Transmission Corporation of Telangana Limited
(State Transmission Utility)

Aggregate Revenue Requirement (ARR) and Filing for Proposed Tariff (FPT) under Multi Year Tariff (MYT) Frame Work for 5th Control Period (FY 2024-25to FY 2028-29)

August, 2024

INDEX

TABLES

BEFORE THE HONOURABLE TELANGANA STATE ELECTRICITY REGULATORY COMMISSION

AT ITS OFFICE AT 5th FLOOR, SINGARENI BHAVAN, RED HILLS, HYDERABAD.

FILING NO._____/2024

CASE NO. _____/2024

In the matter of:

Filing of the Aggregate Revenue Requirement (ARR), Filing for Proposed Tariff (FPT) for the Multi-Year Tariff Framework (MYT) for the Fifth(5th) Control Period (FY:2024-25 to FY 2028-29) for its Transmission Business under Section 26(5) of the Andhra Pradesh Electricity Reform Act, 1998 and under Part VII (Section 61 to Section 64) of the Electricity Act, 2003 (hereinafter referred to as 'the Act') read with the TGERC Multi Year Tariff (MYT) Regulation No. 2 of 2023 and relevant Guidelines as adopted by TGERC till date, by the Transmission Corporation of Telangana Limited ('TGTransco' or 'the Licensee') as the Transmission Licensee and as SLDC operator.

In the matter of:

TRANSMISSION CORPORATION OF TELANGANA LIMITED

... Applicant

AFFIDAVIT OF APPLICANT VERIFYING THE APPLICATION ACCOMPANYING FILING OF AGGREGATE REVENUE REQUIREMENT (ARR), FILING FOR PROPOSED TARIFF (FPT) FOR THE MULTI-YEAR TARIFF FRAMEWORK (MYT) FOR THE FIFTH(5TH)

CONTROL PERIOD (FY:2024-25 TO FY 2028-29) FOR TRANSMISSION BUSINESS OF TGTRANSCO

I, Ronald Rose Dinakaran, S/o Dinakaran Bose Chandrasekhar, 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 TGTransco, the licensee company operating and controlling the Transmission business & SLDC Activity of electricity in Telangana pursuant to the license granted by the Hon'ble Commission. I am competent and duly authorized by TG 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 Aggregate Revenue Requirement. 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 4th day of August 2024 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
TGTRANSCO/HYDERABAD
RAVI KUMAR SULUVA
BCA,FCS
COMPANY SECRETARY, TGTRANSCO,
VIDYUT SOUDHA, HYDERABAD-500 082

BEFORE THE HONOURABLE TELANGANA STATE ELECTRICITY REGULATORY COMMISSION

AT ITS OFFICE AT 5th FLOOR, SINGARENI BHAVAN, RED HILLS,HYDERABAD.

FILING NO._____/2024

CASE NO. _____/2024

In the matter of:

Filing of the Aggregate Revenue Requirement (ARR), Filing for Proposed Tariff (FPT) for the Multi-Year Tariff Framework (MYT) for the Fifth(5th) Control Period (FY:2024-25 to FY 2028-29) for its Transmission Business under Section 26(5) of the Andhra Pradesh Electricity Reform Act, 1998 and under Part VII (Section 61 to Section 64) of the Electricity Act, 2003 (hereinafter referred to as 'the Act') read with the TGERC Multi Year Tariff (MYT) Regulation No. 2 of 2023 and relevant Guidelines as adopted by TGERC till date, by the Transmission Corporation of Telangana Limited ('TGTransco' or 'the Licensee') as the Transmission Licensee and as SLDC operator.

In the matter of:

TRANSMISSION CORPORATION OF TELANGANA LIMITED …
Applicant

The Applicant respectfully submits as under: -

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

1. Consequently, Transmission Corporation of Telangana Limited was established as TRANSCO for Telangana State, vide G.O Ms. No 26 dt. 29.05.2014 by Government of Andhra Pradesh. As such, TGTRANSCO was declared as the deemed transmission licensee, by the erstwhile APERC (i.e., the Joint State Electricity Regulatory Commission to AP & TS) vide proceedings No. APERC/Secy/160/2014, dt. 11.07.2014 under Licence No. 1 of 2014 with effective from 23.06.2014, the date of notification of Transco by the Govt. of TG as the State Transmission Utility (STU) for Telangana State.

2. The erstwhile APERC issued Regulation No. 3 of 2014 (Reorganization) Regulation, 2014 on 26.05.2014 consequent to notification of the Andhra Pradesh Reorganization Act, 2014 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 2nd 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'.

3. In accordance with the above regulation, all the regulations framed by erstwhile APERC will continue to apply for the state of Telangana. Subsequently, TGERC 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 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".

4. This filing for Aggregate Revenue Requirement (ARR) and Filing for Proposed Tariff (FPT) for Multi Year Tariff (MYT) period FY:2024-25to FY: 2028-29 (i.e. 5th control period, filed in terms of the TGERC MYT (Multi Year Tariff) Regulation No. 2 of 2023 dated 30.12.2023 and in accordance with the provisions of the Andhra Pradesh Electricity Reforms Act,1998, the Electricity Act, 2003, the License No. 1 of 2000 granted by the Hon'ble APERC to APTransco on 31st January, 2000 and License No. 1 of 2014 granted by the Hon'ble TGERC to TGTransco on 11thJuly, 2014 and other Guidelines and Regulations including the regulations pertaining to Transmission, SLDC, Open Access, etc., issued by the Hon'ble Commission till date.

5. The APERC in the MYT Tariff Order dated 09.05.2014 issued for 3rd Control Period directed that the same Tariff Order will be applicable for both States post bifurcation till new Tariff Order issued for Telangana by the new State ERC. Accordingly, TGTRANSCO adopted the APERC Order dt. 09.05.2014, from FY:2014-15 to FY:2016-17, on the basis of power allocation ratio @53.89% to TSDISCOMs, notified by GoAP vide G.O.Ms.No.20, Dt.08.05.2014, till this Hon'ble Commission issued Tariff Order Dt. 01.05.2017 (for FY:2017-18 & FY: 2018-19) in mid-term review of 3rd Control Period based on filings and annual accounts and statutory/A.G. Audit remarks on TGTRANSCO during the period FY:2014-15 (02.06.2014 to 31.03.2015) & FY:2015-16.

6. The Hon'ble TGERC issued MYT order dated 20.03.2020 for 4th Control Period for Transmission Business, i.e., from FY:2019-20 to FY:2023–24, for TGTransco filings for ARR& FPT for 4thcontrol period and Orders in TGTRANSCO's filingsfor Annual Performance Review (True up) filed for FY:2019-20, FY:2020-21 and FY:2021-22 in compliance to Directive No. 3 issued by the Hon'ble Commission in the 4th MYT Order issued above.

7. While filing the present MYT petition for filing Aggregate Revenue Requirement and Filings for Proposed Tariff for the 5th control period i.e. FY: 2024-25 to FY:2028-29 for Transmission business, TGTransco has endeavored to comply with the various applicable legal and regulatory directions and stipulations including the directions of the Hon'ble Commission in terms of the TGERC Multi Year Tariff (MYT) Regulation No. 2 of 2023 and relevant Guidelines as adopted vide TGERC (Adoption) Regulation No. 1 of 2014.

8. Based on the information available, the Applicant has made bonafide efforts to comply with the directions of the Hon'ble Commission and discharge its obligations to the best of its abilities. However, should any further material become available in the near future, the Applicant reserve the right to file such additional information and consequently amend / revise this application.

9. TG TRANSCO submits the following in this petition:

   (I) True up Analysis of Performance for 4th Multi Year Tariff Control Period from FY 2019-20 to FY 2023-24 as per Regulation 5 of 2005;

   (II) Aggregate Revenue Requirement (ARR) for Transmission Business from FY 2024-25 to FY 2028-29 as per Regulation 2 of 2023.

   (III) Proposal of Transmission Tariff and Charges from FY 2024-25 to FY 2028-29 as per Regulation 2 of 2023 (Annexed the MYT Regulatory Forms 1 to 15).

9(I) True up Analysis of Performance for FY 2019-20 to FY 2023-24:

a) TG TRANSCO has been providing Transmission Service in the State of Telangana and collecting the Transmission Charges from the Customers as per the Tariff Order issued for 4th Multi Year Tariff Control Period by Hon'ble TGERC for FY 2019-20 to FY 2023-24.

b) In accordance with Regulation No. 5 of 2005, TRANSMISSION CORPORATION OF TELANGANA LIMITED (TG TRANSCO) has filed the True up for corrections for Controllable and Uncontrollable items and as well as sharing of gains/losses for the 4th MYT control period (FY 2019-20to FY 2023-24).

c) The licensee is submitting the following as part of the correction filings for FY 2019-20 to FY 2023-24:

- Statement of variance with the Tariff Order for each item in the Aggregate Revenue Requirement and reasons for variation.

- Actual Aggregate Revenue Requirement (ARR) for each year computed based on actual investments, actual interest and other costs.

- The Surplus/Deficit for each year arrived based on actual revenue for the respective year.

i) The statement showing the ARR Deviation (Actuals) with respect to the APR orders for the periods FY: 2019-20 to FY: 20222-23 and w.r.t. Tariff Order for FY: 2023-24 is given below :

Table: a ARR Deviation (Rs. in Crores)

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Expenditure	1207.30	1641.23	433.93	1726.80	1792.90	66.10	2375.63	2025.76	-349.87
O&M Costs	942.62	942.61	-0.01	865.67	865.67	0.00	1087.87	1061.49	-26.38
O&M Carrying Costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	747.00	919.44	172.44	794.60	857.78	63.18	834.93	889.69	54.76
Taxes	63.83	66.77	2.94	66.53	69.45	2.92	74.58	74.58	0.00
Special Appropriation	-546.15	-287.59	258.56	0.00	0.00	0.00	378.25	0.00	-378.25
Expenses Capitalized	109.23	109.23	0.00	111.46	111.46	0.00	126.24	126.24	0.00
O&M Expenses Capitalized	109.23	109.23	0.00	111.46	111.46	0.00	126.24	126.24	0.00
Net Expenditure	1098.07	1532.00	433.93	1615.34	1681.44	66.10	2249.39	1899.52	-349.87
RoCE	972.94	1017.68	44.74	1009.13	1168.26	159.13	1147.29	1186.51	39.22
Gross ARR	**2071.01**	**2549.68**	**478.67**	**2624.47**	**2849.70**	**225.23**	**3396.68**	**3086.03**	**-310.65**
Non Tariff Income	514.82	514.82	0.00	444.53	444.53	0.00	338.08	338.08	0.00
Revenue from Tariff	1491.31	1491.31	0.00	2353.88	2353.88	0.00	2897.80	2897.80	0.00
Total Revenue	**2006.13**	**2006.13**	**0.00**	**2798.41**	**2798.41**	**0.00**	**3235.88**	**3235.88**	**0.00**
(Surplus)/ Deficit	64.88	543.55	478.67	-173.94	51.29	225.23	160.80	-149.86	-310.66
Disallowed as per APRS	0.00	478.67	478.67	0.00	225.23	225.23	0.00	-310.66	-310.66
Net (Surplus)/ Deficit	**64.88**	**64.88**	**0.00**	**-173.94**	**-173.94**	**0.00**	**160.80**	**160.80**	**0.00**

Particulars	FY 2022-23			FY 2023-24 (Provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/ APR Order	Actual	Deviation
Expenditure	2300.84	2528.74	227.90	2696.53	2979.25	282.72	10307.10	10967.88	660.78
O&M Costs	1265.89	1410.15	144.26	1197.51	1481.23	283.72	5359.56	5761.16	401.60
O&M Carrying Costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	1034.95	1036.64	1.69	1378.79	1271.98	-106.81	4790.27	4975.54	185.27
Taxes	0.00	81.94	81.94	120.23	226.04	105.81	325.17	518.77	193.60
Special Appropriation	0.00	0.00	0.00	0.00	0.00	0.00	-167.90	-287.59	-119.69
Expenses Capitalized	142.49	142.49	0.00	176.98	149.68	-27.30	666.40	639.10	-27.30
O&M Expenses Capitalized	142.49	142.49	0.00	176.98	149.68	-27.30	666.40	639.10	-27.30
Net Expenditure	2158.35	2386.24	227.89	2519.55	2829.57	310.02	9640.70	10328.78	688.08
RoCE	1225.16	1322.57	97.41	1766.59	1322.61	-443.98	6121.11	6017.62	-103.49
Gross ARR	**3383.51**	**3708.81**	**325.30**	**4286.14**	**4152.18**	**-133.96**	**15761.81**	**16346.40**	**584.59**
Non Tariff Income	546.77	545.36	-1.41	477.71	374.36	-103.35	2321.91	2217.15	-104.76
Revenue from Tariff	3415.79	3415.79	0.00	3808.43	3833.19	24.76	13967.21	13991.97	24.76
Total Revenue	**3962.56**	**3961.15**	**-1.41**	**4286.14**	**4207.55**	**-78.59**	**16289.12**	**16209.12**	**-80.00**
(Surplus)/ Deficit	-579.05	-252.34	326.71	0.00	-55.37	-55.37	-527.31	137.28	664.59
Disallowed as per APRS	0.00	326.72	326.72	0.00	0.00	0.00	0.00	719.96	719.96
Net (Surplus)/ Deficit	**-579.05**	**-579.06**	**-0.01**	**0.00**	**-55.37**	**-55.37**	**-527.31**	**-582.68**	**-55.37**

As can be seen from above statement :

a. Net O&M Expenses from FY 2019-20 to FY 2023-24 have been increased by Rs.428.90 Crores for 4th Control period due to wage revision made with effect from 01.04.2022 which was not factored in the ARR for 4th MYT Control Period submitted by the Licensee and also in the Tariff Order issued by the Hon'ble Commission.

b. The decrease in Capitalisation of O&M expenses during the 4th MYT period is due to change in accounting policy in Capitalisation of Admin. & General expenses as per IND AS 12, as commented by C&AG during supplementary Audit.

c. The actual addition to the fixed assets from FY 2019-20 to FY 2022-23 as per Audited Accounts and FY2023-24 (Provl.) is Rs.10905.41 Crores.

d. Revenue : The Actual Revenue accrued from Transmission Charges during the 4th MYT Control Period is Rs.13991.97 Crores as against Rs.13967.21 Crores approved by the Commission; thereby there is an increase of Rs.24.76 Crores. The main reason for increase is due to increase of revenue from Open Access Customers. Further, there is a decrease in other income to the extent of Rs.104.50 Crores during the Control Period, resulting in decrease in total revenue of Rs.80.00 Crores.

e. **Taxes:**

- As per the APR Order dated 07.06.2024 for the FY:2022-23, Hon'ble Commission has approved "Taxes on Income" as NIL, stating that the current year taxes as per Profit & Loss Account of the Company for FY 2022-23 is Zero. Thereby, the Hon'ble Commission has approved a net surplus as pass-through for Rs.579.05 Crores as against surplus filed by the Licensee for Rs.252.33 Crores.

- In this connection, it is to submit that TGTransco has paid Income Tax on Profits for an amount of Rs.41.12 Crores for FY 2022-23 under MAT Provisions and the same was transferred to MAT Tax Credit Entitlement Account (MAT Asset) and hence it has not appeared in P&L Account. Hitherto, the Company has been paying Income Tax as per MAT provisions and the same is being claimed in all the MYTs/APR filings submitted to TGERC.

- Therefore, TGTransco has now filed a Review Petition with Hon'ble Commission with a prayer to consider Income Tax paid, in line with previous APR Orders, and adjust the True-up accordingly in ensuing MYT Orders for 5th Control Period.

f. The Total Aggregate Revenue Requirement (ARR) approved by Hon'ble Commission for FY 2019-20to FY 23-24 (Provl.) is Rs.15761.81Crores, as against which the actual ARR is Rs.16346.40 Crores, thereby there is an increase of Rs.584.59 Crores in ARR. Further, the Licensee has considered total surplus of Rs.582.68 Crores for 4th MYT Control period, duly accepting the Surplus/Deficit as per the APR Orders for the FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 and Provisional Accounts for FY 2023-24 . The licensee has proposed for adjustment of Rs.582.68 Crores in FY 2024-25 as a Special Appropriation towards balance amount of True up for 4th MYT Control Period (FY 2019-20 to FY 2023-24). However, based on audited accounts for FY 2023-24, the difference if any, will be claimed/passed on to the customers as per the Orders of Hon'ble Commission.

g. **Impact of True-Up for prior period**: Based on the Annual Performance Review orders and Provisional Accounts, Pass through for 4th Control Period is as follows:

Table: b Impact of True-Up for prior period (Rs. in Crores)

Sl.No	Financial Year	Particulars	Amount
1	2019-20	Deficit as per APR order dated 02.09.2021	(64.88)
2	2020-21	Surplus as per APR order dated 07.04.2022	173.94
3	2021-22	Deficit as per APR order dated 26.05.2023	(160.80)
4	2022-23	Surplus as per APR order dated 07.06.2024	579.05
5	2023-24	Surplus (as per Provisional Accounts)	55.37
Total			**582.68**

It could be seen from the above that the net pass through for the 4th MYT is arrived at Rs.582.68 Crores and the same was considered as special appropriation for the control period in FY 2024-25.

ii) Technical Performance Analysis: A brief analysis of the key elements of licensee's business is as follows:

a) Loss Reduction: The licensee has undertaken a number of loss reduction measures such as system improvement, reactive power compensation etc., and would continue to do so with an aim to further reduce the transmission losses. The true up of transmission losses approved vs actuals is given below:

Table: c Actual Transmission Loss during 4th Control Period (in %)

Particulars		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Transmission Loss (%)	Approved	3.09	2.78	2.71	2.64	2.57	2.50
	Actual	2.85	2.65	2.57	2.47	2.52	2.30

b) Transmission Network Availability: The transmission network availability has been maintained at 99.9% throughout the 4th Control Period i.e., in FY:2019-20, FY:2020-21, FY:2021-22, FY 2022-23 and FY:2023-24.

9(II).Aggregate Revenue Requirement (ARR) for Transmission Business for 5th control period from FY 2024-25 to FY 2028-29 as per Regulation 2 of 2023.

a) Capital Investment plan during the Control Period:

Capital Investments proposed for execution of 400kV Schemes including evacuation schemes, schemes consisting of 220kV & 132kV Sub Stations and Lines, Lift Irrigation Schemes and Renovation and modernization schemes during 5th Control period are as follows:

Table: d Capital Investment plan during 5th Control Period (Rs. in Crores)

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Opening Capital Works in Progress	3,979.70	3,432.07	4,308.72	1,885.81	836.19

2	Capital Expenditure during the year	4,301.32	3,872.69	3,488.10	2,123.84	1,374.04
3	Capitalisation during the year	4,848.95	2,996.04	5,911.01	3,173.46	2,117.22
4	Closing Capital Works in Progress	3,432.07	4,308.72	1,885.81	836.19	93.02

c) The following is the position of Aggregate Revenue Requirement for 5th Control Period (FY2024-25 to FY 2028-29):

Table: e Aggregate Revenue Requirement for 5th Control Period(Rs. in Crores)

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Operation & Maintenance Expenses	1,489.89	1,600.09	1,708.95	1,883.60	2,047.74
2	Depreciation	661.73	780.71	916.08	1,054.15	1,110.10
3	Interest and finance charges on loan	971.83	1,109.47	1,244.05	1,388.80	1,518.20
4	Interest on Working Capital	71.50	90.09	99.54	113.69	124.18
5	Return on Equity	822.12	945.29	1,071.56	1,210.77	1,343.74
6	Less:					
6.1	Non-Tariff Income	464.70	515.70	580.46	641.18	651.18
6.2	Income from Open Access Charges	-	-	-	-	-
6.3	Income from Other Business	-	-	-	-	-
7	Add:					
7.1	Impact of true-up for prior period	-582.68	-	-	-	-
8	**Aggregate Revenue Requirement**	**2,969.68**	**4,009.95**	**4,459.72**	**5,009.83**	**5,492.77**

- It is to submit that wage revision to the employees is due w.e.f. 01.04.2026. However, the impact of wage revision was not factored in the above projections. The same will be claimed separately based on actuals.

c) Projected Transmission Losses(in %) for the 5th Control Period :

As per the MYT framework, the licensee's forecast of loss reduction trajectory over the five-year Control Period of 5th Control Period is as shown below.

Table: f Projected Transmission Losses (in %) for the 5th Control Period

Particulars	2024-25 (Proj)	2025-26 (Proj)	2026-27 (Proj)	2027-28 (Proj)	2028-29 (Proj)
Transmission Loss Range	2.48 +/- 0.2	2.46 +/- 0.2	2.44 +/- 0.2	2.42 +/- 0.2	2.40 +/- 0.2

d) Projected Transmission System Availability (in %) for the 5th Control Period :

Table: g Projected Transmission System Availability (in %) for the 5th Control Period

Particulars	2024-25 (Proj)	2025-26 (Proj)	2026-27 (Proj)	2027-28 (Proj)	2028-29 (Proj)
Transmission System Availability	99.9	99.9	99.9	99.9	99.9

9(III) Proposal of Transmission Tariff from FY 2024-25 to FY 2028-29:

The Transmission charges are computed by dividing the net ARR of each year with the total contracted capacity of the respective year. As such, the following are the Transmission charges from FY 2024-25 to FY 2028-29.

Table: h Proposal of Transmission Tariff from FY 2024-25 to FY 2028-29

Particulars	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
	(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
ARR of Transmission Business (Rs. in Crs)	2,969.68	4,009.95	4,459.72	5,009.83	5,492.77
Transmission Contracted Capacity (MU)	22590.84	22359.01	22276.22	22131.05	21606.63
Transmission tariff for Long term and medium term consumers (Rs/kW/month)	109.55	149.45	166.83	188.64	211.85

10. The current ARR, FPT and MYT petition for the fifth Control Period (FY 2024-25 to FY 2028 - 29) being filed has been discussed and approved by the Board of Directors of TGTransco and Sri Ronald Rose Dinakaran, Chairman and Managing Director of TGTransco has been authorized to execute and file the said ARR&FPT MYT Petition on behalf of TGTransco. Accordingly, the current ARR& FPT MYT petition is verified and signed by and backed by the affidavit of Sri Ronald Rose Dinakaran, Chairman and Managing Director.

11. In the aforesaid facts and circumstances, the Applicant requests the Hon'ble Commission:

a. to consider and admit the delay petition as miscellaneous petition for condoning the delay in filing ARR and filing for proposed Tariff for the 5th control period i.e., FY: 2024-25 to FY:2028-29 for Transmission business by TGTransco,

b. to take the accompanying MYT petition for filing Aggregate Revenue Requirement and Filings for Proposed Tariff for the 5th control period i.e., FY: 2024-25 to FY:2028-29 for Transmission business by TGTransco on record,

c. for kind consideration of Income Tax paid for the FY:2022-23, in line with previous APR Orders, and adjust the True-up accordingly in ensuing MYT Orders for 5th Control Period, as prayed for in the Review Petition dated 25.07.2024to O.P. no. 02 of 2024;

d. to grant suitable opportunity to TGTransco within a reasonable time frame to file additional material information, if required;

e. to grant the waivers prayed for with respect to such filing requirements as TGTRANSCO is unable to comply with at this stage, as more specifically detailed and for the reasons set out in the present ARR, FPT & MYT filing;

f. to treat the filing as complete in view of substantial compliance as also the specific requests for waivers with justification placed on record;

g. to consider and approve TGTransco's ARR, FPT & MYT including all requested regulatory treatments in the filing;

h. to pass such order, as the Hon'ble Commission may deem fit and proper in the facts and circumstances of the case.

TRANSMISSION CORPORATION OF TELANGANA LIMITED

(APPLICANT)

Through

RONALD ROSE DINAKARAN

CHAIRMAN AND MANAGING DIRECTOR

Place: HYDERABAD
Dated: 4th August, 2024.

2 Introduction

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

Consequently, Transmission Corporation of Telangana Limited was established as TRANSCO for Telangana State, vide G.O Ms. No 26 dt. 29.05.2014 by Government of Andhra Pradesh. As such, TGTRANSCO was declared as the deemed transmission licensee, by the erstwhile APERC (i.e., the Joint State Electricity Regulatory Commission to AP & TS) vide proceedings No. APERC/Secy/160/2014, dt. 11.07.2014 under Licence No. 1 of 2014 with effect from 23.06.2014, the date of notification of Transco by the Govt. of TG as the State Transmission Utility (STU) for Telangana State.

The erstwhile APERC issued Regulation No. 3 of 2014 (Reorganization) Regulation, 2014 on 26.05.2014 consequent to notification of the Andhra Pradesh Reorganization Act, 2014 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 2nd 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, TGERC 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 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".

The APERC in the MYT Tariff Order dated 09.05.2014 issued for 3rd Control Period directed that the same Tariff Order will be applicable for both States post bifurcation till new Tariff Order issued for Telangana by the new State ERC. Accordingly, TGTRANSCO adopted the APERC Order dt. 09.05.2014, from FY: 2014-15 to FY: 2016-17, on the basis of power allocation ratio @53.89% to TSDISCOMs, notified by GoAP vide G.O.Ms.No.20, Dt.08.05.2014, till this Hon'ble Commission issued Tariff Order Dt. 01.05.2017 (for FY:2017-18 & FY: 2018-19) in mid-term review of 3rd Control Period based on filings and annual accounts and statutory/A.G.Audit remarks on TGTRANSCO during the period FY:2014-15 (02.06.2014 to 31.03.2015) & FY:2015-16.

The Hon'ble TGERC issued MYT order dated 20.03.2020 for 4th Control Period for Transmission Business i.e. from FY: 2019-20 to FY: 2023–24, for TGTransco filings for ARR, FPT and MYT for Fourth control period and Orders in TGTRANSCO's filings for Annual Performance Review (True up) filed for FY:2019-20, FY:2020-21 and FY:2021-22 in compliance of Directive No. 3 issued by the Hon'ble Commission in the 4th MYT Order issued above.

Transmission licensee, TG TRANSCO has to file its Aggregate Revenue Requirement (ARR) before Hon'ble TG ERC as per the Provisions of **Telangana State Electricity Regulatory Commission (Multi Year Tariff) Regulation, 2023** for determining the Transmission Tariff for Multi Year Control Period from FY 2024-25 to FY 2028-29. Accordingly, TG TRANSCO is filing its ARR before the Commission in the methodology prescribed by the Commission covering its Capital Investment Plan and ARR for FY 2024-25 to FY 2028-29 as per Regulation No.2 of 2023.

TG TRANSCO submits the following in this petition:

(i) True up Analysis of Performance for 4th Multi Year Tariff Control Period from FY 2019-20 to FY 2023-24 vide Regulation 5 of 2005;

(ii) Aggregate Revenue Requirement (ARR) for Transmission Business from FY 2024-25 to FY 2028-29 vide Regulation 2 of 2023.

(iii) Proposal of Transmission Tariff and Charges from FY 2024-25 to FY 2028-29 vide Regulation 2 of 2023.

I) True up Analysis of Performance for FY 2019-20 to FY 2023-24:

TG TRANSCO has been providing Transmission Service in the State of Telangana and collecting the Transmission Charges from the Customers as per the Tariff Order issued for 4th Multi Year Tariff Control Period by Hon'ble TGERC for FY 2019-20 to FY 2023-24.

In accordance with Regulation No. 5 of 2005, TRANSMISSION CORPORATION OF TELANGANA LIMITED (TG TRANSCO) has filed the True up for corrections for Controllable and Uncontrollable items and as well as sharing of gains/losses for the FY 2019-20to FY 2023-24:

The licensee is submitting the following as part of the correction filings for FY 2019-20 to FY 2023-24:

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

i) Operation and Maintenance (O&M) Expenses: The O&M Expenses includes Employees Cost, Administrative & General Expenses, Repairs & Maintenance Expenses. The O&M Expenses of the licensee are driven by the length of lines in Circuit Kilometers and No. of Sub-Station Bays. The total O&M Expenditure was allocated to Lines and Sub-Stations in the ratio of 30:70.

i.Variance in O&M Expenses:

Table I Variance in O&M Expenses **(Rs. in crores)**

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Gross O&M Costs	942.62	942.61	-0.01	865.67	865.67	0.00	1087.87	1061.49	-26.38
Less: O&M Expenses Capitalised	109.23	109.23	0.00	111.46	111.46	0.00	126.24	126.24	0.00
Net O&M Expenses	**833.39**	**833.39**	**-0.01**	**754.21**	**754.21**	**0.00**	**961.63**	**935.25**	**-26.38**

Particulars	FY 2022-23			FY 2023-24(Provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/ APR Order	Actuals	Deviation
Gross O&M Costs	1265.89	1410.15	144.26	1197.51	1481.23	283.72	5359.56	5761.16	**401.60**
Less: O&M Expenses Capitalised	142.49	142.49	0.00	176.98	149.68	-27.30	666.40	639.10	**-27.30**
Net O&M Expenses	**1123.40**	**1267.66**	144.26	**1020.53**	**1331.55**	311.02	**4693.16**	**5122.06**	**428.90**

- Net O&M Expenses from FY 2019-20to FY 2023-24 have been increased by Rs.428.90 crores.

- Reasons for Increase in the O&M Expenses for 4th Control period are as follows:

    - Wage Revision made with effect from 01.04.2022 which was not factored in the ARR for 4th MYT Control Period submitted by the Licensee and also Tariff Order issued by the Hon'ble Commission.

    - Final Allocation of Employees during bifurcation was settled as per the Supreme Court Order, resulting in increase of Employee Benefit Expenses.

    - The provision for Pension & Gratuity, Medical reimbursement and Leave salary were made in the 4th Control Period based on the Actuarial Valuation Reports for respective years.

- The decrease in Capitalisation of O&M expenses during the 4th MYT period is due to change in accounting policy in Capitalisation of Admin. & General expenses as per IND AS 12, as commented by C&AG during supplementary Audit.

ii) Depreciation: Depreciation is a claim towards replacement cost of fixed assets. Depreciation has been calculated for each year on all the fixed assets on straight line method considering the rates notified by the Ministry of Power, Govt. of India for FY 2019-20 and the rates as notified by CERC from FY 2020-21 to FY 2023-24.

ii. Variance in Depreciation:

Table II Variance in Depreciation: **(Rs. in crores)**

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Depreciation	747.00	919.44	172.44	794.60	857.78	63.18	834.93	889.69	54.76

Particulars	FY 2022-23			FY 2023-24 (Provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/APR Order	Actuals	Deviation
Depreciation	1034.95	1036.64	1.69	1378.79	1271.98	-106.81	4790.27	4975.54	185.27

There is an increase of Rs.185.27crores towards depreciation during 4th Control Period, due to increase in capitalisation.

iii) Taxes on Income:

iii. Variance in Taxes:

Table III Variance in Taxes **(Rs. in crores)**

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Provision for Income Tax	63.83	66.77	2.94	66.53	69.45	2.92	74.58	74.58	0.00

Particulars	FY 2022-23			FY 2023-24 (provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/ APR Order	Actuals	Deviation
Provision for Income Tax	0.00	81.94	81.94	120.23	226.04	105.81	325.17	518.77	193.60

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 from FY 2019-20 to FY 2022-23 and Normal rate of tax for FY 2023-24.

Hon'ble Commission has issued APR Orders for FY 2022-23 on dt.07.06.2024, wherein it has approved a net surplus as pass-through for Rs.579.05 crores as against surplus filed by the Licensee for Rs.252.33 crores.

As per the APR Orders, Hon'ble Commission has approved "Taxes on Income" as NIL, stating that, the current year taxes as per Profit & Loss Account of the Company for FY 2022-23 is Zero.

In this connection, it is to submit that, Company has paid Income Tax on Profits for an amount of Rs.41.12 crores for FY 2022-23 under MAT Provisions and the same was transferred to MAT Tax Credit Entitlement Account (MAT Asset) and hence it was not appeared in P&L Account. The Company is paying Income Tax as per MAT provisions and the same is being claimed in all the MYTs/APR filings submitted to TGERC.

In this connection, the Company has decided to file a Review Petition on Transmission APR Orders issued by Hon'ble TGERC for FY 2022-23. Accordingly, a Review Petition on the APR Orders for FY 2022-23 issued on 07.06.2024 is filled vide ---------- and prayed Hon'ble Commission to allow Income Tax on RoE (Return on Equity) approved by the Commission as per Regulation No.5 of 2005.

