

Venue: Conference Room, Office of the Gujarat Electricity Regulatory Commission, Gandhinagar

Date: 17th September 2019

Time: 11:30 AM

The meeting started with greetings to the Members of the State Advisory Committee by Hon'ble Chairman, GERC. In reference to discussions that took place during 25th Meeting of the State Advisory Committee, Managing Directors of four State Owned DISCOMs and Torrent Power Limited were invited to attend the meeting. After brief introduction of all the participants, discussion took place on agenda items.

Agenda Item No. 1: Approval of the minutes of the 25th Meeting of the State Advisory Committee held on 10th July, 2018.

Minutes of the last meeting was circulated to the members of the Committee and since no comments were received from any of the members, the said minutes were confirmed by the Committee.

Agenda Item No. 2: Members were apprised about the issues deliberated during 25th Meeting of the State Advisory Committee and directives issued to the utilities on the basis of discussions. Action Taken Reports received from the concerned entities on the minutes of 25th Meeting of the State Advisory Committee were discussed.

Item No. 2.1: Details of number of JGY Feeders transferred to Industrial Feeders

It was informed by the Distribution Licensees that only in those cases where it is difficult to provide power supply from nearby Industrial Feeders, power supply is being fed to industrial connections from the nearby JGY Feeders. It is also informed that 24 hours 3 Phase power supply is available from JGY feeders and these feeders are properly maintained and issues of frequent tripping to industrial connections connected to JGY Feeders will be looked into. It is also informed that as there is an actual cost recovery in case of HT connection, applicant is provided with an option to take power supply from nearby JGY feeders, while in case of LT connections, due to fixed charge recovery, the connections are provided from the nearby JGY feeders.

Further, on the observation of the Members of the State Advisory Committee, GUVNL informed that separate analysis for interruptions on JGY feeders having industrial connections will be carried out to redress the issue and a report will be submitted during next meeting of the State Advisory Committee.

(Action: GUVNL)

Item No. 2.2: Study on Load Balancing and Grid Integration with respect to surging RE power: Steps to mitigate challenges

GETCO submitted a report covering challenges and key issues in RE integration and mitigation and measures for planning as well as operational aspects taken to deal with issues of high RE penetration. Presentation on the said report was also made by GETCO during the meeting. The Committee Members were also apprised about Transmission network planning under Green Energy Corridor along with other measures being taken to integrate increasing RE power into the State Grid.

Copy of the presentation is annexed as Annexure I.

Item No. 2.3: Levying property tax/ rent on electricity network

Detailed discussion was held on the issue of levy of property tax on the electricity infrastructure by Municipal Corporation in the license area of Torrent Power Limited. TPL apprised the Committee Members about the representation made to EPD, Government of Gujarat and Hon'ble Deputy Chief Minister, Government of Gujarat.

It was informed by Principal Secretary, EPD, Government of Gujarat that proposal was sent to Finance Department, Government of Gujarat for waiver of property tax, and, the same was rejected. He assured that EPD, Government of Gujarat will send this proposal once again to Finance Department and actively pursue the matter.

(Action: EPD, GoG)

Item No. 2.4: Study on per kVA charges for HT connection

The Committee Members were informed that TPL has submitted a report in this regard which is under deliberation at GERC level.

GUVNL informed that a proposal to levy per kVA charges from prospective HT consumers will be put up before Board of Directors at the ensuing Board Meeting. GUVNL was directed to submit details in this regard to the Commission at the earliest.

(Action: GUVNL)

Item No. 2.5: Withholding electrification due to inadequate stock of transformers

It was confirmed by UGVCL that now the issue of shortage of distribution transformers is resolved.

Item No. 2.6: Quick payment option for payment of Demand Note

It was informed by State Owned DISCOMs that there is a facility available on their websites for online application for getting new LT connections. The applicants who opt for online application are able to pay the demand note online. For getting new HT connections, it is mandatory to apply online and such applicants are facilitated with online payment of demand notes. Torrent Power Limited informed that online demand note payment facility for all the applicants is functional in their license area.

It was suggested to amend the GERC (Supply Code and Related Matters) Regulations, 2015 to permit the online payment of demand note. Staff of the Commission was instructed to take up further action in this regard.

(Action: Staff of the Commission)

Item No. 2.7: Establishment of Special Cell

The Committee members were informed that issue of establishment of special cell in the Commission for providing clarity on interpretation of issues that may arise while implementing the Orders/Regulations is under deliberation.

Item No. 2.8: Study on Electrical Accidents

Chief Electrical Inspector made a detailed presentation on a comprehensive study conducted by the office of the Chief Electrical Inspector on the subject of Electrical Accidents in Gujarat. The study report was circulated during the meeting amongst the Members of the State Advisory Committee.

Hon'ble Chairman apprised the Members about advertisements being published in Newspapers to create awareness about electrical safety amongst consumers.

It was decided that;

- (i) Each Distribution Licensee shall periodically review the number of electrical accidents based on indicators/ratios defined in the report and shall work out these indicators at the level of smallest functional unit in their license area. The Commission emphasized that there should be zero tolerance towards electrical accident;

(Action: Distribution Licensees)

- (ii) The Licensees shall provide details of fatal accidents showing the break-up of the accidents within the consumers' premises and accidents in the Licensees' network.

