.732kM on DC towers.
  - (ii) 132kV Bay extensions at 132/33kV SS Choutuppall-2No's
- Funding tie up with M/s PFC Ltd. & amount Rs.1102.26 Crores.

**15.Erection of 220KV DC line with single Moose conductor from 220/132kVSS Indravelly (Utnoor) to existing 132/33kV SS Asifabad.(To be charged at 132kV Level).**

- The scheme is formulated under Nirmal power transmission Scheme.
- The administrative approval was accorded vide T.O.O (CE-400KV) Ms. No.07, Dated:09.01.2018, Amount: Rs.1151.05Crores
- The scheme envisages the following works
  - (i) 220kV SMDC line from 220/132kV SS Indravelly(Utnoor) to the existing 132/33kV SS Asifabad.-71KMs.
  - (ii) 132kV Bay extensions at 132/33kV SS Asifabad -2No's
- Funding tie up with M/s REC Ltd. & amount Rs.843.16 Crores.

**16.Erection of 220/132/33KV Substation at Husnabad in Siddipet District.**

- The scheme is formulated under KTPS VII Stage power transmission Scheme.
- The administrative approval was accorded vide T.O.O (CE-400KV) Ms. No.139, Dt:11.09.2017, Amount: Rs.1412.53Crores
- The scheme envisages the following works
  - (i) Erection of 220/132/33kV SS Husnabad with 2X100MVA + 2X50 MVA PTRs.
  - (ii) 220kV DC line from 400/220kV Substation Jangaon to proposed 220/132/33kV SS Husnabad-42Kms.
  - (iii) 132kV LILO from 132kV Palamkula-Husnabad DC/SC line to proposed 220/132/33kV Substation Husnabad in Siddipet District.-(2Kms.)
- Funding tie up with M/s PFC Ltd. & amount Rs.1077.12 Crores.

**17.Providing of alternate supply to 132 /33 kV SS Chennur and 132/33 kV SS Kataram from 220/132 kV SS Manthani in Karimnagar District.**

- The scheme is formulated under the program for providing 9.00 Hrs Day Time Supply for Agriculture.
- The administrative approval was accorded vide T.O.O (CE-Transmission) Ms. No.210, Dt:06.11.2015, Amount: Rs.12.13Crores
- The scheme envisages the following works

- (i) Stringing of two circuits on already approved (under construction) 132 KV Multi circuit towers from 220/132 KV SS Manthani upto Loc. No. 19 of existing 132Kv Manthani – Kataram line.
  - (ii) Erection of 132 kV DC line ( 5.00 KM) from existing Loc. No. 19 upto Loc.No. 34A, of 132 kV Manthani – Kataram line.
  - (iii) Stringing of 2nd circuit from newly proposed DC line (from Loc No. 34A of 132 kV Manthani – Kataram) to 132/33 kV Chennur SS on the existing DC/SC line.
  - (iv) Stringing of 2nd circuit from Loc. No. 34A of existing 132 kV Manthani – Kataram line to 132/33 kV SS Kataram.
  - (v) Erection of 132 KV bay (at 220/132 KVSS Manthan - 2 Nos., at 132 kV SS Kataram - 1No.at 132 kV SS Chennur - 1 No. Total-4Nos.
- Funding tie up with M/s REC Ltd. & amount Rs.10.92 Crores.

**18.Erection of 33 KV features at 132 KV Railway Traction Switching Station, Kothagudem, Kothagudem Bhadradi District.**

- The scheme is formulated “to provide quality, reliable & uninterrupted power supply to the consumers and also to meet the future demand”.
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.217, Dt:25.09.2018, Amount: Rs.9.92Crores
- The scheme envisages the following works
  - (i) 33 KV features at 132 KV Railway Traction Switching Station, Kothagudem, Kothagudem Bhadradi District with 2 X 10/16 MVA PTRs.
- Funding tie up with M/s PFC Ltd. & amount Rs.7.35 Crores.

**19.Erection of 132/33 KV Sub-Station at Koutala (V) in Koutala (M) of Komaram Bheem Asifabad District.**

- The scheme is formulated under system improvement scheme to avoid power interruption and to give better supply to the area.
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.981, Dt: 22.02.2021, Amount: Rs.56.56Crores.
- The scheme envisages the following works

- (i) Erection of 132/33 kV Sub-Station at Koutala in Komaram Bheem Asifabad Dist with 2 X 10/16 MVA PTRs (Released).
  - (ii) 132 KV DC/SC line from existing 132 KV Sirpur Kagaznagar SS to proposed 132 KV SS Koutala.-43.40KMs.
  - (iii) 132 KV feeder bay at existing 132 KV SS Sirpur Kagaznagar-1no's
- Funding is with TS Transco funds.

**20.Erection of 220kV Twin Moose DC line by making LILO of existing 220kV Salivagu-Bheemghanpur line at Ramappa point(Loc.No.66) to proposed 400/220/132kV KTPP SS in Jayashankar Bhupalapally District.**

- The scheme is formulated under 400 kV KTPP system improvement scheme
- The administrative approval was accorded vide T.O.O (CE-400 kV) Ms. No.297, Dt:09.02.2019, Amount: Rs.454.23 Crores.
- The scheme envisages the following works.
  - (i) 220kV Twin Moose DC line by making LILO of existing 220kV Salivagu-Bheemghanpur line at Ramappa point (Loc.No.66) to proposed 400/220/132kV KTPP SS- 22KMs.
- Funding tie up with M/s PFC Ltd. & amount Rs.405 Crores.