In view of the facts explained above, it is requested the Hon'ble TGERC for kind consideration of Income Tax in line with previous APR Orders and adjust the True-up accordingly in ensuing MYT Orders for 5th Control Period.

iv) Return on Capital Employed (RoCE): Return on Capital Employed (RoCE) is to cover the interest charges on the debt portion towards Regulated Rate Base and Return on Equity on the investment of TG TRANSCO. The licensee has computed the actual Return on Capital Employed (RoCE) for FY 2019-20 to FY 2023-24 as per the methodology prescribed by the Hon'ble Commission vide Regulation 5 of 2005.

iv. Variance in RoCE:

Table IV Variance in RoCE **(Rs. in crores)**

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Assets		**17550.32**	**17550.32**		**18892.35**	**18892.35**		**21296.49**	**21296.49**
Original Cost of Fixed Assets (OCFA)		14821.22	**14821.22**		17550.32	**17550.32**		18892.35	**18892.35**
Additions to OCFA		2729.10	**2729.10**		1342.03	**1342.03**		2404.14	**2404.14**
Depreciation		**5323.62**	**5323.62**		**6181.40**	**6181.40**		**7045.08**	**7045.08**
Opening Balance		4404.18	**4404.18**		5323.62	**5323.62**		6155.39	**6155.39**
Depreciation during the year		919.44	**919.44**		857.78	**857.78**		889.69	**889.69**
Consumer Contributions		**2876.94**	**2876.94**		**3499.68**	**3499.68**		**3590.02**	**3590.02**
Opening Balance		1950.83	**1950.83**		2876.94	**2876.94**		3499.68	**3499.68**
Additions during the year		926.12	**926.12**		622.73	**622.73**		90.34	**90.34**
Working Capital		**102.75**	**102.75**		**92.00**	**92.00**		**115.30**	**115.30**
Change in Rate Base		**441.77**	**441.77**		**-69.24**	**-69.24**		**712.06**	**712.06**
Regulated Rate Base	8614.65	**9010.73**	**396.08**	**8977.95**	**9372.51**	**394.56**	**10227.96**	**10064.64**	**-163.32**
Return on Capital Employed (RoCE)	**972.94**	**1017.68**	**44.74**	**1009.13**	**1168.26**	**159.13**	**1147.29**	**1186.51**	**39.22**

Particulars	FY 2022-23			FY 2023-24 (Provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/APR Order	Actuals	Deviation
Assets		**22900.11**	**22900.11**		**25726.63**	**25726.63**		**106365.90**	**106365.90**
Original Cost of Fixed Assets (OCFA)		21296.49	**21296.49**		22900.11	**22900.11**		**95460.48**	**95460.48**
Additions to OCFA		1603.62	**1603.62**		**2826.52**	**2826.52**		**10905.41**	**10905.41**
Depreciation		**8035.24**	**8035.24**		**9198.99**	**9198.99**		**35784.33**	**35784.33**
Opening Balance		6998.60	**6998.60**		7927.01	**7927.01**		**30808.79**	**30808.79**
Depreciation during the year		1036.64	**1036.64**		**1271.98**	**1271.98**		**4975.54**	**4975.54**
Consumer Contributions		**3769.01**	**3769.01**		**4021.78**	**4021.78**		**17757.43**	**17757.43**

Opening Balance		3590.02	**3590.02**		3769.01	**3769.01**		**15686.48**	**15686.48**
Additions during the year		179.00	**179.00**		**252.77**	**252.77**		**2070.96**	**2070.96**
Working Capital		**156.29**	**156.29**		**168.79**	**168.79**		**635.13**	**635.13**
Change in Rate Base		**193.99**	**193.99**		**650.89**	**650.89**		**1929.46**	**1929.46**
Regulated Rate Base	**11182.33**	**11058.15**	**-124.18**	**16225.85**	**12023.77**	**-4202.09**	**55228.74**	**51529.80**	**-3698.94**
Return on Capital Employed (RoCE)	**1225.16**	**1322.57**	**97.41**	**1766.59**	**1322.61**	**-443.98**	**6121.11**	**6017.62**	**-103.49**

- The actual addition to the fixed assets from FY 2019-20 to FY 2022-23 as per Audited Accounts and FY2023-24 (Provl.) is Rs.10905.41 crores.

v) Revenue: The following is the position of Revenue for 4th Control period (FY 2019-20 to FY 2023-24):

v. Variance in Revenue:

Table V Variance in Revenue **(Rs. in crores)**

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Revenue from Transmission Charges	1491.31	1491.31	0.00	2353.88	2353.88	0.00	2897.80	2897.80	0.00
Non-Tariff Income	514.82	514.82	0.00	444.53	444.53	0.00	338.08	338.08	0.00
Total:	**2006.13**	**2006.13**	**0.00**	**2798.41**	**2798.41**	**0.00**	**3235.88**	**3235.88**	**0.00**

Particulars	FY 2022-23			FY 2023-24 (Provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/APR Order	Actuals	Deviation
Revenue from Transmission Charges	3415.79	3415.79	0.00	3808.43	3833.19	24.76	13967.21	13991.97	24.76
Non-Tariff Income	546.77	545.36	-1.41	477.71	374.36	-103.35	2321.91	2217.15	-104.76
Total:	**3962.56**	**3961.15**	-1.41	**4286.14**	**4207.55**	-78.59	16289.12	16209.12	-80.00

- The Actual Revenue accrued from Transmission Charges during the 4th MYT Control Period is Rs.13991.97 crores as against Rs.13967.21 crores approved by the Commission; thereby there is an increase of Rs.24.76 crores. The main reason for increase is due to increase of revenue from Open Access Customers.

- Further, there is a decrease in other income to the extent of Rs.104.50 crores during the Control Period, resulting in decrease in total revenue of Rs.80.00 crores.

vi) Aggregate Revenue Requirement (ARR) and Surplus/ (Deficit):

The Total Aggregate Revenue Requirement(ARR) approved by Hon'ble Commission for FY 2019-20to FY 23-24 (Provl.)is Rs.15761.81crores, as against which the actual ARR is Rs.16346.10 crores, thereby there is an increase of Rs.584.59 crores in ARR. Further, the Licensee has considered total surplus of Rs.582.68 crores for 4th MYT Control period, duly accepting the Surplus/Deficit as per the APR Orders for the FY 2019-20, FY 2020-21, FY 2021-22 and FY 2022-23 and Provisional Accounts for FY 2023-24. The licensee has proposed for adjustment of Rs.582.68 Crores in FY 2024-25 as a Special Appropriation towards balance amount of True up for 4th MYT Control Period (FY 2019-20 to FY 2023-24). However, based on audited accounts for FY 2023-24, the difference if any, will be claimed/passed on to the customers as per the Orders of Hon'ble Commission.

vi. ARR Deviation – (Tariff Order vis-à-vis Actual):

Table VI ARR Deviation – (Tariff Order vis-à-vis Actual) (Rs. in crores)

Particulars	FY 2019-20			FY 2020-21			FY 2021-22		
	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation	APR Order	Actuals	Deviation
Expenditure	**1207.30**	**1641.23**	**433.93**	**1726.80**	**1792.90**	**66.10**	**2375.63**	**2025.76**	**-349.87**
O&M Costs	942.62	942.61	-0.01	865.67	865.67	0.00	1087.87	1061.49	-26.38
O&M Carrying Costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	747.00	919.44	172.44	794.60	857.78	63.18	834.93	889.69	54.76
Taxes	63.83	66.77	2.94	66.53	69.45	2.92	74.58	74.58	0.00
Special Approporiation	-546.15	-287.59	258.56	0.00	0.00	0.00	378.25	0.00	-378.25
Expenses Capitalized	**109.23**	**109.23**	**0.00**	**111.46**	**111.46**	**0.00**	**126.24**	**126.24**	**0.00**
O&M Expenses Capitalized	109.23	109.23	0.00	111.46	111.46	0.00	126.24	126.24	0.00
Net Expenditure	**1098.07**	**1532.00**	**433.93**	**1615.34**	**1681.44**	**66.10**	**2249.39**	**1899.52**	**-349.87**
RoCE	972.94	1017.68	44.74	1009.13	1168.26	159.13	1147.29	1186.51	39.22
Gross ARR	**2071.01**	**2549.68**	**478.67**	**2624.47**	**2849.70**	**225.23**	**3396.68**	**3086.03**	**-310.65**
Non Tariff Income	514.82	514.82	0.00	444.53	444.53	0.00	338.08	338.08	0.00
Revenue from Tariff	1491.31	1491.31	0.00	2353.88	2353.88	0.00	2897.80	2897.80	0.00
Total Revenue	**2006.13**	**2006.13**	**0.00**	**2798.41**	**2798.41**	**0.00**	**3235.88**	**3235.88**	**0.00**
(Surplus)/Deficit	**64.88**	**543.55**	**478.67**	**-173.94**	**51.29**	**225.23**	**160.80**	**-149.86**	**-310.66**
Disallowed as per APRS	**0.00**	**478.67**	**478.67**	**0.00**	**225.23**	**225.23**	**0.00**	**-310.66**	**-310.66**
Net (Surplus)/Deficit	**64.88**	**64.88**	**0.00**	**-173.94**	**-173.94**	**0.00**	**160.80**	**160.80**	**0.00**

Particulars	FY 2022-23			FY 2023-24 (Provl.)			Total		
	APR Order	Actuals	Deviation	MYT Order	Actuals	Deviation	Tariff/ APR Order	Actual	Deviation
Expenditure	**2300.84**	**2528.74**	**227.90**	**2696.53**	**2979.25**	**282.72**	**10307.10**	**10967.88**	**660.78**
O&M Costs	1265.89	1410.15	144.26	1197.51	1481.23	283.72	5359.56	5761.16	401.60
O&M Carrying Costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	1034.95	1036.64	1.69	1378.79	1271.98	-106.81	4790.27	4975.54	185.27
Taxes	0.00	81.94	81.94	120.23	226.04	105.81	325.17	518.77	193.60
Special Approporiation	0.00	0.00	0.00	0.00	0.00	0.00	-167.90	-287.59	-119.69
Expenses Capitalized	**142.49**	**142.49**	**0.00**	**176.98**	**149.68**	**-27.30**	**666.40**	**639.10**	**-27.30**
O&M Expenses Capitalized	142.49	142.49	0.00	176.98	149.68	-27.30	666.40	639.10	-27.30
Net Expenditure	**2158.35**	**2386.24**	**227.89**	**2519.55**	**2829.57**	**310.02**	**9640.70**	**10328.78**	**688.08**
RoCE	1225.16	1322.57	97.41	1766.59	1322.61	-443.98	6121.11	6017.62	-103.49
Gross ARR	**3383.51**	**3708.81**	**325.30**	**4286.14**	**4152.18**	**-133.96**	**15761.81**	**16346.40**	**584.59**
Non Tariff Income	546.77	545.36	-1.41	477.71	374.36	-103.35	2321.91	2217.15	-104.76

Revenue from Tariff	3415.79	3415.79	0.00	3808.43	3833.19	24.76	13967.21	13991.97	24.76
Total Revenue	**3962.56**	**3961.15**	**-1.41**	**4286.14**	**4207.55**	**-78.59**	**16289.12**	**16209.12**	**-80.00**
(Surplus)/Deficit	**-579.05**	**-252.34**	**326.71**	**0.00**	**-55.37**	**-55.37**	**-527.31**	**137.28**	**664.59**
Disallowed as per APRS	**0.00**	**326.72**	**326.72**	**0.00**	**0.00**	**0.00**	**0.00**	**719.96**	**719.96**
Net (Surplus)/Deficit	**-579.05**	**-579.06**	**-0.01**	**0.00**	**-55.37**	**-55.37**	**-527.31**	**-582.68**	**-55.37**

II. Aggregate Revenue Requirement for the Control Period from FY 2024-25 to FY 2028-29:

TG TRANSCO submits its Aggregate Revenue Requirement (ARR) for Annual Transmission Charges for each year of the Control Period (FY 2024-25to FY 2028-29) as per the methodology notified by **Telangana State Electricity Regulatory Commission** vide

(Multi Year Tariff) Regulation No.2 of 2023.

The Aggregate Revenue Requirement comprises of following components:

Capital Investment plan during the Control Period:

Capital Investments proposed for execution of 400kV Schemes including evacuation schemes, schemes consisting of 220kV & 132kV Sub Stations and Lines, Lift Irrigation Schemes and Renovation and modernization schemes during 5th Control period are as follows:

Form-3: Summary of Capital Expenditure and Capitalisation for the Control period:

Table VII Summary of Capital Expenditure and Capitalisation for the Control period

(Rs. in crores)

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Opening Capital Works in Progress	3,979.70	3,432.07	4,308.72	1,885.81	836.19
2	Capital Expenditure during the year	4,301.32	3,872.69	3,488.10	2,123.84	1,374.04
3	Capitalisation during the year	4,848.95	2,996.04	5,911.01	3,173.46	2,117.22
4	Closing Capital Works in Progress	3,432.07	4,308.72	1,885.81	836.19	93.02

i. Operation and Maintenance expenses(O&M Expenses):

The O&M Expenses of the licensee shall comprise of (i) Employee cost including unfunded past liabilities of pension and gratuity (ii) Repairs and Maintenance expenses and (iii) Administrative and General expenses. The O&M expenses are computed as per the following formula as per clause 71.2 of approved Regulation No.2 of 2023;

O&Mn = EMPn+R&Mn+A&Gn

Where,

EMPn= (EMPn-1) x (CPI Inflation)
R&Mn= K x (GFAn) x (WPI Inflation) and
A&Gn= (A&Gn-1) x (WPI Inflation).

Form 2: Operation and Maintenance expenses(O&M Expenses):

Table VIII Operation and Maintenance expenses(O&M Expenses) (Rs. in crores)

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Employee Expenses	1,293.66	1,372.06	1,455.20	1,590.38	1,724.34
2	A&G Expenses	90.10	101.90	115.25	130.35	147.43
3	R & M Expenses	106.13	126.13	138.49	162.87	175.97
4	**Total O&M Expenses**	**1,489.89**	**1,600.09**	**1,708.95**	**1,883.60**	**2,047.74**

The "Employee cost including unfunded past liabilities of pension and gratuity" has been computed by considering FY 2022-23 as base year and duly escalating at the rate of 6.06% (monthly average of CPI Inflation for FY 2022-23) for FY 2023-24 and for the subsequent years of the control period considering previous year expenses.

- Repairs and Maintenance (R&M) has been computed as per the regulation No.2 of 2023, where K factor is arrived by dividing R&M expenses with Opening GFA of the respective year and duly escalating with WPI Inflation at the rate of 13.1%.

    - Where, K factor is the average % of R&M expenses on Opening GFA from FY 2019-20 to FY 2022-23 worked out to 0.36%.

    - WPI Inflation is considered as point-to-point change for FY 2021-22 and FY 2022-23, and arrived at 13.1%.

- K factor for the 5th Control Period is worked out to 0.41%.

- Admin & General (A&G) expenses has been computed by considering FY 2022-23 as base year and duly escalating at the rate of 13.1% (point-to-point change for FY 2021-22 and FY 2022-23) for FY 2023-24 and for the subsequent years of the control period considering previous year expenses.

- Further, it is to submit that wage revision to the employees is due w.e.f. 01.04.2026. However, the impact of wage revision was not factored in the above projections. The same will be claimed separately based on actual.

ii. Depreciation: The claim of depreciation is meant for repayment of long-term loans. Depreciation has been calculated for each year on all the existing and future additions upto FY 2023-24 on straight line method considering the rates notified by the CERC. Further, the depreciation for the control period is arrived based on useful life as approved by TSERC vide regulation no. 2 of 2023. The following is the position of year wise depreciation claimed:

Form 4: Depreciation:

Table IX Depreciation **(Rs. in crores)**

Sl.No	Asset Group	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	LAND & LAND RIGHT	-	-	-	-	-
2	BUILDINGS	22.27	25.47	29.11	32.82	34.98
3	OTHER CIVIL WORKS	15.89	18.05	20.50	22.99	24.44
4	PLANT AND MACHINE	274.92	328.99	390.39	453.01	489.47
5	LINES&CBLE NTWRK	319.59	376.15	440.36	505.86	544.00
6	VEHICLES	0.17	0.18	0.26	0.35	0.40
7	FURNITURE & FIXTU	2.57	2.85	3.18	3.51	1.51
8	INTANGIBLE ASSETS	0.73	0.94	1.39	1.86	2.13
9	OFFICE EQUIPMENT	25.60	28.08	30.90	33.77	13.16
Total		**661.73**	**780.71**	**916.08**	**1,054.15**	**1,110.10**

Depreciation for the Control period is calculated as per the Regulation No.2 of 2023, clause 28 in the following manner:

- Balance depreciable value as on 01.04.2023 was arrived by considering the Approved Accumulated depreciation by Hon'ble Commission as per clause 28.3.

- Further, regarding the additions for the control period from FY 2024-25 to FY 2028-29, depreciation is calculated as per the Regulation No.2 of 2023, clause 28 & Annexure I.

iii. Interest and Finance Charges on Loan:

Interest and Finance Charges on loan: The Interest and Finance charges has been computed as per the Regulation 2 of 2023, clause 31 at the weighted average interest rate applied on the Normative average loan for the year arrived as per clause 27 of Regulation 2 of 2023.

Form 5: Interest and Finance Charges on Loan:

Table X Interest and Finance Charges on Loan **(Rs. in crores)**

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Opening Balance of Gross Normative Loan	15,872.68	17,548.14	19,307.15	21,068.93	23,188.65
2	Cumulative Repayment till the year	6,839.82	7,144.46	7,521.42	7,973.58	8,507.96
3	Opening Balance of Net Normative Loan	9,032.86	10,403.68	11,785.72	13,095.35	14,680.69
4	Less: Reduction of Normative Loan due to retirement or replacement of assets	-	-	-	-	-
5	Addition of Normative Loan due to capitalisation during the year	1,675.46	1,759.01	1,761.78	2,119.72	1,587.92
6	Repayment of Normative loan during the year	304.64	376.96	452.16	534.38	585.37
7	Closing Balance of Net Normative Loan	10,403.68	11,785.72	13,095.35	14,680.69	15,683.24
8	Closing Balance of Gross Normative Loan	17,548.14	19,307.15	21,068.93	23,188.65	24,776.57
9	Average Balance of Net Normative Loan	9,718.27	11,094.70	12,440.54	13,888.02	15,181.96
10	Weighted average Rate of Interest on actual Loans (%)	10.00	10.00	10.00	10.00	10.00
11	Interest	971.83	1,109.47	1,244.05	1,388.80	1,518.20
12	Finance charges					
13	**Total Interest & Finance charges**	**971.83**	**1,109.47**	**1,244.05**	**1,388.80**	**1,518.20**

The Interest and Finance charges have been computed on the following basis:

- Opening balance of Net normative loan has been arrived on 75% of the Opening Net Fixed Assets (Excluding Consumer Contributions).
- Addition of normative loan during the year is considered as 75% of Additions to fixed assets during the year.
- Repayment of the normative loan during the year is considered equal to the depreciation amount.
- The "Average Normative loan" is arrived by considering average of net opening and net closing normative loan
- Interest rate at 10% is considered as the weighted average rate of Interest on Actual long term loan portfolio at the beginning of each year.

iv. **Interest on Working Capital:** The Interest on working capital for the control period has been computed as per the Regulation No.2 of 2023, clause 33.2 as follows:

1) One month of O&M expenses.
2) 1% of Opening Gross Fixed Assets as maintenance spares
3) Receivables for 45 Days of Aggregate Revenue Requirement.
4) Security deposits as per Books of Accounts.

Form 6: Interest on Working Capital:

Table XI Interest on Working Capital **(Rs. in crores)**

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	O&M expenses	124.16	133.34	142.41	156.97	170.64
2	Maintenance spares	257.28	305.77	335.73	394.84	426.58
3	Receivables	366.12	494.38	549.82	617.65	677.19
	Less:					
4	Security Deposits	32.58	32.58	32.58	32.58	32.58
5	Total Working Capital requirement	714.98	900.91	995.39	1,136.88	1,241.83
6	Interest rate	10.00	10.00	10.00	10.00	10.00
7	**Interest on working capital**	**71.50**	**90.09**	**99.54**	**113.69**	**124.18**

The Interest on Working Capital for the control period is arrived by considering the following:

1) One month of O&M expenses
2) 1% of Opening Gross Fixed Assets as maintenance spares
3) Receivables for 45 days of Aggregate Revenue Requirement

The above has been reduced to the extent of security deposits as per books of Accounts. On the resultant working capital requirement, interest @10% has been considered (SBI MCLR 8.5%+150 Basis Points).

v. Return on Equity: The Return on Equity has been computed as per the Regulation No.2 of 2023, clause 29 and grossed up with Tax as per clause 30.

Form 7: Return on Equity:

Table XII Return on Equity **(Rs. in crores)**

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Regulatory Equity at the beginning of the year	3,541.24	4,099.73	4,686.07	5,273.33	5,979.90
2	Capitalisation during the year	2,233.94	2,345.34	2,349.05	2,826.29	2,117.22
3	Equity portion of capitalisation during the year	558.49	586.34	587.26	706.57	529.31
4	Reduction in Equity Capital on account of retirement / replacement of assets	-	-	-	-	-
5	Regulatory Equity at the end of the year	4,099.73	4,686.07	5,273.33	5,979.90	6,509.21
	Rate of Return on Equity					
6	Base rate of Return on Equity	14.00%	14.00%	14.00%	14.00%	14.00%
7	Effective Income Tax rate	34.94%	34.94%	34.94%	34.94%	34.94%
8	**Rate of Return on Equity**	21.52%	21.52%	21.52%	21.52%	21.52%
	Return on Equity Computation					
9	Return on Regulatory Equity at the beginning of the year	762.03	882.20	1,008.38	1,134.75	1,286.79
10	Return on Regulatory Equity addition during the year	60.09	63.09	63.19	76.02	56.95
11	**Total Return on Equity**	**822.12**	**945.29**	**1,071.56**	**1,210.77**	**1,343.74**

The Return on Equity has been considered at 14% on equity portion, arrived as follows:

1) Opening regulated equity has been arrived by considering 25% of net block of fixed assets of previous year excluding Consumer Contribution Assets.

2) Additions to equity for the year have been considered as 25% of fixed asset addition during the year excluding Consumer Contribution Assets.
3) Return on Equity has been arrived at 21.52% (Rate of return at 14%with effective normal tax rate) on opening regulated equity and on the 50% of equity addition during the year.

vi. **Non-Tariff Income:** The Non-Tariff Income for the Control Period has been computed as per the Regulation No.2 of 2023, clause 72.

Form 8: Non-Tariff Income:

Table XIII Non-Tariff Income **(Rs. in crores)**

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Income from rent of land or buildings	0.10	0.10	0.10	0.10	0.10
2	Net income from sale of de-capitalised assets	-	-	-	-	-
3	Income from sale of scrap	-	-	-	-	-
4	Income from statutory investments	-	-	-	-	-
5	Interest income on advances to suppliers/ contractors	-	-	-	-	-
6	Income from rental from staff quarters	-	-	-	-	-
7	Income from rental from contractors	-	-	-	-	-
8	Income from hire charges from contactors and others	22.36	23.40	24.51	25.74	26.95
9	Supervision charges for capital works	66.15	69.46	72.93	76.58	80.41
10	Interest on Staff Loans and Advances	1.01	1.01	1.01	1.01	1.01
11	Interest on Other Investments	9.02	9.02	9.02	9.02	9.02
12	Interest on Loans & Advances to DISCOMs	-	-	-	-	-
13	O&M Annual Maintainance Charges	7.36	7.36	7.36	7.36	7.36
14	Income from Training and Testing Charges	0.23	0.23	0.23	0.23	0.23
15	Income from Services Provided	0.15	0.15	0.15	0.15	0.15
16	Sale of Canteen Tokens	0.35	0.35	0.35	0.35	0.35
17	Other Income	0.89	0.89	0.89	0.89	0.89
18	Income from Fines & Penalties	-	-	-	-	-
19	Amortisation of Consumer Contributions towards fixed assets	357.09	403.74	463.93	519.77	524.73
	Total	**464.70**	**515.70**	**580.46**	**641.18**	**651.18**

- The major components of Non-Tariff income includes interest income on staff loans and advances, income from investments, supervision charges, amortization consumer grants, Lease rentals etc.,. The Non-Tariff Income for FY 2024-25 to FY 2028-29 is estimated based on the past trend.

(g) Impact of True-Up for prior period: Based on the Annual Performance Review orders and Provisional Accounts, Pass through for 4th Control Period is as follows:

Table XIV Impact of True-Up for prior period (Rs. in crores)

Sl.No	Financial Year	Particulars	Amount
1	2019-20	Deficit as per APR order dated 02.09.2021	(64.88)
2	2020-21	Surplus as per APR order dated 07.04.2022	173.94
3	2021-22	Deficit as per APR order dated 26.05.2023	(160.80)
4	2022-23	Surplus as per APR order dated 07.06.2024	579.05
5	2023-24	Surplus (as per Provisional Accounts)	55.37
Total			**582.68**

It could be seen from the above that the net pass through for the 4th MYT is arrived at Rs.582.68 crores and the same was considered as special appropriation for the control period in FY 2024-25.

Hon'ble Commission has issued APR Orders for FY 2022-23 on dt.07.06.2024, wherein it has approved a net surplus as pass-through for Rs.579.05 crores as against surplus filed by the Licensee for Rs.252.33 crores.

As per the APR Orders, Hon'ble Commission has approved "Taxes on Income" as NIL, stating that, the current year taxes as per Profit & Loss Account of the Company for FY 2022-23 is Zero.

In this connection, it is to submit that, Company has paid Income Tax on Profits for an amount of Rs.41.12 crores for FY 2022-23 under MAT Provisions and the same was transferred to MAT Tax Credit Entitlement Account (MAT Asset) and hence it was not appeared in P&L Account. The Company is paying Income Tax as per MAT

provisions and the same is being claimed in all the MYTs/APR filings submitted to TGERC.

In this connection, the Company has decided to file a Review Petition on Transmission APR Orders issued by Hon'ble TGERC for FY 2022-23. Accordingly, a Review Petition on the APR Orders for FY 2022-23 issued on 07.06.2024 and prayed Hon'ble Commission to allow Income Tax on RoE (Return on Equity) approved by the Commission as per Regulation No.5 of 2005.

In view of the facts explained above, it is requested the Hon'ble TGERC for kind consideration of Income Tax in line with previous APR Orders and adjust the True-up accordingly in ensuing MYT Orders for 5th Control Period.

(h) Aggregate Revenue Requirement: The following is the position of Aggregate Revenue Requirement for 5th Control Period (FY2024-25 to FY 2028-29):

Form 1: Summary sheet for the control period:

Table XV Summary sheet for the control period **(Rs. in crores)**

S. No.	Particulars	Control Period				
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
		(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
1	Operation & Maintenance Expenses	1,489.89	1,600.09	1,708.95	1,883.60	2,047.74
2	Depreciation	661.73	780.71	916.08	1,054.15	1,110.10
3	Interest and finance charges on loan	971.83	1,109.47	1,244.05	1,388.80	1,518.20
4	Interest on Working Capital	71.50	90.09	99.54	113.69	124.18
5	Return on Equity	822.12	945.29	1,071.56	1,210.77	1,343.74
6	Less:					
6.1	Non-Tariff Income	464.70	515.70	580.46	641.18	651.18
6.2	Income from Open Access Charges	-	-	-	-	-
6.3	Income from Other Business	-	-	-	-	-
7	Add:					
7.1	Impact of true-up for prior period	-582.68	-	-	-	-
8	**Aggregate Revenue Requirement**	**2,969.68**	**4,009.95**	**4,459.72**	**5,009.83**	**5,492.77**

III. Proposal of Transmission Tariff from FY 2024-25 to FY 2028-29:

The Transmission charges are computed by dividing the net ARR of each year with the total contracted capacity of the respective year. As such, the following are the Transmission charges from FY 2024-25 to FY 2028-29.

Table XVI Proposal of Transmission Tariff from FY 2024-25 to FY 2028-29

Particulars	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
	(n+1)	(n+2)	(n+3)	(n+4)	(n+5)
ARR of Transmission Business (Rs. in crores)	2,969.68	4,009.95	4,459.72	5,009.83	5,492.77
Transmission Contracted Capacity (MU)	22,590.84	22,359.01	22,276.22	22,131.05	21,606.63
Transmission Capacity (Rs/kW/month)	109.55	149.45	166.83	188.64	211.85

3 Capital Investment Plan for 5th Control Period & 6th Control Period:

Resource Plan for Fifth Control Period

The Objective of transmission planning to develop new transmission network suitably to handle the necessary demand due to load growth in both TGSPDCL and TGSPDCL and to handle evacuation from new generation plants.

Telangana State handled 85477 MU of energy for the FY:2023-24 and met Peak Demand of 15623 MW. The total energy requirement at state periphery is likely to increase to 102941.61 MU and energy availability is likely to reach 102783.81 MU by the end of the 5th Control Period during FY:2028-29

The Capital Investment plan for the 5th Control Period (FY:2024-25 to FY:2028-29) was filed by TGTRANSCO vide the Resource Plan submitted in August, 2023. The same was approved by the Hon'ble TGERC vide its' order dt. 29-12-2023.

The details of the works completed and ongoing schemes are given at page 84 (Plans for Capital Expenditure).

5.1 Generation Capacity Additions during 5th Control Period

In order to effectively evacuate the power from these Generating Stations, TGTransco needs to invest on the evacuation schemes

Table below summarizes the anticipated Generation Capacity Additions during the Fifth Control Period.

GENERATION CAPACITY ADDITIONS

Table: I GENERATION CAPACITY ADDITIONS

Plant owned by	Generating Station	Installed Capacity (in MW)	Contracted Capacity Addition (in MW)	TS SHARE (in MW)	5th Control Period					COD/ Expected Date of Commissioning (DOC)
					FY: 2024-25	FY: 2025-26	FY: 2026-27	FY: 2027-28	FY: 2028-29	
TSGENCO	Solar Plant at Peddaplly MHES	4.6	4.6	4.60	0.00	4.60	0.00	0.00	0.00	FY 2025-26
TSGENCO	Yadadri Thermal Power Station	5 x 800	3744.00	3744.00	3744.00	0.00	0.00	0.00	0.00	Unit#1 30-09-2024 Unit#2 30-09-2024 Unit#3 31-03-2025 Unit#4 31-12-2024 Unit#5 28-02-2025
NTPC	Telangana Super Thermal Power Project (NTPC), Phase-I	2 x 800	1302.99	1302.99	0.00	0.00	0.00	0.00	0.00	Unit#1 28-09-2023 Unit#2 01-03-2024
TOTAL				**5395.413**	**2400.00**	**4.60**	**0.00**	**0.00**	**0.00**	

5.2. Demand Growth and System Expansion & Improvement Requirements

Energy Balance Statement of TS DISCOMS: The energy requirement approved by the Commission for 5thControl Period from FY 2024-25 to FY 2028-29 is as shown in the following Table:

Table: II Energy Balance for **5**th Control Period of TSDISCOMs (MU)

Sl. No.	Particular	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
1.	Energy Requirement	83,058	87,564	92,365	97,482	102,942
2.	Energy Availability	95,753	106,637	106,157	105,506	102,784
	Surplus/(Deficit)	12,696	19,073	13,793	8,024	(158)

TOTAL DISCOMs Energy Requirement for 5th Control Period:

Table: III Energy Requirement approved for **5**thControl Period(MU)

Particular	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
TSNPDCL at State Periphery	23,659	24,747	25,902	27,130	28,436
TSSPDCL at State Periphery	59,398	62,817	66,462	70,352	74,505
Total Energy Requirement at State Periphery	**83,058**	**87,564**	**92,365**	**97,482**	**102,942**

5.3 ENERGY AVAILABILITY FROM GENERATING STATIONS

TELANGANA GENCO

The below tables show the capacities of the existing/upcoming Thermal and Hydel generating stations.