(Action: Distribution Licensees)

- (iii) There should be a dedicated safety officer designated by each Licensee to exclusively work on the safety aspects only;
(Action: Distribution Licensees)
- (iv) Office of the Electrical Inspector shall periodically inspect the wiring of consumer installations on sample basis;
(Action: Office of the Chief Electrical Inspector)
- (v) To amend the GERC Supply Code Regulations, 2015 to make installation of ELCB mandatory for all electrical connections irrespective of contracted load. Staff of the Commission shall initiate the action in this regard.
(Action: Staff of the Commission)

Agenda item No. 3 & 4:

The Committee Members were apprised about important activities carried out by the Commission during FY 2018-19.

Agenda Item No. 5:

Due to paucity of time, agenda item about Standard of Performance of Distribution Licensee could not be taken up for discussions.

Agenda Item No. 6:

Issues raised by Members of the State Advisory Committee were taken up for discussions as mentioned below;

Issues raised by Gandhinagar Shaher Vasahat Mahamandal, Gandhinagar

- Withdrawal of ECS facility for electricity bill payment:
TPL briefed that due to server problem from SBI side, ECS mandate given by few consumers was not executed. Though, there is no lacuna on TPL's side, they have taken proper care to inform these consumers through SMS about non-payment of bills in time and facilitated them for timely payment of electricity bill.
- Periodic maintenance of street lights in Gandhinagar:
Since the street lights in Gandhinagar is not being maintained by TPL, the issue does not fall within the purview of State Advisory Committee.
- Delay in electricity connection in GIDC, Gandhinagar due to non-availability of material:
TPL apprised the Forum that since, plot holder/ GIDC is not providing space for erection of distribution transformer, release of electricity connections are getting delayed.

- Recovery of fixed charges based on billing demand:
Since the matter is pertaining to tariff determination, the issue is beyond the scope of the State Advisory Committee.

Issues raised by Gujarat Chamber of Commerce & Industry

- Forced conversion of LTMD consumers to HT consumers due to excess usage of contracted demand:
Licensees are bound to comply with the stipulations made in Regulations. There cannot be any exception in this regard.
- Tariff recovery as per Tariff Orders:
It was decided that tariff recovery should be strictly as per Tariff Orders.
- Implementation of CGRF/Ombudsman orders by the Distribution Licensees:
The Commission directed the Licensees for timely implementation of orders of CGRFs and Ombudsman as provided in the GERC (CGRF and Ombudsman) Regulations, 2011.
- Separate corridor for electricity network:
Due to paucity of time, discussion in this regard could not take place.
- Recovery of minimum charges in accordance with the provisions of the GERC Supply Code Regulations, 2015:
A petition is filed before the Commission by one of the consumers in this regard and the matter cannot be discussed in the meeting.
- Denying to provide electricity connection due to non-availability of electrical infrastructure:
Being an individual issue, it was advised to take up the matter separately.

Since, Federation of Gujarat Industries submitted their issues a day before the date of meeting, discussions on them shall be taken up in the next meeting.

Representative of Indian Energy Exchange informed the Members about latest developments in Energy Exchange market.

Hon'ble Chairman, GERC thanked the Members of the Committee for their valuable suggestions.

The meeting concluded with a Vote of Thanks to the Chair.

Sd/-
(Roopwant Singh, IAS)
Secretary
Gujarat Electricity Regulatory Commission
Gandhinagar

List of Participants

Hon'ble Chairman & Members:

1. Shri Anand Kumar, Chairman, GERC
2. Shri K. M. Shringarpure, Member (Finance), GERC
3. Shri P. J. Thakkar, Member (Technical), GERC

Members/ Representatives of State Advisory Committee:

1. Shri Pankaj Joshi, PS, EPD
2. Shri Ajay Pandey, Professor, IIM Ahmedabad
3. Shri Dharendra Doshi, Chairman, Energy Committee, Gujarat Chamber of Commerce & Industry
4. Dr. Samir Shah, President, Bhavnagar Chamber of Commerce & Industry
5. Shri Maganbhai Patel, Bhartiya Kisan Sangh
6. Shri A. H. Buch, President, Gandhinagar Saher Vasahat Mahamandal
7. Jogendra Behera, VP, Indian Energy Exchange
8. Shri Chetan Jain, Indian Energy Exchange

Representatives of Utilities:

1. Ms. Shweta Teotia, MD, PGVCL
2. Shri M. R. Kothari, MD, MGVCL
3. Shri K. M. Bhuva, D (T), GUVNL
4. Shri H. H. Khoja, CEI
5. Shri R. B. Patel, CE, GUVNL
6. Shri K. P. Jangid, GM, GUVNL
7. Shri B. R. Icecreamwala, CE, DGVCL
8. Shri R. K. Purohit, CE, DGVCL
9. Shri H. R. Shah, CE, MGVCL
10. Shri J. J. Gandhi, CE, PGVCL
11. Shri P. B. Pandya, CE, UGVCL
12. Shri N. P. Jadav, ACE, GETCO
13. Shri R. B. Kothari, GM, UGVCL
14. Shri Chetan Bundela, VP, TPL
15. Shri R. P. Patel, SE, UGVCL
16. Shri J. S. Kedaria, SE, DGVCL
17. Shri Dipak Patel, DE, GETCO
18. Shri K. D. Barot, DE, UGVCL
19. Shri N. B. Shah, Office of the CEI
20. Shri G. K. Prajapati, Office of the CEI
21. Shri Umang Dutt, GM, TPL
22. Ms. Luna Pal, AGM, TPL