**21.Erection of 132/33kV Substation at Patancheru in Sangareddy District.**

- The scheme is formulated under “System Improvement Transmission Scheme for reliable and quality power supply to major revenue source industrial consumers and to the residential/commercial areas of Patancheru”.
- The administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.375, Dated: 03.06.2019, Amount:Rs: 23.64 Crores.
- The work envisages the following
  - (i) Erection of 132/33kV SS Patancheru with 2X31.5MVA PTR.
  - (ii) Erection of 132kV DC/SC line from 132kV SS RC puram to proposed 132kV SS Patancheru in Sangareddy District – 4.7 km
- Funding tie up with M/s REC Ltd. & amount Rs.20.85 Crores.



**C. LIFT IRRIGATION SCHEME (LIS) WORKS TAKEN UP BY TSTRANSCO UNDER DEPOSIT CONTRIBUTION WORKS:**

TSTRANSCO has taken up construction of Transmission lines and Substations at 132kV, 220kV and 400kV level for extension of power supply to Pumping stations under various Lift Irrigation schemes which are funded by I&CAD Department, Govt. of Telangana.

The Transmission system established under extension of power supply to LI Schemes is included in the Transmission system of TSTRANSCO.

The addition of Transmission network in respect of LI Schemes for FY 2022-23 is as detailed below (as on 31.03.2023):

Description	Kaleswaram LI Schemes	Godavari LIS (phase- III)	Palamuru-Rangareddy LIS	Sitharama LIS	TOTAL for FY: 2022-23
400kV Lines (CKM)	0	0	0	0	0
220kV Lines (CKM)	0	0	0	62.74	62.74
132kV Lines (CKM)	0	0	0	0	0
400kV SS	0	0	0	0	0
220kV SS	0	0	0	0	0
132kV SS	0	0	0	0	0
400kV Bays	0	0	2	0	2
220kV Bays	3	2	0	16	21
132kV Bays	0	2	0	0	2

**I. Kaleswaram Lift Irrigation Scheme & Godavari (Phase-III) LIS :**

**a. Sub-stations & Lines commissioned during FY 2022-23 : NIL**

**b. Details of Ongoing works during FY 2022-23 (Progress as on 31.03.2023)**

The ongoing Transmission Lines and Substations in respect of LI Schemes for FY 2022-23 is as detailed below:

Sl. No.	Description	Status
<b>Kaleshwaram Lift Irrigation Schemes</b>		
1.	220/11 kV Manichippa SS & connected 220 kV DC line from Dichpally to Manichippa (48 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>40/40 Completed</b> Tower Erection: <b>40/40 Completed</b> Stringing: <b>24.176 Completed</b>
2.	220/11 kV Yacharam Thanda SS & connected 220 kV DC line from Dichpally to Yacharam Thanda (53.7 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>86/97 Completed</b> Tower Erection: <b>86/97 Completed</b> Stringing: <b>15.977/26.902 Completed</b>
3.	220/11 kV New Manchippa SS & connected 33 kV DC Line (4 kM) from 220/33 kV Manchippa SS to 33/11 kV Ghadkol (New Manchippa) Substation (8 CKM)	<b>Substation:</b> Works are under progress. <b>Line: 33 KV Line</b> Tower Foundation: <b>0/0 Completed</b> Tower Erection: <b>0/0 Completed</b> Stringing: <b>NIL</b>
<b>J Chokka Rao (JCR) GLIS Phase-III at Devannapet</b>		
1.	220/11kV Devannapeta SS & connected 220kV DC line from 400/220kV Jangaon SS (110 CKM)	<b>Substation: SS &amp; Line commissioned on 12.04.2023.</b> <b>Line:</b> Tower Foundation: <b>198/198 Completed</b> Tower Erection: <b>198/198 Completed</b> Stringing: <b>54.314/54.314 Completed</b>
<b>Kaleshwaram Lift Irrigation Scheme-Additional TMC Works</b>		
1.	400/220 KV <b>Annaram Substation</b> & connected 400 KV QMDC line (approx. 22.5 KM) from STPP(Jaipur) to proposed 400 KV SS at Annaram pump house in Peddapally District (40.344 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>48/63 Completed</b> Tower Erection: <b>0/63 Completed</b> Stringing: <b>0/20.172 Completed</b>
2.	<b>TMDC Line</b> from 400/220 KV Annaram SS to 220/11 KV SS at Medigadda - 48 KM and 2 Nos Bay extensions at existing 220/11 KV Medigadda LI SS. (96 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>113/155 Completed</b> Tower Erection: <b>64/155 Completed</b> Stringing: <b>0/40.494 Completed</b>
3.	400 KV Switching Station at <b>Kachapur</b> & connected (i) LILO of 400kV QMDC Line from STPP Jaipur- 400/220/11kV Ramadugu SS of line length 2 X 3.5 KM (7 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>18/30 Completed</b> Tower Erection: <b>0/30 Completed</b> Stringing: <b>0/9.52 Completed</b>
	(ii) 400kV QMDC Line from 400kV Kachapur Switching station to 400/220/132kV Gajwel SS of line length 9 KM (18 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>14/23 Completed</b> Tower Erection: <b>0/23 Completed</b> Stringing: <b>0/7.228 Completed</b>

