ENERGY DEPARTMENT

POLICY NOTE
2024 - 2025

DEMAND No.14

THANGAM THENARASU

MINISTER FOR FINANCE AND
HUMAN RESOURCES MANAGEMENT

INDEX

1. INTRODUCTION

In today's world, electricity is the invisible current that runs through everything, from the comforts of daily life to the cutting-edge advancements in medicine, technology, agriculture and transportation. Tamil Nadu’s energy sector is poised for swift transformation to meet the surging demand driven by technological advancements and changing climate conditions.

Tamil Nadu's power grid recently hit a new high, reaching a staggering demand of 20,830 MW on 02.05.2024 and a new peak in daily consumption, with the State using a whopping 454.32 Million Units (MU) on 30.04.2024. Further, Chennai, the State capital, witnessed a surge in power usage, with a maximum demand of 4,769 MW and a daily consumption peak of 101.755 MU recorded on

31.05.2024. Despite these impressive numbers, Tamil Nadu continues to deliver uninterrupted power supply 24X7, ensuring a smooth flow of electricity for its residents.

Tamil Nadu is emerging as a shining star in India's renewable energy revolution. The State government has set a bold vision for the future to become the national leader in clean energy by 2030. To achieve this ambitious goal, the government is planning to generate a staggering additional 100 billion units of renewable energy. The journey towards this green future has already begun with the establishment of a brand-new Green Energy Company i.e., Tamil Nadu Green Energy Corporation Limited (TNGECL) will be the driving force behind this transformation, paving the way for a cleaner, more sustainable tomorrow for Tamil Nadu.

Tamil Nadu’s renewable energy sector has reached new heights with significant achievements in both wind and solar power. On 10.09.2023, the State achieved a record wind power generation of 5,838 MW. In the solar arena, Tamil Nadu set a new peak generation record of 5,398 MW on 05.03.2024, and then broke its own record for the highest single-day solar energy generation with 40.50 MU on 23.04.2024. These accomplishments demonstrate Tamil Nadu's commitment to harnessing renewable energy sources for a sustainable future.

In a landmark achievement, the North Chennai Thermal Power Project Stage III, boasting a massive 800 MegaWatt (MW) capacity, was inaugurated by the Honorable Chief Minister of Tamil Nadu on 07.03.2024.

Tamil Nadu is taking monumental strides towards a robust and secure energy future. An additional 4,900 MW of thermal power projects and 520 MW of hydropower projects are currently under construction and slated for completion shortly. This significant expansion will supercharge Tamil Nadu's power grid, ensuring reliable and efficient energy for all.

TANTRANSCO is taking all efforts to evacuate huge power from the generating stations to load centres by establishing new Substations and its associated lines. This year alone, TANTRANSCO has significantly expanded the State's transmission network by adding 17 new substations and a staggering 1,748 kilometers of high-voltage transmission lines. These critical upgrades will ensure a smooth flow of electricity, fostering growth across various industries.

Understanding the vital role distribution plays in reaching consumers, TANGEDCO prioritized its expansion this year. Despite flood and cyclone setbacks, TANGEDCO significantly strengthened the network with eleven new substations, nearly 16,000 Distribution Transformers, and over 18,000 kilometers of additional power lines. To ensure a reliable power supply and enhance safety, the overhead lines along the car streets of 14 temples are being converted to underground cables.

"MINNAGAM" Customer Care Centre (94987 94987) in Chennai Headquarters, operates 24X7 in three shifts with 65 staff members per shift, handling 37 complaint types. Delivering high customer satisfaction, "MINNAGAM" resolved about 25 lakhs complaints it received.

Consumer Service Rating of DISCOMs (CSR-D) – TANGEDCO'S focus on improving customer service has yielded significant results. The latest Consumer Service Rating of DISCOMs (CSR-D) witnessed TANGEDCO's rise from a "B+" rating in 2021-22 period to an impressive "A" rating in 2022-23. This notable improvement highlights TANGEDCO's steadfast commitment in enhancing the customer experience.

The restoration works in Cyclone "Michaung" hit Chennai, and unprecedented rain fall in Southern Districts occurred during the last year were carried out with the help of officers and staff on war footing round the clock and power supply restored in shortest time.

A new online portal simplifies applications for various low-tension (LT) services, including agricultural connections, tariff changes, and

name transfers. It also allows for easy e-receipt downloads. Additionally, a dedicated solar portal streamlines the process for consumers seeking Central Financial Assistance (CFA) for solar installations. This portal even integrates with the National Solar Roof Top portal for seamless registration by domestic consumers.

A redesigned mobile app empowers consumers to manage their accounts and access services with ease. Distribution offices are streamlining operations with a daily job allocation and execution system. Additionally, a mobile LT assessment tool equips assessors and Assistant Engineers for on-the-go evaluation. Even pensioners can benefit from the digital push, as a new system allows for convenient submission of digital life certificates. These advancements highlight TANGEDCO's commitment to a modern and user-friendly power sector.

Considering the importance of safety of field staff, all field employees are equipped with essential safety gear such as Earth rods, Gloves, Belt ropes etc. To ensure employee safety, an in-house mobile app "TNEBSAFETY" has been developed and the application has been distributed to the field engineers for use and its usage has been made mandatory. It is designed to function in offline mode catering to remote work spots with no internet connectivity.

Further, TANGEDCO stands out as India's first DISCOM utility to digitize all field assets through Geo tagging, creating a comprehensive GIS digital platform across Tamil Nadu.

In order to make Tamil Nadu a "Green" State, the Government is setting new standards. By aggressively pursuing renewable energy sources, the government aims not only

to generate clean power, but also committed to provide uninterrupted, reliable and quality electricity at affordable rate for its citizens. This ambitious goal goes hand-in-hand with reducing the State's reliance on traditional fossil fuels.

2. ENERGY DEPARTMENT

The key to sustainable economic growth lies in a reliable and adaptable electricity infrastructure that can keep pace with demand while minimizing environmental impact. Transitioning from coal to a diversified energy mix, integrating renewables like wind and solar with cleaner natural gas, is key to powering progress while preserving our planet for future generations.

Tamil Nadu aims to be India's renewable energy leader by 2030. To achieve this ambitious target, the government is planning a massive increase in green energy generation of additional 100 billion units. The newly established Tamil Nadu Green Energy Corporation Limited (TNGECL) will be the driving force behind this transformation, paving the way for a sustainable future.

As the first step in Power sector reforms, the Tamil Nadu government sanctioned the restructuring of the Tamil Nadu Electricity Board (TNEB) into a holding company, TNEB Ltd, and two subsidiaries, TANTRANSCO and TANGEDCO. This reorganization, effective from 01.11.2010, was formalized by the Tamil Nadu Electricity Board (Reorganization and Reforms) Transfer Scheme.

Due to the vast scale of Tamil Nadu's distribution operations and considering the trend of establishing separate distribution companies in other major States, a restructuring of TANGEDCO was deemed necessary. Additionally, to prioritize the transition to renewable energy, the establishment of a dedicated green energy company was proposed. Consequently, the Tamil Nadu Government, approved the creation of the Tamil Nadu Power Generation

Corporation Limited (TNPGCL) to inherit TANGEDCO's fossil fuel-based generation activities.

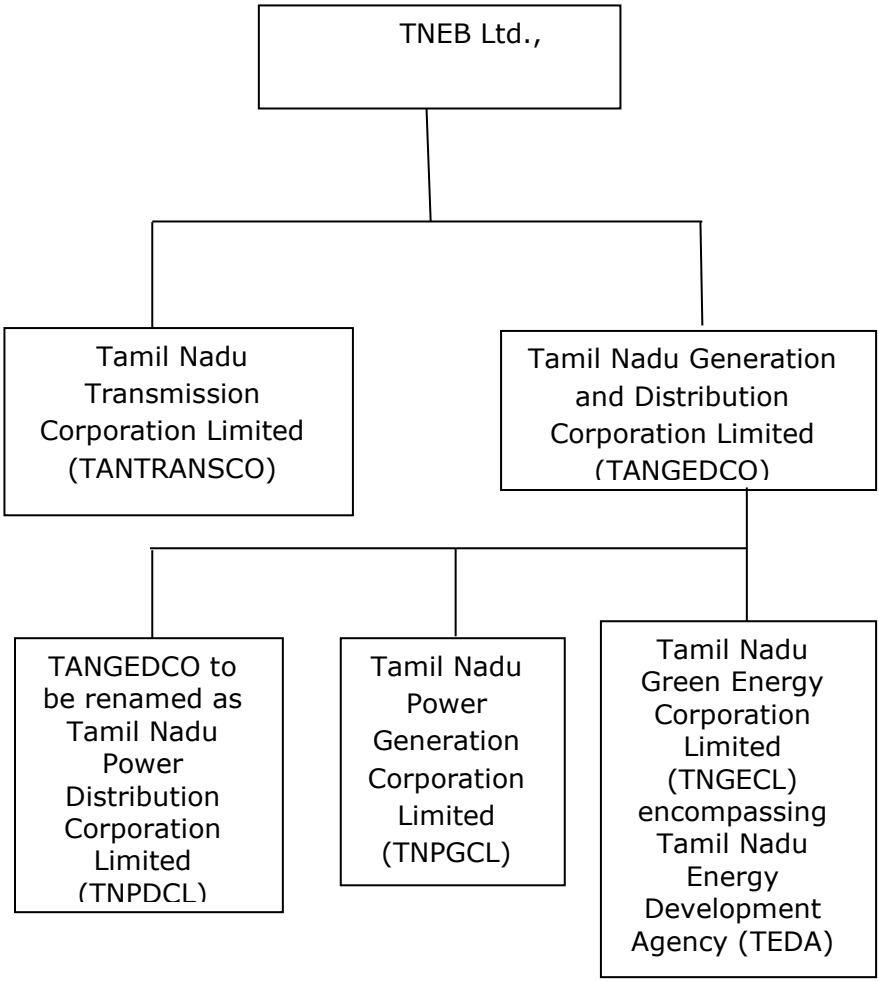
Furthermore, the Tamil Nadu Government authorized the formation of the Tamil Nadu Green Energy Corporation Limited (TNGECL). This new entity would assume control of TANGEDCO's renewable energy operations, including Hydro, Solar, Wind, Bio-gas and incorporate the functions of the Tamil Nadu Energy Development Agency (TEDA). TANGEDCO was permitted to operate as a generation and distribution company until the new companies commence operations, after which it would be renamed as Tamil Nadu Power Distribution Corporation Limited (TNPDCL) and focus solely on distribution.

The incorporation of TNPGCL and TNGECL took place on 09.02.2024 and 10.02.2024,

respectively. A provisional Transfer Scheme was announced detailing the transfer of assets, interests, rights, liabilities, obligations, proceedings, and personnel from TANGEDCO to TNPGCL and TNGECL.

After the reforms, the following organizations will function under the administrative control of the Energy Department:

I. TNEB Limited (Holding company) with the following subsidiary companies:



II. Tamil Nadu Electrical Inspectorate (TNEI).

3. Tamil Nadu Power Generation Corporation Limited (TNPGCL)

The Tamil Nadu Generation and Distribution Corporation (TANGEDCO) has been restructured into three separate companies effective from 24.01.2024. The fundamental operations of Generator and Distribution Licensee are different in nature. Hence, for operational efficiency, they have been divided into independent administrative structures to carry out their respective functions.

Accordingly, to effectively manage and monitor the operation of fossil fuel based (Coal, Naphtha, and Gas) Thermal/Gas power plants, which are the assets of the Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO), the Tamil Nadu Power Generation Corporation Limited (TNPGCL) commenced operations from 09.02.2024.

The key functions of Tamil Nadu Power Generation Corporation Limited (TNPGCL) are as follows:

1. Operation of existing generation plants
2. Monitoring of under construction plants
3. Fuel procurement and management
4. Renovation and Modernization of existing plants
5. Emission control and compliance with Tamil Nadu Pollution Control Board (TNPCB) norms
6. Maintenance and safety
7. Resource Management
8. Regulatory compliance.

I. Installed capacity as on 01.04.2024

Sl. No	Category	Station Capacity MW	Total Capacity in MW
1.	**Thermal**		
	Tuticorin Thermal Power Station (5x210 MW)	1,050	4,320
	Mettur Thermal Power Station-I (4x210 MW)	840	
	Mettur Thermal Power Station-II (1x600 MW)	600	
	North Chennai Thermal Power Station-I (3x210 MW)	630	
	North Chennai Thermal Power Station-II (2x600 MW)	1200	
2.	**Gas**		
	Valuthur Gas Turbine Power Station Phase-I (95 MW), Phase – II (92.2MW)	187.20	408.20
	Kuttalam Gas Turbine Power Station	101.00	
	Basin Bridge Gas Turbine Power Station (4x30 MW)	120.00	
	Total		**4,728.20**

Note:

i) North Chennai Thermal Power Project Stage III was commissioned on 07.03.2024, and has gradually increased its power generation to 670 MW. Once it reaches its installed capacity of 800 MW and operates continuously for 72 hours, it will be considered as a power plant.

ii) The generation has been stopped in kovilkalapal (107.88 MW) gas turbine power plant, as it could not be operated economically due to reduced supply of gas.

II. Thermal Generation

TNPGCL owns five thermal Stations having a total installed capacity of 4,320 MW.

a. Tuticorin Thermal Power Station has 5 units of 210 MW each which were commissioned on 09.07.1979, 17.12.1980, 16.04.1982, 11.02.1992 & 31.03.1991.
b. Mettur Thermal Power Station-I has 4 units of 210 MW each which were commissioned on 07.01.1987, 01.12.1987, 22.03.1989 & 27.03.1990.
c. Mettur Thermal Power Station-II has a single unit of 600 MW which was commissioned on 12.10.2013.
d. North Chennai Thermal Power Station-I has 3 units of 210 MW each which were commissioned on 25.10.1994, 27.03.1995 & 24.02.1996.

e. North Chennai Thermal Power Station-II has 2 units of 600 MW each which were commissioned on 20.03.2014 & 08.05.2014.

Performance of Thermal Stations during the year 2023-24

Generation

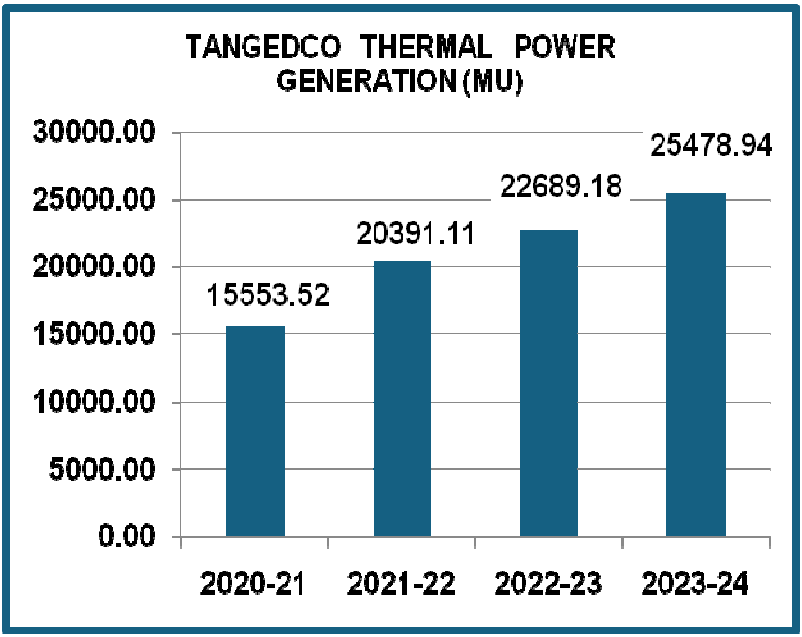
Power generation by the five thermal power plants of the Tamil Nadu Power Generation Corporation Limited (TNPGCL) was 15,553.52 MU in the year 2020-21. This has increased by 63.8% in the last three years, and is 25,478.94 MU in 2023-24. As TANGEDCO has increased power generation from its own thermal power plants, the purchase of electricity in the electricity market has decreased.

Power generation of the five Power plants

S. No	Name of the Station	Generation for the year (in MU)		PLF in %	
		2022-23	2023-24	2022-23	2023-24
1	TTPS (5x210 MW)	5,717.922	6,485.129	62.16	70.31
2	MTPS-I (4x210 MW)	5,395.744	5,805.198	73.33	78.68
3	MTPS-II (1x600 MW)	3,000.694	3,202.150	57.09	60.76
4	NCTPS-I (3x210 MW)	3,134.380	3,616.450	56.79	65.35
5	NCTPS-II (2x600 MW)	5,440.436	6,370.015	51.75	60.43
	TOTAL	22,689.176	25,478.942	59.95	67.14

Last Four Years Generation Details

Year	Generation in MU
2020-21	15,553.52
2021-22	20,391.11
2022-23	22,689.18
2023-24	25,478.94



1. Tuticorin Thermal Power Station (5 x 210 MW)

Tuticorin Thermal Power Station, located in Tuticorin District, has 5 units of 210 MW capacity each with total installed capacity of 1,050 MW.

Significant achievements in the year 2023-24

a. The Units achieved 70.31 % PLF for the year 2023-24 which is greater than the previous year (2022-23) PLF of 62.16%.
b. The average Heat rate of the Station in the year 2023-24 was 2,577 kcal/kWhr which is less than the norms fixed by the Hon'ble TNERC of 2,600 kcal/kWhr.
c. Minimum Specific Oil consumption of 0.95 ml/kWhr for the year 2023-24 which is less than the previous year (2022-23) Specific Oil consumption of 2.53 ml/kWhr.

After completion of upgradation work at Coal jetty-I, higher capacity Panamax type vessel berthed from January-2023 onwards. The higher capacity vessels reduce the transport charges per ton of coal. There are considerable savings.

The extreme heavy rainfall in the Southern districts on 17.12.2023, caused severe

damages both in the Tuticorin city and Tuticorin Thermal Power Station. The movement of workers and employees in the plant area & quarters area were restricted due to heavy water stagnation until 19.12.2023 afternoon. Further, Power & water supply to the plant area got disconnected. During the inspection, the following damages were noticed.

i) Heavy accumulation of ash slurry has completely choked the Cooling water intake channel – I & II of all 5 units of TTPS.

ii) The ash slurry piled up in the high-level peripheral pond of ash dyke filled the Cooling water intake channels.

iii) Fuel oil Pump House, Indoor Switchyard, AHP and CHP Switchgear and Coal yard, water pump houses were inundated in flood water

The restoration works were carried out immediately to bring back the Units into service. The Power Generation commenced in Unit- 4 & 5 on 31.12.2023, in Unit-1 & 3 on 10.01.2024 and in Unit-2 on 15.01.2024.

2. Mettur Thermal Power Station– I (4 x 210 MW)

Mettur Thermal Power Station–I (MTPS– I), located at Mettur Dam of Salem District, has 4 units of 210 MW each with a total installed capacity of 840 MW.

Significant achievements in the year 2023-24

a. The Units achieved 78.68 % PLF for the year 2023-24 which is greater than the previous year (2022-23) PLF of 73.33%.
b. Average Heat rate of the Station in the year 2023-24 was 2,551 kcal/kWhr which is less than the norms fixed by the Hon'ble TNERC of 2,600 kcal/kWhr.

c. Minimum Specific Oil consumption of 0.475 ml/kWhr for the year 2023-24 which is less than the previous year (2022-23) Specific Oil consumption of 1.026 ml/kWhr.

There are two ash water Recovery lines in service, for recycling the ash water from the primary pond to Ash Handling Pump House Stage I & II for ash slurry preparation. The main objective of the system is to reduce the water consumption and also to avoid discharge of ash slurry water into the river Cauvery. The recovery water lines available in MTPS-I are working under syphon principle. No electrical power is being consumed to discharge the recovery water flow of approximately 22,300 M^3/day from the pond to Ash Handling Pump House / Stage I & II. So, the amount of electrical energy conserved for the year 2023-2024 is 4,73,760 kWhr and amount saved is Rs.26,76,744/-.

3. Mettur Thermal Power Station – II (1 x 600 MW)

Mettur Thermal Power Station–II (MTPS–II), located at Mettur Dam of Salem District, has a single unit of 600 MW installed capacity.

Significant achievements in the year 2023-24

a. The Unit achieved 60.76 % PLF for the year 2023-24 which is greater than the previous year (2022-23) PLF of 57.09%.
b. The average Heat rate of the Station in the year 2023-24 was 2,519 kcal/kWhr which is less than the norms fixed by the Hon'ble TNERC of 2,597 kcal/kWhr.
c. Minimum Specific Oil consumption of 0.534 ml/kWhr for the year 2023-24 which is less than the previous year (2022-23) Specific Oil consumption of 0.717 ml/kWhr.

d. Mettur Thermal Power Station-II achieved a record of continuous operation for 96 days in the year 2023-24 (from 26.02.2023 to 01.06.2023) and further operated continuously for another 50 days from 01.12.2023 to 19.01.2024.

In order to maintain clean environment and to ensure maximum generation, orders have been issued for the supply & erection of 50 Tonnes per hour (TPH) capacity Dry fly ash handling system in A11 & C11 hoppers of Electrostatic precipitator (ESP) fields. This work also includes transporting to the existing 2x4152 MT RCC Fly Ash Silo through the pressurized pneumatic system using the existing lines. The purchase order has been issued for an amount of Rs. 2.72 crore, and the work is expected to be completed by August 2024.

In order to prevent coal dust spreading through air to nearby Villages, a wind screen has been installed and action is being taken to provide wind screen for further length. To prevent Ash particles from the ash dyke spreading through air to nearby Villages, water is being sprinkled regularly in the ash dyke. Further, to prevent ash from ash dyke getting mixed in Cauvery River, ash is being collected in separator tanks provided.

4. North Chennai Thermal Power Station – I (3 x 210 MW)

North Chennai Thermal Power Station–I (NCTPS – I), located in Thiruvallur District, has 3 units of 210 MW capacity each, with a total installed capacity of 630 MW.

Significant achievements in the year 2023-24

a. The Units achieved 65.35 % PLF for the year 2023-24 which is greater than the previous year (2022-23) PLF of 56.79%.
b. Average heat rate of the Station in the year 2023-24 was 2,641 kcal/kWhr which is less than the previous year (2022-23) heat rate of 2,829 kcal/kWhr.
c. Minimum Specific Oil consumption of 1.04 ml/kWhr for the year 2023-24 which is less than the previous year (2022-23) Specific Oil consumption of 6.28 ml/kWhr.
d. After revamping of External Coal Handling System (ECHS) & Internal Coal Handling System (ICHS) and Shore Unloaders I & II, outages of conveyors were eliminated. The quantity of coal handled crossed 10 Lakh Tonnes during

this year. So, 50% rebate on port charges from Kamarajar Port Limited (KPL) was availed resulting in saving of Rs.83.69 crore.

As directed by the National Green Tribunal (NGT), action is being taken to replace the 3 Nos. of old ash slurry disposal pipelines utilized for conveying ash slurry to ash dyke for uninterrupted ash evacuation. Supply of pipeline commenced, and work is under progress.

Pressurized Dense Fly Ash Conveying (PDFAC) System has been installed by providing additional compressors and due to this, the fly ash collection has increased by 800 Tonnes per day which was being disposed through ash slurry.

Three Coal Mills, one in each unit has been completely revamped during the year 2023-24,

and this has resulted in reduced Unit outages and reduced oil consumption.

5. North Chennai Thermal Power Station – II (2 x 600 MW)

North Chennai Thermal Power Station–II (NCTPS – II), located in Thiruvallur District, has 2 units of 600 MW capacity each with a total installed capacity of 1,200 MW.

Significant achievements in the year 2023-24

a. The Units achieved 60.43 % PLF for the year 2023-24 which is greater than the previous year (2022-23) PLF of 51.75 %.
b. Average Heat rate of the Station in the year 2023-24 was 2548 kcal/kWhr which is less than the norms fixed by the Hon'ble TNERC of 2597 kcal/kWhr.
c. Minimum Specific Oil consumption of 0.77 ml/kWhr for the year 2023-24 which

is less than the previous year (2022-23) Specific Oil consumption of 1.69 ml/kWhr.

d. Achieved highest generation in a day of 28.175 MU (PLF- 97.83%) on 23.11.2023 since COD and achieved highest monthly generation of 753.86 MU (PLF- 90.26%) during February 2024 since COD.

6. North Chennai Thermal Power Project Stage III (1x800 MW)

The North Chennai Stage III Project is situated at Thiruvallur district. The cost of this Super Critical 800 MW Power Project including Interest During Construction (IDC) is Rs.10,158 crore. LOA has been issued to M/s. BHEL for Boiler, Turbine and Generator (BTG) package during 01/2016, and for Balance of Plant (BoP) LOA has been issued to M/s. BGR Energy Systems Limited (BGRESL) during 10/2016 and to M/s. BHEL for FGD package during 02/2021.

