

ENERGY DEPARTMENT

POLICY NOTE

2019-2020

DEMAND NO.14

THIRU. P.THANGAMANI

**Minister for Electricity,
Prohibition and Excise**

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ENERGY DEPARTMENT

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(An act that has been firmly resolved on must be firmly carried out without delay)

Introduction

Energy is the crux of sustainable development. Meeting rising energy demand and achieving universal access while ensuring energy sector development that is environmentally friendly, socially sound and economically feasible presents a significant challenge. Tackling the multiple energy-related challenges necessitates a transition in the way energy is generated, transmitted and consumed. Major components of this transition are, enhanced energy efficiency, increased renewable energy in the energy mix and enlarged energy access.

Tamil Nadu operates the most diversified electricity generation fleet in India, with

renewables alone constituting to 40% of installed capacity as of March 2019.

Due to the tireless efforts and the road map laid by **the late Hon'ble Chief Minister Amma**, a massive addition of power to the tune of **13,995 MW** has been added to the grid since 2011 by commissioning of new power stations in State and Central sectors, through medium and long term power purchase agreements and through addition of renewable energy. The State has already attained a status of 'Power for all' with 24x7 power to all categories of consumers by lifting all Restrictions & Control (R&C) measures since June 2015.

Tamil Nadu being the leader in Renewable Energy with an installed capacity of **12,180 MW** has harnessed **12,601 million units of wind energy and 3,554 million units of solar energy** during 2018-19.

Tamil Nadu is amongst the States with the highest solar insolation in India. Hence Government of Tamil Nadu is taking effective steps to promote Solar Energy. In that direction the **Tamil Nadu Solar Energy Policy 2019** was released by the **Hon'ble Chief Minister on February 4, 2019**. The policy targets 9,000 MW of installed solar photovoltaic (PV) capacity in Tamil Nadu by 2023. The new solar policy includes both distributed and utility-scale solar PV generation.

The present average power demand of Tamil Nadu is about **15,600 MW to 16,100 MW**. However, the maximum demand met was **16,151 MW on 03.04.19**. There is an increase of 4.6% during this year in maximum demand met, compared with previous year.

Energy is the key input in economic growth and there is a close link between the availability of energy and the growth of a State. Reliable

and affordable availability of energy helps in the all-round development of any State. This Government has put in tremendous efforts in this direction along the path laid by the **late Hon'ble Chief Minister Amma**. As a result Tamil Nadu is a surplus power State today.

The following organizations are under the Administrative Control of Energy Department:

- I. Erstwhile Tamil Nadu Electricity Board which has been re-organized as,
 - i. TNEB Limited
 - ii. Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and
 - iii. Tamil Nadu Transmission Corporation Limited (TANTRANSCO)
- II. Tamil Nadu Energy Development Agency (TEDA)
- III. Chief Electrical Inspectorate to Government (CEIG)
- IV. Tamil Nadu Power Finance and Infrastructure Development Corporation Limited (TNPFC)

TNEB Limited
Tamil Nadu Generation and Distribution
Corporation Limited and
Tamil Nadu Transmission Corporation
Limited

Tamil Nadu Electricity Board (TNEB) which was formed during 1957 based on the Electricity Act 1948 after a long journey of 53 years was restructured on 01.11.2010 into TNEB Limited (Holding Company) and two subsidiary companies namely Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and Tamil Nadu Transmission Corporation Limited (TANTRANSCO).

The functions of Generation, Distribution and Transmission hitherto looked after by erstwhile TNEB is now being handled by two subsidiary companies. The function of power generation and distribution is being handled by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and transmission of power is being handled by Tamil Nadu Transmission Corporation Limited

(TANTRANSKO), the State Transmission Utility. The State of Tamil Nadu is one of the pioneers in electrifying all its villages. The electricity network has been extended to all villages and towns throughout the State and all the villages have already been 100% electrified.

1.1 Sector Transformation

Tamil Nadu has added **13,995 MW** to the State grid since the year 2011, making Tamil Nadu a power surplus State.

The visionary and tireless efforts **of the late Hon'ble Chief Minister Amma** has transformed the energy sector and the restriction and control measures which was in force were fully withdrawn from 05.06.2015, thus providing 24/7 quality power throughout the State.

For a State like Tamil Nadu which faces ever increasing demand for quality power, special emphasis is being given towards augmenting power to meet the rising demand.

The Government of Tamil Nadu is giving topmost priority for development of power infrastructure in the State. Besides strategic steps are being taken to improve the efficiency of Transmission and Distribution networks by continuous augmentation of the network to provide quality and uninterrupted power supply to all category of Consumers.

The details of infrastructure are as follows:

S. No	Description	As on 31.03.19	Effectuated during 2018-19	Effectuated up to 31.03.19 since 2011
1	Substations (Nos)	1,682*	105	507
2	Extra High Tension lines (circuit kms)	34,276	1,191	12,905
3	High Tension lines (kms)	1,77,390	3,628	26,735
4	Low Tension lines (kms)	6,28,066	6,407	77,971
5	Distribution Transformers (Nos.)	3,09,468	16,167	1,05,695
6	Consumers all categories (lakhs)	295.98	8.56	71.11

*- Includes 4 Numbers 765 kV SS and 11 nos 400 kV SS of PGCIL SS

1.2 Efforts taken by TANGEDCO and TANTRANSCO during Cyclone GAJA

- a. Severe Cyclonic storm 'GAJA' struck over Bay of Bengal crossed Tamil Nadu and Puducherry coast between Nagapatinam and Vedaranyam during 00:30 to 02.30 hrs on 16th November 2018 with heavy wind speed of 110-120 Kmph, bringing with it heavy rain that lashed Delta districts devastating the electrical infrastructure. Electrical infrastructure comprising Extra High Tension Lines, Towers, HT and LT poles and HT and LT lines, Distribution Transformers etc., were severely affected.
- b. On transmission side, **201 substations and 42 extra high tension towers** were damaged.
- c. On the distribution side, **3,31,772 poles and 1,655 distribution transformers were damaged and 32,111 km of conductors** severed

and over **66 Lakh service connections** were extensively damaged/ affected.

- d. The extent of damage to the electricity network was much worse than the damages caused during cyclones such as Thane, Vardah and Ockhi. The total damages to TNEB were assessed to be in the range of Rs. 2,380 crores.
- e. The magnitude of damage was so huge that it amounted to the virtual re-electrification of entire affected districts. In addition to the materials on hand which had been stocked as a precautionary measure based on the previous experiences, men and materials from other districts were also diverted immediately for the restoration works on war footing basis.
- f. Apart from 9,025 staff available in the affected districts, around 17,036 staff

from other districts were engaged in restoration works. Further, along with 2,083 staff from Andhra Pradesh, Kerala and Karnataka engaged in restoration works, 500 workers from Nevyeli Lignite Corporation were engaged specifically for cutting uprooted trees.

- g. As the damages were extensive in the districts of Nagapattinam, Tiruvarur, Pudukottai and Thanjavur, as per the instructions of Hon'ble Chief minister of Tamil Nadu restoration works were taken up under the direct supervision of Hon'ble Minister for Electricity, Chairman cum Managing Director, Joint Managing Director, Managing Director/ TANTRANSCO, Director / Distribution, Director/ Generation & Director/ Transmission Projects with teams formed under Chief Engineers / Superintending Engineers.

- h. Works were carried out round the clock on war footing to restore the power supply in all the affected districts within the shortest span of time. The works were undertaken by the officers and staff continuously in spite of the climatic drawbacks and various natural stumbling blocks.
- i. At the first instant, supply was restored to essential services such as General Hospitals, Collectorate etc., within 24 hours. On priority supply in Corporation area was restored within 3 days.
- j. The devoted hard work of TNEB staff ensured restoration of Power in majority of the Municipalities and Town Panchayats within a week. Supply to all domestic consumers was restored by 31st December 2018. The hard work put in by the officers and staff of TNEB was widely appreciated by the Members of the public.



Damages Caused to Infrastructure due to GAJA Cyclone



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Damages Caused to Infrastructure due to GAJA Cyclone



Workers sitting in wet road and eating food



Staff eating food at top of the pole



TNEB staff competing with time in the restoration works



Hon'ble Chief Minister of Tamil Nadu Thiru Edappadi K.Palaniswami visited the areas affected by Gaja cyclone and examined the ongoing electrical pole restoration works. Hon'ble Deputy Chief Minister Thiru O.Panneerselvam, Hon'ble Ministers, Government Higher Officials and Pudukottai District



Thiru.P.Thangamani, Hon'ble Minister for Industries Department Thiru M.C.Sampath travelled by boat to the Vandal area of Thalainayar Panchayat in Nagapattinam District and personally visited the poles damaged due to Gaja cyclone.



Hon'ble Minister for Electricity, Prohibition and Excise Thiru P.Thangamani, Hon'ble Minister for Industries Department Thiru M.C.Sampath travelled by boat and personally visited the Special Medical Camp for the people affected by the Gaja cyclone.



Hon'ble Minister for Electricity, Prohibition and Excise Thiru P.Thangamani and Hon'ble Minister for Rural Industries Thiru P.Benjamin visited and examined the food preparation work for the public affected by the Gaja cyclone



Hon'ble Chief Minister of Tamil Nadu Thiru Edappadi K.Palaniswami personally met the TNEB staff engaged in the restoration works on 28.11.2018 and praised their work. Hon'ble Deputy Chief Minister Thiru O.Paneerselvam, Hon'ble Ministers, Parliamentary and Legislative members, Government higher officials, Thiruvarur District Collector Thiru L.Nirmalraj IAS are also present

1.3 Sustainable Development Goals (SDG):

The SDGs are bold universal agreements to end poverty in all its dimensions and craft an equal, just and secure world – for people, planet and prosperity by 2030. The world is now into the third year of the SDG era. The SDGs are ambitious global development goals that address key aspects of universal wellbeing across different socio-economic, cultural, geographical divisions and integrate the economic, social and environmental dimensions of development. India's National Development Agenda is mirrored in the SDGs.

The 17 SDGs and 169 targets are a part of transforming our world: the 2030 Agenda for Sustainable Development, which was adopted by 193 Member States at the historic UN General Assembly Summit in September 2015, came into effect on January 1, 2016.

The Government of Tamil Nadu began implementing Vision 2030 Agenda with the Tamil Nadu State Planning Commission as co-ordinator.

- ❖ In this regard, a High Power Committee has been constituted under the Chairmanship of Chief Secretary with 8 working groups under the Chairmanship of Secretaries to Government in order to plan, implement, monitor and review the SDG in Tamil Nadu.
- ❖ The working group on “Innovation, Industrialisation and Sustainable Development” under the Chairmanship of the Principal Secretary to Government, Industries department is tasked with Goals pertaining to Energy.

SDG Goal-7 and its Targets:

Sustainable Development Goal 7 pertains to TANGEDCO, and the goal is to ensure access to affordable, reliable, sustainable and modern energy for all.

The important targets 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 being a front runner in achieving SDG goal has been ranked one at

the National level under SDG goal 7 - Affordable and Clean Energy.

Road Map for SDG Goal-7

Target 7.1

- Tamil Nadu has already achieved 100% electrification. All villages and towns are already electrified and access to electricity to households is available in all the areas.
- In remote/forest area habitations where the conventional mode of electrification is not possible, TANGEDCO has electrified the households in these areas through Solar Roof Top System.
- Tamil Nadu is a pioneer State in supplying 24x7 power to all sectors. The State provides uninterrupted quality

supply at affordable price to all categories of consumers.

- The State Utilities (TANGEDCO and TANTRANSCO) continuously plan for infrastructure projects and improvement schemes in Generation, Transmission and Distribution sectors to meet the growing load demand of the State.

Target 7.2

- Tamil Nadu is also a pioneer in renewable energy generation in India. The state holds 1st position in India for the combined total installed capacity of Wind and Solar.
- The maximum Renewable Energy contribution in consumption is around 38% and maximum Renewable Energy contribution in demand is around 42% during peak wind season.

- In order to promote solar energy and to achieve the target of 9000MW of installed solar capacity by 2022, new Solar Policy 2019 came into effect on Feb 2019.
- The new Solar Policy encourages both distributed and utility scale PV generation.
- Hence, the State is taking all necessary steps to move towards clean energy with less dependency on fossil fuel plants thereby reducing the carbon foot print.

Target 7.3

- TANGEDCO has proposed to reduce Aggregate Technical and Commercial (AT&C) losses of TANGEDCO to 10% by 2030.

- TANGEDCO had taken several measures for the reduction of AT&C losses.
- TANGEDCO has already in the process of erecting High Voltage Distribution System (HVDS) by replacing the existing higher capacity Distribution Transformers with lower capacity so as to improve the High tension to Low Tension line length ratio (HT/LT ratio) through IDPS/DDUGJY schemes which aids in reduction of the AT&C losses.
- Distribution strengthening works are also under progress under Integrated Power Development Scheme, Deen Dayal Upadhyaya Gram Jyoti Yojana and UDAY scheme for reduction of AT & C losses.

Thus, the State is taking earnest steps in achieving the SDG targets within the target period.

1.4 Vision

The power sector of the State has grown manifold in capacity generation by the proactive steps taken by the State Government to provide adequate energy of desired quality to users in a sustainable manner and at reasonable costs.

Ever increasing demand of energy has posed tremendous pressure and has necessitated optimum use of the resources. With the objective of managing the increasing demand for electricity in the State and to maintain the State power surplus in the coming years also, a massive capacity addition to the tune of 17,100 MW of thermal and hydel power projects and 750 MW of solar power project have been proposed in a phased manner in addition to the capacity building in the transmission and distribution domains.

1.5 Generation

1.5.1 Demand and supply

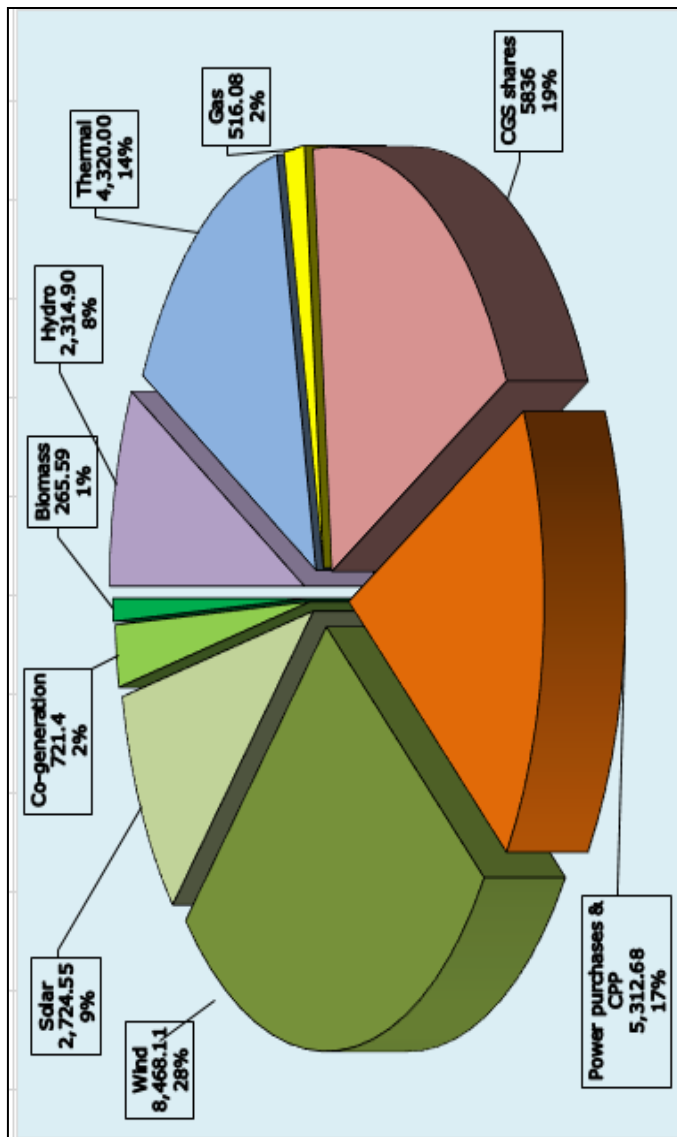
The present average power demand of Tamil Nadu is about **15,600 MW to 16,100 MW**. The maximum demand met was **16,151 MW on 03.04.19**.

Further, **Chennai** met an all time high demand of **3,738 MW on 18.06.2019**. There is an increase of 10.4% during this year in maximum demand met in chennai, compared with previous year.

The daily average State consumption has increased from 200 MU during 2011 to 345 million units in 2019 and the maximum consumption was 369.94 MU on 12.04.2019. There is an increase of 4% during this year in maximum demand met, compared with previous year.

