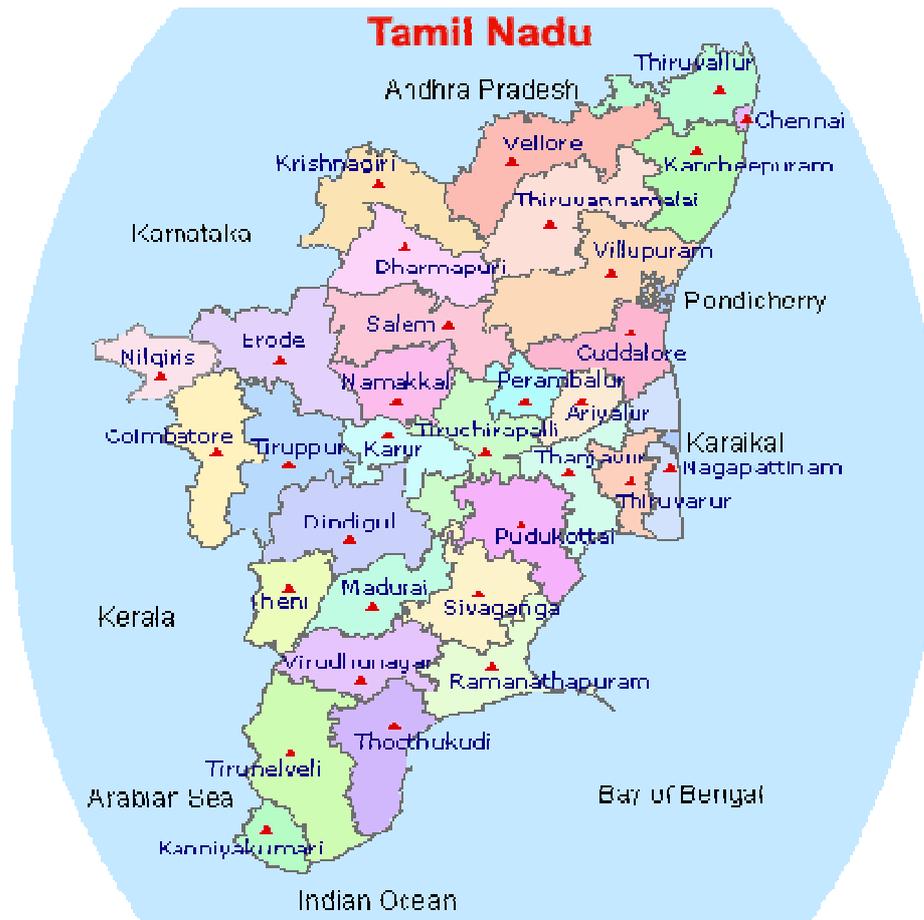




TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED



TANGEDCO DISASTER MANAGEMENT PLAN

AUGUST 2017

TANGEDCO

DISASTER MANAGEMENT PLAN

Revision History

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1.0	28.7.14	CE/Planning &RC TANGEDCO
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(TANGEDCODMP)
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ABBREVIATIONS

TNEB	TamilNadu Electricity Board
TANGEDCO	TamilNadu Generation and Distribution Corporation Limited
TANTRANSCO	Tamil Nadu Transmission Corporation Limited
TANGEDCODMP	TamilNadu Generation and Distribution Corporation Disaster Management Plan
TANGEDCO DMS	TANGEDCO Disaster Management System
DMA	Disaster Management Act
SDMA	State Disaster Management Authority
DDMA	District Disaster Management Authority
SOP	Standard Operating Procedures
SS	Sub Station
DT	Distribution Transformer
KV	Kilo Volt
KVA	Kilo Volt Ampere
O&M	Operation & Maintenance
EDC	Electricity Distribution Circle
AE	Assistant Engineer
JE	Junior Engineer
AEE	Assistant Executive Engineer
EE	Executive Engineer
SE	Superintending Engineer
CE	Chief Engineer
CMD	Chairman cum Managing Director
GOTN	Government of TamilNadu

PART-I Framework/Template

Chapter I

INTRODUCTION

As per the National Disaster Management Act (DMA), 2005 [Chapter I, Section 2 (d)]: "Disaster" means a catastrophe, mishap, calamity or grave occurrence in any area arising from natural or man made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and such a nature or magnitude as to be beyond the coping capacity of the community of the affected area.

State Disaster Management Authority

All State Governments are mandated under Section 14 of the DM Act to establish a State Disaster Management Authority (SDMA). The SDMA under Section 22 of the DM Act shall draw up the State Disaster Management Plan, and shall implement the National Plan. The SDMA is mandated under section 28 to ensure that all the departments of the State prepare disaster management plans as prescribed by the National and State Authorities.

Accordingly Tamil Nadu Generation and Distribution has prepared a disaster management plan. In short form Tamil Nadu Generation and Distribution Corporation Disaster Management Plan is mentioned as TANGEDCODMP.

1.1 Overview of TANGEDCO

On 1st July 1957, Tamil Nadu Electricity Board came into being and has remained the energy provider and distributor all these years. The Electricity Act 2003 mandates unbundling of State Electricity Boards under section 131. Hence, Government of Tamil Nadu have accorded in principle approval in G.O.Ms.No.114 Energy (B2) Department dated 8.10.2008 for reorganization of TNEB by establishment of a holding company, by name TNEB Ltd and two

subsidiary companies, namely **TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED (TANGEDCO)** and **TAMILNADU TRANSMISSION CORPORATION LIMITED (TANTRANSCO)** with stipulation that aforementioned companies shall be fully owned by Government of TamilNadu. Based on the approval of Memorandum of Association and Articles of Association of TANGEDCO and TNEB Limited by the Government of Tamil Nadu vide G.O.Ms.No.94 Energy(B2) Department dated 16.11.2009, Tamil Nadu Generation and Distribution corporation Limited (TANGEDCO) and TNEB Limited was incorporated on 01.12.2009.

The certificates of commencement of business have been obtained for TANGEDCO on 16.3.2010 and for TNEB limited on 12.03.2010. The Chairman-cum-Managing Director and Board of Directors for TANGEDCO and TNEB Limited have been appointed by GoTN vide G.O.Ms.No.36 Energy (B2) dt 5.4.10. During the period TNEB have extended the electrical network to all the villages and towns throughout the State. TNEB takes the credit of 100% electrification of all villages and towns in TamilNadu. After 53years of journey on 1st of November 2010 it has restructured itself into TNEB Ltd, Tamil Nadu Generation and Distribution Corporation (TANGEDCO) Ltd, and Tamil Nadu Transmission Corporation (TANTRANSCO) Ltd as per GoTN notification vide G.O.(Ms).No. 100 Energy (B2) department dt 19.10.2010.

Vision of TANGEDCO

The vision of TANGEDCO is to make TANGEDCO synonymous with availability of quality and reliable power at competitive rates.

Salient Features of TANGEDCO

Sl.No.	Description	
1.	Installed capacity as on 31.05.2017 (MW)	
	a. Thermal	4,320.00
	b. Gas	516.08
	c. Hydro	2,307.90
	d. Share from Central Generating Stations	6,037.50
	e. Independent Power Projects(IPP)	746.50
	f. Captive Power Plants (CPP)	1,074.80
	g. Long Term Open Access (LTOA)	3,330.00
	h. Medium Term Open Access (MTOA)	400.00
	Total (MW)	18,732.78
2.	Energy generated (MU) (Hydro + Thermal + Windmill + Gas)	29,223
3.	Energy purchased & imported from other States (MU)	76,505
4.	Gross energy (2+3) (MU)	1,05,728
5.	Energy exported to other states, Kadamparai Pumping and auxiliary consumption (MU)	3,123
6.	Net energy (MU)	1,02,605
7.	a. Maximum demand during the year (MW) b. Maximum daily grid consumption during the year (MU)	15,343 345.617
8.	Length of lines	
	a. EHT and HT line (Lakh circuit kms)	2.04
	b. LT lines (Lakh kms)	6.19
9.	Total	8.23
10.	EHT & HT substations (Nos.)	1,547
11.	Power Transformer capacity (MVA)	75,568
	Per Capita Consumption (units)	1,340

Details of Existing Sub Stations

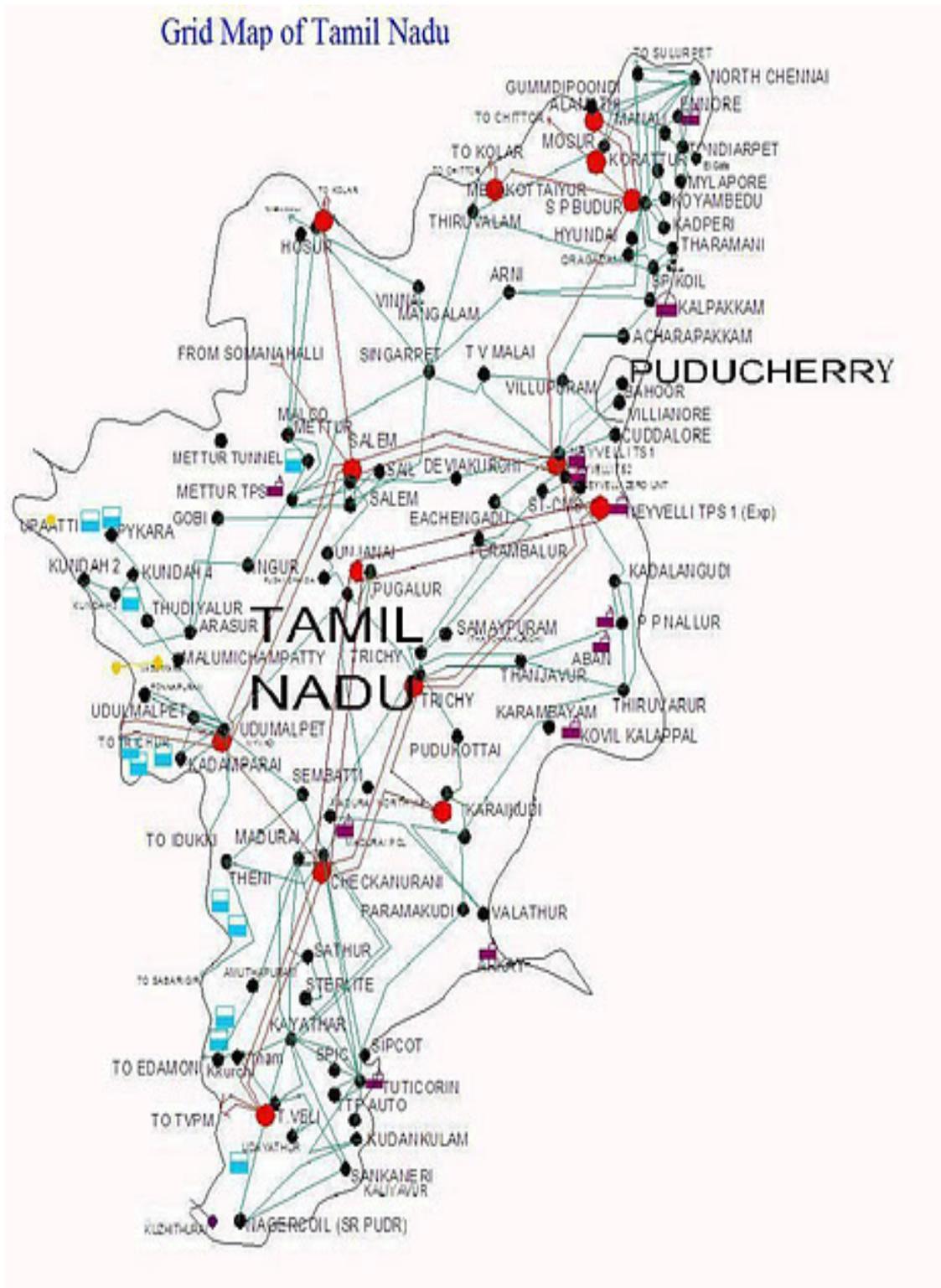
S.No	Description	Total
1	765 KV	4*
2	400 KV	20**
3	230 KV	95
4	110 KV	838
5	66 KV	6
6	33 KV	584
	Total	1547

* 4 Nos 765 KV PGCIL SS. (3 Nos. Initially charged at 400 KV Level)
** 10 Nos. 400 KV – PGCIL SS

Distribution Transformers in service

S.No	Category	Total Numbers
1	500 KVA	12108
2	250 KVA	38638
3	200 KVA	17330
4	150 KVA	661
5	100 KVA	160000
6	75 KVA	3059
7	63 KVA	31832
8	50 KVA	3009
9	Others	15391
	Total	282028

Grid Map of Tamil Nadu



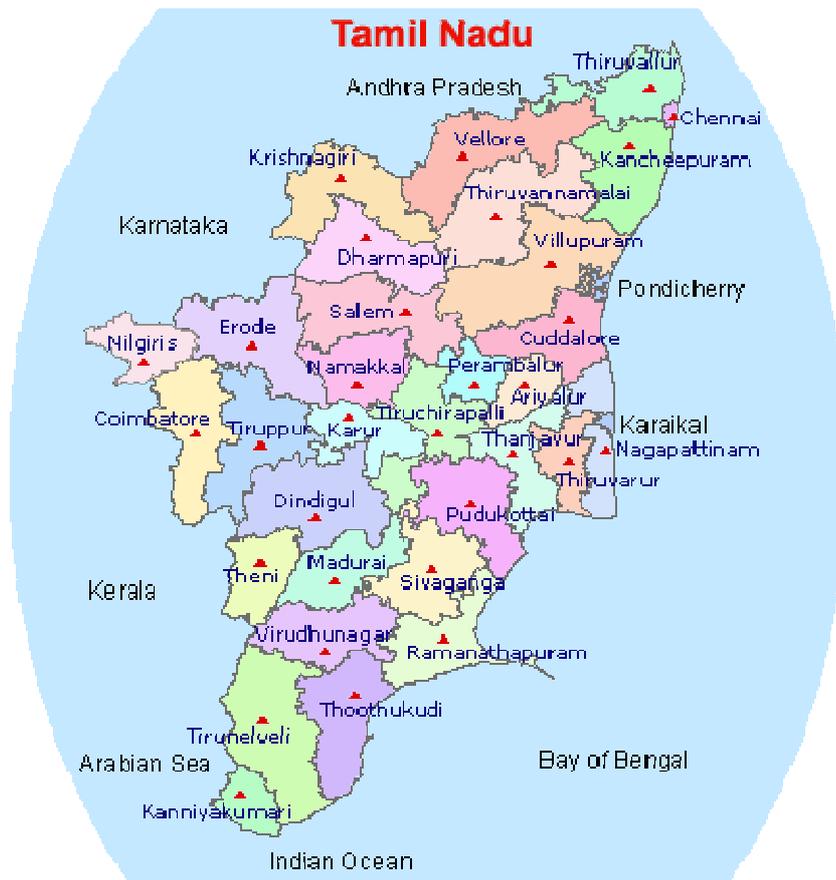
TANGEDCO SERVICE AREA:

TAMILNADU State has 32 Districts. At present TANGEDCO is providing power supply to majority of the consumers in Tamil Nadu. TANGEDCO provide power supply to consumers broadly under High Tension category and Low Tension Category for the domestic, commercial, Industrial, public utility and

agriculture categories. TANGEDCO supply electricity to following districts of
TAMILNADU

- 1 Ariyalur
- 2 Chennai
- 3 Coimbatore
- 4 Cuddalore
- 5 Dharmapuri
- 6 Dindigul
- 7 Erode
- 8 Kancheepuram
- 9 Kanniyakumari
- 10 Karur
- 11 Krishnagiri
- 12 Madurai
- 13 Nagapattinam
- 14 Namakkal
- 15 Nilgiris
- 16 Perambalur
- 17 Pudukkottai
- 18 Ramanathapuram
- 19 Salem
- 20 Sivaganga
- 21 Thanjavur
- 22 Theni
- 23 Thiruppur
- 24 Thiruvallur
- 25 Thiruvarur
- 26 Thoothukudi
- 27 Tiruchchirappalli
- 28 Tirunelveli
- 29 Tiruvannamalai
- 30 Vellore
- 31 Viluppuram
- 32 Virudhunagar

The 32 Districts are grouped in 9 Regions of TANGEDCO. Each region is headed by Chief Engineer/Electrical. The regions comprise Electricity Distribution Circles. Each Electricity Distribution circle is headed by Superintending Engineer.



I.2 Purpose of the Plan

The main objective of the Disaster Management plan is

1. To improve the state of preparedness to meet any contingency.
2. To isolate/ trip the power supply to the Disaster prone area and to restore the power supply after clearing the fault.
3. To eliminate the loss of life due to electrocution.
4. To reduce the damage to the Electrical Infrastructure & Buildings.
5. Capacity building of the Officers and Staff of TANGEDCO to handle emergencies/disasters effectively.

While this plan is not a document for routine, seasonal or severe emergency incidents or accidents associated with TANGEDCO that do not conform to the definition of disaster as stated above, salient features of this plan may be adopted in some emergency situations if necessary.

I.3 Scope of the Plan

The scope of the plan mainly covers distribution networks of TANGEDCO as the damage causes difficulty to larger public. In house emergencies in Generating stations will be handled as per the standard operating procedures maintained in the respective stations.

The plan covers overview of TANGEDCO, Institutional arrangement to handle disaster, Vulnerability and risk assessment, prevention and mitigation, Preparedness and Training activities that may be performed during normal times for effective response at time of Disaster.