Officers of the Commission:

1. Shri D. R. Parmar, Director, GERC
2. Shri S. T. Anada, Joint Director. GERC
3. Shri M. R. Jhala, Joint Director, GERC
4. Shri P. J. Jani, Deputy Director, GERC
5. Shri K. J. Bhuva, Deputy Director, GERC
6. Shri Apurva Adhvaryu, Deputy Director, GERC
7. Shri A. S. Makwana, Assistant Director, GERC
8. Shri Jignesh Makwana, IT Manager, GERC
9. Shri K. M. Thanki, Executive, GERC

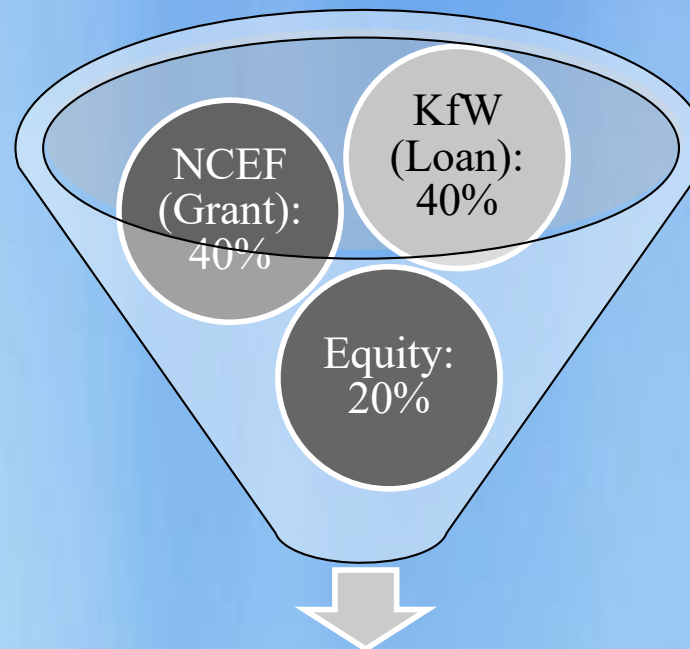
Green Energy Corridor Projects - I



Name of the Project: Green Energy Corridor Scheme

Objective: To integrate and evacuate RE generation from RE rich states

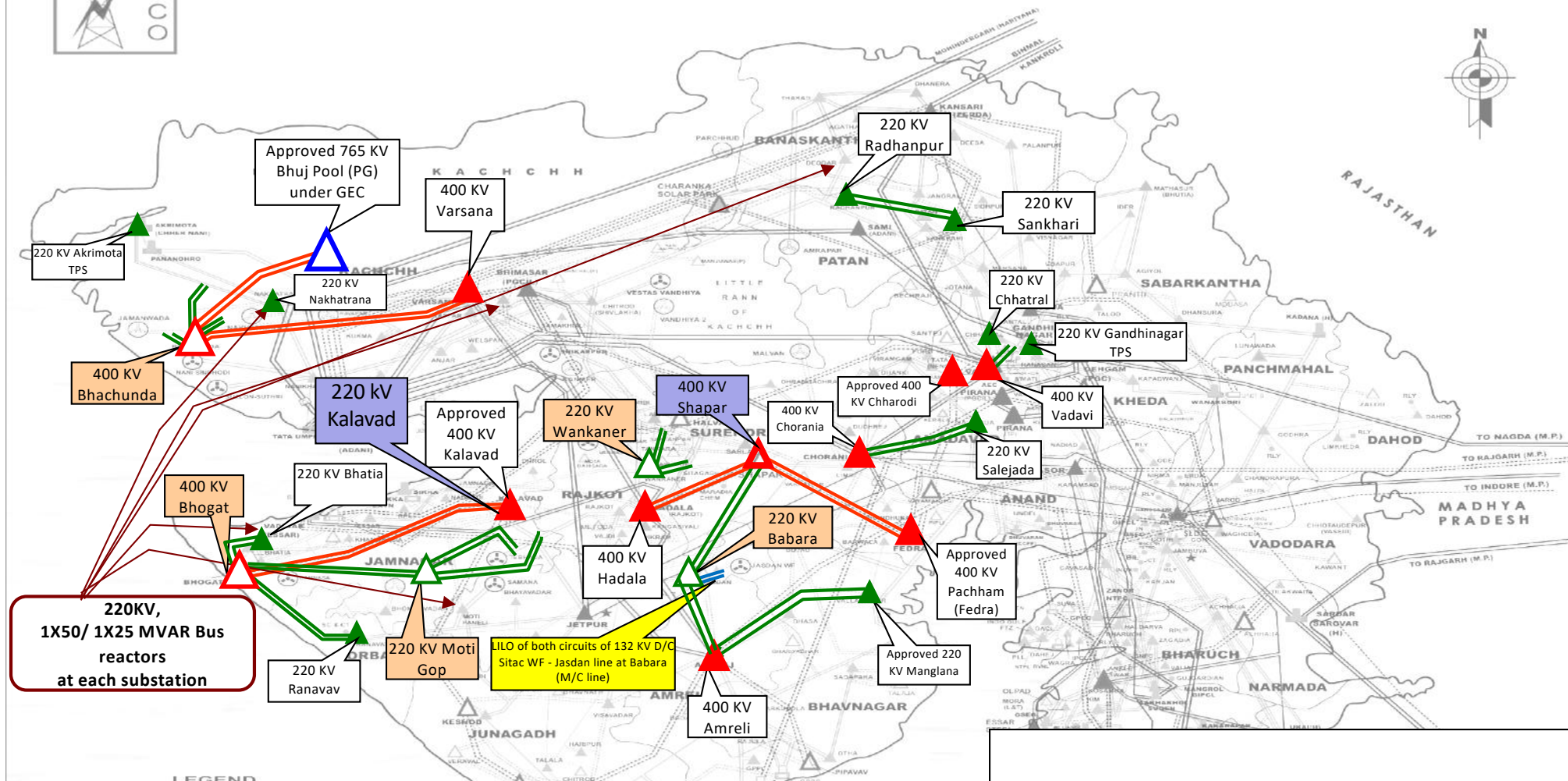
Green Energy Corridor Funding Scheme: 40:40:20