Installed capacity as on 01.04.2019

S.N	Category	Capacity in MW
I	Conventional energy sources	
1	Hydro	2,314.90
2	Thermal	4,320.00
3	Gas	516.08
4	Central Generating Stations	5836.00
5	Power purchases	
	Independent Power Projects (IPP)	746.50
	Long Term Open Access (LTOA)	2,830.00
	Medium Term Open Access(MTOA)	750.00
	Total power purchases	4326.50
6	Captive Power Projects (CPPs)	986.18 *
	Total conventional	18,299.66
II	Renewable energy sources	
1	Wind	8,468.11
2	Solar	2,724.55
3	Biomass – Combustion	265.59
4	Co-generation	721.40
	Total non- conventional	12,179.65
	Grand total	30,479.31
<p>* These CPP though not supplying to TANGEDCO, they supply through open access to private consumers.</p>		



Installed capacity as on 01.04.2019 in MW

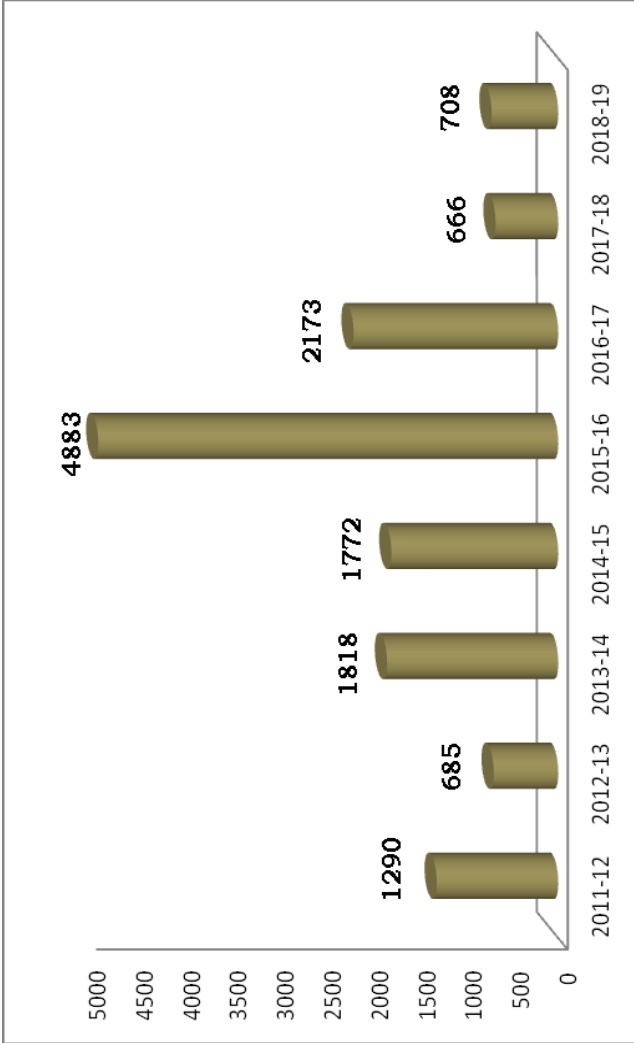
1.5.2 Capacity added from the year 2011-12

Yearwise Capacity Addition from 2011-12 as on 01.04.19			
Year	Projects	Capacity in MW	Commissioning date
2011-12	Bhavani Kattalai Barrage II	30	29.11.11
	Periyar -Vaigai Small HEP II	2.5	30.01.12
	Simhadri stage II Unit 1 (CGS Share)	99.5	16.09.11
	Periyar PH RMU Unit 1(35MW to 42MW)	7	14.07.11
	TOTAL	139	
2012-13	Simhadri stage II Unit 2(CGS Share)	99.5	30.09.12
	TANGEDCO -NTPC JV Unit 1 (Vallur)	359	29.11.12
	Periyar PH RMU Unit 2 (35MW to 42MW)	7	11.09.12
	Bhavani Barrage II	10	26.10.12
	TOTAL	475.5	
2013-14	TANGEDCO -NTPC JV Unit 2 (Vallur)	359	25.08.13
	Mettur Thermal Power Station - Stage III	600	12.10.13

Year	Projects	Capacity in MW	Commissioning date
	North Chennai Thermal Power Station Stage II Unit 1	600	20.03.14
	Periyar PH RMU Unit 3 (35MW to 42MW)	7	08.01.14
	Bhavani Kattalai Barrage III (2x15MW)	30	16.10.13
	Periyar -Vaigai Small HEP III (2x2MW)	4	Unit 1-11.09.13 Unit 2- 09.10.13
	TOTAL	1600	
2014-15	NCTPS Stage II Unit 2	600	08.05.14
	Kudankulam Unit 1	563	31.12.14
	TANGEDCO -NTPC JV Unit 3 (Vallur)	358	26.02.15
	TOTAL	1521	
2015-16	Neyveli TS 2 Expansion (2x250 MW)	271	Unit-2 22.04.15 Unit-1 05.07.15
	TANGEDCO -NLC JV Tuticorin (2x500 MW)	439	Unit-1 18.06.15 Unit-2 29.08.15
	Bhavani Barrage 1	10	Unit-1 29.05.15 Unit -2 02.07.15

Year	Projects	Capacity in MW	Commissioning date
	Periyar Vaigai Small HEP-IV(2x1.25 MW)	2.5	Unit-1 01.03.16 Unit-2 29.02.16
	Periyar PH RMU -Unit 4(35to42 MW)	7	23.03.2016
	TOTAL	729.5	
2016-17	Changes in the Unallocated shares	36	
	Kudankulam Unit 2	562.5	31.03.2017
	TOTAL	598.5	
2017-18	Changes in the Unallocated shares	(-) 97.5	
	Kudgi Stage I (Unit I, Unit 2)	212	
	TOTAL	114.5	
2018-19	Kudgi Stage I (Unit 3)	111	15.09.2018
	Sholayar PH RMU Unit 1 (35MW to42MW)	7	29.10.18
	NLC Vintage TPS 1	(-) 475	PPA expired on 31.03.19
	Changes in the Unallocated shares	48	
	TOTAL (2018-19)	(-) 309	

Year	Projects	Capacity in MW	Commissioning date
	TOTAL (2011- 2018)	4869	
	Long Term Open Access (LTOA)	2,830.00	
	Medium Term Open Access (MTOA)	750.00	(550MW- PTC from 2018 to 2022)
	Grand Total with Power Purchase	8449.00	
	Renewable Energy added since 2011	5546.30	
	Grand Total (with power purchases and Renewable Energy)	13,995.30	



Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Capacity added (MW)	1290	685	1818	1772	4883	2173	666	708

1.5.3 GREEN ENERGY

Renewable Energy (RE) sources provide a viable option for on/off grid electrification. Being a State rich in Solar and Wind Energy, Tamil Nadu still continues to stand first across the country with highest total installed capacity of solar and wind energy. Accommodating the renewable resources requires new approaches for extending and operating the grid. Tremendous efforts are put in to design the Power systems to handle the variable nature of loads, the additional supply-side variability and uncertainty which pose new challenges for utilities.

1. Solar power

The State has a total solar installed capacity of **2,725 MW**. In the year 2018-19, alone **690 MW** has been added to the grid. There is an

increase of 34% compared with previous year's installed capacity.

The State has harnessed around 3,554 million units of solar energy during 2018-19. Further, an all-time high generation of 2,172 MW and all time maximum energy of 14.33 Million Units has been harnessed from solar generators on 11.05.2019. At present, considerable quantum of solar generation is being realized during day time at an average of around 1,000MW to 1,800MW.

Power Purchase Agreements have been executed for a combined capacity of 1,500 MW of solar energy, and so far 235 MW capacity of SPV Plant has been commissioned under this agreement and project works for balance capacity are under progress.

Apart from this, Solar Energy Corporation of India (SECI) is to float a tender for procurement

of 1,000MW in two stages of 500 MW each, on behalf of TANGEDCO from the Developers for establishing solar power plants in the State of Tamil Nadu. The first stage of tender is under process.

In addition to this, initial works are under process to establish a 500MW Ultra Mega Solar Photo Voltaic Power Park Project at Kadaladi and 250MW of Floating Solar PV Power Projects in Theni, Salem and Erode districts.

Realizing the present need of renewable energy, Tamil Nadu Solar Energy Policy 2019 came into effect on February 4, 2019. The policy targets 9,000 MW of installed solar photovoltaic (PV) capacity in Tamil Nadu by 2023. The new solar policy includes both distributed and utility-scale solar PV generation.

The policy aims to establish an ecosystem that translates the state's solar energy vision

into enabling policy systems and processes and create a single window system for technical support, funding support, and project clearance.

2. Wind Power

Tamil Nadu is pioneer in promoting the wind energy in the country. Tamil Nadu has the highest wind power capacity in the country with an installed capacity of **8,468 MW** contributing about 28% of State's total Installed Capacity.

With this Tamil Nadu is first in wind energy capacity contributing about 24% of the country's total wind installed capacity.

Also, the State has harnessed around **12,601 million units** of wind energy during 2018-19. An all-time high generation of **5095.6 MW on 27.07.2017 and the all time maximum energy of 107.317 MUs** on

19.07.2018 has been harnessed from wind generators.

TANGEDCO has signed PPAs for 450 MW and in second phase floated a tender for procurement 1,500 MW.

Apart from this, 637 MW of wind projects in Tamil Nadu with Power Grid Corporation of India Limited (PGCIL), Central Transmission Utility (CTU) connectivity has been commissioned in Tamil Nadu and around 1,040 MW is under process.

As Tamil Nadu is already having a huge installed capacity of wind power which satisfies the State's Renewable Energy Purchase Obligation (RPO), it is in a position to sell wind power to the other needy States who require this power to fulfill their RPO.

3. Co-generation projects

TANGEDCO has taken up establishment of **12 co-generation plants** with a total capacity of **183 MW** in co-operative and public sector sugar mills along with sugar mill modernization in Tamil Nadu at a total cost of **Rs. 1,241.15 crores.**

Out of the 12 cogeneration projects, 5 projects viz., 18 MW at Chengalrayan Co-op. Sugar Mills Ltd., Villupuram District, 15 MW at Vellore Co-op. Sugar Mills Ltd., 15 MW at Cheyyar Co-op. Sugar Mills Ltd., 15 MW at Arignar Anna Sugar Mills Ltd., Tanjore District and 18 MW at Perambalur Sugar Mills Ltd. were commissioned. Balance 7 Nos. Co-gen projects are likely to be commissioned on or before December 2019.

1.5.4 Projects

1.5.4.1 Ongoing projects

Sl. No	Projects	Capacity in MW	Value in Rs. (crores)
1	North Chennai Thermal Power Station Stage-III (1x800 MW)	800	6,376
2	Ennore SEZ Thermal Power Project (2 x 660 MW)	1320	9,800
3	ETPS Expansion Thermal Power Project (1 x 660 MW)	660	5,421
4	Uppur Thermal Power Project (2x800 MW)	1600	12,778
5	Udangudi Thermal Power Project Stage I (2x660MW)	1320	13077
6	Kundah pumped storage hydro-electric project (4x125MW)	500	1831
	TOTAL	6200	49,283

1. North Chennai Thermal Power Station Stage-III (1x800 MW)

The total project cost including IDC is **Rs.6,376 crores**. LOI have been issued for

Boiler, Turbine and Generator (BTG) package to M/s BHEL on 29.01.2016 and Balance of Plant (BOP) package on 28.10.2016 to M/s. BGR Energy Systems Limited (BGRESL) on EPC basis.

Consent to establish from TNPCB on :

03.4.2017

Civil Works commenced on : 9.02.2017

Erection works commenced on :15.07.2017

Completed Works:

- Boiler Ceiling Girder.
- TG Deck.
- Natural Draught Cooling Tower (NDCT) shell 152 meters out of 192 meters.
- Chimney shell Construction & Chimney flue can erection (275m).

Works under Progress:

- Other Boiler works.

- Preliminary works for TG erection.
- Sea water Intake system, Cooling water system, RO-DM plant, ETP, CHP & AHP.
- 230 kV Switch yard sub station and 765 kV switch yard with GIS.
- Other civil works.

Physical Progress :

Boiler, Turbine and Generator (BTG) : 73

Balance Of Plant (BOP) : 69 %

The project is expected to be commissioned during 2019-20.

NCTPP-III : OVER ALL VIEW





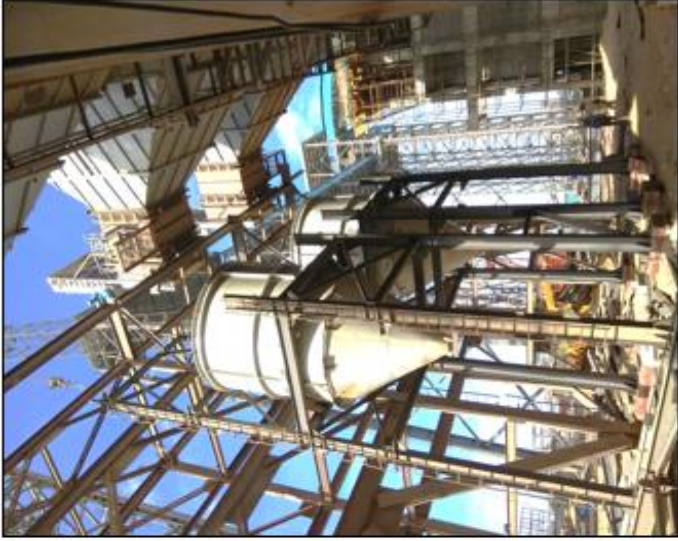
Natural Draught Cooling Tower construction Works



Construction Works of Gas Insulated Sub Station



Sea Water Processing System Construction Works



Construction Works of Ash Handling plant



Electro Static Precipitator (ESP) and Boiler Works

2. Ennore SEZ Thermal Power Project (2 x 660 MW)

The total project cost including IDC is **Rs.9,800 crores**. LOI for EPC cum debt finance contract has been issued to M/s. BHEL on 27.09.2014.

Work was temporarily suspended from 07.09.2015 due to a writ petition filed by one of the bidders in the Hon'ble High Court of Madras. On appeal to Hon'ble Supreme Court by TANGEDCO and after receipt of order dated 18.10.2016 in favour of TANGEDCO from Hon'ble Supreme Court, EPC work was resumed from 19.10.2016.

Consent to establish from TNPCB on : 11.03.2014

Civil Works commenced on : 09.10.2014

Erection works commenced on : 15.09.2017

Completed Works:

- Boiler 1 Ceiling Girder.

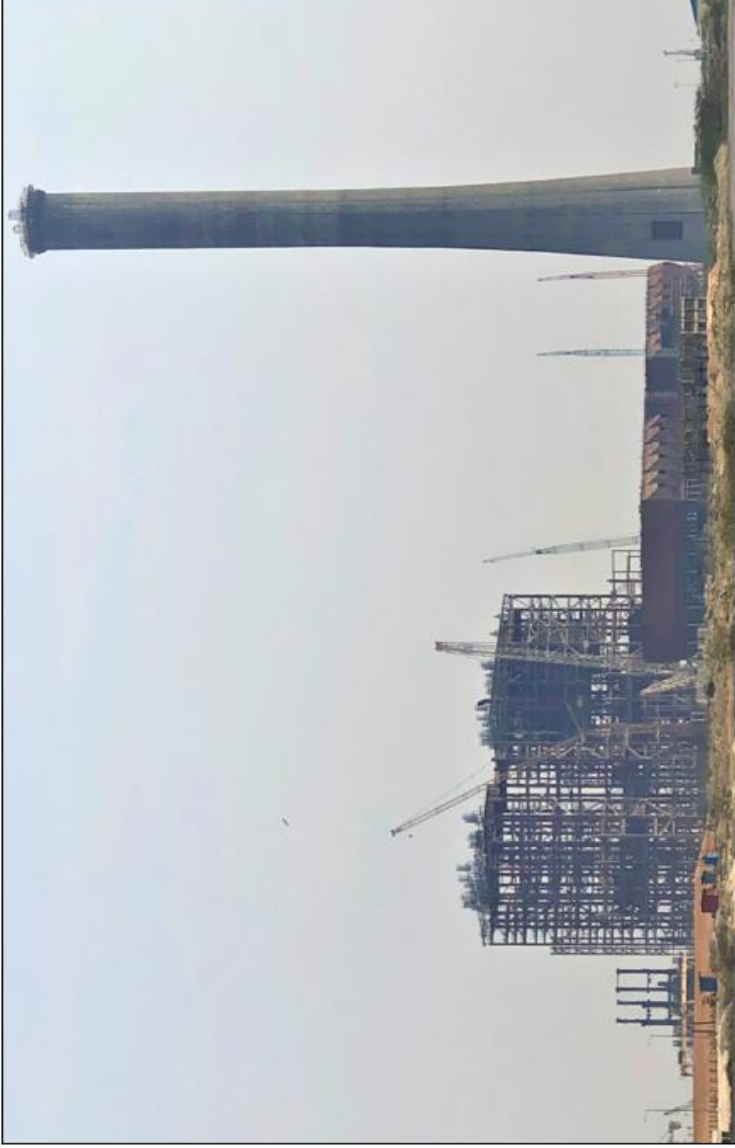
- TG Raft concreting in Unit 2.
- Working Pile in NDCT 1 & 2.
- Chimney shell.

Works under Progress:

- Boiler Unit 1 & Unit 2 & ESP Unit 1 & Unit 2 Erection works.
- Power House Main Column.
- Other Structural Fabrication.
- Boiler 2 Ceiling Girder erection.
- Other Civil works.

Physical Progress : 35%

The project is expected to be commissioned during 2020- 21.



Ennore SEZ Thermal Power Project



Electro Static Precipitator (ESP) and Boiler



Turbine and Generator Construction Works



Power House Construction Works

Video Conferencing:

- Video Conferencing system for 2X660 MW Ennore SEZ Project has been commissioned by Honourable Minister of Electricity, Prohibition and Excise on 18.06.2019.
- Video conference system for NCTPP Stage-III and Uppur projects are to be commissioned by 15.07.2019.
- CCTV system has been supplied at Uppur Project site for watching the day to day progress of works by CMD, JMD and Directors of TANGEDCO and the same are to be commissioned by 31.07.2019.