I.4 Authorities, Codes and Policies

Government of TamilNadu, TANGEDCO is the authorities for implementation of the plan. Under normal circumstances, TANGEDCO will have to follow TamilNadu Electricity Supply Code, TamilNadu Electricity Distribution Code and Distribution Standards of Performance Regulations issued by TamilNadu Electricity Regulatory Commission based on the policy directives of Government of TamilNadu and other orders issued by the Government of Tamil Nadu.

In the event of declaration of a disaster by the State Administration/SDMA, this plan will be in effect and all the directives, rules and Standard Operating Procedures (SOPs) it refers to, must be followed.

The following stake holders are immediately affected by or directly responsible for the accuracy, feasibility and implementation of the plan.

- a) TANGEDCO
- b) TANGEDCO Disaster Management Team
- c) Consumers and General Public under TANGEDCO's areas of operation.

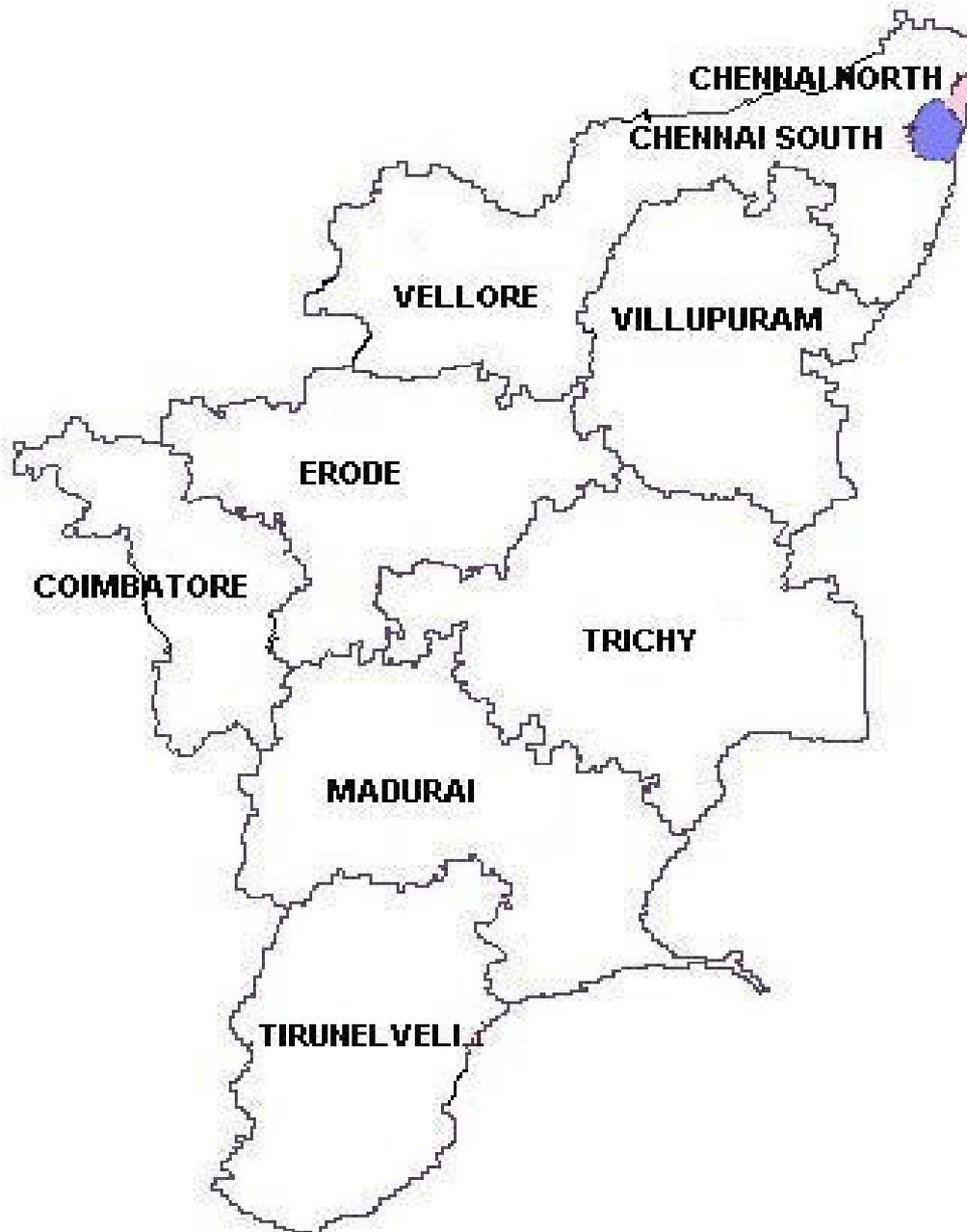
TANGEDCO Operational Hierarchy

TANGEDCO Distribution network is grouped into 9 regions. Each Region is headed by Chief Engineer. They will come under the control of Director (Distribution).

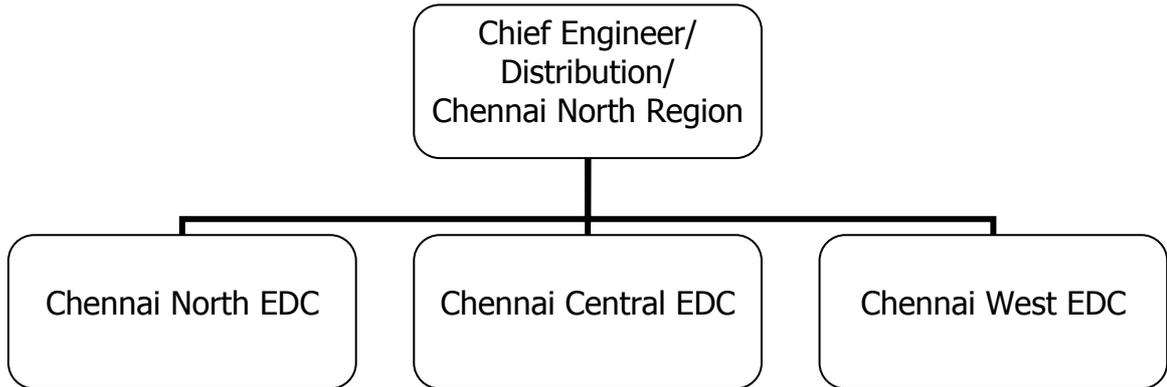
TANGEDCO's technical function starts from a Section office headed by Assistant Engineer/Junior Engineer, Subdivision office headed by Assistant Executive Engineer, Division office headed by Executive Engineer, Circle office

headed by Superintending Engineer and Region office headed by Chief Engineers. In addition various support functionaries like administration, accounts, technical stores, enforcement, and audit wings of the organization have their roles and responsibilities to function.

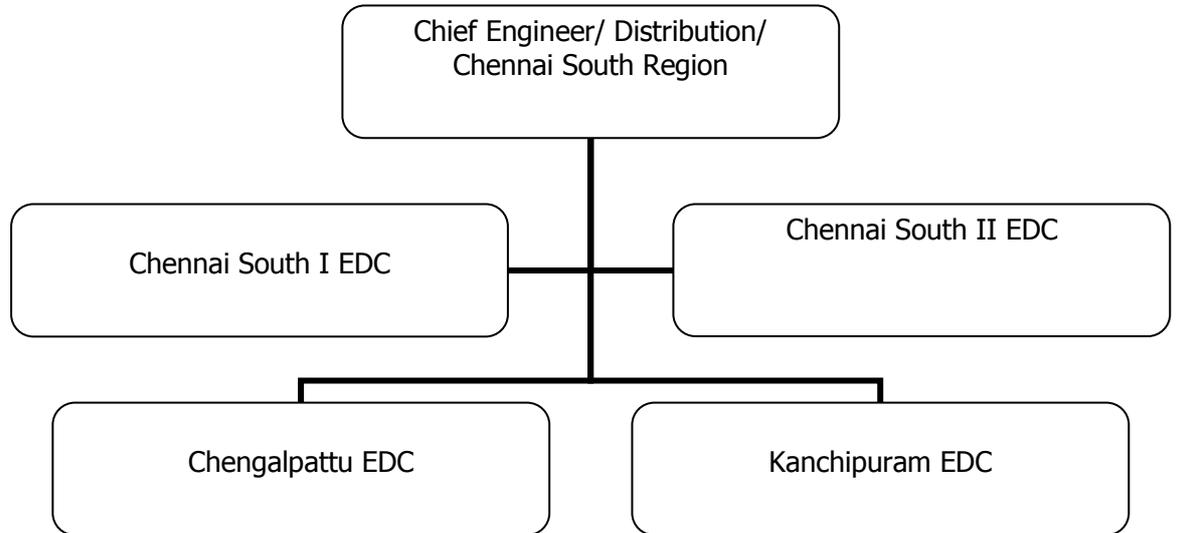
Under normal circumstances they will have various roles, responsibilities and powers to build infrastructure, maintain supply, extend new services and their complaints. Any breakdown of system warrants their immediate attention to isolate, rectify and to normalize in shortest possible time.