Green Corridor Scheme - I



Intra-State Transmission Schemes under GEC – I of Gujarat



LEGEND

Elements	Scope
400 kV Substation	3 nos of Substation
220 kV Substation	5 nos of substation
400 kV Tr. Line	858 Ckm
220 kV Tr. Line	995 Ckm
132 kV Tr. Line	56 Ckm
Reactor Bays	5 nos

		Existing / Approved substations
		Proposed substations under GEC Scheme
		Proposed 220 KV lines under GEC Scheme
		Proposed 400 KV lines under GEC Scheme

Status of the Transmission Projects under Green Energy Corridor:



Sr. No.	Project	Number/C KM	Dist. - Nos. - Location - Target	Status
1	400 kV Substation	3 Nos	- Jamnagar dist -1 - Bhogat - Dec-20 - Kutch dist – 1 - Bhachunda - Mar-20 - S'nagar dist – 1 (Included in GEC-I on 10/09/2018 looking to the saving in the sanctioned fund) - Shapar - Aug-21	WIP
2	220 kV Substation	5 Nos	- Jamnagar dist -2 – Motigop - Commissioned & Kalawad - Mar-20 - Rajkot dist – 1 - Wankaner - Mar-20 - Amreli dist – 1 - Babra - May-20 - Kutch - 1 (part of 400 kV) - Bhachunda - Commissioned	2 no. – Commissioned
3	400 kV Transmission Line	4 Nos 858 CKM	North, Kutch & Saurashtra Region	WIP
4	220 kV Transmission Line	13 Nos 995 CKM	North, Kutch & Saurashtra Region	6 nos – Commissioned (325 CKm) 7 nos - WIP
5	132 kV Transmission Line	1 No 56 CKM	Saurashtra Region	WIP
6	Reactor Bays	5 Nos	Saurashtra Region	WIP
Total RoW Pending Locations:				
Overall physical progress:				60%
Overall financial progress:				59%

Status of Project Proposal under GEC-II

- **Project Cost: Rs 3738.99 Crs**
 - Nos of Substation: 10 Nos
 - Nos of Tr. Lines: 30 Nos
 - Line Reactor: 08 Nos
- **Approved by the Standing Committee, MoM received on 29.06.2019**