	(iii) LILO of 400kV QMDC Line from Telangana STPP NTPC (2x800MW)- 400/220/32kV Narsapur SS of line length 2 X 2.5 KM (5 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>7/23 Completed</b> Tower Erection: <b>0/23 Completed</b> Stringing: <b>0/3.908 Completed</b>
4.	400/11KV <b>Namapur</b> (Pegadapally) Substation & connected (i)400 KV TMDC line from Namapur Substation Switchyard to Transformer Deck of Pump House of length 2 Km (4 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>0/6Completed</b> Tower Erection: <b>0/6Completed</b> Stringing: <b>0/2.13Completed</b>
	(ii) 400kV QMDC Line from 400kV Kachapur Switching station to 400/11kV Namapur (Pegadapally) SS of Line length 19.3 Km. (38.6 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>17/46 Completed</b> Tower Erection: <b>0/46 Completed</b> Stringing: <b>0/15.14 Completed</b>
	(iii)400kV QMDC Line from 400kV Velgatoor Switchyard to 400/11kV Namapur (Pegadapally) SS of line length 22.5 Km (45 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>35/70 Completed</b> Tower Erection: <b>0/70 Completed</b> Stringing: <b>0/21.74Completed</b>
5.	400/11KV <b>Velgatoor</b> Substation & connected 400kV QMDC Line from Velgatoor Switchyard to Transformer deck of 3.712CKM.	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>0/13Completed</b> Tower Erection: <b>0/13Completed</b> Stringing: <b>0/3.712Completed</b>
b.	400kV QMDC Line from 400kV Kachapur Switching station to 400/11kV Velgatoor SS of Line length 26 Km. (52 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>53/76Completed</b> Tower Erection: <b>45/76Completed</b> Stringing: <b>0/24.70Completed</b>
6.	400/11kV <b>Veljipur</b> Sub-Station & connected 400KV QMDC Line from existing 400/11KV Tippapur SS to proposed 400/11KV SS Veljipur of line length of 5.5 Kms (11 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>17/18 Completed</b> Tower Erection: <b>15/18 Completed</b> Stringing: <b>0/5.1 Completed</b>
7.	400/11KV <b>Yellaipally</b> Substation & connected 400 KV QMDC Line from Existing 400/13.8/11 KV Chandlapur SS to proposed Yellaipally 400/11 KV Substation 9.548 Km. (19.01 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>29/30 Completed</b> Tower Erection: <b>25/30 Completed</b> Stringing: <b>0/9.548Completed</b>
8.	400 kV QMDC line from existing 765/400 kV Nizamabad SS (PGCIL) to existing 400/13.8/11 kV Chandulapur SS (Approx. length 94 km) on turnkey basis. (188 CKM)	<b>Substation:</b> Works are under progress. <b>Line:</b> Tower Foundation: <b>209/278Completed</b> Tower Erection: <b>0/278 Completed</b> Stringing: <b>0/93.99Completed</b>
9.	New Tukkapur 400/11KV SS	<b>Substation:</b> Works are under progress.

**II. Palamuru Ranga Reddy Lift Irrigation Scheme works – Progress as on 31.03.2023**

**No. of Substations (along with No. of Bays) and lines commissioned during 2022-23**

1. Only 2Nos. 400kV Bays at 400/220kV Dindi SS were commissioned on 10.06.2022.
2. Substations and Lines commissioned during 2022-23 : Nil.

**Palamuru Lift Irrigation Scheme (Phase-I works) –**

**Erection Contractor: M/s. Larsen & Toubro Ltd, Chennai.**

Works awarded in October'2020.

**i) Erection of 400/11kV Narlapur LI Sub-Station (incl.1No.125MVAR Bus Reactor):**

Construction of Control room building, Store cum office building and DG & FF building, Reactor foundation are under progress. Tower foundations:11/52 completed and Tower foundations are under progress.

**ii) Erection of 400/11kV Vатtem LI Sub-Station (incl.1No.125MVAR Bus Reactor):**

Erection works for Control room building, DG & FF building, Store cum office building, Water tank and Cable trench are under progress, Tower foundations: 46/48 completed, Tower Erection: 46/48 completed, Beams: 30/33 completed, Equipment foundation: 631/711 completed, Equipment structure erection: 610/711 completed, Equipment erection: 580/711 completed LM foundations: 12/13 completed, LM Tower erection: 12/13 completed, Reactor Foundation: 1/1 completed, Bay kiosk: 4/4 completed.

**iii) Erection of 400/11kV Yedula LI Sub-Station (incl.1No.125MVAR Bus Reactor):**

Erection work for Control room building, DG & FF building, Store cum office building, Water tank and Cable trench are under progress, Tower foundations: 68/68 completed, Tower erection: 68/68 completed, Beams:53/53 completed, LM Tower foundations: 17/18 completed, LM tower erection:17/18 completed,

Equipment foundation: 1134/1146 completed, Equipment str. erection: 1083/1146 completed, Equipment erection: 1029/1146 completed, Reactor Foundation: 1/1 completed, Kiosk: 9/9 completed.

iv) **2Nos. 400kV QMDC Bays at 400/220kV Veltoor Sub-Station:**

Cable trench 580/580 RM completed, Tower foundations: 10/10 completed, Tower Erection: 10/10 completed, Beams: 10/10 completed, Equipment foundations: 156/156 completed, Equipment structure erection: 84/84 completed, Equipment erection: 84/84 completed, LM tower foundations: 2/2Nos. completed, LM tower erection: 2/2Nos. completed, Bay kiosk: 2/2 Nos. completed, Bus extension stringing: 2/2 completed.

v) **2Nos. 400kV QMDC Bays at 400/220kV Dindi Sub-Station:**

Equipment foundations: 114/114 completed, Equipment structure erection: 68/68 completed, Equipment erection: 68/68 completed, Cable trench: 240/240 completed, Bay kiosk: 1/1 completed.