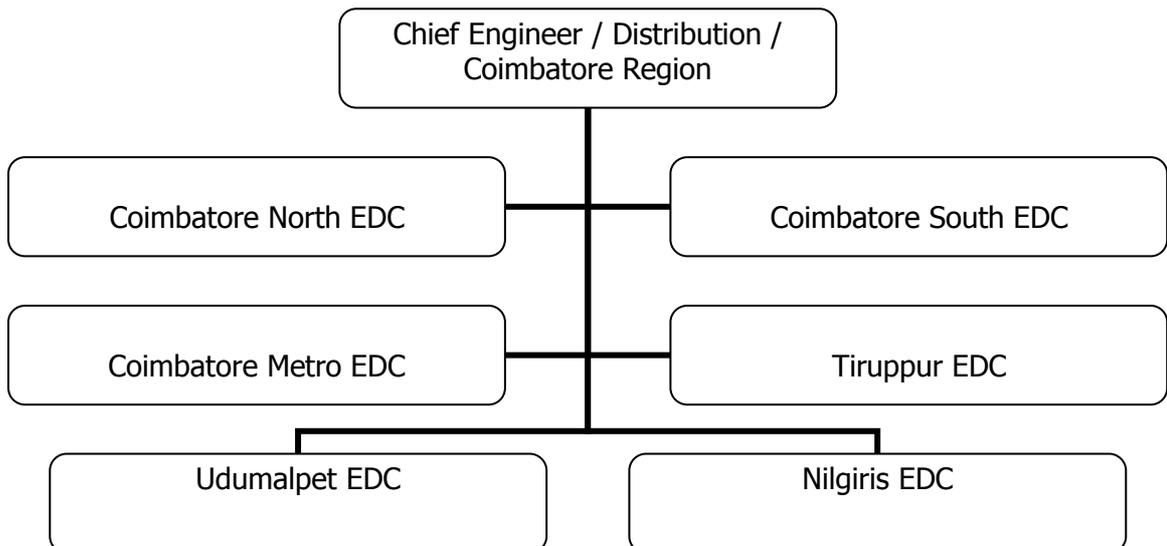
I. Chennai North Region



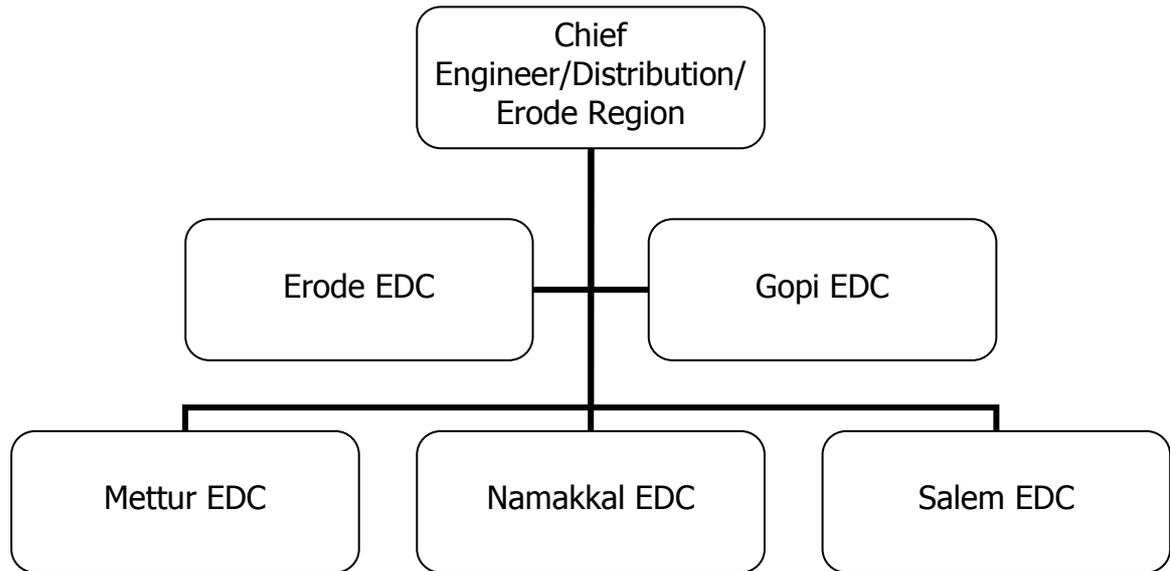
II. Chennai South Region



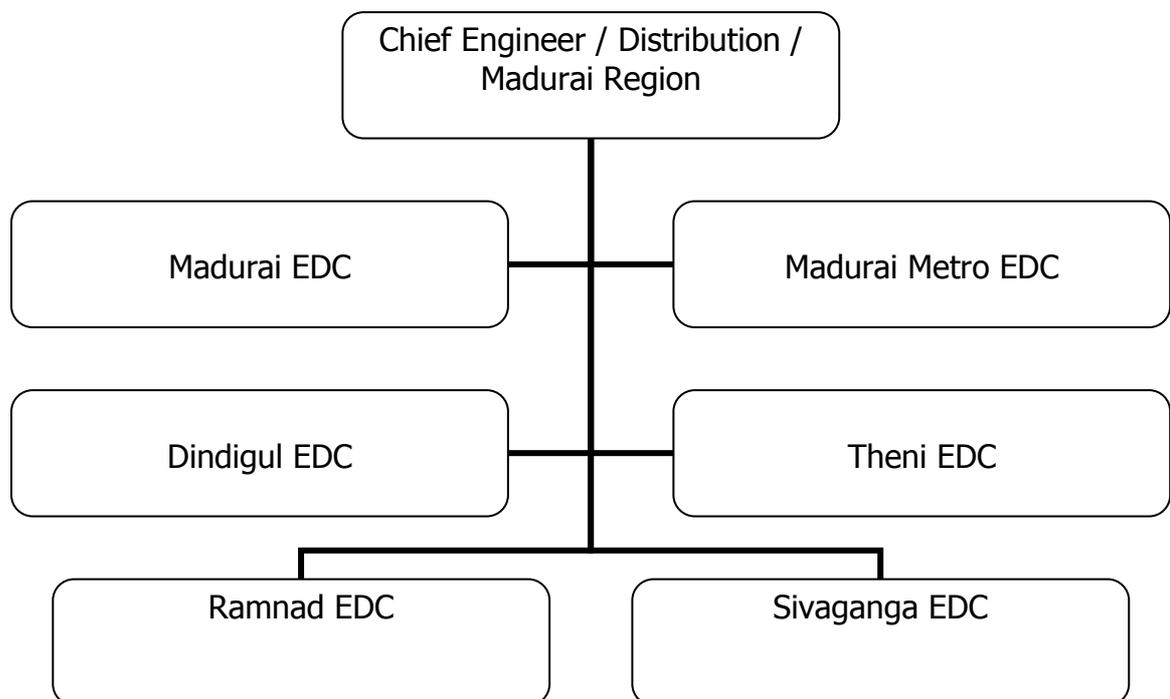
III. Coimbatore Region



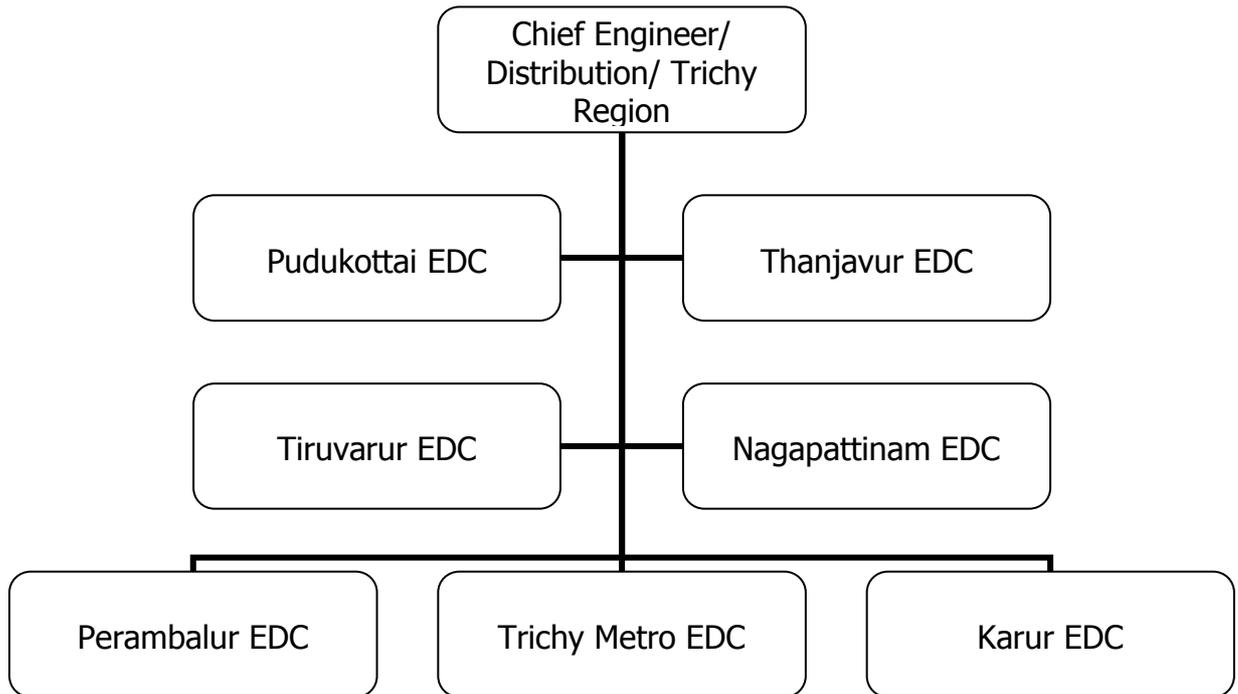
IV. Erode Region



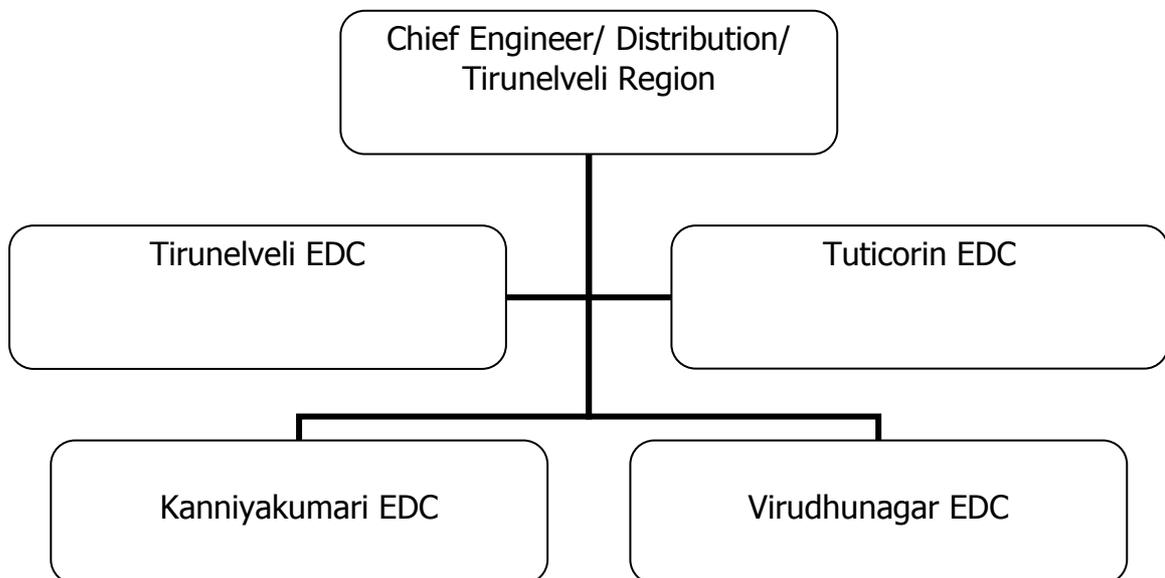
V. Madurai Region



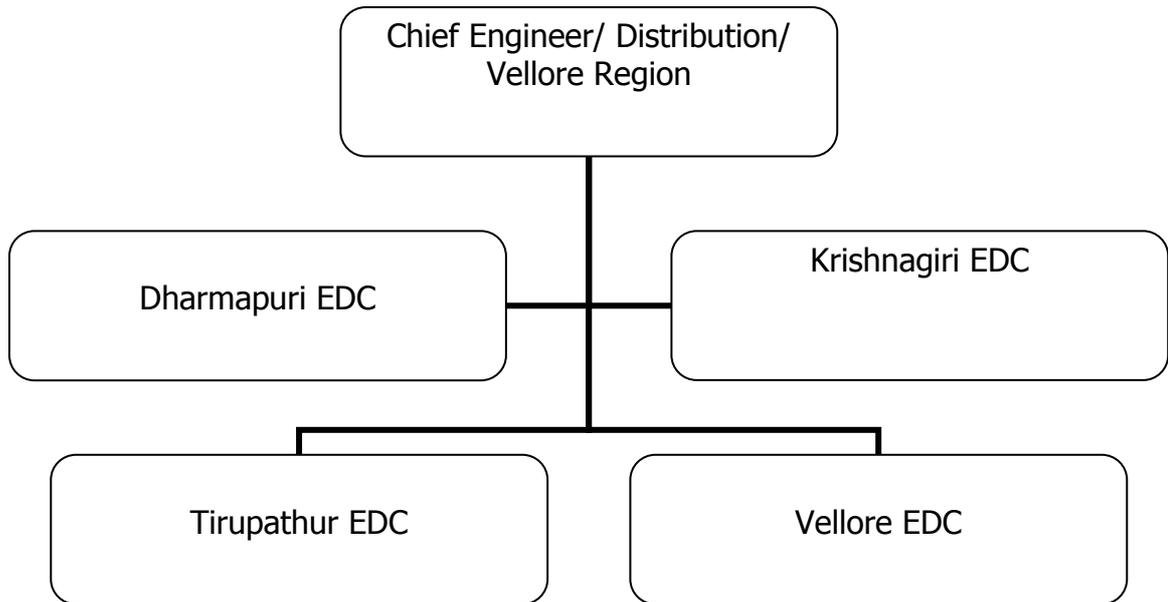
VI. Trichy Region



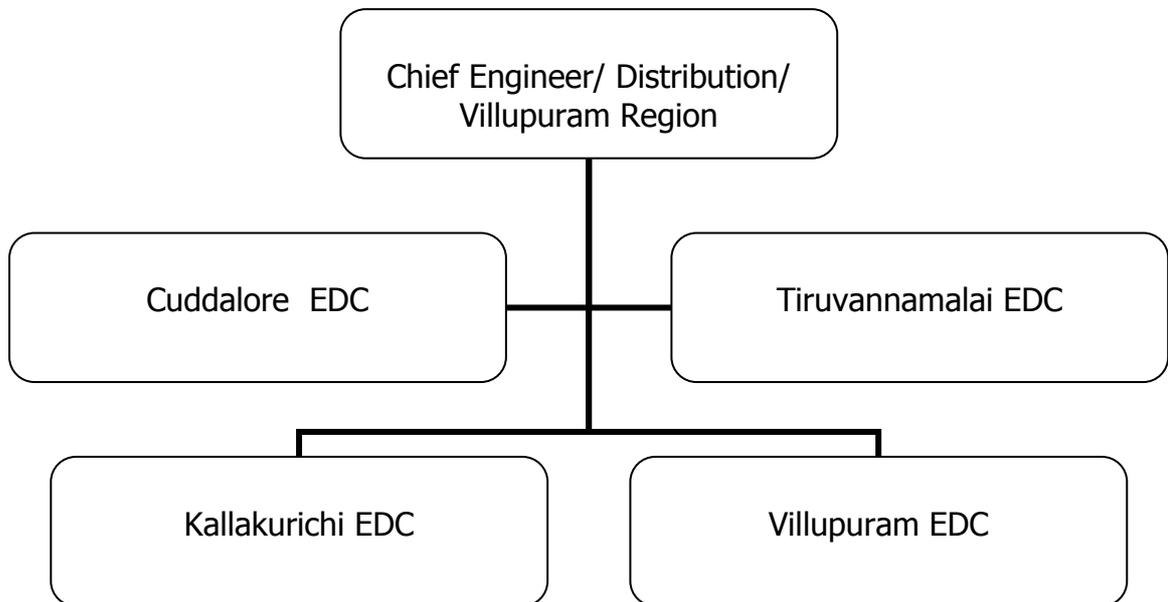
VII. Tirunelveli Region



VIII. Vellore Region



IX. Villupuram Region



EDC : Electricity Distribution Circle

TANGEDCO Organization set up

Section Office

An Operational & Maintenance Unit (O&M) is the primary link between the consumer and TANGEDCO. It is the lowest office in hierarchy, where consumer relationship is established. It covers around 10 villages or one town. It is headed by an officer of the rank of an Assistant Engineer (AE) or a Junior Engineer (JE). The duties of the official in charge of an O&M Office are as follows:

- Maintenance of 11 KV lines, distribution transformers, cables and equipments to ensure reliable and quality power supply to the consumers and attending faults in the above.
- Receiving applications of power supply from prospective consumers.
- Preparation of estimate to assess the expenditure involved and to obtain sanction for incurring the expenditure for releasing connections.
- Examination of the feasibility of power supply from the existing infrastructure.
- Forwarding the application of the prospective consumer with their comments on feasibility and estimate to the sanctioning authority.
- Releasing service connection duly following the prescribed procedure on receipt of power sanction from competent authorities.
- Attending consumer complaints regarding power supply in terms of its quality, and other technical matters.
- Collection of Current consumption charges, etc from consumers as per the terms and conditions of Supply.

Assistant Executive Office

A Sub-division consists of 3 to 5 O&M Sections and headed by an officer of the rank of Assistant Executive Engineer (AEE). He oversees the functioning of O&M Units, so as to ensure reliable distribution of power in the jurisdictional area.

Duties of Sub-divisional Officer:

- Sanctioning service connections as per powers vested with him.
- Approving works mainly in the nature of maintenance works as per power vested with him.
- Maintenance of 11kV lines, distribution of transformers, cables and equipments to ensure reliable and quality power supply to the consumers.
- Attending/Monitoring consumer complaints regarding power supply in terms of its quality, interruption and other technical matters and bill related issues.
- Monitoring of works.
- Preparation and submission of statistical information to the higher offices.
- Integration of men, material and special labour in execution of certain works which required special skills, viz., RMU, MRT and cable faults.
- Action for prevention of theft of power.
- Initiating criminal actions against the consumers involved in theft of power.

Executive Office

A Division has 3 to 5 sub-divisions under its jurisdiction. It is an administrative office. It is headed by an officer of the rank of Executive Engineer (EE) and assisted by sub-ordinate officers. An Assistant Accounts Officer is also placed in the Division office to look after the financial and accounting functions of the Division.

Duties of Divisional officer:

- Overseeing the functioning of the sub-divisions as per specified parameters and regulations.
- Sanctioning of service connections as per powers vested with him.
- Approving works both in the nature of maintenance and capital works as per power vested with him.
- Approval of Augmentation works within the powers vested with him.
- Procurement of materials within the powers vested with him.

- Monitoring of various works being undertaken in the jurisdictional area and ensuring timely completion of the same.
- Rendering periodical statistical information to Head office and other offices.
- Ensuring the activities of the company such as execution of works, releasing of service connections, prevention of theft of power, realization of revenue, redressal of consumers grievances etc.
- Initiating disciplinary actions against the officials who found guilty of offence, non-performing etc., within the powers delegated.

Circle Office

A Circle has 3 to 5 Divisions under its jurisdiction. It is an administrative office which doesn't deal with consumers directly. It is headed by an officer of the rank of Superintending Engineer (SE) and assisted by subordinate officers. A Deputy Financial Controller of Accounts is placed in the Circle office to look after the financial and accounting functions of the Circle.

Regional Office

A Region has 3 to 4 Circles under its jurisdiction. It is also an administrative office which doesn't deal with consumers directly. It is headed by an Officer of the rank of Chief Engineer (CE) and assisted by sub-ordinate officers.

I.5 Institutional Arrangements for Disaster Management

TANGEDCO Disaster Management Plan (TANGEDCODMP) envisages TANGEDCO to constitute a Disaster Management System which functions at the time of disaster as below:

TANGEDCO Disaster Management System (TANGEDCO DMS)

The DMS will function with

1. Chairman cum Managing Director (CMD) – Head of DMS.
2. Director (Distribution)-In charge for Distribution side and coordinating official with Government of Tamilnadu and TANGEDCO.
3. Director (Generation)-In charge for Generation side.
4. Director (Operation) -In charge for Operation side.

5. Director (Projects)- In charge for Projects side.
6. Director (Transmission)- In charge for Transmission side and also Advisory committee member of TNSDMA (Ref:.. Director, Disaster Management Lr.No.NCIII(2)/1595/2014 dt 22.10.2016)
7. Director (Finance) –In charge for Finance and accounting side.
8. IGP (Vigilance)- In charge for security arrangements of installations and to coordinate with law and order.
9. One Chief Engineer level officer to be appointed by the CMD- Field level coordinating officer with local Chief Engineer and Directors.
10. One Superintending Engineer level officer to be appointed by the CMD - Will coordinate with Chief Engineer.

1) Role of the Head of DMS

1. The Head of the DMS shall preside over the meetings of the TANGEDCO DMS, exercise and discharge all powers and functions of the TANGEDCO DMS.
2. The Chairperson of the TANGEDCO DMS may, by general or special order, delegate such of his/her powers and functions, to the Directors of the TANGEDCODMS, subject to such conditions and limitations, if any, as it or he/she deems fit.

2) Meetings

In the event of a disaster being declared by the state authority, a meeting of the TANGEDCODMS will be convened. In addition, the TANGEDCODMS shall meet as and when necessary and at such time and place as the Chairperson may see fit. However, it is recommended that the members of TANGEDCODMS shall review the TANGEDCO DMP at least once a year (post-monsoon) even if there has been no disaster in that year. Also pre-monsoon preparedness by the field is reviewed by the Directors of TANGEDCO before the onset of monsoon.

3) Responsibilities of TANGEDCODMP personnel

The functions and responsibilities of each of the members of the TANGEDCODMS during, and in preparing for, a "State of Disaster" as below

S.No	Designation	Designation of DMS	Functions
1	CMD	HEAD	<p>1) Declare a "State of Disaster" within TANGEDCO and ensure immediate activation of this plan.</p> <p>2) Coordinate with and present detailed reports and updates to SDMA.</p> <p>3) Request District, State or Central resources as necessary from appropriate authorities.</p> <p>4) Declare "Closure of State of Disaster" within TANGEDCO and ensure completion of activities related to closure, including certification and audit, closure of financial documents, implementation of any feedback reports from SDMA etc.,</p>
2	Director (Distribution)	Director (Distribution)	<p>1) Establish a team for execution/certification/ audit of work undertaken during and after the disaster is declared and closed in distribution network.</p> <p>2) Implement procedures specifically for DM, including but not limited to</p> <p>1) Authorisation of emergency</p>

			<p>powers,</p> <p>2) Rules related to leaves and overtime,</p> <p>3) Procedures for transport and communication (including alternatives to telephones/mobile telephones, cranes, boats, trucks)</p> <p>4) Procedures for purchase or leasing of equipment, etc.</p> <p>5) Procedures for purchase, leasing, maintenance and inventory of equipment and vehicles ONLY to be used in disasters.</p> <p>6) Procedures for capacity building and training specifically for disaster management.</p> <p>7) In case of tower collapse/110KV, 230KV line cut, Director (Distribution) will co-ordinate with Director (Transmission)/ TANTRANSCO.</p> <p>8) Maintain and update the Plan, Coordinate with Government and TANGEDCO.</p>
3	Director (Generation)	Director (Generation)	<p>1) Establish a team for execution/certification/ audit of work undertaken during and after the disaster is declared and closed in Generation network.</p>

			<p>2) Implement procedures specifically for DM, including but not limited to</p> <ol style="list-style-type: none"> 1) Authorisation of emergency powers, 2) Rules related to leaves and overtime, 3) Procedures for transport and communication (including alternatives to telephones/mobile telephones, cranes, boats, trucks) 4) Procedures for purchase or leasing of equipment, etc. 5) Procedures for purchase, leasing, maintenance and inventory of equipment and vehicles ONLY to be used in disasters. 6) Procedures for capacity building and training specifically for disaster management.
4	Director (Projects)		<ol style="list-style-type: none"> 1) Establish a team for execution/certification/ audit of work undertaken during and after the disaster is declared and closed in Operation network. 2) Implement procedures specifically for DM, including but not limited to 1) Authorisation of emergency

			<p>powers,</p> <p>2) Rules related to leaves and overtime,</p> <p>3) Procedures for transport and communication (including alternatives to telephones/mobile telephones, cranes, boats, trucks)</p> <p>4) Procedures for purchase or leasing of equipment, etc.</p> <p>5) Procedures for purchase, leasing, maintenance and inventory of equipment and vehicles ONLY to be used in disasters</p> <p>6) Procedures for capacity building and training specifically for disaster management.</p>
5	Director (Operation)	Director (Operation)	<p>1) Establish a team for execution/certification/ audit of work undertaken during and after the disaster is declared and closed in Operation network.</p> <p>2) Implement procedures specifically for DM, including but not limited to</p> <p>1) Authorisation of emergency powers,</p> <p>2) Rules related to leaves and overtime,</p> <p>3) Procedures for transport and</p>

			<p>communication (including alternatives to telephones/mobile telephones, cranes, boats, trucks)</p> <p>4) Procedures for purchase or leasing of equipment, etc.</p> <p>5) Procedures for purchase, leasing, maintenance and inventory of equipment and vehicles ONLY to be used in disasters</p> <p>6) Procedures for capacity building and training specifically for disaster management.</p>
6	Director (Finance)	Director (Finance)	<p>1) Establish a team for execution/certification/ audit of work undertaken during and after the disaster is declared and closed in Finance and accounting network.</p> <p>2) Implement procedures specifically for DM, including but not limited to</p> <p>a) Arranging Finance for carrying out restoration works.</p> <p>b) Rules related to leaves and overtime,</p> <p>c) Procedures for payments, Advances, loans etc.,</p> <p>d) Procedures for purchase, leasing, maintenance and inventory of as recommended</p>

			<p>by other Directors ONLY to be used in disasters.</p> <p>6) Procedures for capacity building and training specifically for disaster management.</p>
7	IGP (Vigilance)	IGP(Vigilance)	<p>1) Establish and operation of teams for security checks right from declaration of disaster to closure of disaster in all TANGEDCO installations in coordination with territorial Chief Engineer , with GOTN and GOI officials in connection with security matters.</p> <p>2) Implement procedures specifically for DM, including but not limited to</p> <p>a) Arranging vigilance and security checks.</p> <p>b) Rules related to leaves and overtime,</p> <p>c) Recommends for payments, Advances, loans etc. ONLY to be used in disasters.,</p> <p>d) Procedures for purchase, leasing, maintenance and inventory of as recommended by other Directors ONLY to be used in disasters.</p> <p>6) Procedures for capacity building and training specifically for disaster management.</p>
8	Chief Engineer	Chief Engineer	<p>1. A Chief Engineer will be</p>

	(Special Officer)	(Special Officer)	<p>authorized by the TANGEDCODMS to Coordinate with Directors and Regional chief Engineer.</p> <p>2. Establish a team for audit of work undertaken during and after the disaster is declared and closed.</p> <p>3. Monitors the resources flow and completion of tasks in scheduled time.</p> <p>4. Giving inputs to Directors on the ground situation to take immediate decisions.</p>
9	Superintending Engineer-On special Duty	Superintending Engineer-On special Duty	<p>A Superintending Engineer will be authorized by the TANGEDCODMS.</p> <p>The Superintending Engineer will be under the control of Special officer.</p> <p>Will arrange for accommodations, logistics, food and medical facilities to employees diverted from other regions of TANGEDCO Will authorize the works carried out by them.</p> <p>Will give inputs to TANGEDCODMS team on the hardship/ better practices adopted for inclusion in the TANGEDCODMP.</p>

5) Circle Level Disaster Management System (DMS)

At each level of the TANGEDCO operational hierarchy, a DMS may be formed along the lines of the DMS. These will allow TANGEDCO to handle emergencies that are not massive in scale and thus do not require direct intervention from the TANGEDCODMS. The composition of a DMS at Region Level is provided below for illustrative purposes:

S.No	Designation	Designated DMS	Function
1	Regional Chief Engineer	Regional Chief Engineer	Nodal Officer of Region level-DMS, reporting to Director Distribution.
2	Superintending Engineer	District Nodal officer	Nodal Officer of Circle level-DMS, reporting to Chief Engineer/Director Distribution
3	Executive Engineer	Taluk level Nodal officer	Responsibilities as required by SE during disasters.
4	Assistant Executive Engineer	Block level Nodal officer	Responsibilities as required by EE during disasters.