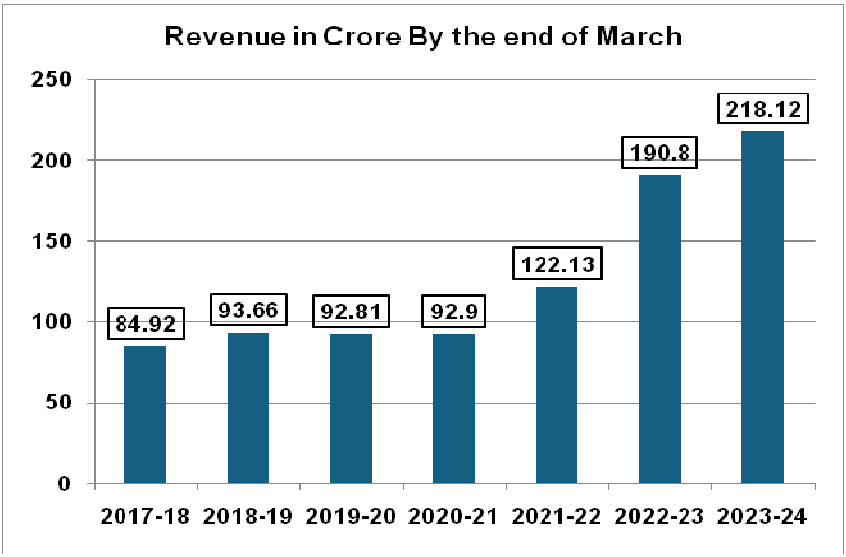
The commissioning of the project was delayed due to rectification works in Cooling water system such as Cooling water pipe, rectification works, Coal handling & Ash handling System and Covid-19. All necessary steps were taken to speed up the project. However, as the BoP contractor M/s BGRESL stopped all the works from 02.02.2024, TANGEDCO entrusted the balance essential works to other contractors and completed the works on war footing, and the Project has been inaugurated by the Hon'ble Chief Minister, Government of Tamil Nadu on 07.03.2024. The project has generated up to 670 MW, and further generated 207.16 MU of energy as on 11.06.2024. All measures are being taken to achieve full load operation.

Revenue augmentation through Sale of Fly Ash

TNPGCL had resorted to various progressive measures to improve the sustained

utilization of fly ash by awarding long term contracts to end users such as Cement companies, Brick / Block manufacturers, Asbestos sheet companies, Ready mix concrete units, etc. During the financial year 2023-24, revenue of Rs.218.12 crore has been realized from sale of fly ash which is 14.32% more than the revenue achieved in the last financial year 2022-23.

Financial Year	Revenue in crore
2017-18	84.92
2018-19	93.66
2019-20	92.81
2020-21	92.90
2021-22	122.13
2022-23	190.80
2023-24	218.12



III. Gas Turbine Power Stations

In Gas Turbine Power Stations, Electricity is produced in the Generator driven by Gas Turbines using Natural Gas/Diesel as fuel. The Gas Turbine Stations of TNPGCL are generating power as per the availability of natural gas being supplied by M/s. Gas Authority of India Ltd (M/s. GAIL). The present gas price is 6.5 US Dollar / Million Metric British Thermal Units (MMBTU).

1. Valuthur Gas Turbine Power Station–Phase I

The installed capacity of Valuthur Gas Turbine Power Station–Phase I is 95 MW. The Unit was in continuous service for more than 100 days from 03.07.2023 to 30.10.2023, and achieved a PLF of 100.44% on 20.12.2023. The Unit has generated around 618 MU in the FY 2023-24. Due to reduction in gas supply from March'24 onwards, the Unit is being operated with only 80% PLF. The average cost of power generation during the financial year 2023-24 is Rs.5.75/unit (Fixed cost –Rs.0.70+Variable cost –Rs.5.05).

2. Valuthur Gas Turbine Power Station-Phase II

The installed capacity of Valuthur Gas Turbine Power Station–Phase II is 92.2 MW. Due to inadequate gas supply, the Unit is being operated at part load. The Unit has generated

around 560 MU in the FY 2023-24, the highest generation for the past 3 years. The unit was in continuous service for more than 100 days from 27.6.2023 to 13.11.2023. The cost of generation during the financial year 2023-24 is Rs.6.30/unit (Fixed cost – Rs.0.72+ Variable cost – Rs.5.58)

3. Kuttalam Gas Turbine Power Station

The installed capacity of Kuttalam Gas Turbine Power Station is 101 MW. The Unit has generated around 695 MU in 2023-24, the highest generation for the past 13 years. The Unit was in continuous service for more than 100 days twice in the financial year 2023-24. The Unit is being operated at more than 83% PLF for the past 4 months. The cost of generation during the financial year 2023-24 is Rs.6.10/unit (Fixed cost–Rs.0.61+Variable cost –Rs.5.49)

4. Thirumakottai (Kovilkalapal) Gas Turbine Power Station

The installed capacity of Thirumakottai (Kovilkalapal) Gas Turbine Power Station is 107.88 MW. The gas supply to T(K)GTPS had been reduced to around 1,70,000 Standard Cubic Metre per Day (SCMD) out of the agreed quantity of 4,50,000 SCMD onwards, and hence, the Unit was being operated with an average PLF of 15%. The cost of generation got increased to Rs.16.14/unit (upto end of July'23). Inspite of repeated requests made by TANGEDCO, M/s. GAIL neither could increase the supply nor agree to reduce the price.

Hence, the gas supply agreement with M/s. GAIL was not extended after its expiry, and the Unit is kept under shutdown condition from 01.08.2023 onwards. Only essential manpower has been retained to ensure that all the major equipments are kept in healthy

condition by conducting periodical trial operations.

5. Basin Bridge Gas Turbine Power Station (120 MW (4X30))

Due to higher fuel cost, the Units are planned to be operated in 'Generation mode' only during emergencies by using High Speed Diesel (HSD).

Now, the BBGTPS Units are being operated as synchronous condensers to supply reactive power to Grid for maintaining the Grid stability and voltage profile improvement based on the grid requirement. During the year 2023-24, the Station has supplied reactive power to an extent of 93.123 kVARh to grid, and the cost benefit works out to Rs.36.35 crore.

IV. Coal

1. Coal to TNPGCL

The requirement of coal for existing TNPGCL's Thermal Power Stations (Total capacity 4,320 MW) @ 85% Plant Load Factor (PLF) is 223.4 LTPA (Lakh Tonnes Per Annum). Domestic Coal is procured from Mahanadhi Coalfields Ltd (MCL) through Fuel Supply Agreement (FSA) with a linkage of 195.63 LTPA, and Singareni Collieries Company Limited (SCCL) through Memorandum of Understanding (MOU) for a quantity of 25.0 LTPA with a total quantity of 220.63 LTPA.

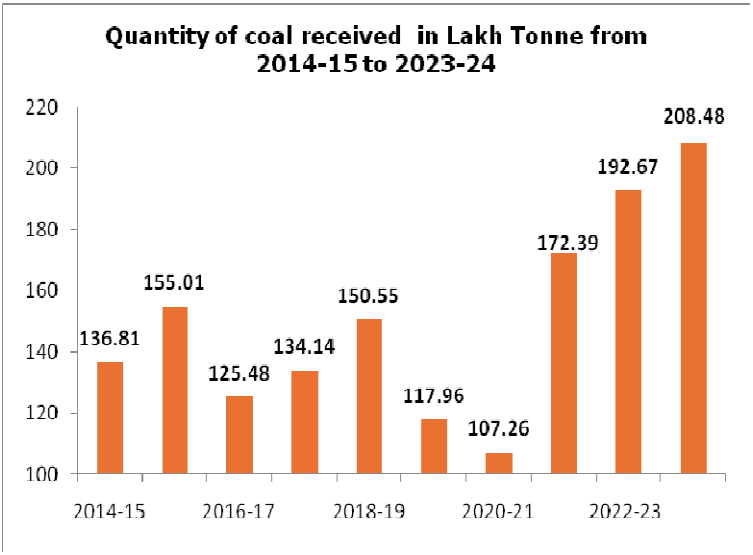
The receipt of coal during the Financial Year 2023-24 from MCL mines is 190.08 Lakh Ton i.e about 97% against the linkage (FSA) and from SCCL is 18.40 Lakh Ton. The total receipt is 208.48 Lakh Ton.

The above receipt of 208.48 Lakh Ton coal is the highest receipt of coal from mines in the last 10 years. Further, it is also to be mentioned that, 649 rakes were realized in March 2024 which is the highest number of rakes realized in a month in the past 10 years.

Quantity of coal received in Lakh Tonne from 2014-15 to 2023-24

i) Domestic Coal

Year	Quantity in LT
2014-15	136.81
2015-16	155.01
2016-17	125.48
2017-18	134.14
2018-19	150.55
2019-20	117.96
2020-21	107.26
2021-22	172.39
2022-23	192.67
2023-24	208.48



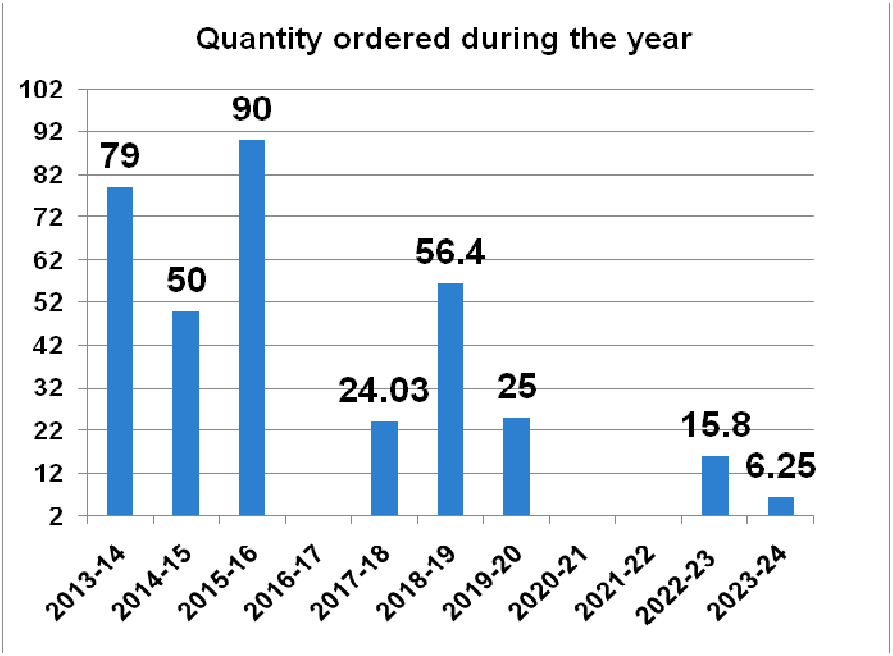
ii) Imported Coal

The Ministry of Power/Govt. of India (GoI) in its guidelines issued on 09.01.2023 & 25.10.2023, directed to procure imported coal to the extent of **6% (by weight)** for the FY 2023-24. Accordingly, in line with the guidelines of GoI, TNPGCL ordered imported coal through e-tender cum e-reverse auction. For the first

time, TNPGCL procured imported coal under variable pricing mechanism as done by the PSUs like NTPC.

As shown in the graph below, the use of imported coal has been continuously reduced. Moreover, imported coal is procured only on the direction of Government of India.

Year	Quantity Ordered during the year
2013-14	79
2014-15	50
2015-16	90
2016-17	NIL
2017-18	24.03
2018-19	56.4
2019-20	25
2020-21	Nil
2021-22	Nil
2022-23	15.8
2023-24	6.25



iii) Quality Analysis

Coal Quality wing headed by a Superintending Engineer has been formed to monitor the quality of domestic and imported coal. M/s. Quality Council of India and M/s Central Power Research Institute (CPRI), reputed organisations under Government of India are being engaged for sampling and

analysis of Domestic Coal at Mine end and Imported coal at discharge end. Further, TNPGCL also carries out coal testing in all lots of supply at mine ends and at all its Thermal Power Stations, while using the coal.

2. Coal Handling

The movement and handling of Coal from the mines to TNPGCL Thermal Stations is done through Paradip and Gangavaram Load ports. The coal is received in the State through Kamarajar Port (Ennore), Karaikal Port and V.O.Chidambaranar Port (Tuticorin).

Port wise Quantity of Coal Handled during the year 2023-24

Sl. No	Port Name	Quantity in Lakh Ton	Port Name	Quantity in Lakh Ton
	i) Load Ports		**ii) Discharge Ports**	
1	Paradip	133.68	Ennore	90.15
2	Gangavaram	45.31	Tuticorin	57.76
3	Dhamra	10.50	Karaikal	43.43

In addition to the above, order was issued to M/s. Dhamra Port Limited for movement and handling of Coal from MCL / Talcher and IB Valley to TNPGCL's Thermal Power Stations in the year 2023-24. About 10.50 Lakh MT of coal had been shipped through Dhamra Port to the discharge ports used by TNPGCL till March 2024.

3. Shipping

The domestic coal is being transported from the load ports of Paradip, Dhamra and Gangavaram ports to the discharge ports at Ennore, Tuticorin and Karaikal Port, through sea route. For the purpose of transportation of domestic coal by sea route, 11 ships are chartered (hired) directly by TNPGCL. During the year 2023-24, TNPGCL has transported the highest quantity of coal (i.e. 19 Million Tonnes) by sea route using a lesser number of vessels

(69,345 Metric Ton per trip), compared to last year.

By studying the market conditions, chartered vessels engaged were replaced with new chartered vessels at a lower rate, by utilizing the declining trend of index prices. This has resulted in savings of about Rs.59 crore.

In addition to Ennore, Tuticorin and Chennai ports, bunkering through the Vizag port is also started in the year 2023-24 due to lower fuel price & port charges, which has resulted in savings of Rs.4.86 crore.

The Highest quantity of around 92,500 MT of domestic coal has been transported in one voyage through sea route from Paradip Port to Ennore.

TNPGCL has received an award for "Highest Record of Thermal coal handling in 24 hrs for unloading 61,940 MT" at Coal Berth-I from the

vessel through the coal berth at Kamarajar Port Ltd., Ennore.

A web-based application software is being developed for monitoring vessel movements, quantity of coal transported, processing of all vessel related payments such as charter hire payments, ports, marine oil supply, etc. The software helps with faster reconciliation of voyage accounts. Further improvements in the Software application for complete automation of chartering operation are being done.

V.Mines

1. Securing of Coal Blocks through Auction

In order to meet the Domestic Coal requirement of TNPGCL's upcoming Thermal Power Projects, TNPGCL has submitted a bid in the 2nd attempt of 17th Tranche of coal block auction for Sakhigopal B Kakurhi Coal Block.

TNPGCL is the only bidder submitted bid for Sakhigopal-B Kakurhi coal block in Angul district of Odisha State in the 2nd attempt of 17th Tranche of coal block auction. Hence, allocation of the said coal block to TNPGCL by the Ministry of Coal is expected. On allocation of the Sakhigopal-B Kakurhi coal block by MoC, the coal block developmental activities could be carried out.

2. Chandrabila Coal Block

The Ministry of Coal (MoC) allocated Chandrabila Coal Block in Odisha with reserve capacity of 896 Million Tonnes to TNPGCL on 24.02.2016. The License for Prospecting was not awarded by Regional office of Ministry of Environment and Forest (MoEF) citing the proximity of the nearest boundary of Tiger Corridor. Adequate land for dumping the overburden was not provided by the Ministry of

Coal (MoC). Hence, the development of Chandrabila Coal Block could not be carried out as per schedule, and hence, Appropriation was issued by MoC in order dt.22.08.2023. TNPGCL has issued a termination notice for the above-said block to MoC.

3. Coal Linkage for New Projects

In order to meet the domestic coal requirement for the upcoming 3,300 MW Thermal Plants at Ennore SEZ TPP (2 x 660 MW), ETPS Expansion TPP (1 x 660 MW) and Udangudi TPP stage-I (2 x 660 MW), the Standing Linkage Committee of Ministry of Coal has recommended for grant of Bridge Linkage (temporary/ short term coal linkage) from SCCL.

VI. Ongoing Thermal Projects

The following are the new Thermal projects under construction.

Sl. No	Ongoing Thermal Project	DPR Value Rs. in crore	Value of award (in Rs. crore)	Expenditure so far incurred including IDC (Rs. in crore)	Proposed date of completion
1	Udangudi Stage I (2x660MW)	13,077.00	9,751.00	10,207.00	2024-25
2	Ennore SEZ (2x660 MW)	18,085.49	8,588.63	9,833.47	2026

By commissioning Udangudi Stage - I (2x660 MW) and Ennore SEZ (2x660 MW), a total capacity 2,640 MW will be added to the Tamil Nadu's grid in the next two years.

1. Udangudi Thermal Power Project – Stage I (2x 660 MW)

The Udangudi Project is situated at Udangudi village in Tuticorin district. The project cost of the Super Critical 2 X 660 MW project including Interest During Construction (IDC) is

Rs. 13,077 crore. Letter of Award for Main Plant was issued to EPC Contractor M/s. BHEL by 12/2017. Letter of Award was issued for establishment of Captive Coal Jetty and unloading facilities with Pipe conveyor system to EPC Contractor M/s. ITD Cementation India Ltd by 02/2018.

The main plant works were delayed by the contractor. The Coal jetty works also got delayed due to fishing activities in the demarcated construction area. Now the project construction activities are in full swing and the manpower mobilization has been improved due to persistent follow up by TNPGCL.

Main Plant

The major civil works have been completed for BTG and BoP. The erection of GIS switchyard, Turbine system equipment, Boiler system equipment, Fuel/Water system

equipment and Commissioning of erected equipment are under progress. The hydro test for Unit 1 is programmed by June'24 and the Boiler light up is planned by July'24.

Coal Jetty

All the civil & erection works including Grab ship unloader on the Jetty were completed. Trial run of equipment is under progress. It is planned for commissioning by August 2024. The current physical progress is 85.59% and Financial progress is 81.89%. The common coal conveyor system works in the main plant are under progress. On completion of the same, it is planned for commissioning of Unit I by Dec' 24 and Unit II by Mar'25.

2. Ennore SEZ 2x660 MW Thermal Power Project

The 2x660 MW Ennore SEZ Thermal Power Station site is at Vayalur Village, Ennore. The

project cost, including IDC works out to Rs. 18,085.49 crore. Work awarded for both Boiler Turbine & Generator (BTG) & Balance of Plant (BoP) to EPC Contractor M/s. BHEL, part of ECHP system works and Shore unloaders package works were awarded to M/s. Chennai Radha Engineering Works (CREW). The current progress is as below:

Physical progress is 70% and financial progress is 60.13%. Now the project construction activities are under progress and proposed to be commissioned during March 2026.

3. ETPS Expansion Thermal Power Project (1 x 660 MW)

The ETPS Expansion Thermal Power Project (1X660 MW) is situated in the Chennai District. LOA for EPC contract was issued to M/s. LANCO Infra Tech Ltd (LITL) on 27.02.2014 for a value

of Rs. 3,921.55 crore which was terminated on 09.04.2018 due to poor progress. Physical & Financial Progress of M/s. LITL was 18% at the time of termination and expenditure incurred in first EPC contract is Rs.712.26 crore. BG was invoked towards SDCPG amount & EMD forfeited from first EPC contractor M/s.LITL for a value of Rs.392.15 crore. Letter of award (LOA) for executing the balance works on 'as is where is basis' condition was issued to M/s. BGRESL, Chennai on 09.03.2022 for a value of Rs.4,442.75 crore and the contract was terminated on 27.02.2024 due to slow progress.

Physical Progress of the second EPC contractor (M/s.BGRESL) is 0.56% and the expenditure incurred in the second contract is approximately Rs.16 crore. However, considering the present energy scenario, it has been

proposed to envisage the project under PPP mode.

4. Uppur Thermal Power Project (2x800 MW)

Uppur Thermal Power Project (2x800 MW) is situated in Ramanathapurm District. The project cost, including Interest During Construction (IDC), is Rs. 12,778 crore.The project was awarded in three packages for a total awarded value of Rs.10,566 crore. The Boiler, Turbine & Generator (BTG) Package was awarded to M/s. BHEL. Balance of Plant (BoP) package was awarded to M/s. Reliance. Sea water intake and outfall system package was awarded to M/s.L&T.

Overall physical progress of the project: 35%. The expenditure incurred including IDC is Rs.5,847.21 crore. (Rs.3,330.79 crore for EPC and IDC Rs.2,516.42 crore). The project was put

on hold from 18.03.2021 due to NGT issue. NGT order was stayed at Honorable Supreme Court on 01.07.2021.

The following major high-cost materials have been supplied by M/s. BHEL and available at Uppur site and to be erected via Generator-Rotor & Stator, Turbine-HP, IP & LP Turbine, HP & LP Heater, CEP, Booster Pump, Boiler-ID & FD Fan, Air Preheater, Mill/Pulverizer, ESP Materials, Boiler Structure & Pressure parts. Piling work completed and structural work partially completed.

Due to increasing power demand and to cater the future energy demand supply scenario of Tamil Nadu, it is envisaged to revive and execute /complete the Uppur project "as is where is basis" condition through PPP mode.

VII. Finance

Based on the Government of Tamil Nadu notification, the new company –TNPGCL's provisional financial balances as on 01.04.2023 are tabulated below:

Sl. No	Description	Amount (Rs. in crore)
a.	Equity share capital	6,313
b.	Borrowings (Non – Current)	94,143
c.	Non – Current Assets including Fixed Assets	55,821
d.	Total Assets	58,398

Consequent to the notification of the Transfer scheme, the following Power stations have been brought under the control of Tamil Nadu Power Generation Corporation Limited (TNPGCL).

S.No.	Name of the Plant/Project
I	**Thermal Power Stations**
1	Tuticorin Thermal Power Station /Tuticorin
2	Mettur Thermal Power Station-I/Mettur
3	Mettur Thermal Power Station-II/Mettur
4	North Chennai Thermal Power Station -I
5	North Chennai Thermal Power Station -II
II	**Thermal Projects**
6	North Chennai Thermal Power Project-III
7	Ennore SEZ Project
8	Ennore Expansion Project
9	Udangudi Thermal Power Project
10	Upper Thermal Power Project
III	**Gas Turbine Power Stations**
11	Vazhudur Gas Turbine Power Station
12	Kuttalam Gas Turbine Power Station
13	Kovilkalappal Gas Turbine Power Station
14	Basin Bridge Gas Turbine Power Station

The Government of Tamil Nadu has also provided Government Guarantee for availing loan facility by the company from Financial Institutions/ Banks.

With the aim of operating the Tamil Nadu Power Generation Company Limited (TNPGCL) as an independent entity, the electricity generated from each plant will be sold to the Tamil Nadu Power Distribution Company Limited (TNPDCL) at the tariff rates (MYT Order) notified by the Tamil Nadu Electricity Regulatory Commission.

In order to increase the own generation, efforts are being taken to complete the ongoing projects of this company.

In order to optimise the cost of generation, several cost cutting measures are being taken up such as swapping high-cost loans, availing loans with cheaper rate of interest, effective functioning in the competitive power market.

4. Tamil Nadu Green Energy Corporation Limited (TNGECL)

Tamil Nadu is pioneer in the adoption of clean energy and has positioned itself at the forefront of India's transition towards clean energy sources. To achieve energy self-sufficiency, the State government has made significant efforts in solar, wind and other renewable energy sources. Tamil Nadu’s contribution to climate action has gained international recognition.

The Government of Tamil Nadu on 24.01.2024, has accorded approval for formation of Green Energy Company in the name of Tamil Nadu Green Energy Corporation Limited (TNGECL) to take over the green energy activities (Hydro, Wind, Solar etc.,) of TANGEDCO and to take over functions of the Tamil Nadu Energy Development Agency

(TEDA). The creation of Green Energy has been undertaken with the following objectives.

- To fast track the Energy Transition from 22% of Renewable Energy mix to 50% of RE By 2030 so as to achieve the RPO trajectory.
- Promoting hydro generation, Operation and maintenance of existing hydro generating stations.
- Promoting hydro projects, pumped storage projects.
- Promoting large scale Solar and Wind projects.
- Promoting Roof top installations for residential sector.
- Promoting other non-fossil fuel-based generation such as Biomass etc.,
- New RE hybrid policy to increase RE Penetration.

- Effective utilization of existing transmission and distribution infra by maximizing the technical limitation.
- To get Green funds at lower cost.

I. Renewable Energy (Wind and Solar)

During the year 2023 – 2024, total capacity of 1,994.62 MW Renewable Energy [Wind – 276.08 MW (STU) & 248.40 MW (CTU), Solar – 1,260.76 MW (STU), Roof top – 201.88 MW and Co-Generation – 7.5 MW] have been added to the grid.

With installed capacity of 19,628.40 MW, Tamil Nadu holds third position in India in Renewable Energy installed capacity. The details are as below:

S. No.	Renewable Energy source	Connected to State Transmission Utility (STU) network	Connected to Central Transmission Utility (CTU) network	Capacity in MW
1.	Wind	9,015.09	1,576.59	10,591.68
2.	Solar	7,995.53 (7,396.37+ Roof Top - 599.16)	150	8,145.53
3.	Bio mass	206.79	-	206.79
4.	Cogeneration (Bagasse)	684.40	-	684.40
	Total	**17,901.81**	**1,726.59**	**19,628.40**

The open access facility in RE power has facilitated rapid industrial growth. About 15,384 MU of RE power (Wind – 10,334 MU and Solar – 5,050 MU) is being used in the open access mode by 3,876 Nos. HT consumers in our State. Tamil Nadu is adopting industry friendly policies and ensuring availability of

infrastructure for easy evacuation of wind and solar power to enable addition of more RE power in the grid.