All works are completed and bays were charged on 10.06.2022.

vi) **400kV QMDC Line from proposed 400/11kV Yedula LISS to proposed 400/11kV Narlapur LI SS:**

Check survey: 27.737/27.737 completed, Foundation: 94/94Nos. completed. Tower erection: 92/94 Nos. completed, Stringing: 24.519/27.737 completed.

vii) **400kV QMDC Line from 400/220kV Dindi SS to proposed 400/11kV Yedula LI SS:**

Check survey: 55.320/55.320kM, Foundation: 167/167 completed, Tower Erection: 167/167 completed, Stringing: 55.320/55.320kM completed.

viii) **400kV QMDC Line from 400/11kV Yedula LI SS to 400/11kV Vattam LI SS:**

Check survey: 30.363/30.363 completed, Foundation: 90/90 completed, Tower Erection: 90/90 completed. Stringing: 30.268/30.363 kM completed.

ix) **400kV QMDC Line from 400/220kV Veltoor SS to 400/11kV Yedula LI SS:**

Check survey: 46.801/46.801 completed, Foundations: 139/139 completed. Tower Erection: 139/139Nos. completed, Stringing: 46.801/46.801 completed.

**Palamuru Lift Irrigation Scheme (Phase-II works) - Erection Contractor:**

M/s. Kalpataru Power Transmission Ltd.,- M/s. Siemens Ltd., (JV),

Purchase Order issued on 04.03.2022.

**i. 400/11kV Uddandapur LI Sub-Station:**

Site handed over to the contractor on 10.12.2022.

Control room building and DG&FF building works under progress.

**ii. 2Nos. 400kV QMDC Bays at 400/11kV Vatterm LISS:**

Equipment foundation: 109/114 and Equipment Structure erection:46/114

completed and civil works are under progress.

**iii. 400kV QMDC Line from 400/220kV Maheswaram SS to proposed 400/11kV Uddandapur LISS (65kM):**

Check survey (KM) : 60.245/60.245 completed, Foundations (Nos.):179/179 completed, Tower Erection (Nos.):179/179 completed, Stringing (kM): 60.177/60.245 completed.

**iv. 400kV QMDC Line from 400/11kV Vatterm LI SS to proposed 400/11kV Uddandapur LI SS (34.129 kMs):**

Check survey (KM):34.139/34.139 completed, Foundations (Nos.):103/103 completed, Tower Erection (Nos.):103/103 completed, Stringing (kM): 33.681/34.139 completed.

**III. 400kV Transmission Projects commissioned during 2022-23 under Sitharama Lift Irrigations Scheme:**

SI No	Name of Transmission Line	Length in Ckm	Date of Commissioning
<b>I</b>	<b>Transmission Lines</b>		
1	Lilo from KTS-Manuguru to BG Kothuru	1.028	08.06.2022
2	Lilo from KTS-Lower Sileru-II to BG Kothuru	33.388	30.06.2022
3	Kamalapuram 400kV SS to VK Ramavaram SS	28.324	21.10.2022
	<b>Total (220kV Lines - LIS)</b>	<b>62.74</b>	
<b>II</b>	<b>Bay Extensions :</b>	<b>400kV</b>	<b>220kV</b>
1	220kV B.G.Kothur LI Substation - Transco		7
2	220kV B.G.Kothur LI Substation (LI Ownership)		9
	<b>Total (220kV Bay Extensions - LIS)</b>	<b>0</b>	<b>16</b>

### 3.2 PERFORMANCE MEASURES

#### (a) NUMBER AND DURATION OF SUPPLY INTERRUPTIONS

##### 1. Requirement in the Guidelines:

Number and duration of supply interruptions on transmission networks, separately for 400kV, 220 Kv and 132 kV. Details of steps proposed to improve performance and monitoring. (Guidelines – 11a)

##### 2. TSTransco's Response:

##### Interruptions on EHT lines during 2022-23

Most of the feeders have alternative supply. Hence, whenever there is any interruption to one feeder, then supply is provided from the alternate source and interrupted feeder is restored immediately by taking necessary steps. All transmission line breakdowns are logged and recorded. The data sheets maintain information such as circuit name and number, date and time of occurrence, date and time of restoration, any remedial measures taken for alternate supply, and a brief description of the cause. As the data is voluminous, and manually entered, all the log sheets have not been included in this filing. However, any data requested by the Commission can be made available as and when requested. Considering the vast extent of the transmission system and the number of transmission circuits, the average availability factor of EHT lines of TSTransco for the year 2022-23 works out at 99.98%. The details of the line availability for the years 2022-23 are shown in the tables below.

##### **Interruptions on EHT lines during 2022-23:**

Year	EHT line voltage	No. of interruptions	Total time of interruptions (Hrs)	Avg. Duration Per Interruption (Hrs)
2022-23	400kV	21	306.87	Beyond 2 Hrs. (14.61)
	220kV	100	1273.75	Beyond 2 Hrs. (12.73)
	132kV	116	1363.05	Beyond 2 Hrs. (11.75)

##### **Transmission System Availability during 2022-23:**

As per the guidelines given by the Central Electricity Authority, all 220kV and 400kV including 132kV EHV AC Transmission systems are considered for determining the

Transmission system availability and the same has been calculated as per guidelines of Central Electricity Regulatory Commission.

As per the calculations, the Transmission system availability of TSTRANSCO system during the period 2022-23 i.e. from April 2022 to March 2023 of Telangana State works out to be **99.98%**.