MoM

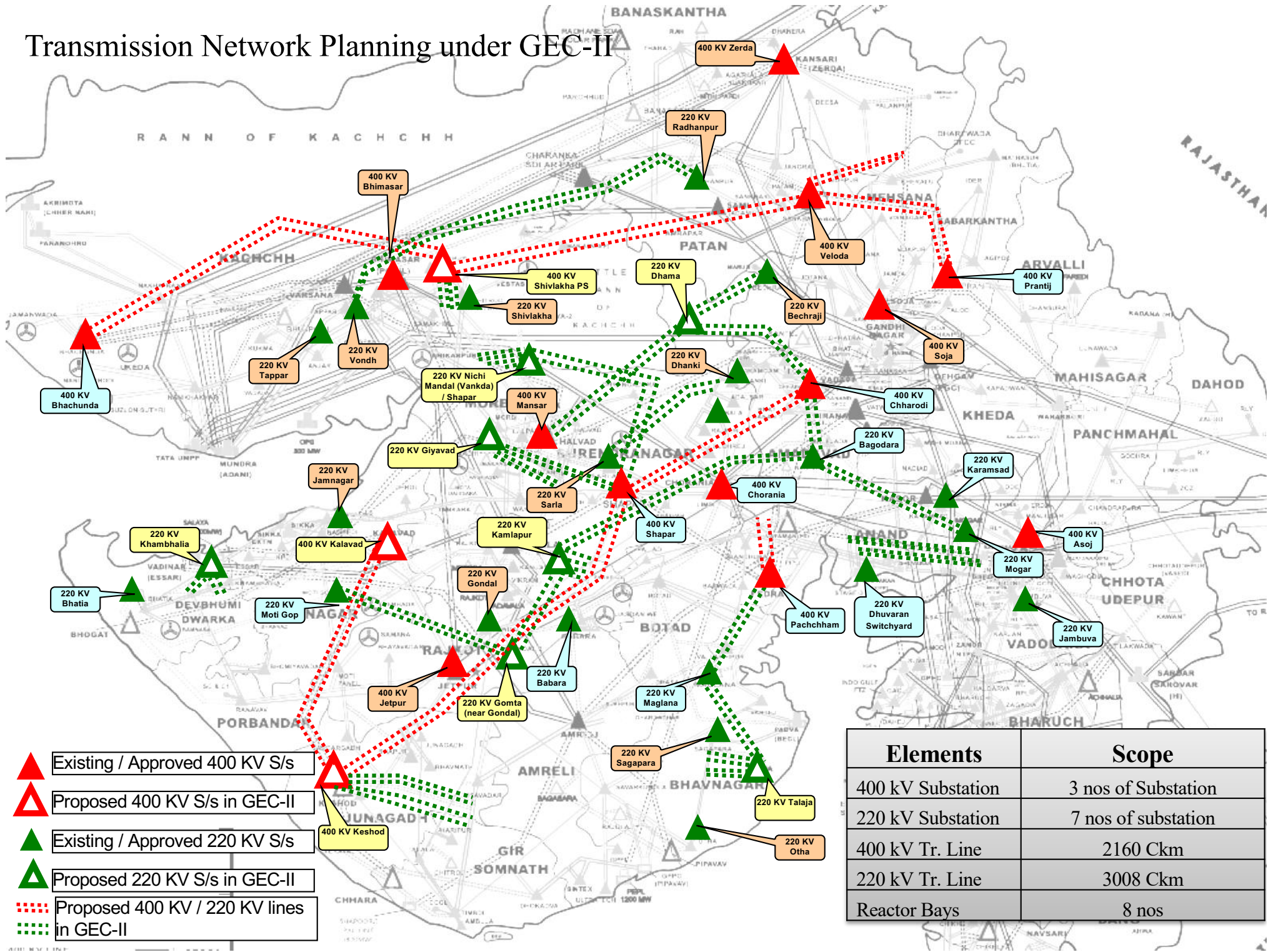
Green Energy Corridor Funding Scheme:

- **40% MNRE Grant**
- **40% Nationalized Bank Loan**
- **20% GETCO's Equity**

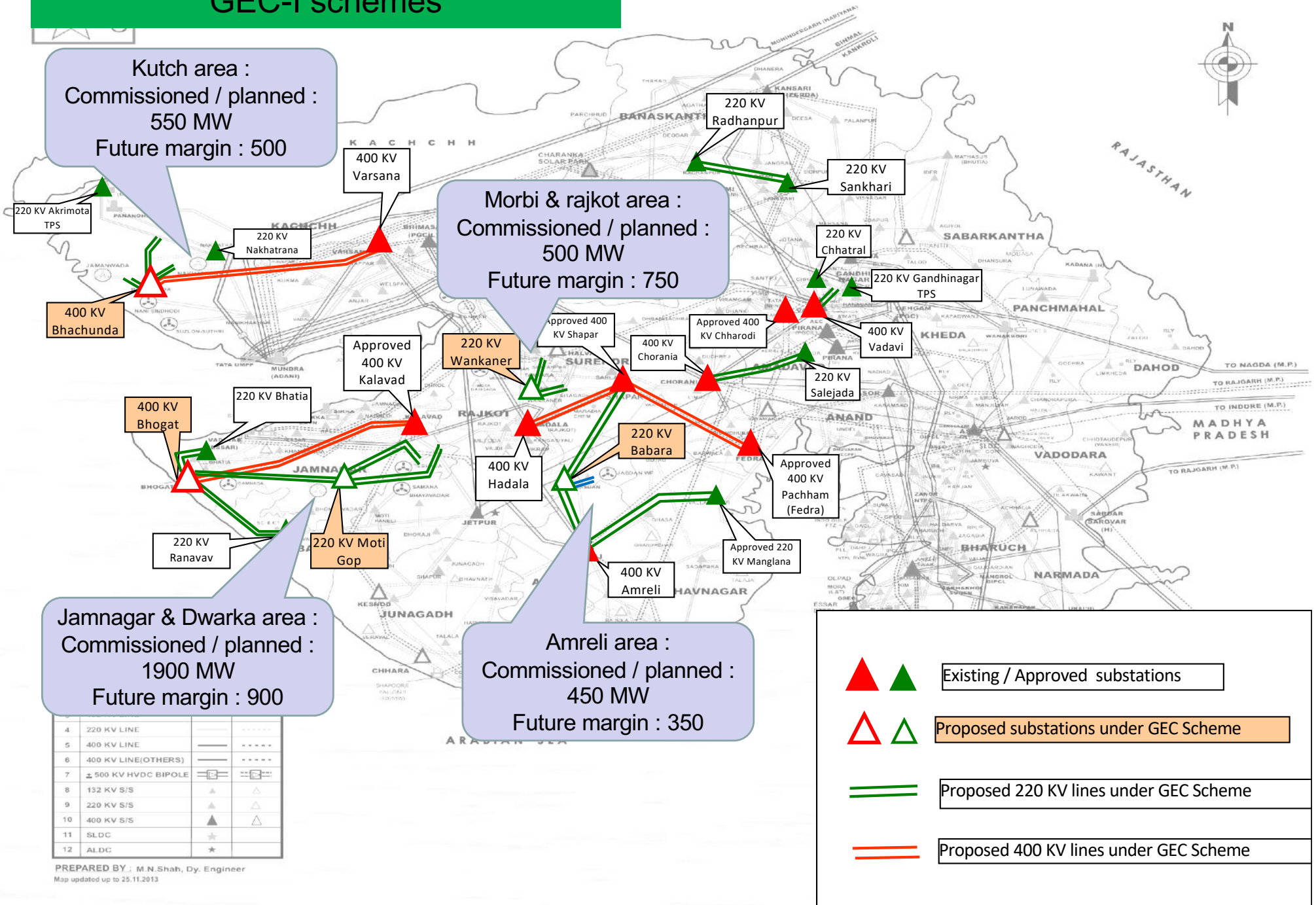


GEC-II Scope

Transmission Network Planning under GEC-II



Anticipated transmission capacity for GEC-I schemes



Anticipated transmission capacity for GEC-II schemes

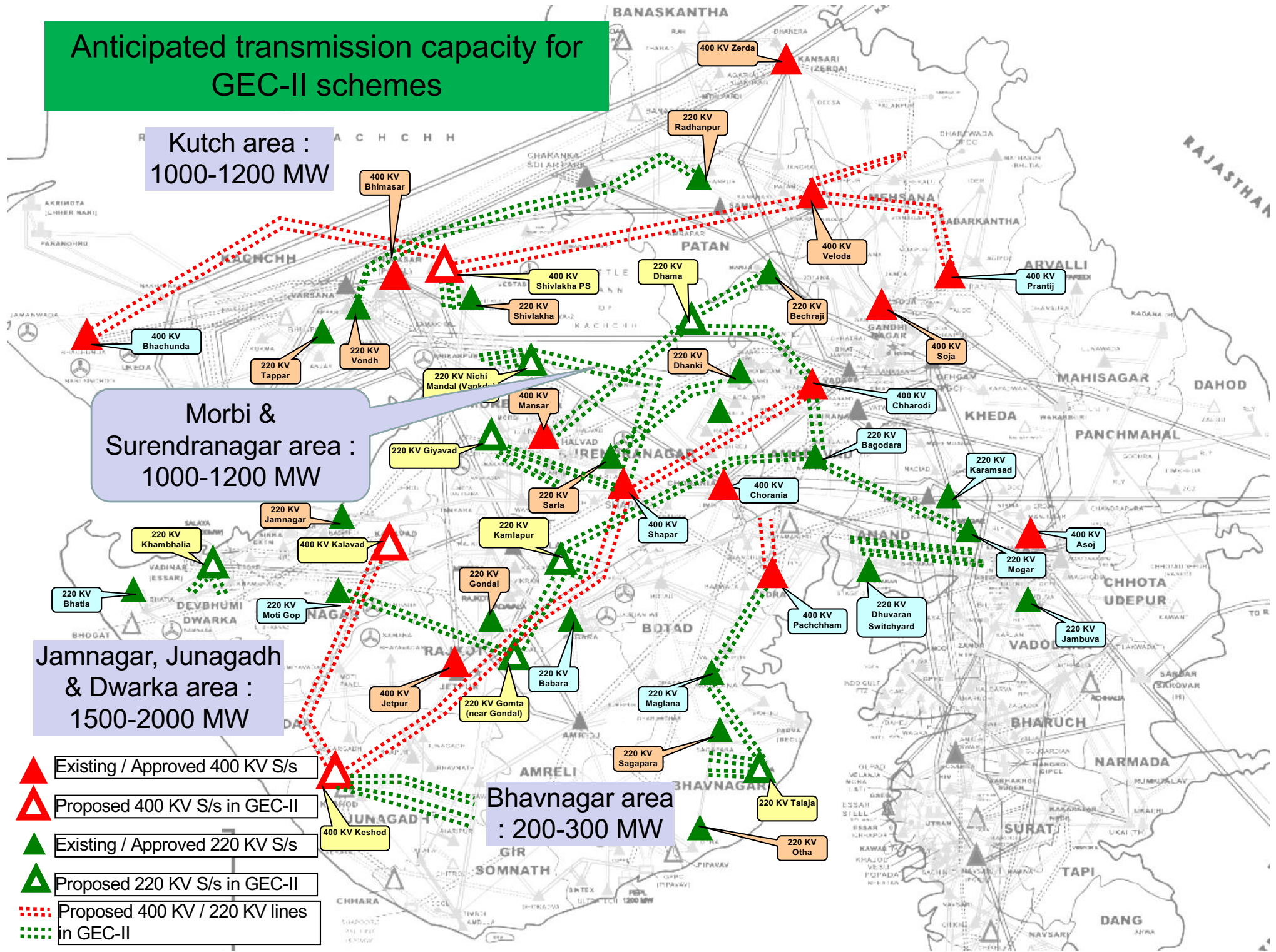
Kutch area :
1000-1200 MW

Morbi &
Surendranagar area :
1000-1200 MW

Jamnagar, Junagadh
& Dwarka area :
1500-2000 MW

Bhavnagar area
: 200-300 MW

-  Existing / Approved 400 KV S/s
-  Proposed 400 KV S/s in GEC-II
-  Existing / Approved 220 KV S/s
-  Proposed 220 KV S/s in GEC-II
-  Proposed 400 KV / 220 KV lines in GEC-II
- 