TANGEDCO DMP authorities to evolve plan at district level in line with TANGEDCO DMP and to co-ordinate with DDMA within their jurisdiction. The TANGEDCODMS reserve the right to modify the rules and powers of members. This has to be got approved in meetings of TANGEDCODMS members.

I.6 Plan Management

The Disaster Management plan shall be regularly reviewed and updated to reflect current policies, assets and procedures.

TANGEDCODMP stipulates that this plan should be monitored, evaluated, updated and maintained. Accordingly Chief Engineer/ Planning &

RC, TANGEDCO will be monitoring, evaluating, updating and maintaining the DMP every year on obtaining approval from the Chairman cum Managing Director, TANGEDCO.

The challenges faced in the yester year as discussed during the review meeting is also taken into account while updating the plan.

Chapter II

Hazard, Risk and Vulnerability Assessment

Tamilnadu is situated at the south eastern end of the Indian peninsula, between Latitude 8° 5' N and 13° 35' N and between Longitudes 76° 15' E and 80° 20'E.

It is bordered on the north by the states of Andhra Pradesh and Karnataka and on the west by the state of Kerala. Kanyakumari, the southernmost tip of this land is the meeting point of the Bay of Bengal, the Arabian Sea and the Indian Ocean.

Tamilnadu has a tropical climate with only slight seasonal variations. Temperature and humidity remain relatively high throughout the year. Tamilnadu gets its rainfall from the South West Monsoon (June to September) and the North East Monsoon (October to December). The normal annual rainfall is 911.6 mm. The temperature in the plains varies between 38° C and 20° C.

A disaster is a natural or man-made (or technological) hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life, or drastic change to the environment. It is a phenomenon that can cause damage to life and property and destroy the economic, social and cultural life of people. The Disasters may be categorized as Natural Disaster and Man made disaster. Natural or Man made disaster may arise suddenly any time, any where. Any disruption in power supply causes hardship to human beings as every aspect of human life is connected with electricity.

TANGEDCO over the period of time has faced the Natural Disaster namely Flood, Cyclone, Landslide, Drought and Tsunami. The man made disaster may arise due to equipment failure, breakdown of system, fire and due to mal operation and malfunction of equipment. TANGEDCO has a committed set up to restore power supply within the shortest possible time during disaster time.

Disaster Categories

The term 'disaster' includes the following events

1. Category 1: Water and Climate disasters.
 - Coastal erosion
 - Thunder and Lightning
 - Cyclone and Storms etc.
 - Flood
 - Drought
2. Category 2: Geological Disasters
 - Landslides and Mudflows
 - Earthquakes
 - Tsunami
3. Category 3: Chemical Industrial and Nuclear disasters
 - Leakage of hazardous materials
 - Nuclear attack
4. Category 4: Biological disasters
 - Epidemics
 - Cattle epidemics
 - Food poisoning
 - Pest attacks
5. Category 5: Man-made disasters
 - Forest fire
 - Urban fire
 - Village fire
 - Festival related disasters
 - Road, Rail and Air Accidents
 - Oil spill
 - Terrorist Attack
 - Tanker lorry mishaps
 - Pollution (water , air and soil)

- Family suicides
- Environmental disasters
- Communal riot

Analysis of Past Disasters and Future Disaster Possibilities in TANGEDCO Operational Areas:

1) Category 1: Water and Climate disasters

a) Coastal erosion:

Given the location of TANGEDCO operation, coastal erosion is not a major threat.

b) Cyclone and storm, thunder and lightning

Cyclone and high wind is a threat in the 13 coastal districts of Tamil Nadu. The electric poles, transmission lines, service lines, substation equipments like transformers, breakers, switches near the coastal districts are often subjected to get damaged. Also Lightning can cause significant damages to electric transformers and lines, disturbing the TANGEDCO network.

Generally power supply is switched off or tripped on protection to ensure safety of public and equipments. After attending the damages and on ascertaining the safe conditions, TANGEDCO infrastructures are tested and then power supply is restored in a phased manner.

c) Floods and Drought

The random nature of rainfall causes flood and drought. Floods may cause additional problems to the electricity network. As far as TANGEDCO is concerned, low lying areas are affected due to Flood. Generally power supply is switched off or tripped on protection to ensure safety of public and equipments. After attending the damages and on ascertaining the safe conditions, TANGEDCO infrastructures are tested and then power supply is restored in a phased manner.

2) Category 2: Geological Disasters

a) Landslides and Mudflows

Nilgiris District is affected due to landslide. Generally power supply is switched off or tripped on protection to ensure safety of public and

equipments. After attending the damages and on ascertaining the safe conditions, TANGEDCO infrastructures are tested and then power supply is restored in a phased manner.

b) Tsunami

These kinds of disasters are more threat to coastal areas of entire TAMILNADU. Generally power supply is switched off or tripped on protection to ensure safety of public and equipments. After attending the damages and on ascertaining the safe conditions, TANGEDCO infrastructures are tested and then power supply is restored in a phased manner

c) Earthquakes

As per the Earthquake Hazard Mapping, most of the geographical area is under Moderate damage risk zone 3. (Chennai, Kanniyakumari, Nilgiris, Coimbatore and Part of Tiruvallur, Vellore, Kanchipuram, Dharmapuri, Salem and Tiruvannamalai District). Other parts of the State fall under earthquake low damage risk zone 2.

Generally power supply is switched off or tripped on protection to ensure safety of public and equipments. After attending the damages and on ascertaining the safe conditions, TANGEDCO infrastructures are tested and then power supply is restored in a phased manner.

Risk assessment

For all the above disasters, details of High tension/Low tension line, cables, Distribution Transformers and Poles are available in the section offices of TANGEDCO. Assessment of damages and its restoration can be planned from the records available in the Section office.

Immediate assessment as a first report is received from affected area and restoration activities are simultaneously started. Specific reporting formats are given to field to report initial assessment, subsequent assessment and final assessment of damages and its restorations.

Three case histories to indicate the past experience of TANGEDCO in handling a disaster is given below:

Case History I : NILAM CYCLONE

The Regional Meteorological Department, Chennai announced that the Cyclone 'Nilam' was likely to cross the coast near Chennai on 31.10.2012 at 17.30 Hours. All precautionary measures were taken. All the Chief Engineers and Superintending Engineers were on vigil and were available in the respective offices, for immediate restoration of supply on war footing.

The movement of Cyclone was closely tracked and immediately upon crossing the coast, the Chief Engineers of Regions and Circle Superintending Engineers who monitored the position with regard to power supply, started restoration works apart from assessing the damages to electrical equipments and about untoward incidents.

The following Districts were affected. The blocks affected most are furnished in the brackets.

- a. Chennai
- b. Kancheepuram (Thirukazhukundram, Thiruporur, Chenglepet Blocks)
- c. Tiruvallur (Ponneri Block)
- d. Villupuram (Kandamangalam, Vaanoor, Marakkanam, Mylam, Olakkur Blocks)
- e. Cuddalore (Cuddalore, Parangipettai, Panruti, Virudhachalam, Kurinjipadi Blocks)
- f. Nagapattinam (Sirkazhi Block)
- g. Tiruvarur (Thiruthuraipoondi, Muthupettai, Kudavasal Blocks)
- h. Vellore (Vellore, Kaniyambadi, Arcot, Sholinghur Blocks)
- i. Tiruvannamalai (Vandavasi, Thellar, Cheyyar, Anakavur, Sembakkam, Chepet, Peranamallaur Blocks)
- j. Thanjavur (Kumbakonam, Pattukottai Blocks)
- k. Krishnagiri.
- l. With trivial damages in Ariyalur, Dharmapuri, Nilgiris, Perambalur, Salem and Sivaganga.

Precautionary measures

- i. Two Assistant Executive Engineers were posted, one at the Control Room of the Corporation of Chennai and the other at

the Control Room of the Commissioner of Police, to update the power related issues and they were monitoring the situation in Chennai and updating the status.

- ii. Many trees have fallen on the Over Head lines /Feeders and the feeders got tripped disrupting power supply.
- iii. In Coastal areas, as a precautionary measure, the Overhead feeders were switched off to avoid any electrical accidents due to snapping of conductors.
- iv. Around 63 Substations were switched off in and around Chennai City.

Restoration

- i. Power supply was restored almost to 95% of the areas in the State. All the HT feeders have been normalized.
- ii. The balance work could not be completed due to water logging, inaccessibility to the site and standing crops, however in the balance areas works done on a war footing.
- iii. around 8875 poles have been reported to be damaged.
- iv. Around 562 Distribution Transformers have been reported to have failed/damaged and the cost of restoration works out to Rs.19.26 Crores.
- v. On the whole power supply has been restored to the City, its sub urban areas and in other areas. Restoration were in progress in water logging areas of the State on war footing, mainly in agriculture service connection.

Case History-II

Power supply restoration works carried out in Cuddalore, Chennai, Thiruvallur and Kanchipuram Districts due to Torrential rains followed by flood damages in November And December 2015.

- Northeast monsoon for the year 2015 has been associated with low pressure formation and cyclonic storms resulting in wide spread heavy rains in many parts of Tamil Nadu causing flooding and damages to

infrastructures of TANGEDCO. Chennai, Tiruvallur, Kanchipuram and Cuddalore were much affected. There were damages in other Districts also.

- From 6.11.2015, heavy rain started in Cuddalore, Chennai, Kancheepuram and Tiruvallur Districts. From 9.11.2015 heavy rains poured in many parts of Cuddalore District. Around 640 No's of Distribution Transformers, 10375 No's of Poles and 715 Km conductor were damaged
- As the damages to the TANGEDCO infrastructure in Cuddalore were very high officers, staff and contract labour (around 2350 staff) from other districts were deployed to various parts of Cuddalore District to carry out restoration works on war footing from 11.11.2015 onwards.
- Out of all the 683 affected Village panchayats, 613 panchayats were given supply on 11.11.2015 and after water logging cleared, electric supply were fully restored on 18.11.2015.
- Again heavy rain lashed out from 30.11.2015, causing severe flooding in almost entire Chennai city and many suburban areas. Due to this water flooded in the Substations up to a height of 6 feet and most of the equipments got inundated with water. Also, most of the pillar boxes in the Chennai city got submerged in the water.
- As a result of water logging, 22 Nos. substations in Chennai Districts, 13 Nos. substations in Kanchipuram District feeding Chennai area and 6 Nos. substations in Tiruvallur District feeding Chennai area were kept off for safety purposes due to water logging. Around 1980 No's of

Distribution Transformers, 11,335 No's of Poles and 1420 Km of conductor were damaged.

- Power supply was restored after pumping out the water in the Substations, and after draining the water and attending the damages in the affected parts within 2 days. Sandbags were stacked in the Substation to prevent water from entering the Substation any further. In heavily water stagnated areas, power supply was restored within 4 days after the water was drained completely.
- As the damages were very huge, Officers, Staff, vehicles and materials were diverted from other districts and works were carried out on war footing.
- Government of TamilNadu vide Proc.No.NC 1(2)/5394-6/2015 dt 09.12.15 has released a sum of Rs.50 Crore (Rupees fifty Crores) towards temporary restoration of damaged infrastructure of electricity network.
- For the fund allotment of Rs.50 Crores, utilization certificate was furnished for an amount of Rs.79.84 Crores to the Commissioner of Revenue Administration vide Lr.No.SE/RE & I(D)/EE/RE/AEE3/F.Doc /D548/16 dt 09.09.16.

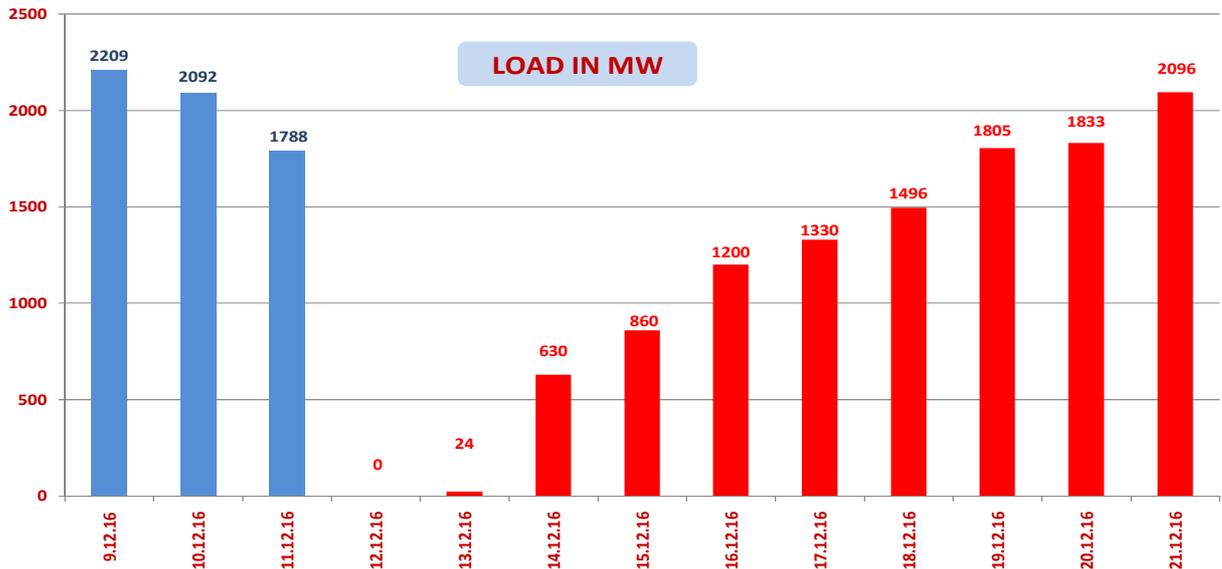
Case History-III- Vardah Cyclone

- The cyclone Vardah struck land at Chennai Coast, Tamil Nadu on 12.12.2016 with a wind speed of 130 to 140 kmph, bringing with it heavy rain that lashed the coast in Tamil Nadu devastating the electrical infrastructures. To avoid accidents, as precautionary measure power supply was cut off in many parts.

- Chennai, Kanchipuram, Tiruvallur were the worst affected districts. In these districts, EHT transmission towers and transmission lines were collapsed due to the high wind speed and also the substation equipments were damaged. The power lines, poles and distribution transformers of distribution network were also affected due to high wind speed as the uprooted trees fell on the electrical network lines and structures.
- There were also damages in other districts such as Thiruvannamalai and Vellore.
- 59 nos. of EHT towers collapsed and around 800 distribution transformers, 49,100 poles, 4500 pillar boxes and 15,000 km conductors were damaged.
- Due to collapsing of EHT towers feeding Chennai, the entire Chennai city and its suburban area, power supply got tripped.
- Initially supply was restored for emergency service such as Government general hospital, Secretariat and High court of Madras within 3 hours. Supply was also normalized for CMBT Koyambedu that night itself. Chennai airport also resumed its services from the early morning on 13.12.2016.