Honourable Minister of Electricity, Prohibition and Excise inaugurated Video Conferencing facility in Ennore SEZ Thermal Power Project Station on 18.06.2019

3. ETPS Expansion TPP (1 x 660 MW)

The total project cost is **Rs. 5,421 crores** including Interest during construction (IDC). Letter of Intent (LOI) for Engineering, Procurement and Construction (EPC) contract had been issued on 27.02.2014. to M/s. LANCO Infra Tech Ltd.

Consent to establish from TNPCB on :

26.08.2014

Civil Works commenced on : 01.10.2014

Erection works commenced on : 15.09.2015

Partially Completed Works:

- Turbine Generator Foundation.
- Boiler & Electro Static Precipitator (ESP).
- Chimney shell.
- Natural Draught Cooling Tower (NDCT).
- Sea water Intake & Compound wall.

Physical Progress: 18 % (Up to August 2017)

Under these circumstances work in the project has been stalled from August 2017. Contract to M/s LITL has been terminated on 9.4.18 due to financial issues and Corporate Insolvency Resolution Process initiated on the contractor in NCLT, Hyderabad under IBC 2016.

After assessment of the balance works in the project, following "open tender system" for executing the balance works on EPC basis, LOA was issued to the L1 contractor M/s. BGRESL, Chennai on 02.03.2019. LOI of the project will be issued shortly.

The project is expected to be commissioned during 2022-23.



Chimney , ESP & Boiler

ETPS Expansion Thermal Power Project

4. Uppur Thermal Power Project (2 x 800 MW)

The total project cost including IDC is **Rs. 12,778 crores**. LOI has been issued for Boiler Turbine Generator (BTG) to M/s. BHEL on 27.02.2016, Balance of Project (BOP) to M/s. Reliance Infrastructure Ltd on 21.02.2018 and Sea water intake and outfall system to M/s. L&T Ltd on 08.05.2018 on EPC basis.

Around 70 acres of land have been handed over to M/s. BHEL for BTG package. Around 552 acres of land have been handed over to M/s Reliance Infrastructure Ltd for BOP package. Around 11.04 acres of land have been handed over to M/s. L&T. Balance Patta land to an extent of around 354 acres is under litigation which are yet to be handed over to the BTG/BOP Contractors.

Land acquisition for the Private Railway siding works for the stretch of 28 km is under process.

Writ petitions Challenging the Land Acquisition Act have been filed by land owners of the project site. On filing counter from TANGEDCO's side and implead petitions, arguments were taken up and completed on 13.12.2018 and judgement reserved.

Another petition has been filed by Anaithu vivasayikal Paathukapu Nalasangam in the High Court of Madras in December 2017, stating that a few areas of the project site are obstructing the surplus water flow from the nearby tanks.

In this regard MOEF&CC has issued an amendment on 29.10.2018 for the Environmental clearance accorded for the projects, stating that artificial canal shall be constructed to divert the surplus water from the nearby tanks to maintain the water flow to

preserve mangroves in the creek. Counter filed by MOEF&CC based on this Amendment. This case is pending in the Hon'ble High Court of Madras.

In addition to the above cases, the farmers of the area have filed an Appeal in the National Green Tribunal (NGT) in 2016, challenging the Environmental Clearance issued by MoEF & CC for the project. This case is to be heard by the Tribunal.

Consent to establish from TNPCC on :

22.08.2017

Civil Works commenced on **:15.06.2018 (BTG)**

:28.05.2018(SWIO)

Erection works commenced on **: 12.06.2019**

(BTG)

Completed Works:

- Working pile in ESP Unit I & II Mill foundation Unit I & II.

- Topographical survey work and Geo-technical investigation in the BOP area.
- In the Sea Water Intake & Out Fall System area Geo-technical investigation & Test piling.
- Fabrication of pipes in the Sea Water Intake & Out Fall System area.

Work under progress:

- Working pile in Boiler Unit I & II, Mill foundation Unit II, ID Duct Unit I & II & Power House Unit I.
- Construction of Stores in the BOP area.
- In the Sea Water Intake & OutFall System area Pile cap.

Physical Progress:

Boiler, Turbine and Generator (BTG) : 11 %

Sea Water Intake & Out Fall (SWIO) : 20 %

While carrying out the work, the Forest department has stated in November 2018, that Forest clearance is required to proceed with the work in the area of 0.4 Hectares which forms a part of the 44 Hectares of area that has been reserved under TN Forests Act which attracts Forest clearance. The issue got resolved and approval of Forest Department, conveyed on 27.05.19. Stopped works re-commenced on 30.5.19.

The project is expected to be commissioned during 2022-23.



Boiler and Electro Static Precipitator (ESP) construction works



Fabrication of pipes in the Sea Water Intake & Out Fall System area

5.Udangudi Thermal Power Project – tage-I (2 x 660 MW)

The total project cost including IDC is **Rs. 13,077 crores.**

LOI was issued to M/s. BHEL for Design, Engineering, Manufacture, Supply, erection, testing and commissioning of complete thermal power project, on EPC basis on 07.12.2017.

Work for establishment of Captive Coal Jetty has been awarded to M/s. ITD Cementation India Limited on 13.02.2018

Consent to establish from TNPCB on :

20.09.2016

Civil Works commenced on : 20.01.2018

Foundation Stone was laid for this project by Hon'ble Chief Minister of Tamil Nadu on 29.01.2018 through Video Conferencing.

Completed Works:

- Land leveling, Compound, Boiler foundation, Store shed & Chimney.
- Approach Pile and Pile cap construction activities for about 1 km from shore in the Captive Coal Jetty.

Work under Progress.

- Mobilization of materials.
- Construction of compound wall.
- Earth work excavation for Boiler Unit 1 & 2 foundation.
- Engineering and other Civil Works.
- Approach Pile and Pile cap construction activities in the Captive Coal Jetty.
- Casting of PSC Girders and Accropode Pre casting in the Captive Coal Jetty.

- Pre casting of deck slab, Brake water construction, Construction of compound wall work in the Captive Coal Jetty.

Physical Progress:

Power Plant (EPC) : 5%

Captive Coal Jetty : 14%

The project is expected to be commissioned during 2021-22.



Boiler & Chimney Construction works



Captive Coal Jetty Construction Works



Captive Coal Jetty Construction Works

6. Kundah pumped storage hydro-electric project- (4x125MW)

The total project cost including Interest during construction is **Rs.1,831 crores.**

All the statutory clearances required for the project have been obtained. This project is proposed to be executed in 3 phases.

The EPC contract has been issued to M/s. Patel Engineering on 15.02.2018 for Package I & II of Phase I relating to Civil and Hydro Mechanical works.

Consent to establish from TNPCB on :

26.08.2014

Civil Works commenced on : 05.03.2018

The Hon'ble Chief Minister of Tamil Nadu has inaugurated the Project work on 18.05.2018.

Tenders opened on 28.03.2019 for Package-III of Phase-I, Phase II & Phase III (E & M works) and evaluation is under progress.

Completed Works:

Package I

- Main Access Tunnel (MAT) – 1,000 m
- Cable cum Ventilation Tunnel
(CCVT) – 500 m
- The balance Mining work in
'Main Access Tunnel' – 284 m
- Cable Cum Ventilation
Tunnel – 369 m
- Additionally Driven Inspection Tunnel (ADIT) to Tail Race Surge Chamber ADIT to Tail race Tunnel, ADIT to Power house Top, ADIT to Pressure shaft Bottom, Pilot Tunnel for Transformer Cavern, Pilot Tunnel for Power House Cavern ADIT to PH bottom and ADIT to Tail race surge chamber crown top.

- Rock Mechanics Tests.

Package II

- Portal formation for ADIT to Head Race Tunnel, Open excavation and Shotcrete works.
- Head Race Tunnel Surge Shaft site formation and erection of EOT crane.

Work under progress.

Package I

- Transformer Cavern slash, Tail Race Tunnel and TR surge chamber benching works.

Package II

- ADIT to HRT Earth Tunnel excavation work and pressure shaft excavation.

Physical Progress:

Package I : 17 %

Package II : 4.7 %

This Project is expected to be commissioned during 2022-23.





ADIT to HRT Earth Tunnel excavation work



Power House cavern drilling

1.5.4.2 New Projects

Sl. No	Projects	Capacity in MW	Value in Rs. Crores
1	Ennore Replacement Thermal Power Project (1x660 MW)	660	5,400
2	Udangudi Expansion Project Stage II (2x660MW)	1,320	8,745
3	Udangudi Expansion Project Stage III (2x660MW)	1,320	8,745
4	Sillahalla Pumped Storage HEP(8x250 MW in 2 Stages)	2,000	7,000
5	Kadaladi Thermal Power Project (5x800 MW)	4,000	24,000
6	Cheyyur Ultra Mega Power Project (4000 MW (5 x 800 MW) ; Total estimate : Rs. 25,970 crores)	1,600 (Share)	-
7	Kadaladi Ultra Mega Solar Photo Voltaic Power Park Project (500 MW)	500	2350
8	Floating Solar PV Power Projects Theni, Salem and Erode districts	250	1,125
	TOTAL	11,650	

1. Ennore Replacement Thermal Power Project (1 x 660 MW)

The total project cost including IDC is **Rs.5,400 crores**. This project has been proposed in place of the Ennore Thermal Power Station which has been decommissioned on 31.03.2017.

Terms of Reference (ToR) for the project has been issued by Ministry of Environment, Forests and Climate Change (MoEF & CC) New Delhi on 25.07.2014. The Expert Appraisal Committee meeting of MoEF & Climate change was held on 30.08.2017 and the committee considered the project proposal but stated that a Sub-Committee may be sent to visit the project site to ascertain the Environmental conditions. The committee on visit, directed to furnish certain documents related to Environmental conditions, study of assessing Ambient Air Quality (AAQ) in and around ETPS, Replacement

Thermal Power Project area and the Study of Bio-accumulation of plant and water quality in Buckingham canal was directed to be carried out. Ambient Air Quality study completed and the study of Bio accumulation of plant and water quality in Buckingham canal completed. Based on the above reports Post-Project Impact to be studied by the Environment Impact Assessment Consultant.

DPR for the new Replacement project received from consultant on 21.07.17.

The project is expected to be commissioned in the year 2024-25.

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

The total project cost including IDC is **Rs.8,745 crores**. Land acquisition and various other related activities are under progress. MoEF & CC, Government of India has directed

TANGEDCO to approach the Ministry after awarding the work of Udangudi Stage I, for considering the issue of Terms of Reference (ToR) for Stages II & III. As the contract for establishment of Udangudi Stage-I has been awarded, the MoEF & CC will be approached shortly by TANGEDCO.

The project of Stage II is expected to be commissioned in the year 2026-27.

3. Udangudi Thermal Power Project Stage-III (2 x 660 MW):

The total project cost including IDC is **Rs.8,745 crores**. Land acquisition and various other related activities are under progress. MoEF & CC, Government of India has directed TANGEDCO to approach the Ministry after awarding the work of Udangudi Stage I, for considering the issue of Terms of Reference (ToR) for Stages II & III. As the contract for establishment of Udangudi Stage-I has been

awarded, the MoEF & CC will be approached by TANGEDCO.

The project of Stage III is expected to be commissioned in the year 2026-27.

4. Sillahalla Pumped Storage Hydro Electric Project (2,000 MW- 2 Stages 8x250 MW)

Preparation of DPR, conducting all geo-technical investigation works, Environment Impact Assessment (EIA) study, getting all necessary clearances from Ministry of Environment Forest & Climate Change and Central Electricity Authority, New Delhi for the Sillahalla PSHEP Stage -I (4x250MW) are to be taken up. For which Consultancy services towards preparation of DPR, conducting all geo-technical investigation works, EIA study, getting all necessary clearances for the Stage I of this project has been awarded to M/s. WAPCOS on 23.1.2019. Draft Feasibility Report received from

M/s. WAPCOS on 15.5.2019 and is under scrutiny.

Preliminary works such as drilling exploratory boreholes & conducting Seismic refraction survey at Sillahalla dam site and conducting detailed survey in water conductor system area have been completed. Survey works for Lower reservoir & for water conductor system, alignment of Stage I of the project have been completed. Stage II (1,000MW) of this project will be taken up after completion and commissioning of Stage I (1,000MW).

The Stage I & II of the projects are expected to be commissioned in 2025-26 and 2026-27.

5. Kadaladi Thermal Power Project, Ramanathapuram (5x800 MW)

The total project cost is **Rs.24,000 crores**. The MoEF & CC, in its Expert Appraisal

Committee meeting has directed TANGEDCO to explore 3 new sites, as the sites already proposed fall within the buffer zone of Gulf of Mannar Biosphere Reserve Area. It is proposed to shift the site suitably away from the buffer zone. Alternate sites are being identified.

6. Cheyyur Ultra Mega Power Project (5x800 MW-TANGEDCO's Share-1600MW)

The total project cost including IDC is **Rs.25,970 crores**. This project is being developed by Government of India with private sector participation through Power Finance Corporation. Tamil Nadu will get 1,600 MW power from the project as its share.

Land acquisition works:

Land acquisition for port and plant completed for entire patta land to an extent of 623 acres and possession has been taken by CTNPL (Special Purpose Vehicle).Availability of

additional land of 767 acres consequent to the decision of bringing up the project on indigenous coal additional land is necessitated has been confirmed by GOTN and communicated to CTNPL.

The Ministry of Power has agreed to allot a coal block for this project. Ministry of Power has planned to upload the bidding documents shortly on modifying the bidding documents incorporating 100% utilization of domestic coal, after which tender processing will be initiated.

7. Kadaladi Ultra Mega Solar Photo Voltaic Power Park Project (500 MW)

The total cost of the project including IDC is **Rs. 2,350 crores**. Approval from MNRE obtained on 08.12.2017 and approval from GoTN was issued on 29.12.2017 for establishment of the project in Narippaiyur and nearby villages in 900 Hectares of land on EPC

contract basis under State Sector. Land acquisition is under progress.

Administrative sanction for Land acquisition was issued on 19.11.18 for 21.62.50 hectares of Poromboke Land and 1611.10.50 hectares of Patta Land. The CRZ Demarcation of the site has been carried out through Institute of Remote Sensing(IRS), Anna University.

Meanwhile, Writ petitions (PIL) have been filed by the land owners at Madurai Bench of the Madras High Court Challenging that livelihood of the land owners are affected by acquisition of Patta lands for establishment of this Project.

In the meantime SECI have offered to invest and develop the Solar Project in the land to be provided by TANGEDCO on Build Own Operate (BOO) basis. However, TANGEDCO will off take 100% power generated in the solar

park. MNRE has issued the necessary amendment on 15.10.18 that TANGEDCO will be the Solar Power Park Developer (SPPD) instead of TNEB Ltd and SECI will be the Solar Project Developer (SPD). Soil investigation report has been received. Geo- hydrology study work is underway. Revised Detailed Project report is being prepared by the Consultant incorporating the above studies.

The project is expected to be commissioned in 2020-21 subject to acquisition of land.

8. Floating Solar PV Power Projects in Theni, Salem and Erode districts (250 MW):

The total cost of the project is Rs. 1,125 crores. Vaigai, Mettur and Bhavani Sagar Reservoirs have been identified for this purpose. The project is proposed to be executed in

association with Solar Energy Corporation of India (SECI).

M/s. SECI has been authorized to establish 250 MW grid connected Floating Solar PV project in the PWD reservoirs with 100% funding from World Bank loan, at the tender discovered tariff rate subject to the approval by Hon'ble TNERC.

1.5.5 Coal and Coal Block

- a.** The Total coal required for operating the existing Thermal Power Stations of TANGEDCO with installed capacity of **4,320 MW** capacity at 100% PLF is **72,000 Tonnes/day** which works out to **26.28 MTPA (262.80 Lakh tonnes (LT)/annum)**. TANGEDCO have executed Fuel supply agreement (FSA) with M/s.CIL for a total quantity of **22.945 MTPA (229.45 LT/annum)**.

b. During the year 2018-19 the total generation of all the TPS is 25,978 million units and the total coal required is **185.21 LT**. Against this, M/s Coal India Limited have supplied only **153.97 LT** which works out to 67.1% of the agreed FSA quantity of **229.45LT**. Hence, due to inadequate supply of Indian coal, TANGEDCO imported coal to meet the shortfall during the year **2018-19**.

2018- 19	Indian Coal (LT)	Import Coal (LT)	Total in LT
Receipt	153.97	35.50	189.47
Consumption	150.13	35.08	185.21

TANGEDCO placed Purchase orders for supply of Import of coal for **55 LT** through **Open Tender (e-Tender) with e-reverse auction**. During the year 2018 -19, import coal of **21 LT**

was already supplied and utilized for generation. The balance quantity of **34 LT** will be supplied during the current financial year 2019–20.

c. Critical issues to be taken up with Railway and Coal Ministries:

The major portion (about 80%) of domestic coal requirement is met from MCL/Talcher. The coal realization from MCL/Talcher during the period between April 2018 and March 2019 was 105.05 Lakh Tonnes (LT) against the linkage quantity 157.37 LT which is 66.80%.

The issue was taken up with Ministry of Coal, Coal India Ltd/MCL & Railways to improve realization from Talcher/MCL. In this regard letter has also been addressed from Hon'ble Chief Minister of Tamil Nadu to Hon'ble Prime Minister of India on 14.09.2018 and reminded subsequently.

M/s.CIL have agreed to supply 16 rakes daily to TANGEDCO (i.e.,) 61,000 Tonnes per day as per FSA but due to non availability of empty rakes it is not being achieved. Hence, the Railways are being pursued to ensure availability of 16-18 rakes daily at the coal mines end to transport the above quantity to the nearest Sea Port.

d. Logistics:

The Kolkata port trust has awarded the number 1 position to TANGEDCO for having handled 25.3 Lakh tons of coal in HALDIA DOCK COMPLEX for the YEAR 2018-19. The award was received in person by the Director/Generation on 15.06.2019.