Table: IV Energy Availability from Telangana GENCO stations (in MW)

Energy Source	Plant Capacity (MW)	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
State Thermal Projects						
KTPS V	500	455.00	455.00	455.00	455.00	455.00
KTPS VI	500	462.50	462.50	462.50	462.50	462.50
RTS-B	62.5	56.25	56.25	56.25	56.25	56.25
KTPP Stage-I	500	462.50	462.50	462.50	462.50	462.50
KTPP Stage-II	600	558.00	558.00	558.00	558.00	558.00
KTPS Stage-VII	800	758.00	758.00	758.00	758.00	758.00
BTPS(4x270 MW)	1080	988.20	988.20	988.20	988.20	988.20
YTPS (5x800 MW)	4000	3744.00	3744.00	3744.00	3744.00	3744.00
Total Thermal	**8042.5**	**7484.45**	**7484.45**	**7484.45**	**7484.45**	**7484.45**
NSHP	815.6	807.44	807.44	807.44	807.44	807.44
NSLCPH	60	59.40	59.40	59.40	59.40	59.40
Pulichintala	120	118.80	118.80	118.80	118.80	118.80
Pochampad	36	35.64	35.64	35.64	35.64	35.64
Nizamsagar	10	9.90	9.90	9.90	9.90	9.90
Palair	2	1.98	1.98	1.98	1.98	1.98
Mini Hydels (Peddapalli)	9.16	9.07	9.07	9.07	9.07	9.07
Singur	15	14.85	14.85	14.85	14.85	14.85
Srisailam LBH ES	900	889.20	889.20	889.20	889.20	889.20
Priyadarshini Jurala (TS Share)	234	115.83	115.83	115.83	115.83	115.83
Lower Jurala	240	237.60	237.60	237.60	237.60	237.60
Total Hydel	**2441.76**	**2299.71**	**2299.71**	**2299.71**	**2299.71**	**2299.71**
Solar PV at Jurala	1	1	1	1	1	1
Total Capacity	**10485.26**	**9785.16**	**9785.16**	**9785.16**	**9785.16**	**9785.16**

Central Generating Stations

The share of the Telangana in the total capacity of the Central Generating Stations is provided below:

Table: V Energy Availability from CGS stations (in MW)

Name of the Station	Capacity (MW)	TS Share (MW)	Percentage %
NTPC (SR)-I & II	2100	327.43	15.59
NTPC (SR)Stage-III	500	82.79	16.56
NTPC Talcher StageII	2000	203.54	10.18
NLC Stage-I	580	4.89	0.84
NLC Stage-II	790	6.43	0.81
NPC-MAPS	440	19.78	4.49
NPC-KaigaUnit-I&II	440	60.77	13.81
NPC-KaigaUnit-III & IV	440	64.63	14.69
NTPC Simhadri Stage-I	1000	507.91	50.79
NTPC Simhadri Stage-II	1000	241.89	24.19
NTECL Vallur Thermal Power Plant	1500	99.81	6.65
NLC Tamilnadu (Tuticorn) Unit-I & Unit II	1000	139.35	13.93
KudigiUnit-I, II & III	2400	262.71	10.95
New Neyvelli Thermal Power plant	934	58.07	6.22
NLC Exp-I	420	5.18	1.23
NLC Exp-II	500	6.06	1.21
KKNPP (Kudankulam Nuclear Power Plant) Unit-I	1000	4.14	0.41
KKNPP (Kudankulam Nuclear Power Plant) Unit-II	1000	46.10	4.61
NTPC NSM Bundled Phase -II (Coal 200MW)	25650	186.83	0.73
NVVNL Bundled Power (Coal 85 MW)	45.81	42.92	93.69
Telangana STPP	1600	1302.99	81.44
Total CGS	**45339.81**	**3674.22**	**8.10**

Independent Power Producers (IPPs)

The share of Telangana from the following IPPs:

Table: VI Energy Availability from Independent Power Producers (IPPs)(in MW)

Project Name	Plant Capacity (MW)	TS Share (MW)	Remarks
GVK	220	115.43	The Natural gas supplies from RIL KG D-6 fields to these IPPs became zero from 01.03.2013 onwards and hence at present there is no Generation from these 4 IPPs. The PPAs of GVK, Gouthami &Konaseema expire in 2024 and Vemagiri in 2029.
Vemagiri	370	193.03	
Gouthami	464	242.50	
Konaseema	444.08	231.83	
Total	**1498.08**	**782.79**	

Inter-State Hydel projects:

The share of Telangana from the following IPPs:

Table: VII Energy Availability from Inter-State Hydel stations(in MW)

Project Name	Plant Capacity (MW)	TS Share (MW)	Remarks
Machkund	84.00	44.82	120 MW (84 MW for combined AP)
T B Dam	57.60	30.73	72 MW (57.6 MW for combined AP)
Total	**141.60**	**75.55**	

Other Sources

The following Generation capacities are available from other sources:

Table: VIII Energy Availability from Other Sources(in MW)

Name of the Station	Capacity (MW)	TS Share (MW)
Thermal Power Tech (Unit-I)	1320	269.45
Thermal Power Tech (Unit-II)		570.00
Singareni Thermal Power Plant Stage-I	1200	1131.00
Chattisgarh Power Purchase	1000	947.50
Total	**3520**	**2917.95**

ANNEXURE – I PLANS FOR SYSTEM PERFORMANCE

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 TGTRANSCO's Response:

2019-20

Typical Full load details along with curves for three seasons representing Peak demand met day and Peak demand met on weekend day for the year 2019-20 follows:-

Sl.No	Season	Date
1	Typical week end day in summer	01st March 2020
2	Typical full load day in summer	03rd March'2020
3	Typical week end day in monsoon	18th August'2019
4	Typical full load day in monsoon	30th August'2019
5	Typical full load day in winter	28th February'2020
6	Typical week end day in winter	29th February'2020

The highest system peak demand of 13168 MW was recorded on 28.02.2020 @ 07:52 AM for the FY 2019-20.

A brief analysis of system demand for all seasons of the year 2019-20 is furnished in the following sections:

For 2019-20

PEAK GRID DEMAND				
SEASON	**Max MW**	**Max Date**	**Min MW**	**Min Date**
SUMMER	12941	03.03.2020	4685	03.06.2019
MONSOON	11703	30.08.2019	4782	03.08.2019
WINTER	13168	28.02.2020	5189	03.12.2019

1 Summer season

For 2019-20

From the daily system load curves (vide annexure 1.a) on the day when the highest system peak was recorded, it can be seen that the system peak load is continuously maintained above 8157 MW (minimum on 03.03.2020) throughout the day and the maximum demand recorded was 12941 MW .The **demand variation in summer was between 4685 MW** and **12941 MW**. The minimum system demand on 03rd June 2019 was 4685 MW, and is the lowest recorded in this season.

2 Monsoon season

For 2019-20

No table of authorities entries found.

From the daily system load curves (vide annexure 1.b) on the day when the highest system peak was recorded, it can be seen that the system peak load is continuously maintained above 8003 MW (minimum on 30.08.2019) throughout the day and the maximum demand recorded was 11703 MW. The demand variation in monsoon was between 4782 MW and 11703 MW. The minimum system demand on 03rd August 2019 was 4782 MW, and is the lowest recorded in this season.

3 Winter season

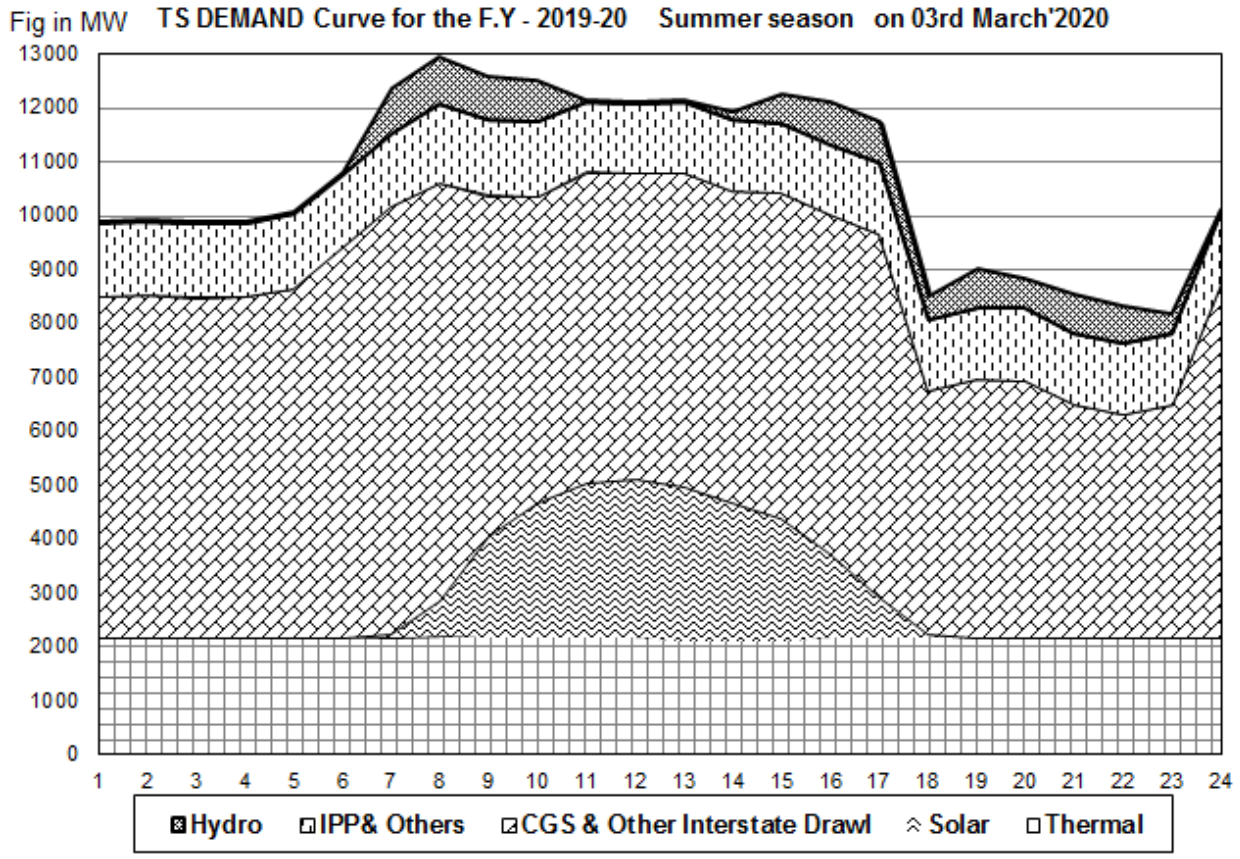
For 2019-20

From the daily system load curves (vide annexure 1.c) on the day when the highest system peak was recorded, it can be seen that the system peak load is continuously maintained above 7975 MW (minimum on 28.02.2020) throughout the day and the maximum demand recorded was 13168 MW on February 28th 2020.The demand variation in dry winter was between 5189 MW and 13168 MW. The minimum system demand on 03rd December 2019 was 5189 MW, and is the lowest recorded in this season.

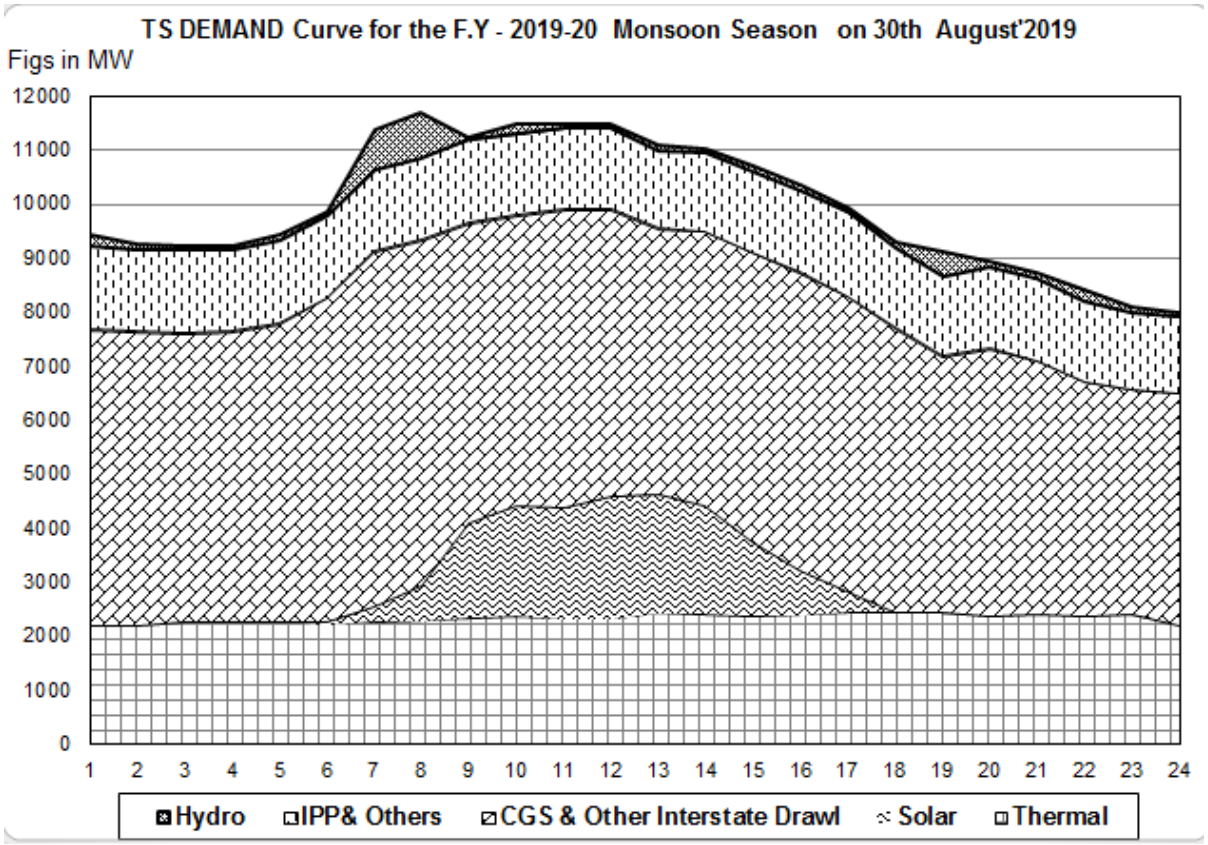
LOAD DURATION CURVES

The energy availability in FY 2019-2020 is 100% of the total energy requirement.
Load duration curves for the FY 2019-2020 is enclosed as Annexure 2(a)

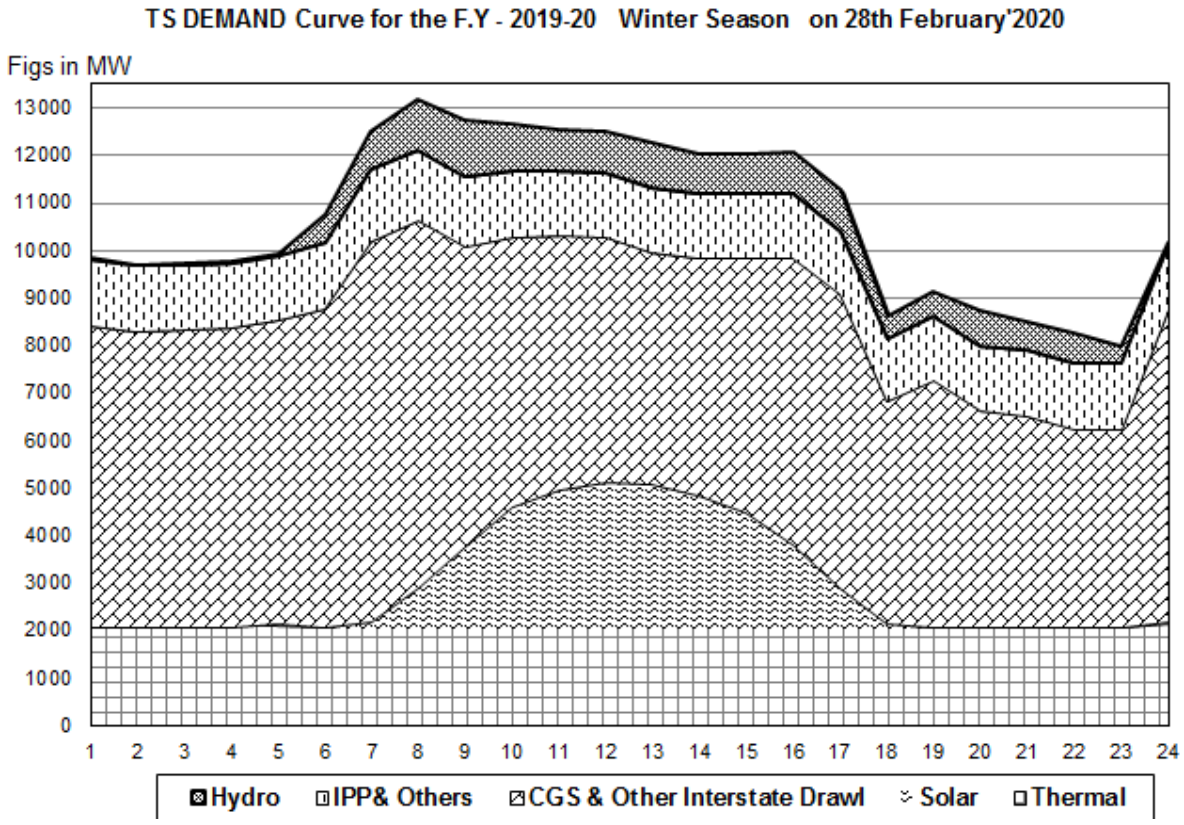
Annexure 1.a



Annexure 1.b



Annexure1.c



2020-21

Typical Full load details along with curves for three seasons representing Peak demand met day and Peak demand met on weekend day for the year 2020-21 follows:-

Sl.No	Season	Date
1	Typical week end day in summer	20th March 2021
2	Typical full load day in summer	26th March'2021
3	Typical week end day in monsoon	9th August'2020
4	Typical full load day in monsoon	9th August'2020
5	Typical full load day in winter	26th February'2021
6	Typical week end day in winter	27th February'2021

The highest system peak demand of 13688 MW was recorded on 26.03.2021 @ 12:22 PM for the FY 2020-21.

A brief analysis of system demand for all seasons of the year 2020-21 is furnished in the following sections:

For 2020-21

PEAK GRID DEMAND				
SEASON	**Max MW**	**Max Date**	**Min MW**	**Min Date**
SUMMER	13688	26.03.2021	4065	28.04.2020
MONSOON	12908	09.08.2020	2656	14.10.2020
WINTER	13452	26.02.2021	3892	28.11.2020

1 Summer season

For 2020-21

The highest System Peak Demand recorded during summer season is 13688 MW on 26.03.2021.From the system load curve (vide annexure 1.d) 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 8743 MW (minimum on 26.03.2021) throughout the day and the maximum demand recorded was 13688 MW. The **demand variation in summer was between 4065 MW** and **13688 MW**. The minimum system demand met on 28th April 2020 was 4065 MW, and is the lowest recorded in this season.

2 Monsoon season

For 2020-21

The highest System Peak Demand recorded during monsoon season is 12908 MW on 09.08.2020.From the system load curve (vide annexure 1.e) 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 7621 MW (minimum on 09.08.2020) throughout the day and the maximum demand recorded was 12908 MW. The **demand variation in monsoon was between 2656 MW** and **12908 MW**. The minimum system demand met on 14th October 2020 was 2656 MW, and is the lowest recorded in this season.

3 Winter season

For 2020-21

The highest System Peak Demand recorded during winter season is 13452 MW on 26.02.2021.From the system load curve (vide annexure 1.f) on the day when the highest system peak was recorded during winter season, it can be seen that the system load is

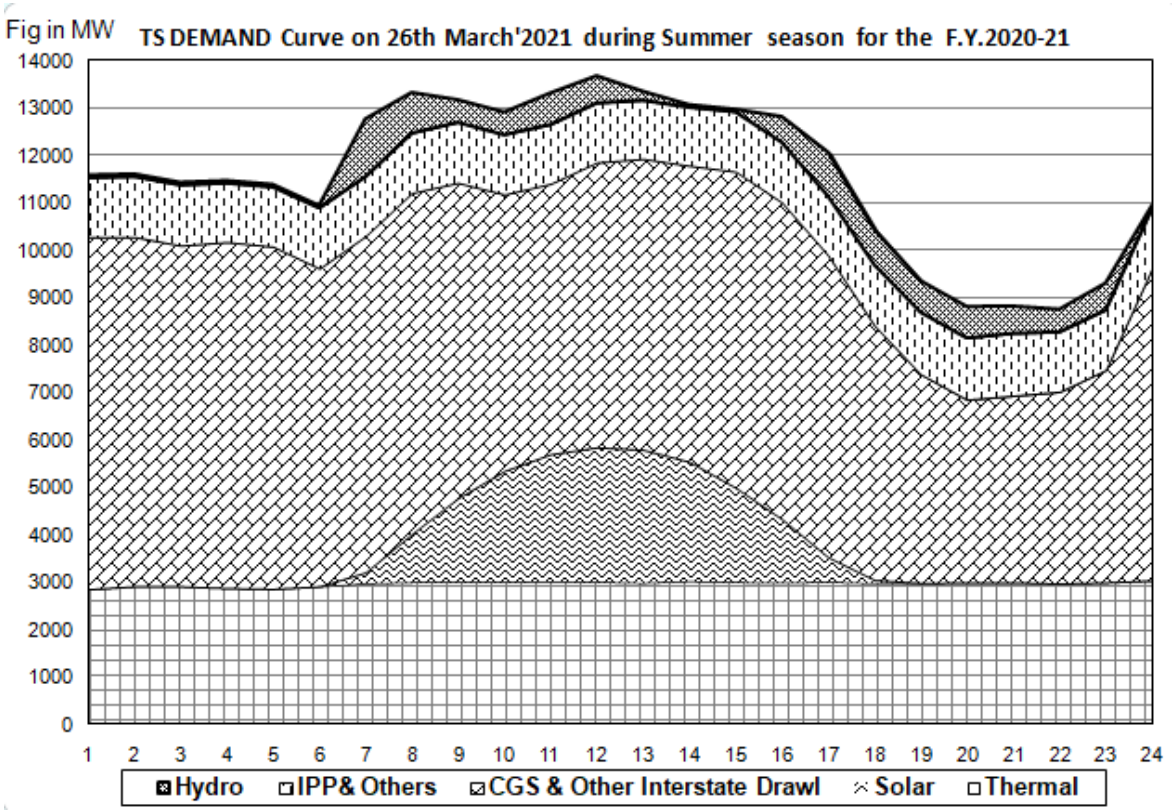
continuously maintained above 7587 MW (minimum on 26.02.2021) throughout the day and the maximum demand recorded was 13452 MW on February 26th 2021.The **demand variation in dry winter was between 3892 MW** and **13452 MW**. The minimum system demand met on 28th November 2020 was 3892 MW, and is the lowest recorded in this season.

LOAD DURATION CURVES

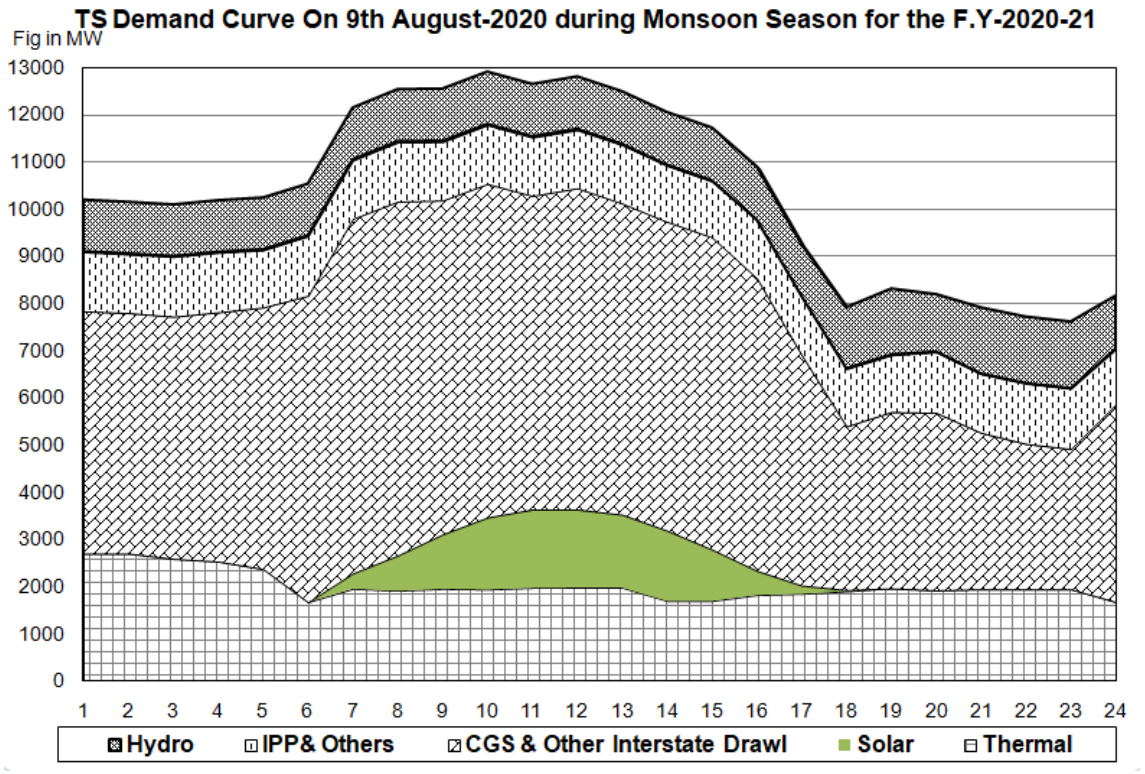
The energy availability in FY 2020-2021 is 100% of the total energy requirement.

Load duration curves for the FY 2020-2021 is enclosed as Annexure 2(b)

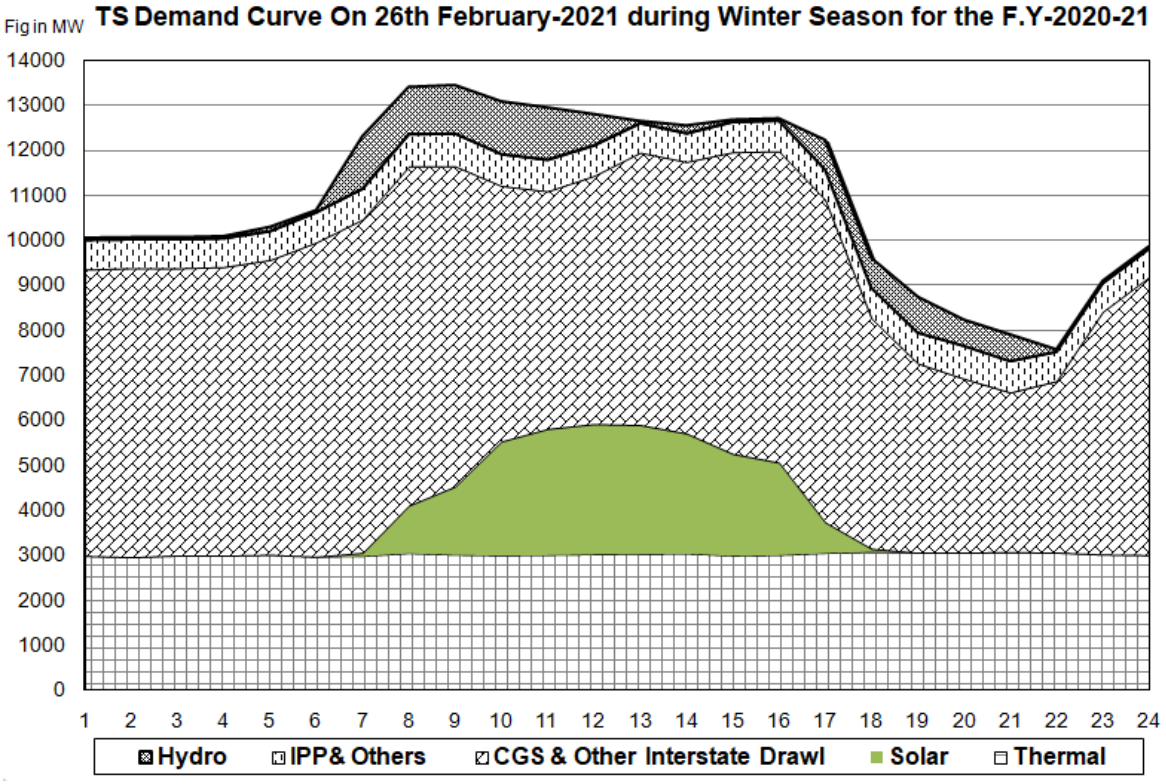
Annexure 1.d



Annexure 1.e



Annexure 1.f



2021-22

Typical Full load details along with curves for three seasons representing Peak demand met day and Peak demand met on weekend day for the year 2021-22 follows:-

Sl.No	Season	Date
1	Typical week end day in summer	26th March 2022
2	Typical full load day in summer	29th March'2022
3	Typical week end day in monsoon	18th Sept' 2021
4	Typical full load day in monsoon	12th Aug'2021
5	Typical full load day in winter	25th Feb'2022
6	Typical week end day in winter	26th Feb'2022

The highest system peak demand of 14160 MW was recorded on 29.03.2022 @ 12:28 PM for the FY 2021-22.

A brief analysis of system demand for all seasons of the year 2021-22 is furnished in the following sections:

For 2021-22

PEAK GRID DEMAND				
SEASON	**Max MW**	**Max Date**	**Min MW**	**Min Date**
SUMMER	14160	29.03.2022	4557	30.06.2021
MONSOON	12855	12.08.2021	4351	23.07.2021
WINTER	13178	25.02.2022	4707	22.11.2021

1 Summer season

For 2021-22

The highest System Peak Demand recorded during summer season is 14160 MW on 29.03.2022. From the system load curve (vide annexure 1.g) 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 8182 MW (minimum on 29.03.2022) throughout the day and the maximum demand recorded was 14160 MW. The **demand variation in summer was**

between 4557 MW and **14160 MW**. The minimum system demand met on 30th June 2021 was 4557 MW, and is the lowest recorded in this season.

2 Monsoon season

For 2021-22

The highest System Peak Demand recorded during monsoon season is 12855 MW on 12.08.2021. From the system load curve (vide annexure 1.h) 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 7571 MW (minimum on 12.08.2021) throughout the day and the maximum demand recorded was 12855 MW. The **demand variation in monsoon was between 4351 MW** and **12855 MW**. The minimum system demand met on 23rd July 2021 was 4351 MW, and is the lowest recorded in this season.

3 Winter season

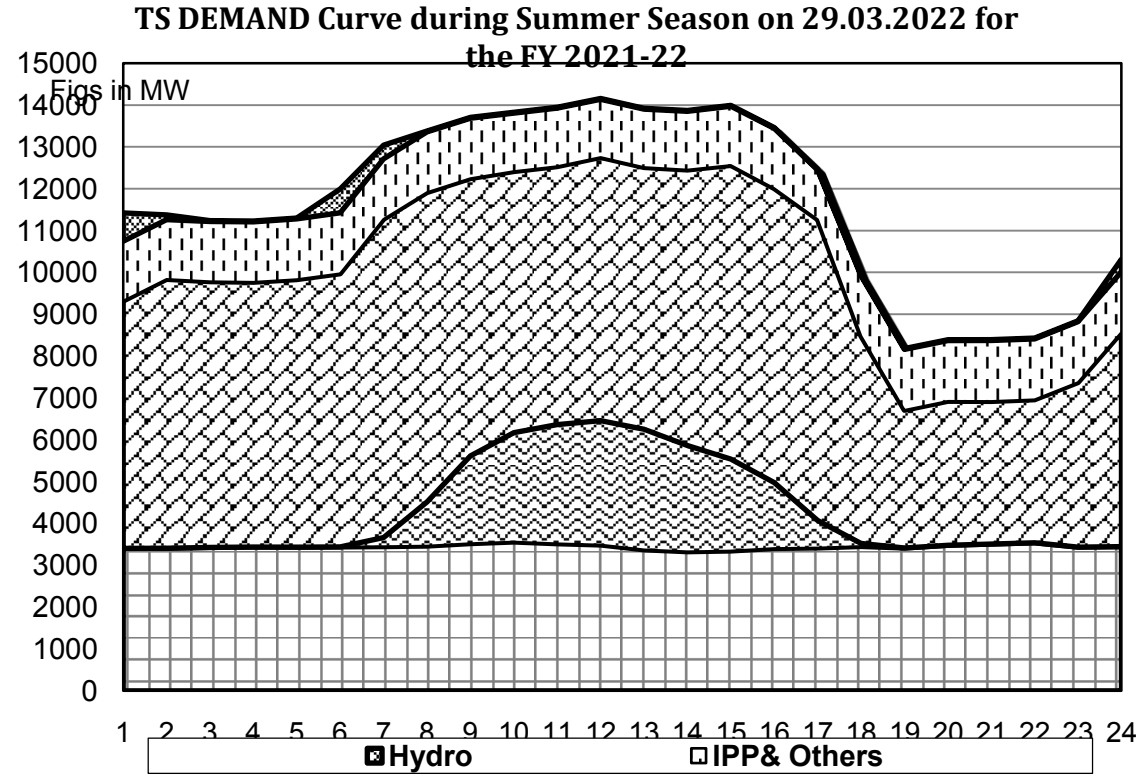
For 2021-22

The highest System Peak Demand recorded during winter season is 13178 MW on 25.02.2022. From the system load curve (vide annexure 1.i) 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 7554 MW (minimum on 25.02.2022) throughout the day and the maximum demand recorded was 13178 MW on February 25th 2022.The **demand variation in dry winter was between 4707 MW** and **13178 MW**. The minimum system demand met on 22nd November 2021 was 4707 MW, and is the lowest recorded in this season.

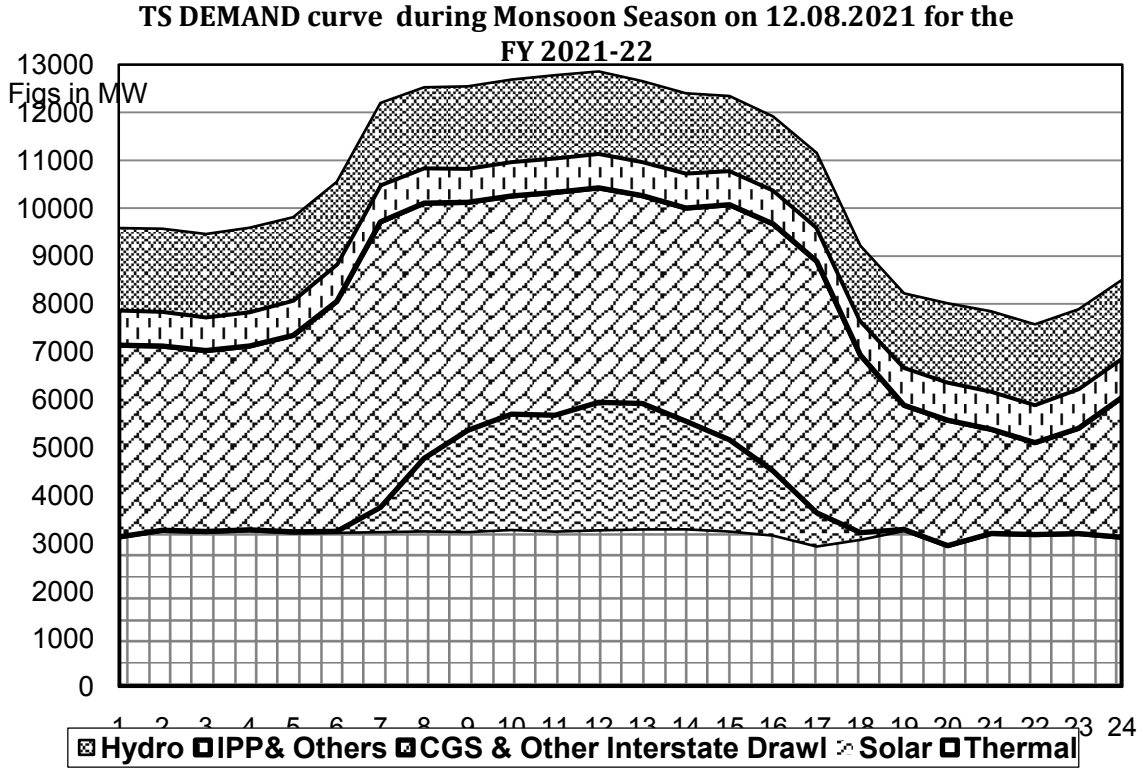
LOAD DURATION CURVES

The energy availability in FY 2021-22 is 100% of the total energy requirement.
Load duration curve for the FY 2021-22 is enclosed as Annexure 2(c).