Sl. No.	Financial year	Transmission System Availability
1	2022-23	99.98%

**Plans to improve performance monitoring:**

It is to be planned to incorporate the Formula for calculation of availability factor in SAP duly integrating in the system to enable the data to be updated regularly in the real time system as the approval accorded towards rate contract for supply of transducers for data transfer.

**Steps implemented /proposed to improve performance and monitoring of Transmission System**

The following steps have been implemented to improve the performance and monitoring.

- Replacement of aged conductors in a phased manner, since conductor snapping and jumper failures are found to be the major causes for interruptions.
- Replacement of old and failed insulators on existing lines.
- Reinforcement of the conductor of overloaded lines, periodical tree cutting work to prevent falling of branches with conductor, conducting quarterly inspection of lines and timely rectification of defects noticed.
- Breakdown staff attending supply interruptions is arranged round the clock.
- Emergency vehicles are kept ready for breakdown staff round the clock to facilitate quick and timely deployment of staff and minimize the duration of interruptions.
- Safety appliances such as gloves, safety shoes, helmets, earthing rods are also provided to the breakdown staff with necessary T&P.
- Use of off line signature preventive maintenance and line fault locators for locating the fault on lines during breakdowns.



- TSTRANSCO is carrying out the hot line works very effectively in the live line maintenance from 132kV to 400kV lines and Sub-Stations by adopting hot stick method - using insulated sticks, bare hand technique – using conductive suit along with insulated ladder. Like replacement of damaged insulators, tightening of bolts and nuts of jumpers, shoe clamp, tension clamp and bay to bay jumpers connection etc.,

**(b) Major Grid Disturbance(s)/Incident(s) occurred during the year 2022-23**

**1. Grid Breaker trippings at 220kV Medchal SS on 21-06-22 at 19:31 Hrs due to Busbar Protection Operation.**

On 21-06-2022 at 19:31Hrs, 220kV busbar protection was operated and tripped all the 220kV feeders and 220/132kV PTRs connected to the Bus without any indications at 220kV Medchal SS.

From the events it was observed that a fault current of 10,000 Amps was recorded in R-Ph on 220kV Malkaram feeder-1. Accordingly 220kV Malkaram feeder-1 has been isolated and the remaining 220kV Feeders and PTRs had been taken into service.

On 22-06-22, it was noted that above tripping caused due to failure of control cable laid between the R-ph CTMB of 220kV Malkaram feeder-1 to bus bar protection panel.

**Performance Measures:**

The defective cable was replaced with healthy cable on 22-06-2022 and the feeder was taken in to service.

**2. Grid Breaker trippings at 220kV Chalakurthy Switching Station and outage of 220kV Puliyatanda SS and 220kV Puttamgandi SS on 02.11.2022 at 00:37 hrs.**

Prior to the grid incident, 220kV Chalakurthy-Miryalaguda feeder was idle charged from 220kV Chalakurthy SWS.

On 02-11-2022 at 00:37Hrs, for a R-Phase to ground fault on 220kV Chalakurthy-Miryalaguda feeder, Zone-1 protection was operated for which the breaker did not trip at 220kV Chalakurthy Switching substation resulting in operation of LBB protection at 220kV Chalakurthy SWS.

As 220kV Puliayatanda SS and 220kV Puttamgandi SS were radially fed from 220kV Chalakurthy switching station, there was load interruption of 60 MWs.

#### **Performance Measures:**

The breaker is pneumatic type of CGL make and the compressor motor of the breaker did not turn on when the air pressure was dropping before the set point as the pressure switch was stuck and the breaker went into lock out condition.

After the tripping incident the pressure switch contacts were cleaned and breaker on & off operations were verified, feeder was charged and found ok.

### **3. Grid Breaker trippings at 220/132kV Tandur SS on 17.01.2023 at 06:55 hrs.**

Prior to the incident, load of 98 MWs (i.e., 257A) was observed from 400/220kV Shankarpally SS to 220kV Tandur SS and load of 14 MWs from 220kV Tandur SS to 220kV Sedam SS.

On 17-01-2023, it was observed a sudden increase of load from 14MWs to 195 MWs from 220kV Tandur SS to 220kV Sedam SS. Due to which the load on 220kV Shankarpally –Tandur feeder increased from 257A to 700A.

Later at 06:55Hrs, 220kV Shankarpally-Tandur feeder tripped at 400/220kV Shankarpally SS on overload protection (as the current suddenly increased from 700A to 1300A).

Overload protection setting adopted in Main-I Alstom make P444 type distance relay with current setting as  $1.5 \times I_n$  and time delay of 1.5 sec.

As a result, entire 132kV Tandur SS load was fed from 220kV Kosigi SS and 220kV Parigi SS as they are connected to Tandur SS at 132kV level.

Subsequently 132kV Parigi-Tandur feeder tripped at Parigi SS and 220/132kV 100MVA PTR-1 & 2 at Kosgi SS tripped on overload protections causing load interruption of 252 MWs to Tandur SS, 132kV Kodangal SS, 132kV Maddur SS and 33kV feeders of 220/132kV Kosgi SS

**Performance Measures:**

The time delay for Over Current protection on 220kV Shankarpally-Tandur feeder at 220kV Shankarpally SS is set to maximum as independent Over Current protection is not envisaged for feeders with 220kV Voltage class and above.

Directional Back up overcurrent relay on 132kV Kodangal – Tandur feeder at 132kV Kodangal SS is tested and found to be OK.