1. Wind Power

Tamil Nadu holds second rank in wind power among the states of India. Tamil Nadu is having an Onshore wind potential of 95 GW at 150 meter height. With the total installed wind capacity of 9,015.09 MW in State Transmission Utility, around 13,000 MU of wind power is generated every year which contributes to 9.91% of State consumption.

The all-time high power generation peak of Wind Energy has been recorded on 10.09.2023 as 5,838 MW.

Tamil Nadu is the first State in country towards implementing re-powering of old wind mills owned by private wind power generators

and so far 96 old wind mills with 26.20 MW has been Repowered. As on date, about 1,368 wind mills having capacity 961.98 MW are to be benefitted by the Repowering.

Offshore Wind

As per the study done by National Institute of Wind Energy (NIWE), the Coast of Tamil Nadu from Kannyakumari to Nagapattinam is having the Offshore Wind potential of 35 GW. The SECI (Solar Energy Corporation of India) has floated tender for leasing of sea bed for installation of 4 GW of offshore wind generation capacity.

TANGEDCO has given consent to procure offshore wind power of 2000 MW at a rate of Rs. 4.00 per unit through State Transmission Utility (STU) on long term basis.

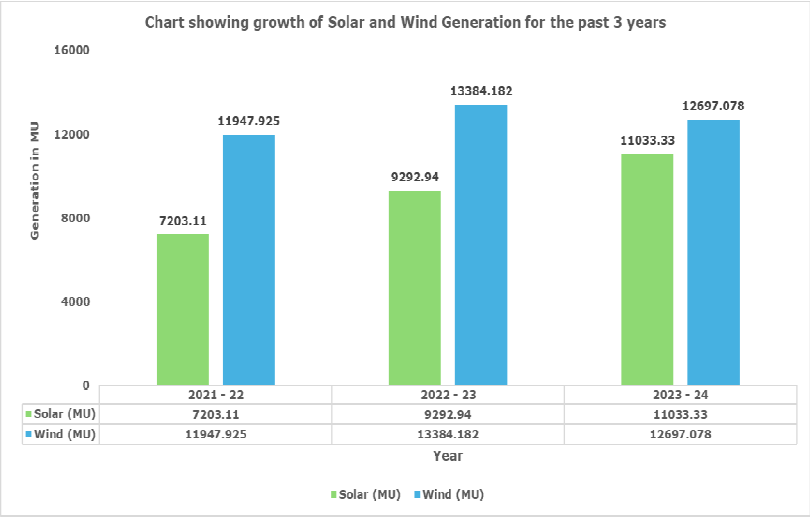
2. Solar Power

Tamil Nadu holds fourth position in India with an installed Solar capacity of 8,145.53 MW (including rooftop and CTU connectivity).

The all-time high solar power generation peak was recorded on 05.03.2024 as 5,398 MW and all time high solar energy generation of 40.50 million units recorded on 23.04.2024. Moreover, the State has also harnessed 11,033 million units of solar energy from the installed Solar Power Plants of State Transmission Utility during the year 2023-24.

3. Solar and Wind power generation

The Solar and Wind power generation in million units for the past three years are furnished below:

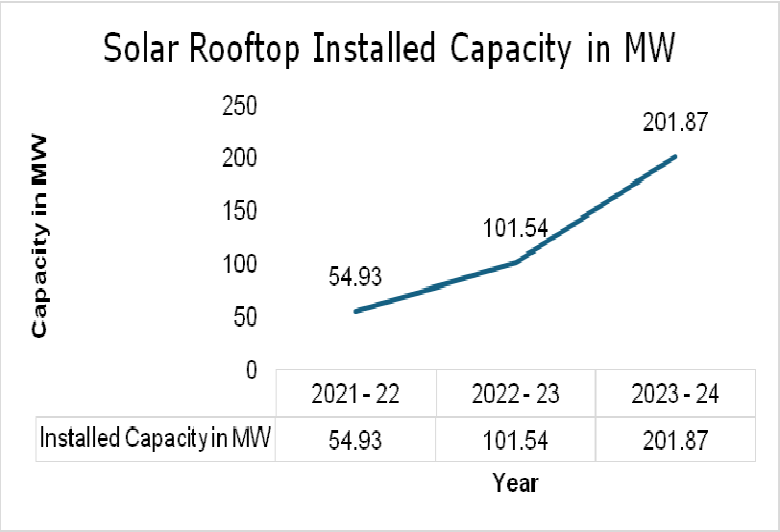


4. Solarisation of Agricultural Feeders

Solarisation of 1,685 Nos. of agricultural feeders has been programmed by TNGECL in the next three years. The solarisation of agricultural feeders has the benefit of energizing the feeders through solar power, which is a cheaper source of Renewable energy. It results in savings in drawl of power for agriculture sector and since solar plants are to be developed at distribution level, distribution losses will get reduced.

Installation of Solar Roof top

Steps are being taken to promote installation of more solar roof top especially in domestic sector to achieve the vision of distributed solar installations. The growth of Roof top solar for the past three is as below and the incentive of Rs. 28.4 crore from Ministry of New and Renewable Energy (MNRE) have been received so far.



5. Co-generation Plants in Co-operative and Public Sector Sugar mills

TNGECL has taken up the work for establishment of 12nos. of Co-generation power plants in 10 Co-operative and 2 Public Sector sugar mills along with sugar mill modernization in Tamil Nadu to a total capacity of 183 MW at a total cost of Rs. 1,241.15 crore.

The Modernization works have been completed in 10 Nos. of sugar mills. 7 Nos. Co-generation power plants of 108 MW have been commissioned and the balance 5 nos. of Co-generation power plants with the capacity of 75 MW are under progress.

6. Renewable Purchase Obligation (RPO) by 2030

The Ministry of Power, GoI has fixed the state Renewable Purchase Obligation (RPO) of 29.91% for the year 2024–25 for various

Renewable Energy sources. In addition to the existing installed capacity, an additional 6,000 MW of RE capacity is required to meet the above target.

To meet the obligation, in addition to internal generation, Power sale agreement has been signed with M/s. SECI (to procure 1,000 MW of solar power from 2024 – 25. In addition, 3,750 MW of Renewable Energy projects with State connectivity (Solar – 3,100 MW, Wind – 350 MW, Rooftop – 300 MW) are under various stages of completion. Further, it has been proposed to procure an additional 1,500 MW of solar power so as to achieve the RPO target.

As per MNRE guidelines, the revised RPO through various Renewable Energy sources by 2030 is Wind RE – 3.48%; Hydro RE – 1.33%; Distributed RE – 4.50%; Other RE – 34.02%;

Total RE – 43.33%.

In order to achieve the above RPO, Tamil Nadu Green Energy Corporation Limited needs the following capacities by 2029 – 30:

Wind	2,350 MW (@29.15 % Capacity Utilization Factor - CUF)
Hydro	1,050 MW (@25 % CUF)
Distributed Energy	4,700 MW (@19 % CUF)
Others Including Solar	26,500 MW (@19 % CUF)

For achieving this obligation by 2030, in addition to the anticipated RE capacity addition, it is proposed to purchase 10,000 MW of solar power in a phased manner.

7. Global Investors Meet 2024

In Global Investors Meet, MoU has been Signed for Solar / Wind / Hybrid projects for

about 18,428.70 MW. So far, the work for 2,940.70 MW Solar / Wind projects are under execution, and out of which, 391 MW Solar / Wind plants have been commissioned. Further, MoU for 1,600 MW of Pumped Storage Plants has also been signed.

8. Renewable Energy Application processing through online

Processing of applications for Renewable Energy projects has been enabled through online mode to speed up the RE installations. Once the developers register the applications through online mode, based on site feasibility study and load flow study, the intimation is given to the developers online. On receipt of land documents and on payment of refundable security deposit, in-principle approval is accorded.

The process of grid tie up approval has been delegated to circle level Superintending Engineers so as to commission the projects

without any delay. Also in the solar rooftop sector, circle level Superintending Engineers are delegated to process applications less than 1 MW capacity through online mode.

II. Hydro Power Stations

i. Existing Plants

TNGECL's Hydro wing operates and maintains 47 Hydro Power Stations (107 machines with the total installed capacity of 2,321.90 MW) spread over four generation circles viz., Erode, Kadamparai, Kundah, and Tirunelveli. Majority of Power Houses are located in remote isolated areas.

1. **Irrigation based Power Houses (29 Nos.) : 891.25 MW**

Sl No	Name & location of Power Station	No of Units * Unit Capacity	Capacity in MW
1	Mettur Dam PH, Salem Dt.	(4x12.5)	50

2	Mettur Tunnel PH, Salem Dt.	(4x50)	200
3	Lower Mettur Barrage PH-I, Chekkanur, Salem Dt.	(2x15)	30
4	Lower Mettur Barrage PH-II, Nerinjipettai, Erode Dt.	(2x15)	30
5	Lower Mettur Barrage PH-III, Kuthiraikalmedu, Erode Dt.	(2x15)	30
6	Lower Mettur Barrage PH-IV, Urachikottai, Erode Dt.	(2x15)	30
7	Bhavani Kattalai Barrage PH –I, Samayasangili, Namakkal Dt.	(2x15)	30
8	Bhavani Kattalai Barrage PH- II, Vendipalayam, Erode Dt.	(2x15)	30
9	Bhavani Kattalai Barrage PH- III, Solasiramani, Namakkal Dt.	(2x15)	30
10	Lower Bhavani Micro Hydel PH, Bhavani Sagar, Erode Dt.	(4x2)	8
11	Lower Bhavani Right Bank Canal Bhavani Sagar, Erode Dt.	(2x4)	8
12	Sathanur Dam PH, Thiruvannamalai Dt.	(1x7.5)	7.5

13	Bhavani Barrage 1 PH, Coimbatore Dt.	(2x5)	10
14	Bhavani Barrage 2 PH, Coimbatore Dt.	(2x5)	10
15	Sarkarpathy PH, Coimbatore Dt.	(1x30)	30
16	Sholayar PH-I, Coimbatore Dt.	(2x42)	84
17	Sholayar PH-II, Coimbatore Dt.	(1x25)	25
18	Thirumurthy Mini PH., Thiruppur Dt.	(3x0.65)	1.95
19	Aliyar Mini PH, Coimbatore Dt.	(2x1.25)	2.5
20	Amaravathi, Thiruppur Dt.	(2x2)	4
21	Periyar PH, Theni Dt.	(4x42)	168
22	Papanasam PH, Tirunelveli Dt.	(4x8)	32
23	Servalar PH, Tirunelveli Dt.	(1x20)	20
24	Vaigai Small PH, Theni Dt.	(2x3)	6
25	Perunchani, Kanyakumari Dt.	(2x0.65)	1.3
26	Periyar Vaigai Mini PH-I, Theni Dt.	(2x2)	4
27	Periyar Vaigai Mini PH-II, Theni Dt.	(2x1.25)	2.5
28	Periyar Vaigai Mini PH-III, Theni Dt.	(2x2)	4
29	Periyar Vaigai Mini PH-IV, Theni Dt.	(2x1.25)	2.5
TOTAL (Hydro Irrigation Installed Capacity)			**891.25**

2. Non-Irrigation based Power Houses (17 Nos.): 1,030.65 MW			
Sl No	**Name & location of Power Station**	**No of Units * Unit Capacity**	**Capacity in MW**
1	Kundah PH. I, Nilgiris Dt.	(3x20)	60
2	Kundah PH. II, Nilgiris Dt.	(5x35)	175
3	Kundah PH. III, Coimbatore Dt.	(3x60)	180
4	Kundah PH. IV, Coimbatore Dt.	(2x50)	100
5	Kundah PH. V, Nilgiris Dt.	(2x20)	40
6	Kundah PH. VI, Nilgiris Dt.	(1x30)	30
7	Pykara PH, Nilgiris Dt.	(3x7)+(1x11) +(2x13.6)	59.2
8	PUSHEP, Nilgiris Dt.	(3x50)	150
9	Moyar PH, Nilgiris Dt.	(3x12)	36
10	Mukurthy Mini PH, Nilgiris Dt.	(2x0.35)	0.7
11	Pykara Micro PH, Nilgiris Dt.	(1x2)	2
12	Maravakandy Mini PH. Nilgiris Dt.	(1x0.75)	0.75
13	Aliyar PH, Coimbatore Dt.	(1x60)	60
14	Poonachi Mini PH,	(2x1)	2

	Coimbatore Dt.		
15	Kodayar PH I, Kanyakumari Dt.	(1x60)	60
16	Kodayar PH II, Kanyakumari Dt.	(1x40)	40
17	Suruliyar PH, Theni Dt.	(1x35)	35
TOTAL (Hydro – Non-Irrigation)			**1,030.65**

3. Pumped storage power house (1 No.) 400 MW

Kadamparai Power-House, Coimbatore Dt. (4x100 MW)

Seventy-six Nos. of TNGECL owned Dams, Saddles, Reservoirs and Barrages are being maintained by Hydro wing. The Generation in Million Units (MU) achieved during the last four years as below.

Year	CEA Target in MU	Generation in MU	Plant Load Factor %	Plant Availability Factor %
2020-21	4,040	5,386.59	25.73	77.09
2021-22	3,854	5,514.10	27.11	76.37
2022-23	3,913	6,174.08	30.35	82.70
2023-24	4,220	3,707.63	18.18	80.77

Due to monsoon failure, water inflow to major Reservoirs was below average, and hence, the annual generation during the year 2023-24 was only 3,707.63 MU.

For the year 2024-25, Generation Target fixed by Central Electricity Authority is 4,329 MU. However, generation depends on flow of water to dams based on monsoon rain.

4. Major works carried out during 2023-24

i) Replacement/rectification of damaged gates at Lower Mettur Barrage Power House(LMBPH) IV, Uratchikottai

Out of 18 Nos. of Barrage gates which served for 30 years in Lower Mettur Barrage Power House IV, Uratchikottai, it was found that, 17 Nos. of Barrage gates required replacement. The work of replacement is being taken up in a phased manner. In first phase, replacement of 7 Nos. of Barrage gates have been taken up at a

cost of Rs.10.89 crore. Four Nos. of Barrage gates have been replaced during 2023-24, and replacement works of three Nos. Barrage Gates are under progress. The remaining 10 Nos. of Barrage gates will be replaced in the second and third phases.

ii) Suruliyar Penstock replacement works

Suruliyar Power House (1x35 MW) of Periyar Division was commissioned on 27.08.1978, and has been in operation at full capacity of 35 MW. This Power House has served 43 years which is more than its designed life period of 35 years.

The penstock pipe buckled and burst for a length of 220 metres out of total length of 2,885.17 metres. The replacement work has been taken up at a cost of Rs.14.45 crore, and completed on 20.07.2023. From 06.08.2023, the Unit is available for continuous generation. The

total generation from 20.07.2023 upto 30.4.2024 is 29.77 MU. The cost of replacement has been compensated by the generation revenue Rs.17.62 crore earned.

iii) Stator coil rectification work at Kodayar Power House-II

At Kodayar Power House-II (1 x 40 MW), as the inter turns Stator coils were short circuited on 25.05.2023, the works for Refurbishment of stator lamination and complete replacement of stator coil was awarded on 27.12.2023 for Rs.9.53 crore. The works are under progress and are expected to be completed by June 2024.

iv) Providing protective treatment to 11 Nos. steel penstocks at Kundah Power Houses- II, III, V & VI

Kundah Power Houses-II, III, V & VI were commissioned during 1960's and the steel penstocks need protective coating to maintain

their strength. In order to provide protective treatment to 11 Nos. of steel penstocks in these Power Houses, work was awarded for a value of Rs.24.89 crore. Providing protective treatment to Penstock of Kundah PH VI was completed on 19.6.2023. At Kundah PH- II, III & V penstock, outer surface painting works have been completed. Inner surface painting works are under progress.

v) Major rectification works at 4 x 100 MW Kadamparai Power House

Description	Amount (Rs. in crore)	Date of completion
Rectification of damages and leakages in Pressure shafts I and II	6.93	18.12.2023
Rectification and replacement of defective Stator coils at Unit-IV	2.75	30.12.2023
Rectification of sheared Runner bolts at Unit-III	0.44	29.02.2024
Rectification of sheared Runner stud bolt at Unit–I	0.94	30.03.2024

After completing all the above works, all the Units were synchronized one by one as below:

Unit	Put into service on	Generation up to 14.05.2024 in MU	Revenue earned Rs. in crore	Operated in pump mode for	Water pumped in Mcft
Unit-II	28.12.23	59.39	35.45	185:05 Hrs	545.16
Unit-III	29.02.24	29.58	17.66	436:27 Hrs	1344.17
Unit-IV	30.12.23	36.76	21.94	627:18 Hrs	1901.61
Unit-I	30.03.24	15.87	9.474	278:01 Hrs	835.92
	Total	**141.60**	**84.52**		

For fabrication and supply of New Turbine shaft for Unit–I, Purchase Order was issued for a value of Rs.1.76 crore and the work is under progress.

Work was awarded for Supply and Commissioning of Digital Excitation System at a

cost of Rs.0.24 crore and will be completed by August 2024.

vi) Rectification of damages due to fire accident at 2 x 5 MW Bhavani Barrage Power House-2, Umaipalayam

In Bhavani Barrage Power House-2, Unit I, the rectification works were completed and the Unit was put into service on 11.12.2023.

The following works have been awarded for the rectification of damages in Unit-II:

(i) For Supply, Erection and Testing of Generator and Transformer protection & Relay panels on 31.01.2024 for a value of Rs.0.28 crore.

(ii) For Supply, Erection and Testing of 6.6 kV Panels on 15.03.2024 for a value of Rs. 0.73 crore.

(iii) Approval has been accorded on 14.06.2024 for Supply and Laying of

HT/LT/Control cables for Rs 1.32 crore and it is under progress.

vii) Replacement of damaged gate at Lower Mettur Barrage Power House II, Nerinjipettai

Work was awarded for the replacement of the damaged gate No. 11 at Lower Mettur Barrage Power House II, Nerinjipettai on 25.2.2023 for a value of Rs.1.35 crore, and work was completed on 25.12.2023.

viii) Rectification of oil leak in runner assembly of Unit-3 at Tunnel Power House/Mettur Dam

Work was awarded for rectification of oil leak in runner assembly of Unit-3 at Tunnel Power House/Mettur Dam, for a value of Rs.1.54 crore on 18.03.2023, and the work was completed on 20.01.2024.

ix) Design, fabrication and fixing of new bottom wheel bogie at Bhavani Kattalai Barrage Power House-I, Samayasangili

i) For Gate No. 13, work was awarded on 16.05.2023 for fixing of 1 No. wheel bogie for a value of Rs.0.15 crore, and completed on 15.09.2023.

ii) For Gate No.12, work was awarded on 01.02.2024 for fixing of 2 Nos. wheel bogie for a value of Rs.0.33 crore, and the work was completed on 02.05.2024.

x) Replacement of existing eroded and misaligned penstocks expansion joint bits near Anchor Nos: 3, 4, 5 of Unit-I and Anchor No: 2 of Unit -II of Sholayar Power House –I

The work was awarded on 04.05.2023 for a value of Rs. 1.40 crore and the work was completed on 13.08.2023.

Similarly, for replacement of 2 Nos. old air vent pipes at Sathanur Dam Power House with new air vent pipes, the work was awarded on 11.5.2023 for a value of Rs. 0.86 crore, and completed on 23.8.2023.

xi) Replacement of 3 Nos. old High-Pressure Penstocks at 3x 12 MW Moyar Power House

Approval has been accorded for replacement of 3 Nos. High Pressure Penstocks at Moyar Power House (3x 12 MW) situated in Nilgiris District which has served more than 70 years, at an estimated cost of Rs.84.67 crore. Techno Commercial bids are opened on 31.01.2024.

xii) Procurement of Trash Rack Cleaning Machine for Lower Mettur Barrage Power House-I Chekkanur (2x15 MW)

Approval has been accorded for Procurement of trash rack cleaning machine at

Lower Mettur Barrage Power House-I, Chekkanur (2x15 MW), and to clear hyacinth plants, solid wastages from intake trash rack at an estimated cost of Rs.6.95 crore.

5. Renovation, Modernization and Up-rating works (RMU) in Hydro Power Stations are under progress to increase the life span for further 25-30 years.

Some of the Hydro Power Houses in Tamil Nadu are old and have been serving beyond their normal life period (normal life period of a hydro power house is 40 years). So, the full capacity generation of some of the existing hydro power plants could not be achieved. In order to improve the generation capacity of Hydro stations, action has been initiated to undertake Renovation, Modernization and Up-rating works (RMU). Currently, Renovation, Modernization and Up-rating (RMU) works are

under progress at Moyar and Kodayar Hydro Power House-I.

The details are tabulated below:

Scheme	Life period served in years	Existing Capacity MW	Capacity after RMU MW	Cost of work in crore	Average Annual Generation in MU
Moyar PH	72	3 x 12	3 x 14	121.13	133.91
Kodayar PH-I	53	1 x 60	1 x 70	80.96	157.81

Ongoing Hydro Electric Projects

The following ongoing hydro projects of 520 MW capacity are under progress and will be completed in the next two years.

Sl. No	Name of the Ongoing Project	Revised Project cost	Expenditure so far incurred	Proposed Year of Completion

		(Rs. in crore)	(Rs. in crore)	
1	Kollimalai HEP (1X20MW)	591.20	379.50	2025-26
2	Kundah PSP-(4x125MW)	3,523.37	2,366.52	2025-26

1. Kollimalai Hydro-Electric Project (1x20 MW)

It has been proposed to establish 1x20 MW capacity Hydro Power Project in Namakkal district at a cost of Rs.591.20 crore. The project envisages construction of five numbers of diversion Weirs/Fore bay, Power Tunnel, penstock in Kollimalai Hill ranges and establishment of Sub station in Puliancholai Village, Trichy District. The project works have been awarded for an amount of Rs.307.19 crore during 2016.

The construction of weirs 3 & 5 work has been completed. The construction of Power House, Power tunnel, Weirs (1, 2 & 4), flume from weir - 2 to 3, flume from weir – 3 to 4 and erection of penstock and switch yard works are in progress. The physical & financial progress of the project achieved is 67% and 64% respectively, as on 31.05.2024. The project is expected to be commissioned in the year 2025 - 26.

2. Kundah Pumped Storage Hydro Electric Project (4x125 MW)

It has been proposed to establish Kundah Pumped Storage Hydro-Electric Project (4x125 MW) in Nilgiris District at a cost of Rs.3,523.37 crore.

Under this project, the existing TNGECL's 'Porthimund' and 'Avalanche – Emerald' reservoirs in Nilgiris district will be utilized as the 'Upper' and 'Lower' reservoirs respectively. The

surplus energy available during off-peak time will be utilized for pumping water from the 'Avalanche – Emerald' reservoirs to the 'Porthimund' reservoir and the same water will be utilized for generation during peak time. Being hydro generation, this project is pollution free and a Green Energy Project.

The civil and Hydro-Mechanical works of the project have been awarded on 15.02.2018. The Electro-Mechanical works have been awarded on 28.11.2019.

Civil Works

Concreting in Power House Cavern, Transformer Cavern, Head Race and Tail Race Tunnels, Upper intake, Switchyard GIS and Control Building are in progress. Excavation of Lower Intake and widening of Pressure Shaft are in progress. Fabrication of Steel Liners is in progress.

Electromechanical works

All major equipment received at site, Erection works are completed in Draft Tube elbow and Draft tube liners. E.O.T cranes have been erected and equipment erection works are under progress.

The establishment of this project work was started during February 2018 and 12% of the work was completed by May 2021. Due to continuous monitoring, the progress of the Project has improved from 12% to 79.5% during the last 3 years. The scheduled year of commissioning is 2025-26.

3. New Pumped Storage Projects (Upcoming Projects)

i. The Upper Bhavani Pumped Storage Project (4 x 250 MW), located in the Nilgiris District, at a cost of Rs.3,905 crore has been allotted to NTECL for development under Joint

Venture (JV). Government order has been issued in this regard.

ii. International Finance Corporation has been proposed as Transaction Advisor for execution of the Projects under PPP mode for 3 projects Viz., Sandy Nalla Pumped Storage Project (4 x 300 MW) and Sigur Pumped Storage Project (4 x 200 MW) in the Nilgiris District & Vellimalai Pumped Storage Project (4 x 275 MW) in Kanyakumari District.