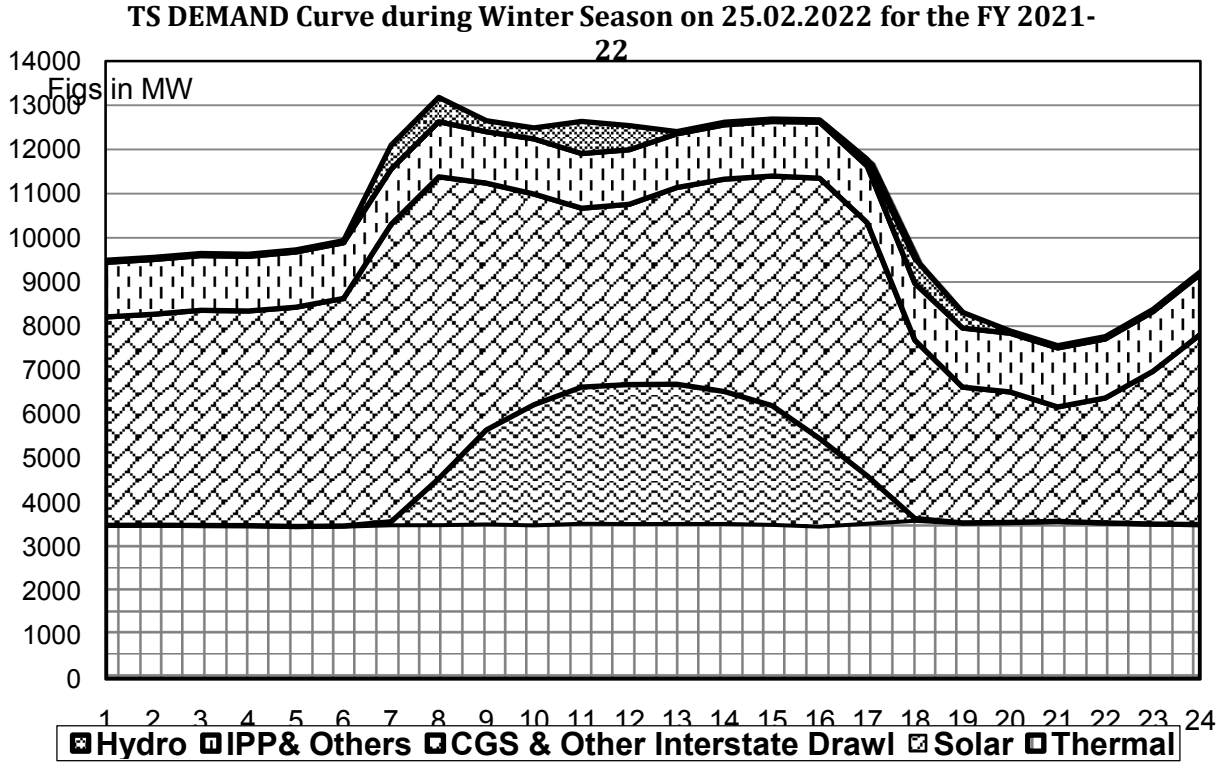
Annexure –1.g



Annexure 1.h



Annexure 1.i



2022-23

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

Sl.No	Season	Date
1	Typical week end day in summer	04th Mar'23
2	Typical full load day in summer	30th Mar'23
3	Typical week end day in monsoon	03rd Sept'22
4	Typical full load day in monsoon	26th Sept'22
5	Typical full load day in winter	11th Feb'23
6	Typical week end day in winter	28th 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 annexure 1.j) 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 02nd 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 annexure 1.k) 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 29th July 2022 was 3760 MW and is the lowest recorded in this season.

3 Winter season

For 2022-23

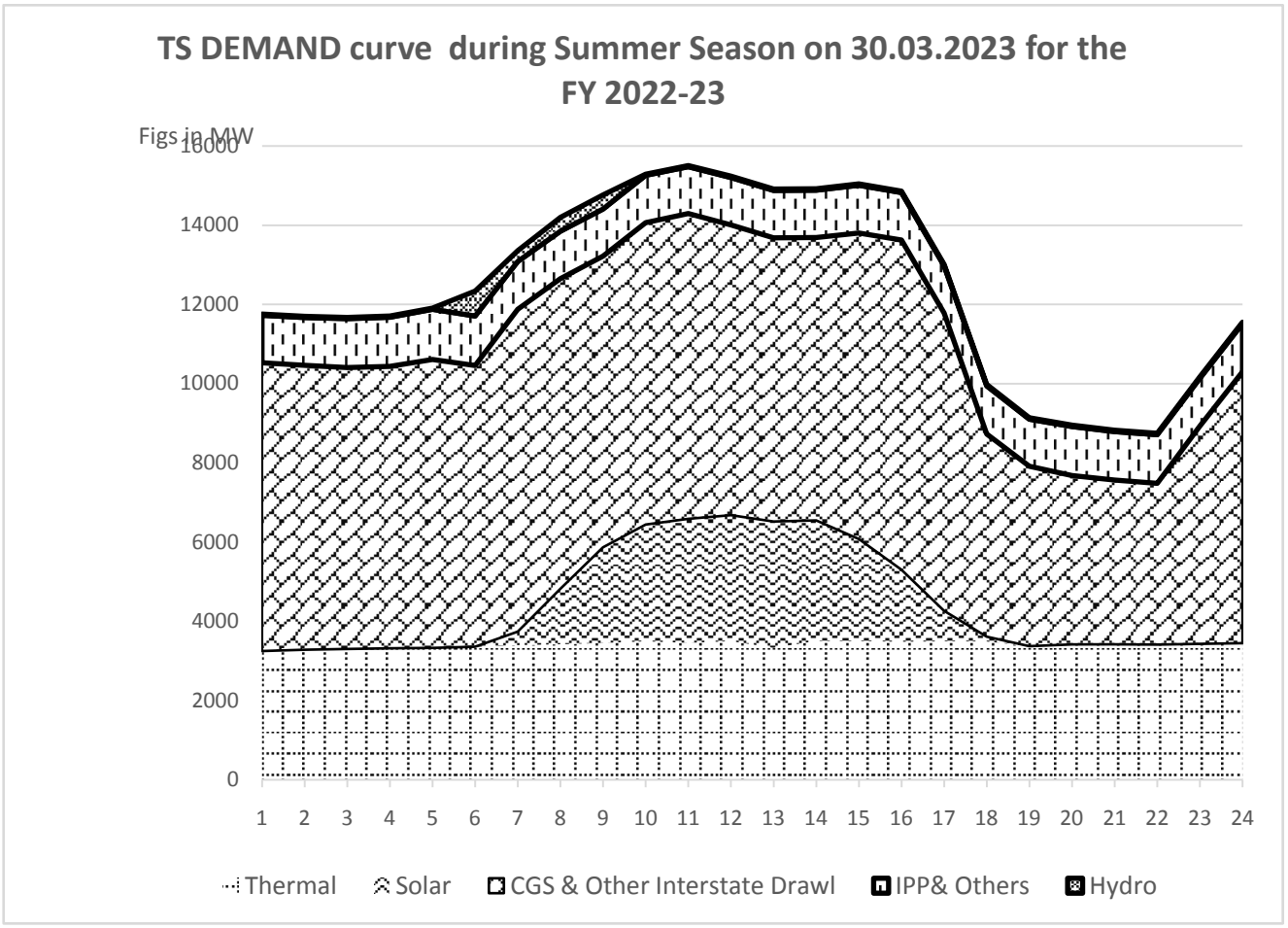
The highest System Peak Demand recorded during winter season is 14794 MW on 28.02.2023. From the system load curve (vide annexure 1.l) on the day when the highest system peak was recorded during winter season, it can be seen that the system load is continuously maintained above 7232 MW (minimum on 28.02.2023) 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 30th November 2022 was 4266 MW and is the lowest recorded in this season.

LOAD DURATION CURVES

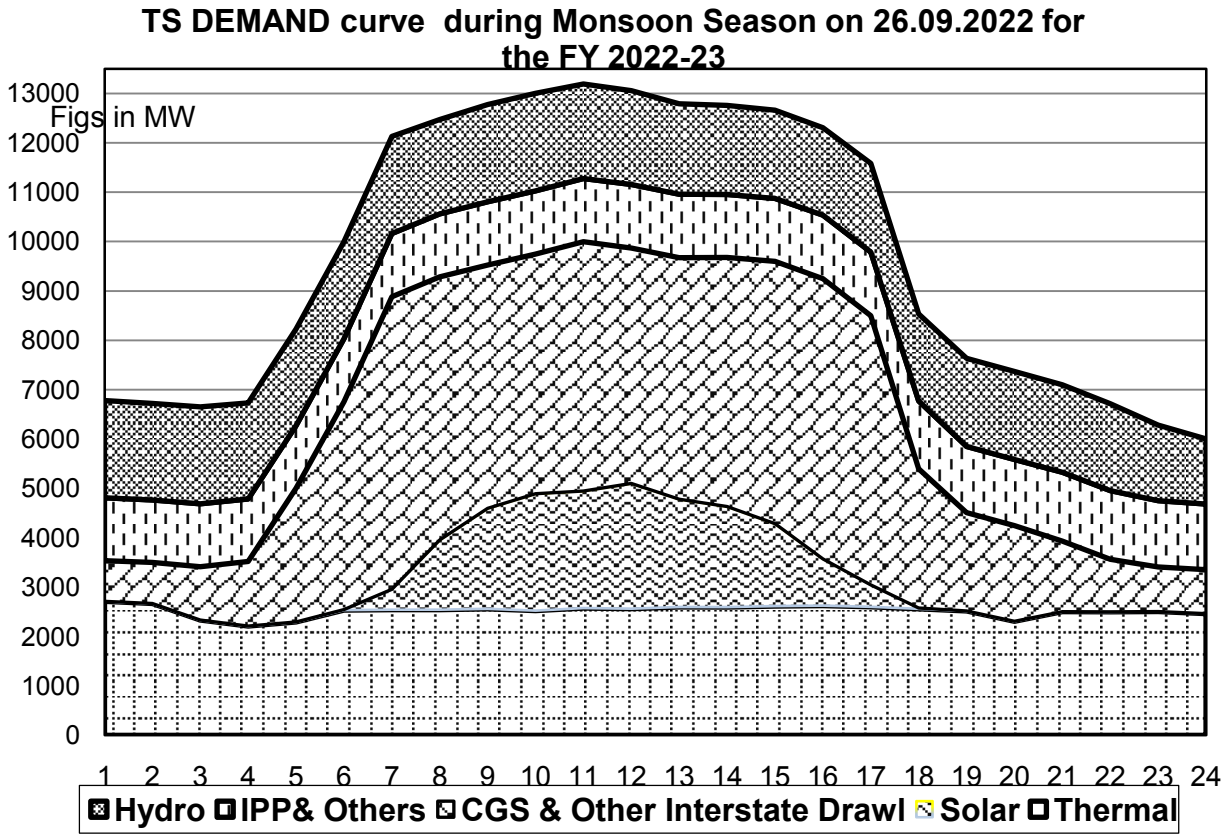
The energy availability in FY 2022-23 is 100% of the total energy requirement.

Load duration curve for the FY 2022-23 is enclosed as Annexure 2(d)

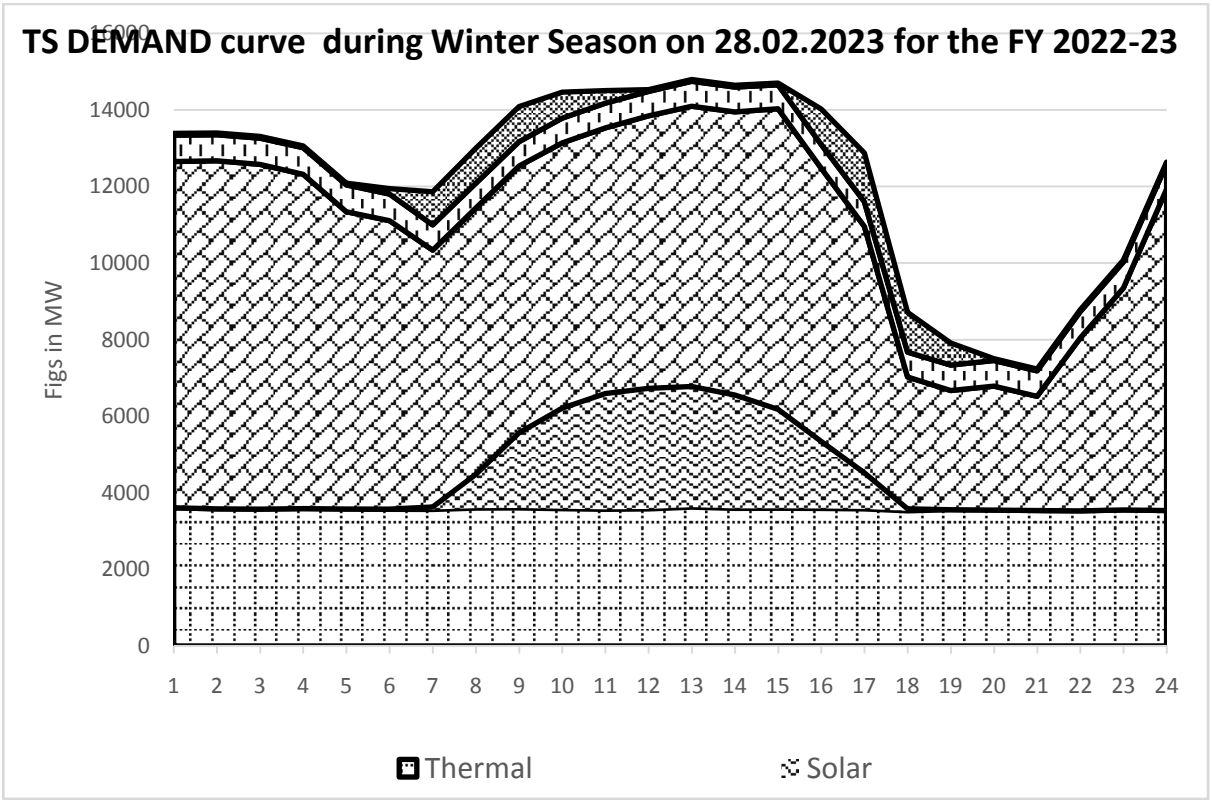
Annexure 1.j



Annexure 1.k



Annexure 1.l



2023-24

Typical Full load details along with curves for three seasons representing Peak demand met day and Peak demand met on weekend day for the year 2023-24 are as follows:-

For 2023-24

Sl. No	Season	Date
1	Typical week end day in summer	2nd Mar'24
2	Typical full load day in summer	8th Mar'24
3	Typical week end day in monsoon	14thOct'23
4	Typical full load day in monsoon	20th Sept'23
5	Typical full load day in winter	28th Feb'24
6	Typical week end day in winter	11th Feb'24

The highest system peak demand of 15623 MW was recorded on 08.03.2024 @ 10:00 AM for the FY 2023-24.

A brief analysis of system demand for all seasons of the year 2023-24 is furnished in the following sections:

For 2023-24

PEAK GRID DEMAND				
SEASON	**Max MW**	**Max Date**	**Min MW**	**Min Date**
SUMMER	15623	08.03.2024	4841	01.05.2023
MONSOON	15370	20.09.2023	4493	27.07.2023
WINTER	15164	28.02.2024	5476	05.12.2023

1 Summer season

For 2023-24

The highest System Peak Demand recorded during summer season is 15623 MW on 08.03.2024. From the system load curve (vide annexure1.a) 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 8091 MW (minimum on 08.03.2024) throughout the day and the maximum demand recorded was 15623 MW. The **demand variation in summer was between 4841 MW** and **15623 MW**. The minimum system demand met on 01st May 2023 was 4841 MW and is the lowest recorded in this season.

2 Monsoon season

For 2023-24

The highest System Peak Demand recorded during monsoon season is 15370 MW on 20.09.2023. From the system load curve (vide annexure 1.b) 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 8957 MW (minimum on 20.09.2023) throughout the day and the maximum demand recorded was 15370 MW. The **demand variation in monsoon was between 4493 MW** and **15370 MW**. The minimum system demand met on 27th July 2023 was 4493 MW and is the lowest recorded in this season.

3 Winter season

For 2023-24

The highest System Peak Demand recorded during winter season is 15164 MW on 28.02.2024. From the system load curve (vide annexure 1.c) 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 7960 MW (minimum on 28.02.2024) throughout the day and the maximum demand recorded was 15164 MW. The **demand variation in dry winter was between 5476 MW** and **15164 MW**. The minimum system demand met on 05th December 2023 was 5476 MW and is the lowest recorded in this season.

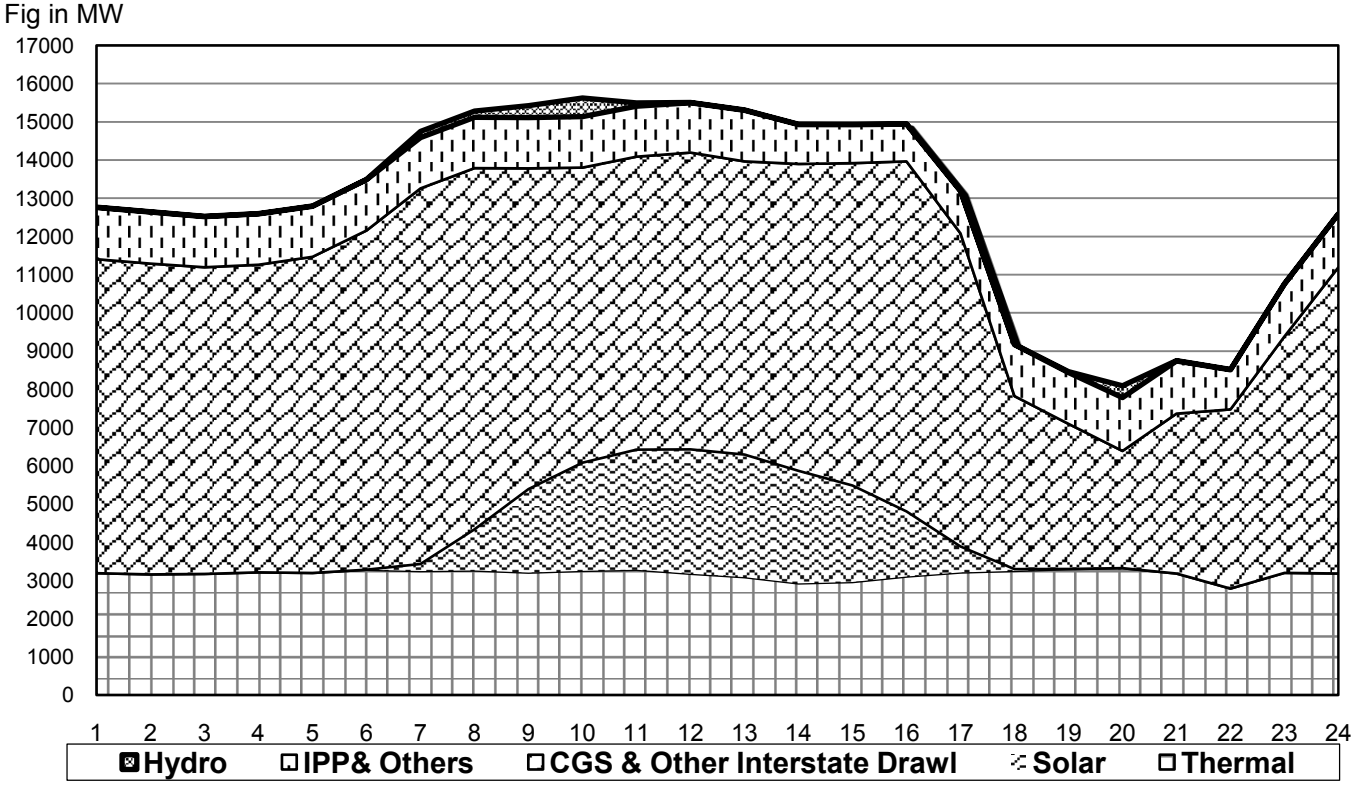
LOAD DURATION CURVES

The energy availability in FY 2023-24 is 100% of the total energy requirement.

Load duration curve for the FY 2023-24 is enclosed as Annexure 2(e).

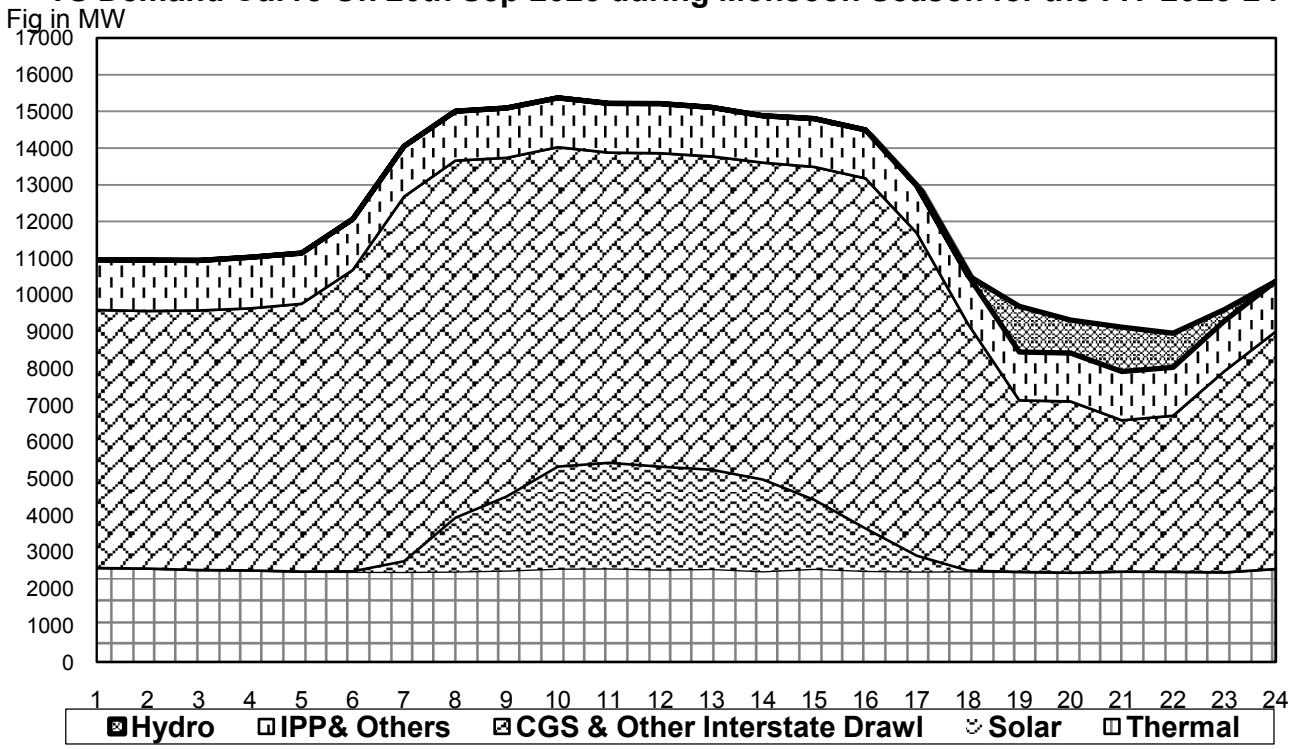
Annexure – 1.m

TS Demand Curve On 8th March-2024 during Summer Season for the F.Y-2023-24



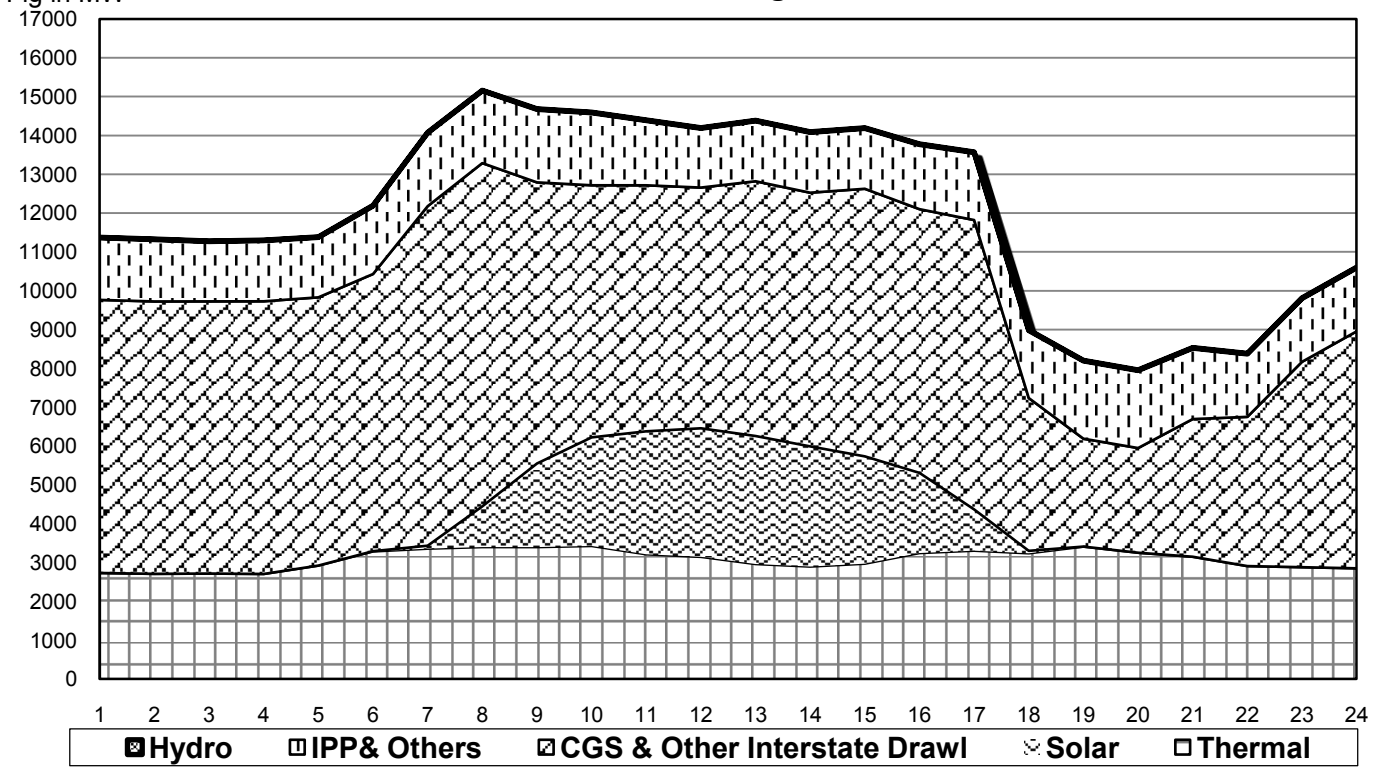
Annexure – 1.n

TS Demand Curve On 20th Sep-2023 during Monsoon Season for the F.Y-2023-24



Annexure – 1.o

Fig in MW **TS Demand Curve On 28th Feb-2024 during Winter Season for the F.Y-2023-24**



LOAD DURATION CURVES

1. Requirement in the guidelines

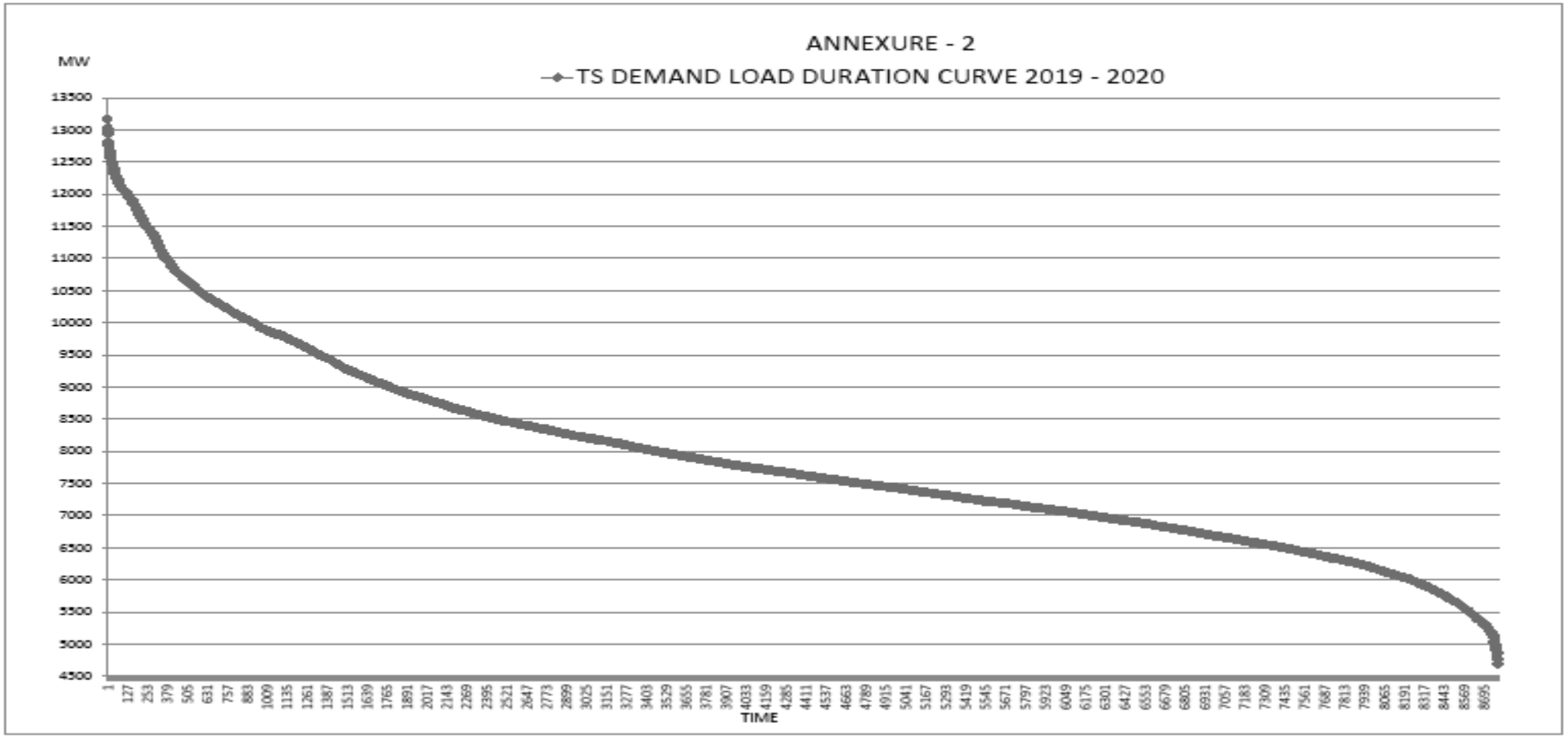
Load duration curves for the past year and current year and expected load duration curve for the ensuing year. Indicate energy unserved on the load duration curves. (Guidelines – 10b)

2. TGTRANSCO's Response:

The load duration curves for the years 2019-2024are enclosed as Annexures -2(a) to 2(e).