### **(c) PERIODS WHEN VOLTAGE AND FREQUENCY WAS BEYOND PRESCRIBED LIMITS**

#### **1. Requirement in the Guidelines**

Periods when voltage and/or frequency was beyond the prescribed limits on Transmission (400 kV, 220 kV, 132 kV) networks. Details of steps proposed to improve performance and monitoring. (Guidelines – 11b).

#### **2. TSTransco's Response:**

##### **I. PERIODS WHEN FREQUENCY WAS BEYOND PRESCRIBED LIMITS**

##### **Frequency**

The details of frequency in Average, Maximum, Minimum and % time experienced during FY-2022-23 is shown below.

Month	Average	Maximum		Minimum	
	HZ	HZ	Date	HZ	Date
<b>Apr-22</b>	49.93	50.26	14 <sup>th</sup>	49.43	19 <sup>th</sup>
<b>May-22</b>	50.00	50.36	23 <sup>rd</sup>	49.50	3 <sup>rd</sup>
<b>Jun-22</b>	49.99	50.36	19 <sup>th</sup>	49.48	13 <sup>th</sup>
<b>Jul-22</b>	50.00	50.30	14 <sup>th</sup>	49.42	18 <sup>th</sup>
<b>Aug-22</b>	50.00	50.31	15 <sup>th</sup>	49.47	16 <sup>th</sup>
<b>Sep-22</b>	50.00	50.31	16 <sup>th</sup>	49.50	2 <sup>nd</sup>
<b>Oct-22</b>	50.01	50.41	24 <sup>th</sup>	49.53	25 <sup>th</sup>
<b>Nov-22</b>	50.00	50.27	26 <sup>th</sup>	49.44	8 <sup>th</sup>
<b>Dec-22</b>	50.00	50.55	26 <sup>th</sup>	49.41	25 <sup>th</sup>
<b>Jan-23</b>	50.00	50.49	23 <sup>rd</sup>	49.42	20 <sup>th</sup>
<b>Feb-23</b>	50.00	50.40	10 <sup>th</sup>	49.51	9 <sup>th</sup>
<b>Mar-23</b>	50.00	50.48	4 <sup>th</sup>	49.56	7 <sup>th</sup>
<b>Year</b>	<b>49.99</b>	<b>50.55</b>	<b>26.12.2022</b>	<b>49.41</b>	<b>25.12.2022</b>

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
<b>Apr-22</b>	31.98	59.25	8.77
<b>May-22</b>	9.83	72.23	17.94
<b>Jun-22</b>	12.45	73.39	14.16
<b>Jul-22</b>	7.82	73.45	18.72
<b>Aug-22</b>	8.77	75.77	15.45
<b>Sep-22</b>	6.24	80.79	12.97
<b>Oct-22</b>	4.88	78.26	16.86

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Nov-22	6.70	77.00	16.31
Dec-22	13.06	57.49	29.45
Jan-23	13.30	58.70	28.00
Feb-23	10.75	64.68	24.57
Mar-23	9.18	65.63	25.19
Average	11.25	69.72	19.03

**(d) VOLTAGES OF TS SYSTEM FOR 2022-23**

Voltages recorded at some of the Generating Stations, Grid sub-stations and Tail-end sub-stations on 30.03.2023, the date on which the State Peak Demand Met i.e., 15497 MW are as tabulated below.

**Voltages profile at various Generating Stations as on 30.03.2023**

<b>400kV Level</b>						
S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	BHUPALAPALLY(KTPP)	412.99	406.73	422.23	423.74	405.34
2	BTPS	408.52	406.11	413.47	414.48	404.78
3	KTPS-VI	413.91	412.49	422.5	423.76	409.8
4	KTPS-VII	413.02	413.02	421.22	422.65	408.7
5	SINGARENI	417.46	413.71	425.49	427.95	411.2
<b>220kV Level</b>						
S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	KTPS-V	230.55	227.66	235.64	236.7	226.62
2	LOWER JURALA	215.04	210.82	230.88	232.87	208.59
3	U.JURALA	214.22	210.1	232.1	234.01	207.43
4	N'SAGAR MAIN	226.97	226.02	236.4	238.21	220.15
<b>132kV Level</b>						
S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	N'SAGAR	134.97	135.01	141.62	142.61	131.1
2	RTS-B	112.66	108.42	114.92	115.57	108

### **Voltages profile at various 400kV Substations as on 30.03.2023**

<b>S.NO</b>	<b>STATION NAME</b>	<b>00:00</b>	<b>08:00</b>	<b>19:00</b>	<b>Max</b>	<b>Min</b>
1	CHANDULAPUR	410.94	404.39	426.13	428.22	402.3
2	DICHPALLY	410.51	407.23	422.23	423.74	405.34
3	DINDI	412.75	407.05	427.01	429.42	402.39
4	GAJWEL	410.86	403.05	426.98	429.32	400.72
5	JANGAON	414.22	408.03	430.57	431.4	407.17
6	JULURUPADU	416.12	412.61	425	425	410.55
7	KETHIREDDY PALLI	413.47	407.37	429.21	432.69	403.6
8	MAHABOONNAGAR	410.88	410.88	428.17	431.83	405.53
9	MAHESWARAM	409.93	405.72	425.02	428.3	397.9
10	MAMIDIPALLY	407.52	402.26	422.64	426.1	397.97
11	MEDARAM	415.89	407.58	427.75	430.53	404.79
12	NARSAPUR	412.44	404.71	427.35	430	396.4
13	NIRMAL	412.44	408.18	429.73	432.78	403.44
14	RAMADUGU	415.63	407.77	428.34	431.23	405.23
15	SHANKARPALLY	410.2	403.8	426.51	429.74	397.64
16	SUNDILA	416.48	412.12	425.79	428.47	409.42
17	SURYAPET	416.78	412.88	429.46	429.46	410.59
18	TIPPAPUR	414.19	406.93	428.35	430.52	399.97