LOAD PATTERN BEFORE AND AFTER CYCLONE VARDHAH

- The average demand of Chennai City is around 2500 MW.
- On the day of Vardah Cyclone, due to pulling of 230 KV feeders, on 12.12.2016, the load went to Zero MW.
- After restoration, the load has gradually increased and is being maintained at around 2100 MW



- Staff and labour (around 15000 persons) from Chennai, other regions and also from the neighbouring State of Andhra Pradesh were deployed to carry out restoration works on war footing from 12.12.2016 onwards.
- Materials were diverted from all the regions of Tamil Nadu and poles & transformers were procured from Andhra Pradesh on a short notice and used in the restoration works.
- Supply was fully restored in Chennai city on 15.12.2016 and suburban areas on 18.12.2016. Supply to all Municipalities, Town Panchayats and Panchayats completely restored by 20.12.2016. For rest of the areas, power supply restoration completed by 22.12.2016.
- Government of TamilNadu vide vide G.O. No (Ms). No. 298 dt 14.12.2016 has released a sum of Rs.350 Crore (Rupees three hundred

and fifty Crores) towards temporary restoration of damaged infrastructure of electricity network.

- For the fund allotment of Rs.350 Crores, utilization certificate was furnished for an amount of Rs.715.55 Crore to the Commissioner of Revenue Administration vide Lr.No.SE/RE & I(D)/EE/RE/AEE3/F.Doc/D258/17 dt 19.04.2017.
- The efforts taken by TANGEDCO was appreciated by the public.

It could be seen that TANGEDCO has a committed setup to handle the disaster. The inclusion of TANGEDCODMP will be an enhanced procedural guide to the stakeholders of TANGEDCO.

Vardah Cyclone- Men at restoration work in EHT Tower



Vardah Cyclone- Men at restoration work in EHT Tower



Vardah Cyclone- Men at restoration work in EHT Tower



Vardah Cyclone- Men at restoration work in EHT Tower



Vardah Cyclone- Men at restoration work in EHT Tower



Vardah Cyclone- Men at restoration work in EHT Line



Vardah Cyclone- Men at restoration work in EHT Line



Vardah Cyclone- Men at restoration work in Distribution Transformer Structure



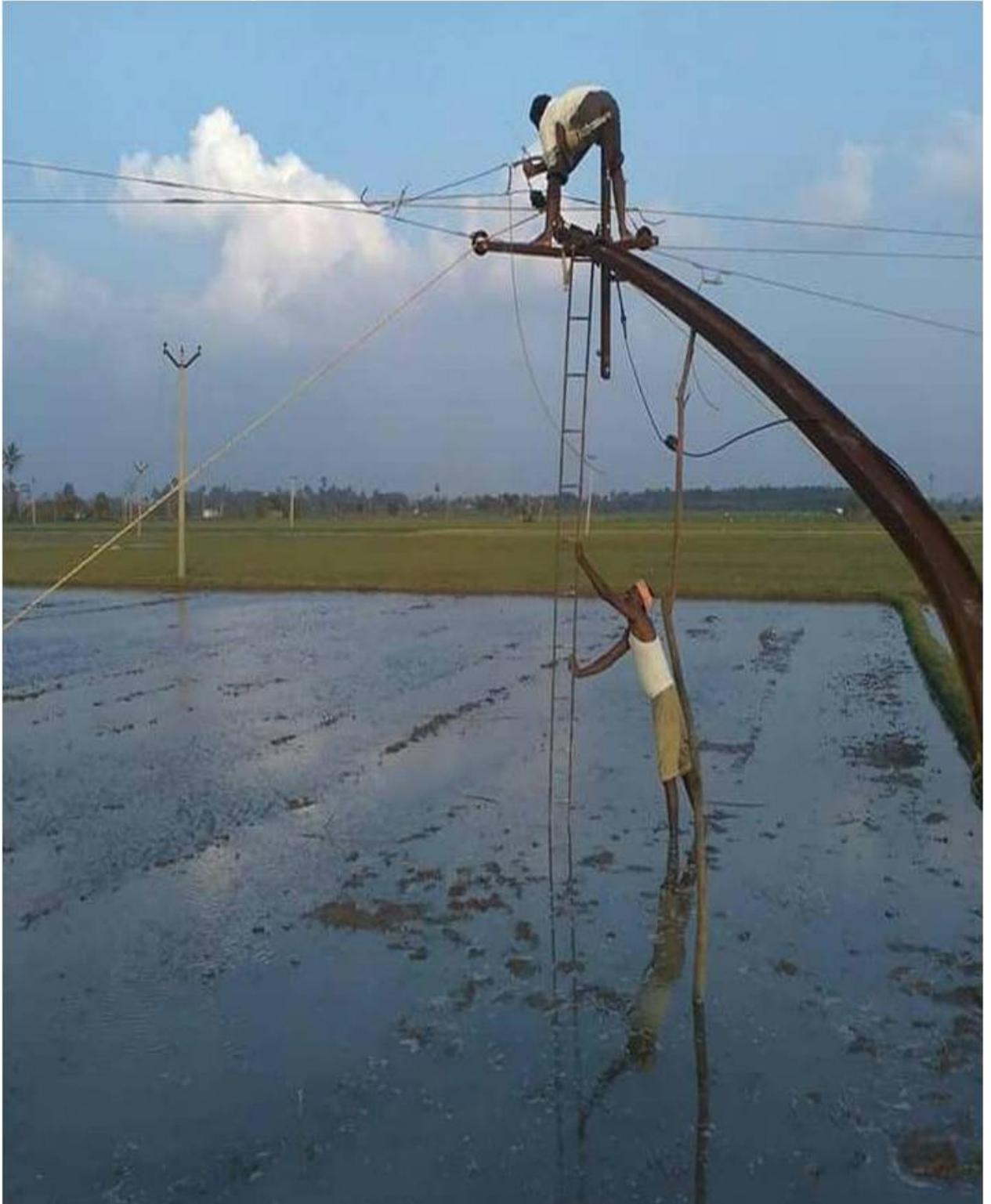
Vardah Cyclone- Men at restoration work in Distribution Transformer Structure



Vardah Cyclone- Men at restoration work in HT Line



Vardah Cyclone- Men at restoration work in HT Line



Vardah Cyclone- Men at restoration work of HT Pole erection



Vardah Cyclone- Men in transportation of Pole to work spot



Vardah Cyclone- Men at restoration work of Pole erection



Vardah Cyclone- Men at restoration work of LT line



Chapter III

Prevention and Mitigation

Prevention Measures

Prevention of certain natural disasters is not possible. Similarly prevention of failure of electrical installations is unavoidable. The failure of electrical installations can be due to technical and non technical reasons. However, measures can be taken to prevent man-made disasters due to mal operation by imparting proper technical education measures.

Periodical maintenance of electrical equipments, transmission lines and services will prevent major damages in case of electrical breakdowns. The maintenance of electrical equipments and replacements after life period served are to be carried out as per the procedure outlined in Code of Technical Instructions{Refer: [http://exam.tnebnet.org/exambooks/ TO1H.pdf](http://exam.tnebnet.org/exambooks/TO1H.pdf) } and other instructions issued from time to time by TANGEDCO. The better erection practices also help to avoid early damages.

The Central Electricity Authority's Technical Standards for construction of Electric Plants and Electric Lines Chapter IV: Technical standards for construction of Substation and Switch yard Chapter V: Technical Standards for construction of Electric Lines shall be referred and adopted for erections and maintenance.{[http://www.cea.nic.in/reports/regulation/ techstd reg.pdf](http://www.cea.nic.in/reports/regulation/techstd_reg.pdf) }

The Central Electricity Authority's Safety requirements for construction, Operation and maintenance of Electric Plants and Electric Lines shall be referred and adopted for erections and maintenance. {Reference: http://www.cea.nic.in/reports/regulation/reg_elec_plants_lines.pdf } and The Central Electricity Authority's Measures relating to Safety and Electric supply shall be referred and adopted for erections and maintenance. { Reference : http://www.cea.nic.in/reports/regulation/regulation_elec_safety.pdf }

Mitigation Measures

Basic Mitigation Measures

The impact of certain natural disasters and man-made disasters can be reduced by a series of mitigation measures.

Strategy of Mitigation Plan

Disaster Management Plan is the concept and practice of reducing disaster risks through systematic efforts to analyze and reduce the causal factors of disasters. The DMP is to restore the distribution of power in the affected area within a least time.

The Disaster prevention, mitigation, preparedness and relief are the four elements of Disaster Management plan. Prevention and Mitigation contribute to lasting improvement in safety and are essential to Integrated Disaster Management.

Mitigation measures for Natural as well as Man-made Disasters

Routine maintenance and security activities go a long way in mitigating the effects of incidents that lead to a disaster. The effect of natural disasters such as floods can be mitigated by ensuring that critical facilities are located away from flood prone regions as well as at higher elevations. Situations arising from Chemical, Biological, Radiological and Nuclear (CBRN) incidents require separate and special measures. CBRN hardening of vital equipment is an option that may be considered to mitigate the effects of CBRN incidents.

Mitigation Measures in Coastal Area

Coastal area development – OH to UG conversion. World Bank assistance project Coastal Disaster Risk Reduction Programme (CDRRP) has been initiated through Government of TamilNadu. The project completion is expected by 2018.

Public Warning

Before the onset of Monsoon tree clearance mass maintenance activities are carried out which creates awareness to public about the possible hazard that may happen place in the area.

The District level field officials gives the following advice to the public through Thandora, Local TV Media, Newspaper etc., in English and Tamil before onset of the rainy season.

“ Don't touch/ allow to touch the damaged conductors and leaned poles of TANGEDCO noticed in flooded areas. Public may give immediate intimation to the nearby TANGEDCO offices wherever the damaged conductors and leaned poles noticed”.

Further, the consumer may contact the section officer/inform nearest substation/ any TANGEDCO personnel / concerned District nodal level officer to inform about any snapping of conductor/ damaged poles over phone, in person, through messenger. Till the arrival of TANGEDCO staff, Consumer and General public may help by presenting themselves whenever they see snapped line so that others do not touch or come into contact with the snapped line. Consumers and General public are advised to follow the following Dos and Don'ts with regard to electrical power supply.

Before onset of Monsoon/Natural calamity, the public are reiterated on the following lines for their safety through Television, Radios & Newspapers, with wide publicity.

DO's:

1. Use only electrical gadgets with ISI mark and carry out all electrical works by certified electricians
2. Inspect electrical wiring regularly and renew deteriorated wiring
3. If any snapped electricity conductors are noticed, inform the nearest Electricity Board Office and do not touch or go near them
4. Watch your children while they are playing with kites near any electric overhead lines.
5. During Car Festival, for running cars of higher pitch, seek the help of Electricity Board officials for ensuring the safety of the public. General public/temple authorities in charge of conducting such festivals to inform the

territorial officer of TANGEDCO such as sections/sub-divisions/division/circle offices so as to enable them to switch off the power lines crossing and-or passing by the route of festival procession in order to avoid the accidents.

6. While digging the ground for other works, care should be taken while working near underground electric cables.
7. Earth leakage protection device is to be provided in all electrical installation with connected load of 5KW and above.

Don'ts:

1. Do not hang wet clothes on electric wires will prove fatal.
2. Do not go near or touch the electric poles, stay wires, fencing etc., during rainy seasons.
3. Do not use electric poles as support to Pandals or displaying advertisement Board.
4. Do not secure poultries/ domestic animals to the electric poles or the stay wires.
5. Do not construct buildings near electric lines, consult the Electricity Board officials before planning for the same.
6. Do not go near the fencing of electrical transformers/ substations for nature's Call.
7. Do not park lorries near transformer structure or Over head electric line and carry out loading and unloading of materials.
8. Do not drive vehicles, carry ladders etc, which are of greater height beneath the electric lines.
9. Electrification of fencing should not be done which can lead to loss of lives. Doing so is punishable with imprisonment.
10. Do not carry unauthorized electrical works in a substandard manner to reduce cost and do not extend unauthorisedly to other buildings.
11. Do not cut or damage the stays provided for your convenience.

Chapter – IV

Mainstreaming DM Plan in developmental projects

All TANGEDCO field personnel shall follow the steps outlined in the Code of Technical instructions to mitigate effects of potential disasters.

- As a precautionary measure, power supply is tripped in advance to the low lying area and normalized after line patrol, thereby ensures safety and reduction in accidents.
- The distances between the poles are reduced in coastal areas wherever necessary so as to withstand the high wind and heavy rain.
- The conversion of Over head conductor to Under Ground conductor mainly in the thickly populated area and coastal areas leads to reduction of accidents and power failure trip is also considerably reduced.

As a sustainable Development objective, by factorizing disaster risk concern, can help reduce disaster loss, protect the existing development gains and avoid new risks, TANGEDCO has programmed to carry out the following works:

1. Cyclone Resilient Electrical Network” in World Bank aided Coastal Disaster Risk Reduction Project (CDRRP).
2. Raising of Pillar boxes height to minimize breakdowns/ disasters and to avoid accidents.
3. Replacement of existing 13810 nos. DT structures into new automated 11 KV RMUs(Ring Main Units) in Chennai Sub-urban area to reduce the downtime of supply interruption during breakdowns/ disasters and to avoid accidents.

4. Modernization of 33,225 Nos. Pillar boxes by HRC (High Rupturing Capacity) fuse 6 way Pillar Boxes in Chennai North & South Regions in order to minimize power interruption during breakdowns/ disasters and to avoid accidents.
5. Conversion of the existing 2004.89 KM of HT and 33307.81 KMs of LT Over head lines into UG Cables in the extended Area of Chennai City covering Corporation area, extended Corporation and Chennai Sub urban area to minimize damages to the electrical infrastructure during breakdowns/disasters and to avoid accidents.
6. Master plan for establishment of new Sub Stations, up gradation and conversion of Sub Station from 2017-2022 and subsequent plans so as to improve the stability of electricity network matching the load growth and to minimise the down time by providing spare capacity for back feeding during disasters.
7. Retrofitting of Headquarters of TNEB Main Building in Anna Salai with shear walls to resist Earthquake and Cyclone effect.

The details of the scheme are as follows:

1. Coastal Disaster Risk Reduction Project (CDRRP)

During 'Thane' cyclone hit in Cuddalore and Nagapattinam in December 2011, the Overhead electrical power network in coastal Cuddalore area got fully devastated. Cuddalore and Nagapattinam Towns being in the coastal area of Tamil Nadu are very much prone to cyclone. In order to provide cyclone resilient electrical network in coastal area, TANGEDCO has proposed to convert HT and LT overhead power lines into HT and LT underground

cables in cyclone prone coastal towns of Cuddalore, Nagapattinam and Velankanni which are prone for frequent natural calamities. The above proposal was approved under Component 1 'Vulnerability Reduction', Sub Component 1.3 "Cyclone Resilient Electrical Network" in World Bank aided Coastal Disaster Risk Reduction Project (CDRRP). Accordingly Credit loan Agreement (IDA Credit No.5279) was signed between International Development Association (IDA) and Government of India and Government of Tamil Nadu on 11.11.2013. The project period is five years from the date of agreement and the cost of the project estimated as Rs.360 Crores. The Tamil Nadu State Disaster Management Agency (TNSDMA)/ GoTN are the Project Management Unit (PMU) for this project.

The Administrative sanction of Rs. 360 Crores (66.30US\$) for the above Cyclone Resilient Electrical Network was accorded vide GO.Ms No.23 Rev. (DM4.1) Dept dt. 21.01.2014. Approval was accorded by GoTN for calling for Expression of Interest vide G.O.(Ms) No.66 dt.12.2.2014 for selection of Consultant for preparing DPR and other works, for conversion of HT/LT lines into underground cables and the Contract Agreement was signed on 24.02.2015 between TANGEDCO and M/s. N_Arc Consulting, New Delhi after getting approval of World Bank. The contract value is Rs.57.38 lakhs.

The schemes for Cuddalore, Nagapattinam and Velankanni towns under CDRRP are proposed in 7 packages. i.e three packages for Cuddalore Town and four packages for Nagapattinam & Velankanni Towns. The total length of UG cables to be laid for conversion of existing OH lines for the above 7 packages are HT – 360 km , LT – 1034km

As per survey by consultant, the Detailed Project Report (DPR) has been prepared as three packages (No.01 to 03) for Cuddalore town and four packages(No.04 to 07) for Nagapattinam & Velankanni Towns.The three packages of Cuddalore town covers 7 nos. 22KV feeders viz. Manjakuppam, Vandipalayam, Cuddalore New Town, Sellankuppam, Alpettai, Suthukulam, Pentesia feeders and four packages of Nagapattinam & Velankanni Towns covers 6 nos. 11KV feeders viz. Nagapattinam Town, Thonithurai, Nagore, Velipalayam, Velipalayam Water works and Velankanni feeders. The total estimate cost of all the seven packages works out to Rs. 630.88 Crores.

After approval of DPR,Bid documents and other related documents by World Bank through PMU, tenders are to be floated on total turn-key basis. The contract will be awarded on finalisation of tender process, for execution of works covered under CDRRP.

Out of seven packages, four packages (i.e 3,7,2 &5) are proposed for implementation on priority in accordance with the sanctioned amount of Rs.360 crores as finalised with PMU. The status of these priority packages are detailed below:

The e-tender for Package-3 and Package-7 have been opened in June 2017 and contract will be awarded after finalisation of tender evaluation with approval of World Bank. The bid documents for Package-2 & 5 were submitted to World Bank through Project Management Unit for approval. On approval, the tenders will be floated for these packages. The total length of UG cables to be laid for conversion of existing OH lines for the above 4 packages are HT – 250 km , LT – 575 km.

CRZ clearance:

As per World Bank directions, CRZ clearance for both Cuddalore and Nagapattinam project is to be obtained for the execution of the project work before award of contract. With regard to CRZ clearance of Cuddalore project (packages 1 to 3), after processing through District and State level agencies of Dept. Of Environment, the CRZ proposal along with relevant maps and documents have been uploaded in Ministry of Environment, Forests & Climate Change(MoEFCC) website. The proposal is now under examination of the MoEFCC for according approval for CRZ clearance.