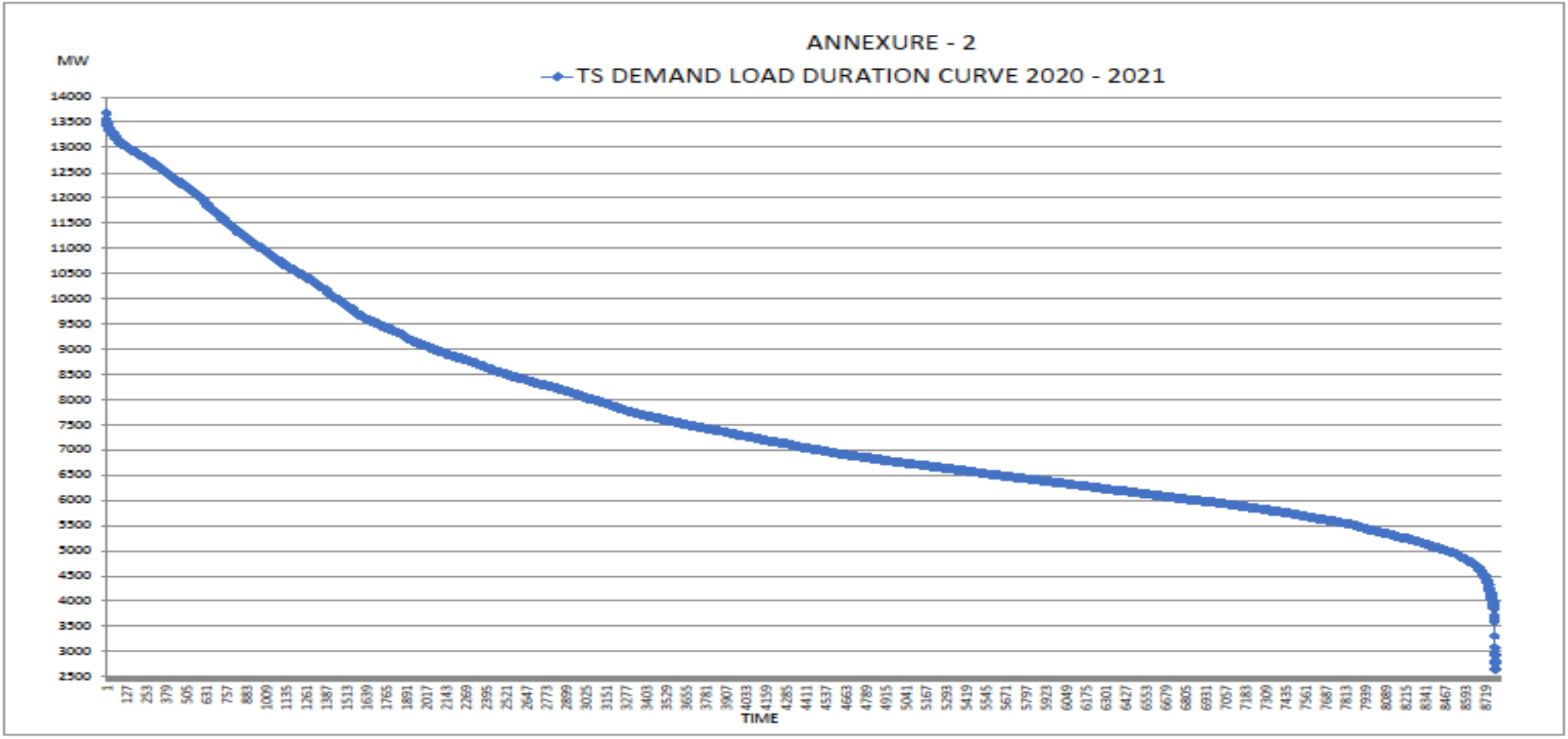
The load duration curves for the year 2019-20 is enclosed as Annexure 2(a).

Annexure 2(a)



The load duration curves for the year 2020-21 is enclosed as Annexure 2(b).

Annexure 2(b)

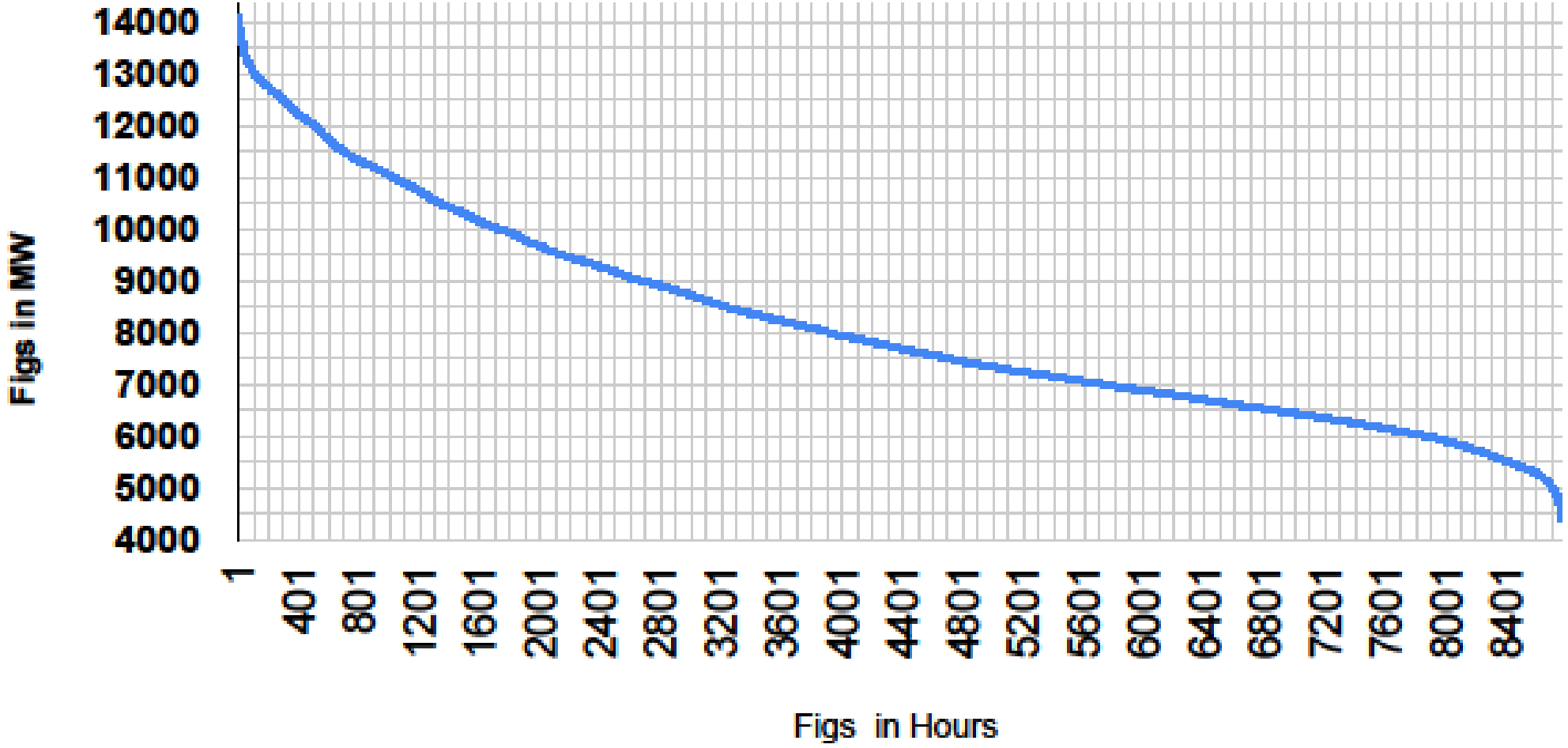


The load duration curves for the year 2021-22 is enclosed as Annexure 2(c).

Annexure 2(c)

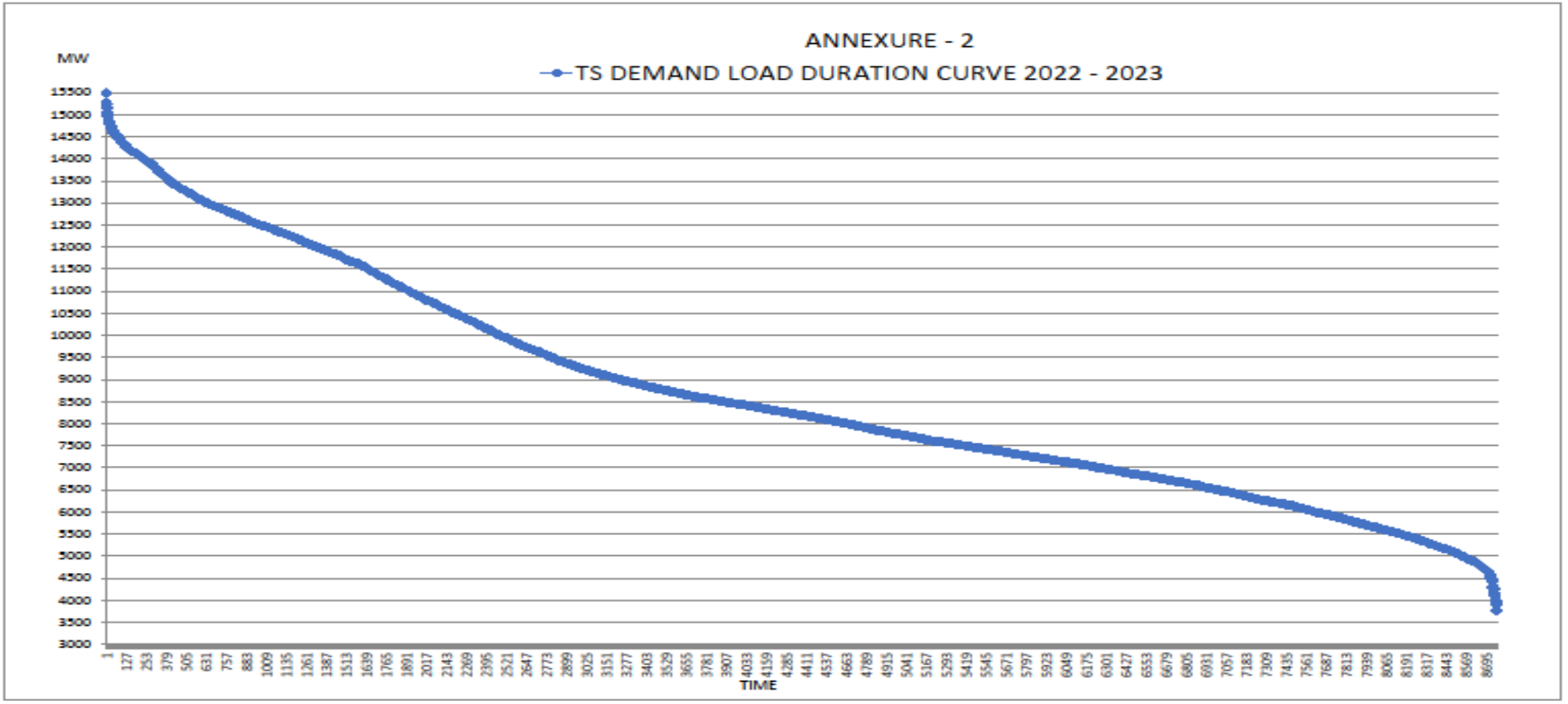
Annexure-2

TSDEMAND Load Duration Curve



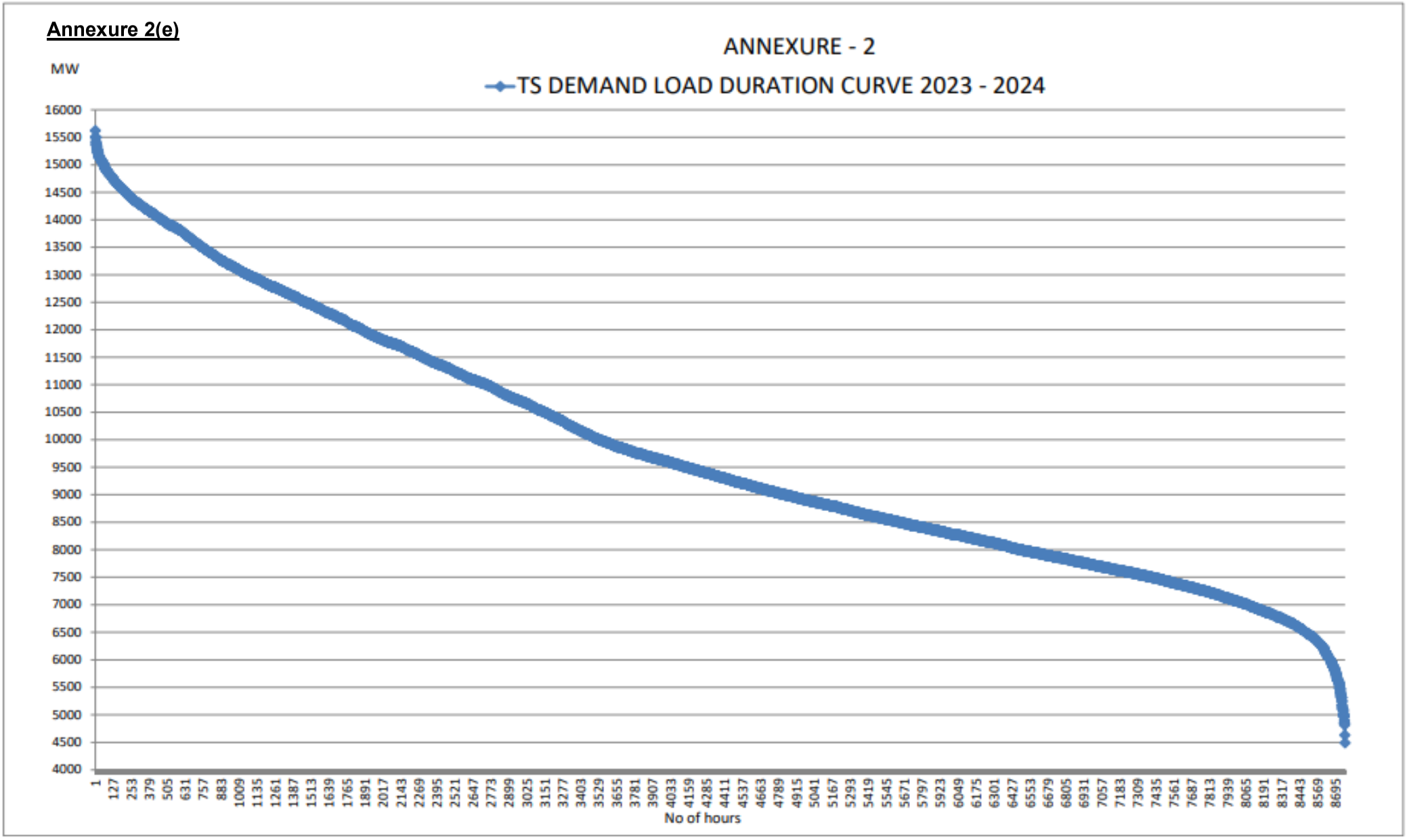
The load duration curves for the year 2022-23 is enclosed as Annexure 2(d).

Annexure 2(d)



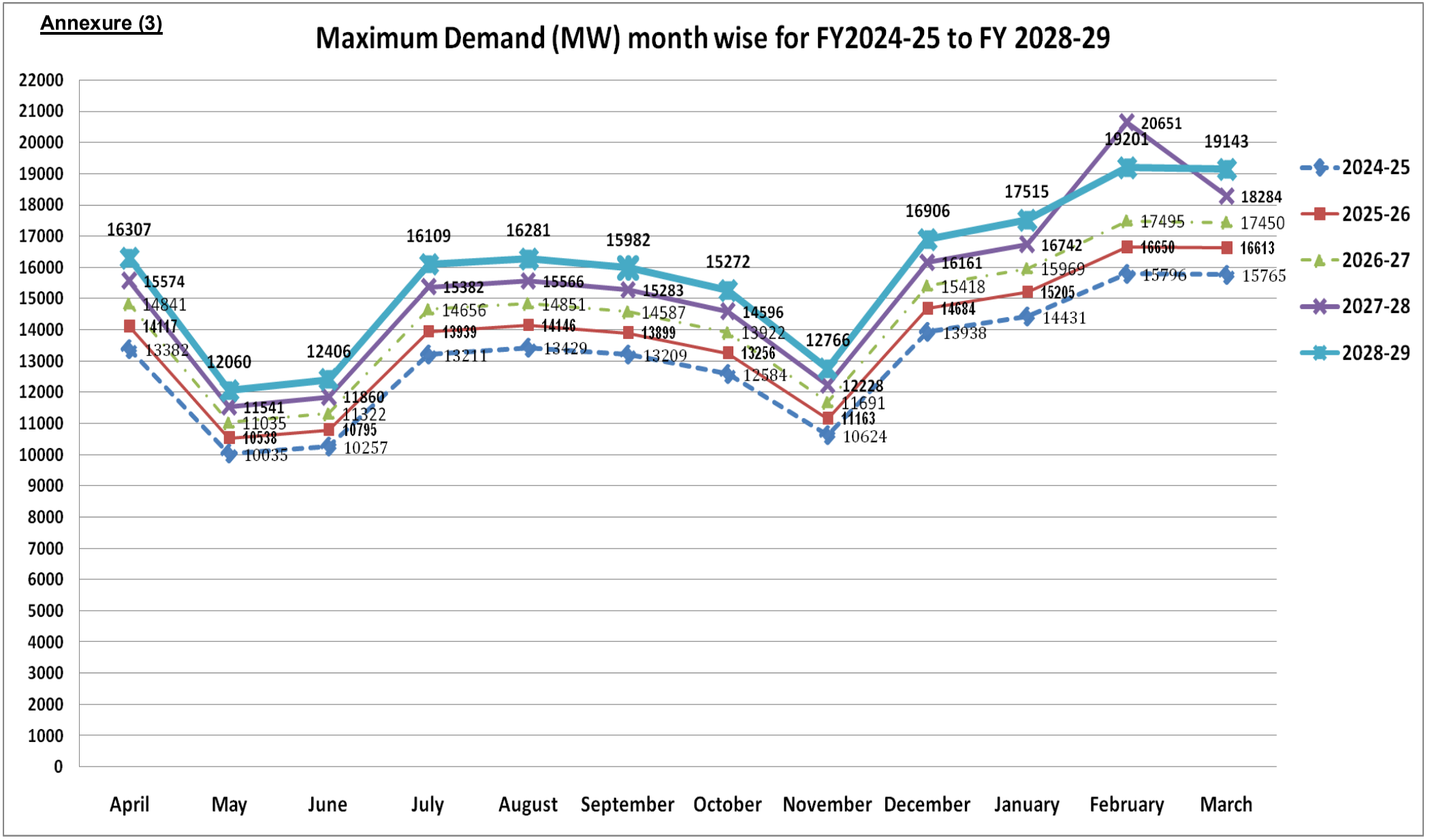
The load duration curves for the year 2023-24 is enclosed as Annexure 2(e).

Annexure 2(e)



Based on Discom load forecast data, the Demand curves for the 4th Control Period (FY2019-20 to FY2023-24) are enclosed as Annexure (3).

Annexure (3)



PLANS FOR RATIONALISATION OF EXISTING MANPOWER

1. Requirement in the Guidelines:

Plans both short term and long term for rationalization existing manpower (Guide lines-10c)

2. TGTRANSCO's Response :

Initiatives for rationalization of manpower for 5thControl Period from FY2024-25 to FY2028-29 for both short term and long term plan & measures taken while arriving regular man power on permanent basis:

i. Staff pattern norms are being followed as per B.P. Ms.No.94 & 95, Dt.31.05.1994 and the technical Committee report dt.09.09.2005.

ii. TGTRANSCO has issued orders engaging the services of Administrative Staff College of India, Hyderabad for conducting a comprehensive study of Organization structure /manpower requirement and furnishing of a report. Accordingly, M/s ASCI has submitted the draft report which is under finalization. Upon completion of the final report necessary steps will be taken for rationalization of manpower/ re-organization of in TGTRANSCO.

iii. The Details of EHT Sub-stations & connected lines programmed for commissioning during the period 2024-29 are obtained from CE/Power Systems.

iv. Regular man power is being assessed every year keeping in view of the following aspects:

- Creation of new posts to the newly commissioned SS and Lines as per the norms.
- Retirements.
- Filling up of initial cadres, such as AE, Sub-Engineer, JAO, JPO & JLM, is being taken up as per the requirement and rules duly following regulations in vogue.
- Promotions.

v. Considering all the above measures, Man Power Projections in TGTRANSCO for the period from 2023-2029 is arrived as follows:

Sl. No.	FY	Sanctioned	Filled	Vacant
1	2023-24	5595	3139	2457
2	2024-25	7093	3737	3356
3	2025-26	7168	4356	2812
4	2026-27	7189	4650	2539
5	2027-28	7264	4900	2364
6	2028-29	7295	5008	2287

2. Measures taken while arriving outsourcing man power on temporary basis:

i) TGTRANSCO issued orders vide T.O.O. No. (Jt. Secy.-Per) Ms.No.130, Dt.30.08.2017 and T.O.O. No. (Jt.Secy.Per) Ms.No.131, Dt.30.08.2017 duly absorbing 4359 Nos Outsourced personnel as Artisan Grade-I, Grade-II, Grade-III & Grade- IV.

ii) TGTRANSCO has also taken decision to meet the requirement of personnel by direct recruitment, instead of engaging by outsourcing through Private Agencies.

PLANS TO IMPROVE TRANSMISSION SYSTEM PERFORMANCE

1. Requirement in the Guidelines:

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

2. TGTransco's Response:

The transmission system of TGTransco as of March 31, 2024 consists of 7221 Circuit KMs of 400 kV lines,10117 Circuit KMs of 220 kV lines,12771 Circuit KMs of 132 kV lines,28 Nos. 400 kV sub-stations, 104 Nos. 220 kV sub-stations and 253 Nos. 132 kV sub-stations

During 2019-24, the following assets were added to the transmission network of TGTRANSCO (up to 31/03/2024).

400 kV lines	2543 Ckm.
220 kV lines	2440 Ckm.
132 kV lines	1609 Ckm.
400 kV sub stations	11 Nos.
220 kV sub stations	23 Nos.
132 kV sub stations	19 Nos.

During 2022-23, a sum of Rs.1931.30Crs. was incurred by TGTRANSCOtowards strengthening of Transmission network, which resulted in the addition of the following assets (incl. LIS).

(Incl. LIS)

400 kV lines	44 Ckm.
220 kV lines	259 Ckm.
132 kV lines	171 Ckm.
400 kV sub-stations	2 Nos.
220 kV sub-stations	3 Nos.
132 kV sub-stations	3 Nos.

During the current Financial Year i.e., 2023-24 of the 4th Control Period, the following assets were added, which includes the XLPE cable and GIS sub-stations in the twin cities.

400 kV lines	864Ckm.
220 kV lines	802Ckm.
132 kV lines	594Ckm.
400 kV sub stations	3Nos.
220 kV sub stations	3Nos.
132 kV sub stations	3 Nos.

During 5th Control Period, it is proposed to strengthen the Transmission System by adding the following assets which includes the XLPE cable and GIS sub-stations in the twin cities.

400 kV lines	100 Ckm.
220 kV lines	529 Ckm.
132 kV lines	1650 Ckm.
400 kV sub stations	1 No.
220 kV sub stations	12 Nos.
132 kV sub stations	35 Nos.

With the above strengthening measures of the Transmission system, it is expected that the transmission system would greatly improve and the voltage profile of the system will improve to a considerable extent.

Electrical substations and lines are critical infrastructure components that play a vital role in transmitting, transforming, and distributing electricity throughout the power grid. These facilities are indispensable for modern society, enabling homes, businesses, and industries to function reliably and efficiently. Their importance is projected to grow further in the future due to several key trends:

1. **Increasing electricity demand:** The demand for electricity is expected to continue to grow steadily in the coming decades, driven by population growth, urbanization, and technological advancements. This surge in demand will necessitate the expansion and modernization of the electrical grid, including the construction of new substations and lines.

2. **Improving reliability and grid stability:** Substations and lines are critical components of the electricity grid, and their condition can have a significant impact on the reliability and stability of the grid. Older substations and lines may be more prone to outages, and upgrading them can help to improve the overall reliability of the grid.

3. **Renewable Energy Integration:** The transition towards a sustainable energy future will rely heavily on renewable energy sources, such as solar and wind power. However, these sources are intermittent and require integration with the existing grid to ensure a reliable supply of electricity. Substations and lines play a crucial role in connecting renewable energy generators to the grid and managing the fluctuations in their output.

4. **Distributed Energy Resources:** The rise of distributed energy resources (DERs), such as rooftop solar panels and microgrids, is transforming the power landscape. These

decentralized sources of electricity generation require intelligent grid management systems and robust transmission and distribution infrastructure, including substations and lines, to effectively integrate them into the grid.

5. **Expanding the grid into new areas:** As cities and towns grow, new substations and lines may need to be constructed to provide electricity to new developments.

6. **Replacing aging infrastructure:** Substations and lines have a finite lifespan, and they eventually need to be replaced. This is an ongoing process that is essential for maintaining the reliability of the electricity grid.

7. **Smart Grid Technologies:** The development of smart grid technologies, such as advanced sensors, communication systems, and data analytics, is paving the way for a more intelligent and resilient electrical grid. Substations and lines are essential components of the smart grid, enabling real-time monitoring, control, and optimization of the power system.

8. **Electrification of Transportation:** The transition towards electric vehicles (EVs) is expected to significantly increase electricity demand in the transportation sector. This growth will necessitate the expansion of the grid infrastructure, including substations and lines, to provide the necessary capacity for EV charging.

9. **Grid Reliability and Resilience:** Electrical substations and lines are critical for maintaining the reliability and resilience of the power grid. Upgrading and modernizing these facilities can help to prevent outages, reduce downtime, and ensure a more stable and secure electricity supply.

10. **Cyber security Threats:** The increasing reliance on digital technologies in the power sector makes electrical substations and lines vulnerable to cyber attacks. Enhancing cyber security measures for these facilities is crucial for protecting the grid from potential disruptions and ensuring its continued operation

11. **Meeting environmental regulations:** In some cases, substations and lines may need to be constructed or upgraded in order to meet new environmental regulations. For example, new substations may be required to use cleaner technologies, and older lines may need to be upgraded to reduce their environmental impact.

12. **Preparing for natural disasters:** Substations and lines are vulnerable to damage from natural disasters, such as hurricanes, earthquakes, and wildfires. Constructing new substations and lines that are more resilient to these events can help to protect the

electricity grid and ensure that it can continue to provide power in the aftermath of a disaster.

In summary, electrical substations and lines are essential infrastructure components that will play a critical role in shaping the future of the power grid. Their importance is evident in supporting renewable energy integration, distributed energy resources, smart grid technologies, and electrification of transportation, grid reliability, and cyber security. As the world transitions towards a more sustainable and electrified future, the need for these facilities will only continue to grow, ensuring a reliable and resilient electricity supply for generations to come.

LOAD PROFILES

1. Requirement in the Guidelines

Submit load profiles for sub-stations segregated by voltage levels and supplied parties. (Guidelines – 10e).

2. TGTransco's response

Load curves for peak load days during summer, monsoon and winter seasons have been enclosed as Annexures 1(a) to 1(c). These curves represents hourly demand in MW recorded at various voltage levels, on the days of the highest system peak was recorded for the respective seasons at various representative grid sub-stations.

At this stage, TGTRANSCO has provided the above data for representative sub-stations. It is respectfully submitted that providing such data for all the sub-stations in voltage levels and supplied parties would be a very voluminous and time-consuming process. In the event that the Hon'ble Commission requires such data for any other specific sub-station, TGTRANSCO would be glad to provide such data as may be directed.

PLANS FOR DETERMINING LOAD PROFILES

1. Requirement in the Guidelines

If information in (e) above is incomplete or non-existent, submit plans for determining load profiles on grid sub-stations and to determine system peak at different voltage levels. (Guidelines – 10f)

2. TGTransco's response

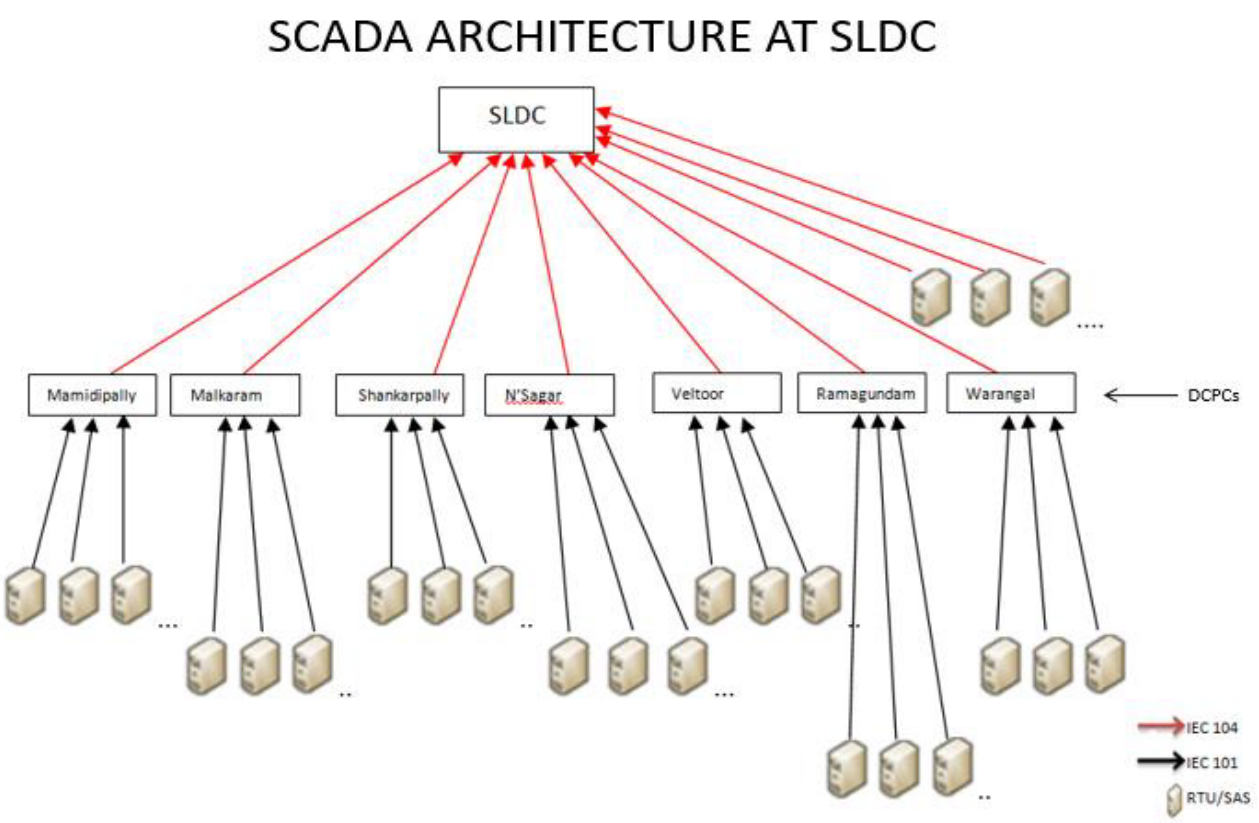
SCADA System:

The SCADA/ EMS systems at SLDC, Hyd are upgraded with GE System (Formerly M/s.Alstom T& D Ltd) during the year October, 2015.

The Upgraded SCADA/EMS system consists of 7 Data Concentrator Cum Protocol Converter (DCPC's) located at Wide band stations namely Mamidipally, Ramagundam, Warangal, Veltoor, Shankarpally, Nagarjunsagar & Malkaram.

Each DCPC receives data from nearest RTU stations using IEC 60870-5-101 protocol, processes them and then transmits the real time data to SLDC through IEC 60870-5-104 protocol for monitoring, controlling, storage and reporting. All the Real time data to DCPC is received through PLCC/Fiber communication medium. Whereas the data from DCPC's to control center is received through Fiber optic communication.

The SCADA architecture is as shown below:

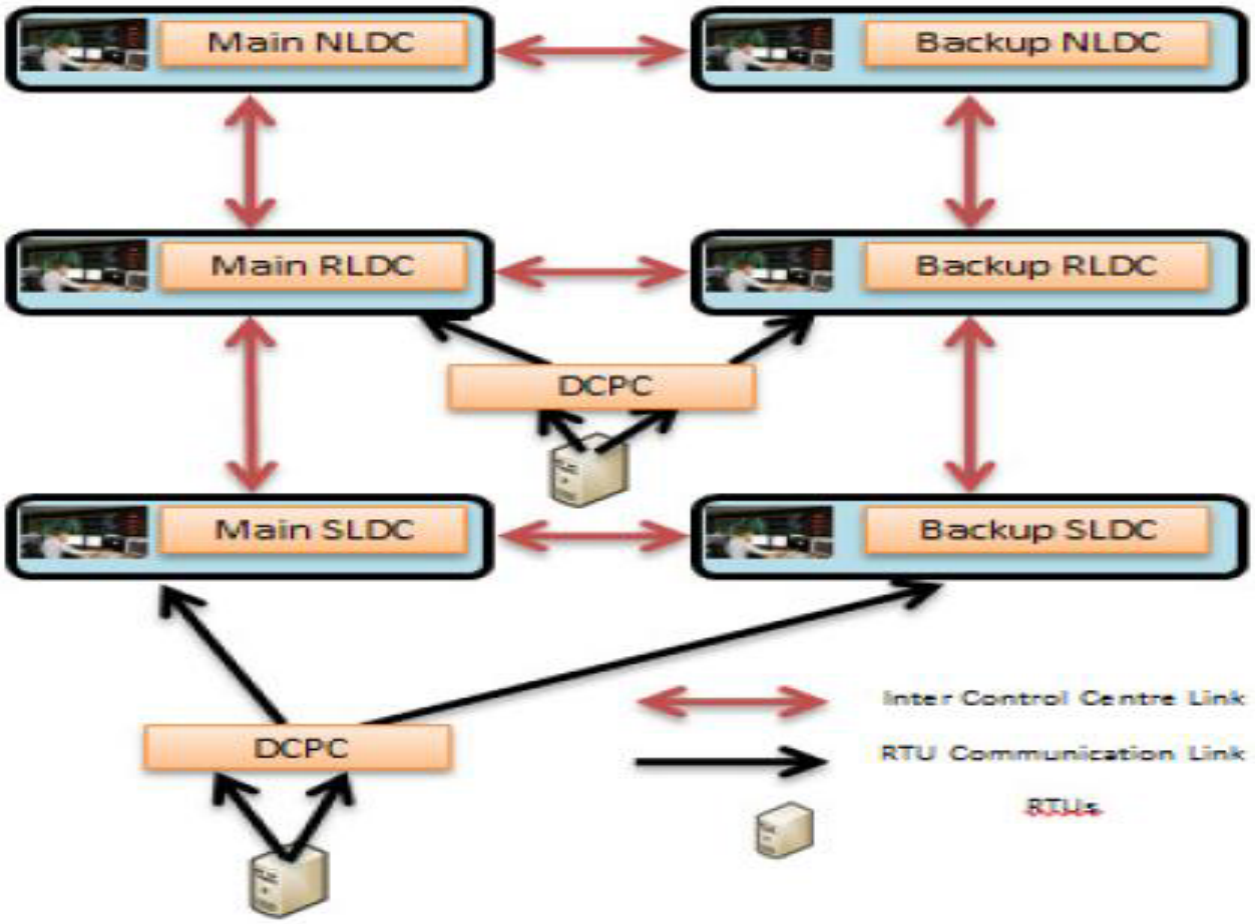


DCPC – Data Concentrator-Cum-Protocol Convertor

The details of RTU reporting To DCPCs is as shown below.