The following pumped storage projects have been envisaged and are under various stages as below:

Sl. No	Name of the Project	Capacity in MW	Project cost (Rs. in crore.)	Action Plan
1	Kodayar-Kanyakumari	6x250	10,838	Preparation of necessary documents to execute the projects under PPP mode is in progress.
2	Manalar- Theni	6x200	9,887	
3	Aliyar-Coimbatore	4x175	2,504	
4	Palar Porathalar-Dindigul	4 x 275	4,254	Action will be taken to execute the projects under PPP Mode based on the outcome of the above 3 Projects.
5	Manjalar- Theni	2 x 250	2,464	
6	Sillahalla Stage-II-Nilgiris	4 x 250	4,918	
7	Chattar-Kanyakumari	4 x 275	4,707	
8	Karaiyar-Tirunelveli	4 x 250	4,589	
9	Mettur- Salem	4 x 250	4,434	
10	Athur- Dindigul	2 x 150	1,718	
11	Sillahalla Stage-I-Nilgiris	4 x 250	4,952	Preparation of detailed project report is in progress.

III. Dam Rehabilitation and Improvement Project (DRIP-II & III)

The main objective of DRIP is to improve the safety, structural integrity and operational performance of dams for generating reliable hydro power in a sustained manner.

The Government of Tamil Nadu has accorded administrative sanction for the implementation of Dam Rehabilitation and Improvement Project (Phase II & III) to carry out rehabilitation and improvement works in 27 dams of TNGECL which is being implemented in 2 phases with financial aid of Rs. 461 crore from the World Bank and Central Water Commission (CWC) as a nodal agency.

DRIP II

Under DRIP phase II, rehabilitation works in 17 dams have been programmed to be done at a cost of Rs. 227 crore during the period from October 2021 to December 2027.

DRIP II Dams	Present status
Nilgiris District (9 Dams)	
Pykara Dam	Works completed
Maravakandy Dam	Works are under progress*
Moyar Forebay Dam	Works are under progress*
Niralapallam Diversion Weir	Works are under progress*
Parsons Valley Dam	Works are under progress*
Pykara New Forebay Dam	Works completed
Sandynallah Dam	Works completed
Avalanche Dam	Works are under progress*
Mukurthy Dam	Works completed
Coimbatore District (1 Dam)	
Pillur Dam	Works are under progress*
Tirunelveli District (3 Dams)	
Servalar Dam	Works completed
Thambraparani Dam	Works completed
Papanasam Diversion Weir	Works will be taken up after getting clearance from National Wild Life Board.
Theni District (3 Dams)	
Manalar Dam	Works completed

Vennirar Dam	Works completed
Periyar Forebay Dam	Works completed
Kanyakumari District (1 Dam)	
Kodayar II Dam	Works completed
Note : * - All ongoing works are expected to be completed by 31.12.2025.	

DRIP III

Under DRIP phase III, rehabilitation works in 10 dams, 7 dams in Nilgiris District namely Upper Bhavani pumping weir, Western Catchment weir-I, Western Catchment weir-II, Western Catchment weir-III, West Varahapallam weir, East Varahapallam weir and Kundahpalam dam, 1 dam in Coimbatore district namely Kadamaparai dam, 2 dams in Kanyakumari district namely Kodayar I dam and Chinna kuttiyar dam are programmed to be carried out at a cost of Rs. 227 crore during the period from April 2025 to December 2031.

IV. Finance

Based on the Government of Tamil Nadu notification, the new company – TNGECL's provisional financial balances as on 01.04.2023 are tabulated below:

Sl.No	Description	Amount (Rs.in crore)
a.	Equity share capital	2,412
b.	Borrowings (Non – Current)	6,376
c.	Non – Current Assets including Fixed Assets	8,001
d.	Total Assets	8,269

During the year 2023 -24, TNGECL has been brought into operational as per the Government order.

In order to improve the financial position of Tamil Nadu Green Energy Corporation Limited (TNGECL), the Government of Tamil Nadu is

continuously providing financial assistance in the form of Equity Share Capital towards Dam Rehabilitation and Improvement Programme.

TNGECL will receive financial support through the Green Fund. During the financial year 2023-24, the Government of Tamil Nadu has provided a financial assistance of Rs.29.31 crore in the form of Equity share capital.

The Government of Tamil Nadu has also provided Government Guarantee for availing loan facility by the company from Financial Institutions/ Banks

With the aim of operating as an independent entity, the Tamil Nadu Green Energy Corporation Limited (TNGECL) will sell the electricity generated from each plant to the Tamil Nadu Power Distribution Company Limited (TNPDCL) at the tariff rates (MYT order) notified

by the Hon'ble Tamil Nadu Electricity Regulatory Commission (TNERC).

To increase its own power generation, efforts are being made to expedite the completion of the current additional power generation projects of this company.

In order to optimize the cost of generation, several cost cutting measures are being taken up such as swapping high cost loans, availing loans with cheaper rate of interest, effective functioning in the competitive power market.

Human Resource

Officers currently working in the Tamil Nadu Generation and Distribution Corporation (TANGEDCO) will be transferred to the Tamil Nadu Green Energy Corporation (TNGECL) on deputation basis without any change in their work and location. Further, arrangements have been made for those employees to continue

working on their assigned tasks at the same location. On the date of transfer, personnel from the Finance, Human Resources, Information Technology, and Legal departments will be transferred from the Tamil Nadu Generation and Distribution Corporation (TANGEDCO) to the Tamil Nadu Green Energy Corporation (TNGECL) to carry out their functions within the scope of their work. Similarly, employees from the Tamil Nadu Energy Development Agency (TEDA) will be transferred to TNGECL.

Tamil Nadu Energy Development Agency

Introduction

The Tamil Nadu Energy Development Agency (TEDA) was established in 1985 under the Energy Department of Tamil Nadu, with the primary objective of promoting renewable energy in the state. TEDA functions as the Nodal Agency responsible for identifying and assessing the potential of renewable energy sources, creating awareness among stakeholders, supporting Research & Development initiatives, increasing the contribution of renewable energy to the overall energy mix, providing necessary assistance for renewable energy projects, and contributing to the formulation of renewable energy policies. As the State Nodal Agency for the Ministry of New and Renewable Energy (MNRE), TEDA facilitates the availing of Central Financial Assistance (CFA) for various renewable

energy projects. TEDA is actively engaged in promoting the use and propagation of new and renewable non-conventional energy sources in the State and acts as the Nodal Agency for the purpose of implementation of the projects thereof.

Renewable Energy Scenario in Tamil Nadu

Tamil Nadu has emerged as a pioneer in the adoption of clean energy and has positioned itself at the forefront of India's transition towards clean energy sources.

The State government has made remarkable efforts to achieve energy self-sufficiency, create significant opportunities for solar energy generation in various sectors such as rooftop solar, large-scale solar parks, solar-battery hybrid projects and wind-solar hybrid projects.

Tamil Nadu has successfully ensured uninterrupted power supply 24x7 and its commitment to climate action has gained recognition on a global scale.

TEDA in its efforts to promote renewable energy in the State, TEDA has successfully implemented projects with a cumulative capacity of approximately 86.28 MW under the various solar projects and 17 MW from demonstration wind projects. TEDA has successfully achieved installation of 12 MW of rooftop solar under the consumer scale category in the last one year.

Major Programmes and Projects

TEDA has been in the forefront of implementation of Renewable Energy Programmes in the State. On the direction of the Government, several initiative programmes, flagship schemes and Socio-Economic Benefit programmes have been conceived and

implemented by TEDA. The major programmes being undertaken by TEDA are detailed below:

Grid Connected Rooftop Solar PV System – Phase II (for residential consumers)

MNRE accorded a 10 MW sanction to TANGEDCO under Phase II of the Grid Connected Rooftop Solar Programme. TANGEDCO has designated TEDA as the State Implementing Agency for Phase II of the Grid Connected Rooftop Solar Programme by MNRE, to install Rooftop Solar PV systems for residential consumers. TEDA has successfully installed Rooftop Solar PV systems with a capacity of 9.84 MW, benefiting around 2,359 beneficiaries under the programme. The programme provided subsidies of up to 40% from MNRE. The validity of the programme expired on 19.01.2024.

Installation of Rooftop Solar PV systems at secondary and senior secondary schools (Samagrashiksha)

TEDA has facilitated the installation of rooftop solar power plants with a cumulative capacity of 867 kW at 221 schools.

Solarization of Government Buildings

In order to give impetus to adoption of rooftop solar systems in all Government Buildings, TEDA proposes to install Distributed Grid-Connected Solar PV Systems of various capacities for buildings of Government Offices, e- court complexes, State-run industrial units and educational institutions in the state of Tamil Nadu. Tenders have been finalized and empanelment of vendors have been completed for a cumulative capacity of 20 MW.

a. Grid Connected Solar PV Systems

As on date, TEDA has awarded contracts for a capacity of 2.32 MW for e-court complexes and 392 kW for school projects. Out of this, TEDA has successfully completed the installation of 1.59 MW for the e-court project. The installation of the balance capacity for the e-court complex project is expected to be completed by the end of this month.

b. Model Grid Connected Hybrid System

TEDA is in the process of installing Grid Connected Hybrid Systems at 142 e-court complexes. This project aims to combine solar and battery technology to create a more reliable and efficient energy system, offering greater benefits compared to a system that relies on a single source. TEDA has awarded work for a capacity of 426 KW, out of which 234 KW has been successfully installed for the e-courts

project and the balance capacity of 192 kW is expected to be by the end of this month.

b. Solar Powered EV charging station

The Tamil Nadu Energy Development Agency (TEDA) has installed a 25-kW solar powered EV charging station at the DPI complex on a pilot basis, which is available for the general public to charge their electric vehicles. In addition to this, the Government order has been issued for the establishment of two solar-powered electric vehicle (EV) charging stations under the State Innovation Fund at the Secretariat and DPI campus, with an estimated cost of Rs. 150 lakhs. The tender process is currently underway for implementing the project.

5. TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED

I. Introduction

The Government of Tamil Nadu has accorded approval on 24.01.2024 for the formation of Thermal Generation Company in the name of Tamil Nadu Power Generation Corporation Limited (TNPGCL) to take over the fossil fuel (Coal, Naptha and Gas) related generation activities of TANGEDCO, and for the formation of Green Energy Company in the name of Tamil Nadu Green Energy Corporation Limited (TNGECL) to take over the green energy activities (Hydro, Wind, Solar etc.,) of TANGEDCO and also to take over the functions of the Tamil Nadu Energy Development Agency (TEDA).

Furthermore, approval has accorded to TANGEDCO to continue to operate as a

generation and distribution company until the new companies commence operations. Subsequently, TANGEDCO will be renamed as "Tamil Nadu Power Distribution Corporation Limited" (TNPDCL) and will handle power distribution activities.

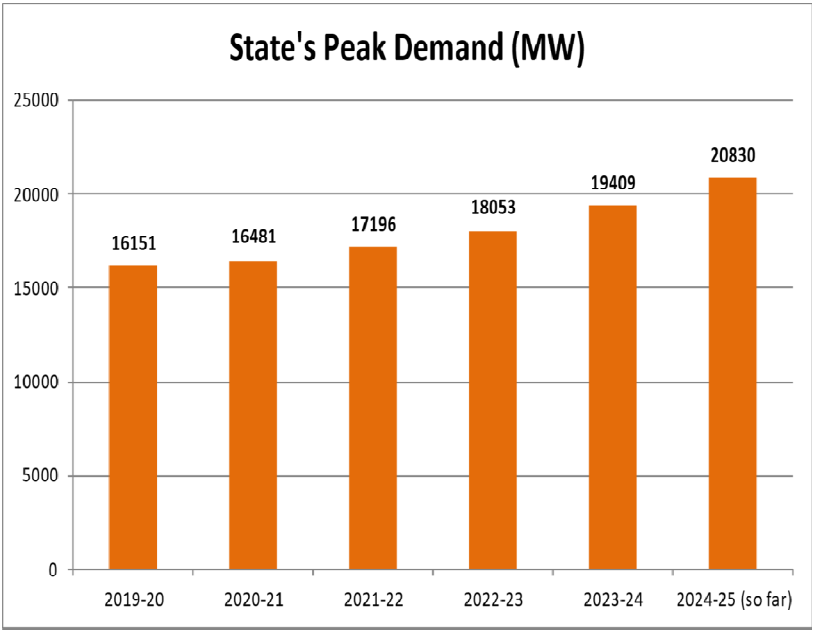
The distribution network is the most fundamental and vital section in modern power systems. This network is closest to the end-users and exhibits the most direct impact on consumer experience.

The distribution system comprises of 110/11 kV, 110/22 kV, 33/11 kV substation, Distribution Transformers, 33 kV, 22 kV, 11 kV and LT voltage lines (over headlines/ underground cables), poles and other equipment. These are needed to deliver electric power to the consumer at the required voltages. These equipments enable the distribution of

power from the generating source to various consumers at different voltages while maintaining the system stable and reliable.

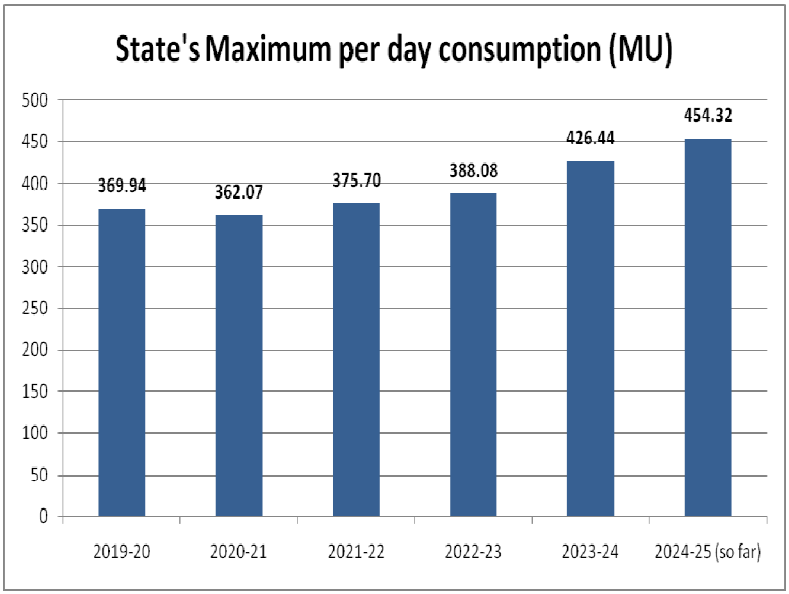
TANGEDCO serves about 3.37 crore consumers of various categories. During the year 2023-24, 8.11 lakh new service connections were effected. The power demand of the State is rising year by year. This year, the grid met an all-time maximum demand of 20,830 MW on 02.05.2024, which is 7.32% higher than last year.

The trend of increase in peak power demand is depicted below:



The maximum per day consumption of 454.32 MU was recorded on 30.04.2024, which is 6.54% higher than last year.

The trend of increase of maximum per day consumption every year is depicted below:



The power demand is met by the State owned conventional thermal and gas plants, and non-conventional hydro, wind and solar plants, along with share from CGS (Central Generating Stations) and the power purchase agreements for long term, medium term and short term. The balance day-to-day shortages are met by purchase through exchanges.

II. Installed capacity

Sl. No.	Category	Capacity in MW
I	**Conventional energy sources**	
1.	Thermal	4,320.00
2.	Gas	408.20
3.	Central Generating Stations (CGS)	6,724.00
4.	Power purchases	
	Independent Power Projects (IPP)	1,105.50
	Long Term Open Access (LTOA)	2,835.00
	Medium Term Open Access (MTOA)	252.00
5.	CPP/Third party generators (Approved open access wheeling quantum)	194.86
	Total Conventional	**15,839.56**
II	**Renewable Energy Sources**	
1.	Hydro	2,321.90
2.	Wind	9,015.09
3.	Solar (STU connected – 7,396.37 MW, Roof Top-599.16 MW)	7,995.53
	LTOA (through PSA with SECI)	500.00
4.	Bio-mass – combustion	206.79
5.	Co-Generation (Bagasse)	684.40
	Total Renewables	**20,723.71**
	Grand Total	**36,563.27**

Long Term power purchase

Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) has executed 11 long term Power Purchase Agreements (PPAs) for procurement of 3,330 MW power for fifteen years from 2013. Out of 3,330 MW, 2,158 MW is from the Inter-state generators and 1,172 MW is from the Intra-state generators.

The entire 1,172 MW is being received from the Intra-state generators. Out of 2,158 MW to be received from the Inter-state generators, 1,658 MW is being received.

Medium Term power purchase

Medium Term Power Supply Agreement (PSA) - Aggregator M/s. PTC India Ltd

Sl.No.	Name of the Company	Quantum in MW	Date of signing of PPA	Agreement period	Remarks
	Pilot-II PSA (3 Years)				
1	DB Power Ltd, Chattisgarh	100	22.10.21	20.01.22 -19.01.25	Power is being procured.
2	Jaypee Nigrie Super Thermal Power Plant, Maharashtra	50		10.04.22 - 09.04.25	Power is being procured.
3	MB Power (Madhya Pradesh) Ltd, Madhya Pradesh	150		3 years from the date of commencement	Not commenced the supply. Case pending before CERC.
4	SKS Power Generation Chattisgarh Ltd, Chattisgarh	100			Not commenced the supply. Under NCLT
		400			

	FOO Method PSA (5 Years)				
1	M/s.GMR Kamalanga, Odisha	**102**	16.07.22	15.12.22 - 14.12.27	Power is being procured.

Short term open access

The following actions were taken to meet out the summer demand.

i. Short term tenders

Under short term tender, TANGEDCO had finalized to procure as below to meet out the summer demand.

Sl.No	Month	RTC in MW	Peak hours (18-24 hrs) in MW	Final quantum during peak hours (18-24 hrs) in MW
1	Mar-24	1,490	541	2,031
2	Apr-24	1,760	492	2,252
3	May-24	835	537	1,372

ii. Swap power arrangement

The swap power arrangement shall be energy to energy transaction between two utilities without monetary considerations. TANGEDCO participated in a power exchange program during the period June 2023 to September 2024.

TANGEDCO supplied power to utilities in Punjab and Rajasthan, ranging from 75 MW to 500 MW, totaling 860 million units. Additionally, TANGEDCO is scheduled to supply power to Uttar Pradesh, BSES Yamuna Power Limited (Delhi) and BSES Rajdhani Power Limited (Delhi) from June 2024 to September 2024, ranging from 50 MW to 525 MW for a total of 200 million units.

TANGEDCO has received power from January 2024 to June 2024 from the same

utilities mentioned above, from 50 MW to 500 MW, for a total of 1,090 million units.

III. Salient Features of Distribution Network

The details of Distribution network as on 01.04.2024 are given below:

Distribution network	
33/11 kV Substations	788 Nos.
High Tension Lines 33 kV, 22 kV and 11 kV (HT-OH)	1,94,614 km
Low Tension Lines (LT-OH)	6,30,518 km
Distribution Transformers	4,15,814 Nos.
HT Cables (HT-UG)	7,470 km
LT Cables (LT-UG)	11,956 km
Total Consumers	3,36,81,673 Nos.

During the year 2023-24, TANGEDCO has commissioned 11 Nos. new 33/11 kV substations with a total capacity of 96 MVA, enhanced Power Transformer capacity in 10 Nos. substations (additional capacity 112 MVA), erected 6,261 kms of HT lines, erected 15,879 new Distribution Transformers that includes 2,550 Nos of DTs erected to avoid over loading and low voltage issues and 11,891 kms of LT lines for strengthening of the Distribution network.

New 33/11 kV Sub-stations commissioned from 1.04.2023 to 31.03.2024			
Sl. No.	**Name of the SS**	**District**	**Capacity in MVA**
1	Poonamalle Bye pass Road	Tiruvallur	16
2	Mathur	Kancheepuram	8
3	Seevadi (Thachur)	Chengalpet	8
4	Periyakarukkai	Ariyalur	8
5	Ayakaranpulam	Nagapattinam	8

6	Vettaikaranirruppu	Nagapattinam	8
7	Ottangadu	Thanjavur	8
8	Veppathur	Thanjavur	8
9	Venmani	Perambalur	8
10	Regunathapuram	Pudukottai	8
11	Sims Park (Conoor)	Nilgiris	8
Total			**96**

Chennai Demand

Chennai, the capital city, serves as a major hub for industries, IT parks, and with a dense population, resulting in a high demand for electricity. Chennai has met a maximum demand of 4,769 MW and maximum consumption per day of 101.76 MU on 31.05.2024.

The highest demand reached in Chennai for the past 4 years is tabulated below:

Sl.No.	Year	Demand	
		in MW	in MU
1	2021	3,540	76.69
2	2022	3,763	82.97
3	2023	4,300	92.74
4	2024	4,769	101.76

In order to meet the above growth in demand, network improvement is being done regularly. Eleven new substations have been commissioned, and in Fifty three substations enhancement of power transformer capacity have been carried out. Further, to avoid supply interruption due to overloading in the existing Distribution Transformers and to improve voltage in the low voltage areas, 2,574 Nos. of DTs have been erected.

New Substations commissioned in Chennai

Sl. No.	Name of the District	Name of the Substation	Capacity in MVA
1	Chennai	Pulianthope 110/33/11 kV SS	25
2	Kanchipuram	Kavanur 33/11 kV SS	32
3	Kanchipuram	Thirumudivakkam 33/11 kV SS (Amarprakash)	32
4	Thiruvallur	Adyalampattu 33/11 kV SS	32
5	Tiruvallur	Arasur 110/33-11 kV SS	41
6	Tiruvallur	Tirumalaivasannagar 33/11 kV SS	16
7	Tiruvallur	Ponniamman Nagar 33/11 kV SS	32
8	Chennai	Alwarthirunagar 33/11 kV SS	16
9	Chennai	Anna Centenary Library (Kotturpuram) 110/11 kV SS	16
10	Tiruvallur	Thirumullaivoyal 110/11 kV SS	16
11	Tiruvallur	Poonamalle Bye pass Road 33/11 kV SS	16

IV. Conversion of existing Over Headline (OH) to Under Ground cable (UG)

1. Chennai

In order to avoid accidents due to snapping of conductors in Chennai city, extended areas of Chennai City and Chennai Sub-urban areas, TANGEDCO has decided to convert the existing Over Head Lines (OH) into Under Ground Cables (UG) in these areas at a cost of Rs.2,567 crore with the financial assistance of PFC.

For this proposal, Detailed Project Reports were submitted to PFC for financial assistance, and PFC accorded loan sanction for an amount of Rs.2,549 crore on 21.11.2017.

33,307 kms LT lines and 2,004.89 kms HT lines are proposed to be converted into underground cables for 12 divisions namely Perambur, Tambaram, Avadi, Adyar, ITC,

K.K.Nagar, Porur, Guindy, Anna Nagar, Ambattur, Tondaiarpet & Vysarpadi.

Work has been awarded for 5 divisions namely Perambur, Tambaram, Avadi, Adyar & IT Corridor for an estimated cost of Rs.1,002.48 crore covering 3,469 kms of UG Cable (HT and LT) and 38,819 Nos of Pillar boxes, under total turnkey basis.

OH to UG conversion works have been completed in Perambur and Avadi divisions on 26.06.2022 and 22.08.2022 respectively and the remaining 3 divisions namely Tambaram, Adyar and ITC Divisions, works are in advance stage of completion.

The progress made so far in the above divisions are given below:

Sl.No	Name of the Division	Revised Total Amount including road cut charges (Rs in crore)	Works involved		Works completed	
			Total Cables (HT+LT) (kms)	Total number of Pillar Boxes	Total Cables (HT+LT) (kms)	Total number of Pillar Boxes
1	Perambur	212.77	675	9,968	675	9,968
2	Tambaram	375.88	1,275	12,431	1,078	11,750
3	Avadi	141.78	540	6,180	540	6,180
4	Adyar & ITC	272.05	979	10,240	976	10,240
	Total	**1,002.48**	**3,469**	**38,819**	**3,269**	**38,138**

The balance works in Tambaram and Adyar division are likely to be completed by 31.07.2024.

2. Conversion of 33 kV Overhead (OH) source lines to Underground (UG) in Delta Districts

In order to have a cyclone resilient network in Coastal areas, the conversion works of

33 kV Overhead (OH) source lines between Sub-stations near coastal area into 33 kV Underground cable has been proposed with the financial assistance of REC.

Fifteen Nos. feeders covering 205.45 km in Delta districts namely Tiruvarur, Nagapattinam, Thanjavur, Cuddalore, Villupuram and Ramanathapuram have been chosen and loan has been sanctioned for an amount of Rs.111 crore.

Nine Nos. feeders have been commissioned. Works are under progress for the following six feeders.

S. No.	Name of EDC	33 KV feeder between Sub-stations		Present Status	Probable date of completion
		From	To		
1	Nagapattinam	110/33-11 kV Achalpuram SS	33/11 kV Arasur SS	99% completed	15.07.24
2	Nagapattinam	110/33-11 kV Vedharanyam SS	33/11 kV Ayakarapulam SS	Work under progress	31.10.24
3	Nagapattinam	Vedharanyam 110/33-11 kV SS	33/11 kV Vettaikaraniruppu SS		31.10.24

4	Tiruvarur	110/33/11 kV Thiruthuraipoondi SS	33/11 kV Perugavalnthan SS	Work under progress	31.10.24
5	Thanjavur	110/ 33-11 kV Sethubavachitram SS	33 kV Kallampatty		31.10.24
6	Villupuram	110/33-11 kV Marakkanam SS	33/11 kV Anumanthai SS		31.10.24

3. Conversion of Overhead line into Underground Cable in the Temple Car Streets

In order to avoid accidents in the Temple Car Streets during Car festivals, conversion works of overhead lines to underground cables in the Temple Car Streets has been taken up for the following fourteen temples, of which works have been completed for three temples, and in remaining eleven temples works are under progress.