With regard to CRZ clearance for CDRRP project work in Nagapattinam district, after processing through District level of Dept. Of Environment, 15 sets of documents and maps have been submitted to Member Secretary/ TNSCZMA & Director/ Dept.of Environment/GoTN /Saidapet for processing CRZ clearance.

Switching stations involved in CDRRP

Erection of 4 Nos. Switching stations are included in the scope of works for 7 packages. Land is being acquired for erection of the above switching stations from various Departments like Salt Department/GoI, Agricultural Department/ GoTN, Hindu Religious & Charitable Endowment Department/GoTN, SIDCO/GoTN etc.

Environmental and Social Assessment report (ESA)

This Environmental and Social Assessment (ESA) for the Underground Electricity/Power Cable Network is prepared in line with the Environment and Social Management Framework (ESMF) based on the guidelines specified under Indian Regulatory Framework and guidelines/ policies of World Bank (WB).

In terms of environmental impacts, ESA envisages minor construction-related reversible physical environmental impacts, e.g. storage and disposal of debris including occupational health impacts to unskilled workforce and community health and safety concerns to the nearby settlements.

In terms of social impacts, ESA envisages only temporary displacement of vendors along the alignment of newly proposed UG Cable route. The vendors along the alignment of newly proposed UG Cable route will be displaced temporarily from their place of business for a period of not more than two days during UG cable laying.

The Environment Management Plan consists of a set of mitigation, monitoring and institutional measures to be taken for the project to avoid, minimize and mitigate adverse environmental impacts and enhance positive impacts. The social measures/plans will be utilized by Implementation Agency (IA) for social safeguards compliance monitoring while they will form the basis of preparing the site-specific management plan by the contractors engaged for the implementation of this project. Hence, the reports have to be approved by World Bank and published in website.

The Public Grievance Redressal Meeting were conducted in Cuddalore and Nagapattinam Districts. The ESA reports for Packages.3 & 7 were

approved by World Bank and published in TANGEDCO website. For the other packages, separate EA and SA reports are being approved by PMU/GoTN.

2. Raising of Pillar Box height

As a part of development project, in Chennai District, based on the past experience, it has been programmed to raise the height of the pillar boxes upto 4 feet to prevent water logging due to incessant rain. This will reduce time of outages and will quicken the power supply restoration works and pillar boxes identified and rectifications are carried out.

3. The following scheme are undertaken based on the announcement by Hon'ble Chief Minister under Rule 110 in the floor of Legislative Assembly

3.1 Replacement of existing 13810 nos. DT structures into new automated 11 KV RMUs in Chennai.

Replacement of existing 13810 nos. DT structures into RMU in Chennai area to reduce the downtime of supply interruption and to prevent accidents thereby ensuring safety. More safety is ensured since no live parts are exposed to open air. Distribution Transformers are protected by the breakers instead of the conventional open type HG fuse, and the transformer is isolated through these breakers instead of AB switches. Identification of faulty section is easier and its subsequent rectification is quicker.

SL.NO	CIRCLE	QUANTITY
A.	Chennai North Region	
1	Central	2415
2	North	1926
3	West	3421
Sub total-A		7762
B.	Chennai South Region	

1	Chennai south-I	2965
2	Chennai south-II	3083
	Sub total-B	6048
Grand Total(A+B)		13810

The estimated cost of the project works out to Rs. 1819.80/- Crores and could be met through financial Loan assistance from M/s.REC Ltd., i.e., Rs1637.82 Crores from M/s REC Ltd. (90% of scheme cost) and balance 181.98 Crores (10% of the scheme cost) to be borne by TANGEDCO.

It has been programmed to replace the existing Distribution transformer structure into Ring Main Unit (RMU) within a span of 3 years as per the tentative plan tabulated below.

FY	QUANTITY		
	Chennai/North	Chennai/South	Total
17-18	2587	2016	4603
18-19	2587	2016	4603
19-20	2588	2016	4604
Total	7762	6048	13810

3.2 Modernization of 33225 Nos. Pillar boxes by HRC fuse 6 way Pillar Boxes in Chennai.

In order to minimize power interruption and electrical accidents due to natural calamities in Chennai modernization of Pillar boxes are proposed. No live part is exposed to open air when the front door of the pillar box is opened, which leads to total safety of the operating personnel as well as to the human beings/animals. The quantity of 6 way pillar box proposed to be replaced with HRC Fuse MS 6 way pillar box is tabulated below.

	CIRCLE	QUANTITY (Nos)
A.	Chennai North Region	
1	Central	10979
2	North	3478
3	West	5127
Sub total-A		19584
B.	Chennai South Region	
1	Chennai south-I	6850
2	Chennai south-II	6791
Sub total-B		13641
Grand Total(A+B)		33225

It has been programmed to replace the existing Pillar Boxes by HRC Fuse MS 6 Way Pillar Box within a span of 3 years as per the tentative plan tabulated below.

Table.3

FY	QUANTITY (Nos)		
	Chennai/North	Chennai/South	Total
17-18	6528	4547	11075
18-19	6528	4547	11075
19-20	6528	4547	11075
Total	19584	13641	33225

The estimated cost of Rs. 389.00Crores (Rupees Three hundred and eighty nine crores only) could be met through financial Loan assistance from M/s.REC Ltd.,i.e., Rs.350.10 Crores from M/s REC Ltd. (90% of scheme cost) and balance 38.90 Crores (10% of the scheme cost) to be borne by TANGEDCO.

4. Conversion of the existing 2004.89 KM of HT and 33307.81 KMs of LT Over head lines into UG Cables in the extended Area of Chennai City covering Corporation area, extended Corporation and Chennai Sub urban area.

The HT/LT OH line feeder are hanging low due to regular increasing level of roads. In spite of restringing the low hanging line then and there, they are again lowered, due to their age and service. In Coastal Areas, due to abnormal condition of weather and moisture of the sea, the conductor are still in poor condition ie, the resistance of the same had been decreased and turned it to powdered base. This causes frequent line cuts and low voltage profile, occurring in that area.

During rainy seasons and stormy weather, snapping of lines are more alarming and worse, causing accidents, taking out the valuable life of people. Even the HT lines are at easy reach within arcing distance for the residents in storied buildings. In the last cyclone and rains, thousands of poles were damaged and power supply was disturbed due to OH line breakdowns. To prevent probable accidents, supply was cut off as a precaution to avert electrocutions. The supply outages had largely affected water supply, cold storage, hospitals and even rescue operations. The damages can cause such an extended power outages that in extreme cases cannot be restored for days or even weeks as we have seen after the last cyclone and floods. The cost of repairing the physical damages was in crores of rupees. The possibility of lines twisting and snapping is more during wind season.

By conversion, No environmental hazard, maintenance is less, life period of cable is more, number of fault is less, lower dielectric losses and

reduction in line loss may be achieved, comparatively higher voltage regulation and reliability.

Conversion of 2004.89 kms of HT and 33307.81 kms of LT overhead lines into UG Cables in the extended Area of Chennai City covering Corporation area, extended Corporation and Chennai Sub urban area at an estimated amount of Rs.2567crores.

Sl.No.	Description of UG Cable	Chennai South Region		Chennai North Region	
		Route length in Km	Estimate cost in Lakhs	Route length in Km	Estimate cost in Lakhs
A	HT Cables				
1	33 KV HT			78.45	2169.14
2	11 KV HT				
(a)	3*300 Sq.mm	838.35	34837.99	559.27	21802.11
(b)	3*120 Sq.mm	361.66		167.16	
	sub Total	1200.01	34837.99	726.43	21802.11
	Total	1200.01	34837.99	804.88	23971.25
B	LT Cables				
(a)	LT line 4x240 Sq.mm	2915.11	114823.60	2910.80	83058.27
(b)	LT line 4x120 Sq.mm	2173.40		2755.91	
(c)	LT line 4x25 Sq.mm	3872.03		11522.32	
(d)	LT line 4x16 Sq.mm	2091.83		5066.41	
	Total	11052.37	114823.60	22255.44	83058.27
	Total		149661.59		107029.52
	Grand Total		256691.11		

- (i) Total HT cable length : 2004.89 kms
- (ii) Total LT cable length : 33307.81 kms
- (iii) Total Amount : Rs. 2567 Crores.**

To execute the above schemes with financial loan assistance of Rs.2567Crores (Rs. Two thousand five hundred & sixty seven crores) from M/s.PFC Ltd.

5. Master plan for establishment of Sub Station, up gradation and conversion of Sub Station from 2017-2022.

As day by day, power supply demand is increasing, TANGEDCO has proposed to establish new Sub Station, Upgrade the existing Sub Station, Enhance the existing Power Transformer to cater the future load with quality and reliable power supply. This aims to improve the stability of electricity network matching the load growth and to minimise the down time by providing spare capacity for back feeding during disasters.

The plan is detailed as follows:

Sl. No	Description	Phasing year					TOTAL (Nos)
		2017-18	2018-19	2019-20	2020-21	2021-22	
I	Establishment of 400 kV SS		2	2		1	5
II	Establishment of 230 kV SS	27	9	6	6	9	57
III	Establishment of 110 kV SS	48	24	19	8	3	102
IV	Establishment of 33 kV SS	81	77	58	47	38	301
	TOTAL Substations	156	112	85	61	51	465
V	Upgradation/Conversion	3	3	1		1	8
VI	Introduction of Voltage Ratio	8	14	6	3	4	35
VII	Enhancement of Power Transformers	46	41	18	24	5	134

6. Retrofitting of Headquarters of TNEB Main Building in AnnaSalai with shear walls to resist Earthquake and Cyclone effect.

The renovation of the 10 storey building, which is more than 30 years old, is being taken up at an estimated Rs.25 Crore. Chennai falls under the earthquake zone 3 after the 2002 [Bhuj earthquake](#). But the present [TNEB headquarters building](#) was constructed much before 2002. On analysis of the building, the present building is safe for gravity and occupancy. But it is not strong enough to withstand an earthquake or a big cyclone. The building needed shear walls to save it from earthquakes and cyclones. "Being in the coastal area, most of the new buildings in Chennai city have a different front area as per the concrete code. But the TNEB building which is quite old is open in the front. At present a new building will come up in front of the present building. Shear wall is a rigid vertical diaphragm capable of transferring lateral forces from exterior walls, floors, and roofs to the ground foundation in a direction parallel to their planes. The work is expected to be completed by 2019.

Chapter V

Preparedness Measures

Preparedness measures are to be taken up continuously by TANGEDCO to reduce the effects of disasters.

5.1 Emergency operation centers facility

Emergency operation centres are immediately set up at the District level to monitor, co-ordinate with the District Administration, TANGEDCO headquarters and field officials, arrangement of food, vehicle and need based actual requirement of resources.

In advance every year TANGEDCO envisages periodical assessment and review of the preparedness measures in their jurisdiction by the Executive Engineers, Superintending Engineers and Chief Engineers. It is done before onset of Monsoon and shall report their preparedness to the next higher level authority.

The Region level preparedness reports are scrutinized and an appraisal is put up to Head of TANGEDCODMS by the CE/Planning & RC through Director (Distribution).

5.2 Mechanism for access control and isolation of danger area.

Generally the advance information shall be received either from SDMA or DDMA.

TANGEDCODMS on receipt of advance information from Govt or through any reliable source, the same is informed to the Regions immediately for early preparedness. However the declaration of Disaster is taken by TANGEDCODMS team.

The District nodal officer (Normally district level Superintending Engineer) or the officer authorized by the Superintending Engineer/ EDC gets the information from the Collector office or TANGEDCO DMS or other

Government utilities or News papers or TV News or any other mode. He will immediately take the responsibility of Nodal officer. The nodal officer shall coordinate District Administration and various officials of TANGEDCO for advance arrangements to handle the disaster, effective utilization of the available resources and restoration of power supply at the earliest.

In case of emergency, the field officers, staff are empowered to isolate the power supply in the danger areas. After ensuring the normalcy and safety aspects power supply is restored as quickly as possible in a phased manner.

5.3 to 5.7 TANGEDCO will coordinate with District Administration with respect of evacuation support, Decontamination support, Medical treatment, Special population support, support and rescue mechanism.

5.8 Resources Management

The data on the availability of materials in the Disaster prone area to meet the emergency is studied, which aids in easy transport of materials to the affected area.

It is ensured that sufficient materials are made available in the respective area based on the previous damages or based on a tentative assessment. In case of further requirement of resources, it shall be arranged in coordination with other TANGEDCO offices.

Adequate skilled men to handle the crisis is also mobilized from the respective circles and near by Districts also.

To meet the emergency, fund is immediately allotted to the District affected from the available resources.

The District level officers and regional level officers are vested with monetary powers for purchase of materials, mobilisation of materials, diverting department skilled workmen and carrying out the restoration work with private agency. (Powers of sanction-Volume-II).

TANGEDCO DMP envisages Assistant Engineer of TANGEDCO with the concurrence of Nodal officer (Circle Superintending Engineer) shall draw the materials under emergency from TANGEDCO stores under Transport Note to carryout immediate restoration activity in his jurisdiction and shall be regularized subsequently. Also Assistant Executive Engineer can hire a lorry and other immediate resources required for earlier restoration of power supply.

5.9 Training and Capacity Building

Training programs, Awareness program and Safety classes are being given then and there to all the Officers and Staff of TANGEDCO. Further, exclusive training programs on 'Capacity Building in the field of Disaster Management' was given under Grant in aid proposal from GOTN for the Officers and Staff of TANGEDCO. TANGEDCO has exclusive training department that can train the officers and staff as per the requirement in the field of Disaster Management.

5.10 EOC/Communication/ early warning

Communication plays a vital role in dealing with the Disaster. On receipt of advance information of flood/ cyclone from Government or through any reliable source, the same is informed to the Regions immediately for early preparedness. The information can also be communicated from field to HQ. The Superintending Engineer of the District will assume as nodal officer for Disaster Management to carryout immediate arrangements.

The nodal officer co-ordinates with the various offices of TANGEDCO for effective utilization of the available resources for restoration of power supply at the earliest. The data on the availability of materials in the Disaster prone area to meet out the emergency is studied, which aids in easy transport of materials to the affected area.

5.11 Operation coordination, Drills and exercises.

The preparedness shall be carried out on the following line

5.11.1 A standard set of instructions to be followed is issued to the field officials as below

1. Premonsoon inspection of all EHT, HT and LT lines should be carried out thoroughly. Rectification works required based on the inspection should be carried out meticulously.
2. All the structures should be inspected thoroughly, loose jumpers and clamps tightened and lightning arrester connections checked up.
3. In all cyclone prone areas, the distribution lines may be strengthened by providing additional stays. Tall trees may be cleared to avoid fouling on the lines.
4. All the roof bushings of 11KV and 33KV kiosk may be inspected by taking total shut down and leakage of rain water prevented by changing the bushing gasket, wherever they are weak or deteriorated.
5. Officers at all levels should be vigilant all through the monsoon period to gather information regarding monsoon through all available sources of media, such as Radio, TV etc.
6. The O/H lines may be kept out of service in the areas likely to be affected by flood to avoid damage due to snapping of conductors, electrocution etc.,
7. Sub-station operators may be instructed not to recharge the lines before the fault is cleared. They should charge the feeders only after ensuring safety of the public after patrolling the feeders.
8. In all outdoor sub-stations, where there is likelihood of floods entering the sub-station, arrangements may be made to provide strong retaining wall or otherwise to prevent possible damages to the sub-station. In case, flood enters the sub-station, it should be arranged to be pumped out quickly to safeguard electrical

equipments. As temporary measures sand bags are kept to avoid water entry.

9. The EEs may be instructed to gather all required materials to attend to emergencies and breakdowns and also diesel pumps for draining flood water from the Sub-stations which are located in low lying areas.
10. Materials like meters and other electrical items may be stored in an elevated place to the extent possible. In stores, where there is likelihood of flood waters entering, arrangements should be made to move the materials like cement etc. to a safer place at short notice. Stores Officer may be suitably instructed in this regard.
11. The present addresses of the officers and staff and telephone numbers of officers should be available with EEs and AEEs concerned.
12. During Flood and Cyclone season, granting of permission, casual leave, medical leave, earned leave etc., has to be discouraged. Discretion may be exercised in this matter judiciously when leave is absolutely necessary and unavoidable. Suitable alternate arrangements including incharge arrangements should be made for any emergencies.
13. The EE/Control Centre should be available at the Electricity Breakdown service to co-ordinate the operations and to attend any other emergencies in Chennai area. CE/Operation and SE/LD&GO shall co-ordinate the operations throughout the State.
14. Field officers are requested to be ready to disconnect/connect in inundated areas to ensure safety of people and to ensure proper power supply without any hurdles in all areas.

5.11.2 The availability of materials to meet out the crisis to be worked out.

5.11.3 Arrangement of adequate vehicles for transportation of materials and men to the disaster prone area.

5.11.4 All electrical equipment and installation are maintained as per code of Technical Instructions to ensure proper functioning of equipments and to prevent danger.

5.11.5 People who are working with electricity are regularly trained and are made to be competent to act in emergencies following safety precautions.

Initial assessment of Damages

An initial assessment of damages caused to the electrical infrastructure due to the disaster is given by the nodal officer/team. Based on this restoration of electrical power in the possible affected area is planned, coordinated and execution works are started and restoration of supply made available one by one.

The general priority would be restoration of power supply to our own substation, then to the healthy feeders. The priority is for Hospitals, drinking water supply, public lighting, community centers where peoples have been safely accommodated. The initial assessment gives a preliminary idea of the materials damaged, the probable cost and time of restoration.