### **Voltages profile at various 220kV Major substations as on 30.03.2023**

<b>S.NO</b>	<b>STATION NAME</b>	<b>00:00</b>	<b>08:00</b>	<b>19:00</b>	<b>Max</b>	<b>Min</b>
1	BONGULUR	225.2	220.97	233.58	234.76	217.9
2	BHEEMGAL	220.73	213.52	232.27	234.02	210.17
3	BHONGIR	224.25	219.2	233.92	235.84	217.49
4	CHALAKURTHY SWS	222.96	218.67	230.03	231.62	216.94
5	CHANDRAYANAGUTTA	224.6	224.6	224.6	224.6	224.6
6	DINDI	225.6	220.57	236.11	238.64	218.09
7	FABCITY	225.26	220.68	233.11	235.25	217.65
8	HAYATHNAGAR	227.5	223.21	234.89	236.95	220.38
9	IMLIBUN	225.65	221.27	233.19	235.33	218.79
10	JAGITYAL	227.7	215.85	237.28	238.53	214.68
11	KALWAKURTHY	220.64	215.62	233.41	235.48	212.77
12	KONDAMALLEPALLY	219.78	215.26	232.18	234.04	211.6
13	KAMAREDDY	206.47	202.57	232.7	234.62	199.61
14	KONDAPAKA	215.91	210.93	234.54	236.46	208.3

15	MAHABUBNAGAR	229.12	219.91	236.81	238.04	218.7
16	MEDCHAL	220.65	215.45	229.3	231.44	213.07
17	MEDARAM	227.33	220.78	240.41	242.18	218.27
18	MAMIDIPALLY	223.55	219.25	231.27	233.37	216.94
19	MOULALI	227.57	222.99	234.83	236.53	220.9
20	MURMUR	229.76	222.86	237.87	238.97	221.93
21	NARKETPALLY	219.23	215.24	234.53	236.27	213.31
22	NIRMAL	225.8	218.7	237.09	238.49	217.14
23	OSMANIA	227.33	222.48	235.31	237.31	220.31
24	PARGI	222.17	213.07	234.89	237.2	208.83
25	SIDDIPET	215.48	208.95	233.94	235.83	206.28
26	SINGOTAM	219.75	216.04	232.75	234.5	213.88
27	SHANKARPALLY	224.43	218.3	234.19	236.27	215.56
28	SHAPURNAGAR	228.58	222.38	236.7	238.97	219.99
29	SURYAPET	226.66	222.97	234.91	236.23	221.65

**ANNEXURE - I: TSTRANSCO Contracts (in MW) for FY 2022-23 (Actuals)**

Sl. No.	Generating Station / Source	Installed/Contracted Capacity (MW)	Net Capacity of TSDiscoms (MW)	Transmission ContractedCapacity(MW)	
				TSSPDCL	TSNPDCL
I	TSGENCO THERMAL				
1	KTPS-D(V)(2x250)	500.00	455.00	321.00	134.00
2	KTPS-VI(1x500)	500.00	462.50	326.29	136.21
3	RTS-B (1x62.5)	62.50	56.25	39.68	16.57
4	KTPP St.I(1x500)	500.00	462.50	326.29	136.21
5	KTPP St.II (1x600)	600.00	558.00	393.67	164.33
6	KTPS VII (1 x 800)	800.00	758.00	534.77	223.23
7	BTPS (4 x 270)	1080.00	988.20	697.18	291.02
Total TSGENCO Thermal		4042.50	3740.45	2638.89	1101.56
II	TSGENCO HYDEL				
1	N.SAGAR PH (1x110 + 7x100.8)	815.60	807.44	569.65	237.79
2	NSLCPH(2x30)	60.00	59.40	41.91	17.49
3	Pochampadu (3x9 + 1x9)	36.00	35.64	25.14	10.50
4	Srisaillam LBPH(SLBHES)(6x150)	900.00	889.20	627.33	261.87
5	Jurala HES (6)(Priyadarshini) (50% share to Karnataka) (6 x 39)	234.00	115.83	81.72	34.11
6	Singur(2x7.5)	15.00	14.85	10.48	4.37
7	Nizam Sagar (2x5)	10.00	9.90	6.98	2.92
8	Mini Hydel (Peddapalli,) (total 19 units)	9.16	9.07	6.40	2.67
9	Mini Hydel (Palair) (2 x 1MW)	2.00	1.98	1.40	0.58
10	Lower Jurala Hydro Electric Project(6x40)	240.00	237.60	167.63	69.97
11	Pulichintala(4x30)	120.00	118.80	83.81	34.99
Total TSGENCO Hydel		2441.76	2299.71	1622.45	677.26
III	INTER STATE HYDEL				
1	Machkund PH	120.00	0.00	0.00	0.00
2	Tungabhadra PH & Hampi	72.00	0.00	0.00	0.00
	TOTAL IS Hydel	192.00	0.00	0.00	0.00
IV	CENTRAL GENERATING STATIONS				
1	NTPC (SR)-I&II	353.01	328.16	231.52	96.64
2	NTPC (SR) Stage-III	88.50	82.97	58.54	24.43
3	NTPC (Simhadri) I	538.90	507.91	358.33	149.58
4	NTPC (Simhadri) II	256.82	242.05	170.77	71.28
5	NTPC Talcher-II	217.41	203.82	143.80	60.02
6	NLC - Stage-I	5.25	4.72	3.33	1.39