S. No	Name of the temple	District	Project cost (Rs.in crore)	Remarks
1	Suseendhram Arulmigu Thanumalayan Temple	Kanniyakumari	0.38	Completed
2	Arulmigu Sriranganathar Temple in Srirangam	Trichy	1.4	Completed
3	Thaanthondri malai Arulmigu Sri Kalyana Venkataramana swami Temple in Karur	Karur	0.73	Completed
4	Thiruvarur Arulmigu Thiyagaraja Temple	Thiruvarur	6.57	Works are under progress and will be completed before 30.09.2024.
5	Srivilliputhur Arulmigu Andal Temple	Virudhunagar	1.801	
6	Arulmigu Madurai Meenakshi Amman Temple	Madurai	10.82	
7	Arulmigu Nellaiyappar temple in Tirunelveli	Tirunelveli	1.96	
8	Arulmigu Koniamman Temple in Coimbatore	Coimbatore	1.7	

9	Arulmigu Avinasi Lingeswarar Temple in Avinashi	Tiruppur	1.25	Works are under progress and will be completed before 30.09.2024.
10	Arulmigu Subramaniya swamy Temple in Thiruparankundram	Madurai	1.87	
11	Arulmigu Arthanareeswarar Temple in Tiruchengodu	Namakkal	1.96	
12	Arulmigu Varadharaja Perumal Temple in Kancheepuram	Kancheepuram	1.81	
13	Arulmigu Ekambareeswarar Temple in Kancheepuram	Kancheepuram	1.95	
14	Arulmigu Kanchi Kamatchiamman Temple in Kancheepuram	Kancheepuram	1.63	
	Total		**35.831**	

V. Conversion of existing Distribution Transformer (DT) structures to Ring Main Units (RMUs) in Chennai and its sub-urban area

In conventional Distribution Transformer structures, supply interruption occurs due to faults like insulator flash over, failure of AB switch contacts, jumper cuts, bird faults, faults due to tree branch falling, etc.

In order to eliminate the supply interruption due to the above faults, it has been proposed to replace the existing conventional DT structures into Ring Main Unit (RMU) in Chennai city and its suburban area which ensures maintenance free HT network and reliability of power supply.

These RMUs occupies much less space compared to conventional structures and no live parts are exposed. It facilitates easy identification of faulty section and hence rectification is made quicker. Moreover, as the

loads are transferred by on-load operations in RMUs, the supply interruptions are reduced. The financial assistance for this work is received from REC and the works are taken up.

Works have been awarded for erection of 11 kV RMUs at a cost of about Rs.787.50 crore. All the 5,433 Nos. of RMUs have been installed and are in service.

VI. MINNAGAM – 24X7 STATE LEVEL CENTRALIZED CUSTOMER CARE CENTRE:

"MINNAGAM" Centralized Customer Care Centre is actively functioning to swiftly address issues related to power supply. It is equipped to handle 37 distinct types of complaints. Any power supply related issues may be reported by contacting the Minnagam Customer Care number 94987 94987.

"MINNAGAM" located at the Chennai headquarters, functions with 65 employees per shift working 24X7 in three daily shifts. This customer service center has received widespread acclaim since its inception due to its prompt resolution of all public complaints.

MINNAGAM prioritizes customer satisfaction by closing the complaints after getting feedback from the complainant. As on date 25,04,930 complaints have been received and successfully resolved then and there.

VII. Mass Maintenance Programme in 2023-2024

Mass maintenance programme was announced to carry out maintenance works throughout the State. From 19.07.2023 to 31.10.2023 various types of mass maintenance works were carried out and completed in all the Distribution Section offices.

Following the above, regular maintenance works were carried out from 01.11.2023 to 30.04.2024. and works have been completed. As a result of the mass maintenance works, supply interruptions have been reduced and the number of tripping of feeders also got reduced. The details of works carried out are as below:

S. No.	Description of work	Unit	Maintenance works carried out from 19.07.23 to 30.04.24
1	Sub-station maintenance carried out	Nos.	2,172
2	Tree Clearance	Nos.	9,32,286
3	Damaged HT Poles Replaced	Nos.	16,774
4	Damaged LT Poles Replaced	Nos.	48,393
5	Leaned Poles Rectification	Nos.	38,301
6	Low Sag Rectification (location in Nos.)	Loc	88,821
7	Insertion of Poles to maintain ground clearance in HT lines	Nos.	11,110
8	Insertion of Poles to maintain ground clearance in LT lines	Nos.	18,729

9	Stay Cut Renewal	Nos.	45,682
10	Replacement of Weak Damaged Insulators	Nos.	2,07,109
11	Damaged Pillar rectification	Nos.	2,104
12	Aged Conductor replacement	km	859
13	Weak Jumpers	Nos.	1,25,127
14	AB Switch maintenance	Nos.	29,468
15	Earthing /Guarding	Nos.	12,496
16	Strengthening of conductors	km	1,399
17	DT Structure Maintenance	Nos.	76,130
18	DT Maintained & oil Rectification	Nos.	43,696
19	Exposed cable burying	Nos.	1,470
20	New DP provided	Nos.	757
21	Pillar box maintenance	Loc	3,436
	Total		**17,06,319**

Further, the areas that were severely affected during the rainy season have been identified, and so far, 5,126 pillar boxes and the plinths of 41 Power Transformers in substations have been raised to one meter above the ground level.

VIII.Revamped Distribution Sector Scheme

In TANGEDCO, under the Revamped Distribution Sector Scheme the following Loss Reduction works are under progress in 15 Districts covering 22 Circles. The Works will be taken up shortly in balance 20 districts covering 19 Circles.

(i) Agriculture Feeder Segregation
(ii) High Voltage Distribution System
(iii) Separation of Double DTs with HVDS
(iv) Augmentation of 33 kV Feeders

RDSS District wise Work Details						
Sl.No	**District Name**	**Agriculture Feeder Segregation (Feeders in Nos.)**	**High Voltage Distribution System (Feeders in Nos.)**	**Separation of Double Distribution Transformers with HVDS (Feeders in Nos.)**	**Augmentation of 33 KV Feeders (Feeders in Nos.)**	**Awarded Value in Rs. crore**
1	Erode	73	32	59	3	537.29
2	Karur	61	3	19	2	310.25
3	Tirupathur	38	9	3	1	240.06
4	Namakkal	40	8	10	0	242.56
5	Salem	68	18	0	0	428.99
6	Vellore	51	6	4	0	235.04
7	Ranipet	58	7	0	6	236.86
8	Villupuram	67	0	0	1	270.92
9	Virudhunagar	45	4	0	6	159.38
10	Krishnagiri	50	14	35	3	284.52
11	Cuddalore	70	4	0	6	265.79

12	Tiruvallur	56	7	33	9	197.12
13	Kanchipuram	22	0	20	3	67.80
14	Chengalpattu	49	3	1	0	208.24
15	Coimbatore	74	10	220	0	529.98
16	Tiruppur	80	33	281	0	763.34
17	Dindigul	68	6	91	0	502.41
18	Madurai	17	9	19	0	114.77
19	Ramanad	3	0	0	0	12.17
20	Sivaganga	8	3	0	0	66.15
21	Theni	18	1	4	0	79.23
22	Trichy	38	12	6	1	374.99
23	Perambalur	14	0	0	0	36.44
24	Ariyalur	24	10	0	1	157.65
25	Pudukkottai	75	1	42	0	206.28
26	Thanjavur	109	11	0	0	297.07
27	Nagapattinam	1	5	13	1	45.14
28	Mayiladuthurai	30	13	10	1	146.86
29	Thiruvarur	32	5	0	0	275.92

30	Dharmapuri	56	10	0	2	299.15
31	Kallakuruchi	40	1	85	0	485.43
32	Tiruvannamalai	174	10	29	2	789.50
33	Tirunelveli	35	7	0	3	157.37
34	Tenkasi	21	4	0	0	110.38
35	Thoothukudi	20	7	0	1	110.08
Total		**1,685**	**273**	**984**	**52**	**9,245.14**

IX. Smart Meter Implementation

In order to eliminate human intervention for fetching of meter data, and to facilitate auto billing, disconnection / reconnection process, smart metering system is being implemented in TANGEDCO.

As a pilot project, Smart Metering System has been successfully implemented with RF communication technology for 1.28 Lakhs LT consumers (Post Paid) under Chennai Smart City Scheme's Area Based Development (ABD) in

Thiyagarayanagar.

Further, Smart meters have been fixed in LT commercial establishments of 351 service connections (shops, kiosks, Hotels, ATM etc.,) attached to the HT Service connections provided inside the CMRL stations.

It has been proposed to install approximately 1.07 crore smart meter (86.58 lakhs single phase, 20.02 lakhs three phase and 24,568 Nos of LTCT three phase and 14,117 Nos of HT Smart Consumer Meters) with prepaid /post paid functionality to all category of consumers except Agriculture and Hut services covering Chennai and other Districts, under RDSS in first phase.

X. Effecting Agricultural service connections in 2023-2024

"சுழன்றும்ஏர்ப்பின்னதுஉலகம்அதனால்
உழந்தும்உழவேதலை" - (குறள்: 1031)

Thiruvalluvar

Though the World revolves with various activities it stays behind the Agriculture activity which is the best activity.

Kalaignar Urai

Agricultural free service connections are effected under various categories such as Normal, RSFS, Special Priority, TATKAL, Kalaignarin All Village Integrated Agriculture Development Programme (KAVIADP) and Tamil Nadu Adi Dravidar Housing Development and Welfare Department (TAHDCO) schemes.

The Scheme of providing free agricultural service connections for the year 2023-24 was

inaugurated by Hon'ble Chief Minister of Tamil Nadu on 27.07.2023 in Trichy District. The Hon'ble Chief Minister also issued orders to 10 Nos. beneficiaries in the function.

So far 18,975 Agricultural services have been effected adding 1,29,658 HP of agricultural Load to the grid. An additional 37,818 acres of agricultural land has been benefitted.

Further, Hon'ble Minister for Agriculture and Farmers Welfare announced a new scheme called "Kalaignarin All Village Integrated Agriculture Development Programme (KAVIADP)" in 2021–22, which aims to convert fallow land into arable land in the State thereby increasing agricultural productivity and uplifting farmer's economic status.

During the year 2023-24, under KAVIADP Scheme-I, 257 Nos. of service connections have been effected to the cluster of lands to a group

of farmers, by fixing meter with bi-monthly billing. Under KAVIADP Scheme-II, 690 Nos. of service connections have been effected to the individual SC/ST Farmers with free electricity charges.

The Government of Tamil Nadu provides subsidy to all agricultural free service connections as fixed by the Hon'ble Tamil Nadu Electricity Regulatory Commission and the subsidy amount of Rs. 6,991 crore has been released for the year 2023-24. The Government of Tamil Nadu shall provide an additional subsidy of Rs.47.07 crore every year for the additional agriculture service connections effected during 2023-24.

XI. Information Technology

IT Wing deals with Low Tension (LT) and High Tension (HT) Consumer related software, employee related software, Sub-stations and

stores related software, ERP and Smart meter applications and implementation of GIS.

i. Implementation of SAP ERP in TANGEDCO & TANTRANSCO

SAP ERP project was implemented and Gone Live on 05.05.2021 for both companies TANGEDCO & TANTRANSCO. The ERP implementation covers about 100 Accounting Units and around 600 Storage locations along with more than 85,000 employees across 283 pay areas. All the Business transactions such as Purchase Orders, Receipt of materials, Recording Services rendered, Invoice processing, Employee Payroll, Leaves and Loans, Receipts and Maintenance activities of Sub Stations are being carried out in SAP ERP System and payments to Vendor and Employees are centralised and done through ERP System only.

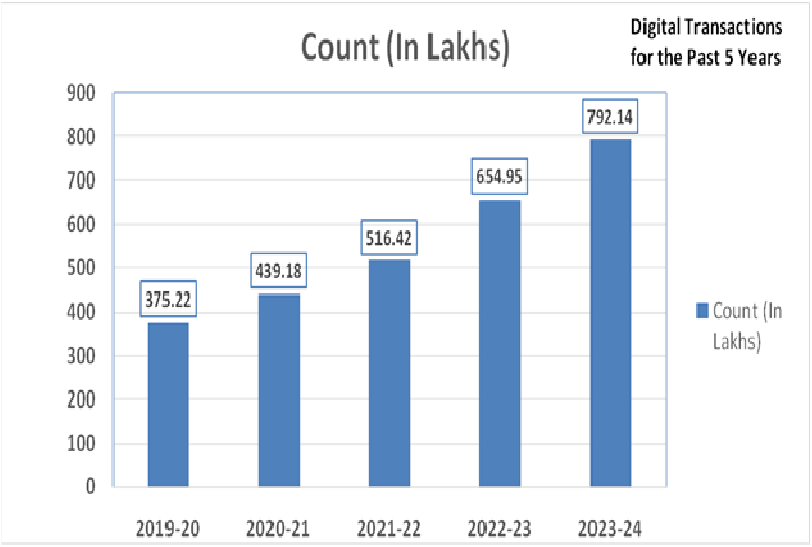
Various Modules available in ERP implementation are listed below:

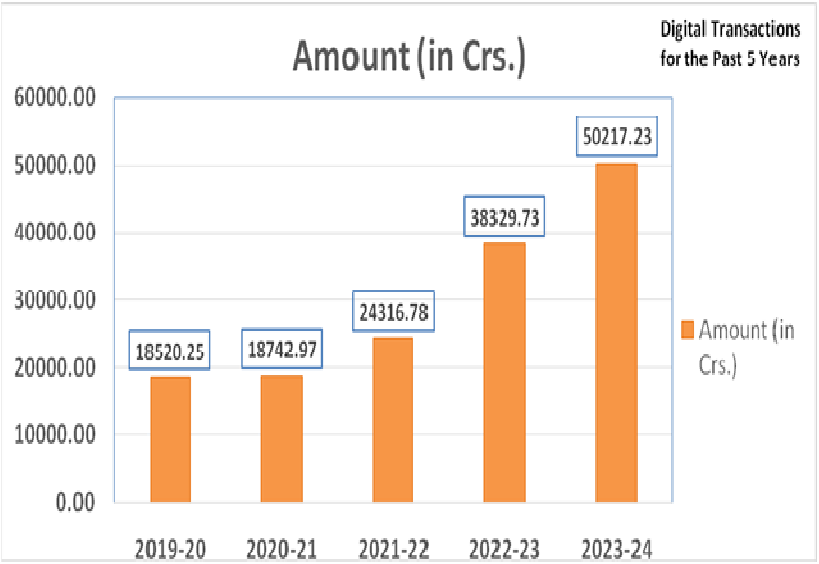
- Finance and Control
- Material Management
- Human Resource
- Project System
- Plant Maintenance
- Sale & Distribution
- Quality Management
- Document Management System
- File Life Cycle Management
- Business Intelligence & Business Object
- Business Warehouse
- Treasury & Risk Management
- Business Application Software Integrated Solution (Basis)
- Advanced Business Application Programming (ABAP)

ii. Digital Transactions status for the past years

The consumers can pay CC charges in digital mode in TANGEDCO online payment

portal and Mobile App through Net banking, Credit/Debit & RuPay Cards, UPI/QR code etc, E-seva Centres of GoTN, BBPS system (GPay, PhonePe, Paytm, BHIM etc), Selected BANK counters, NEFT/RTGS mode. The digital payment is growing at 20% annually. About 83% of TANGEDCO's total collection is made through Digital Mode. There is significant increase in collection by digital transaction. Compared to Rs. 38,329 crore of last year, this year Rs. 50,217 crore was received by digital channel. This was an increase of 31% during the year.


Count (In Lakhs)
Digital Transactions for the Past 5 Years
900
800
700
600
500
400
300
200
100
0
375.22
439.18
516.42
654.95
792.14
2019-20
2020-21
2021-22
2022-23
2023-24
Count (In Lakhs)


Amount (in Crs.)
Digital Transactions for the Past 5 Years
60000.00
50000.00
40000.00
30000.00
20000.00
10000.00
0.00
18520.25
18742.97
24316.78
38329.73
50217.23
2019-20
2020-21
2021-22
2022-23
2023-24
Amount (in Crs.)

SMS is being sent to the consumers in the following occasions:

- Bill Intimation SMS after assessment entry by the Assessor
- Payment confirmation SMS after through collection counter and digital mode.
- Reminder SMS 3 days prior to due date.
- Outage intimation SMS for both scheduled maintenance and fault tripping.
- SMS to the applicants at various stages of application processing.
- SMS to consumers about complaint status.

About 33 crore SMS is being sent every year.

IT Initiatives

i. A new Mobile App for field staff and officials for daily tasks has been launched.

This app facilitates digital transaction of disconnection, reconnection, proper recording of meter changes, new/additional load service connection entries, inspection and prompt response to complaints.

ii. Vendor service Portal

Vendor portal helps to bridge the gap in submission of documents like drawings, test certificates, invoices etc., from vendor to TANGEDCO. The Portal provides easy access of documents, files, invoices against the Purchase Order to both vendor & TANGEDCO. It gives real-time information on the bills processed and pending details. Vendors can see the data of purchase order, materials delivered and processed invoice through this portal. Purchase Order has been issued and is under development.

iii. Mobile app for assessors and Section officers for assessment of LT/LT CT Services

using Serial port cable and blue tooth connector at an approximate cost of Rs. 30 lakhs.

iv. **Red Flag report** has been introduced for focussed inspection of suspected LT connections based on the analysis of variations in consumption pattern, illegal restorations, misuse of tariff etc.

v. TANGEDCO portal for effecting of solar services under **PM Surya Ghar scheme** is integrated with the National Solar Portal.

vi. **Android Mobile app for Pensioners**

Android Mobile app for Pensioners of TNEB has been introduced to view all pension payment details, circulars and income tax details. Digital life certificate is issued through Aadhar enabled Bio-metric as well as facial authentication.

vii. TNEBSAFETY – Mobile Application

TANGEDCO's Distribution field employees work tirelessly to ensure quality power supply. Safety gear like Earth rods, gloves, and belt ropes are provided to ensure safety and to reduce accidents. Their proper usage is crucial, reducing electrical and mechanical accidents. A mobile app named, "TNEBSAFETY," developed by the IT wing, ensuring safety gear usage is being utilised by field staff. Key features of this app include Earth rod verification via photos, simple interface for documenting work details, and offline functionality for remote areas.

XII. ENERGY CONSERVATION & DSM MEASURES

The Government of Tamil Nadu has designated the Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) as the State Designated Agency (SDA) to

coordinate, regulate and enforce the provisions of the Energy Conservation Act 2001. Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) also has been nominated as the State Nodal Agency (SNA) for setting up of the charging infrastructure for electric vehicles in the State.

The DSM wing of TANGEDCO is executing the above said activities in respect of both TNSDA and TNSNA apart from TANGEDCO activities.

Accordingly, TNEI handed over portfolio of TNSDA to TANGEDCO in January 2020. Subsequently, TANGEDCO as TNSDA took up activities on Energy Conservation (EC) and Energy Efficiency (EE) (more than 20 nos. Programmes/schemes) as per the directions of Bureau of Energy Efficiency (BEE), Ministry of Power (MoP), Government of India (GoI) across

the state for which funds are being sanctioned and allotted by BEE.

The activities carried out by TANGEDCO as State Designated Agency (TNSDA) with financial assistance from BEE are

i. Awareness programmes on Energy Conservation (EC) were conducted for 606 farmers in (11 Electricity Distribution Circles) during 2023-24. Further programmes are planned for 2024-25 for farmers in the remaining districts.

ii. **Electric Vehicle:** TANGEDCO has been appointed as State Nodal Agency(SNA) for promotion of installation of Public Charging Stations (PCS) across the State for Electric Vehicles (EV).

iii. **Perform Achieve and Trade (PAT) scheme:** 82 Nos. industries have been identified as Designated Consumers (DCs)

and target for reduction in Specific Energy Consumption (SEC) fixed by BEE in various PAT (PAT cycle - I to VIII) cycles. The reduction in SEC as per target fixed is monitored and verified at the end of the respective PAT cycle. In continuation, BEE with the assistance of TNSDA is in the process of identifying more industries for carrying out baseline audit verification for inclusion in the upcoming PAT cycles.

iv. 1,583 Nos. Energy clubs were established as on 30.04.2024 in Government High and Higher Secondary Schools in 37 districts (37 EDCs) with an enrolment of 61,877 students, to create awareness on energy conservation among the students.

v. 119 Nos. one day Retailer Training Programmes (RTP) on Star labelling of Home appliances were conducted

benefiting about 2,975 salespersons / technicians along with general public across the State during 2023-24. Further 130 programmes have been proposed across the State in Tamil Nadu for the year 2024-25.

vi. In respect of creating awareness on energy conservation and energy efficiency in electrical appliances among the officials of government departments, 38 Nos. one day awareness programmes were conducted for TWAD, Municipal Administration, Greater Chennai Corporation and CMWSSB officials (950 participants during 2023-24).

XIII. Action plan to ensure safety

i. To ensure safe working environment for the staff, Safety appliances such as earth rod, safety gloves/gauntlets and belt rope

are provided along with "TNEBSAFETY" Mobile App developed by IT wing.

ii. To curtail accidents occurred by ignorance of public and animals,

- Wide publicity on Electrical Safety is given through local channels, social media, newsprints and pamphlets.
- Necessity on the installation of Residual Current Device (RCD) is displayed in TANGEDCO Web portal and social media to create awareness among consumers.
- During the last three years, 1,303 consumer awareness programs have been conducted to public and 954 awareness programs conducted in Schools.

iii. **Action plan to save wild animals in forest area due to electrocution**

The implementation of 10-point Action Plan to save elephants from electrocution has been taken up and following works are carried out.

Intensive joint inspection with the Forest Department officials and TANGEDCO Officials are carried out on fortnight basis in vulnerable locations of elephant path area and 7,487 Nos. of rectification works have been carried out in elephant path area so far.

Sl. No.	Name of work	Unit	Total works carried out
1	Raising/Heightening of the existing poles at identified locations.	Nos.	499
2	Removal of low sag by re-sagging the lines	Locations	1,488
3	Insertion of new poles in the long span lines to minimize sagging.	Nos.	2,056
4	Providing spikes or barbed wires around poles to avoid them being pushed by elephants.	Nos.	1,456

5	Replacement of damaged Poles	Nos.	464
6	Leaned pole rectification	Nos.	168
7	Provision of guarding arrangement	Nos.	117
8	Tree branches clearance	Nos.	863
9	Provision of coping of poles	Nos.	110
10	Checking the condition of stay sets and renewal of stay sets wherever required	Nos.	266

Tamil Nadu Government has issued orders for conversion of bare conductors into insulated conductors to prevent electrocution to wild animals. To address Human-Elephant Conflict under Tamil Nadu Innovation Initiatives (TANII), an amount of Rs.5 crore has been sanctioned under State innovation fund. Amount has been disbursed for Pilot Project of laying 11 kV cable from "Thorapally to Theppakadu" in core area of Mudumalai Tiger Reserve, Udhagamandalam of Mudumalai Division. Tenders have been opened and awarding of works are under progress.

In Bargur Forest area, Erode District, to prevent accidents to wild animals and elephants, the bare overhead conductors have been replaced with 22 kV covered conductor for a length of 4.5 km from Thamaraikarai to Bargur and the safety of the animals are ensured.

Joint inspections are being carried out along with the Forest department to carry out improvements. District Level Committee have been formed by the District Collector comprising Forest, Revenue, Agriculture, TANGEDCO and one public representative. Inspection is being carried out by the committee to identify the erection of illegal electrical fencing in forest area.

Govt. order has been issued by Environment, Climate Change and Forests (FR.5) Department on 3rd July 2023 regarding Tamil Nadu Power Fences (Registration and

Regulation) Rules, 2023, for standard erection of power fences within 5 kms from Reserve Forest boundary. Accordingly, joint inspection is carried out by TANGEDCO officials to identify compliance upon receipt of intimation from the Jurisdiction Forest officials.

XIV. Disaster & Resilience

Natural Calamities 2023

i. Cyclone Michaung

The "Cyclone Michaung" brought heavy to extremely heavy rainfall on 03.12.2023 and 04.12.2023 causing inundation and flooding in many areas, resulting in severe damages to the electrical infrastructures of TANGEDCO / TANTRANSCO in Chennai, Chengalpattu, Kanchipuram and Tiruvallur Districts.

In these districts, 18 Nos. of Substations, 231 Nos. of Distribution Transformers, 1,865 Nos. of Poles, 111 km of Conductor,

33 km of Cables, 3 Nos. 230 kV Tower and 20 Nos. 110 kV Tower were damaged.

Out of 45,075 Nos. total Distribution Transformers in the above four Districts, 3,433 Nos. were opened for safety purposes in water logged areas. 95% of Distribution Transformers supply was restored on the second day and balance DTs in water logged area were restored subsequently after draining the water.