Sub Stations

- Standard Operating procedures are available for each electrical entity. Standard operating instructions is written and available in each Sub Station. The operator in the Sub Station shall be aware of the operating instructions.
- Mock fire drills are being carried out periodically in all Substations as per schedule. Safety classes are regularly conducted to staff for safety awareness.
- The batteries in the Sub Station are maintained periodically.
- The Sub Stations in low lying area is provided with Dewatering pumps to pump out the flooded water.

- The fire fighting equipment and the pumps in the Sub Stations are maintained and checked periodically.
- The monthly shut down are availed in Sub stations for periodical maintenance of equipments inside the sub stations.
- Each electrical entity is provided with the protection relays, fuses, accessories to isolate the faulty system immediately.
- Only, when the power transformer fails in Substations despite all preventive measures, Ad-hoc emergency alternative arrangement are made in the field in view of the dynamic nature of network for day to day power Distribution management.

Preparedness Exercises

1. Instructions are issued to the field officials to take precautionary measures to be adopted well in advance to meet out the situations arising due to monsoon, flood and cyclone.
2. The field officials Co-ordinate with the district administration in tackling the problems arising during natural calamities period connected with power supply.
3. The field officials have been instructed to keep ready the men and material to meet out the emergency situation due to the ensuing monsoon for immediate restoration of power supply.
4. The field officials have also been instructed to give the following advice to the public through Thandora, Local TV Media, Newspaper etc in English and Tamil before on set of the rainy season.

“ Don't touch/ allow to touch the damaged conductors and leaned poles of TANGEDCO noticed in flooded areas. Public may give immediate intimation to the near by TANGEDCO offices wherever the damaged conductors and leaned poles noticed”.
5. The HT lines are periodically patrolled and preventive measures are taken to ensure proper maintenance of HT lines without leaving scope for breakdown leading to crisis.
6. All types of equipments with voltage level wise, capacity wise like Breakers, current transformers, Distribution Transformers etc and line

materials, various size of conductors , cables, various type of Poles, transformer oil and cross arms are being maintained to meet out the crisis time.

7. In case of disruption in 11 KV distribution network due to break down in 11 KV breakers, necessary back feeding arrangements are being done as soon as possible from nearby feeders of same Sub-station or nearby Sub Station, If the loading capacity of the proposed back fed feeder is not adequate the loads will be split up so as to feed from some other feeders.

All the field officials are suitably instructed to keep ready the men and materials to restore the power supply at the earliest in case of any emergency.

8. The LT lines and distribution transformers are periodically inspected and preventive measures that are needed to be taken to avoid crisis due to failure of equipment or snapping of conductors are done then and there.
9. All the field staff and officers have been alerted to implement the measures (including completion of pre-monsoon inspection of lines and rectification of defects observed, if any) to be adopted to meet situation arising out of possible monsoon floods and cyclone.

The preparedness measures taken by TANGEDCO are aimed to get back to normalcy within a short time period.

The consumers and other departments can contact their jurisdiction officer in the event of any electrical fault, untoward incidents in addition to request for restoration of supply. The contact numbers is given in Annexure I. Also this can be viewed in <http://www.tangedco.gov.in/tangedco1.php>.

Chapter -VI

Response

Procedure for Action during a Disaster

1. If the early warning systems indicate that there is a potential for a disaster, **the Chairperson (CMD) must be immediately informed.** [If the Chairperson is not available, the Director (Distribution) must be immediately informed].
2. The Chairman (CMD) conveys to Director (Distribution) (CEO) the intent to declare a "State of Disaster" in TANGEDCO via phone call/SMS/in writing. The Chairman (CMD) also conveys to Director (Operation) the intent to declare a "State of Disaster", via phone call/SMS/in writing.
3. Director (Distribution) immediately follows the requisite communication protocol send out information to other Directors, CE concerned, CE/Plg & RC and CE/Operation. The information is made to reach in shortest time to all employees.
4. DMS Meeting: A meeting of the DMS must be immediately called for by the HEAD to discuss the plan of action evolved, resources arrangement, funding from GoTN, to supervise response and relief efforts and other points that are necessary.
5. Disaster Management Command and Control Centre (DMS, under Director Distribution) must be immediately operational. The safety and availability of personnel is conveyed by said personnel to the DMS via a reporting mechanism in formats given as Annexure II.
6. Prepare First Assessment Report for DMS
An initial assessment of damages caused to the electrical infrastructure due to the disaster is given by the SE/EDC. Based on this restoration of electrical power in the possible affected area is planned, coordinated and execution works are started and restoration of supply made available one by one. The general priority would be restoration of power supply to our own substation, then to the healthy feeders. The priority for hospitals, drinking water supply, public lighting, community

centers where people have been safely accommodated. The initial assessment gives a preliminary idea of the materials damaged, the probable cost of restoration.

7. Prepare Second Assessment Report for DMC that includes
 - a. A current detailed damage estimate
 - b. Equipment/man-power requirements for complex problems/areas
 - c. List of high priorities (including regions that will need attention)
 - d. Requirements for assistance from other agencies
8. Reporting of information on a continuous basis via DMS including interim reports.
9. Final Progress Report prepared for TANGEDCODMS

Computer Based Power Failure Redressal Call Centre will act as additional communication centre during Disaster.

Computer based power failure redressal call centres are functioning at Chennai, Coimbatore, Madurai, Trichy, Erode, Tiruenelveli, Nagercoil, Salem, Vellore, Karur and Tiruppur. Consumers register their power supply failure complaints by dialing a 4 digit number 1912 from anywhere. Complaint of the consumer is registered in the computer and complaint number is given to the consumer. During disaster additional resources will be made available to receive the complaints and will also function as additional communication centre to public and consumers.

Chapter VII

Recovery Measures

An initial assessment of damages caused to the electrical infrastructure due to the disaster is given by the nodal officer/team. Based on this restoration of electrical power in the possible affected area is planned, coordinated and execution works are started and restoration of supply made available one by one

Reconstruction and recovery plan will be developed with the following priority according to the extent of damage:

Supply will be restored after ensuring all safety and technical aspects in the following order as

- (i) in all EHT lines
- (ii) in all Substations
- (iii) in all HT lines.

Once the Substation and feeder High Tension lines are energized, the Distribution Transformer will get the feeding supply. This Distribution Transformer feeds low tension voltage in the order of 440 Volt or 230 Volts to the end user consumer. Power supply will be restored in priority for Hospitals, drinking water supply, public lighting, community centers where peoples have been safely accommodated and then to the consumers. In addition, the District Management priority will also be followed.

Depending upon the urgency, technical and financial implications, reconstruction activities are carried out. However TANGEDCO always will look for long term development aspects during reconstruction and recovery measures.

In consultation with SDMA officials, the need of the Department Operation Center will be ascertained for its continuance or withdrawal. Once the disaster is subsided and after ensuring power supply normalcy in the affected areas, the Emergency Operations Center activities are closed and the diverted officers/staff are sent back to carry out their routine works. On completion of the entire extension works / replacement works, estimates are got sanctioned from the Competent authority for regularization.

On completion of recovery process and after calamity subsided, during the routine course of work, further improvements are assessed on need basis. Then the improvements estimates are got sanctioned from the Competent authority and improvement works carried out.

Chapter VIII

Financial Arrangements

Separate financial budget provisions are not provided in the annual budget. However, in respect of Distribution network, routine inventories are available in every District. If required, materials and skilled men are diverted from other parts of districts. Further funds if any required is allotted to the respective District by the Chairman cum Managing Director. Government of TamilNadu extends financial assistance based on further requirement by TANGEDCO.

Financial resources of TANGEDCODMP consists of

1) Men

Sufficient skilled men are available in TANGEDCO to meet out any type of Disasters. Hiring of skilled person is also carried out based on the necessity.

2) Material

Sufficient inventory levels of materials are being maintained at district level also if needed materials will be diverted from other places of TANGEDCO and if required it can be diverted from other State Utilities.

3) Money

Existing financial system in TANGEDCO covers the New schemes, Ongoing schemes, Improvements and Disasters. Moreover for major Disasters financial assistance from State Government and from Central government will be sought.

4) Methods

For rectification section officers are entrusted to draw materials from TANGEDCO stores. Chief Engineers are empowered to sanction estimates for Disaster rectification upto Rupees 10 lakh and Superintending Engineers are empowered upto Rupees five lakh. In addition to the above, need based approval and sanctions are given by the CMD/TANGEDCO for early restoration of damaged infrastructures.

Part II : Hazard Specific Incident Action (IAP)

Chapter –I: Cyclone and Storm

Part A- General

1. **Define Scenario** : Cyclone and storm.
2. **Define precautions (Dos and Don'ts)**: Generally power supply is switched off or tripped on protection to ensure safety of public and equipments. Sandbags are stacked in the Substation to prevent water from entering the Substation. Sub-station operators are instructed not to recharge the lines before the fault is cleared. They should charge the feeders only after ensuring safety of the public after patrolling the feeders.
3. **Define impact Zones : Coastal Districts are affected**
4. **Identify resources required for scenario under consideration and their positions**: Electric poles, Conductors, Distribution transformers are stocked at Division/ section level to face the calamity. Further Substation equipments like Power transformers, breakers, switches at Circle level/other circles are also kept as stock.

Part B- Action plan

Task	Agency Responsible	Remark
Raise alert	Govt/ TNSDMA/ Media/ TANGEDCO	
Assess and Notify	Initial assessment from field	
Activate EoC	TANGEDCO	
Establish command	TANGEDCODMA	
Prioritise actions	CMD	Power supply is restored as per District Administration priority and in addition the priority of Hospitals, drinking water supply, public lighting, community centers and then to the consumer.
Mobilize and deploy resources	Special Officer / Chief Engineer	
SAR/ Evacuation	Does not arise	
Establish Relief operations	Concerned Chief Engineer/ Superintending Engineer	
Assess situation dynamics to re adjust action plan	On the spot decision will be taken by the officers in charge in the affected zone. Based on the extent of damage and field input received action plan will be constantly reviewed and remedial action will be taken.	

Chapter –II: Flood

Part A- General

1. Define Scenario : Flood

5. **Define precautions (Dos and Don'ts):** Generally power supply is switched off or tripped on protection to ensure safety of public and equipments. Sandbags are stacked in the Substation to prevent water from entering the Substation. Sub-station operators are instructed not to recharge the lines before the fault is cleared. They should charge the feeders only after ensuring safety of the public after patrolling the feeders.

2. **Define impact Zones:** Low lying areas are affected due to Flood.

3. **Identify resources required for scenario under consideration and their positions:** Electric poles, Conductors, Distribution transformers are stocked at Division / section level to face the calamity.

Part B- Action plan

Task	Agency Responsible	Remark
Raise alert	Govt/ TNSDMA/ Media/ TANGEDCO	
Assess and Notify	Initial assessment from field	
Activate EoC	TANGEDCO	
Establish command	TANGEDCODMA	
Prioritise actions	CMD	Power supply is restored as per District Administration priority and in addition the priority of Hospitals, drinking water supply, public lighting, community centers and then to the consumer.
Mobilize and deploy resources	Special Officer / Chief Engineer	
SAR/ Evacuation	Does not arise	
Establish Relief operations	Concerned Chief Engineer/ Superintending Engineer	
Assess situation dynamics to re adjust action plan	On the spot decision will be taken by the officers in charge in the affected zone. Based on the extent of damage and field input received action plan will be constantly reviewed and remedial action will be taken.	

Chapter –III: Land Slide

Part A- General

1. **Define Scenario** : Landslide
2. **Define precautions (Dos and Don'ts)** : Generally power supply is switched off or tripped on protection to ensure safety of public and equipments.
3. **Define impact Zones:** Nilgiris District.
4. **Identify resources required for scenario under consideration and their positions:** Electric poles, Conductors, Distribution transformers are stocked to face the calamity at Division / section level.

Part B- Action plan

Task	Agency Responsible	Remark
Raise alert	Govt/ TNSDMA/ Media	
Assess and Notify	Initial assessment from field	
Activate EoC	TANGEDCO	
Establish command	TANGEDCODMA	
Prioritise actions	Chief Engineer	Power supply is restored as per District Administration priority and in addition the priority of Hospitals, drinking water supply, public lighting, community centers and then to the consumer.
Mobilize and deploy resources	Special Officer / Chief Engineer	
SAR/ Evacuation	Does not arise	
Establish Relief operations	Concerned Chief Engineer/ Superintending Engineer	
Assess situation dynamics to read just action plan	On the spot decision will be taken by the officers in charge in the affected zone. Based on the extent of damage and field input received action plan will be constantly reviewed and remedial action will be taken.	

Chapter –IV: Tsunami

Part A- General

- 1. Define Scenario :** Tsunami
- 2. Define precautions (Dos and Don'ts):** Generally power supply is switched off or tripped on protection to ensure safety of public and equipments.
- 3. Define impact Zones :** Coastal districts are affected.
- 4. Identify resources required for scenario under consideration and their positions:** Electric poles, Conductors, Distribution transformers are stocked to face the calamity at Division / section level. Further Substation equipments like Power transformers, breakers, switches at Circle level are also kept as stock.

Part B- Action plan

Task	Agency Responsible	Remark
Raise alert	Govt/ TNSDMA/ Media/ TANGEDCO	
Assess and Notify	Initial assessment from field	
Activate EoC	TANGEDCO	
Establish command	TANGEDCODMA	
Prioritise actions	CMD	Power supply is restored as per District Administration priority and in addition the priority of Hospitals, drinking water supply, public lighting, community centers and then to the consumer.
Mobilize and deploy resources	Special Officer / Chief Engineer	
SAR/ Evacuation	Does not arise	
Establish Relief operations	Concerned Chief Engineer/ Superintending Engineer	
Assess situation dynamics to re adjust action plan	On the spot decision will be taken by the officers in charge in the affected zone. Based on the extent of damage and field input received action plan will be constantly reviewed and remedial action will be taken.	

Chapter –V: Earthquake

Part A- General

- 1. Define Scenario :** Earthquake
- 2. Define precautions (Dos and Don'ts):** Generally power supply is switched off or tripped on protection to ensure safety of public and equipments.
- 3. Define impact Zones :** Chennai, Kanniyakumari, Nilgiris, Coimbatore and Part of Tiruvallur, Vellore, Kanchipuram, Dharmapuri, Salem and Tiruvannamalai District.
- 4. Identify resources required for scenario under consideration and their positions:** Electric poles, Conductors, Distribution transformers are stocked to face the calamity at Division / section level. Further Substation equipments like Power transformers, breakers, switches at Circle level are also kept as stock.

Part B- Action plan

Task	Agency Responsible	Remark
Raise alert	Govt/ TNSDMA/ Media/TANGEDCO	
Assess and Notify	Initial assessment from field.	
Activate EoC	TANGEDCO	
Establish command	TANGEDCODMA	
Prioritise actions	CMD	Power supply is restored as per District Administration priority and in addition the priority of Hospitals, drinking water supply, public lighting, community centers and then to the consumer.
Mobilize and deploy resources	Special Officer / Chief Engineer	
SAR/ Evacuation	Does not arise	
Establish Relief operations	Concerned Chief Engineer/ Superintending Engineer	
Assess situation dynamics to read just action plan	On the spot, decision will be taken by the officers in charge in the affected zone. Based on the extent of damage and field input received action plan will be constantly reviewed and remedial action will be taken.	

Chapter VI: Emergency Support Function (ESF)

1. **Primary Agency :** TANGEDCO
2. **Secondary Agencies:** District Administration and all Government related departments viz Highway & State Department, Metro Water, Corporations, Municipalities, Rural bodies etc.

3. Introduction

A. Purpose

Emergency support function is to enable the utility to handle the critical situation in a planned manner.

B. Scope

The ESF is from the Region level to the bottom most section level.

4. Concept of operations

A. General

TANGEDCO operational activity is to restore power supply in the affected area in the least possible time. With the co-ordination of the District Administration and other Government department, the restoration works are carried out under war footing.

B. and C Organization and Procedures

The 32 Districts in TamilNadu are grouped in 9 Regions of TANGEDCO. Each region is headed by Chief Engineer/Electrical. The regions comprise Electricity Distribution Circles. Each Electricity Distribution circle is headed by Superintending Engineer. Each EDC comprises Division office headed by Executive Engineer. Each Division office comprises of Sub Division office headed by Assistant Executive Engineer and then Section office headed by Assistant Engineer/Junior Engineer.

E. Prevention and Mitigation Activities

As far as TANGEDCO is concerned, high wind speed and flooding of rain water is the main cause for power supply interruption. If provision for draining of the rain water is made, then there does not arise any problem for power supply failure. The pole copping is being done to withstand high wind pressure.

F, G,H.Preparedness, Response and Recovery activities

In advance every year TANGEDCO envisages periodical assessment and review of the preparedness measures in their jurisdiction by the Executive Engineers, Superintending Engineers and Chief Engineers. It is done before onset of Monsoon and shall report their preparedness to the next higher level authority.

TANGEDCODMS on receipt of advance information from Govt or through any reliable source, the same is informed to the Regions immediately for early preparedness.

The District nodal officer (Normally district level Superintending Engineer) gets the information from the Collector office or TANGEDCO DMS or other Government utilities or News papers or TV News or any other mode. He will immediately take the responsibility of Nodal officer. The nodal officer shall co-ordinate with the various officials of TANGEDCO for advance arrangements to handle the disaster, effective utilization of the available resources and restoration of power supply at the earliest.

In case of emergency, the field officers, staffs are empowered to isolate the power supply in the danger areas. After ensuring the normalcy and

safety aspects, power supply is restored as quickly as possible in a phased manner.