Sl. No.	Generating Station / Source	Installed/Contracted Capacity (MW)	Net Capacity of TSDiscoms (MW)	Transmission Contracted Capacity(MW)	
				TSSPDCL	TSNPDCL
7	NLC - Stage-II	6.91	6.22	4.39	1.83
8	NLC TPS-I Expn	5.47	5.01	3.53	1.48
9	NLC – TPS-II Expn	6.51	5.86	4.13	1.73
10	NPC (Kaiga) Unit I & II	67.70	60.59	42.75	17.84
11	NPC (Kaiga) Unit III & IV	72.01	64.45	45.47	18.98
12	NPC (MAPS)	22.04	19.73	13.92	5.81
13	NTECL Valluru Thermal Power	106.13	99.50	70.20	29.30
14	NLC tamil( Tuticorin) Unit I & II	147.49	139.01	98.07	40.94
15	New Nyvelly Thermal Power Station	61.92	58.05	40.95	17.10
16	Kuddankulam Nuclear Power Plant (KKNP) Unit- I	4.34	4.00	2.82	1.18
17	Kuddankulam Nuclear Power Plant (KKNP) Unit- II	50.00	50.00	35.28	14.72
18	Kudigi Unit-I&II	281.12	263.55	185.93	77.62
19	NVVNL Bundled Power COAL	45.81	45.81	32.32	13.49
20	NSM II(Coal)( NTPC 200 MW)	200.00	200.00	141.10	58.90
Total CGS		2537.34	2391.41	1687.15	704.26
VI	OTHERS				
1	Sembcorp (Unit-I) (Sembcorp)	660.00	269.45	190.10	79.35
2	Sembcorp (Unit-II) (Sembcorp)	660.00	570.00	402.14	167.86
3	Singareni Thermal Power Project	1200.00	1131.00	797.92	333.08
4	Chattisgarh Power Purchase	1000.00	948.00	668.81	279.19
Total Others		3520.00	2918.45	2058.97	859.48
VII	NCE				
1	Bio-Mass	30.00	0.00	00.00	00.00
2	Bagasse	78.40	72.40	15.00	57.40
3	Mini-Hydel	2.55	0.00	0.00	0.00
4	Industrial-Waste	15.00	7.50	7.50	0.00
5	MSW	19.80	19.80	19.80	0.00
6	Wind Power	128.10	128.10	128.10	0.00
7	Solar	5101.54	4091.75	2822.49	1269.26
Total NCE		5375.39	4319.55	2992.89	1326.66
Discom Total		18108.99	15669.57	11000.35	4669.22
Open Access			87.644	87.644	
Grand Total Contractual Capacity (in MW)			15757.21	15757.21	
Note: APGPCL Contracted Capacity is not included as TSDISCOMs decided not to schedule power from APGPCL from Feb 2020 onwards.					

**ANNEXURE – II**

**LIST OF DIRECTIVES**

Sl. No.	Directive	Subject of Directive	Compliance Report
1	Segregation of assets and liabilities between APTransco and TSTransco	The Commission directs the petitioner to submit a compliance report on the segregation of assets and liabilities between APTransco and TSTransco by 30.06.2020	Complied with vide APR FY2020-21
2	Transmission works relating to LI Schemes	The Commission directs the petitioner to execute the Transmission works relating to LIS duly coordinating with the Irrigation Department.	Complied with since FY 2019-20.
3	Annual Performance Review	The Commission directs the petitioner to file the Performance Review (true up) for each year of the 4 <sup>th</sup> Control Period before 31 <sup>st</sup> December of the following year. As a first step, the petitioner shall file the Annual Performance Review for FY 2019-20 by 31.12.2020.	Complied with since the APR for FY 2019-20.
4	Capitalisation details for 3 <sup>rd</sup> Control Period from FY 2014-15 to FY 2018-19	The Commission directs the petitioner to submit the complete details sought regarding the capitalisation for the 3 <sup>rd</sup> Control Period, in the Petition to be filed for the Annual Performance Review for FY 2019-20.	Complied with since FY 2019-20.
5	Computations of Depreciation in accordance with CERC (Terms and Conditions of Tariff) Regulations, 2019	The Commission directs the petitioner to submit the computations of depreciation for each year of the 4 <sup>th</sup> Control period in accordance with the provisions of the CERC (Terms and Conditions of Tariff) Regulations, 2019 in Annual Performance Review for each year of the 4 <sup>th</sup> Control Period	Complied with since FY 2019-20.
6	Capital Investments	<p>Considering the importance of capitalisation of works, the Commission lays down the following requirements to be fulfilled before accepting inclusion of the value of the capitalised work in the OCFA:</p> <ol style="list-style-type: none"> <li>On completion of a capital work, a physical completion certificate (PCC) to the effect that the work in question has been fully executed, physically, and the assets created are put in use, to be issued by the concerned engineer not below the rank of Superintending Engineer.</li> <li>The PCC shall be accompanied or followed by a financial completion certificate (FCC) to the effect that the assets created have been fully entered in the fixed assets register by transfer from the CWIP register to OCFA. The FCC shall have to be issued by the concerned finance officer not below the rank of senior Accounts Officer.</li> <li>The above mentioned certificates have to be submitted to the Commission within 60 days of completion of work, at the latest.</li> </ol>	Complied with. PCCs & FCCs FY2021-22 are being submitted