The restoration works were carried out on war footing and supply restored with the shortest possible time. 11,164 Nos. officers and staff participated in the restoration work round the clock.

ii. Unprecedented Rainfall in Southern Districts

Due to the unprecedented rain fall in Southern Districts on 17.12.2023 and 18.12.2023 severe damage occurred to the

electrical infrastructures of TANGEDCO/ TANTRANSCO in Tuticorin, Tirunelveli, Thenkasi and Kanyakumari Districts.

Sub-Stations, power lines, poles, cables and Distribution Transformers of all the four Districts were damaged by the downpour. Extensive damage was caused to the electrical distribution network particularly in Tuticorin District.

Twelve Nos. of Substations, 795 Nos. of Distribution Transformers, 15,230 Nos. of Poles, 985 km of Conductor, 4 Nos. 230 kV Towers and 4 Nos. 110 kV Towers were damaged. The restoration works were carried out round the clock. 5,920 Nos. Officers and staff were continuously involved in bringing back normalcy.

Within 24 hours, 100% supply was restored to Thenkasi and Kanyakumari Districts. In Tirunelveli District, 90 % of supply was restored within 24 hours and the remaining subsequently.

In Tuticorin District, 60 % of supply was restored within 24 hours, 20% on next day and balance works within subsequent 3 days except for DTs that provided supply to Agriculture consumers in water logging area.

Out of 30,720 Nos. of total Distribution Transformers in the affected Districts, 4,735 waterlogged DTs were opened for safety purposes. Supply was restored to 4,724 Nos. of DTs on first instance. The balance DTs providing supply to Agriculture Consumers and Salt pan area consumers in Tuticorin District were resumed to service on receding of water.

GoTN has sanctioned a sum of Rs. 10 crore for temporary restoration of Cyclone Michaung and unprecedented rain fall in Southern Districts.

XV. Vigilance and Prevention of Energy Theft Activities

Tamil Nadu Electricity Generation and Distribution Corporation has 4 Vigilance Squads, 21 Enforcement Squads, one Intelligence Squad, one Flying Squad Vigilance Group, 43 Squads of Ex-servicemen and Enforcement (Electricity Theft Prevention Squad) functioning under the Chairmanship of the Director General of Police.

i. Vigilance work (Prevention of Corruption, irregularities and malpractices)

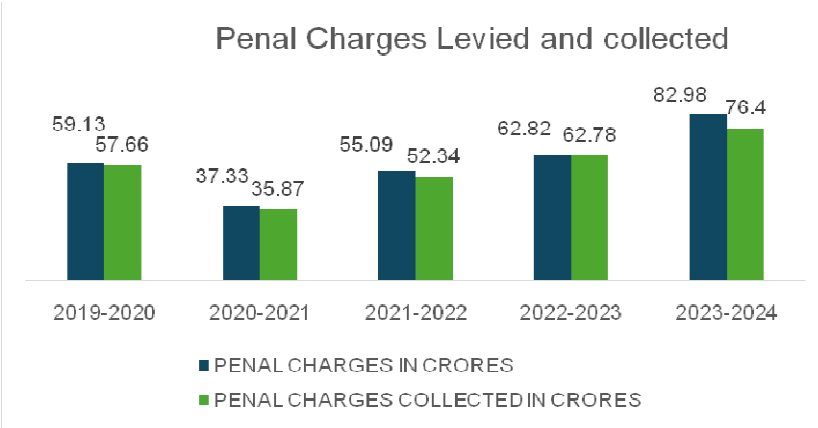
ii. Enforcement (For detecting malpractices and theft of energy)

iii. Safety of Thermal Power Stations and Hydro Power Stations

In Electricity distribution circles, steps are taken to detect and prevent electricity theft by inspecting electrical connections. In the year

2023-24, a penalty of Rs. 82.98 crore has been imposed on those involved in electricity theft as compensation and settlement amount. The details of the penalty imposed and the amount collected in the last 5 years are as follows:

Sl.No.	Year	Penal charges in crore	Penal charges collected in crore
1	2019-2020	59.13	57.66
2	2020-2021	37.33	35.87
3	2021-2022	55.09	52.34
4	2022-2023	62.82	62.78
5	2023-2024	82.98	76.40



XVI. Human Resources

The Secretariat Branch deals with subjects related to all policy matters, Wage-Revision, Work-load Agreement with Unions, Service matters of Class-I Officers and Top level officers, Allotment of funds for HBA and other Advances, Adoption of Government Orders, Establishment matters of all deputationists and all staff of Secretariat Branch, Processing of Medical Aids/ Claims, TNEB Service Regulations-Amendments/Clarifications, Convening Board Meetings, Redressal of Grievances received from the Hon'ble Chief Minister's Cell and RTI Act etc.

The Administrative Branch deals with subjects regarding Direct Recruitment, Compassionate Appointment, Internal Selection, Staff Sanction, Disciplinary Proceedings, Contract Labours issues, Panel / Promotion / Postings & Transfers for all employees of Class

II, III & IV Services, Service Matters / Clarifications & Issuing instructions, Court Cases / IOL / Tribunal Cases / RTI. The details of promotion orders issued for Class I, II, III & IV employees during the year 2023-24 is tabulated:

S. No.	Category	Promotion (in nos.)
1.	Class I	254
2.	Class II	654
3.	Class III (Provincial)	1,436
4.	Class III & IV (RWE)	4,139
	Total	6,483

Further, 317 nos. of compassionate appointments to the legal heirs of deceased Board employees under various initial cadre were issued during the year 2023-24.

Sl.No.	**Name of the Post**	**Number of selected candidates**
1	Office Helper (Trainee)	25
2	Field Assistant (Trainee)	144
3	Junior Assistant (Administration)	23

4	Junior Assistant (Accounts)	17
5	Typist	3
6	Assessor (Trainee)	32
7	Technical Assistant (Electrical)	45
8	Technical Assistant (Mechanical)	13
9	Assistant Draughtsman	1
10	Tester Chemical	2
11	Junior Auditor	3
12	Watchman	9

Training is being imparted to the employees of TANGEDCO and TANTRANSCO regularly throughout the year to enhance their Technical/Managerial skills.

i. Accordingly, administrative approval was accorded for conducting Annual Training Programme for the year 2023-24 at an expenditure of Rs.5.44 crore. Based on the approval, training was conducted for

56,402 participants with 54,227 mandays at an actual expenditure of Rs.3.04 crore.

ii. Annual Training Programme for the year 2024-25, has been approved and training has been commenced.

XVII. Awards

✓ **Consumer Service Rating of DISCOMs (CSR-D)**

TANGEDCO's focus on improving customer service has yielded significant results. TANGEDCO has made significant efforts in enhancing its customer service, resulting in a notable improvement in its Consumer Service Rating of DISCOMs (CSR-D). In the recent assessment, TANGEDCO has climbed from a "B+" rating in 2021-22 to an impressive "A" rating in 2022-23. This remarkable progress underscores TANGEDCO's unwavering commitment to elevating customer experience.

- ✓ TANGEDCO participated in Indian Smart Grid Forum Innovation Award 2023, and received Diamond award for implementation of Automatic Meter Reading for Renewable generators.

XVIII. Sustainable Development Goals (SDG)

The main goal related to the Energy Department is Goal 7 and the other related Goals are Goal 1, Goal 12 and Goal 13.

SDG Goal-7 and its Targets

Goal 7 pertains to TANGEDCO, and the goal is to ensure access to affordable, reliable, sustainable and modern energy for all. The important features are

7.1 Access to affordable, reliable and modern energy services,

7.2 Increase substantially the share of renewable energy mix and

7.3 Double the global rate of improvement in energy efficiency.

Indicators have been fixed for the above targets and action is being taken towards achieving these goals.

Tamil Nadu is a front runner with regards to Goal-7. In this Goal, the national level indicator percentage of households electrified has been selected based on the availability of data and to ensure comparability across States and Union Territories.

XIX. Finance

TANGEDCO's (to be renamed as TNPDCL) provisional financial balances as on 1.4.2023 are tabulated below:

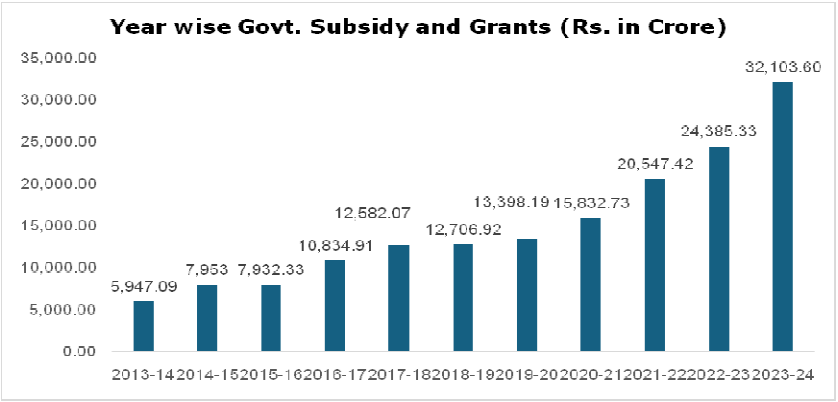
Sl. No.	Description	Amount (Rs.in crore)
a.	Equity share capital	11,394
b.	Borrowings (Non - Current)	64,042
c.	Non – Current Assets including fixed Assets	47,878
d.	Total Assets	84,033

In order to improve the financial position of Tamil Nadu Generation and Distribution Corporation Limited, the Government of Tamil Nadu is continuously providing financial assistance in the form of Equity Share Capital, Tariff Subsidy, Grants towards funding of losses, etc.

The details of subsidies provided by the Government of Tamil Nadu during the past 10 years are as below:

(Rs. In crore)

Year	Tariff Subsidy	Grants	Total
2013-14	4,985.09	962.00	5,947.09
2014-15	5,953.00	2,000.00	7,953.00
2015-16	6,879.33	1,053.00	7,932.33
2016-17	8,484.91	2,350.00	10,834.91
2017-18	7,724.30	4,857.77	12,582.07
2018-19	7,693.92	5,013.00	12,706.92
2019-20	8,053.11	5,345.08	13,398.19
2020-21	8,269.73	7,563.00	15,832.73
2021-22	8,876.36	11,671.06	20,547.42
2022-23	12,069.97	12,315.36	24,385.33
2023-24	14,976.42	17,127.18	32,103.60



During the financial year 2023-24, the Government of Tamil Nadu has provided a financial assistance in the form of Tariff subsidy of Rs.14,976.42 crore, Loss funding grant of Rs.17,127.18 crore.

The Government of Tamil Nadu has also provided Government Guarantee for availing loan facility by the company from Financial Institutions/ Banks.

In order to improve the billing and collection efficiency, efforts are being made to install Smart meters, replace the defective meters, ensure 100% assessment, disconnect the defaulted services, control improper use of energy, enhanced online payment usage, etc.

Tamil Nadu Generation and Distribution Corporation Limited has facilitated its consumers to make payment of current consumption charges through various modes

viz., net banking, Bharat Bill Payment System, e-Seva Centers, Post offices, Payment Gateways, Debit Card/Credit Cards, bank counters, ATMs, etc. TANGEDCO has collected 83% of the total revenue through digital modes. In view of the above facilities extended to the consumers, the collection efficiency stands at more than 99%, which is highest in the country.

Further, in order to optimize the cost of supply of power, several cost cutting measures are being taken up such as Merit Order Dispatch (MoD) on power purchase to avail cheaper power, Interest rate reduction by swapping of high cost loans, improving the ratings for cheaper rate of interest, continuous monitoring for timely completion of capital works etc. Savings achieved subsequent to the negotiation of interest rates worked out to Rs.228 crore per annum. The interest rebate availed from Tamil

Nadu Power Finance Corporation (TNPFC) during 2023-24 was Rs.1,435 crore.

In order to present the Annual Statement of Accounts in compliance with the Companies Act, 2013, TANGEDCO envisaged to implement the Indian Accounting Standards (Ind AS), duly revising the audited accounts of the Financial Years 2020-21 & 2021-22. The Ind AS Accounts continues in FY 2022-23 also.

Timely completion of Ind AS Accounts for 3 Financial years upto FY 2022-23, has enabled TANGEDCO to meet the norms, to avail the additional financial support by the GoTN of about Rs.6,000 crore (i.e 0.25% of GSDP); to obtain improved C&AG audit comments thereby obtaining better 'Rating' leading to assist in reducing the interest rates on the loans. Accordingly, all the new companies including Tamil Nadu Power Distribution Corporation Ltd. (TNPDCL) will also continue to prepare the

Accounts in compliance with the Indian Accounting Standards (Ind AS).

TANGEDCO has implemented the recent judgment of the Hon'ble Supreme Court of India dated 09.10.2023, wherein, TANGEDCO had impleaded itself to finalise various pending court cases since year 2017, in identifying the status of the Captive Generating Plant (CGP). Accordingly, TANGEDCO has commenced to file Petitions before the Hon'ble TNERC, disposal of which may enable TANGEDCO to recover significant revenue.

6. Tamil Nadu Transmission Corporation Limited (TANTRANSCO)

I. TRANSMISSION

Introduction

Transmission is part of electricity delivery that transmits electricity from the generation sites over long distances to substations closer to areas of demand. Transmission network includes towers, which carry Extra High-Tension lines over longer distances and transmits large amounts of power at extra high voltage levels.

TANTRANSCO's objective is to provide quality, robust, reliable Extra High Tension (EHT) power to meet consistently growing power demand in the State to the Distribution network and EHT consumers in the appropriate transmission network at 765 kV, 400 kV, 230 kV & 110 kV voltage levels.

Evacuation of power from the Generating stations and Renewable Energy sources to various Load Centres within Tamil Nadu and connectivity to Inter State Transmission network is ensured by establishing and developing Transmission network in the State.

In this regard, TANTRANSCO is taking all efforts to establish appropriate new Extra High Tension (EHT) Substations and its associated lines at 765 kV, 400 kV, 230 kV & 110 kV voltage levels, Augmentation and Upgradation of the existing transmission infrastructure across the State.

1. Transmission Infrastructure in the State

The existing transmission system infrastructure in the State of Tamil Nadu at different Voltage levels as on 31.03.2024 is as follows:

Sl. No.	Voltage Level	Total No. of Substations in Nos.	Total length of lines in Circuit kms
1	765 kV	2	733
2	400 kV	19	5,075
3	230 kV	115	11,919
4	110 kV (**Grid & Non-Grid)**	952	20,962
5	66 kV	03	83
	Total	**1,091**	**38,772**

Schemes implemented

Twenty three Nos. of Substations and 131 Nos. of Additional / Enhancement of Transformers in 32 Districts, Establishment of Tondiarpet CDH 110 kV SS and Establishment of Ganesh Nagar 230/33 kV substation in Chennai District under Vada Chennai Valarchi Thittam at the total Scheme cost of Rs. 9,564.33 crore has been inaugurated by the Hon'ble Chief Minister of Tamil Nadu.

Achievements during 2023-24

During the financial year 2023-24, TANTRANSCO has commissioned the following Transmission Schemes in the State.

Sl. No	Voltage Level	No. of Substations	Total No. of Additional/ Enhancement Transformers	Total No. of Reactors	Total length of lines in Circuit kms
1	765 kV	2	-	7	732.773
2	400 kV	1	-	2	322.526
3	230 kV	1	15	-	423.627
4	110 kV	13	105	-	268.885
Total		**17**	**120**	**9**	**1,747.811**
Capacity Addition		**7,031 MVA**	**2,487 MVA**	**1,840 MVAR**	

2.Transmission Infrastructure Development

a. 765 kV Transmission Network

TANTRANSCO has stepped into setting up of 765 kV own transmission network mainly for

transmission of power especially Green Energy generated from Solar and Wind Farms from Southern parts of the State. Tamil Nadu is the 3rd state in the Nation in having 765 kV transmission network.

The 765 kV Network will:

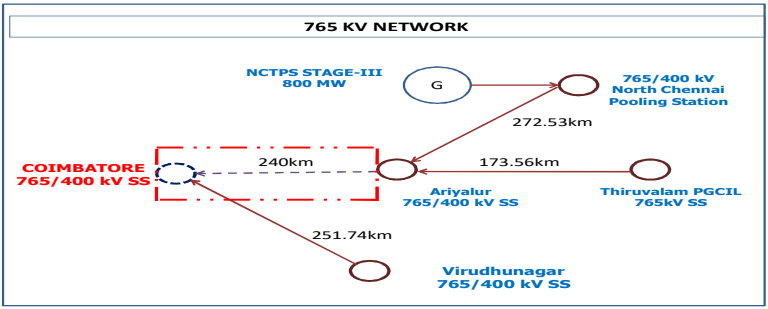
- Minimize transmission line losses
- Carry power to long distances
- Enhance the Available Transfer Capability
- Reliability and
- Develop the Intra-state Transmission system.

The 765 kV network is being developed from Virudhunagar to North Chennai for carrying out power to long distance across the State to the load centres.

765 kV North Chennai Pooling Station (GIS) has been established for evacuating power from

newly established NCTPS Stage III. Moreover, 765 kV North Chennai Pooling Station is to facilitate evacuation of power from the proposed ETPS Expansion Thermal Power Plant and Ennore Special Economic Zone (SEZ) Thermal Plants.

Establishment of Virudhunagar 765 kV Substation is under progress. The intermediate Ariyalur 765 kV Substation has connectivity to the Inter State Transmission System (ISTS) Network at 765 kV Voltage level and has been commissioned.



The 765 kV Substation details:

Sl.No	Name of the Substation	Transformer capacity in MVA	765 kV EHT lines in Ckms		Date of completion/Probable Date of completion
			Energized	Under execution/to be taken up	
1	North Chennai Pooling Gas Insulated Switchgear (GIS) Station	3x1500	560	-	02.02.2024
2	Ariyalur	2x1500	174	174	28.12.2023
3	Virudhunagar	2x1500	-	504	2025-26
4	Coimbatore	2x1500	-	480	
		67.78 / 99.15 acres Land has been acquired and balance of 31.37 acres land acquisition is under process			

b. 400 kV Transmission Network

TANTRANSCO have a robust, reliable 400 kV transmission system with 19 Nos. of

Substations and EHT lines of 5,075 circuit kms across the State for transferring power to load centre and connectivity to Inter State Transmission System. 400 kV Substation at Vellalaviduthi in Pudukottai District has been commissioned on 04.10.2023. The details of works under progress are as below:

Sl. No	Substation Name	District	Present Status	Probable date of completion
1	Thervoikandigai	Thiruvallur	Completed and charged at 230 kV level. 400 kV associated source line work is under progress	July 2024
2	Guindy Gas Insulated Switchgear (GIS)	Chennai	Completed and charged at 230 kV level. 400 kV associated source line work is under progress	2024-25

3	Tharamani Gas Insulated Switchgear (GIS)	Chennai	230 kV Gas Insulated Switchgear (GIS) Bus has been test charged on 17.03.2023. Laying of Associated 400 kV UG Cable source to Tharamani SS is under progress	2025-26
4	Korattur	Thiruvallur	110 kV Bays have been charged. Works are nearing completion	July 2024
5	Edayarpalayam	Coimbatore	Tender will be floated for the balance works	2026-27
6	Parali	Coimbatore	Works are under progress. Getting forest clearance to remove the trees in the Substation site is under process.	2025-26

Lot of Data Centres, Residential and Commercial loads are coming up in the Western parts of the Chennai city. To cater to the above load growth a Gas Insulated Switchgear (GIS) Substation at Koyambedu is proposed to be established with ADB funding with 2x500 MVA ICTs.

c. 230 kV Transmission Network

TANTRANSCO have a robust, reliable 230 kV transmission system with 115 Nos. of Substations and EHT lines of 11,919 ckms across the State for transferring power to load centre. New 230 kV Substation at Karuppur in Salem District has been commissioned on 16.10.2023.

Works are under progress in the following 230 kV Substations to strengthen the network and stability of the 110 kV network.

Sl. No	Substation Name	District	Probable date of Completion
1	Thiruvanmiyur Gas Insulated Switchgear (GIS)	Chennai	March 2025
2	Maraimalainagar	Chengalpattu	January 2025
3	Mambakkam	Chengalpattu	December 2024

4	Panjetty	Thiruvallur	September 2024
5	Avadi	Thiruvallur	September 2024
6	Ganesh Nagar Gas Insulated Switchgear (GIS)	Chennai	December 2024
7	Vembakkam	Thiruvannamalai	October 2024
8	Selvapuram	Coimbatore	August 2024
9	Kalivelampatty	Tiruppur	November 2024
10	Sathumadurai	Vellore	March 2025
11	Nallur	Namakkal	March 2025
12	Nanguneri	Tirunelveli	September 2024

Further, the works for the establishment of K.K. Nagar Gas Insulated Switchgear (GIS) 230 kV Substation is proposed to be re-tendered.

3. Projects funded with Japan International Cooperation Agency (JICA)

JICA loan agreement was approved for 35 Nos. packages for a total amount of Rs.3,572.93 crore.

After exclusion of 11 Nos. packages (due to exclusion of UG cable schemes and 24 packages including associated lines were sanctioned to a total amount of Rs.2,494.67 crore.

Sl. No.	Name of the Schemes	Present Status
	400 kV Substations	
1	Karamadai	Commissioned
2	Manali Gas Insulated Switchgear (GIS)	
3	Sholinganallur	
4	Guindy Gas Insulated Switchgear (GIS)	Completed and charged at 230 kV level. 400 kV associated source line works are under progress. Works will be completed during the year 2024-25.
5	Korattur Gas Insulated Switchgear (GIS)	110 kV Bays have been charged. Works are nearing completion and will be completed by July 2024

	230 kV Substations	
1	Alandur (CMRL)	Commissioned
2	Karuvalur	
3	Echur (Purisai)	
4	Kinnimangalam	
5	Poiyur	
6	Ambattur III Main Road	
7	R.A.Puram	
8	Kumbakonam	
9	CMRL Central	
10	Tiruppur	
11	Shenbagapudur	
12	TNEB Head Quarters	

As loan agreement period was over on 23.07.2023, JICA funding was closed. 15 packages at a cost of Rs.634.85 crore already included in JICA (in lieu of the excluded packages), are being executed by availing domestic funding viz., PFC / REC / HUDCO.

4. Green Energy Corridor

In order to evacuate the huge quantum of Renewable Energy (RE), viz., Wind & Solar, TANTRANSCO has taken up establishment of a

vast network of high-capacity transmission lines in the State.

a. Green Energy Corridor – Phase –I

i. Thennampatty 400 kV Substation

ii. 400 kV DC line from Thennampatty to Kayathar

iii. 400 kV DC line from Rasipalayam to Palavadi

iv. Erection of 6 Nos. 230 kV lines and

v. Augmentation of 13 Nos. 230/110 kV auto transformer capacity from 100 MVA to 160 MVA in 5 Nos., existing 230 kV substations.

The above works have been completed at a project cost of Rs.2,049.39 crore.

b. Green Energy Corridor – Phase –II

Establishment of EHT Substations and Transmission Lines to facilitate intra state transmission of Renewable Energy under Green Energy Corridor–II (GEC-II) with funding

assistance viz., Grant from MNRE for Rs.237.52 crore, Loan from KfW/Germany for Rs.473.12 crore (47% of project cost) & TANTRANSCO Equity for Rs.296.00 crore are being executed as detailed below:

Sl. No	Name of Package	Project cost in crore	Current Status
1	Samugarengapuram 400/230-110 kV SS	249.92	Techno-commercial Bid evaluation completed. Price bid to be opened.
2	Associated 400 kV lines of Samugarengapuram SS	208.86	Techno-commercial Bid evaluation completed. Price bid to be opened.
3	Associated 230/110 kV lines of Samugarengapuram SS	192.60	Techno-commercial Bid evaluation under process.
4	Poolavady 230/110 kV (Digital) substation	73.95	Techno-commercial Bid evaluation under process.
5	Associated 230/110 kV lines of Poolavadi 230 kV SS.	130.00	Techno-commercial Bid evaluation completed. Price bid to be opened.

6	Muppandal 230/110 kV Substation	70.97	Techno-commercial Bid evaluation completed. Price bid to be opened.
7	Associated 230 kV lines of Muppandal 230 kV SS.	11.00	Techno-commercial Bid evaluation completed. Price bid has been opened and evaluation is under process.
8	Associated 230 kV lines of Kongal Nagaram 230 kV SS.	155.54	Technical bid opened on 08.05.2024 and is under scrutiny.

5. Schemes under Chennai – Kanyakumari Industrial Corridor (CKIC) Funded by Asian Development Bank (ADB)

i) Substations and associated Line works

Chennai – Kanyakumari Industrial Corridor Transmission schemes are implemented at a total estimated cost of Rs.4,332.57 crore inclusive of GoTN support of Rs.1,000 crore. Ottapidaram 400 kV SS was commissioned on 22.03.2023 and establishment of Virudhunagar

765 kV SS along with the associated line works are in progress.

ii) Organizational Transformation Study

In order to improve the overall financial and fiscal performance of TANGEDCO and TANTRANSCO, a detailed strategic management study has been undertaken with ADB funding. M/s. Ernst & Young LLP, New Delhi was appointed as the consultant on 25.10.2021.