Shipment of MCL/Talcher coal via Paradip port during the year 2018 –19 was 107.4 LTPA, which is very close to the previous record of 109.6 LTPA achieved during the year 2015-

16. Growth rate is 29% (ie) 83.2 LTPA (2017-18) to 107.4 LTPA(2018-19)

e. Savings achieved in handling of coal:

i) Cost Reduction achieved in Import coal during 2018-19:

TANGEDCO had placed purchase orders for supply of Import coal for 55 Lakh Tonnes through e-tender with e-reverse auction. The tender was finalized with a competitive CIF (Cost, Insurance & Freight) price of 69 USD per MT (42.5 Lakh tonnes with 6,000 Air Dried basis (ADB)) and at 56.51 USD per MT (12.5 LT with 5,000 Gross as received (GAR)) which was comparatively less than the prevailing international market price resulting in cost reduction of about **Rs. 336 crores** to TANGEDCO.

ii) Savings due to rebate in logistics:

Savings due to Rebate availed in KPL/Ennore and Paradip Port for the year 2018 – 19 is **Rs. 103.24 crores**.

iii) Additional Expenditure in 2018 -19:

Additional expenditure incurred due to revision of Surface Transport charges for the year 2018 -2019 is Rs. 5.37 crores and an additional expenditure incurred due to revision of Railway freight and port charges for the Period from August 2018 to March 2019 is Rs. 49.20 crores, which totals to **Rs. 54.57 crores**.

Hence the nett savings achieved is **Rs.384.67 crores** in spite of an additional expenditure of Rs.54.57 crores for the year 2018-19.

1.5.6 Chandrabila coal block

The Ministry of Coal has allocated Chandrabila coal block (9.32 sq.km) in Odisha

with reserve capacity of 896 Million Tonnes to Tamil Nadu Generation and Distribution Corporation Ltd on 24.02.16 and Agreement for Coal Block Development and Production was signed with Ministry of Coal on 30.03.16.

A consultant has been appointed on 28.12.16, for preparation of bid specification for selection of Mine Developer and Operator (MDO) and offering consultancy service till selection of MDO.

There are two issues to be sorted out to proceed further in the development of the block.

1. Inadequate area for dumping of overburden (OB).
2. Clearance from MoEF & CC for exploration in the forest area within the block.

For OB dumping, on pursuance of TANGEDCO Ministry of Coal had constituted a sub-committee and the sub-committee

recommended additional land of 0.98 sq.km, for OB dumping against the 14 sq.km. requested by TANGEDCO. The adequacy of the dumping area will be known only after preparation of Mining Plan.

The MoEF & CC has rejected the proposal for prospecting in the forest area (3.64 sq.km) by drilling 16 Nos. boreholes, during Feb' 2019. A letter has been addressed on 10.05.19 from Hon'ble Minister of Electricity, Prohibition and Excise, Govt. of Tamil Nadu to Hon'ble Minister of Environment, Forest and Climate Change, Govt. of India requesting to issue clearance for prospecting in the forest area in Chandrabila coal block.

Long Term Coal Linkages and Bridge linkages:

Long term coal linkages for the NCTPS Stage-III project (1X800MW) (1.971 MTPA) and Uppur TPP (2X800MW) (3.942 MTPA) was

recommended by Ministry of Power to Ministry of Coal on 25.03.2019.

Bridge linkages for the end use plants of Chandrabila coal block namely ETPS Expansion project (1X660MW) (1.885 MTPA), Ennore SEZ TPP (2X660MW) (3.682 MTPA) and Udangudi Stage-I TPP (2X660MW) (3.647 MTPA) were applied by TANGEDCO and the same has been recommended by Ministry of Power to Ministry of Coal on 25.03.2019.

Approval awaited from Ministry of Coal for both Long Term linkages and Bridge linkages.

1.5.7 Power Purchases

Long term power purchase

Tamil Nadu Generation and Distribution Corporation Limited had executed 11 long term Power Purchase Agreements for procurement of 3,330 MW power for fifteen years from 2014.

Out of 3,330 MW, 2158 MW is from inter-state generators and 1,172 MW from intra-state generators. Out of 2,158 MW, from inter-state generators, 1,658 MW is being received. In case of intra-state generators, the entire 1,172 MW is being received.

Medium term power purchase

Tamil Nadu Generation and Distribution Corporation Limited had executed 3 medium term Power Purchase Agreements (PPA) for procurement of 500 MW power for five years from 2012 -2017 from Inter-State generators viz M/s. National Energy Trading Services Ltd, M/s. Jindal Power Ltd and M/s. Adani Enterprises Ltd.

Power Purchase Agreements with M/s. NETS and M/s. Jindal was extended for a further period of 2 years from 2017. Out of which, the

Power Purchase Agreements with M/s. NETS expired on 31.01.2019 and agreement with M/s. Jindal (200 MW) is expiring on 31.08.2019.

Further, TANGEDCO executed medium term agreement for a period of three years from 2018 with M/s.PTC India Ltd through Pilot Scheme for procurement of 550 MW Round the Clock (RTC) power.

1.6 Transmission

TANTRANSCO has planned to develop transmission infrastructure to effectively evacuate power from the existing and new power generating stations. The existing capacity of intra-state transmission system is enhanced year by year to match the capacity addition in generation and to meet the increasing demand.

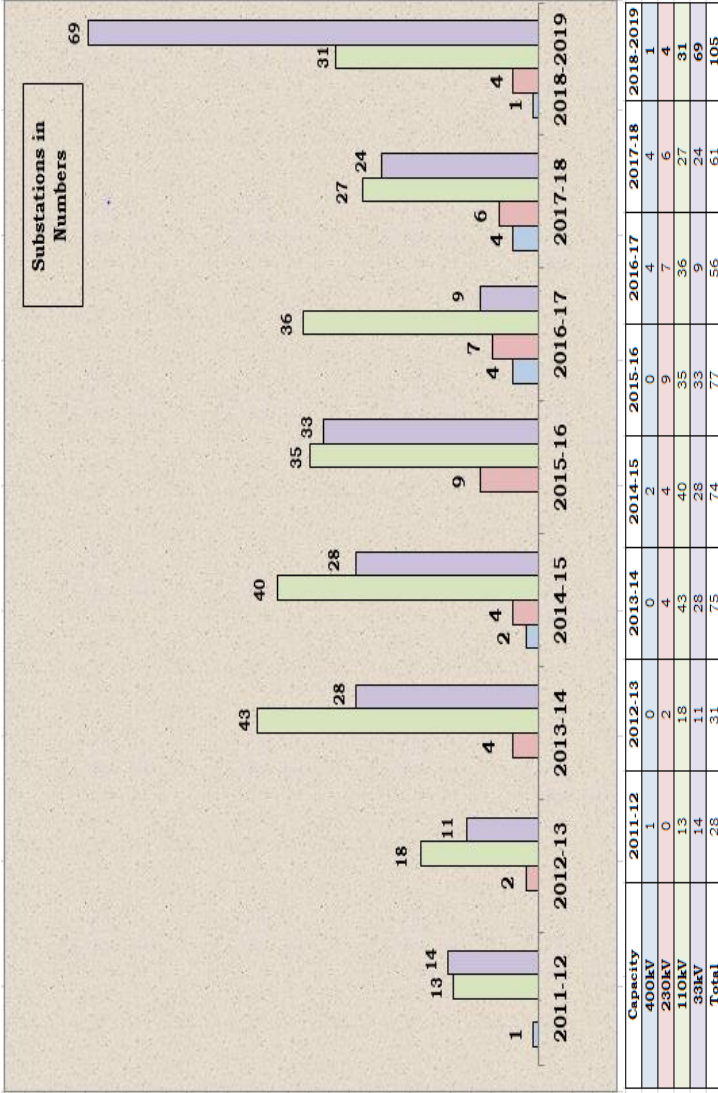
Substations and EHT lines in the existing network as on 31.03.2019

S.No	Rating of Substation	Number of substations/ EHT lines
1	765 kV	4 * (PGCIL SS)
2	400 kV	26 **
3	230 kV	104
4	110 kV	876
5	66 kV	03
6	33 kV	669
	Total	1682
	EHT lines	34275.701 Circuit kms

(Note: *3 nos. 765 kV substations initially charged at 400 kV level, **11 nos. 400kV SS are PGCIL SS further 1 no. 400kV TANGEDCO SS has been initially charged at 230kV level)

Number of substations commissioned and EHT lines energized since 2011

S.No	Year	Number of substations commissioned	EHT lines Energised in circuit kms
1	2011-12	28	691.072
2	2012-13	31	1268.05
3	2013-14	75	1436.391
4	2014-15	74	2634.147
5	2015-16	77	1987.679
6	2016-17	56	1487.437
7	2017-18	61	2208.951
8	2018-19	105	1190.815
	Total	507	12904.542



Number of substations commissioned since 2011

1.6.1 Adoption of New Technology

Tamil Nadu's first digital substation

Digital substation adopt digital technology in the communication network between Control and Relay (C&R) Panels and yard equipments, for reducing the time for rectification of fault and early restoration of supply.

Selvapuram in Coimbatore district with a scheme cost of Rs.65 crores is the first digital substation and works are under progress. The substation is expected to be commissioned during 2019-20.

Further, works are under progress for Karuppur and Thiruvanmyur Digital substations also and is expected to be completed by 2019-20.



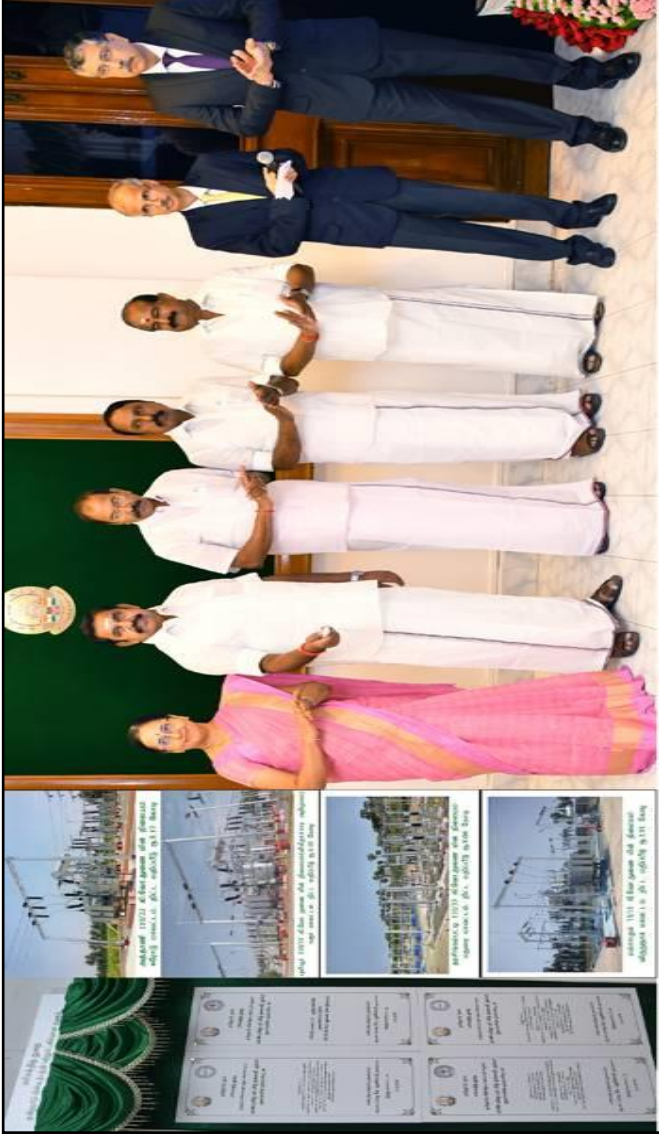
230/110 kV Selvapuram SS Construction works

1.6.2 Intra state transmission system

During 2018-19, 1 no. 400 kV substation at Thoppakundu, 4 nos. 230 kV substations at CMRL (Central), Porur, Neyveli and Kanchipuram and 31 numbers 110kV substations have been commissioned.



Neyveli 230/110 kV Substation in Cuddalore District



Hon'ble Chief Minister of Tamil Nadu Thiru Edappadi K.Palaniswami inaugurated 110/22 KV Sub Station at Athani, Erode District and 42 Nos Substations in 18 districts of Tamil Nadu through Video conferencing on 21.06.2019 at Secretariat.

1.6.3 Schemes under progress

1. 765 kV substations:

Transferring of bulk power from Generating stations and transferring of inter-state power with downstream connectivity for evacuation of generated power effectively, a 765 kV network comprising of 4 nos. 765 kV substations along with their associate Transmission lines has been proposed by TANGEDCO. Among all State transmission utilities in India, **TANTRANSCO is the first State utility to erect a 765kV network on its own.**

Works are under progress for Ariyalur SS along with associated lines from Ariyalur to PGCIL Thiruvalem 765 kV SS and GIS Pooling Station at North Chennai along with the associated 765 kV DC line from North Chennai to Ariyalur.

Tender opened and under scrutiny for establishment of Virudhunagar 765 kV Substation and associated 765 kV and 400 kV Line of Virudhunagar 765 kV SS. Tender for execution of Coimbatore 765kV substation will be initiated shortly and works will be taken up during 2019-20.



Ariyalur 765 kV Sub Station – Construction works



**North Chennai 765kV GIS Pooling Sub station -
Construction works**

2. 400 kV substations

In order to strengthen the system and for hassle free power evacuation throughout the State, TANTRANSCO has proposed **5 nos. 400 kV** substations other than Chennai, viz. Vellalaviduthi, Edayarpalayam, Ottapidaram, Samugarengapuram and Parali.

Works are under progress for Vellalaviduthi 400 kV SS. Tender opened and under scrutiny for Ottapidaram 400 kV SS and tendering is under various stages for other Substations.



Vellalaviduthi 400 kV Sub Station Works

3. 230 kV substations

For a flexible operation and network strengthening, TANTRANSCO has proposed 15 nos. 230 kV substations throughout the State other than Chennai, for system strengthening and flexibility of operation.

Uddanapalli 230 /110 KV Substation in Krishnagiri District has been test charged on 23.06.19. This is the 1000th EHV Substation in the history of TNEB and established at a cost of Rs.168 crores to ensure quality and reliable power to the people of Krishnagiri District in Tamil nadu.

Works are under progress for substations at, Karuppur, Samayanallur, Thirupathur, Sankarapuram, Selvapuram, Thuvakudy and Erode. Tendering is under various stages for substations at Narimanam, K.Pudur (Gas Insulated Substation-GIS), Rajagopalapuram (GIS), Kalivelampatty, Thackaly (GIS), Muppandal and Poolavady.



Samayanallur and Sankarapuram 230/110kV SubStation works

1.6.4 Japan International Cooperation Agency (JICA) Assistance

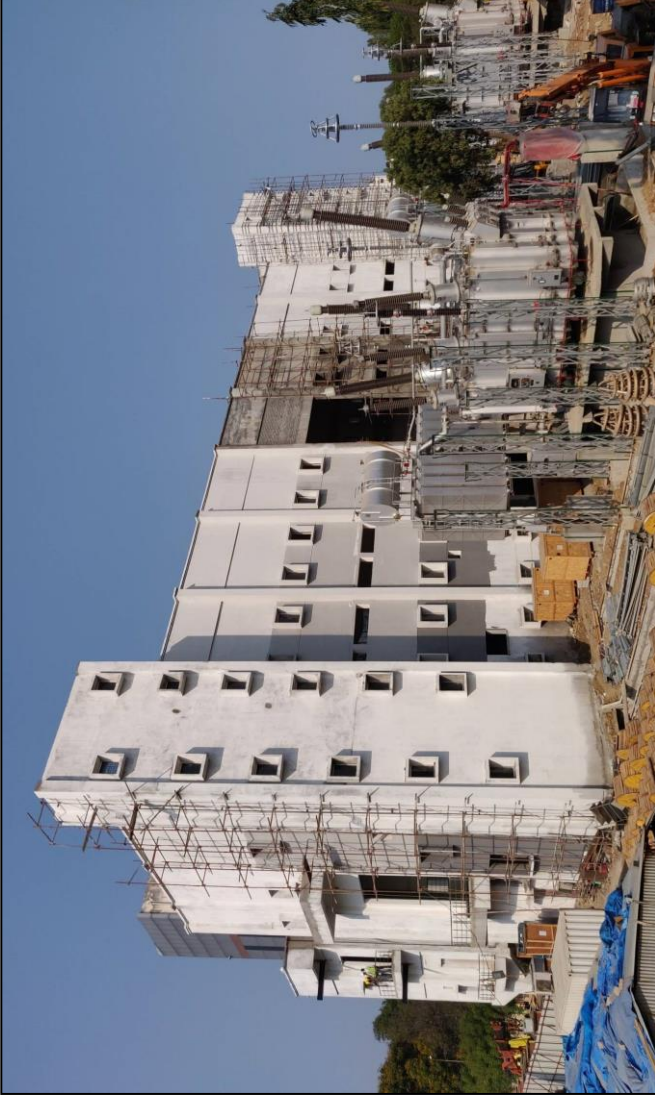
Establishment of five 400 kV substations and twelve 230 kV substations along with the associated transmission lines have been sanctioned at a total outlay of Rs.5,000 crores with the Official Development Assistance (ODA) Loan of JICA amounting to Rs.3,572.93 crores. Expected date of completion of JICA schemes are by 2020-21.