Sl. No	DCPC Location	No of RTU's Stations
1	Malkaram	17
2	Mamidipally	20
3	Nagarjunsagar	11
4	Ramagundam	18
5	Shankarpally	21
6	Veltoor	13
7	Warangal	15
8	Vidyutsoudha (SLDC)	60

Main SLDC is further integrated to SRLDC (Main & back up) on ICCP link. SRLDC in turn is integrated to NLDC also on ICCP link. The Backup SLDC proposed at Warangal will be integrated to Main SLDC and backup SRLDC over ICCP link. The data connectivity network will be as shown below.



The Backup SLDC shall be a fully functional replica of the Main SLDC (with minor changes) so that it can function as a full fledged SLDC in case of any disaster. During normal course, it shall share the duties of main SLDC also.

PLANS FOR CAPITAL EXPENDITURE

1. Requirement in the Guidelines.

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

2. TGTransco's Response

A. PLANS FOR CAPITAL EXPENDITURE for 220KV and 132KV Schemes

Capital works are being taken up for Power System improvements and for evacuation of power from the up-coming Generating Stations. Strengthening of the Transmission System is being planned to meet the existing and upcoming load demand, to improve the system voltage profile, 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 (TGTransco) funding.

The capital investment plan for the 5th control period (FY:2024-25 to FY:2028-29) filed by TGTRANSCO vide Resource Plan petition submitted in August, 2023 was approved by the Hon'ble Commission vide its' order dt. 29-12-2023.

The details of ongoing schemes that spill over into the 5th Control Periodand new projects which will commence in each year of the control period are enclosed vide Annexure-A (Capital expenditure plan) as approved by the Hon'ble TGERC vide Annexure – I to the Resource Plan order dt. 29-12-2023.

However, as and when new unplanned projects come up, the Hon'ble TGERC will be approached for investment approvals on a case to case basis.

I. Write up of completed works of 220kV & 132kV Schemes duringFY:2023-24

1. 132/33kV SS at Padmanagar in Karimnagar District

- The scheme is formulated "to meet the existing & upcoming load demand in the Karimnagar town."
- The revised administrative approval was accorded vide T.O.O (CE-Construction) Ms. No.1565, Dated:04.02.2023. Amount: Rs.29.00 Crores
- The scheme envisages the following works:
  - (i) Erection of 132/33 kV Sub-Station Padmanagar (V) in Karimnagar District with 2x31.5 MVA capacity

(ii) LILO of132 KV Line (one circuit) from 220/132 KV SS Durshad to the 132/33 KV SS Siricilla to proposed 132/33 KV SS Padmanagar-6 KM &132 kV DC line erection on 400 kV DD Type Towers- 1 KM

- The investment approval No.CRN TGT/TG/Erection of 132/33 KV SS at Padmanagar in Karimnagar District. Approval/No.02/2024-25, date. 01.06.2024 Amount.Rs.29.00Cr

- Funding tie up with M/s PFC Ltd & amount Rs. 14.20 Crores.
- Date of commissioning: 15.05.2023.

2. 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
- Date of commissioning: 29.02.2024

3. Erection of 132kV DC line from proposed 400/220/132kV SS Choutuppal to 132kV SS Choutuppal.

- 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 400/220/132kV SS Choutuppal to 132kV SS Choutuppal.-9.961KM on Multi circuit towers & 4.732KM on DC towers.

  (ii) 132kV Bay extensions at /132/33kV SS Choutuppal-2No.s

- Funding tie up with M/s PFC Ltd. & amount Rs.1102.26 Crores.

- Date of commissioning: 20.10.2023

4. Erection of 33 KV features at 132 KV Railway Traction Switching Station, Kothagudem, Kothagudem Bhadradri 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 work:
  (i) 33 KV features at 132 KV Railway Traction Switching Station, Kothagudem, Kothagudem Bhadradri District with 2 X 10/16 MVA PTRs.
- Funding tie up with M/s PFC Ltd. & amount Rs.7.35 Crores.
- Date of commissioning: 21.11.2023

5. 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 work:
  (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.
- Date of commissioning: 16.09.2023

6. Erection of 220kV Twin Moose DC line by making LILO of existing 220kV Palakurthy-Bhimghanapur SC line to proposed400/220/132kVKTPPSSatRamappapointin 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 work:

(ii) 220kV Twin Moose DC line by making LILO of existing 220kV Palakurthy-Bhimghanapur SC line to proposed400/220/132kVKTPPSSatRamappa point25KMs.

- Funding tie up with M/s PFC Ltd. & amount Rs.405 Crores.
- Date of commissioning : 22.06.2023

7. 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 accommodation 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.
- Date of commissioning: 31.03.2024

II. Works under progress (ongoing) of 220kV & 132kV Schemes as on 31-03-2024

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 works:

  (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.21.22 Cr
- Funding tie up with M/s PFC Ltd & amount Rs. 182.98 Crores.

4. 132/33 kV Gas Insulated Sub-Station (GIS) at Seetharambagh in Hyderabad District

- The scheme is formulated to (i) reduce overloading of PTRs at 220/132/33 kV Shivarampally Sub-Station & 132/33 kV Imlibun Sub-Station, (ii) reduce the length of 33 kV lines feeding the scheme area, thereby reducing the time taken in locating faults, attending breakdowns & restoration of supply (iii) to provide reliable & uninterrupted power supply, (iv) reduce the overall energy losses in the system and (iv) to cater to the upcoming loads which are increasing multi-fold due to the vertical growth of the city and increase in commercial establishments.
- The administrative approval was accorded vide T.O.O (CE-Transmission) Ms. No. 28 Dated: 27.02.2017, Amount: Rs.63.63 Crores.
- The scheme envisages the following works:

  (i) Erection of 132/33 kV GIS substation at Seetharambagh with 2X80 MVA PTR Capacities.

  (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 220 kV DC line with UG Cable from 400 kV Narsapur SS to proposed 220 kV Borampet SS – 5 KM.

  (iii) 132 kV Bay extensions at Asifnagar substation

- The investment approval CRN TS/TST/132/33 KV, GIS, Seetharambagh/Invest.Approval No.6/17-2017-18 , Amount.Rs.63.63 Cr
- Funding tie up with M/s REC Ltd & amount Rs. 57.26 Crores

5. 2nd circuit stringing on existing 132 kV DC/SC line from 220/132/33 kV Shadnagar SS to 132/33 kV SS Srirangapur in Ranga Reddy District

- The scheme is formulated under "System Improvement Transmission Scheme and as the 132/33 KVSS Srirangapur is being fed by the 132 KV Shadnagar - Srirangapur DC/SC line which is the only source for the sub-station i.e., radial feeder and to maintain reliable and quality power supply to the consumers in that scheme area.
- The administrative approval was accorded vide T.O.O (CE-Construction) MS.No.1461,Dt:19.08.2022, Amount: Rs.5.79 Crores
- The scheme envisages the following works:

  (ix) 2nd circuit stringing on existing 132 kV DC/SC line from 220/132/33 kV Shadnagar SS to 132/33 kV SS Srirangapur with Panther ACSR conductor (including 2 Nos Narrow Base Towers)

  (x) 132kV Bay Extensions (1 No at 220/132/33 kV SS Shadnagar & 1 No at 132/33 kV SS Srirangapur)

- Funding from TGTransco funds.

6. 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 proposed 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.

7. 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)

- The investment approval CRN/TST/TS/Erection of 132 KV DC line from 400/220/132 KV SS Narsapur to 132/33 KV SS Yeldurthy in Medak District. Approval No.04/2021-22, dt:05.02.2022, amount-30.58 Crores.
- Funding tie up is with M/s.HUDCO Ltd.

8. 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 Substation 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. & TGTransco funds

9. 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 400/22kV Substation Jangon 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.

10. 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 4000/220kV SS Damaraherla 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.

11. 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.

12. 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.

13. 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

- The investment approval No. (CRN) TST/TS/ Erection of 132/33kV Sub-station at Koutala(V) & (M) of Komaram Bheem Asifabad District .Approval No.02/2021-22
- Funding tie up is with M/s.HUDCO Ltd.

14. 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

B. PLANS FOR CAPITAL EXPENDITURE for 400KV Schemes

i. 400kV Capital Works completed during FY 2023-24:

1) Yadradri Thermal Power (5x800 MW) Evacuation Scheme :

   a) Choutuppal 400/220/132kV Substation is commissioned with 1x500 MVA ICT on 16.03.2023 and the following ICT/PTRs are charged during 2023-24:

      i) 2nd 500 MVA, 400/220kV ICT charged on 03.11.2023,
      ii) 1st 160 MVA, 220/132kV PTR charged on 08.01.2024
      iii) 2nd 160 MVA, 220/132kV PTR charged on 15.02.2024

b) 2 Nos. 400kV Feeder Bay Extensions (YTPP-I & 2) charged at Dindi 400/220kV Substation on 11.07.2023

2) Reactors Scheme-III :

a) 125MVAR Bus Reactor charged on 04.03.2024 at Maheshwaram 400/220kV Substation.

b) 125MVAR Bus Reactor charged on 19.03.2024 at Kethireddypally 400/220/132 kV Substation.

3) Augmentation Scheme-IV (Transformation capacity addition) :

a) 1 No. 500 MVA, 400/220 kV ICT charged on 04.08.2023 (in place of 315MVA ICT) at the existing Veltoor 400/220 kV Substation.

b) 1 No. 500 MVA, 400/220 kV ICT charged on 30.12.2023 at the existing Suryapet 400/220/132 kV Substation.

c) 1 No. 500 MVA, 400/220 kV ICT charged on 21.02.2024 at the existing Dichpally 400/220 kV Substation.

4) **400kV LI Scheme : Sita Rama Lift Irrigation Scheme:**

1) 220/11 kV V.K.Ramavaram LI Substation charged on 28.04.2023.

2) 220kV LILO of KTS - Asupaka Line to V.K. Ramavaram 220/11 kV LI Substation (2.832 ckm) charged on 28.04.2023

ii. Capital Works in progress as on 31.03.2024 :

1) KTPP System Improvement Scheme : Bhupalapally 400/220/132kV Substation

[CRN : TST/TS/KTPP SIS/ Approval No.03/2019-20]

All Tower Foundations & Erection and Equipment Structure Foundation works completed. Equipment Erection works nearing completion. Testing of Control & Relay Panels are under progress.

2 Nos of 500 MVA, 400/220kV ICTs pre-commissioning tests completed and HVWS works in progress. Reactor placed on plinth and erection works are in progress.

Status of Works completed at 400/220/132kV Bhupalapally Substation:

Voltage level of switchyard	No. of Towers	Tower Foundations completed	Total No. of Equipment Locations	Works completed status		
				Foundations	Support Structure Erection	Equipment Erection
400kV	27	27	207	207	204	200
220kV	55	55	232	232	232	232
132kV	14	14	58	58	48	40
Total	**96**	**96**	**497**	**497**	**484**	**472**

2) <u>Yadradri Thermal Power (5x800 MW) Evacuation Scheme</u> :

[CRN : TST/TS/Yadadri Thermal Power Evacuation/Approval No.09/2019-20, dated 27.01.2020]

a) 400kV Yadadri TPP - Dindi QMDC Line : Statutory Inspection remarks are being attended.

i) No. of Foundations completed : 290 / 290
ii) No. of Towers Erected : 290 / 290
iii) Stringing completed (in ckm) : 207.566 / 207.566

b) 400kV Yadadri TPP - Choutuppal QMDC Line : Works are under progress.

i) No. of Foundations completed : 259 / 259
ii) No. of Towers Erected : 258 / 259
iii) Stringing completed (in ckm) : 66.21 / 184.75

c) 400kV Yadadri TPP - Jangaon QMDC Line : Works are under progress.

i) No. of Foundations completed : 367 / 402
ii) No. of Towers Erected : 290 / 402
iii) Stringing completed (in ckm) : 43.834 / 278

d) 2 Nos. 400kV Feeder Bay Extensions at 400kV Jangaon Substation : Testing & Commissioning works under progress.

e) 125 MVAR Bus Reactor at Choutuppal 400/220/132 kV Substation: Reactor Equipment bay charged on 15.03.2023. 125 MVAR Reactor Erection, Testing & Commissioning works under progress and programmed for commissioning in May/ June, 2024.

3) Reactor Scheme-III [CRN:TST/TS/Reactor Scheme-III/ Approval No.04/2019-20]
Supply of all the balance 6 Nos. Reactors completed and the status is as below:

a) 125 MVAR Bus Reactor at Suryapet 400/220/132 kV Substation: Reactor Equipment bay charged on 04.11.2023. Reactor Erection, Testing & Commissioning works completed and programmed for commissioning in April, 2024.

b) 125 MVAR Bus Reactor at Narsapur 400/220kV Substation : Reactor Equipment bay charged on 25.08.2023. Reactor Erection, Testing & Commissioning works completed and programmed for commissioning in April, 2024.

c) 125 MVAR Bus Reactors at Dindi 400/220kV Substation :

Reactor Equipment Bays charged on 03.03.2023.

1st 125 MVAR Bus Reactor Erection, Testing & Commissioning works completed and programmed for commissioning in April, 2024.

2nd 125 MVAR Bus Reactor Oil filtration, HVWS works & Pre-commissioning Tests are under progress and programmed for commissioning in May/June, 2024.

d) 125 MVAR Bus Reactor at Jangaon 400/220kV Substation: All the pre-commissioning tests completed. SAS Integration works under progress. Reactor programmed for commissioning in May, 2024.

e) 80 MVAR Bus Reactor & 63 MVA Line Reactor at Asupaka 400/220kV Substation : All the Erection works of Reactor & Reactor Bay Equipment completed. Testing and commissioning works are under progress. Both the Reactors are programmed for commissioning during May/ June, 2024.

4) Augmentation Scheme-IV :

[CRN : TST/TS/Augmentation Scheme-IV/ Erection of 315/500MVA ICT's at 400kV Suryapet, Asupaka, Veltoor, Dichpally & Gajwel Substations Approval No.01/2022-23]

a) 1x315 MVA ICT at Kamlapuram 400/220kV Substation: The dismantled 315 MVA ICT at 400kV Gajwel SS is transported to Kamalapuram 400kV SS. ICT Erection works, Relay & SAS testing works completed and programmed for commissioning in April, 2024.

b) 1x315 MVA ICT at Asupaka 400/220kV Substation: The dismantled 315 MVA ICT at 400kV Veltoor SS is transported to Asupaka 400kV SS. ICT Erection & Oil filtration works completed. SAS integration works under progress.

C. PLANS FOR CAPITAL EXPENDITURE for RMI Schemes

i) The Administrative approval for Replacement of aged/obsolete equipment & strengthening/improvement works in EHT sub-stations and Transmission lines under Renovation & Modernization Scheme during the FY:2023-24 for an amount of Rs. 67.90 Crore vide T.O.O.CE(Transmission) Ms.No.1810, Dt. 07-10-2023 was issued as per the approval of Hon'ble TSERC.

ii) Procurement under progress for replacing the old and obsolete equipment under RMI Scheme, so that outages of substation equipment have been reduced, improving reliability and stability of transmission system.

iii) Due to implementation of RMI Scheme, outages of substation equipment have been reduced, improving reliability and stability of Transmission System and able to implement the Government of Telangana prestigious flagship programme "24 Hrs Agriculture Supply" to forming sector.

iv) Following works have been included under RMI 2023-24 Scheme in the State.

- Replacement of old & obsolete substation equipment viz Electrical and Telecom
- Shifting of 33KV Equipment and 33KV Feeders from underneath of the Bus
- Metal Spreading works and water supply arrangements to earth pits in the EHT Substations.
- Strengthening of Transmission lines, replacement of conductor works.

D. PLANS FOR CAPITAL EXPENDITURE for Lift Irrigation Schemes

I. Palamuru Lift Irrigation Scheme

i. List of 400kV lines and Substations commissioned during FY2023-24

i) 400/11kV Narlapur LI Sub-Station (incl.1No.125MVAR Bus Reactor).
- Charged on 12.09.2023

ii) 400/11kV Vattem LI Sub-Station (incl.1No.125MVAR Bus Reactor).
- Charged on 20.10.2023

iii) 400/11kV Yedula LI Sub-Station (incl.1No.125MVAR Bus Reactor).
- Charged on 12.09.2023

iv) 2Nos.400kV QMDC Bays at 400/220kV Dindi Sub-Station

- Charged on 10.06.2023

v) 400kV QMDC Line from proposed 400/11kV Yedula LISS to proposed 400/11kV Narlapur LISS(27.737 kM).

- Circuit –II charged on 12.09.2023
- Circuit-I charged on 27.09.2023

vi) 400kV QMDC Line from 400/220kV Dindi SS to proposed 400/11kV Yedula LISS(55.32kM).

- Circuit –II charged on 12.09.2023
- Circuit-I charged on 27.09.2023

vii) 400kV QMDC Line from 400/11kV Yedula LI SS to 400/11kV Vattem LI SS (30.363 kM),

- Circuit –I charged on 20.10.2023
- Circuit-II : All works completed and ready for charging.

ii. work progress as on 31.03.2024

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

The substation was charged on 12.09.2023 and finishing civil works such as Roads, Drains, Cable trench, Control room building, Firefighting room etc are under progress.

ii) 400/11kV Vattem LI Sub-Station (incl.1No.125MVAR Bus Reactor).

The substation was charged on 20.10.2023 and finishing civil works such as Roads, Drains, Cable trench, Control room building, Firefighting room etc are under progress.

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

The substation was charged on 12.09.2023 and finishing civil works such as Roads, Drains, Cable trench, Control room building, Firefighting room etc are under progress.

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

All works are completed and equipment testing is under progress.

v) 400kV QMDC Line from 400/220kV Veltoor SS to 400/11kV Yedula LI SS (46.801kM)

All works completed and statutory inspection in under progress.

vi) 400/11kV Uddandapur LI Sub-Station (incl.1No.125MVAR Bus Reactor).

Works stopped due to severe ROW issues since November-2023.

vii) 400kV QMDC Line from 400/11kV Vattem LISS to 400/11kV Uddandapur LI SS (34.139kM).

All works completed except gantry connections.

viii) 400kV QMDC Line from 400/220kV Maheswaram SS to 400/11kV Uddandapur LI SS (60.245kMs).

All works completed except gantry connections.

II. Kaleshwaram Lift Irrigation Scheme :

i. Works completed during FY:2023-24 :

a. The addition of Transmission network in respect of LI Schemes for FY 2023-24 is as detailed below.

Description	FY 2023-24
400kV Lines (CKM)	0
220kV Lines (CKM)	110.00
132kV Lines (CKM)	0
400kV SS	0
220kV SS	1
132kV SS	0

b. Details of Sub Stations and Connected Transmission Lines commissioned under Lift Irrigation Scheme works during FY 2023-24

List of Lines completed during FY 2023-24				
Sl. No	**Name of the LIS**	**Name of the Line**	**Length (CKM)**	**Date of Commissioning**
1.	J.Chokka Rao Devadula Godavari LIS Phase-III	220kV DC line from 400/220kV Jangaon SS to Devannapeta	110	19.06.2023

List of Substations completed during FY 2023-24			
Sl. No	**Name of the LIS**	**Sub-station**	**Date of Commissioning**
1.	J.Chokka Rao Devadula Godavari LIS Phase-III	220/11kV Devannapeta Sub-Station in Hanumakonda Dist., (formerly Warangal(Urban) Dist.,)	19.06.2023

List of Bays completed during FY 2023-24				
Sl. No.	**Name of the work**	**No. of Bays**		
		400kV	**220kV**	**132kV**
NIL				

ii. Details of Ongoing works during FY 2023-24 (Progress as on 31.03.2024)

The ongoing Transmission Lines and Substations in respect of LI Schemes for FY 2023-24 is as detailed below:

Sl. No.	Description	Status
Kaleshwaram Lift Irrigation Scheme:		
1.	220/11 kV Manichippa SS & connected 220kV DC line from Dichpally to Manichippa (48 CKM)	**Substation:** Tower Foundations : 40/40 No's completed, Tower Erection : 40/40No's completed, Equipment Foundation : 114/126 No's completed, Structure Erection : 106/126 No's completed, Works are under progress. **Line:** Survey :89/89 ,24.176 Km completed Foundations :89/89 No's completed, Erections : 89/89 No's completed, Stringing :24.176/24.176 KM. The 220KV DC line from 400/220KV Dichpally SS to 220/11KV SS Mentrajpally at loc.No.20 charged. Erection of 2No. 220kV bay extensions at 400/220kV Dichpally substation in Nizambad District Bay charged on 31.03.2023

Sl. No.	Description	Status
2.	220/11 kV Yacharam Thanda SS & connected 220 kV DC line from Dichpally to YacharamThanda (53.7 CKM)	**Substation:** Tower Foundations : 37/38 completed, Tower Erection : 37/38 completed, Equipment Foundations : 158/159 completed, Equipment Erection: 154/154 completed, **Line:** Survey :26.902/26.902 kM completed Tower Foundations :97/97 Nos Completed, Tower Erection :95/97 Nos completed, Stringing :21.224/26.902kM Balance Erection and Stringing work will be taken up after crop cutting.
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)	**Substation:** Tower Foundations : 9/9 No's completed, Tower Erection : 9/9No's completed, Equipment Foundation : 39/39No's completed, Structure Erection : 39/39 No's completed, Works at 33/11KVSS Ghadkol are not started as the Site is yet to be handed over by I&CADD. **Line: 33 KV Line** Survey : 4/ 4KM completed, Foundations : 0/100No.s, Erections : 0/100 No.s, Stringing : 0/4 KM. DC Line from 220/33 kV New Manchippa SS to 33/11kV Ghadkol SS of Line length 4 Km is not yet started due to ROW issues.
Kaleshwaram Lift Irrigation Scheme-Additional TMC Works:		
1.	400/220 KV **Annaram Substation**& 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)	**400/220kV Sub-Station Works:** Tower Foundations :65/70 No's Completed, Tower Erection :0/70 No's Completed, Equipment Foundation:211/676 No's Completed, Structure Erection :0/676 No's Completed, **Line:** Survey :20.172/20.172 KM Completed, Foundations :62/63 No's Completed, Erections :0/63 No's Completed, Stringing :0/20.172 KM Completed,
2.	**TMDC Line** 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)	**Line:** Survey : 40.494/40.494 KM completed Tower Foundations :129/155 Nos completed, Tower Erection :118/155 Nos completed, Stringing : 0/40.494 Km completed,
3.	400 KV Switching Station at **Kachapur**& connected	**Substation:** Tower Foundations : 0/76 No's completed

Sl. No.	Description	Status
	(i)LILO of 400kV QMDC Line from STPP Jaipur- 400/220/11kV Ramadugu SS of line length 2 X 3.5 KM (7 CKM)	Tower Erection : 0/76No's completed Equipment Foundation : 0/1074No's completed, Structure Erection : 0/1074 No's completed, **Line:** Survey : 9.57/9.57 Km completed Foundations : 18/30 No's completed, Erections : 0/30 No's completed Stringing : 0/9.57 Km
	(ii)400kV QMDC Line from 400kV Kachapur Switching station to 400/220/132kV Gajwel SS of line length 9 KM (18 CKM)	Survey : 7.228/7.228 Km completed Foundations :14/23 No's completed, Erections : 0/23 No's completed, Stringing : 0/7.228 Km,
	(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)	Survey : 3.908/3.908 Km completed Foundations : 07/13 No's completed, Erections : 0/13 No's completed, Stringing : 0/3.908 Km,
4.	400/11KV **Namapur** (Pegadapally) Substation & connected (i)400 KV TMDC line from Namapur Substation Switchyard to Transformer Deck of Pump House of length 2 Km (4 CKM)	**Substation:** Tower Foundations : 44/44 No.s completed Tower Erection : 0/44 No.s completed, Equipment Foundation: 564/705No.s completed, Structure Erection : 0/705 No.scompleted, **Line:** Tower Foundation : 0/6Completed Tower Erection : 0/6Completed Stringing : 0/2.13Completed
	(ii) 400kV QMDC Line from 400kV Kachapur Switching station to 400/11kV Namapur (Pegadapally) SS of Line length 19.3 Km. (38.6 CKM)	**Line:** Survey : 15.14/15.14 Km completed Foundation : 35/46 No.s completed, Erection : 0/46 No.s completed, Stringing : 0/15.14 Km
	(iii)400kV QMDC Line from 400kV Velgatoor Switchyard to 400/11kV Namapur (Pegadapally) SS of line length 22.5 Km (45 CKM)	**Line:** Survey : 21.74/21.74 Km completed Foundations : 58/70 No.s completed, Erections : 0/70 No.s completed, Stringing : 0/21.74 Km,
5.	400/11KV **Velgatoor** Substation & connected 400kV QMDC Line from Velgatoor Switchyard to Transformer deck of 3.712CKM.	**Substation:** Tower Foundations : 56/58 No's completed. Tower Erection : 56/58 No's completed. Equipment Foundation : 745/787No's completed. Structure Erection : 550/787 No's completed, Equipment Erection : 177/787 No's completed, **Line:** Tower Foundation :0/13Completed Tower Erection : 0/13Completed Stringing : 0/3.712Completed

Sl. No.	Description	Status
	400kV QMDC Line from 400kV Kachapur Switching station to 400/11kV Velgatoor SS of Line length 26 Km. (52 CKM)	**Line:** Survey : 24.70/24.70 Km completed Foundations : 67/76 No's completed, Erections : 66/76 No's completed, Stringing : 0/24.70 Km,
6.	400/11kV **Veljipur** 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)	**Substation:** Tower Foundations : 23/27 No's completed, Tower Erection : 30/39 No's completed, Equipment Foundation : 176/185 No's completed, Structure Erection : 156/176 No's completed, Equipment Erection : 156/185 No's completed, **Line:** Survey : 5.1/5.1 Km completed Foundations : 18/18 No's completed, Erections : 17/18 No's completed, Stringing : 0/5.1 Km completed,
7.	400/11KV **Yellaipally** 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)	**Substation:** Tower Foundations :21/21 completed Tower Erection :21/21 completed, Equipment Foundations :369/459 completed, Structure Erection :202/317 completed **Line:** Survey: 9.548/9.548kM completed Foundations: 30/30 Nos completed. Tower Erection: 29/30Nos completed, Stringing: 9.229/9.548 kM,
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)	**Line:** Survey : 93.998/93.998 Km completed Foundations : 211/278No.s completed, Erections : 0/278 No.s completed, Stringing : 0/93.998 Km.
9.	New Tukkapur 400/11KV SS	**Substation:** Tower Foundations : 0/18 No.s completed Tower Erection : 0/18 No.s completed Equipment Foundation : 68/542No.s completed, Structure Erection : 0/542 No.s completed.

Description	2023-24
400kV Lines (CKM)	431.66
220kV Lines (CKM)	205.7
132kV Lines (CKM)	0
33kV Lines (CKM)	8
400kV SS	7
220kV SS	2
132kV SS	0

ANNEXURE – II PERFORMANCE MEASURES

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. TGTransco's Response:

Interruptions on EHT lines during 2019-20,2020-21, 2021-22, 2022-23& 2023-24

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 TGTransco for the years 2019-20 to 2023-2024 works out at 99.98%. The details of the line availability for the years 2019-20,2020-21, 2021-22, 2022-23& 2023-24 are shown in the tables below.

Interruptions on EHT lines during 2019-20,2020-21, 2021-22, 2022-23& 2023-24

Year	EHT line voltage	No. of interruptions	Total time of interruptions (Hrs)	Avg. Duration Per Interruption (Hrs)
2018-19	400kV	8	142.45	Beyond 2 Hrs. (17.08)
	220kV	115	1393.37	Beyond 2 Hrs. (12.11)
	132kV	203	2132.67	Beyond 2 Hrs. (10.50)
2019-20	400kV	15	185.48	Beyond 2 Hrs. (12.36)
	220kV	133	1547.05	Beyond 2 Hrs. (11.63)
	132kV	156	1956.12	Beyond 2 Hrs. (12.54)
2020-21	400kV	26	299.15	Beyond 2 Hrs. (11.50)
	220kV	100	1092.33	Beyond 2 Hrs. (10.92)
	132kV	182	1860.07	Beyond 2 Hrs. (10.22)

Year	EHT line voltage	No. of interruptions	Total time of interruptions (Hrs)	Avg. Duration Per Interruption (Hrs)
2021-22	400kV	15	205.67	Beyond 2 Hrs. (13.71)
	220kV	116	1607.52	Beyond 2 Hrs. (13.85)
	132kV	148	1751.93	Beyond 2 Hrs. (11.83)
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)
2023-24	400kV	17	194.05	Beyond 2 Hrs. (11.41)
	220kV	62	707.58	Beyond 2 Hrs. (10.92)
	132kV	96	1266.07	Beyond 2 Hrs. (10.22)

Transmission System Availability during 2019-20,2020-21, 2021-22, 2022-23& 2023-24:

Sl. No.	Financial year	Transmission System Availability
1	2019-20	99.98%
2	2020-21	99.98%
3	2021-22	99.98%
4	2022-23	99.98%
5	2023-24	99.98%

Target Transmission System Availability for FY 2024-25 to FY 2028-29:

Sl. No.	Financial year	Target System Availability
1	2024-25	99.9%
2	2025-26	99.9%
3	2026-27	99.9%
4	2027-28	99.9%
5	2028-29	99.9%

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.
- TGTRANSCO 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.,

Major Grid Disturbances / Incidents occurred during the years 2019-20,2020-21, 2021-22, 2022-23& 2023-24.

I. Major Grid Disturbances occurred during the year **2019-20**

a) Grid Breaker trippings at 220 KV Ghanapur on 27.05.2019 @02.03 Hrs.

The fault was due to blasting of 220kV B phase CT of Bus coupler which is connected to Bus-2. Due to which Bus Bar Zone-2 protection operated and tripped all the breakers of feeders/ICTs connected to Bus-2 along with Bus coupler breaker instantaneously.

Due to blasting of faulty CT, the porcelain of blasted CT damaged the Y & B phase Bus coupler CTs which are connected to Bus-1 leading to second fault. This fault current was between Bus coupler CTs to Bus coupler breaker which is in the dead zone. Hence Dead zone protection has operated and cleared the fault after 150msec (time delay set for Dead Zone protection) tripping all the feeders/ICTs connected to Bus-1.

Performance Measures:

The CTs near the Bus coupler are very old of HBB make which are manufactured in the year 1983. All the 6 Bus coupler CTs connected to Bus-1&2 are replaced with new one.

Instructions were issued to DEE/MRTs to carry out the testing of CTs (like Tan delta, Oil sample test etc) on regular basis and to replace the defective CTs.

II. Major Grid Disturbance(s)/Incident(s)occurred during the year **2020-21**.

a) Grid Breaker trippings at 400KV Chandulapur SS on 18.04.2020 @ 11:48Hrs :

On 18-04-2020, Lift irrigation personnel were checking the operation of isolators near the Consumer Bus and they have closed the consumer bus isolator of pump-3 transformer with R phase earth switch in closed condition (as the pipe link connected to opening of earth switch R-phase was broken) creating Bus fault.

Due to above operation Bus Bar protection of consumer Bus should have operated. But as the consumer bus bar protection was under block mode due to defective PU in pump-2 transformer bay during the event, the fault was fed from the remote end feeders connected to Chandulapur SS. Thereby all the in-service feeders i.e., 400KV chandulapur-Gajwel-2, 400KV Chandulapur-Bhoopalpally-2, 400KV Chandulapur-Tippapur-2 & 400KV chandulapur-Tukkapur-1 tripped at remote end with Zone-2 timings (350ms) except for Gajwel feeder which tripped with Zone-1 timing and also these feeders tripped at Chandulapur SS in reverse zone (350ms) except for Gajwel feeder.

Performance Measures:

Engineer-In-Chief of I&CAD department was requested on 20-08-2020 to take steps to adopt proper & safe operational procedures to avoid such unwarranted trippings in future and also informed to provide necessary protections during pre-commissioning activities itself.