The assignment includes 11 Nos. tasks viz., Generation Planning, Transmission Modeling, Distribution efficiency improvement and Financial due diligence along with Study of various organization structuring options. Report has been submitted for one task. For the balance 10 tasks, draft study report has been submitted for 8 tasks and study report is about to be submitted for 2 tasks.

6. Projects under Tamil Nadu Investment Promotion Programme (TNIPP)

Phase – I

Six Nos. of Transmission Schemes have been planned for execution under TNIPP Phase – I. An amount of Rs. 195.23 crore has been funded by GoTN for the schemes against the project cost of Rs.216.39 crore and balance amount of Rs.21.26 crore as equity from TANTRANSCO. Out of 6 Nos. schemes, 5 Nos. schemes, viz, 230 kV Substations at Thiruverkadu & Omega Industrial Estate, 110 kV Substations at Omega Industrial Estate, TNSCB Perumbakkam & Thirumangalam South have been commissioned. 110 kV Substation at Munusamy Salai (GIS) is in Progress.

Phase – II

Under GoTN funding, 15 Nos. of Transmission Schemes have been planned for execution under TNIPP Phase –II. The project

cost of Rs.481.65 crore has been funded by GoTN for the schemes. All the 15 Nos. schemes have been awarded out of which 10 Nos. schemes viz, 230 kV SS at Thuvakudy and 110 kV Substations at Singadivakkam, Eliambedu, Thirumani, Denkanikottai, Papparambakkam, Kunjalam, Mangadu, Pulianthope & Pallikaranai have been completed. The balance 5 Nos. schemes are as below:

Sl. No	Name of the scheme	Probable date of completion
1	Avadi 230/110 kV SS	Work under progress. Completion by September 2024
2	Panjetty 230/110 kV SS	Work under progress. Completion by September 2024
3	Thiruvanmiyur 230/33 kV (GIS) SS	To be retendered for balance works of 230 kV & 33 kV. Completion by March 2025
4	Maduravoyal 110/33-11 kV (GIS) SS	Work under progress. Completion by February, 2025
5	Associated 230 & 110 kV lines of Thuvakudy 230 kV SS	OH to UG conversion has been proposed due to RoW issues. Completion by January, 2025

7. Power Evacuation Lines envisaged for the Generation Projects:

(Power Finance Corporation (PFC), Rural Electrification Corporation (REC), Housing Urban Development Corporation (HUDCO) – Domestic Funding Agencies)

Sl. No	Name of the Project	Capacity in MW	Connectivity
1	Ennore SEZ TPP - Unit–I&II (Thermal)	2x660	400 kV DC line from Ennore SEZ Project to 765/400 kV North Chennai Pooling station. Completion by March25.
2	ETPS Expansion TPP (Thermal)	1x660	400 kV DC line from Ennore Expansion Project to 765/400 kV North Chennai Pooling station. Completion by March 25.
3	Udangudi TPP-Stage-I (Thermal)	2x660	400 kV DC line from Udangudi project to Virudhunagar 765/400 kV SS work to be taken up.

4	Kundah Pumped Storage HEP (Hydro)	4x125	Three Nos. 230 kV feeders from Kundah Pumped Storage Generating Station switchyard to Parali 400/230 kV SS work under progress. Completion by 2025-26.
5	Sillahalla pumped storage (Hydro)	4x250	400 kV DC line to Parali 400 kV SS. Work to be taken up.

II. System Operation

The operation wing has the functional responsibility to operate and maintain the EHV transmission elements, so as to match the generation capacity addition, to evacuate and maintain / ensure a reliable supply available all the time, to all the distribution networks, there by the exponential growth of demand, from all the category of consumers are being served judicially.

There are about 1,091 nos. Substations and 38,772 km of Transmission lines under various voltage categories. Works related to Operation and maintenance of the above Substations and Transmission lines are being carried out by Operation wing all over Tamil Nadu.

1. Formation of Hotline sub-divisions

The maintenance / breakdown works on the EHT networks are being carried out by line maintenance team by interrupting the supply. Any interruption of supply due to maintenance / breakdown works will lead to the consumer's dissatisfaction and in turn revenue loss.

In order to avoid supply interruptions, maintenance works on Live Line (without supply interruption) are being carried out and this is called Hotline technique.

The Hotline maintenance works carried out on Live Line by the Hotline trained staff are

1. Replacement of defective disc insulators.
2. High temperature Hot Spot rectification in substation switchyards.
3. Lightning Arrestor testing works.
4. Condition monitoring of Electrical equipments using Thermovision camera.
5. Phase matching test in new Transmission lines.

The Hotline staff are imparted with special training at Hotline Training institute, Bangalore at a cost of Rs.5,74,837/- per person**.** So far 150 personnel have been trained in Hotline technique. In order to carry out the work on live line with safety, the staff are provided with Hotline suits, shoes, goggles and gauntlets.

The Hotline works are carried out by the special hotline tools which are imported from AB Chance/ USA in the year 1995 and the tools are tested at CPRI Bangalore once in two years for its Dielectric capability at a cost of Rs.2.75 Lakhs

per subdivision. The hotline suits costs Rs.2.5 lakhs. By wearing this suit, a person can work even on a Live line with 400 kV safely. Also, the Hotline wings are provided with a special Hotline vehicle to carry out the Hotline works.

Considering the importance of the Hotline works along with the existing 5 nos. sub-divisions, 1 no. Hotline division has been formed at Korattur. Around Rs. 90 crore (180 MU of electricity) was saved by carrying out the EHT line maintenance works on live lines during the year 2023-24.

2. Formation of GIS sub-division

To meet out the rising demand and considering the difficulties in acquiring land for constructing new outdoor substations in Chennai city, Gas Insulated substations are established with minimum space.

In order to carry out the maintenance activities in GIS Substations, 2 Nos. GIS subdivisions at Korattur and Guindy are formed and functioning in an effective manner. At present, 36 nos. GIS substations are in service.The maintenance works carried out by the GIS wing are,

1. $S0_2$ level checking & Gas Analysis Test.
2. Hot spot scanning.
3. High voltage test.
4. GIS Cable termination work.
5. GIS Breaker overhauling work.
6. GIS substation maintenance work.
7. GIS Gas filling work.

3. Measures taken to ensure reliable supply

The substations where only single source of supply is available, fault in the source feeder cause supply interruption to consumers. To avoid such supply interruptions, additional

source feeder is to be connected to such substation. Accordingly, 5 Nos. 110 kV substations have been provided with a second source of supply.

In Substations, due to handling of high voltage and current over a long period of time, loose connections and weak spots will develop slowly in the joints leading to high temperature in the locations. These are called hotspots. These hotspots, if left unattended, develop into major faults leading to breakdown and interruption of supply. Hence these Hotspots have to be identified early and attended immediately.

In order to identify the hotspots, 15 nos. Thermo vision cameras were procured and allotted to the five operation circles namely Chennai North, Chennai South, Sriperumbudur, Thiruvalam and Villupuram in System

Operation/Chennai Region (3 nos. to each operation circle). All the Thermo vision cameras are utilised in Operation circles effectively for identifying the Hotspots and rectifying them then and there.

III. Protection and Communication Wing

1. Reliable Communication Scheme

Fiber optic communication has advantages such as quick data transfer, reliability of data and facility for bulk data transfer. To have redundancy, the reliable communication scheme is being executed for establishment of 10,770 km of 48 fiber optic network in EHT towers and covering 620 Nos. 110 kV Substations. Already TANTRANSCO is having about 5000 km. optical fiber network with 12/24 core fiber in various routes in the State.

The scope of this project is to provide reliable Optical Power Ground Wire (OPGW)

based Fiber Optic Communication with Data Acquisition system to 110 kV & above level substations in the State of Tamil Nadu at a total estimated project cost of Rs.479.84 crore.

The Ministry of Power have sanctioned grant of Rs.155.48 crore from Power System Development Fund (PSDF) for implementation of the above scheme in Tamil Nadu.

Out of the contracted quantity of 10,770 km, about 10,753 km has been supplied out of which 9,361 km OPGW has been erected and about 4,327 km of OPGW has been commissioned. About Rs. 154.33 crore has been spent so far for this project.

Description	Work completed upto March 2023	Progress during 2023-24	Work completed as on date
Supply in km	7,296	3,457	10,753
Erection in km	6,187	3,174	9,361
Commissioning in km	1,360	2,967	4,327

2. Formation of P&C circles

The Protection and Communication wing designs and maintains the protection scheme and ensures healthiness of Transmission network equipments by routine testing. The equipments in the substation and transmission line are to be isolated from fault and protected from damage. Two new P&C circles have been formed to test and ensure healthiness of the TANTRANSCO grid having grid substations at the level of 110 kV, 230 kV, 400 kV and 765 kV.

The total number of substations and equipments are listed below.

Voltage level of SS	No. of SS	No of trans-formers	No of Feeders	No of Breakers	No of CTs	No of PTs	No of Relays
765kV	2	5	6	50	132	42	109
400kV	19	77	45	392	1368	524	1234
230kV	115	301	330	1042	3151	2470	2839
110kV	223	154	581	1779	5053	2002	4359
Total	359	537	962	3263	9704	5038	8541

The Protection and Communication wing is associated with following work.

i. Necessary schemes are deployed for protection of the substation equipment.

ii. Routine testing of relays in protection scheme, Breakers, CTs, PTs used for Protection schemes and Transformers are tested annually to ensure healthiness.

iii. Special Protection schemes are implemented for Grid stability during contingency.

iv. The Protection audit of substations as mandated by IEGC regulation are carried out annually.

v. New elements are tested to ensure functionality before commissioning.

vi. Special test are conducted to restore the system after breakdown.

vii. The data from all the substations are made available at LD centers for effective Grid Operation using the communication network established and maintained by P&C wing. The data is shared with Regional LD Center for smooth operation of INDIA grid.

All State of Art Technology is adopted for all schemes. With the expansion of the grid and due to dearth of testing personnel, the routine test could not be conducted periodically and normalization of system was delayed due to longer travel time from head quarters of testing team.

Considering the importance of Protection and Communication wing in maintaining EHT feeders & their infrastructures and equipments in EHT Sub stations, and commissioning of sub station within scheduled time, in addition to the already existing 4 Nos. P&C Circles, 2 more Circles with Head Quarters one at Thiruvalam, and another at Neyveli, and also 7 new Divisions, and 11 new sub divisions have been formed for the effective maintenance of the grid stability.

IV. GRID OPERATION

The State Load Despatch Centre (SLDC) is a nerve centre for the entire State Electricity Grid. SLDC is carrying the balancing role of matching the load with the available generation on real time monitoring of the grid operation, to exercise supervision and control over the intra state transmission system. Due to the utmost

efforts of this centre, un-interrupted power supply is maintained 24 x 7 hours.

Every year, the summer demand requirement and availability of generation from various sources are being analyzed well in advance in this centre. In order to meet out the deficit during the summer months in round the clock (RTC) period, adequate power procurement has been tied up bilaterally and swapping arrangement. Hence, the maximum peak demand of 20,830 MW was met without any power cut in the State. This peak demand is 7.32% higher than the previous year peak demand of 19,409 MW.

Further, the daily power supply position is being reviewed. Daily contingency occurs due to outage of units and changes in wind & solar generation which causes variation in power supply availability. The power demand is met by

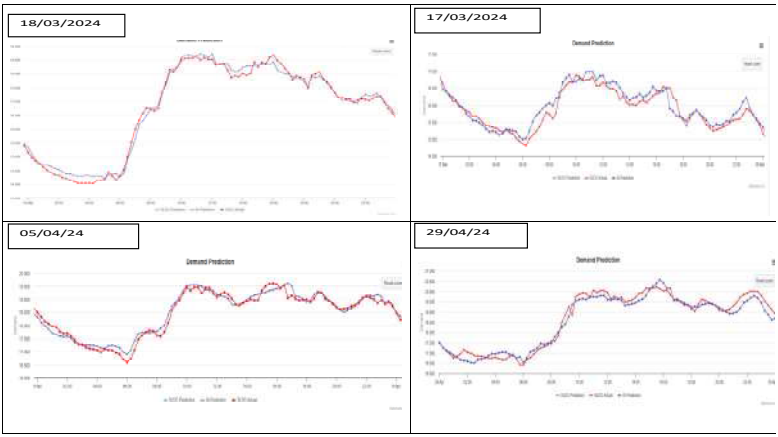
maximizing all available sources and optimizing the power purchase from the day ahead and real time market.

1. Demand Forecasting – AI Based

In Tamil Nadu, previously demand forecasting was done manually based on the historical demand. The power purchase was carried out as per the manual demand forecasting.

Whereas now, a software has been developed in-house based on Artificial Intelligence with the available historical demand and weather forecast from an open website and with the data obtained from Agriculture University. This software is being utilized from the month of November 2023, and the power purchase is being made efficiently as the demand forecasting error has been reduced. The graph showing demand forecast and with the

actual data for various four days is plotted below:

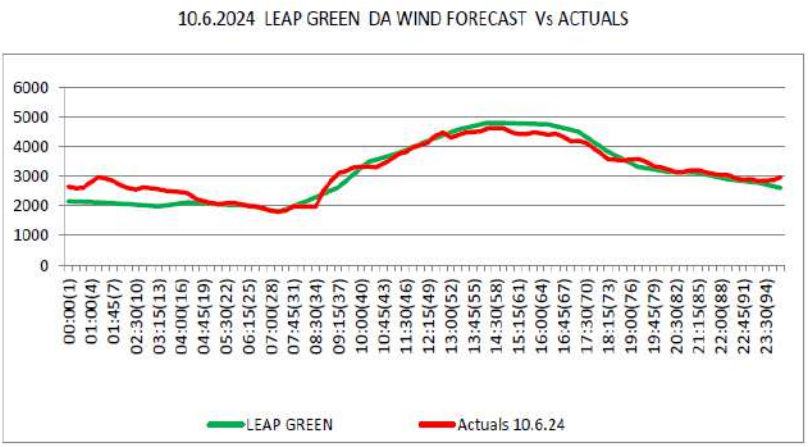


2. Renewable Energy Forecasting:

i. Wind Power Forecasting

The Wind power forecasting carried out through the 3 Nos Forecast Service Providers (FSPs) under the PGCIL funded REMC contract, concentrated more on intra-day forecasts only with 90% of the entire wind installed capacity of the State. Therefore, forecast was not accurate.

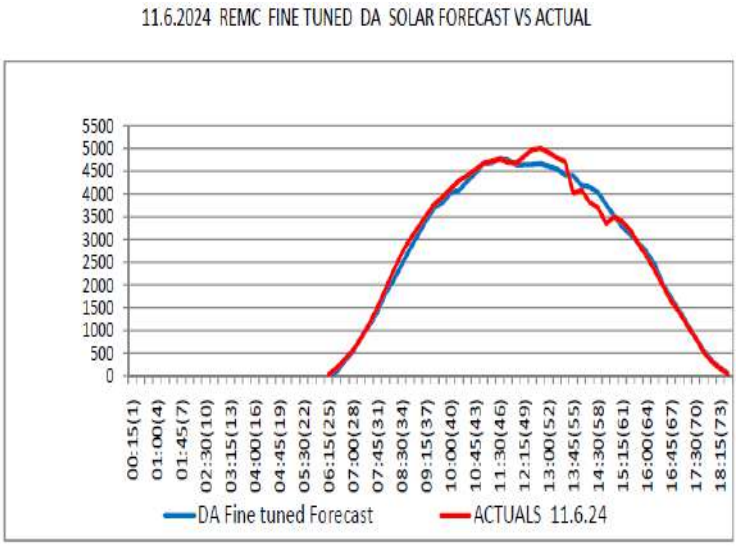
Hence, the wind power forecasts provided by M/s. Leap Green Energy Ltd was considered as it covered the entire wind installed capacity of 9,050 MW deploying advanced Numerical weather prediction models more suitable for Tamil Nadu terrain with better data assimilation. M/s. Leap Green Energy Ltd facilitate wind power forecasting to SLDC, Tamil Nadu on intraday, day ahead and week ahead basis with better accuracy towards real time grid operation, planning and management.



ii. Solar Power Forecasting

The Solar power forecasting is carried out by the Renewable Energy Management Centre, SLDC, Tamil Nadu through 2 Nos Forecast Service Providers (FSPs) under the PGCIL funded REMC contract.

The solar forecasting is carried out for 7,530 MW from 1,336 Nos solar Photovoltaic plants installed throughout the State. Based on the static data of all the SPV Plants, historical and real time generation and global weather prediction models, the FSPs facilitate solar power forecasting on intraday, day ahead and week ahead basis towards better grid management



3. Available Transfer Capability (ATC)

The Power transfer capability from other State (i.e Andhra Pradesh, Karnataka, Telangana) to Tamil Nadu by Inter-State Transmission lines is termed as ATC. This is used to draw power from other States utilizing the existing transmission system by Long Term Agreement from Central Generating Stations,

Medium Term Open Access (MTOA) and Short-Term Open Access (STOA).

Tamil Nadu demand is increasing every year. In order to meet the future demand, it is essential to improve the existing State transmission system connected with Inter-State Transmission system for increasing the transfer capability to Tamil Nadu.

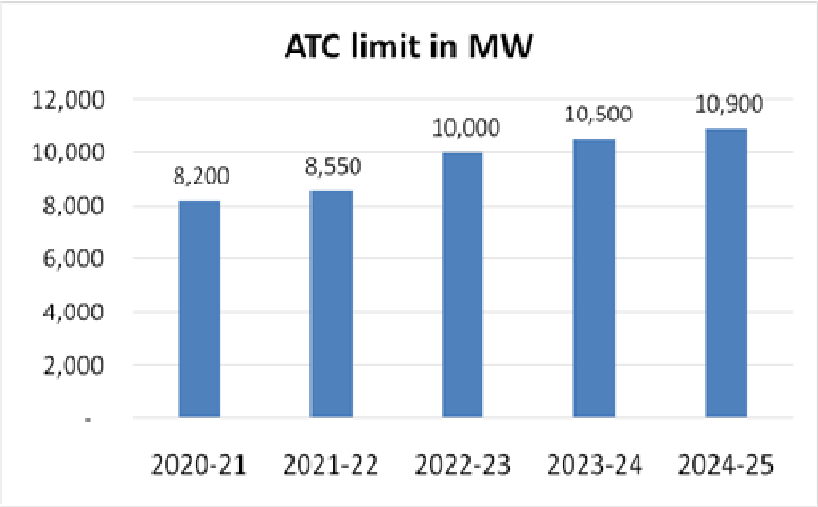
The Available Transfer Capability from other States to Tamil Nadu as on April 2021 is 8,200 MW and it was increased to 10,900 MW from 01.06.2024 by commissioning the following transmission lines connected with ISTS network,

1. Vellalaviduthi 400/230-110 kV SS with the 400 kV lines of Karaikudi S/c line and 400 kV Pugalur S/c line, 4 Nos. 230 kV lines of Thuvakudi, N.T.Gudi, Pudukottai, Mondipatti, 2 Nos. 110 kV lines Karambakudi S/C line, Gandharvakottai

S/C line 400/230 kV 2x315 MVA ICT and 400/110 kV 1x200 MVA ICT.

2. Alundur 400/230 kV SS: Enhancement of 400/230 kV 315 MVA ICT to 500 MVA ICT.
3. Thiruvalam 400/230 kV SS: Additional 400/230 kV 500 MVA ICT
4. Sriperumbudur 400/230-110 kV SS: Additional 400/230 kV 500 MVA ICT
5. Hosur 400/230 kV SS: Additional 400/230 kV 500 MVA ICT
6. Ariyalur 765/400 kV SS: 765 kV lines of Ariyalur – Thiruvalam DC line, 765 kV Ariyalur – North Chennai S/c line, 400 kV Ariyalur – Kalivanthapattu DC line, 400 kV Ariyalur – Pugalur DC line and 400 kV Ariyalur – NNTPS.

The graph showing the ATC limits for the five years is plotted below:



For System Strengthening and enhancement of ATC for Tamil Nadu, the following transmission elements are under progress,

1. Vellalavidithi 400/230-110 kV SS: 400/110 kV 1x200 MVA ICT with 4 Nos 110 kV lines
2. Sriperumbudur 400/230-110 kV SS: Enhancement of 400/230 kV 315 MVA ICT to 500 MVA ICT

3. Salem 400/230 kV SS: Additional 400/230 kV 500 MVA ICT
4. Arasur 400/230 kV PG SS: Additional 400/230 kV 500 MVA ICT
5. Neyeveli TS2: Additional 400/230 kV 315 MVA ICT
6. Ariyalur 400/230 kV SS: 400/230 kV 2x500 MVA ICT with 4 Nos. 230 kV lines
7. Guindy 400/230 kV SS: 400/230 kV 2x500 MVA ICT with 4 Nos. 400 Kv lines
8. Tharamani 400/230 kV SS: 400/230 kV 2x500 MVA ICT with 2 Nos. 400 kV lines

4. Intra-State Deviation Settlement Mechanism for Grid discipline

In order to bring grid discipline to ensure grid stability and security towards the goal of uninterrupted power supply, all generators have been brought under the ambit of a set of Regulations for Deviation Settlement Mechanism and Related Matters formulated by the Hon'ble

Tamil Nadu Electricity Regulatory Commission in March 2019 and February 2024.

As per these Regulations, all Generators (both State owned and Private generators including Renewable Energy Generators) will have to forecast and schedule the power to be generated on day ahead basis in order to ensure effective grid operation through effective power planning. In case of any deviation from the schedule, the Deviation Settlement Mechanism (DSM) will be enforced. The DSM Charges will be payable/receivable by the generators to/from the State Deviation Pool Account maintained by the State Load Despatch Centre (SLDC), as the case may be.

As per the orders of Hon'ble TNERC, the Intra-State DSM for both Conventional Generators and renewable energy generators (wind and solar power) commenced from

01.04.2024. The deviation charges are collected in the State Deviation Pool Account which is being maintained by SLDC on a weekly basis for conventional generators and yearly for wind and solar generators. The entire implementation process of the DSM is being carried out through SAMAST software.

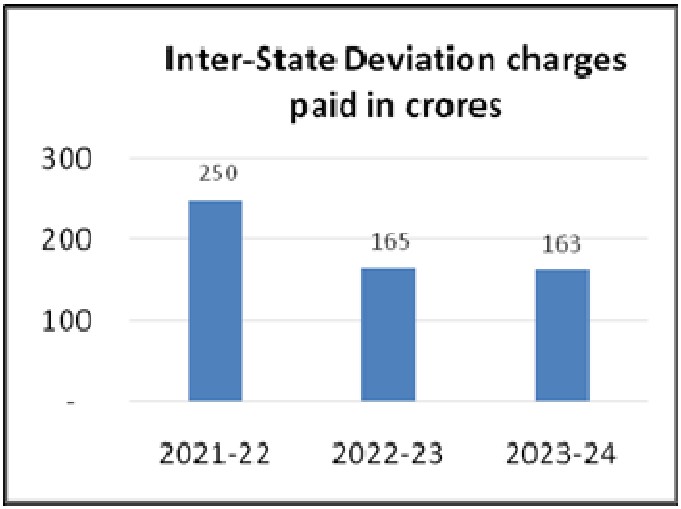
The SAMAST which is (Scheduling, Accounting, Metering And Settlement Of Transactions In Electricity) was framed by **Forum of Regulators, GoI** in July 2016 to bring the grid discipline and ensure Grid Security since India had achieved **One Nation-One Grid – One Frequency** as on 31st December 2013. GoI has provided funding for implementation of the SAMAST project.

Under the above Guidelines framed by Hon'ble Central Electricity Regulatory Commission (CERC), the SAMAST Software was

developed and deployed in the SAMAST IT Infrastructure established in the SLDC. The Software Modules such as Scheduling, Metering and DSM (Deviation Settlement Mechanism) are operational from January 2021. In addition, other software applications such as Open Access, Transmission Line maintenance request (LC), Grid connectivity, REC and RPO are being carried out in the SAMAST Software since 2022.

All the generators and stakeholders are brought within the ambit of Scheduling through implementation of Intra-State Deviation Settlement Mechanism from 01.04.2024 in Tamil Nadu. The metering data is captured in the SAMAST Software. The weekly deviation charges of the generators have been computed by SLDC and published in the SLDC's Website. The monthly energy accounting is also being carried out and published in the SLDC website from 01.04.2024.

Similarly, interstate DSM Regulations are in force as per the CERC, DSM Regulations. The deviation charges paid by TANGEDCO has been reduced for the last three financial years from Rs. 250 crore to Rs. 163 crore.



5. CYBER SECURITY

In order to protect the grid from cyber security attack preventive action is being taken.

The Computer Emergency Response Team- Grid Operation (CERT-GO) has identified the critical information infrastructure of TNSLDC are has notified SLDC as protected systems from Cyber-attacks. The Crisis Management Plan document towards mitigation of any possible cyber-attacks has been prepared and got approved by the Computer Emergency Response Team – India (CERT-In) which is the Nodal Agency to co-ordinate all matters related to Cyber Security in the country.