Out of the **5 nos. 400 kV substations**, 3 nos. 400 kV substations at Karamadai, Sholinganallur and Manali have been commissioned. Works are under progress for Guindy 400 kV GIS SS and is expected to be completed during 2019-20 and tender is under scrutiny for Korattur 400 kV GIS SS.

Out of **12 nos. 230 kV substations**, 9 nos. 230 kV substations at Alandur, Karuvalur, Echur(Purisai), Kinnimangalam, Ambattur III Main Road, R.A. Puram, Poyyur , Kumbakonam and CMRL Central GIS SS have been commissioned. Works are under progress in respect of Tiruppur, Shenbagapudhur and TNEB Head Quarters substations which are expected to be commissioned during 2019-20.



Central 230/110 kV GIS Sub Station, Chennai



Guindy 400/230 kV (GIS) Sub Station, Chennai

1.6.5 Schemes funded by KfW (German Development Bank), Germany Funding

In order to evacuate the huge quantum of the Renewable Energy (RE), TANTRANSCO has taken up establishment of a vast network of high capacity transmission lines in the State at an estimated cost of Rs.6,000 crores.

Ministry of New and Renewable Energy (MNRE) has recommended assistance for creation of the transmission network infrastructure for Rs.1,593 crores to Tamil Nadu. Government of India has accorded approval for a grant of Rs.637.20 Crores (40%) under National Clean Energy Fund (NCEF). Agreement with KfW was signed on 17.12.2014 between Government of India and KfW (German Development Bank) for a soft loan of Rs.637.20 crores (40%) from KfW German funding. The balance Rs.318.60 crores. (20%) is proposed as equity by TANTRANSCO.

The schemes under KfW funding have been taken up in five packages and works are expected to be completed by September 2019.

Package –I

Thennampatti 400 kV SS – Works have been completed and charged at 230 kV level on 08.10.18. 400 kV line energized and SS will be commissioned at 400 kV level shortly.

Package –II

400 kV DC Line connecting Thennampatti – Kayathar 400kV SS (48 kms) and 2 Nos. 400 kV bay provision at Kayathar – Works completed and energized on 27.05.19.



Thennampatti 400 kV Sub Station

Package –III

Works for 400 kV DC Line connecting Rasipalayam & Singarapet (Palavadi) (195 kms) are under progress.

Works have been completed for 2 Nos 400 kV bays at Palavadi SS.

Package –IV

6 nos. 230 kV Transmission lines in various regions of the State with a length of 608 kms have been proposed, of which 4 nos. line with a length of 215.779 kms have been commissioned.

Package - V

Augmentation of 230/110 kV transformation capacity at existing six nos. substations at Annupankulam, Cuddalore, Villupuram, Pudukottai, Thiruvannamalai and Sembatty – Out of 17 nos, 10 nos. 160 MVA Auto Transformer have been commissioned. Balance works are under progress.

1.6.6 Schemes proposed in Chennai area

Apart from the above, the following schemes are proposed for improving Chennai network.

1. 400 kV substations

In order to evacuate power generated in Gummidipoondi and North Chennai area, **3 nos.** 400 kV substations are proposed. Out of which, one at Thervoikandigai is charged at 230 kV level on 15.04.2016 and 400 kV line works are under progress. Works are under progress for 400 kV Pulianthope (GIS) SS. Further, tender has been opened and is under scrutiny for Tharamani 400 kV GIS SS.

2. 230 kV substations

In order to strengthen the transmission infrastructure in Greater Chennai, **10 Nos. 230 kV** substations are proposed to be established at Chennai.

Of which, works are under progress for Thiruvanmiyur (GIS) and Mambalam (GIS) Substations. Tendering is under various stages for Ganesh Nagar (GIS), Ennore (GIS), Avadi, Durainallur, Maraimalainagar, Pallavaram (GIS), Mambakkam and K.K.Nagar (GIS) Substations.

1.6.7 Schemes under Chennai – Kanyakumari Industrial Corridor Project funded by Asian Development Bank (ADB) Funding:

Ministry of Power, Government of India has cleared the proposal for financial assistance of US\$ 500 Million from Asian Development Bank (ADB), under Chennai – Kanyakumari Industrial Corridor Project, comprising of Virudhunagar 765 kV substation and Ottapidaram 400 kV substation with their associated lines for an estimated cost of Rs. 4,987 crores. Tender for both the substations have been opened and are under scrutiny for both the substations.

1.6.8 Schemes proposed for Intra-State Green Energy Corridor (Phase II)

In order to evacuate the wind and solar power generated in Aralvoimozhi area of Tirunelveli District a new 400kV substation has been proposed at Samugarengapuram. Apart from this, 3 nos. 230 kV substations at Poolavady, Muppandal and Kongalnagaram in Tirunelveli and Udumalpet area and 400 kV DC line from Kamudhi to Thappagundu have also been proposed. The total estimated scheme cost is Rs. 1,609 crores.

ABSTRACT OF SCHEMES AVAILABLE FOR EXECUTION DURING 2019-20

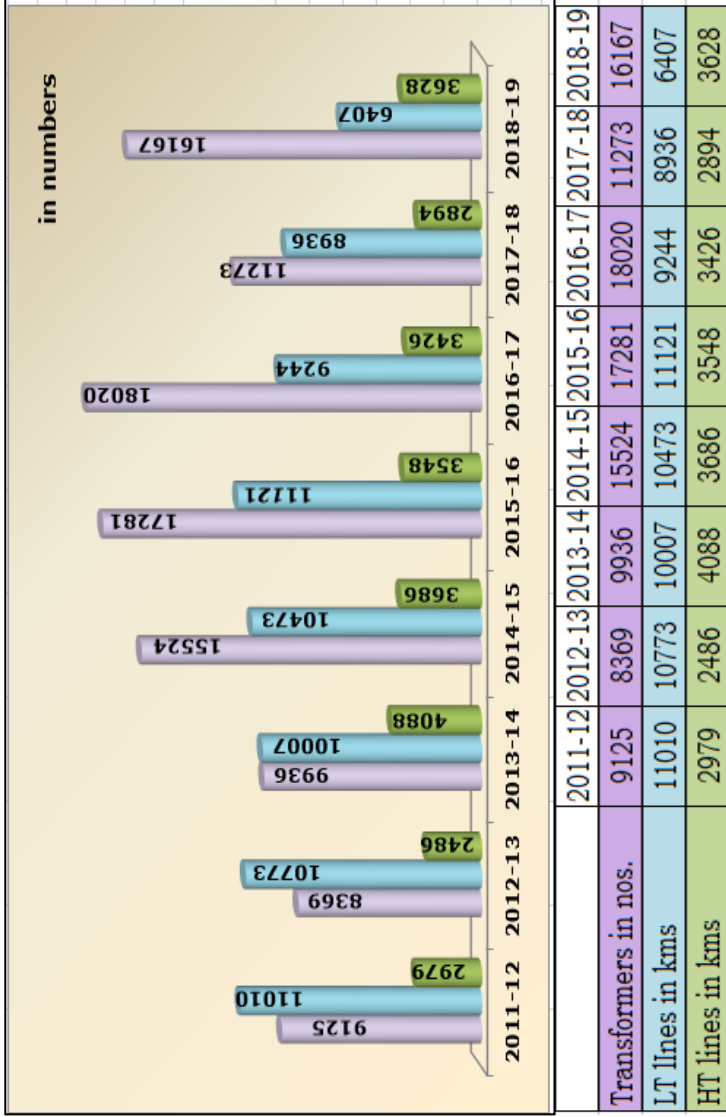
S. No.	Voltage Rating	Number of substations	Total Scheme cost in Rs crores
1	765 kV	4	12,454.43
2	400 kV	11	6939.32
3	230 kV	34	4354.46
4	110 kV	134	1840.33
	Total	183	25,588.54

1.7 Distribution

Distribution network is a fundamental and the most crucial area of the power grid infrastructure. Being the only link between the utility and consumer, tremendous improvement works are under process for hassle free reliable and safe operation. Space constraints, higher cost of land, Right of Way (RoW) issues are the major challenges faced in strengthening the distribution infrastructure not only in major cities but also in towns. Also restoration of distribution network is becoming a major challenge due to extensive damages caused by natural calamities hitting Tamil Nadu year after year. In spite of all the constraints great efforts are being taken to make the system more robust.

1.7.1 Salient Features

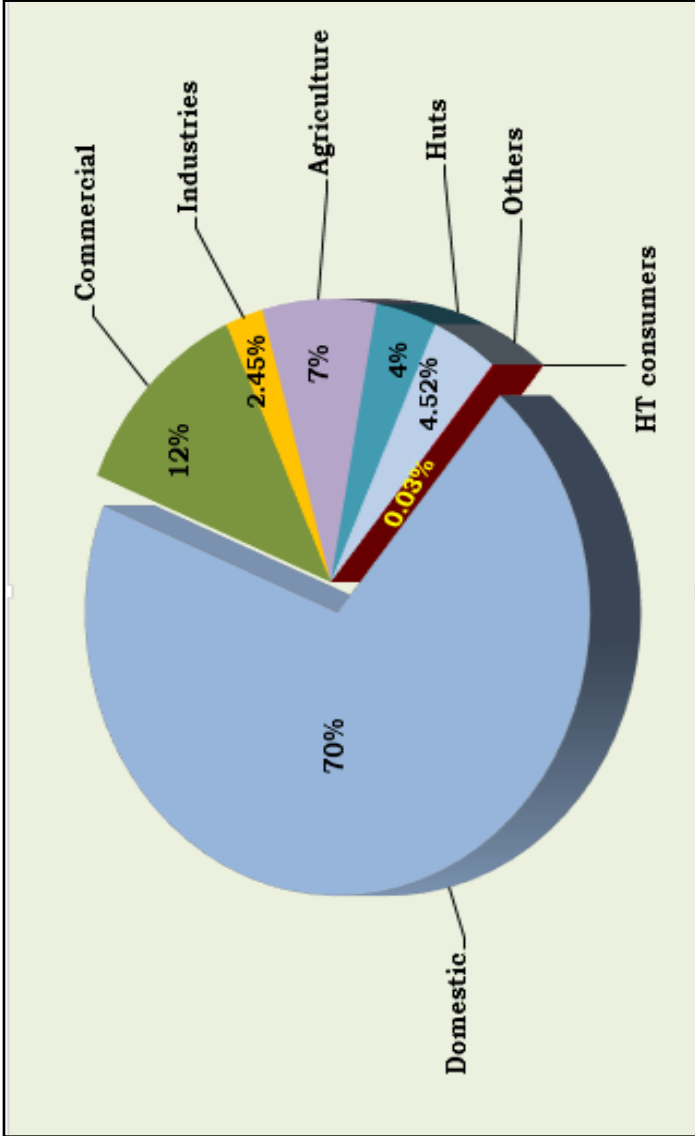
During the year 2018-19, **69 nos. 33 kV substations, 6,407 kms of LT lines, 3,628 kms of HT lines and 16,167 distribution transformers** have been energized. Further, new service connections have been effected to **8.56 lakhs** new consumers in the year 2018-19.



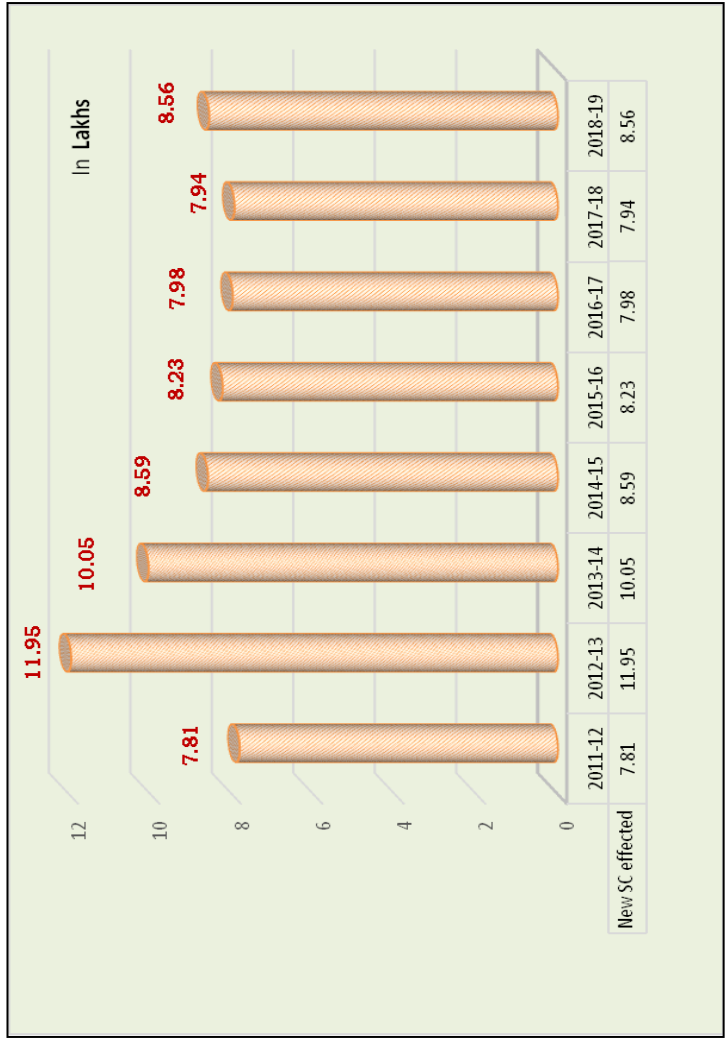
Distribution Transformers, LT lines and HT Lines added since 2011

Category wise total number of consumers being served in the State by TANGEDCO as on **31.03.2019** is as follows:

Sl. No.	Category	Numbers in Lakhs	Number of new service connections effected	
			During 2018-19	Since 2011
	HT Services	0.097 (9748 nos)	0.006 (581nos)	0.034 (342nos)
	LT Services			
1	Domestic	207.54	5.74	48.67
2	Commercial	35.44	1.17	12.45
3	Industries	7.24	0.26	1.88
4	Agriculture	21.17	0.21	1.48
5	Huts	11.21	0.01	0.16
6	Others	13.28	1.16	6.43
	Total	295.98	8.56	71.11



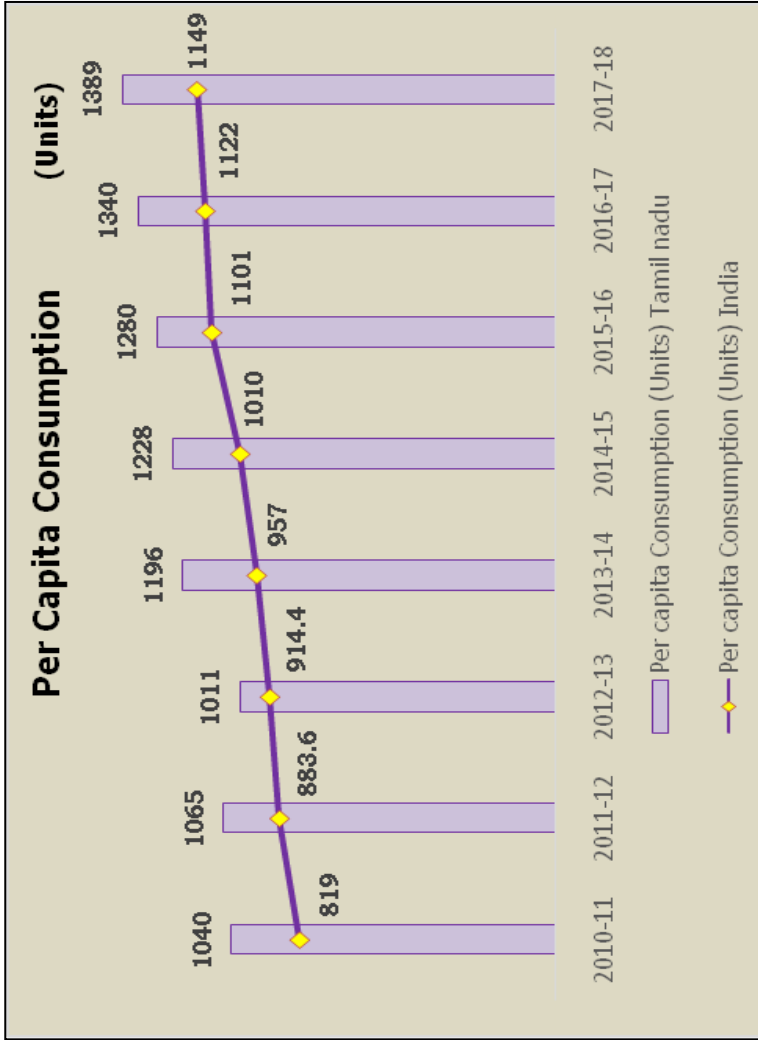
Category wise total number of consumers as on 31.03.2019



New service connections effected since 2011

As an indication of growing appetite for electricity in the State, the state's **per capita electricity consumption** has reached 1,389 units in 2017-18, compared with 1,011 units in 2012-13. When compared with 2012-13, the percentage increase of per capita consumption is 37%. Also, this is 21% more than the National's per capita consumption of 1,149 during the year 2017-18.

Also, the **consumption of energy of the state** has increased to 1,13,495 MU in the year 2018-19 compared with 74,872 MU in 2012-13. The percentage increase of consumption of energy has been increased to 52% when compared with the consumption in 2012-13.



1.7.2 Strengthening of Distribution network

In order to support the massive capacity addition and to cater to the needs of the increasing demand, Distribution networks needs to be strengthened. Apart from augmenting the existing infrastructure, the rectification & strengthening works are also being carried out to ensure uninterrupted, reliable and safe power to all.