III. Major Grid Disturbance(s)/Incident(s)occurred during the year **2021-22**

a) 220kV Busbar Protection Operation at 400/220kV Veltoor SS at 13:37Hrs on 16-04-2021:

i. On 16-04-2021, Line Clear was taken on 220kV Veltoor-Wanaparthy feeder at 11:36Hrs for Hot line maintenance work at Wanaparthy end and after completion of work, the 220kV Wanaparthy feeder-2 which is connected to Bus-1 was charged from 400/220kV Veltoor substation at 13:37 Hrs.

ii. Immediately, 220kV bus bar protection (Zone-1) operated and tripped all the feeder and bus coupler circuit breakers connected to both Bus-1 and Bus-2 as the R-Phase earth switch of line isolator remained in closed position.

iii. Since, the line isolator (with earth switch in closed) is located between the feeder circuit breaker and current transformer (CT) inside the Bus-1 zone as per Double bus & Transfer bus configuration, the feeder circuit breakers connected to Bus-1 and Bus Coupler CB were supposed to be tripped. However, all the CBs connected to both Bus-1 and Bus-2 were tripped.

iv. On 19-04-2021, while investigating the possible reasons for above tripping, it is observed that the busbar relay is getting closed status for both 89A and 89B isolators on 220kV Renew Akshya solar feeder-1 even though 89B isolator (connected to Bus-2) is in open condition, due to defective control cable laid for the above status.

v. As per the relay configuration, the two buses are treated as single bus if the busbar relay is getting closed status for both 89A and 89B isolators.

vi. Thus, the fault inside the Bus-1 zone has caused tripping of all the circuit breakers connected to both Bus-1 and Bus-2.

Performance Measures:

i. The defective cable was isolated and temporary wiring was made at the relay for permanent open status for 89B isolator irrespective of isolator position.

ii. The defective cable was replaced with healthy cable.

iii. The Shift Engineers were strictly instructed to ensure personally the open position of earth switch before charging the feeders to avert such unwarranted trippings in future.

b) Complete outage of 400kV Sundila SS on 15-05-2021at 15:46 hrs:

i. On 15-05-2021 at 15:46Hrs there was B-Phase to Ground fault on 400kV Sundilla-Singareni-1 feeder for which A/R operated and tripped again due to persistent fault.

ii. Later, Over Voltage was developed on 400kV Sundilla-Nirmal-1 feeder at Sundilla SS and tripped.

iii. Due to above trippings 400kV Sundilla Substation was Dead.

iv. During the above Over Voltage tripping, ICT-3 tripped on UFR Stage-I i.e., 49.4Hz as observed from the DRs

Performance Measures:

i. Instructed MRT wing to disable the tripping of UFR Stage-1 setting on ICT-3.

ii. All the operations were on account of Over Voltage protection operations as per the Voltage gradings adopted and are in order.

c) Complete outage of 400kV Sundila SS on 15-05-2021at 18:44 hrs:

i. After the above tripping incident on 15-05-2021 at 15:46Hrs at Sundilla SS, Charged the 400kV Sundilla-Nirmal-1 feeder at18:31Hrs.

ii. Later charged the 400kV Sundilla-Singareni-2 feeder.

iii. After the above charging, Over Voltage was sensed on 400kV Nirmal-1 & Singareni-2 feeders and tripped at 400kV Sundilla SS and Direct Trip was sent to other ends.

iv. Due to above trippingsthere was again complete outage of Sundilla SS.

Performance Measures:

All the operations were on account of Over Voltage protection operations as per the Voltage gradings adopted and are in order.

d) Complete Outage of 400/220kV Mamidipally SS on 24-06-21at 19:25 hrs

i. On 24-06-2021 at 19:25Hrs on 315MVA ICT-I at 400/220kV Mamidipally SS, it is observed that B-Phase differential protection operated.

ii. Observed Fire on ICT-1. Due to this as a safety measure all the remaining ICTs, 400kV & 220kV feeders were hand tripped with the permission from SLDC.

iii. As the Emulsifier system is not in Auto mode due to problem with the Deluge valve and water leakages, the inlet valve is kept in closed condition. Fire engines were used to extinguish the fire on the ICT-1. However, subsequently hydrant system near the ICT-1 was made operational by opening the inlet valve.

iv. From the DR's, fault was cleared instantaneously. Also differential High set protection has operated. From the Event Logger (EL) of HV Over Current & Earth fault relay, it is also observed that Over Current High set protection has operated.

v. From the physical field conditions, it is suspected that the long jumper connected between HV side LA & HV Bushings might have caused tension/pull on the HV B-Phase bushing termination causing sparks at the bushing tip leading to damage of the bushing and fire on the transformer. Then the fire slowly propagated towards turret of ICT-I. Later this damaged HV B-phase bushing might have caused pulling effect of the HV B-Phase LA which in turn led to breakage of bottom stack of B-Phase LA.

Performance Measures:

i. Emulsifier system will be taken into service immediately by rectifying the issues with the Deluge Valve and will be kept in Auto Mode.

ii. Erection of High Bus Post Insulator (HBPIs) supports may be examined between the ICT and LAs to anchor the jumper load so as to avoid the tension/pull on the Bushing termination due to LA blasting or mechanical failure.

e) Complete outage of 220kV/33kV Nagaram SS on 28-06-2021 at 12:57hrs

i. On the day of the incident i.e., 28-06-2021, after completion of LC works on 220kV Nagaram-Pulakurthy-2 feeder, charged the feeder from Pulakurthy SS at 12:57hrs. After charging the above feeder, the Y-Phase line CT of the feeder blasted at 220kV Nagaram SS.

ii. Due to above blasting, the feeder tripped immediately at Pulakurthy SS with Zone-1 indications. After tripping of the feeder i.e., after a lapse 1.5sec, there was again heavy flash over of the Y-Phase line CT due to fire and fallen towards to B-Phase CT. Due to heavy fire of the CT, there was Y-phase to B-phase fault on the 220kV Bus due to which 220kV Bus Bar Zone-2 protection has operated at Nagaram SS as the Bus isolator of 220kV Nagaram – Pulakurthy feeder-2 was connected to Bus-2.

iii. After Zone-2 operation, Bus Bar Zone-1 has operated with similar phase to phase fault after a gap of 0.5sec thereby the total 220kV Bus was dead.

iv. As the 220kV Pulakurthy, Salivagu, Bheemghanapur and Gangaram Substations are radially fed from 220kV Nagaram SS there was Incoming Supply Failure (ISF) to the above Substations.

Performance Measures:

As a remedial measure all the testings related to Bus Bar were done and found to be normal.

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

a) Grid Breaker trippings at 220kV Medchal SS on 21-06-22 at 19:31 Hrs due to Bus bar Protection Operation.

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

ii. 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.

iii. 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.

b) 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.

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

ii. 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.

iii. As 220kV Puliyatanda 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.

c) Grid Breaker trippings at 220/132kV Tandur SS on 17.01.2023 at 06:55 hrs.

i. 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.

ii. 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.

iii. 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).

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

v. 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.

vi. 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.

V. Major Grid Disturbance(s)/Incident(s)occurred during the year 2023-24

a) Complete outage of 400/220kV Dhamarcherla SS on 08-06-2023 at 08:20 Hrs.

i. On the day of incident i.e., 08-06-2023 at 08:20Hrs there was severe DC leakage i.e., +ve to ground is 5V and –ve to ground is 225V on DC Source-1 near the line isolator Marshalling box of 220kV Miryalaguda-1 feeder.

ii. Due to the above DC leakage, under voltage relay in the DCDB of Source-1 has tripped the incomer of DC Source-1.

iii. As the DC source change over in DCDB was in Auto mode, all the feeders on DC source-1 was connected to DC Source-2 through DC Bus coupler. Due to this, incomer of DC Source-2 also tripped on operation of Under Voltage relay.

iv. As the substation was newly commissioned, CTDs were in service on all the ICTs and feeders. All the elements i.e., 500MVA ICT-1 & 2 , 400kV YTPP-1 & 2 feeders and 220kV Miryalaguda-1 & 2 feeders tripped on operation of CTD protection due to DC (Source-1 & 2) failure.

Performance Measures:

CTDs on all the feeders and ICTs were removed and also DC Earth Leakage was rectified after the tripping incident.

b) Complete Outage of 220kV/11kV BG Kothur LIS SS of TGTRANSCO on 27-07-2023 at 16:10Hrs.

i. 220/11kV B.G.Kothur lift irrigation substation was commissioned on 08.06.2022 which is being operated in coordination with I & CAD officials where in DC sources-1& 2 are under the control of TGTRANSCO and I & CAD respectively due to space limitations at site.

ii. I & CAD officials switched off the incomer of DCDB –II as the DC source-II is under their control and operated without any coordination and prior information Consequently the loads were fed from DC source-I.

iii. On 27.07.2023 DC source-1 was also switched off without any coordination with TGTRANSCO field officials. Due to this, at 16:11 hrs, 220kV Manuguru, 220kV

Chintoor, 220kV KTS O&M and 220kV KTS -V stage feeders and bus coupler got tripped on CTD.

Performance Measures:

- CTDs on 220kV Manuguru, 220kV Chintoor, 220kV KTS O&M and 220kV KTS -V stage feeders and bus coupler were removed and charged the feeders.
- Informed I &CAD officials to avoid any unauthorised operations of AC and DC sources without coordinating with TGTRANSCO officials to avert such incidents in future.

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. TGTransco's Response:

I. FY: 2023-24

a. PERIODS WHEN FREQUENCY WAS BEYOND PRESCRIBED LIMITS DURING FY:2023-24

The details of frequency in Average, Maximum, Minimum and % time experienced during FY-2023-24 is shown below.

Month	Average	Maximum		Minimum	
	HZ	HZ	Date	HZ	Date
Apr-23	49.99	50.33	23rd	49.49	15th
May-23	49.99	50.43	18th	49.48	15th
Jun-23	46.69	50.41	14th	49.51	15th
Jul-23	50.01	50.42	30th	49.58	3rd
Aug-23	50.00	50.29	2nd	49.51	31st
Sep-23	50.00	50.30	18th	49.53	1st
Oct-23	49.99	50.30	27th	49.47	16th
Nov-23	50.00	50.39	27th	49.55	25th
Dec-23	49.99	50.42	17th	49.53	7th
Jan-24	50.00	50.33	21st	49.52	17th
Feb-24	50.00	50.35	1st	49.57	18th
Mar-24	50.00	50.43	17th	49.59	28th
Year	**49.72**	**50.43**	**18.05.2023**	**49.47**	**16.10.2023**

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Apr-23	10.54	67.90	21.55
May-23	9.83	68.48	21.69

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Jun-23	6.47	67.83	25.70
Jul-23	4.60	74.96	20.44
Aug-23	7.11	77.25	15.64
Sep-23	5.26	77.90	16.84
Oct-23	8.87	74.42	16.71
Nov-23	6.83	74.36	18.81
Dec-23	7.83	75.21	16.96
Jan-24	6.79	75.83	17.37
Feb-24	6.32	74.42	19.26
Mar-24	6.02	77.51	16.46
Average	**7.21**	**73.84**	**18.95**

b. VOLTAGES OF TS SYSTEM FOR 2023-24 AS PER SCADA DATA

Voltages recorded at some of the Generating Stations, Grid sub-stations and Tail-end sub-stations on 08.03.2024, the date on which the State Peak Demand Met i.e.,15623 MW are as tabulated below.

Voltages profile at various Generating Stations as on 08.03.2024

400kV Level						
S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	BHUPALAPALLY(KTPP)	412.73	410.98	419.84	423.07	403.99
2	BTPS	407.82	407.68	412.96	415.49	401.67
3	KTPS-VI	416.04	414.77	423.05	425.72	406.93
4	KTPS-VII	413.27	412.51	420.72	424.7	404.16
5	SINGARENI	415.87	416.31	419	423.15	411.66
6	SRISAILAM	417.79	418.75	425.47	432.58	401.59

220kV Level						
S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	KTPS-V	229.53	227.94	234.11	236.04	223.57

2	LOWER JURALA	216.08	215.42	229.04	231.26	208.16
3	U.JURALA	215.21	214.51	229.22	232.45	206.85
4	N'SAGAR MAIN	225.42	223.72	236.59	238.92	216.08

132kV Level						
S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	N'SAGAR	134.3	133.39	141.53	142.78	129.08

Voltages profile at various 400kVsubstations as on 08.03.2024

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	ASUPAKA	423.56	422.17	430.72	436.72	410.07
2	CHANDULAPUR	409.12	409.53	421.63	425.01	401.9
3	DICHPALLY	413.76	413.64	423.63	432.17	402.14
4	DINDI	413.56	413.67	424.42	429.49	401.53
5	GAJWEL	410.59	408.24	424.54	427.4	401
6	JANGAON	413.66	410.33	426.52	428.99	405.42
7	JULURUPADU	415.38	415.47	425.02	427.43	408.22
8	KETHIREDDY PALLI	411.71	414.49	423.54	430.28	401.35
9	MAHABOOBNAGAR	408.98	412.93	419.19	428.75	396.45
10	MAHESWARAM	412.18	414.33	422.12	428.72	399.79
11	MAMIDIPALLY	409.11	410.86	420.82	426.1	396.8
12	MALKARAM	416.00	419.5	427.3	434.5	406
12	MEDARAM	412.98	412.09	422.57	426.28	405.33
13	NARSAPUR	409.74	411.63	424.27	427.15	403.35
14	NIRMAL	415.17	413.33	425.43	429.99	404.63
15	RAMADUGU	412.5	411.45	422.28	425.84	404.76
16	SHANKARPALLY	409.21	411.33	421.14	427.07	398.88
17	SUNDILA	414.87	416.13	419.14	423.46	409.89
18	SURYAPET	416.56	416.71	425.59	430.53	404.61
19	TUKKAPUR	411.23	411.71	423.38	427.36	403.15
20	TIPPAPUR	411.28	412.04	423.28	426.23	404.39

Voltages profile at various 220kV Major substations as on 08.03.2024

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	BONGULUR	224.65	224.62	231.59	234.12	216.75
2	BOMMAKAL	223.5	214.08	233.8	235.34	210.12
3	BHEEMGAL	218.55	215.65	230.47	232.73	210.17
4	BHEEMGHAPUR	225.95	215.65	233.56	235.19	211.03
5	BHONGIR	223.17	221.37	230.92	233.48	215.34
6	BELLAMPALLY	228.19	224.9	236.89	238.83	220.72
7	BRAMHANAKOTKUR	224.21	224.33	228.67	232.03	212.43
8	BUDIDAMPAD	227.57	224.03	233.69	235.95	218.55
9	CHALAKURTHY SWS	220.13	218.45	226.66	230.86	211.16
10	DICHPALLY	223.43	222.11	235.42	236.83	216.77
11	DINDI	225.4	224.14	234.45	237.32	217.42
12	DURSHED	221.77	212.1	232.08	233.37	208.56
13	ERRAGADDA	226.19	225.04	232.05	235.07	215
14	FABCITY	224.76	224.16	230.94	233.69	216.23
15	HIAL	223.04	222.91	229.2	231.9	214.98
16	HAYATHNAGAR	227.82	226.74	233.23	236.6	218.89
17	HUZURABAD	226.37	212.94	236.91	236.91	210.27
18	GHANAPUR	227.58	226.39	233.05	236.19	219.01
19	GANGARAM	225.92	215.45	233.39	235.12	210.87
20	IMLIBUN	224.98	224.7	231.42	233.64	217.03
21	JAGITYAL	230.91	221.65	240.64	242.1	217.97
22	JURALA	211.82	211.42	225.28	227.82	203.69
23	KALWAKURTHY	220.65	219.32	231.57	234.36	211.4
24	KALLUR	226.7	224.39	233.49	233.49	222
25	KONDAMALLEPALLY	220.6	219.05	230.81	233.48	212.09
26	KAMAREDDY	210.74	207.76	231.97	233.68	203.79
27	KONDAPAKA	216.04	213.56	232.85	234.44	209.09
28	MADGULA	221.16	220.53	229.75	232.24	213.15
29	MAHABUBNAGAR	218.55	218.55	231.76	234.02	209.53

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
30	MEDCHAL	219.84	219.19	227.57	229.83	212.43
31	MEDARAM	226.56	224.99	237.31	240.8	218.99
32	MAMIDIPALLY	223.38	223.38	229.5	232.08	215.65
33	MIYAPUR	223.74	222.57	230.51	232.92	215.54
34	MALYALAPALLY	228.59	227.74	236.22	238	223.31
35	MANUGURU	224.98	222.65	229.52	230.73	219.17
36	MIRYALAGUDA	215.67	213.34	227.23	230.74	203.75
37	MINPUR	195.07	192.44	230.07	231.98	188.72
38	MOULALI	226.67	226.1	232.72	235.78	218.67
39	MURMUR	227.82	225.02	236.64	238.12	220.4
40	NAGOLE	226.47	225.26	232.08	235.01	217.74
41	NAGARAM	226.61	216.81	234.09	235.68	212.25
42	NARKETPALLY	215.75	214.75	230.35	232.95	207.24
43	NIRMAL	227.88	222.43	235.45	236.98	217.95
44	OSMANIA	226.75	225.78	233.33	235.85	218.32
45	PARGI	217.76	215.13	230.29	233.06	210.68
46	PEDAGOPATHI	227.2	225	232.58	234.69	220.08
47	PULAKURTHY	228.53	218.44	236.07	237.75	213.83
48	PULIYATANDA	222.62	220.34	232.22	233.56	214.44
49	PUTTAGANDITHANDA	223.51	221.17	233.32	234.56	215.42
50	RAMAGIRI	229.24	228.17	231.73	234.46	211.54
51	SHADNAGAR	220.5	219.55	226.94	229.55	212.52
52	SHAMAHABAD	223.53	222.81	229.55	232.11	214.49
53	SALIVAGU	227	216.76	234.53	236.11	212.17
54	SIRICILLA	222.24	214.76	236.02	237.98	212.4
55	SADASHIVAPET	216.48	214.64	224.65	226.84	208.47
56	SITAPURAM	215.24	212.76	224.85	226.94	202.61
57	SEETHARAMPATNAM	228.42	226.63	232.65	234.58	222.4
58	SIDDIPET	215.81	211.54	233.09	234.69	207.12
59	SINGOTAM	219.94	220.97	231.7	234.21	211.66

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
60	SHANKARPALLY	222.78	221.95	230.67	233.09	214.94
61	SHAPURNAGAR	226.96	225.3	233.7	236.2	217.59
62	SURYAPET	221.93	221.03	233.07	235.19	214.02
63	THIMMAJIPET	220.51	217.87	231.29	233.94	212.52
64	TANDUR	228.15	220.46	236.72	240.11	215.76
65	VEMANUR	229.24	224.4	237.78	239.46	220.27
66	WADDEKOTHAPALLY	225.74	218.47	236.6	238.56	214.05
67	WARANGAL	227.25	215.65	235.3	236.92	210.82
68	WANPARTHY	217.77	218.99	229.6	231.65	209.9

II. FY: 2022-23

a. PERIODS WHEN FREQUENCY WAS BEYOND PRESCRIBED LIMITS DURING FY:2022-23

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

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

b. 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 on 30.03.2023

400kV Level						
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

220kV Level						
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

132kV Level						
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 400kVsubstations on 30.03.2023

S.No.	STATION NAME	00:00	08:00	19:00	Max	Min
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	MAHABOOBNAGAR	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 on 30.03.2023

S.No.	STATION NAME	00:00	08:00	19:00	Max	Min
1	BONGULUR	225.2	220.97	233.58	234.76	217.9
2	BHEEMGAL	220.73	213.52	232.27	234.02	210.17

S.No.	STATION NAME	00:00	08:00	19:00	Max	Min
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

III. FY: 2021-22

a. PERIODS WHEN FREQUENCY WAS BEYOND PRESCRIBED LIMITS DURING FY:2021-22

The details of frequency in Average, Maximum, Minimum and % time experienced during FY-2021-22 is shown below.

Month	Average	Maximum		Minimum	
	HZ	HZ	Date	HZ	Date
Apr-21	50.00	50.29	4th	49.69	11th
May-21	50.00	50.28	1st	49.63	28th
Jun-21	50.00	50.27	4th	49.64	24th
Jul-21	50.01	50.26	20th	49.51	6th
Aug-21	50.00	50.22	1st	49.53	26th
Sep-21	50.01	50.23	10th & 25th	49.50	24th
Oct-21	49.99	50.29	26th	49.50	7th
Nov-21	50.00	50.27	28th	49.63	17th
Dec-21	50.00	50.34	20th	49.62	31st
Jan-22	50.00	50.28	16th	49.65	15th
Feb-22	50.00	50.26	6th	49.64	11th
Mar-22	49.98	50.31	3rd	49.54	22nd
Year	**50.00**	**50.34**	**20.12.2021**	**49.50**	**24th Sep'21 & 7th Oct'21**

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Apr-21	7.97	75.08	16.96
May-21	6.64	74.5	18.86
Jun-21	6.11	74.52	19.38
Jul-21	5.35	75.06	19.58
Aug-21	7.69	77.43	14.89
Sep-21	4.18	77.03	18.79
Oct-21	11.1	74.38	14.51
Nov-21	7.99	74.1	17.88
Dec-21	6.91	73.14	19.94
Jan-22	5.84	75.66	18.51
Feb-22	5.81	77.24	16.95
Mar-22	14.5	73.42	12.09
Average	**7.51**	**75.13**	**17.36**

b. VOLTAGES OF TS SYSTEM FOR 2021-22

SCADA data of various stations on 29.03.2022 with the time specified.

220kV Level						
S.No.	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	KTPS-V	231.61	225.18	233.17	235.5	223.08
2	LOWER JURALA	221.87	210.29	229.04	232.6	207.01
3	U.JURALA	222.62	210.82	230.05	233.5	207.39
4	N'SAGAR MAIN	228.86	221.21	235.58	237.6	214.07

132kV Level						
S.No.	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	N'SAGAR	136.31	131.8	140.67	141.8	127.52
2	RTS-B	143.2	142.1	142.9	144.5	138.7

Sl.NO	**400kV SUB-STATION/LIS NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	CHANDULAPUR	416.13	406.62	422.6	426.6	402.7
2	DICHPALLY	419.72	406.26	422.58	429.07	401.72
3	DINDI	419.78	403.88	422.18	427.03	400.79
4	GAJWEL	417.01	407.64	422.81	427.61	402.71
5	JANGAON	420.69	408.39	423.67	428.72	405.73
6	JULURUPADU	420.19	409.02	422.57	425	406.65
7	KETHIREDDY PALLI	420.45	408.05	426.88	433.27	402.56
8	MAHABOOBNAGAR	420.39	409.14	424.39	433.55	401.91
9	MAHESWARAM	416.94	405.12	420.03	426.15	400.05
10	MAMIDIPALLY	412	403	420	422	400
11	MEDARAM	418.38	409.38	423.27	427.86	404.83
12	NARSAPUR	418.08	405.33	424.38	428.49	403.21
13	NIRMAL	419.73	407.43	425.23	429.98	403.5
14	RAMADUGU	418.36	409.36	423.48	427.98	404.76

Sl.NO	400kV SUB-STATION/LIS NAME	00:00	08:00	19:00	Max	Min
15	SHANKARPALLY	417.12	404.5	422.49	428.38	400.73
16	SUNDILA	416.63	412.61	420.18	424.23	409.09
17	SURYAPET	419.62	409.79	423.84	428.67	407.32
18	TIPPAPUR	417.75	407.81	423.85	427.03	403.38

S.NO	220kV SUB-STATION/ LIS NAME	00:00	08:00	19:00	Max	Min
1	BONGULUR	228.92	220.88	230.85	234.16	218.62
2	BHEEMGAL	219	211	232	232	210
3	BHONGIR	226.28	218.89	231.08	234.87	216.07
4	CHALAKURTHY SWS	234	225	242	242	222
5	CHANDRAYANAGUTTA	229	220.4	231.2	233.9	217.7
6	DINDI	227	218	234	236	216
7	FABCITY	227	221	231	232	217
8	GACHIBOWLI	229	220	228	235	220
9	HAYATHNAGAR	230.1	223.17	231.68	235.63	220.35
10	IMLIBUN	228.12	220.53	229.41	233.29	218.27
11	JAGITYAL	231.12	218.87	234.98	237.88	218.55
12	KALWAKURTHY	223.47	212.02	229.22	232.49	210.19
13	KONDAMALLEPALLY	223.69	216.19	229.1	231.41	210.72
14	KAMAREDDY	219.88	211.48	207.08	219.88	207.08
15	KONDAPAKA	223.98	215.43	230.92	234.15	214.33
16	MAHABUBNAGAR	223.06	211.78	230.47	234.02	208.56
17	MEDCHAL	223.06	215.33	225.32	228.86	212.1
18	MEDARAM	231.38	217.05	233.82	237.69	216.21
19	MAMIDIPALLY	226.6	219.19	228.22	231.76	217.26
20	MOULALI	229.33	222.92	231.26	234.9	218.89
21	MURMUR	232.05	220.83	234.68	237.72	220.48
22	NARKETPALLY	217.69	210.74	229.7	233.22	206.09
23	NIRMAL	230.8	219.05	235.2	238.01	218.28
24	OSMANIA	229.81	222.8	231.54	235.78	219.86
25	PARGI	226.47	215.97	232.56	235.5	212.56
26	SIDDIPET	224	202	224	227	202
27	SINGOTAM	223.64	212.75	231.38	234	210.13
28	SHANKARPALLY	228.2	219.23	232.29	235.57	218.05

S.NO	220kV SUB-STATION/ LIS NAME	00:00	08:00	19:00	Max	Min
29	SHAPURNAGAR	221.4	217.2	226.8	226.8	211.6
30	SURYAPET	224.91	216.92	231.43	234.03	216.91

IV. FY: 2020-21

a. PERIODS WHEN FREQUENCY WAS BEYOND PRESCRIBED LIMITS DURING FY:2020-21

The details of frequency duration, maximum and minimum frequency experienced during FY-2020-21 is shown below.

Southern Region frequency during 2020-21

Month	Average	Maximum		Minimum	
	HZ	HZ	Date	HZ	Date
Apr-20	50.01	50.30	4th	49.61	01st
May-20	50.01	50.29	26th& 28th	49.57	28th
Jun-20	50.01	50.31	21st	49.63	9th
Jul-20	50.00	50.39	5th	49.62	14th
Aug-20	49.99	50.23	30th	49.60	31st
Sep-20	50.00	50.20	26th	49.64	24th
Oct-20	50.00	50.27	12th	49.70	28th
Nov-20	50.00	50.27	16th	49.68	5th
Dec-20	50.00	50.26	25th	49.66	16th
Jan-21	50.00	50.24	14th,26th& 30th	49.70	30th
Feb-21	50.00	50.31	11th	49.60	25th
Mar-21	50.00	50.32	21st	49.66	17th
Year	**50.00**	**50.39**	**05.07.2020**	**49.57**	**28.05.2020**

Percentage of time frequency varied:

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Apr-20	5.09	75.03	19.88
May-20	4.19	76.38	19.43
Jun-20	4.45	76.56	18.98

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Jul-20	6.71	78.01	15.28
Aug-20	5.99	80.87	13.14
Sep-20	4.23	84.11	11.65
Oct-20	3.91	81.74	14.35
Nov-20	4.46	79.81	15.73
Dec-20	4.79	75.13	20.08
Jan-21	5.19	75.54	19.27
Feb-21	6.89	75.41	17.69
Mar-21	7.16	72.77	20.07
Average	**5.26**	**77.61**	**17.13**

b. VOLTAGES OF TS SYSTEM FOR 2020-21

Voltages recorded at some of the Generating Stations, Grid sub-stations and Tail-end sub-stations on 26.03.2021, the date on which the State Peak Demand Met i.e.,13688 MW are as tabulated below.

Voltages profile at various Generating Stations as on 26.03.2021

400kV Level						
S.No.	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	BHUPALAPALLY(KTPP)	407.94	399.06	409.95	**413**	**398**
2	BTPS	415.47	409.32	417.7	**420.4**	**407.79**
3	KTPS-VI	411.73	404.53	415.8	**419.98**	**403**
4	KTPS-VII	416.22	409.13	420.43	**423.81**	**407.32**
5	SINGARENI	418.21	415.16	419.75	**424.75**	**413.62**
220kV Level						
S.No.	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	KTPS-V	227.78	222.65	230.5	**232.95**	**221.48**
2	LOWER JURALA	216.17	216.17	216.17	**216.17**	**216.17**
3	U.JURALA	214.28	205.09	222.11	**224.98**	**201.33**
4	N'SAGAR MAIN	224.17	217.5	228.43	**231.01**	**215.45**
132kV Level						
S.No.	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	N'SAGAR	135.24	131.13	138.52	**140.11**	**133.7**
2	RTS-B	108.51	102.66	109.65	**112.03**	**106.33**

Voltages profile at various 400kVsubstations as on 26.03.2021

S. No.	STATION NAME	00:00	08:00	19:00	Max	Min
1	CHANDULAPUR	412.31	403.61	418.04	**422.64**	**400.32**
2	DICHPALLY	413.64	402.3	421.78	**427.04**	**398.15**
3	DINDI	413.04	401.41	419.9	**422.42**	**398.74**
4	GAJWEL	410.01	401.38	417.9	**422.98**	**397.46**
5	JANGAON	416.21	406.18	422.88	**427.76**	**405.93**
6	JULURUPADU	420.16	412.98	425.02	**427.5**	**410.33**
7	KETHIREDDY PALLI	414.15	403.24	421.37	**427.67**	**399.58**
8	MAHABOOBNAGAR	412.05	402.8	420.95	**427.45**	**397.15**
9	MAHESWARAM	411.93	401.55	418.85	**424.53**	**398.01**
10	MAMIDIPALLY	409.51	399.18	415.72	**421.41**	**395.63**
11	MEDARAM	415.22	406.48	420.22	**425.37**	**404.08**
12	NARSAPUR	411.9	402.46	418.42	**422.63**	**398.27**
13	NIRMAL	415.4	404.38	422.4	**428.12**	**400.05**
14	RAMADUGU	415.2	406.49	420.31	**425.52**	**404.08**
15	SHANKARPALLY	411.45	401.1	418.8	**425.01**	**397.18**
16	SUNDILA	414.84	410.01	417.59	**422.49**	**408.22**
17	SURYAPET	419.29	409.66	424.01	**426.45**	**407.17**
18	TIPPAPUR	414.64	405.9	420.2	**424.92**	**402.75**

Voltages profile at various 220kV Major substations as on 26.03.2021

S. NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	BONGULUR	226.76	219.52	230.18	**233.66**	**218.13**
2	BHEEMGAL	200.86	189.07	210.46	**212.43**	**186.97**
3	BHONGIR	221.96	216.07	227.58	**231.54**	**212.96**
4	CHALAKURTHY SWS	222.69	215.84	225.10	**227.6**	**214.39**
5	CHANDRAYANAGUTTA	193.51	186.22	195.54	**200.18**	**185.04**
6	DINDI	226.36	217.69	230.71	**233.41**	**216.36**
7	FABCITY	224.58	217.64	228	**231.65**	**216.2**
8	GACHIBOWLI	225.27	217.41	228.41	**232.6**	**215.1**
9	HAYATHNAGAR	230.19	222.7	231.36	**234**	**222**

S. NO	STATION NAME	00:00	08:00	19:00	Max	Min
10	IMLIBUN	226.6	219.64	229.74	**233.6**	**217.92**
11	JAGITYAL	228.32	214.47	234.11	**236.59**	**213.72**
12	KALWAKURTHY	219.86	210.78	226.2	**229.14**	**208.2**
13	KONDAMALLEPALLY	219.42	212.98	223.46	**226.48**	**211**
14	KAMAREDDY	207.65	201.13	226.33	**229.07**	**198.63**
15	KONDAPAKA	215.47	209.05	227.09	**229.93**	**207.29**
16	MAHABUBNAGAR	216.65	207.89	226.37	**228.86**	**204.69**
17	MEDCHAL	217.45	211.59	223.15	**226.93**	**208.88**
18	MEDARAM	230.12	220.23	234.44	**237.01**	**219.5**
19	MAMIDIPALLY	223.22	216.69	226.72	**230.47**	**215**
20	MOULALI	234.7	226.9	235.8	**238.9**	**226.8**
21	MURMUR	228.45	219.1	233.39	**235.48**	**218.18**
22	NARKETPALLY	214.2	208.28	225.87	**229.58**	**206.14**
23	NIRMAL	226.78	224.32	233.2	**236.13**	**215.06**
24	OSMANIA	230.84	224.21	232.25	**236.06**	**222.25**
25	PARGI	221.29	211.72	228.81	**232.9**	**209.14**
26	SIDDIPET	212.26	198.53	214.26	**220.21**	**197.62**
27	SINGOTAM	216.35	207.3	225.17	**226.77**	**204.7**
28	SHANKARPALLY	224.29	216.71	228.53	**232.61**	**214.85**
29	SHAPURNAGAR	226.2	218.69	229.78	**233.89**	**215.96**
30	SURYAPET	223.37	218.06	229.12	**231.76**	**218.13**

V. FY: 2019-20

a. PERIODS WHEN FREQUENCY WAS BEYOND PRESCRIBED LIMITS DURING FY:2019-20

The details of frequency duration, maximum and minimum frequency experienced during FY-2019-20 is shown below.