In order to watch the cyber threats to SLDC on 24x7 basis and for monitoring, detecting, investigating, preventing and responding to cyber threats round the clock, an Information Security Division (ISD) and a Security Operation Centre (SOC) is being established. Advisories on Cyber Attacks as and when received from the CERT-In are attended by SLDC and TANTRANSCO.

In compliance with Cyber Security guidelines, the process of acquiring ISO 27001:2022 ISMS (Information Security Management System) standard certification to TN SLDC is in progress.

V. FINANCE

TANGEDCO is the major customer which contributes to about 80% of the total revenue of TANTRANSCO.

TANTRANSCO has incurred losses during the past 10 out of 14 years due to which the accumulated losses have increased to Rs.8,906.70 crore as on 31.3.2023. Out of this the provisional losses for the financial year 2022-23 is Rs.807.10 crore.

The year-wise Revenue account details for the past 5 years are as below:

(Rs in crore)

Financial Years	Revenue Receipts (Rs in crore)	Revenue Expenditure
2018 – 19	3,224.63	3,859.54
2019 – 20	3,366.22	4,440.70
2020 – 21	3,391.06	5,141.62
2021 -22	3,631.30	4,934.18
2022-23 (Provisional)	4,476.99	5,284.09

Savings

TANTRANSCO is availing financial assistance from various financial institutions. viz. REC, PFC, IREDA and other institutions for executing certain transmission Projects. TANTRANSCO has been continuously pursuing with the Financial Institutions for reduction in interest rate. The total outstanding loan as on 31.03.2024 is Rs.30,803.36 crore.

Due to the continuous effort taken by TANTRANSCO, REC, PFC and IREDA have offered

reductions in interest rates. The outstanding loan as on 31.03.2024 from the above institutions is Rs. 24,130.32 crore. Due to this, TANTRANSCO achieved interest savings on loan to the tune of Rs. 148 crore over a period of one year.

TANTRANSCO is also taking efforts to swap the high-cost loans with low-cost loans which will lead to considerable interest savings.

Indian Accounting Standards (IND AS)

TANTRANSCO has prepared its financials under IND AS from FY 2020-21 onwards in compliance with the provisions of the Companies Act.

7. TAMIL NADU CHIEF ELECTRICAL INSPECTORATE

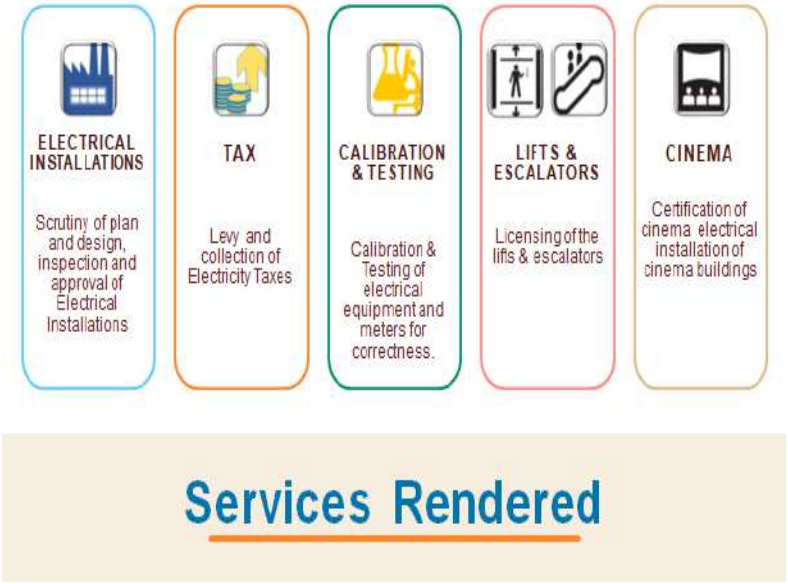
7.1 INTRODUCTION

Electricity is a subject included in the concurrent list under the Indian Constitution. The Electricity Act, 2003 (Act 36 of 2003) supersedes previous legislation including the Indian Electricity Act, 1910, the Electricity Supply Act, 1948, and the Electricity Regulatory Commission Act, 1998. The Electrical Inspectorate is a statutory body established under the Indian Electricity Act, 1910and has the primary mandate to ensure electrical safety within the State of Tamil Nadu.

The Electrical Inspectorate, led by the Chief Electrical Inspector to Government, enforces electrical safety regulations laid under Section 53 of the Electricity Act, 2003. Its duties also encompass the regulation of lifts, escalators,

cinemas and the administration of electricity taxes under State laws.

7.2 SERVICES RENDERED BY ELECTRICAL INSPECTORATE



7.3 STATUTORY & EXECUTIVEFUNCTIONS, ROLES &RESPONSIBILITIES

7.3.1 Statutory Functions

i. Enforcing safety regulations laid under the Electricity Act.
ii. Levying and collecting electricity tax under the Tamil Nadu Tax on Consumption or Sale of Electricity Act & Rules, 2003.
iii. Enforcing the Tamil Nadu Lifts and Escalators Act & Rules, 1997.
iv. Enforcing the electrical safety regulations under the Tamil Nadu Cinemas (Regulation) Rules, 1957.

7.3.2 Executive Functions of the Chief Electrical Inspector

i. Member in the Electro-technical Division of the Bureau of Indian Standards.

ii. Testing and calibration through the Government Electrical Standards Laboratory.
iii. Member of the Power and Telecommunication Coordination Committee.
iv. Ex-officio President of the Tamil Nadu Electrical Licensing Board.

7.3.3 Inspection of Electrical Installations

The Electrical Inspectorate ensures electrical installations are safe and free from electrical accidents by the following activities:

i. Inspection and issuance of approvals for the electrical installations of High-Tension service connections, Solar /Wind Energy generating stations, Independent Power Projects and Captive Power Plants.

ii. Inspection and issuance of approvals for Generating Stations, Sub-Stations, Distribution transformers, and transmission lines of TANGEDCO / TANTRANSCO.

iii. Inspection and issuance of approvals for Multi-Storeyed buildings of more than 15m in height.

iv. Periodic inspections of installations to verify proper maintenance of electrical installations.

v. Investigation of electrical accidents and suggesting remedial measures or recommendations to avoid such accidents in future.

7.3.4 Statutory Duties of Electrical Inspectorate

The Electrical Inspectorate has the statutory responsibility for inspecting and certifying temporary electrical installations that

are set up for events involving VVIPs such as the Hon'ble President, Hon'ble Vice President, Hon'ble Prime Minister, Hon'ble Governor, Hon'ble Chief Minister, as well as other public functions where large crowds are expected to gather.

7.3.5 Cinema Installations

The Electrical Inspectorate carries out the following duties under cinema rules to ensure the safety of cinemagoers.

a) Issuance of Drawing Approvals for the electrical installations of cinema premises.
b) Inspection and issuance of Electrical Certificates for all cinema theaters.
c) Annual inspections of cinemas.

7.3.6 Lifts and Escalators

The Tamil Nadu Lifts Act, 1997 was enacted by the Government of Tamil Nadu. In 2017, the Act was amended to include escalators. Under

the Tamil Nadu Lifts and Escalators Act, 1997 and its associated rules, the Electrical Inspectorate performs the following activities to protect the users of lifts and escalators:

a. Issuance of erection permission for lifts and escalators.
b. Inspection and issuance of licenses for working of the lifts and escalators.
c. Periodic inspections and renewal of licenses to ensure the continued safe operation of lifts and escalators.
d. Issuance of authorization to companies responsible for erection, maintenance, inspection and testing of lifts and escalators.

7.3.7 Electricity Tax

The Tamil Nadu Tax on Consumption or Sale of Electricity Act, 2003 came into force repealing the Tamil Nadu Electricity Duty Act, 1939 and the Tamil Nadu Electricity (Taxation on Consumption) Act, 1962.

Under this Act, the Government has assigned TANGEDCO with the responsibility of collecting taxes on the consumption of electricity from captive generators and IEX purchases.

7.3.7.a The Government has notified the following rates of electricity taxes for sale or consumption of electricity:

Sl. No.	Category	Rate of Tax	Tax collected by
1	Electricity sold by Licensee (TANGEDCO) to consumers	5% on the Consumption Charge	TANGEDCO
2	Electricity Sold by Captive Generating Plants to Consumers	5% on the Consumption Charge	Electrical Inspectorate
3	Consumption of Electricity by Captive Generating Plants including standby Generators (DG sets) for Own Use & IEX purchase	10 paise per unit of electricity consumed	TANGEDCO

7.3.7.b Exemption Categories SS

The following categories are exempted from electricity tax:

1. Electricity sold to the Government, local authorities, and railways.
2. Electricity supplied for agricultural purposes and for hut service connections.
3. Electricity sold to domestic consumers
4. Electricity sold to TANGEDCO.
5. Electricity sold to and consumed by companies set up under various policies, such as Special Economic Zone Policy, Industrial Policy, Solar Energy Policy, Data Centre Policy, and Electric Vehicle Policy.

7.3.8 Government Electrical Standards Laboratory

The Government Electrical Standards Laboratory attached to the Office of the Chief Electrical Inspector to the Government provides calibration and testing ofthe following meters/instruments

1. Energy meters
2. Voltmeters
3. Ammeters
4. Other instruments.

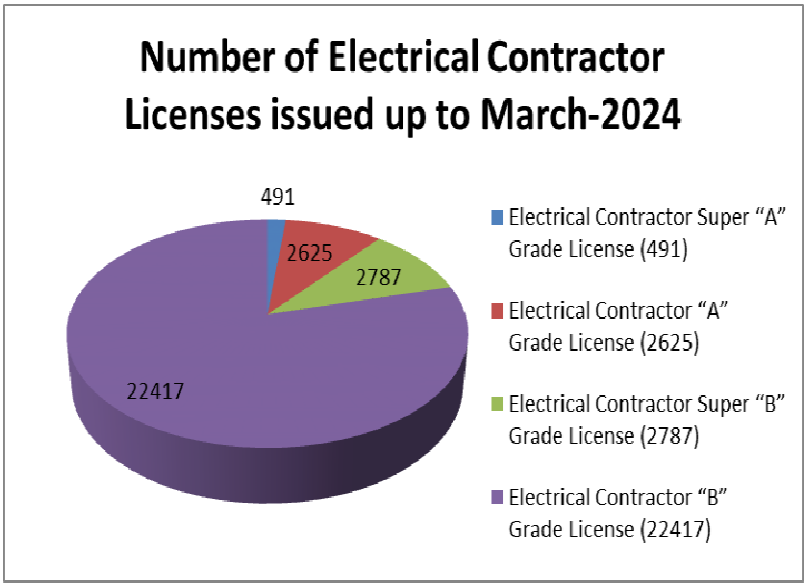
To provide world-class calibration of the above services the laboratory has been accredited to ISO-17025 by the National Accreditation Board for Testing and Calibration Laboratories (NABL) (NABL calibration certificate No. CC-3520, valid from 31.01.2023 to 30.01.2025)

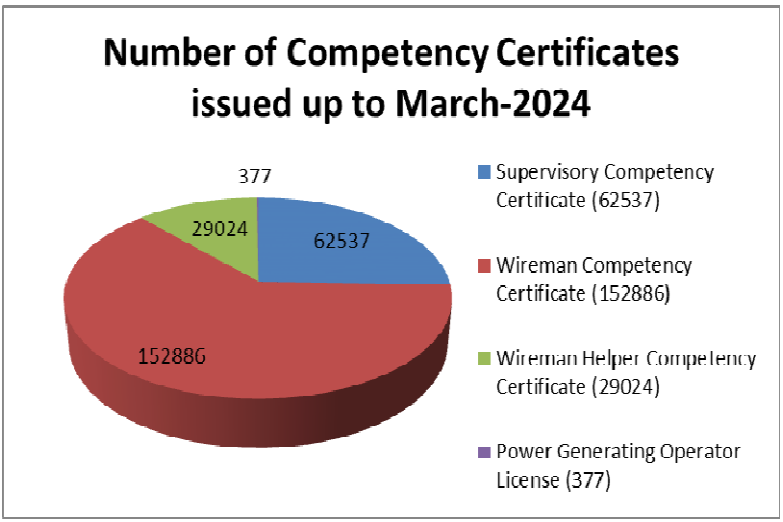
7.3.9 Electrical Licensing Board

1. According to the provisions of the Electricity Act, all electrical installation work must be carried out by licensed contractors and competency certificate holders.
2. The Tamil Nadu Electrical Licensing Board was constituted by the Government of Tamil Nadu to issue licenses to electrical contractors and grant certificates of competency to wiremen and supervisors.
3. The Board issues the following electrical contractor’s licenses based on the contractor's competency in handling voltage levels.

Sl. No	Grade of the electrical contractor	Voltage level
1.	Electrical contractor Super "A" (ESA)	Electrical Installations of all voltage level
2.	Electrical contractor "A" (EA)	All Electrical Installations of voltage upto 33kV
3.	Electrical contractor Super "B" (ESB)	All Electrical Installations of voltage upto 650V
4.	Electrical contractor "B" (EB)	LT consumer (upto 650V) installations with a maximum connected load of 50kW and generators upto 63kVA

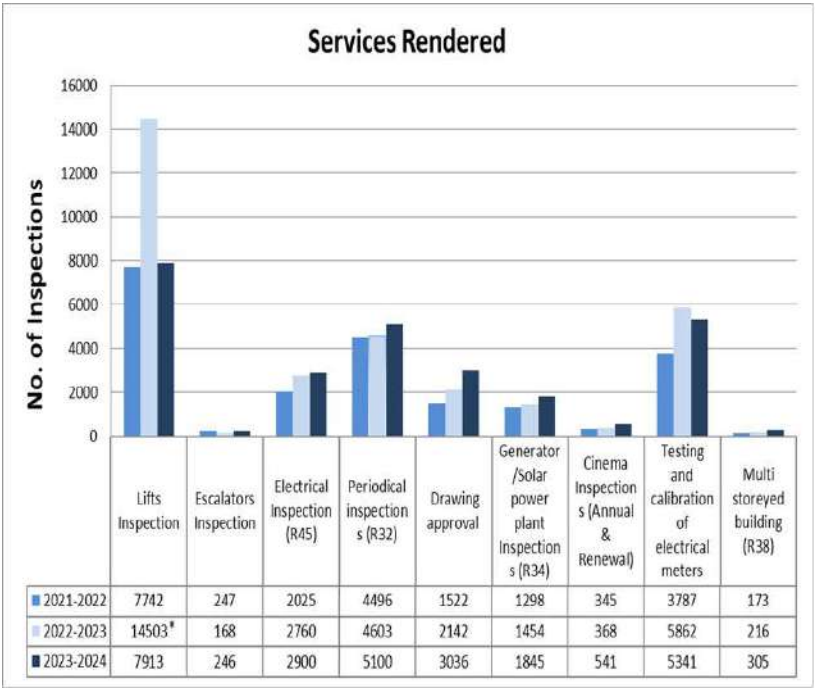
4. The number of Electrical Contractor Licenses and Competency Certificates issued up to March-2024 is as follows:


Number of Electrical Contractor Licenses issued up to March-2024
491
2625
2787
22417
Electrical Contractor Super "A" Grade License (491)
Electrical Contractor "A" Grade License (2625)
Electrical Contractor Super "B" Grade License (2787)
Electrical Contractor "B" Grade License (22417)


Number of Competency Certificates issued up to March-2024
377
29024
62537
152886
Supervisory Competency Certificate (62537)
Wireman Competency Certificate (152886)
Wireman Helper Competency Certificate (29024)
Power Generating Operator License (377)

7.4 PERFORMANCE

7.4.1 The following is a summary of the Department's performance for the financial years 2021-22, 2022-23 and 2023-24.

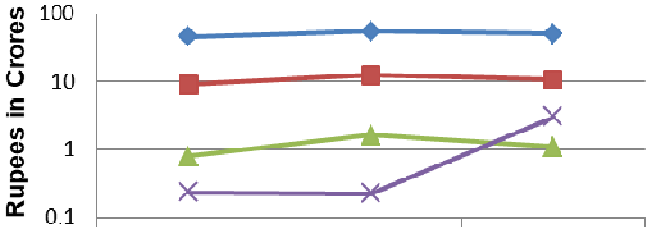


	Lifts Inspection	Escalators Inspection	Electrical Inspection (R45)	Periodical inspections (R32)	Drawing approval	Generator /Solar power plant Inspections (R34)	Cinema Inspections (Annual & Renewal)	Testing and calibration of electrical meters	Multi storeyed building (R38)
2021-2022	7742	247	2025	4496	1522	1298	345	3787	173
2022-2023	14503*	168	2760	4603	2142	1454	368	5862	216
2023-2024	7913	246	2900	5100	3036	1845	541	5341	305

* Higher number of lift inspection applications received during 2022-23 due to the amendment act in 2018 which increased the periodicity of inspection from one year to three years.

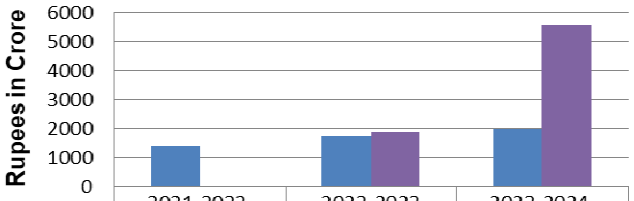
7.4.2 REVENUE

Tax Collected by Electrical Inspectorate



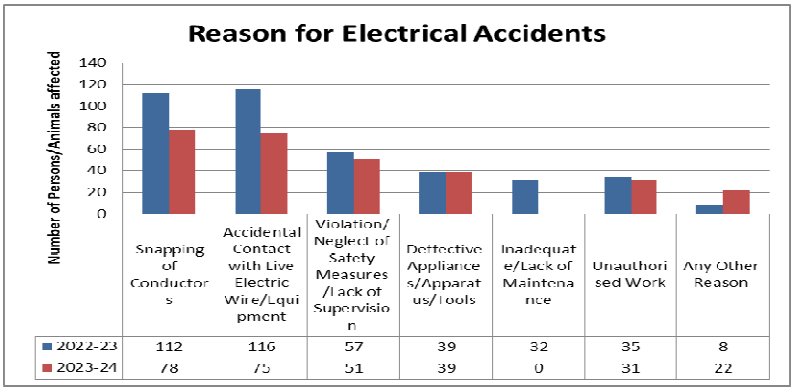
	2021 22	2022 23	2023 24
Electricity Consumption Tax	45.35	54.69	50.9
Sales Tax	9.19	12.57	10.74
Interest	0.81	1.66	1.1
registration	0.24	0.23	3.04

Tax collected by TANGEDCO Ltd

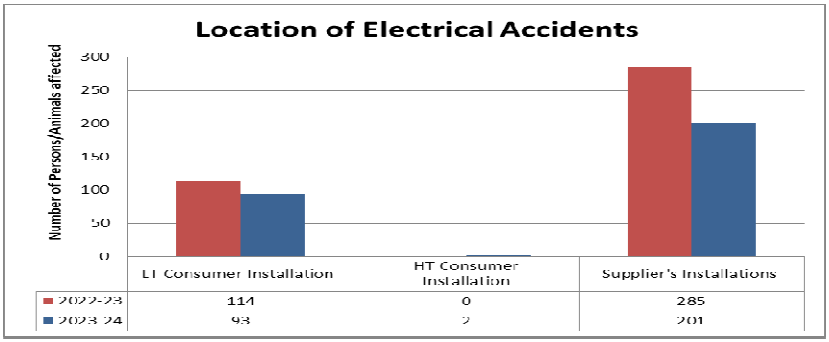


	2021-2022	2022-2023	2023-2024
Total amount collected (Rupees in Crore)	1387.73	1737.48	1985.03
Amount deposited into Government account (Rupees in Crore)	0	1900	5580.21

7.4.3.a ANALYSIS OF ELECTRICAL ACCIDENTS OCCURRED DURING 2022-2023 & 2023-2024



Number of persons /Animal affected, 2022-2023 - 399 & 2023-2024 -296



Number of persons /Animal affected, 2022-2023 - 399 & 2023-2024 -296

7.4.3.b Duties related to electrical accidents

1. Investigation of electrical accidents and suggesting to the TNEB, the remedial measures to avoid such accidents in future.
2. Issuance of electrical safety guidelines for public in newspapers, and through section offices of TANGEDCO particularly during monsoon periods.
3. Some of the important remedial measures suggested to prevent electrical accidents are:
   i. To install the electric shock protecting and lifesaving RCCB/RCBO/RCD in all electrical installations especially in houses.
   ii. To observe requisite safety clearances to overhead power lines

near buildings while doing activities near them.

iii. To ensure the healthiness of electrical installations by engaging licensed electrical contractor to test periodically & verify insulation level.

iv. To train the employees of the Electricity Board periodically about electrical safety measures.

v. To execute all electrical works adopting the safety measures and using personnel protective equipment under competent supervision.

7.5 E-GOVERNANCE

To promote transparency in governance, all services of this department are rendered through online.The Department's website (https://www.tnei.tn.gov.in) provides citizens

with access to all the information which features an easy-to-use content management system.

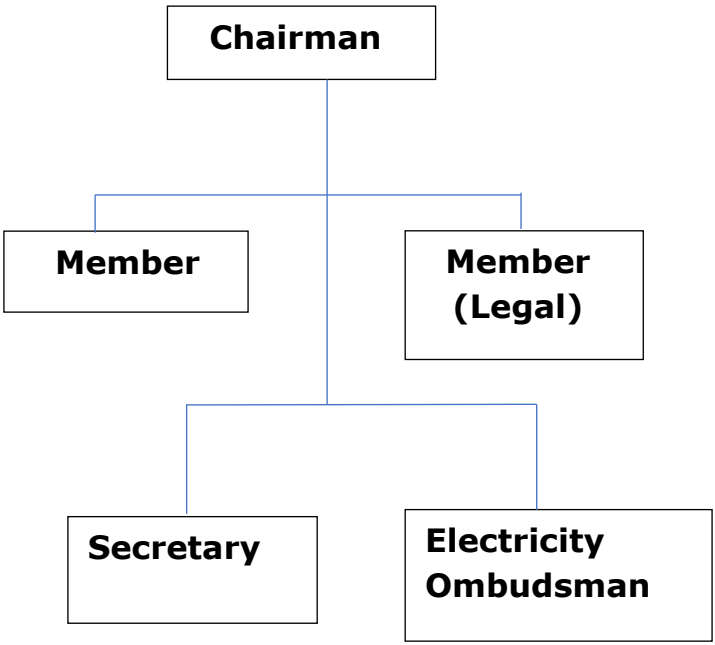
7.6 EASE OF DOING BUSINESS, EASE OF LIVING & BUSINESS REFORMS ACTION PLAN

The services of the Electrical Inspectorate are delivered digitally to the Investors without physical touchpoint through the single-window portal of Guidance.

8. TAMIL NADU ELECTRICITY REGULATORY COMMISSION

The Tamil Nadu Electricity Regulatory Commission (TNERC) was established under the Electricity Regulatory Commissions Act, 1998 (Central Act 14 of 1998). Consequent to the repeal of the Central Act 14 of 1998, the Tamil Nadu Electricity Regulatory Commission continues to be the State Electricity Regulatory Commission (SERC) by virtue of the proviso to sub-section (1) of section 82 of the Electricity Act, 2003.

Organizational structure of the Tamil Nadu Electricity Regulatory Commission



Functions of the Commission

The TNERC discharges the following functions as per the Section 86 of the Electricity Act,2003:

- To determine the Tariff for Generation, Supply, Transmission & Wheeling of Electricity, wholesale, bulk or retail supply within the State.
- To regulate Electricity purchase and procurement process of the Distribution Licensee.
- To facilitate intra-State Transmission and Wheeling of Electricity.
- To issue Transmission licensee, Distribution licensee and Licensee for Electricity Traders to operate within the State.
- To Promote Co-generation and Generation of electricity from Renewable Sources and to specify the Renewable Purchase Obligation.
- To adjudicate upon the disputes between the licensees and generating companies and to refer any dispute for arbitration.

- To levy fee for the purposes of Electricity Act.
- To specify State Grid Code.
- To specify or enforce standards with respect to quality, continuity and reliability of service by licensees.
- To fix the trading margin in the intra-State trading of electricity.

The TNERC shall advise the State Government on the following matters:

(i) promotion of competition, efficiency and economy in activities of the electricity industry
(ii) promotion of investment in electricity industry
(iii) re-organisation and restructuring of electricity industry in the State
(iv) matters concerning generation, transmission, distribution and trading of electricity.

TNERC is empowered to make Regulations consistent with the Act and Rules to carry out the provisions of the Electricity Act, 2003.

Tamil Nadu Electricity Ombudsman

Electricity Ombudsman will receive the appeal petitions against the order of the consumer grievance redressal forum of TANGEDCO and consider such complaints and facilitate their satisfaction or settlement by agreement, through conciliation and mediation between a licensee and the aggrieved parties by passing an award in accordance with the Act and Rules or Regulations made by the Commission.

Thangam Thenarasu
Minister for Finance and
Human Resources Management

Printed by Govt. Central Press, Chennai - 600 001.