During the year 2018-19, around 10,649.10 kms of aged conductors have been identified and replaced, around 64,657 damaged poles have been replaced and to ensure safety, low sagging lines of about 1,22,386 locations have been rectified under improvement works throughout the State. In addition to this, 12,912 nos pillar box have been heightened in Chennai alone.

1.7.3 Greater Chennai Distribution network

1. Improvement Works carried out in Chennai for the past three years:

Sl.No	Description of work	Quantity
1	Replacement of aged conductors	8,258 (km)
2	Replacement of damaged poles	1,92,991 (Nos)
3	Rectification of low sagging lines in Locations	45,611 (km)
4	Pillar boxes heightened	34,885 (Nos)

Demand – Consumption of Greater Chennai				
	2016	2017	2018	2019 (Expected)
Peak Demand in MW	3,101	3,332	3,537	3,738 (on 18.06.19)
Peak Day Consumption in MU	58.881	64.830	58.949	60.694
% Growth rate in Peak Demand		7.45%	6.15%	5.68%

Works Carried out for the past three years in Greater Chennai		
S. No	Description	Works Carried Out
1	Substation Commissioned	21 Nos.
2	33 kV Feeders Commissioned	48 Nos.
3	11 kV Feeders Commissioned	346 Nos.
4	Power Transformer capacity addition	706 MVA
5	Distribution Transformers	5,749 Nos.

Ongoing Works in Greater Chennai		
S. No	Description	Works under process
1	Substation	24 Nos.
2	33 kV Feeders	16 Nos.

1.7.3.1 Schemes under execution in Greater Chennai

1. Conversion of existing OH lines into UG Cable

To avoid accidents, damages due to calamities and to develop a robust infrastructure in Chennai and extended area of Chennai city, it

has been proposed to convert the existing 2,004.89 kms of High Tension overhead lines and 33,307.81 kms of Low Tension overhead lines into underground cables at an estimated amount of Rs.2,567 crores, funded by M/s. PFC Ltd., New Delhi.

At present works are to be taken in 8 packages, for 1,281.50 kms of High Tension overhead lines and 5,251.80 kms of Low Tension overhead lines and procurement of cables for conversion of balance lines is being processed and works will be taken up by TANGEDCO. Out of 8 packages, work orders have been issued for Tambaram (1,230 km) and Perambur (653 km) divisions on 08.03.2019. Survey works were completed by the Contractor. The works are expected to be completed during 2020-21.

Further tenders has been opened and is under scrutiny for Avadi (561.315 kms) and IT

Corridor (821.689 kms) divisions. Balance works will be taken up in phased manner.

2. Conversion of existing Distribution Transformers structures to RMUs in Chennai suburban areas

To ensure safety and to prevent accidents and to reduce the downtime of supply interruption and to improve livability standard, it was proposed to replace the existing Distribution Transformer Structures into Ring Main Unit (RMU) in Chennai suburban areas in a phased manner.

As per the Detailed Project Report (DPR), approval has been obtained for replacement of 13,810 existing Distribution Transformer Structures at an estimated cost of Rs.1,819 crores, funded by Rural Electrification Corporation (REC). The tender for the first phase of 5,692 Nos. of 11 kV RMU has been opened and is under scrutiny.

Works are expected to be completed by 2020-21.

3. Replacement of Pillar Box to HRC (High Rupturing Capacity) fuse MS 6 way Pillar Box in Chennai Region

In order to minimize power interruptions due to natural calamities, it is proposed to replace the existing pillar boxes by High Rupturing Capacity (HRC) fuse MS 6 way pillar boxes in Chennai region in a phased manner.

As per the Detailed Project Report (DPR), approval has been obtained for replacement of 33,225 Nos. of existing pillar boxes at an estimated amount of Rs.389 crores, funded by Rural Electrification Corporation (REC). Tender opened and is under scrutiny for the first phase for 17,080 Nos. of High Rupturing Capacity (HRC) fuse MS 6 way pillar boxes.

Works are expected to be completed by 2020-21.

1.7.4 Other Schemes

1. Conversion of overhead lines into underground cables under Coastal Disaster Risk Reduction Project (CDRRP)

Coastal areas of Tamil Nadu are often affected by floods and cyclone due to which large scale damages to High Tension (HT) and Low Tension (LT) lines occurs. Hence, TANGEDCO has proposed to convert HT and LT overhead lines into underground cables in cyclone prone coastal towns of Cuddalore, Nagapattinam and Velankanni to minimize the damage and loss and for easy restoration of power supply.

The Administrative sanction has been accorded for Rs. 360 Crores (66.30 US\$M) for this project with the funding assistance from World Bank.

Contracts have been awarded and works are under progress for three packages at a total cost of Rs.406.83 crores for conversion of OH to UG cabling system for 22 kV Alpettai, Suthukulam and Pentesia feeders in Cuddalore Town, for 11 kV Velankanni Town feeder in Nagapattinam District and for 22 kV Sellankuppam, New Town and Manjakuppam (part) feeders in Cuddalore Town. At most efforts are being taken to complete the work at the earliest.



Cable laying works in Cuddalore



Cable laying works in Cuddalore



Replacement of Distribution transformers in Cuddalore



Replacement of Distribution transformers in Cuddalore

2. Ujwal Discom Assurance Yojana (UDAY)

Tripartite agreement was signed amongst Ministry of Power/Government of India, Government of Tamil Nadu and TANGEDCO on 09.01.2017 for effective implementation of UDAY scheme in Tamil Nadu.

Objective: Reduction of Aggregate Technical & Commercial (AT&C) losses.

To achieve the AT&C loss reduction the following works are proposed.

a. HT Strengthening

The above work includes erection of new 33/22/11 kV lines, replacement/ Strengthening of existing 33/22/11 kV lines, erection of new 33/11 kV SS and augmentation of Power transformers. Scrutiny of the proposals submitted based on DPR are under way and procurement of materials are also

under progress. On finalization of the proposals, work will be taken up and executed in this financial year.

- b. DT metering for accurate energy accounting
- c. Providing Smart meters for LT consumers
- d. Segregation of Rural feeders.

1.7.5 Schemes executed under the assistance of GoI

1. Integrated Power Development Scheme (IPDS)

Integrated Power Development Scheme (IPDS), funded by Ministry of Power, Government of India, is implemented in urban areas of all States, with the following objectives.

- (i) 24x7 Power supply for all
- (ii) AT&C Losses reduction
- (iii) Electrification of all urban households

Sub transmission and Distribution system strengthening works in 521 towns having population above 5,000 have been sanctioned at a project cost of Rs. 1,695.86 crores with MoP/GoI funding as follows:

Sl. No.	Type of Fund	Quantum of fund (in % of Total Project Cost)
1	Grant by MoP / GoI	60%
2	Lending from Financial Institutions (FIs)	30% (of which 50% will be given as Additional grant for successful achievement of milestones stipulated)
3	Utility own funds	10%

M/s. WAPCOS Ltd has been appointed as Project Management Agency (PMA) to assist TANGEDCO in implementing the scheme works.

Procurement of major materials to the tune of Rs.1,459.36 crores have been completed and Present progress of the works are as follows.

- Out of 72 nos. new 33/11 kV SS, 34 substations have been commissioned.
- Out of 41 nos. of augmentation of Power Transformers, 23 Power Transformers have been commissioned.
- Out of 13,879 new Distribution Transformers, 10,339 Transformers have been commissioned.
- Out of 634 km 33 kV New feeder/ feeder reconductoring / augmentation works for 447 km have been completed and commissioned.
- Out of 3,744 km 22 kV/11 kV New feeder/ feeder re-conductoring / augmentation, works for 3,034 km have been completed and commissioned.

Around 70 % of IPDS works completed and balance works are expected to be completed by 2019-20.



S.Kodikulam 33/11 kV SS – Virudhunagar District



Aathur 33/11 kV SS - Tuticorin District



**Two numbers 20 KW and 10 KW Solar Panels installed at
Superintending Engineer/ Kanyakumari Electricity Distribution
Circle**



**Vagarayampalayam 33/11 kV SSCOimbatore Electricity
Distribution Circle/South**



Mamsapuram 33/11kV SS - Virudhunagar District



Other Works under IPDS

2. Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

Government of India have launched Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) for the rural areas with the following components:

- a. Separation of agriculture and non-agriculture feeders .
- b. Strengthening and augmentation of sub-transmission & distribution (ST&D).
- c. Rural electrification

Ministry of Power, Government of India has approved Rs.924.12 crores (including provision for PMA) under the above scheme.

Tripartite agreement between the Nodal Agency (on behalf of Government of India), the State Government and the TANGEDCO has been executed on 29th July 2016.

M/s. WAPCOS Ltd has been appointed as Project Management Agency (PMA) to assist TANGEDCO in implementing the scheme works. Present progress of the works are as follows..

- Out of 106 nos. new 33/11 kV SS, 65 substations have been commissioned.
- Out of 132 nos. of enhancement of Power Transformers, 80 Nos. Power Transformers have been commissioned.
- Regarding feeder segregation works, out of 29 Nos. feeders, 3 Nos. feeder has been completed and 43% of line works completed in feeder segregation and 488 Nos. of DT out of 974 Nos have been commissioned.
- Out of 11,93,990 electromechanical meters, 8,09,802 electromechanical meters have been replaced by static meters.
- 7,325 New Service connections have been effected under Rural households.

Around 73 % of DDUGJY works completed and balance works are expected to be completed by 2019-20.



Modikuppam 33/11kV SS – Vellore District



Rural Electrification under DDUGJY Scheme



Rural Electrification under DDUGJY Scheme



Rural Electrification under DDUGJY Scheme

1.7.6 Energy conservation measures

1. Prevention of Energy Theft

TANGEDCO has formed 43 teams of Ex-servicemen, 21 Enforcement Squads, 1 number Intelligence Wing and one flying squad for inspection and detection of theft of energy in Electricity Distribution Circles. The number of thefts detected and the amount levied towards provisional assessment and compounding charges are detailed below.

S. No		2017-18		2018-19	
		No. of case of Power theft	Penal charges in crores	No. of case of Power theft	Penal charges in crores
1	Ex-Servicemen	10,586	18.66	10,402	19.09
2	Enforcement Squads	4,616	32.90	6,242	46.31
3	Intelligence wing	265	3.44	429	4.30

So far, 95,968 Nos. of theft of energy cases were detected by 40 teams of Ex-servicemen and provisional assessment and compounding charges amounting to Rs. 173.14 crores were levied upon the consumers.

The 3 teams of Ex-servicemen in 3 newly formed Electricity Distribution Circles viz., Krishangiri, Kallakurichi and Chennai South II, so far detected 2149 theft of energy cases and provisional assessment and compounding charges amounting to Rs.4.53 crores were levied since 01.11.2016.

2. Energy conservation measures

Awareness creation:

The "Energy Conservation Day and Week" is being celebrated every year during December 14th -20th. As a promotional measure, slogan on energy conservation "SAVE ELECTRICITY" is being sent as SMS to about 2.6 crores

consumers along with SMS on payment of current consumption (CC) charges.

Training wing of TANGEDCO emphasizes the need of energy conservation and also popularizing the use of energy efficient lighting and star rated equipments in all training programmes / workshops / seminars.

The program of energy conservation awareness to school students has been started throughout the State from October 2014. So far (up to March 2019) about 11.90 lakh students have been enlightened on energy conservation.

Seminar/ talk/ lecture on Energy Conservation for disseminating the knowledge and the latest technical knowhow is being taken up for central government sectors, micro/ small/ medium enterprises, private/ public sector, MNC companies and higher educational institutions.

Many steps are being taken to emphasize that Energy Conservation leads to savings not only for home but also for the Country.

1.7.7 Unnat Jyothi by Affordable LEDs to All (UJALA) scheme

TANGEDCO has permitted M/s. Energy Efficiency Services Limited (EESL) to sell 9 watt LED bulbs, 20 watt LED tube lights and 50 watt energy efficient 5-star rated fans at affordable price to the willing domestic consumers through independent kiosks all over Tamil Nadu.

M/s. EESL commenced the sale in Chennai Region (Phase I) on 22.03.2017 through Distribution Agents (DAs). The above sale is in progress in 26 EDCs in the State. As on date, 23.54 lakh LED bulbs, 4.52 lakh LED tube lights and 1.10 lakh BEE 5 star fans have been sold.

Apart from this, as a part of Gram Swaraj Abhiyan programme, UJALA scheme launched on 14.04.2018 in Chennai to sell subsidized LED bulbs in 1477 identified villages across the State and about 5.96 lakh LED bulbs have been sold

through this programme. This programme was concluded on 10.05.2018.

Under Extended Gram Swaraj Abhiyan programme, UJALA scheme was launched on 01.06.2018 to sell LED bulbs at affordable price in 583 identified villages in Ramanathapuram and Virudhunagar districts and about 2.42 lakh LED bulbs have been sold through this programme. This programme concluded on 15.08.2018.

S. No.	Description	Sales (Nos.)	Rate (Less than market rate) Rs.	Savings in MU/day
1	9 Watt LED bulbs	31,92,468	70	0.814
2	20 Watt LED tube lights	4,52,459	220	0.079
3	50 Watt BEE 5 star fans	1,10,568	1,110	0.027
	Total			0.92 *
* This will result in a saving of around 365 million units per annum				

1.7.8 Consumer Friendly Measures

TANGEDCO has implemented various schemes in order to improve the customer oriented services.

- ❖ To ease the hassle of applying for a new service connection, **on-line filing of applications** has been launched on 05.08.2016 by **the late Hon'ble Chief Minister Amma**. Now, consumers can file the application for new service connection through on-line.

- ❖ **One day service connection scheme:** This scheme was launched on 12.06.2017. Under this scheme, for new LT Domestic and Commercial service connections (other than special and multi-storeyed buildings) falling under mere service connection category, the electricity service connection will be

effected **on the same day on receipt of application**. So far **6,43,834** numbers of service connections were effected under this scheme.

❖ **Minsara Nanban (Urja Mitra):**

Minsara Nanban is a new initiative by TANGEDCO in association with Ministry of Power, Govt. of India under the Urja Mitra scheme. The main objective of the scheme is to share information about scheduled / unscheduled electrical power outages in rural and urban areas directly to consumer through SMS to their mobile phones.

TANGEDCO ranks first continuously for three years in uploading details of consumers in Ujra mitra portal. Also TANGEDCO ranks second in sharing information through Ujra mitra portal.

- ❖ On the Agriculture side, a **fast track (tatkal) scheme** for effecting free agriculture service connections against a onetime payment for infrastructure development only for willing farmers had been introduced with effect from **24.06.2017** and during the year 2017-2018, 10,000 agriculture service connections have been effected under this scheme.

There was a tremendous response for this scheme, and the scheme was also implemented during 2018-19 and so far 10,000 have been effected. Also, this year 21,302 total agriculture services has been effected.

- ❖ A scheme for effecting LT industrial service connections within 7 days up to a demand of **112 kilo watt** for both new and additional load has been launched

with effect from 15.07.2017 and **66,145 Nos** service connections have been effected under this scheme.

- ❖ Towards enhancement of **ease of doing business**, the Policy of 24x7 power to Industries / Developers with a demand of 10 MVA and above or with an investment of Rs.100 crores or more has been launched with effect from 05.09.2017. Under this scheme the industries or developers who have signed Memorandum of Understanding (MoU), TANGEDCO / TANTRANSCO on its own cost will establish the Sub-Station on the land provided by the investors. This will help the industries/developers in getting uninterrupted power supply through dedicated dual network, in which the cost of the first feeder will be borne by TANGEDCO/ TANTRANSCO and the cost

of the second feeder will be borne by the industries / developers.

- ❖ A mobile application for both Android and IOS operating systems have been launched for hassle free payment of Current Consumption Charges.
- ❖ Multiple channels of collection of Current Consumption charges viz., Net Banking, Debit/Credit Cards through Payment Gateway, Point of Sale (PoS) machines have been launched to encourage payment of Electricity Charges by Low Tension (LT) consumers. This facility had been extended in phased manner to 312 collection centres in Chennai. Also for HT Consumers payment through RTGS facility is also in place.
- ❖ Presently **37% of the consumers** are paying around **Rs.1,534 crores per**

month by making use of the above facilities. Steps are being taken to achieve 50% under digital payment mode during this financial year.

1.7.9 Call centres

Automatic computer based power failure redressal call centres are functioning at Chennai, Coimbatore, Madurai, Trichy, Erode, Tirunelveli, Nagercoil, Salem, Vellore, Kanchipuram, Karur and Tiruppur. Further, New call centres were commissioned at Nammakkal, Krishnagiri, Dharmapuri, Thirupathur, Tuticorin, Gobi and Virudhunagar district. Consumers can register their complaints by dialing 1912. The above facility will be extended to the entire districts of Tamil Nadu.

Also, a 24 hrs consumer redressal centre functions in the camp office of the Hon'ble Minister for Electricity, Prohibition and Excise to

attend the grievances of the consumers. The general public can contact this centre through **044-24959525**.

1.7.10 Direct Recruitment

Board has accorded approval to recruit 250 posts of Junior Assistant/Accounts announced during 2018-19 in addition to the already announced 250 posts totally 500 Junior Assistant/ Accounts by Direct Recruitment and selection of candidates based on the marks obtained in the Competitive Written Examination and as per the communal roster.