Electrical Accidents in Gujarat

STATE ADVISORY COMMITTEE MEETING AT HON'BLE GERC
SEPTEMBER 17, 2019

Prepared By: Office of the Chief Electrical Inspector, Gandhinagar

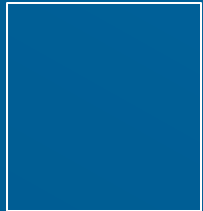
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Legal Provisions Pertaining to Electrical Safety

Deep Dive on Electrical Accidents in Gujarat State

Measures to Curb Electrical Accidents

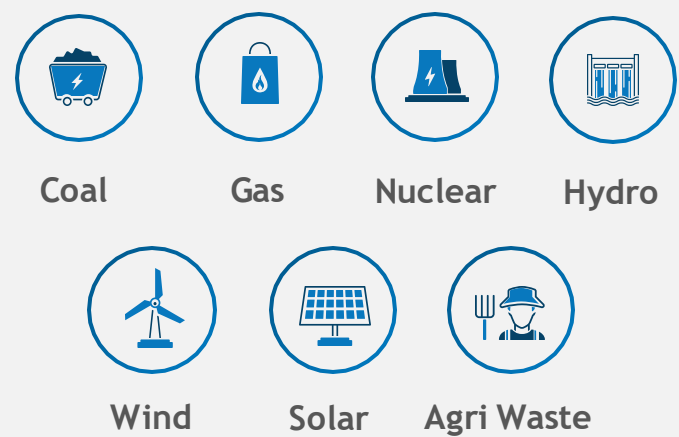




Introduction

Diversified and rapidly growing power sector makes electrical safety a priority

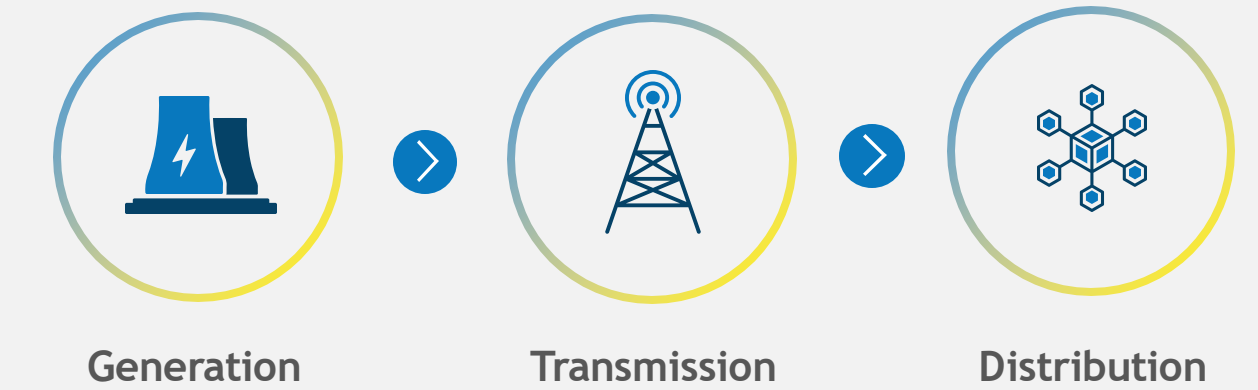
Indian power sector is highly diversified...



...and rapidly growing



Safety needs to be ensured across the entire electricity supply chain



.....

Scope of this study

12 common causes of electrical accidents have been identified basis electrical accident investigation



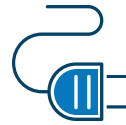
Unsafe System
of Work



Inadequate
Information



Lack of
Training



Inadequate
Isolation



Non-compliance
of Safety
Regulations



Ineffective work
supervision



Working on
Live Wires



Sub-standard
Test Equipment



Poor
Installation
Maintenance



Failure to
Manage Work



Non-competent
Personnel



Uninsulated
Electrical Wiring



Legal Provisions Pertaining to Electrical Safety

The Central Electricity Authority (CEA) has made several regulations related to construction, operation and maintenance of electrical installations

1



The CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010.

2



The CEA (Grid Standards) Regulations, 2010 which every transmission licensee has to comply for operation and maintenance of transmission lines.

3



The CEA (Measures relating to Safety and Electric Supply) Regulations, 2010

Notice and investigation of electrical accidents (in pursuance of Section 161 of the Electricity Act, 2003)



Fatal/Non-Fatal
accident occurs to
human/animal



Inform Electrical
Inspector within 24
hours of knowledge
(by phone, email,
fax, etc.)