5. Responsibilities

A. Primary Agency

On the spot, decision will be taken by the officers in charge in the affected zone. Based on the extent of damage and field input received, action plan will be constantly reviewed and remedial action will be taken. After ensuring normalcy and safety aspects, power supply is restored as quickly as possible in a phased manner.

B. Support Agencies

With the co-ordination and help of the Government department and Government aided department viz road clearance, drainage of flooded water, the power supply restoration may be carried out faster.

6. Resource Requirements

The data on the availability of materials in the Disaster prone area to meet the emergency is studied, which aids in easy transport of materials to the affected area. It is ensured that sufficient materials are made available in the respective area based on the previous damages or based on a tentative assessment. In case of further requirement of resources, it shall be arranged in coordination with other TANGEDCO offices.

Adequate skilled men to handle the crisis are also mobilized from the respective circles and nearby Districts also with materials and vehicles.

TANGEDCO officials have been provided with closed user group mobiles for communication.

7. Terms & Definitions

TANGEDCO TamilNadu Generation and Distribution Corporation Limited.

EDC Electricity Distribution Circle.

Annexure I

Also this can be viewed in <http://www.tangedco.gov.in/tangedco1.php>

Details of contact numbers of TANGEDCO officials

SL NO	NAME OF OFFICER	Mobile No	SL NO	NAME OF OFFICER	Mobile No
I	CE/D/CHENNAI-NORTH REGION	9445850999	VI	ERODE REGION	9445851999
	EA to CE/NORTH	9445850989		EE/ELECTRICAL	9445852110
1	SE/CHENNAI-CENTRAL	9445850707		EA to CE	9445851801
	EE/GENERAL	9445850676		AEE/MM	9445851804
	AEE/PRO	9445850679		AE/MM	9445851806
	AEE/Safety	9444577600		AEE/GENERAL	9445851802
2	SE/CHENNAI-NORTH	9445850909		AEE/SAFETY	9445851803
	EE/GENERAL	9445850900	24	SE/ERODE	9445851900
	AEE/PRO	9445850929		EE/GENERAL	9445852150
3	SE/CHENNAI-WEST	9445850300		AEE/PRO&DEV	9445851926
	EE/GENERAL	9445850400		AE/GENERAL	9445851930
	PRO	9445850500		AE/DEV	9445851933
II	CE/D/CHENNAI-SOUTH REGION	9445850100		AEE./MM	9445851928
4	SE/CHENNAI SOUTH I	9445850111		AE/MM	9445851934
	EE/GENERAL	9445850222		AE/MM	9445851935
	PRO	9445850283	25	SE/GOBI	9445852100
5	SE/CHENNAI-SOUTH II	9445981258		EE/GENERAL	9445852030
	EE/GENERAL	9445850333		AEE/MM	9445852114
	AEE/PRO & DEV	9445850283		AE/MM	9445857481
6	SE/CHENGELPET	9443343293		AEE/GENERAL	9445852113
	EE/GENERAL	9445850200		AE/GENERAL	9445857480
	PRO	9445850044	25	SE/METTUR	9445852200
7	SE/KANCHIPURAM	9445855444		EE/GENERAL	9445852210
	EE/GENERAL	9445855255		AE/DEV	9445851909
	AEE/PRO & DEV	9445855156		AEE/MM	9445851907
	AE/DEV	9445855157		AE/MM	9445851908
	AEE/GENERAL	9445855158	26	SE/SALEM	9445852300
III	CE/D/COIMBATORE REGION	9445851751		EE/GENERAL	9445852280
	EA to CE/CBE	9445851732		AEE/PRO	9445852215
	EE/ELECTRICAL	9445851730		AEE/MM	9445852217
	AEE/MM	9445851734		AE/MM	9445852275
	AEE/SAFETY	9445851736		AEE/GENERAL	9445852216
	AEE/R&D	9445851310		AE/TECHNICAL 1	9445852273
8	SE/COIMBATORE-NORTH	9445851051		AE/TECHNICAL 2	9445852274
	EE/GENERAL	9445851052		AE/DEV	9445852276
	AEE/PRO	9445851056		AE/DEV	9445852277
	AE/DEV	9445851057	27	SE/NAMAKKAL	9445852400
	AEE/MM	9445851058		EE/GENERAL	9445852380
	AE/MM	9445851059		AEE/PRO&DEV	9445852436
	AEE/GENERAL	9445851054		AE/DEV	9445852442
	AE/GENERAL	9445851055		AE/DEV	9445852443

SL NO	NAME OF OFFICER	Mobile No	SL NO	NAME OF OFFICER	Mobile No
9	SE/COIMBATORE-SOUTH	9445851151		AEE/MM	9445852438
	EE/GENERAL	9445851160		AE/MM	9445852441
	AEE/PRO	9445851164		AE/MM	9445852439
	AE/DEV	9445851165	VII	MADURAI REGION	9443337528
	AEE/MM	9445851166		EE/ELECTRICAL	9445853355
	AE/MM	9445851167		AEE/TECH 1	9445853001
	AEE/GENERAL	9445851162		AEE/TECH 2	9445853002
	AE/GENERAL	9445851163		AEE/TECH 3	9445853003
10	SE/COIMBATORE-METRO	9445851251		AEE/TECH 4	9445853004
	EE/GENERAL	9445851286		AEE/Safety	9445853006
	AEE/MM	9445851292		EA TO CE.MDU	9445853005
	AE/MM	9445851293	28	SE/MADURAI	9443037754
	AEE/GENERAL	9445851288		EE/GENERAL	9445852818
	AE/GENERAL	9445851289		AEE/GENERAL	9445852819
	AEE/PRO&DEV	9445851290		AE/GENERAL	9445852829
	AE/DEV	9445851291		AEE/PRO&DEV	9445852821
11	SE/UDUMALPET	9445851451		AE/DEV	9445852826
	EE/GENERAL	9445851460		AEE/MM	9445852820
	AEE/PRO&DEV	9445851466		AE/MM	9445852827
	AE/DEV	9445851467	29	SE/MADURAI-METRO	9443053767
	AEE/MM	9445851464		EE/GENERAL	9445852929
	AE/MM	9445851465		AEE/GENERAL	9445852918
	AEE/GENERAL	9445851462		AE/GENERAL	9445852926
	AE/GENERAL	9445851463		AEE/MM	9445852919
12	SE/TIRUPPUR	9445851351		AE/MM	9445852927
	AEE/GENERAL	9445851382		AE/DEV	9445852925
	AEE/PRO&DEV	9445851384	30	SE/DINDIGUL	9443384960
	AE/DEV	9445851385		EE/GENERAL	9445852666
	AEE/MM	9445851384		AEE/GENERAL	9445852665
	AE/MM	9445851386		AE/GENERAL	9445852670
13	SE/NILGRIS	9445851551		AE/GENERAL	9445852671
	EE/GENERAL	9445851613		AEE/PRO	9445852667
	AEE/GENERAL	9445851615		AE/DEV	9445852674
	AE/GENERAL	9445851616		AEE/MM	9445852664
	AEE/PRO	9445851617		AE/MM	9445852672
	AE/DEV	9445851618		AE/MM	9445852673
	AEE/MM	9445851619	31	SE/THENI	9443353670
	AE/MM	9445851620		EE/GENERAL	9445853138
IV	TRICHY REGION	9443327911		AEE/GENERAL	9445853138
	EE/ELECTRICAL	9445853422		AE/GENERAL	9445853142
	AEE/MM	9445853425		AEE/PRO & DEV	9445853139
	AEE/GENERAL	9445853426		AE/MM	9445853141
	AEE/DEV	9445853427		AE/DEV	9445853143
	AEE/SAFTY	9445853428	32	SE/RAMNAD	9443160576
	AEE/Monitoring	9445853424		EE/GENERAL	9443163242

SL NO	NAME OF OFFICER	Mobile No	SL NO	NAME OF OFFICER	Mobile No
14	SE/KARUR	9443366791		AEE/PRO&DEV	9445852994
	EE/GENERAL	9445854060		AEE/MM	9445852993
	AEE/PRO &GENERAL	9445854061		AE/MM	9445852996
	AEE/DEV	9445442491		AE/GENERAL	9445852997
	AEE/MM	9445854062		AE/DEV	9445852998
	AE/MM	9445854066	33	SE/SIVAGANGA	9443341609
	AE/GENERAL	9445854065		EE/GENERAL	9445853070
13	SE/NAGAPATTINAM	9443340723		AEE/PRO&DEV	9445853061
	EE/GENERAL	9445854297		AE/DEV	9445853067
	AEE/PRO&DEV	9445854299		AEE/MM&GENERAL	9445853062
	AE/DEV	9445854304		AE/MM	9445853066
	AEE/GENERAL	9445854298		AE/GENERAL	9445853065
	AE/GENERAL	9445854302	VIII	VELLORE REGION	9445855111
	AE/GENERAL	9445854303		EE/ELECTRICAL	9445855100
	AEE/MM	9445854300		EE/SAFTY&COMPUTER	9445855200
	AE/MM	9445854305		AEE/MM	9445854984
15	SE/TIRUVARUR	9445865161		AEE/GENERAL	9445854982
	EE/GENERAL/MRT	9443342238		AE/COMPUTER	9445854983
	AEE/GENERAL	9445854300	34	SE/DHARMAPURI	9445855582
16	SE/PUDUKOTTAI	9443121854		EE/GENERAL	9445854989
	EE/GENERAL	9445853884		AEE/PRO & DEV	9445855394
	AEE/PRO&DEV	9445853885		AE/DEV	9445855585
	AE/DEV	9445853890		AEE/MM	9445855396
	AE/DEV	9445853891		AE/MM	9445855397
	AEE/GENERAL	9445853886		AE/GENERAL	9445855584
	AE/GENERAL	9445853892	35	SE/KANCHIPURAM	9445855444
	AEE/MM	9445853887		EE/GENERAL	9445855255
	AE/MM	9445853893		AEE/PRO & DEV	9445855156
	AE/MM	9445853894		AE/DEV	9445855157
17	SE/PERAMBALUR	9443379221		AEE/GENERAL	9445855158
	EE/GENERAL	9445853636		AEE/MM	9445855159
	AEE/PRO &DEV	9445853624	36	SE/TIRUPATHUR	9445855500
	AEE/MM&GENERAL	9445853623		EE/GENERAL	9445855060
	AE/MM	9445853628		AEE/PRO&DEV	9445855277
	AE/DEV	9445853629		AEE/MM	9445855276
	AE/GENERAL	9445853627		AEE/GENERAL	9445855278
	AE/REC	9445853630	37	SE/VELLORE	9445855222
18	SE/THANJAVUR	9443323066		EE/GENERAL	9445855055
	EE/GENERAL	9445853737		AEE/PRO & DEV	9445855026
	AEE/PRO&DEV	9445853712		AEE/MM	9445855028
	AEE/MM	9445853714		AEE/GENERAL	9445855027
	AE/MM	9445853721	38	SE/KRISHNAGIRI	9445865102
	AE/MM	9445853722		EE/GENERAL	9445855583
	AEE/GENERAL	9445853713		AEE/GENERAL/KGIRI	9445855395
	AE/GENERAL	9445853720		AEE/DEV	9445855449

SL NO	NAME OF OFFICER	Mobile No	SL NO	NAME OF OFFICER	Mobile No
19	SE/TRICHY-METRO	9443070450		AE/G11	9445865102
	EE/GENERAL	9445853434		AE/G12	9445855586
	AEE/PRO & DEV	9445853438		AE/MM	9445865103
	AEE/MM	9445853435		AE/DEV	9445859527
	AE/MM	9445853446	IX	VILLUPURAM REGION	9445855777
	AE/MM	9445853447		EE/ELECTRICAL	9445855757
	AEE/GENERAL	9445853439		AEE/PLG	9445855691
	AE/GENERAL	9445853448		AEE/MM	9445855679
	AE/DEV	9445853444		AE/MM	9445855681
	AE/REC	9445853443		AEE/SAFETY	9445857174
	AE/CABLE	9445853445	39	SE/CUDDALORE	9445856222
V	TIRUNELVELI REGION	9445854907		EE/GENERAL	9445855921
	EE/ELECTRICAL	9445854908		AEE/PRO & DEV	9445855922
	AEE/TECH	9445854910		AEE/GENERAL	9445855925
	AEE/Safety	9445854911		AEE/MM	9445855929
	AEE/MM	9445854916		AE/GENERAL	9445855926
20	SE/KANYAKUMARI	9443130460		AE/GENERAL	9445855927
	EE/GENERAL	9445854475		AE/DEV	9445855924
	AEE/PRO&DEV	9445854477		AE/PRO	9445855923
	AE/DEV	9445854481		AE/MM	9445855928
	AE/DEV	9445854482	40	SE/TIRUVANNAMALAI	9445856333
	AEE/MM	9445854478		EE/GENERAL	9445856243
	AE/MM	9445854479		PRO & DEV	9445856239
	AE/MM	9445854480		AEE/GENERAL	9445856237
	AEE/GENERAL	9445854476		AE/GENERAL 1	9445856231
	AE/GENERAL	9445854483		AE/GENERAL 1	9445856232
	AE/GENERAL	9445854484		AE/DEV	9445855233
21	SE/TUTICORIN	9443141502		AE/DEV	9445855235
	EE/GENERAL	9445854717		AEE/MM	9445856238
	AEE/PRO&DEV	9445854720		AE/MM	9445856228
	AE/DEV	9445854724	41	SE/VILLUPURAM	9445856111
	AEE/MM	9445854719		EE/GENERAL	9445856171
	AE/MM	9445854725		AEE/PRO&DEV	9445855710
	AEE/GENERAL	9445854718		AE/DEV	9445855717
	AE/GENERAL	9445854721		AEE/GENERAL	9445855709
	AE/GENERAL	9445854722		AE/GENERAL 2	9445855715
22	SE/TIRUNELVELI	9443155198		AE/MM	9445855718
	EE/GENERAL	9445854333	42	SE/KALLACKURICHY	9445855710
	AEE/PRO&DEV	9445854888		AEE/GENERAL	9445855709
	AE/DEV	9445854332		AE/PRO	9445855716
	AE/DEV	9445854327		AE/GENERAL 1	9445855714
	AEE/MM	9445854334		AE/DEV	9445859526
	AE/MM	9445854335			
	AEE/GENERAL	9445854555			
	AE/GENERAL	9445854666			

SL NO	NAME OF OFFICER	Mobile No	SL NO	NAME OF OFFICER	Mobile No
	AE/GENERAL	9445854777			
23	SE/VIRUDHU NAGAR	9443143176			
	EE/GENERAL	9445854570			
	AEE/PRO&DEV	9445854574			
	AE/PRO	9445854575			
	AEE/GENERAL	9445854571			
	AE/GENERAL	9445854572			
	AE/GENERAL	9445854573			
	AEE/MM	9445854576			
	AE/MM	9445854577			
	AE/MM	9445854578			

Annexure I

Details of contact numbers of TANTRANSCO Officials			
SL NO	NAME OF OFFICER	Mobile No.	
1	CE/Transmission	9445856666	
	SE/Transmission I	9445857768	
	EE/Works	9445857773	
	EE/Monitoring	9445867896	
	SE/Transmission II	9445857769	
	EE/ Lines	9445449165	
	EE/ Transformer	9445449164	
	EE/ Sub Station	9445449163	
	SE/Transmission III	9445857771	
	EE/ Projects	9445449167	
	EE / Cables	9445449166	
	EE/ 400 KV	9445449168	
	SE/Transmission IV	9445449169	
	EE//Elec	9445857775	
	EE/II/Elec	9445449170	
	SE/ Civil/ Pole casting co-ordination	9445857772	
	CE/Civil/Transmission	9445857774	
	SE/ Civil I /Transmission	9445449174	
	SE/ Civil II /Transmission	9445449175	
	EE/Civil I	9445449171	
	EE/Civil II	9445449172	
	EE/Civil III	9445449173	
	EE/Civil IV	9445449176	
	EE/Civil V	9445449177	
	SE/400KV/SVChatram	9445857771	
	General Construction Circle		
	2	CE/Transmission	9444071378
		SE/GCC/Salem	9445857722
		SE/GCC/Madurai	9442231000
		SE/GCC/Trichy	9442502200
SE/GCC-I/Chennai		9445857666	
SE/GCC-II/Chennai		9445857707	
SE/GCC/Coimbatore		9445857811	

Annexure II
Format (TANGEDCO)

Requirements under the head of repair of damaged infrastructure of immediate nature

S.No	Sector	Damage in physical terms	Requirement of funds for repair of immediate nature	Out of column 4 amount available from annual maintenance budget	Out of column 4 amount available from related schemes/ programmes/ other sources
1	2	3	4	5	6
1	Damage to Electrical properties (description to be given)				

Annexure II

Daily report on damages caused to TANGEDCO materials and the restoration details

Sl. No	Name of District	No of Villages				Combined Water Supply Schemes/			
		Existing	Affected	Restored	Pending	Available	Affected	Restored	Pending
		(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)
1	2	3	4	5	6	7	8	9	10

Sl. No	Name of District	Sub Stations				Distribution Transformer (Nos)			
		Available	Affected	Restored	Pending	Existing	Affected	Restored	Pending
		(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)
1	2	3	4	5	6	7	8	9	10

Sl. No.	Name of District	Length of Line (Km)				Poles (Nos)			
		Existing	Damaged	Rectified	Pending	Available	Damaged	Replaced	Pending
		(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)	(Nos)
1	2	3	4	5	6	7	8	9	10

Sl. No.	Name of District	Cost of Damage Rs. In Lakhs			No of consumers			
		Material	Rectification cost	Total	Affected	Restored	Balance	% of restoration
		Rs	Rs	Rs	(Nos)	(Nos)	(Nos)	%
1	2	3	4	5	6	7	8	9