Also, Board has accorded approval to recruit 2000 posts of Field Assistant (Trainee) announced during 2018-19 in addition to the already approved 900 posts totally 2900 posts of Field Assistant (Trainee) by Direct Recruitment. The Candidates who pass the physical test alone

will be permitted to appear in the Competitive Written Examination. The selection shall be made based on eligibility, merit of marks obtained in Competitive Written Examination and rule of reservation.

Further, Direct Recruitment work in filling up of 150 posts of Assistant Engineer/ Electrical, 25 posts of Assistant Engineer/Civil and 25 posts of Assistant Engineer/Mechanical is under progress.

Considering the interest of the public in large, the huge number of vacant posts prevailing in the initial category and also in order to provide uninterrupted power supply, TANGEDCO has created a new post called Gangman (Trainee). To carry out initial ground level works such as erection of poles, stringing of lines etc., for establishing distribution network

without any delay, it is proposed to recruit 5,000 posts of Gangman (Trainee) for which notification has been issued on 07.03.2019. Applications from eligible candidates with a minimum qualification of 5th standard has been received via online. Based on the outcome the case filed in the High Court of Chennai further actions will be carried out.

1.8 Finance

1.8.1 In order to improve the financial position of TANGEDCO, the Government of Tamil Nadu is continuously providing financial assistance in the form of Equity Share Capital, Tariff Subsidy, Grants under Financial Restructuring Plan and UDAY scheme, Loan assistance, funds for Disaster recovery purpose, etc.

Financial Assistance from Government of Tamil Nadu

Sl. No	Financial Years	Financial Assistance (Rs. In crores)	
		Tariff Subsidy	Other category
1	2011 - 2012	2071.41	5841.94
2	2012 - 2013	4457.23	4784.77
3	2013 - 2014	4985.09	3394.22
4	2014 - 2015	6953.00	6886.50
5	2015 - 2016	6695.10	5695.62
6	2016 - 2017	8484.91	30823.02
7	2017 - 2018	7643.39	6303.63
8	2018 - 2019	7731.67	5531.45

1.8.2 During the last financial year 2018-19, the Government of Tamil Nadu has provided a financial assistance in the form of Tariff subsidy of Rs.7,731.67 crores and other assistances amounting to Rs.5,531.45 crores towards loan from

JICA, KfW, UDAY grants, etc. were released by Government of Tamil Nadu.

1.8.3 The Government of Tamil Nadu has taken over TANGEDCO's loan of Rs.22,815 crores under UDAY scheme and provided to TANGEDCO as interest free loan.

1.8.4 As per the UDAY, the GoTN is to provide Rs 4,563 crores of grants being conversion of 1/5th of interest free loan provided to TANGEDCO every year. Since GoTN has sanctioned the grants for second installment of conversion of loan for the financial year 2018-19 during October 2018, the same is accounted as revenue grants.

1.8.5 In addition to the above heads, the Government of Tamil Nadu has released a sum of Rs.450 crores to TANGEDCO towards Gaja Cyclone relief for meeting

the expenditure incurred in connection with Gaja Cyclone.

1.8.6 The Government of Tamil Nadu has provided the following financial assistance to TANGEDCO in Budget Estimate 2019-2020.

(Rs.in crores)

S. No	Assistances	BE 2019-20
1	Tariff subsidy	8118.25
2	Taking over future loss of TANGEDCO by State Government under UDAY Scheme	1254.70
3	Transmission System Improvement Loans & Grants	660.95
4	Cyclone Resilient Electrical Network under Coastal Disaster Risk Reduction Project (CDRRP) Grants	165.00
5	Hydel Swing Subsidy	125.00
6	Conversion of GoTN Loans to TANGEDCO as Grants.	4563.00
7	Allocation under TNIPP Phase-II expenditure	398.70
	Total	15285.62

1.8.7 From the above budget provision, the Government of Tamil Nadu so far released Rs.3,086.92 crores to TANGEDCO as Tariff Subsidy.

1.8.8 Further, Government of Tamil Nadu has given a government guarantee of Rs. 18,215.41 crores to avail loans from Financial Institution / Banks for the financial year 2018-19 to TANGEDCO.

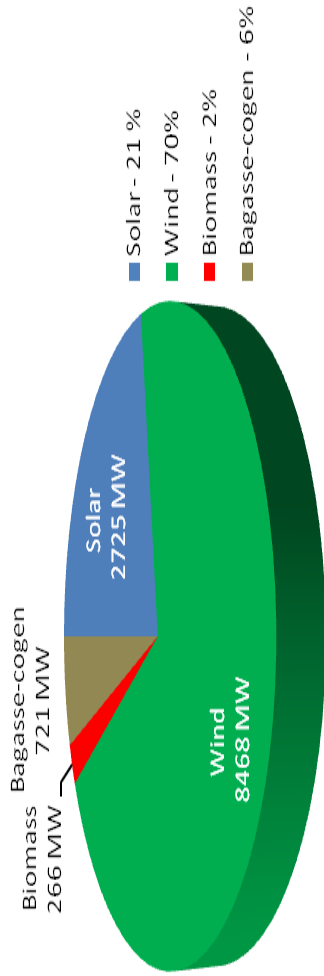
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II. TAMIL NADU ENERGY DEVELOPMENT AGENCY

2.1 Introduction

Tamil Nadu, with an installed capacity of 12180 MW is the leading state in the Country in Renewable Energy Sector. TEDA has played an important role in achieving this position. Set up in 1985, Tamil Nadu Energy Development Agency (TEDA) is actively engaged in promoting the use and propagation of new and renewable energy sources in the State. TEDA also acts as the Nodal Agency for the purpose of implementation of various projects.

Renewable Energy Installed Capacity in TamilNadu as on 31.03.2019



Total Installed RE Capacity is 12180 MW

Source: TANGEDCO

2.2 Major Programmes and Projects

2018-19 has been a productive year for solar energy with an additional 690MW capacity getting installed during the year. During this year solar rooftops with a cumulative capacity of 53 MW and utility power plants with a cumulative capacity of 637 MW have been installed. TEDA has been at the fore front of the national renewable energy initiative. Several innovative programmes have been conceived and implemented by TEDA, on the advice of the State Government.

2.3 Chief Minister's Solar Powered Green House Scheme (CMSPGHS)

Under the Chief Minister's Solar Powered Green House Scheme (CMSPGHS), launched during 2011-12 for the benefit of people below poverty line. 6482 Nos. home lighting systems have been installed during the year 2018-19 with the provision of 5Nos. of LED/CFL lamps in

each beneficiary's house. This has created an installed capacity of 0.45 MW of solar roof tops in the year 2018-19, taking the cumulative capacity to 24.03 MW with the installation of 281316 Solar Home Lighting System. Besides the above, 10000 Weaver's Houses have been energised through Solar Energy.



Chief Minister's Solar Powered Green House Scheme

2.4 Chief Minister's Solar Rooftop Capital Incentive Scheme

Under this scheme, Grid Connected Rooftop Solar of 1kW capacity each has been installed for a cumulative capacity of 174 kW in 174 beneficiary houses. State Government subsidy has been disbursed to all the beneficiaries totaling Rs.31 lakhs besides the eligible Central Financial Assistance.

1KW Solar Rooftop Panel



2.5 Solar Photovoltaic Power Plants

TEDA has facilitated installation of solar power plants in the following Government Departments during 2018-19:

- Ground mounted solar plant of 10 kW capacity in the buildings of TWAD Board, Salavakkam, Kanchipuram district.
- Solar Rooftops with a cumulative capacity of 440 kWp in the premises of Bharathiar University, Coimbatore
- Solar roof tops with a cumulative capacity of 267 kWp in the premises of 14 District Courts is under progress.
- Solar PV power plants with a cumulative capacity of 95 kW for energizing street lights and for water supply system at SIDCO Industrial Estate, Kakkalur, Thiruvalluvar District.

- 9KW solar rooftops at the buildings of Central Cooperative banks of the Papanasam and Nannilam branches in Kumbakkonam.

Besides the above, TEDA has been facilitating in the Installation of solar roof tops with a cumulative capacity of 160kWp in Madras High Court buildings.

2.6 Effective Energy Efficiency Measures

In order to implement the Energy Efficiency Measures in an effective way, the Government has declared TEDA as an optional Procurement Agency for providing goods and services pertaining to Energy Efficiency, as listed below:

2.7 Goods:

- Renewable energy generation systems including balance of systems
- Appliances, equipments, devices and accessories including pumps, motors,

lighting and mobility systems powered by renewable energy

- Energy efficient systems, gadgets, devices, utilities, appliances and accessories.

2.8 Services:

- Energy services including design, implementation of energy saving projects, retrofitting, energy conservation, energy infrastructure outsourcing, renewable power generation & supply and risk management.
- Project Development management, operation and maintenance of renewable energy projects and energy efficiency projects.
- Technical Consultancy.

TEDA will also act as a RESCO for providing solar rooftops in Government/Local Body/Public sector undertaking buildings under section (3) of Tamil Nadu Transparency in Tenders Act 1998, vide G.O. (Ms) No.9 dated 29.01.2019.

2.9 Global Investors Meet 2019

TEDA participated in the 2nd edition of Global Investors Meet 2019 organized by the Government of Tamil Nadu at Chennai Trade Centre, Nandambakkam, Chennai on 23rd and 24th of January 2019 and put up a stall highlighting the major schemes and programmes being implemented by TEDA. A special session was also held on “Investment Opportunities in Renewable Energy” during the meet in which Experts, Officers and Entrepreneurs participated.



Investment Opportunities in Renewable Energy” during the meet in which Experts, Officers and Entrepreneurs



Tamil Nadu Energy Development Stall at Global Investors Meet

2.10 An Awareness Expo on Sustainable Energy

TEDA participated in the 45th India Tourist and Industrial Fair, 2019 organized by Tamil Nadu Tourism Development Corporation at Island Grounds, Chennai and put up a pavilion with the concept “A Digital Transformation for Sustainable Energy Development” which attracted about 1,00,000 visitors. TEDA won the “First Prize in the “State Government Undertakings” category.

Tamil Nadu Energy Development Stall – External View





Promotion of Distributed Generation by Land Owning Farmers – Internal View



TEDA won the "First Prize in the State Government

2.11 Publicity Awareness

In 2018-19, TEDA's mobile van having renewable energy working models was sent to the following 3 institutions at their request for awareness campaigns in the state.

1. M/s. Excel Group Institutions, Pallakkapalayam, Namakkal District,
2. M/s. Periyar Maniammai Institute of Science and Technology, Vallam, Thanjavur,
3. M/s. SRM Institute of Science and Technology, Kanchipuram.

2.12 Tamil Nadu Solar Energy Policy 2019

In order to achieve the ambitious targets as envisaged in "Tamil Nadu Vision 2023" and National Solar Mission, to achieve 8884 MW of Solar power by 2023, the Hon'ble Chief

Minster made the following announcement under rule 110 of State Assembly Rules.

“To synchronize objectives of Tamil Nadu Solar Energy Policy 2012, Tamil Nadu Vision 2023 and the National Solar Mission, Solar Policy 2012 will be suitably modified to achieve 8884 MW of Solar Power by 2023”.

Based on the above announcement, Tamil Nadu Energy Development Agency (TEDA) prepared ‘Tamil Nadu Solar Energy Policy 2019’ The Policy was released by Hon’ble Chief Minister on 04.02.2019. The salient features of Tamil Nadu Solar Energy Policy 2019 are as below:

- To achieve an installed solar energy generation capacity of 9,000 MW by 2023 in Tamil Nadu.

- To provide Net feed-in facility for all Low Tension (LT) electricity consumer categories.
- To make Tamil Nadu a forerunner / leader in Solar Power generation, besides wind power generation.
- To provide green jobs to a significant number of the State's workforce in solar energy sector.
- To design and to promote solar energy generation in the agricultural sector with suitable incentives to farmers.
- To promote both utility and consumer category solar energy systems.



Hon'ble Chief Minister of Tamil Nadu Thiru Edappadi K.Palaniswami on 04.02.2019, at Secretariat released the "Tamil Nadu Solar Energy Policy 2019" book prepared by Tamil Nadu Energy Development Agency (TEDA) and was received by Hon'ble Minister for Electricity Prohibition and Excise.

MNRE Benchmark costs for Off-grid Solar PV Systems and Grid Connected Rooftop Solar Power Plants:

(i) Solar Pumps

Pump Capacity (HP)	Benchmark Costs (Rs./HP)
Upto 3 HP DC	85000
3HP – 5 HP DC	77000
Upto 3 HP AC	80000
3 HP -5 HP AC	65000

(ii) Solar Lighting Systems

System	Benchmark Costs (Rs./HP)
Solar Lamps	250
Solar Street Lights	
With Lead Acid battery	300
With Li-Ion battery	435

(iii) Standalone Solar Power Plants / Packs

Capacity (kW)	Battery back-up (hrs)	Benchmark Costs(Rs./Wp)
Upto 10	6	100
	3	80
	1	68
Above 10 and upto 25	6	90
	3	72
	1	61

(iv) Grid Connected Rooftop Solar Power Plants

Capacity	Benchmark Costs (Rs./Wp)
Above 1 kW and upto 10 kW	60
Above 10 and upto 100 kW	55
Above 100 kW and upto 500kW	53

Residential, Institutional and Social Sectors are eligible to avail the Central Financial Assistance of 30% of the benchmark cost or project cost whichever is lesser.

(v) Achievement Linked Incentives for Government Sectors and Central Financial Assistance for Private Sectors for Renewable Energy Schemes:

Incentive structure for Rooftop systems for Government sector:

Sl. No.	Achievement vis-à-vis Target Allocation	Incentives for General Category States
1	80% and above within the sanctioned period	INR 13,750/- per kW
2	Below 80% and upto 50% (including 50%) within the sanctioned period	INR 8,250/- per Kw
3	Below 50% and upto 40% (including 40%) within the sanctioned period	INR 5,500/- per kW
4	Below 40% within the sanctioned period	NIL

(a) Solar Thermal Applications:

Sl. No.	Name of the Scheme	Available Financial Assistance/Subsidy
1	Solar collector system for direct heating applications (NIC/CPC)	Rs.3600/-sq. m.
2	Concentrator with manual tracking	Rs.2100/- sq. m.
3	Concentrator with single axis tracking (including scheffler dishes)	Rs.4500/- sq. m.
4	Concentrator with single axis tracking (SCMR. ETC),	Rs.5400/- sq. m.
5	Concentrator with double axis tracking	Rs.6000/- sq. m.

(c) Small Wind Energy and Hybrid Systems:

Sl. No.	Name of the Scheme	Available Financial Assistance / Subsidy
1	Small Wind Energy & Hybrid Systems (Aero-generators/Wind-Solar Hybrid Systems)	Rs.1,00,000/- per kW (for community users only)

TEDA has also been implementing the schemes announced/ being announced by the Ministry of New and Renewable Energy, GOI, facilitating the disbursement of eligible subsidy/ incentive to the beneficiaries.

2.10 Tamil Nadu Energy Promotion Scheme

The principal correctives envisaged by TEDA is to encourage decentralized and disaggregated generation of solar power, especially by the sections which are subsidized and to encourage other segments to produce and consume solar power, which will effectively contain the Government subsidy while reducing the pressure

on TANGEDCO. TEDA's solution is expected to accomplish Government's avowed twin policy objectives of (a) protecting and improving the environment by promoting solar power in the State, and (b) continuance of the 'pro-poor, pro-farmer' welfare programmes in the power sector, whilst, simultaneously mitigating the problem of mounting corresponding subsidies. Driven by these objectives, TEDA has conceptualized an innovative scheme, namely, **Tamil Nadu Solar Energy Promotion Scheme** based on the announcements made by the Honourable Minister of Electricity, Prohibition and Excise in the State Legislative Assembly on 31.05.2018 which comprises of the following four components.

(i) Rural Mini Solar Park (RMSP):

TEDA proposes to develop "RURAL MINI SOLAR PARKS" with a minimum installed capacity of 20 MW. Under this programme, any individual, farmers (or) group of farmers,

minimum 1 MWp capacity up to a maximum capacity of 5 MWp for their livelihood and sustainable income. This program is independent of land ownership, but it can also take advantage of the Rural Mini Solar Parks as referred above. The unemployed youth will be skilled in installation, commissioning and maintenance of solar power generation equipments, in the light of the recent 'KUSUM' scheme announced by the Government of India for which detailed guidelines are awaited.

(iii) Solar Energy Producing Farmers:

TEDA proposes to encourage and facilitate distributed generation of solar power by the land owning farmers currently drawing subsidized power from the grid for self-consumption and commercial sale to TANGEDCO and other buyers. Recently, MNRE has approved the launch of Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM) with the objective of providing financial and water security to

farmers. Under the KUSUM scheme, central financial assistance (CFA) of 30% of the benchmark cost or the tendered cost, whichever is lower, will be provided. The State Government will give a subsidy of 30%; and the remaining 40% will be provided by the farmer.

However, due to the above proposition the contribution to be borne by the farmers is higher and in order to ease the burden on the farmers, TEDA proposes to mobilize the 40% fund through financial partners, viz., Tamil Nadu Infrastructure Finance Management Corporation (TNIFMC).

The solar energy generated under this scheme is proposed to be purchased by TANGEDCO through a PPA (Appropriate Tariff to be determined by TNERC). The power produced by each farmer will be fed into a) irrigation pump-sets for his own farms and b) the grid towards sale to TANGEDCO. This model addresses the issue of current grid availability

impacting the continuity of irrigation to farmers as well as the heavy subsidies that TANGEDCO bears towards the agricultural community. In parallel, it generates a sizeable income stream for the farmer, in the light of the recent 'KUSUM' scheme announced by the Government of India for which detailed guidelines are awaited.

iv) Solarization of Government Buildings:

In order to implement the Grid Connected Rooftop Solar Systems in the buildings of various Government Departments under the RESCO model, TEDA has identified the installer. As, many departments have evinced interest and come forward to install rooftop solar systems, TEDA will take up the installations through the installer which will be maintained for 25 years by the installer and the applicable tariff will be charged by the installer for the power supplied to the departments.