Southern Region frequency during 2019-20

Month	Average	Maximum		Minimum	
	HZ	HZ	Date	HZ	Date
Apr-19	50.00	50.29	7th& 29th	49.65	01st
May-19	50.00	50.33	01st	49.65	09th& 21st
Jun-19	49.99	50.31	16th	49.63	11th
Jul-19	50.00	50.32	7th,15th& 24th	49.64	04th
Aug-19	50.00	50.32	15th	49.55	20th
Sep-19	50.01	50.27	05th	49.62	09th & 18th
Oct-19	50.01	50.31	23rd	49.67	24th
Nov-19	50.01	50.27	26th	49.65	18th
Dec-19	50.01	50.34	15th	49.65	11th
Jan-20	50.00	50.27	01st	49.69	6th& 26th
Feb-20	50.00	50.33	21st	49.68	04th
Mar-20	50.01	50.32	22nd	49.69	19th& 31st
Year	**50.00**	**50.33**	**01.05.2019 & 21.02.2020**	**49.62**	**09.09.2019 & 18.09.2019**

Percentage of time frequency varied:

Month	<49.90 Hz	IEGC BAND (49.90-50.05 Hz)	>50.05 Hz
Apr-19	7.33	72.69	19.98
May-19	8.25	72.4	19.35
Jun-19	10.50	70.09	19.41
Jul-19	7.50	68.35	24.15
Aug-19	7.28	72.18	20.54
Sep-19	4.57	74.83	20.61
Oct-19	3.19	76.72	20.10
Nov-19	4.07	73.39	22.54
Dec-19	6.27	71.31	22.42
Jan-20	6.48	74.72	18.80
Feb-20	7.06	73.49	19.45
Mar-20	5.37	70.64	23.99
Average	**6.49**	**72.56**	**20.95**

b. VOLTAGES OF TS SYSTEM FOR 2019-20

Voltages recorded at some of the Generating Stations, Grid sub-stations and Tail-end sub-stations on 28.02.2020, the date on which the State Peak Demand Met i.e 13168 MW are as tabulated below.

Voltages profile at various Generating Stations as on 28.02.2020

400kV Level						
S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	BHUPALAPALLY(KTPP)	411	402	412	415	398
2	BTPS	415	403	417	419	399
3	KTPS-VII	422	410	423	425	406
4	KTPS-VI	417	404	416	420	399
5	SINGARENI	419	417	420	423	412

220kV Level						
S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	KTPS-V	230	223	229	231	221
2	LOWER JURALA	231	224	230	233	221
3	U.JURALA	233	220	235	237	217
4	N'SAGAR MAIN	231	220	233	237	215

132kV Level						
S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	N'SAGAR	140	136	141	143	132
2	RTS-B	137	122	139	141	122

Voltages profile at various 400kVsubstations as on 28.02.2020

S.NO	**STATION NAME**	**00:00**	**08:00**	**19:00**	**Max**	**Min**
1	CHANDULAPUR	416	405	418	422	399
2	DICHPALLY	416	410	421	430	395

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
3	DINDI	424	412	422	426	404
4	GAJWEL	416	405	418	422	398
5	JANGAON	419	404	421	425	399
6	JULURUPADU	423	410	423	425	405
7	KETHIREDDY PALLI	421	409	422	428	399
8	MAHABOOBNAGAR	421	413	423	428	402
9	MAHESWARAM	417	411	419	427	398
10	MAMIDIPALLY	419	405	417	423	396
11	MEDARAM	417	409	419	422	403
12	NARSAPUR	418	407	419	425	398
13	NIRMAL	417	409	422	429	397
14	RAMADUGU	418	409	420	423	403
15	SHANKARPALLY	418	407	419	426	396
16	SUNDILA	415	412	416	419	406
17	SURYAPET	429	409	423	429	402
18	TIPPAPUR	418	408	421	424	402

Voltages profile at various 220kV Major substations as on 28.02.2020

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
1	BONGULUR	234	225	234	236	222
2	BHEEMGAL	231	222	227	237	219
3	BHONGIR	230	218	231	233	215
4	CHALAKURTHY SWS	229	219	231	234	214
5	CHANDRAYANAGUTTA	229	222	228	230	218
6	DINDI	226	218	230	235	212
7	FABCITY	231	219	227	233	214
8	GACHIBOWLI	233	225	232	235	218
9	HAYATHNAGAR	229	220	227	231	215
10	IMLIBUN	233	224	230	234	219
11	JAGITYAL	233	224	231	235	218
12	KALWAKURTHY	227	219	228	232	213
13	KONDAMALLEPALLY	224	214	224	227	209
14	KAMAREDDY	228	220	227	230	216
15	KONDAPAKA	225	211	228	232	208
16	MAHABUBNAGAR	233	218	235	236	205
17	MEDCHAL	225	216	227	230	210

S.NO	STATION NAME	00:00	08:00	19:00	Max	Min
18	MEDARAM	227	216	226	230	212
19	MALKARAM	231	219	228	232	216
20	MAMIDIPALLY	228	215	229	231	212
21	MOULALI	223	211	228	231	206
22	MURMUR	219	211	226	228	207
23	NARKETPALLY	231	221	229	236	218
24	NIRMAL	216	206	225	228	202
25	OSMANIA	234	225	235	237	221
26	PARGI	237	229	237	238	226
27	SIDDIPET	230	219	229	233	214
28	SINGOTAM	229	221	228	232	215
29	SHANKARPALLY	225	217	226	230	213
30	SHAPURNAGAR	231	222	229	233	217
31	SURYAPET	231	221	230	234	215

ACCIDENTS

1. Requirement in the Guidelines

Number of reported fatal and non-fatal accidents, differentiating between accidents involving humans and those involving animals. An analysis of steps to reduce such accidents must also be provided. (Guidelines - 11c)

2. TGTransco's response

Total 7 Nos. Fatal accidents and 16 Nos. non-fatal accidents were reported in 2019-20 to 2023-24 upto 31st Mar'2024 during the 4th Control Period.

TGTransco constantly reviews the existing safety practices and procedures with an endeavor to minimize and achieve a zero accident record. The statistics for 2019-20 to 2023-24 upto 31st Mar'2024 are shown in the Table-I & II and the reasons for causing the accidents are summarized in Table-III.

Table-I: Summary of Electrical Accidents occurred during 4th Control Period

ACCIDENTS	2019-20	2020-21	2021-22	2022-23	2023-24	Total
FATAL						
Humans	1	2	0	2	2	**7**
Animals/Others	0	0	0	0	0	**0**
NON FATAL						
Humans	7	3	1	4	1	**16**
Animals/Others	0	0	0	0	0	**0**

Table-II (a): Details of Accidents recorded in TGTRANSCO for FY 2019-20

ACCIDENTS	Hyderabad Metro Zone	Hyderabad Rural Zone	Warangal Zone	KarimNagar Zone	Total
FATAL					
Human	0	0	1	**0**	**1**
Animals/Others	0	0	0	**0**	**0**
NON FATAL					
Human	2	0	2	**3**	**7**
Animals/Others	0	0	0	**0**	**0**

Table-II (b): Details of Accidents recorded on EHT System in TGTRANSCO for FY 2020-21

ACCIDENTS FATAL	Hyderabad Metro Zone	Hyderabad Rural Zone	Warangal Zone	KarimNagar Zone	Total
Human	0	0	2	**0**	**2**
Animals/Others	0	0	0	**0**	**0**
NON FATAL					
Human	0	3	0	**0**	**3**
Animals/Others	0	0	0	**0**	**0**

Table-II (c): Details of Accidents recorded on EHT System in TGTRANSCO for FY 2021-22

ACCIDENTS FATAL	Hyderabad Metro Zone	Hyderabad Rural Zone	Warangal Zone	KarimNagar Zone	Total
Human	0	0	0	**0**	**0**
Animals/Others	0	0	0	**0**	**0**
NON FATAL					
Human	1	0	0	**0**	**1**
Animals/Others	0	0	0	**0**	**0**

Table-II (d): Details of Accidents recorded on EHT System in TGTRANSCO for FY 2022-23

ACCIDENTS FATAL	Hyderabad Metro Zone	Hyderabad Rural Zone	Warangal Zone	KarimNagar Zone	Total
Human	1	0	0	**1**	**2**
Animals/Others	0	0	0	**0**	**0**
NON FATAL					
Human	1	3	0	**0**	**4**
Animals/Others	0	0	0	**0**	**0**

Table-II (e): Details of Accidents recorded on EHT System in TGTRANSCO for FY 2023-24

ACCIDENTS FATAL	Hyderabad Metro Zone	Hyderabad Rural Zone	Warangal Zone	KarimNagar Zone	Total
Human	2	0	0	**0**	**2**
Animals/Others	0	0	0	**0**	**0**
NON FATAL					
Human	1	0	0	**0**	**1**
Animals/Others	0	0	0	**0**	**0**

Table-III:

Details of Fatal/Non-fatal electrical accidents (Departmental/Non-Departmental) in TGTRANSCO for the period from FY: 2019-20 to FY: 2023-24(till date).

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
FY 2019 - 20									
1	Metro-West	132KV SS RC Puram	05.05.2019	Dept.	Non fatal	Human (Sri.R.Ramakrishna Artisan Gr-I)	Sri. R.Rama krishna,Artisian Grade-1 was got electrocuted while carrying earth rods under 132KV Bus.	Immediately, he was shifted to nearest hospital (Archana hospital,Madinaguda)for first aid,later shifted to yashoda hospital for better treatment.	Treatment expenditure paid by TGTRANSCO
2	Khammam	220KV SS Budidampadu, Khammam at 220KV Waddekothapally-II feeder	24.05.2019	Dept.	Non-Fatal	Human (Sri.Sk.Madar, Artisan Gr-II)	Electrical Accident occurred due to the Earth rod went to the induction zone at CB towards Bus Isolator which is in live	Ensure CB must be in tripped condition and Bus & Line isolators must be opened. Immediately rushed to Hospital for treatment.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
3	Metro-East	220/33KV GHIAL Substation	09.07.2019	Dept.	Non-Fatal	Human (Sri.B.Vijaya Kumar Artisan Gr-II)	The pre commissioning tests and preparation of charging works were being carried out at 220/33KV GHIAL. On 09.07.2019,at 12:39 Hrs. Sri B.Vijaya Kumar, Artisan Grade-II has climbed the 33KV PT Structure of 25MVA PTR-I of 220/33KV GHIAL SS for insulation resistance testing and also for noting the name plate details. After completion of work while he was getting down of the structure, unfortunately he was fell down on ground due to electric shock.	He was immediately taken to Apollo DRDO hospital and has undergone medical treatment and recovered. Further, he selected as JLM in TGNPDCL and relieved from the post of Artisan Gr-II on 19.09.2019AN	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
4	Karimnagar	132/33KV SS Manthani	16.07.2019	Dept.	Non-Fatal	Human (Sri.B.Mallaiah, Artisan Gr-II)	Opened the earth rod connections without removing the earth rods on line.	Admitted in nearest Govt hospital for first aid.	-
5	Khammam	220KV Asupaka-Aswaraopet-I Line at Loc.No.44	30.08.2019	Dept.	Fatal	Human (Sri.M.Yedukondalu)	While stringing of Y-Ph conductor suddenly the pulley at bottom of tower was broken and load suddenly got released and rope hit the person accidently. He fallen from tower structure to the ground	Immediately rushed to Hospital for treatment and then he expired.	Compensation was paid for an amount of Rs.10 Lakhs.
6	Karimnagar	132/33KV SS Karimnagar	09.11.2019	Dept	Non fatal	Human (Sri. Md.Amzad Khan , Line Inspector)	Due to closing of bus sectionalizer isolator, 33kV supply got extended to the equipment while the injured person was attempting to close the bus isolator of 33kV Kothapally feeder with the help of MS rod	Immediately shifted to local private hospital through 108 ambulance and then later to hospital in Hyderabad.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
7	Nizamabad	220/132/ 33kVSS Dichpally	09-12-2019 12:25Hrs.	Dept.	Non-fatal	Human (Sri.Md. Gouse Artisan Gr-I)	In the process of maintaining of 220KV Yanampally-Dichpally - IV for attending periodical maintenance and the feeder was tripped and the line isolator opened by the Artisan-II before opening bus side isolator Mr. Md. Gouse Artisan-I was climbing to keep megger clip to the breaker limb by oversight he has gone to induction zone. There by caused injury himself due to induction.	Immediately rushed to Hospital for treatment. Conducted orientation programe to the Artisans to avoid such incidents in the future for the safety of men and material.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non-Fatal	Human / Others			
8	Warangal	Raghunathpally Village limits, Dist: Janagaon132KV Raghunathpally-Ghanpur line at Loc.No.11.	14.02.2020	Dept.	Non-Fatal	Human (Artisan Gr-IV)	LC was taken at 11:33 Hrs/14-02-2020 on 132KV Raghunathpally - Ghanpur Ckt - I for replacement of flashed over discs at Loc.No.11 Top phase and CBD Gang were attending the flashed over replacement work at Loc.No.11 on Ckt - I. At 12:05 Hrs Ckt - II tripped on general fault. As there is no earth wire on towers due to this fault current took tower as path and at the same time the artisan was touching the tower and ground, the fault path took through Artisan as he was standing in the wet paddy field.	First Aid and treatment was taken at Ghanpur SSK Multi Specialty Hospital.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
FY 2020 - 21									
1	Nalgonda	132/33 KV SS Kodada	28.04.2020 & 22:30 Hrs	Dept.	Non - Fatal	Human (Sri.J. Venkata rami Reddy, JLM)	Station Transformer Limbs and the tank were blasted and oil gushed out and fallen on the backside of the employee.	Immediately the First aid was given to him at Government Hospital, Kodada and admitted in Arogya hospital, Vyra Road, Khammaam where he was being treated and his condition was stable.	Treatment expenditure paid by TGTRANSCO
2	Nalgonda	132/33 KV SS Ramannapet	15.05.2020 & 19:20Hrs	Dept.	Non Fatal	Human (Sri.M. Ravi, Artisan Gr.II)	While inspecting the Substation yard, 5 MVAR Capacitor bank -1, 33KV R-Ph CT blasted and the broken material forcibly fallen on his left shoulder.	Immediately the First aid was given to him at Ramannapet Government Hospital and admitted in Yashoda hospital, Malkapet, Hyderabad, where he was being treated and his condition was stable.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
3	Sangareddy	132KV SS Wattipally	17.07.2020	Dept.	Non-Fatal	Human (Sri. P.Prabhu Lingam , Artisan Grade-II	While arresting of oil leakage from Y-phase CT of 132KV Jogipet feeder. Burning of earth wire due to induction on account of raising of earth rod near to jumper from bus isolator to breaker top pad clamp of 132 KV Jogipet feeder, without proper instructions from the concerned authority and without opening of bus isolator.	First Aid given and medical treatment provided at Sanjeevini Clinic, Wattipally.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
4	Khammam	Koyachilaka, Khammam Dist. Between Loc No.4 - 5 on 132KV Budidampadu - Arempula feeder	06.08.2020 @ 11:00 Hrs	Dept.	Fatal	Human (Sri.A.Madhava Rao, Artisan Gr-IV)	While cutting Eucalyptus tree it was fall down passing across feeder light induction was taken but the line was not tripped both fell downfrightened very much and cardiac arrest to one person. Immediately rushed to Hospital for treatment and then he expired.	LC to be avail while tree cutting and very much cautious while working in live line.	Compensation was paid for an amount of Rs.11,48,175/-
5	Khammam	220KVSS Manuguru	28.09.2020 around 10:40hrs	Dept.	Fatal	Human (Sri.E.Sridhar, A.E)	Electrical shock during Hot line Work	Immediately arranged for treatment in M/s.SCCL Manuguru and then he expired.	Compensation was paid for an amount of Rs.25 Lakhs.

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
FY 2021 - 22									
1	Metro-West	132/33 KV SS Chintal	17.06.2021	Dept.	Non Fatal	Human (Sri.B.Mohan Krishna, Artisan Gr.I,)	AE/M/Chintal has instructed sri B.Mohan Krishna, to fix the clamp to newly cut jumper at control room. But, without any consent of concerned AE/M ,B.Mohankrishna had climbed the 33KV Jeedimetla feeder structure at bus isolator side and came in to induction zone.	Immediately rushed to Hospital for treatment.	Treatment expenditure paid by TGTRANSCO

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
FY 2022 - 23									
1	Nalgonda	132/33KV SS Nagaram	26.05.2022	Dept.	Non-Fatal	Sri.K.Vijay Kumar, Artisan Grade-II	Slipped and fell down while quenching the fire of R-Ph 33KV Bus PT-1.	Immediately rushed to Hospital for treatment.	Treatment expenditure paid by TGTRANSCO
2	Metro-West	220KV SS Gachibowli	27.07.2022	Dept.	Non-Fatal	Sri.P.Raghavendar, Artisan Gr-I	Due to overlooking of closed position of isolator by shift artisan.	Immediately rushed to Hospital for treatment.	Treatment expenditure paid by TGTRANSCO
3	Karimnagar	132KV RSS-Yellampally Line at Loc.No.43-44	25.10.2022	Dept.	Fatal	Human (Sri.Banoth Ramesh, Artisan Grade IV)	While trimming the teak wood tree branches between Loc.No.43 to 44 in 132kV RSS-Yellampally Line,the edge of branch came into induction zone due to sudden and heavy wind flow. The person trimming the tree branches got electrocuted.	Admitted in Govt. Medical College& General Hospital, Ramagundam immediately after the incident occurred.	-

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
4	Nalgonda	132KV SS Ramannapet	07.11.2022	Dept.	Non-Fatal	Human (Sri.V Ramesh, JLM/MRT)	Slipped and fell down on ground while getting from CT structure.	Immediately rushed to Hospital for treatment.	Treatment expenditure paid by TGTRANSCO
5	Nalgonda	400/220/132KV SS Suryapet	16.11.2022	Dept.	Non-Fatal	Human (Sri.N.Nagaraju, (JLM) & Sri.R.Nageshwar Reddy,(Artisan Grade-II)	Megger connected wires was moved into induction zone.	Immediately rushed to Hospital for treatment.	Treatment expenditure paid by TGTRANSCO
6	Metro-West	132KV SS Medchal	23.01.2023	Dept.	Fatal	Human (Sri.P.Ramachndru , Artisan Gr-III)	Sri.P.Ramachandru, climbed the 33KV Kompally feeder CB without issue of LC & opening of bus isolator.	Immediately rushed to Hospital for treatment and he expired on 25.01.2023 while taking treatment.	Compensation was paid for an amount of Rs.14,41,050/-

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
FY 2023 - 24 (up to 31 Mar'2024)									
1	Hyderabad/ OMC/ Metro-Central Circle	132KV SS Asifnagar	11.04.2023	Dept.	Non-Fatal	Human (Sri.S.Suraj Kumar Artisan Gr.I & Sri.P.Suresh, Artisan Gr.II)	At 132KV SS Asifnagar, (a) 33KV Gudimalkapur feeder breaker limb got blasted at 13:25 hrs on 11.04.2023. The broken porcelain piece hit the radiator pipe of 100KVA Station transformer, a small hole formed & transformer oil gushed out from radiator, hence complete oil drained out from drain pipe. Simultaneously both 80MVA PTR's I & II pulled out. (b) 80MVA PTR I charged at 13:40 Hrs. (c) 80MVA PTR II charged at 13:50 Hrs. (d) All the 33KV feeders charged except 33KV Gudimalkapur feeder & station transformer. Later, after rectification works carried out on station transformer and oil filled back. While closing 33KV Bus isolator of station transformer, 100KVA Station transformer main tank got blasted and oil gushed out at 20:56Hrs and hot oil & flames fallen on shift operators i.e., Grade I & II (i.e., S.Suraj Kumar, Artisan Grade -I and P. Suresh Artisan Grade -I I) causing burns. The fire was extinguished by using available extinguishers.	The fire was extinguished by using fire extinguishers. Immediately both the injured artisans were moved to Yashoda Hospital, Malakpet Hyderabad and treatment provided to the Artisans.	a).Treatment expenditure paid by TGTRANSCO. b). Salary paid during their treatment period till they join back to their duties after complete recovery & fit to resume their duties because accident was taken place while they were performing duties at 132KV Asifnagar.

Sl. No.	Name of the Circle	Place at which accident occurred	Date	Type			Reasons	Remedial actions/ Remarks	Compensation paid, if any
				Dept., / Non - Dept.,	Fatal / Non - Fatal	Human / Others			
2	Hyderabad / OMC/Metro-West Circle	220KV Shapurnagar-Erragadda-Raidurg DC line (Between Loc.No.131 & 132), HMT Sathavahan Nagar Mainroad, Kukkatpally.	27.09.2023 @ 12:22 Hrs	Dept.	Fatal	Human (Sri.G.Naresh, Artisan Gr.III,)	While carrying out tree cutting work on 220KV Shapurnagar – Erragadda – Raidurg double circuit line, unforeseen heavy winds blown across the site caused some of the branches of Tree enter into induction zone of Line, thereby leading to an electric shock to Sri.G.Naresh, Artisan Grade-III on 27.09.2023 and died at 13:27 Hrs.	Immediately rushed to Hospital for treatment and doctors declared that he is expired.	Workmen compensation paid for an amount of Rs.14,59,800/- to legal heir of Sri.G.Naresh as per Workmen compensation act 1923
3	Medchal-Malkajgiri Dist./ Metro East Circle	220/132/33KV SS Moulali	09.11.2023	Dept.	Fatal	Human (Sri.T.Verraju, JLM)	JLM/Shift closed the bus sectionalizer which is under LC instead of opening 33KV feeder isolator due to which supply extended to bus section-IV resulted in electrocution of 2 members (1No. JLM and 1No. Artisan) working on bus section-IV. The JLM succumbed to death during treatment. The other member (Artisan) has been discharged after treatment.	Immediately rushed to Hospital for treatment.	For the deceased JLM, Rs.5,00,000/- sanctioned towards self funding scheme. Rs.13,60,275/- sanctioned towards workmen compensation act 1923.

Main reasons for Accidents and Remedial action to reduce accidents:

The fatal and Non-fatal accidents occurred for human beings mainly due to the induction to the adjacent live parts and slipping from the structure while carrying out the maintenance works due to anxiety/confusion.

Remedial action to reduce accidents:

For any lapse, suitable prompt action is taken against the concerned public or staff to discourage their negligence or casual approach.

The concerned superior staff takes deterrent action against all the erring field staff who fails to take safety precautions while working on lines and also ensure that adequate quantity of safety appliances are made available to all the concerned staff members. Safety training courses are regularly conducted.

Schedules for preventive maintenance of all CTs and PTs in the EHT Sub-Stations are given preventive maintenance schedules are also generated from the ERP system. It is also proposed to replace all aged CTs and PTs & PTRs sets with new sets through renovation and modernization schemes.

Classes are being conducted for the workmen on payday or any suitable working day to enlighten them on safety measures and to avoid electrical accidents by proper utilization of safety devices and precautions as per the safety rules.

Preventive steps:

- Standard construction practice is ensured whenever new lines are laid and energized.
- Clearances for O/H lines as specified in IE rules 77, 78, 79, 80 and 81 to be strictly maintained and verified at the time of statutory inspections of lines & sub-stations, before charging.
- Cradle Guards are provided under the O/H lines as required under IE Rules Nos. 66 and 91, regarding safety and protective devices, in order to render the lines electrically harmless in case it breaks.
- All metal supports of O/H lines and attached metallic fittings are permanently earthed as per I.E. Rule No.90.
- Danger Boards to be affixed wherever necessary in the local language.
- Anti-climbing devices to be provided to prevent people from scaling towers or poles.

BOUNDARY METERS (Status of Metering at Interface Points) :

1. Requirement in the Guidelines

Number of inadequate or defective meters. Program and phasing of investment for replacement. (Guidelines – 11d)

2. TGTransco's response

List of boundary points as on 31.03.2024

Sl.No.	DISCOM	Metering Point Type	No. of metering points	Discom Total
1	TGSPDCL	PTR LVs	370	659
2		EHT Consumers	118	
3		G-D	14	
4		D-D	4	
5		PDs (33kV, 11kV)	153	
6	TGNPDCL	PTR LVs	271	439
7		EHT Consumers	99	
8		G-D	15	
9		D-D	17	
10		PDs (33kV, 11kV)	37	
T-D Total (A)				**1098**

G - T		
Sl.No.	**Metering Point Type**	**No. ofMetering Points**
1	TGGENCO -TGTRANSCO	63
2	CTU	79
3	CPPs	26
4	IPPs	4
5	132kV EHT PDs	59
G-T Total (B)		**231**
Grand Total (A+B)		**1329**

ANNEXURE – III

ABSTRACT
Projected Contract Capacities for TRANSMISSION BUSINESS OF TGTRANSCO FOR THE PERIOD FROM FY:2024-25 to FY:2028-29

(in MW)

Sl. No.	Generating Station/ Unit/ Source	Installed Capacity (MW)	Net Capacity TS Share (MW)	TSDISCOMS' SHARE (Projected) (in MW)				
				(n+1) FY 2024-25	(n+2) FY 2025-26	(n+3) FY 2026-27	(n+4) FY 2027-28	(n+5) FY 2028-29
(A)	**GENCO THERMAL:**							
1	KTPS-V	500	455.00	455.00	455.00	455.00	455.00	455.00
2	KTPS-VI	500	462.50	462.50	462.50	462.50	462.50	462.50
3	KTPS-VII	800	758.00	758.00	758.00	758.00	758.00	758.00
4	KTPP-I	500	462.50	462.50	462.50	462.50	462.50	462.50
5	KTPP-II	600	558.00	558.00	558.00	558.00	558.00	558.00
6	RTS-B	62.5	56.25	56.25	56.25	56.25	56.25	56.25
7	BTPS	1080	988.20	988.20	988.20	988.20	988.20	988.20
8	YTPS	4000	3744.00	3744.00	3744.00	3744.00	3744.00	3744.00
	Total Thermal (A):	**8042.50**	**7484.45**	**7484.45**	**7484.45**	**7484.45**	**7484.45**	**7484.45**
(B)	**GENCO HYDEL:**							
1	SrisailamLeft Bank HES	900	889.20	889.20	889.20	889.20	889.20	889.20
2	NSPH	815.6	807.44	807.44	807.44	807.44	807.44	807.44
3	NSLCPH	60	59.40	59.40	59.40	59.40	59.40	59.40
4	Lower Jurala HES	240	237.60	237.60	237.60	237.60	237.60	237.60
5	Pulichintala	120	118.80	118.80	118.80	118.80	118.80	118.80
6	Priyadarshini Jurala HES	234	115.83	115.83	115.83	115.83	115.83	115.83
7	Pochampad PH (I-IV)	36	35.64	35.64	35.64	35.64	35.64	35.64
8	Singur	15	14.85	14.85	14.85	14.85	14.85	14.85
9	Nizam Sagar PH	10	9.90	9.90	9.90	9.90	9.90	9.90
10	Mini Hydel (Peddapalli)	9.16	9.07	9.07	9.07	9.07	9.07	9.07
11	Palair	2	1.98	1.98	1.98	1.98	1.98	1.98
	Total Hydel (B):	**2441.76**	**2299.71**	**2299.71**	**2299.71**	**2299.71**	**2299.71**	**2299.71**

Sl. No.	Generating Station/ Unit/ Source	Installed Capacity (MW)	Net Capacity TS Share (MW)	TSDISCOMS' SHARE (Projected) (in MW)				
				(n+1) FY 2024-25	(n+2) FY 2025-26	(n+3) FY 2026-27	(n+4) FY 2027-28	(n+5) FY 2028-29
(C)	**CENTRAL GENERATING STATIONS:**							
1	NTPC (SR)-I & II	2100	327.43	327.43	327.43	327.43	327.43	327.43
2	NTPC (SR) Stage-III	500	82.79	82.79	82.79	0.00	0.00	0.00
3	NTPC Talcher StageII	2000	203.54	203.54	203.54	203.54	203.54	203.54
4	NLC Stage-I	580	4.89	4.89	4.89	4.89	4.89	4.89
5	NLC Stage-II	790	6.43	6.43	6.43	6.43	6.43	6.43
6	NPC-MAPS	440	19.78	19.78	19.78	19.78	0.00	0.00
7	NPC-Kaiga Unit-I&II	440	60.77	60.77	60.77	60.77	0.00	0.00
8	NPC-Kaiga Unit-III & IV	440	64.63	64.63	64.63	64.63	0.00	0.00
9	NTPC Simhadri Stage-I	1000	507.91	507.91	507.91	507.91	507.91	0.00
10	NTPC Simhadri Stage-II	1000	241.89	241.89	241.89	241.89	241.89	241.89
11	NTECL Vallur Thermal Power Plant	1500	99.81	99.81	99.81	99.81	99.81	99.81
12	NLC Tamilnadu (Tuticorn) Unit-I & Unit II	1000	139.35	139.35	139.35	139.35	139.35	139.35
13	Kudigi Unit-I, II & III	2400	262.71	262.71	262.71	262.71	262.71	262.71
14	New Neyvelli Thermal Power plant	934	58.07	58.07	58.07	58.07	58.07	58.07
15	NLC Exp-I	420	5.18	5.18	5.18	5.18	5.18	5.18
16	NLC Exp-II	500	6.06	6.06	6.06	6.06	6.06	6.06
17	Telangana STPP	1600	1302.99	1302.99	1302.99	1302.99	1302.99	1302.99
18	KKNPP (Kudankulam Nuclear Power Plant) Unit-I	1000	4.14	4.14	4.14	4.14	4.14	4.14
19	KKNPP (Kudankulam Nuclear Power Plant) Unit-II	1000	46.10	46.10	46.10	46.10	46.10	46.10
20	NSM Bundled Phase -II *	25650	186.83	186.83	186.83	186.83	186.83	186.83
21	NVVNL Bundled Power (Coal)	45.81	42.92	42.92	42.92	42.92	42.92	42.92
	Total CGS	**45339.81**	**3674.22**	**3674.22**	**3674.22**	**3591.43**	**3446.26**	**2938.35**

Sl. No.	Generating Station/ Unit/ Source	Installed Capacity (MW)	Net Capacity TS Share (MW)	TSDISCOMS' SHARE (Projected) (in MW)				
				(n+1) FY 2024-25	(n+2) FY 2025-26	(n+3) FY 2026-27	(n+4) FY 2027-28	(n+5) FY 2028-29
(D)	***Gas Projects***							
1	GMR Vemagiri	370	193.03	193.03	193.03	193.03	193.03	193.03
2	Kona seema	444.08	231.83	231.83	0.00	0.00	0.00	0.00
3	GVK	220	115.43	0.00	0.00	0.00	0.00	0.00
4	Gouthami	464	242.50	0.00	0.00	0.00	0.00	0.00
	Total Gas Projects:	**1498.08**	**782.79**	**424.86**	**193.03**	**193.03**	**193.03**	**193.03**
(E)	***Inter State Hydel projects***							
1	Machkund	84.00	44.82	44.82	44.82	44.82	44.82	44.82
2	T B Dam	57.60	30.73	30.73	30.73	30.73	30.73	30.73
	Total Inter State Hydel Projects:	**141.60**	**75.55**	**75.55**	**75.55**	**75.55**	**75.55**	**75.55**
(F)	**Other Projects:**							
1	Singareni Thermal Power Plant	1200	1131.00	1131.00	1131.00	1131.00	1131.00	1131.00
2	Thermal Power Tech (Unit - I)	1320	269.45	269.45	269.45	269.45	269.45	269.45
3	Thermal Power Tech (Unit -II)		570.00	0.00	0.00	0.00	0.00	0.00
3	Atal Bihari Vajpayee TPP, Chattisgarh	1000	947.50	0.00	0.00	0.00	0.00	0.00
	Total Other Projects:	**3520.00**	**2917.95**	**1400.45**	**1400.45**	**1400.45**	**1400.45**	**1400.45**
(G)	**NCE**							
1	RE-Biomass	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	RE-Bagasse	55.70	55.70	55.70	55.70	55.70	55.70	39.20
3	RE-Mini Hydel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	RE-IW	7.50	7.50	7.50	7.50	7.50	7.50	7.50
5	RE-MSW	19.80	19.80	19.80	19.80	19.80	19.80	19.80
6	RE-Wind	128.10	128.10	128.10	128.10	128.10	128.10	128.10
7	Solar Power	6890.75	6890.75	6890.75	6890.75	6890.75	6890.75	6890.75
	Total NCEs	**7101.85**	**7101.85**	**7101.85**	**7101.85**	**7101.85**	**7101.85**	**7085.35**
	Discom Contracts Total	68085.59	24336.51	22461.09	22229.26	22146.47	22001.30	21476.88
	Open Access Contracts Total	129.75	129.75	129.75	129.75	129.75	129.75	129.75
TRANSCO : Total Contract Capacity		**68215.34**	**24466.26**	**22590.84**	**22359.01**	**22276.22**	**22131.05**	**21606.63**

ANNEXURE – IV COMPLIANCE WITH DIRECTIVES GIVEN IN TARIFF ORDER

Sl. No.	Directive	Subject of Directive	Compliance
1	Segregation of assets and liabilities between APTransco and TGTransco	The Commission directs the petitioner to submit a compliance report on the segregation of assets and liabilities between APTransco and TGTransco 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 4th Control Period before 31st 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 in the APR for FY 2019-20.
4	Capitalization details for 3rd Control Period from FY 2014-15 to FY 2018-19	The Commission directs the petitioner to submit the complete details sought regarding the capitalization for the 3rd 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 4th 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 4th Control Period	Complied with since FY 2019-20.
6	Capital Investments	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: a. 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. b. 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. c. The above mentioned certificates have to be submitted to the Commission within 60 days of completion of work, at the latest.	Complied with. PCCs & FCCs FY2022-23 are being submitted.