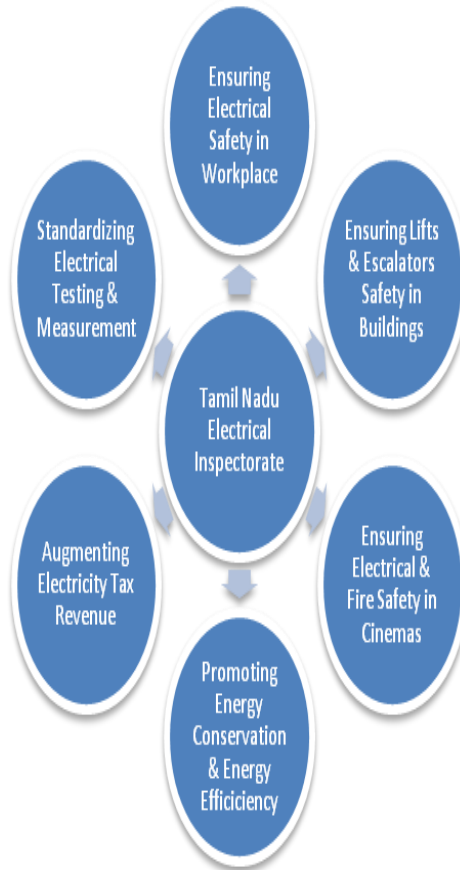
III. ELECTRICAL INSPECTORATE DEPARTMENT

3.1 INTRODUCTION

The Electrical Inspectorate Department's main mandate is to ensure that all electrical installations are safe and complies with Regulations & Standards.

The Department also administers and enforces the statutory provisions relating to lifts and escalators safety, electrical & fire safety in cinema halls. Besides, the department is responsible for promotion of energy conservation & energy efficiency, and electricity tax collection under the various provisions of State and Central Laws.

3.2 ROLE OF ELECTRICAL INSPECTORATE DEPARTMENT



3.3 STATUTORY FUNCTIONS

3.3.1 Implementation of Central Electricity Authority (Measures relating to Safety & Electric Supply) Regulations, 2010.

The Central Electricity Authority (Measures relating to Safety & Electric Supply) Regulations, 2010 framed under Section 53 of Electricity Act, 2003 specifies the measures for

- a) Protecting the public (including the persons engaged in generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation, maintenance or use of any electric line or electrical plant.
- b) Eliminating or reducing the risks of personal injury to any person, or

damage to property of any person or interference with use of such property;

- c) Prohibiting the supply or transmission of electricity except by means of a system which conforms to the specifications as may be specified;

The above Regulations specifically define the conditions of safety in electricity supply and following activities are carried by the Department under them.

- i. Scrutinizing and issue of report on the compliance of the design drawings of electrical installations receiving HT supply (More than 650V) in accordance with Regulations / Bureau of Indian Standards.
- ii. Initial Inspection & Testing of Electrical Installations receiving HT supply under

Regulation 43 for ensuring compliance of Regulations and hence for Certifying.

- iii. Initial Inspection & Testing of Electrical Installations in Multi-Storied Buildings of more than 15m in height for ensuring compliance of Regulations and hence for Certifying.
- iv. Periodical Inspection and Testing of Electrical Installations receiving HT supply and all those installations of Supplier of Electricity, under Regulation 30 for ensuring continued compliance of Regulations.

3.3.2 Implementation of Tamil Nadu Cinemas (Regulation) Act, 1955 & Rules, 1957

The above laws provide enough provisions to ensure electrical and fire safety in Cinema Theatres, besides other regulatory mechanism. Under this Rules, the Department carries out the

following duties to ensure safety to the Cinemagoer.

- a) Issue of Drawing Approval
- b) Inspection & Issue of Electrical Certificate for Cinema Theatres
- c) Annual Inspection of Cinemas

3.3.3 Implementation of Tamil Nadu Lifts and Escalators Act, & Rules, 1997.

The Government of Tamil Nadu enacted the Lift laws in 1997 to regulate the erection, maintenance and safe working of Lifts. Subsequently by an Amendment Act in 2017, the Escalators are also included.

Under this Act, & Rules, the Department carries out the following activities.

- a) Issue of Erection Permission for Lifts & Escalators
- b) Inspection & Issue of Licences for working the Lifts & Escalators

- c) Periodical Inspection & Renewal of Licences for working the Lifts & Escalators
- d) Issue of Authorization for Erection, Maintenance, Inspection and Testing of Lifts and Escalators.

3.3.4 Implementation of Energy Conservation Act, 2001 (Central Act No.52 of 2001)

The Government of India enacted the law to provide for efficient use of energy and its conservation. The Government of Tamil Nadu notified the Department of Electrical Inspectorate as the State Designated Agency for implementing the provisions of the Act. The responsibilities and duties of the Department as the State Designated Agency are:

- a) Spread awareness on Energy Conservation Act, Energy Efficiency Labeling programs, Energy

Conservation Building Codes (ECBC), etc., framed under the Act.

- b) Undertake voluntary initiatives to promote energy conservation
- c) Liaison and coordinate with Bureau of Energy Efficiency, State Government Departments dealing with energy, industry, planning, regulators, consumer affairs, municipal bodies etc.
- d) Capacity building of staff employed
- e) Launch and maintain state specific website addressing the voluntary and mandatory provisions of Act
- f) Undertake energy conservation awareness program for consumers, industrial & commercial sector, school children, farmers etc.
- g) Arrange interactive meets between energy managers, energy auditors and experts in the field.

- h) Request State Government to constitute a state energy conservation fund for the purposes of promotion of efficient use of energy and its conservation within the state.

3.3.5 Implementation of Tamil Nadu Tax on Consumption or Sale of Electricity Act, & Rules, 2003

The Tamil Nadu Tax on Consumption or Sale of Electricity Act, 2003, (Act 12 of 2003) was enacted repealing the Tamil Nadu Electricity Duty Act 1939 and the Tamil Nadu Electricity (Taxation on Consumption) of Electricity Act, 1962, which came into force on 16.6.2003. According to section 3(1) of this Act, "Every licensee and every person other than licensee shall pay every month to Government in the prescribed manner a tax on electricity sold or consumed during the previous months at the rates specified there under".

Every person other than a licensee or the State Government, who has installed or proposes to install a generating plant for generation of electricity for his own consumption, shall register his name with such officer as the Government may appoint in this behalf. The Electrical Inspectors were appointed as Electricity Tax Inspecting Officers for the purpose of registration. The collection of tax on consumption of self-generated electricity also has been entrusted to TANGEDCO by including in the current consumption bills.

The rate of tax on electricity sold by licensees and also by person other than licensees was prescribed as 5% of the consumption charge. The rate of tax on electricity consumed for own use by licensees and also by person other than licensees was prescribed as 10 paise per unit of electricity consumed.

Electricity tax is collected by the Department as well as Tamil Nadu Generation and Distribution Corporation Limited .

Electricity tax collected by the Electrical Inspectorate

	2017-2018 (in Crores)	2018-2019 (in Crores)
Registration	0.1474	0.1695
Electricity Consumption Tax	65.87	66.68
Sales Tax	1.81	9.89
Interest	2.08	1.22
Total	69.90	77.97

Electricity tax collected by the TANGEDCO Ltd

	2017-2018 (in Crores)	2018-2019 (in Crores)
TANGEDCO Ltd Collection	1176.28	1279.28

3.4 Testing and Calibration

In order to undertake testing and calibration of electrical equipment, meters and instruments, facilities are available at the Government Electrical Standards Laboratory

attached to the Head Office of the Electrical Inspectorate. The laboratory receives energy meters and other electrical instruments from various State Electricity Boards in our country for calibrating their accuracy.

3.5 Achievements

The performance of the Department during 2018-2019 and revenue receipts are as follows:

Sl. No	Services Rendered by this department	Total Nos.
(a)	Lift	
	(i) Lift license issued (from November 1997 to March 2019)	29,243
	(ii) Issue of licenses for new lifts in the year 2018-19	2,265
	(iii) Renewal of licenses for the existing lifts	12,308
(b)	Issue of permission for energisation of new electrical installations	2,030
(c)	Statutory inspections of High Tension installations	3,938
(d)	Scrutiny of drawing proposals for the new Electrical	2,246

	Installations and additions/Alterations of equipment in the existing installations	
(e)	Cinema Theatres	
	(i) Existing cinema theatres	1,107
	(ii) Certification of Electrical Fitness to new cinema buildings in the year 2018-19	30
	(iii) Renewal of certification of Electrical Fitness to existing cinema buildings in the year 2018-19	349
(f)	Testing and calibrations of electrical meters in the year 2018-19 from April 2018 to March 2019	4347

The department mobilized Rs.20.07 crores of revenue from its inspection other services.

3.6 ENERGY CONSERVATION

(i) Energy Conservation Building Code (ECBC)

The Energy Conservation Building Code (ECBC) was launched by Ministry of Power,

Government of India is a model document listing out mandatory requirement of energy efficiency in the building sector besides prescribing minimum energy efficiency standards for design and construction of commercial buildings. As per the powers conferred under clause 15(a) of the Energy Conservation Act, 2001 the Government of Tamil Nadu has constituted a technical committee for evolving technical guide lines for adoption of ECBC through local body and an Empowered committee to advise and evolve policy decision for the implementation of the ECBC.

The Ministry of Power, Government of India has released ECBC 2017, an updated version of the earlier code. In order to adopt the updated code in the state, the draft TNECBC 2018 has been prepared with the help of technical consultants. The draft Tamil Nadu Energy Conservation Building Code (TNECBC) along with

technical committee inputs and TNECBC rules were submitted to the ECBC empowered committee during the meeting chaired by the Chief Secretary held on 09.11.2018. The TNECBC is under active consideration by the Government.

(ii) Energy Conservation week

In order to create awareness on Energy Conservation amongst general public, the student's rally has been conducted on 14.12.2018. Besides National Energy Conservation Week during is observed during 14.12.2018 to 20.12.2018 in the State of TamilNadu. Energy Conservation awareness programme was inaugurated by Hon'ble Minister Electricity, Prohibition and Excise on 20.12.2018.

3.7 ELECTRICAL LICENSING BOARD

As per regulation 29 of Central Electricity Authority (Measures relating to Safety and

Electric Supply) Regulations, 2010 all the electrical installation works can only be carried out by the licensed contractors and workmen. The Electrical Licensing board under the Electrical Inspectorate has been designated as competent authority to issue license to the electrical contractors and to grant certificate of competency to wiremen and supervisors in order to ensure that all the electrical works are handled by licensed contractors and certified personnel only. The electrical contractor's licenses are classified as ESA, EA, ESB and EB grade depending upon the competency in handling voltage level.

Issuance of Electrical Contractor License and Competency Certificate upto 31.3.2019.

1	Electrical Contractor License	26,402 Nos.
2	Certificate of Competency to Wireman and Supervisor	2,25,839 Nos.

3.8 IMPROVEMENT IN SERVICE DELIVERY OF THE ELECTRICAL INSPECTORATE

“Online Lift License Management” system has been implemented which enables an applicant seeking grant of new lift license and renewal of existing lift license to apply online and also monitor the status of his/her application.

“Online Filing of Returns of Electricity Tax” has also been implemented. This has improved the collection of electricity tax.

IV. TAMIL NADU POWER FINANCE AND INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.,

Introduction

The Tamil Nadu Power Finance and Infrastructure Development Corporation Ltd., (TNPFDCL) incorporated on 27.6.1991 as a Non-Banking Finance Company- (Deposit) to fund infrastructural projects. The TNPFDCL is classified as Public Financial Institution Under section 4A of the Companies Act. It is a wholly owned state Public Sector Undertaking with authorized capital of Rs 5,000 crores and Paid up Capital of Rs.1290 crores. The company's mandate is to raise funds through Debt market and Public Deposits. It primarily lends to state energy utilities viz. TANGEDCO and TANTRANSOCO. The Company has loan assets of Rs.33,000 crores as on 31.3.2019. Due to its sound financial and professional management,

the company has been making profit since inception.

4.1 Fixed Deposits:

TNPFIDCL has emerged as the leading NBFC (Deposit) in Tamilnadu attracting depositors, individuals as well as institutions. There has been steady growth in deposits from Rs.24,624.22 Cr. to Rs.27,324.59 crores as on 31.03.2019 maintaining a healthy growth rate of 10.97%, from 9,93,108 depositors. The net deposits from individual and institutional depositors have grown from Rs.24,624.22 crores in 2017-18 to Rs.27324.59 crores in 2018-19.

4.2 Rate of Interest

TNPFIDCL offers a competitive interest rate of 7.50% on term deposits for one year, 7.75% for deposits for 2 years and 8.25% for deposits with tenure up to 5 years. The Company offers an additional interest of 0.25%

p.a. for one year and two years and 0.50% p.a. for 3,4, and 5 years term for senior citizens of 58 years and above.

4.3 Financial Assistance to TANGEDCO:

TNPFIDCL primarily lends to TANGEDCO for financing their infrastructural projects. The gross sanction since inception stands at Rs.1,03,518.39 crores by way of hire purchase, lease and term loan. A record lending of Rs.24,358 crores has been made during the financial year 2018-19. The net loan outstanding from TANGEDCO is Rs.33,162.43 crores as on 31.3.2019.

4.4 Deposits under the State Government Schemes:

1. Cash Incentive Scheme:

Government in the year 2011-12 vide G.O.Ms.No.141, School Education Department, dt.13.9.2011 ordered to implement a new "Special Incentive Scheme" for students in

Government and Government – Aided Schools to prevent the school dropouts in 10th, 11th and 12th standards. An incentive of Rs.1500/- per student for 10th and 11th standards and Rs.2000/- per student for 12th standard is deposited by the Government in Tamil Nadu Power Finance Corporation every year. The School Education Department has deposited a sum of Rs.250 crores in the year 2018-19 as cash incentive to reduce dropout of students in the Schools. After passing class 12th examination, the incentive along with interest of Rs.5,851/- per student is directly transferred to the bank account of the students. So far 34,27,356 students have been benefitted under this scheme with cash incentive of Rs.1774.69 crores since 2011-12.

2. Bread-winning Scheme:

Government vide G.O.Ms.No.195, School Education Department dt.27.11.2014, have

enhanced the existing deposit amount from Rs.50,000/- to Rs.75,000/- per student under this Scheme to provide financial assistance to students studying from 1st standard to 12th standard in Government and Government – Aided Schools, whose bread-winning parent died or got permanently incapacitated in an accident. A sum of Rs.43.50 crores has been deposited by the School Education Department from the year 2005 till 31.3.2019.

3. Chief Minister's Girl Child Protection Scheme:

Government vide G.O.Ms.No.61, Social Welfare & Nutritious Meal Programme Department, dt.5.7.2013 have enhanced the deposit amount from Rs.22,200/- to Rs.50,000/- per child under "One Girl Child Scheme" (Scheme I) and a sum of Rs.15,200/- to Rs.25,000/- per child under "Two girl children Scheme" (Scheme II) in the name of the child. An incentive of Rs.1,800/- is given per child on

completion of 5th year up to 18th year of deposit for her educational purpose. Under the scheme, a sum of Rs.1420.57 crores has been deposited by the Social Welfare Department since the year 2001 till 31.3.2019.

4. Oru Kala Pooja Scheme:

Government vide G.O.Ms.No.197, Tamil Development Hindu Religious and Information Department, dt.20.9.2011 have enhanced the existing deposit amount from Rs.25,000/- to Rs.1,00,000/- towards "Oru Kala Pooja" scheme for performing daily Pooja in the fund starved temples from the quarterly interest earned on such deposits in TNPFDCL. A sum of Rs.116.54 crores has been deposited with the Corporation to benefit 11,654 temples.

4.5 Financial Performance:

TNPFDCL is a profit making Company since its inception. The total revenue of this

Company during the financial year 2018-2019 is Rs.3,038.17 crores (*Provisional*). The Company has earned a Net profit after tax of Rs.96.90 crores during the financial year 2018-2019. The company has declared dividend regularly from the year 1995-96 onwards. A sum of Rs.29.00 crores has been paid as dividend for the year 2017-18 during the financial year 2018-19.

4.6 Corporate Social Responsibility (CSR)

As per section 135 of the Companies Act,2013 read with rule 9 of the Companies(Accounts) Rules,2014, CSR activities shall be undertaken by the Company as per CSR policy and shall spend, in every financial year, at-least 2% of the average Net Profits of the Company made during the last three financial years. During 2018-19, the Company has spent Rs.150.81 lakhs for purchase of aids and appliances for the differently-abled persons run by various institutions and also provided 20 TV

sets to the tribal schools under the Administrative Control of Environment and Forest Department.

4.7 SOFTWARE UPGRATION:

TNPFIDC will be upgrading finance management system to enable a higher level of automation in accordance with RBI regulatory compliance and audit requirements at a cost of Rs.2.31cr (approx). The upgrading of IT solutions will make the transaction depositor friendly. Depositors will be able to transact online using web portal and mobile application with features such as online filling of application form, uploading KYC, updating nomination and contact details, renewals etc.

THIRU P.THANGAMANI
Minister for Electricity,
Prohibition & Excise.

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