Give written notice
in Form-A within 48
hours of knowledge



Electrical Inspector inquires and reports as to the cause of any electrical accident affecting the safety of the public, or as to the manner in, and extent to, which the provisions of the Act or rules and regulations made thereunder or of any licence, so far as those provisions affect the safety of any person, have been complied with.

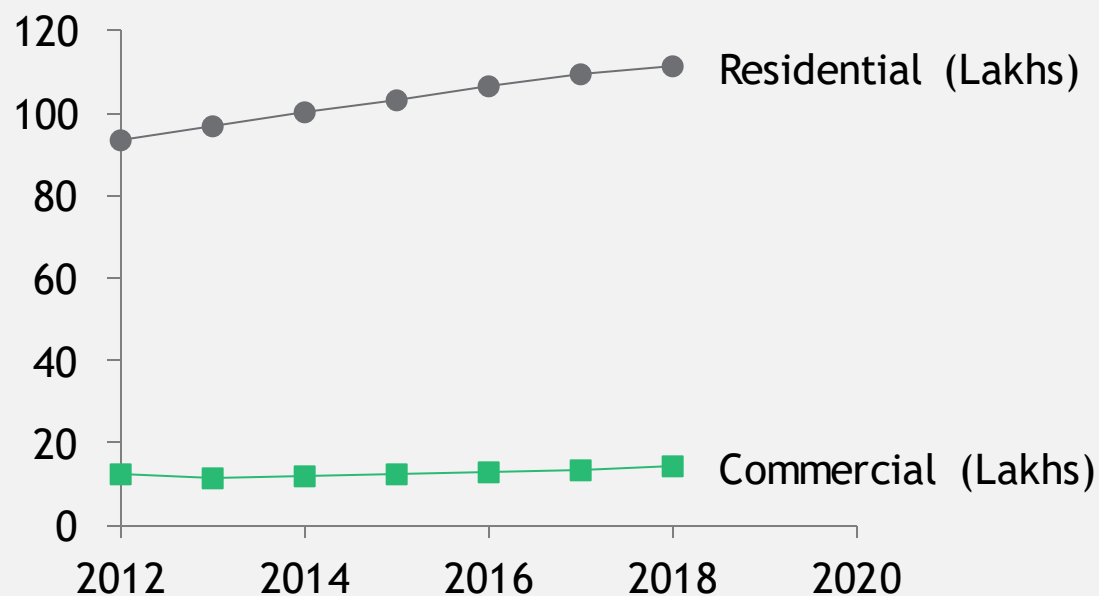
● ●
Gujarat Electricity (Notice of Occurrence of Accident) Rules, 2004.



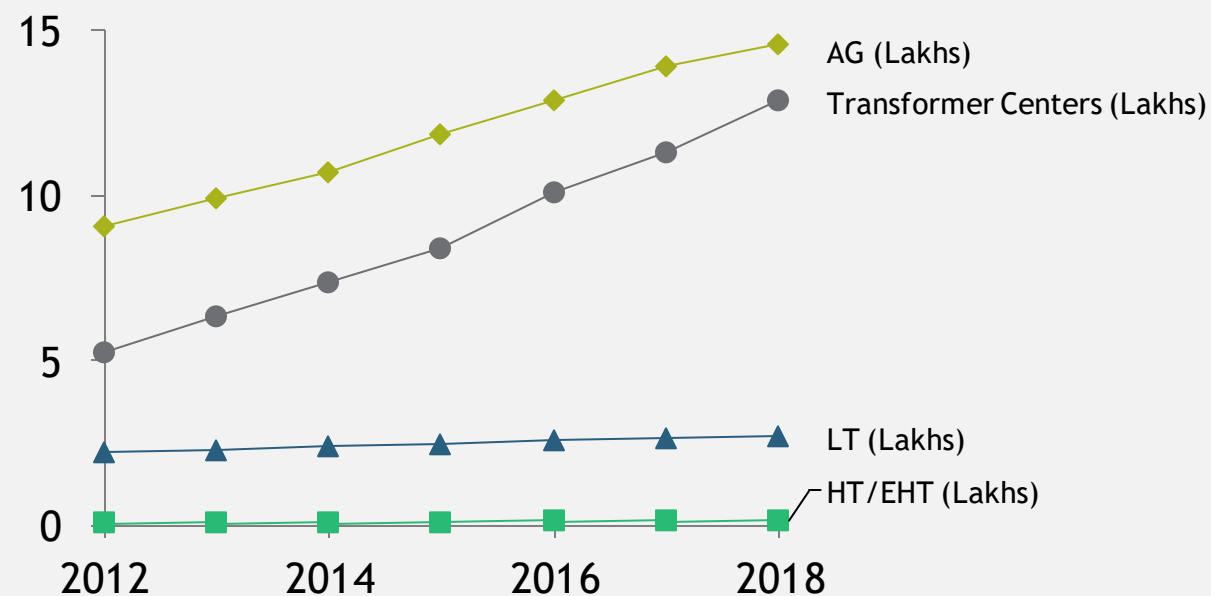
Deep Dive on Electrical Accidents in Gujarat State

Economic development has resulted in increased number of installations and network complexity...

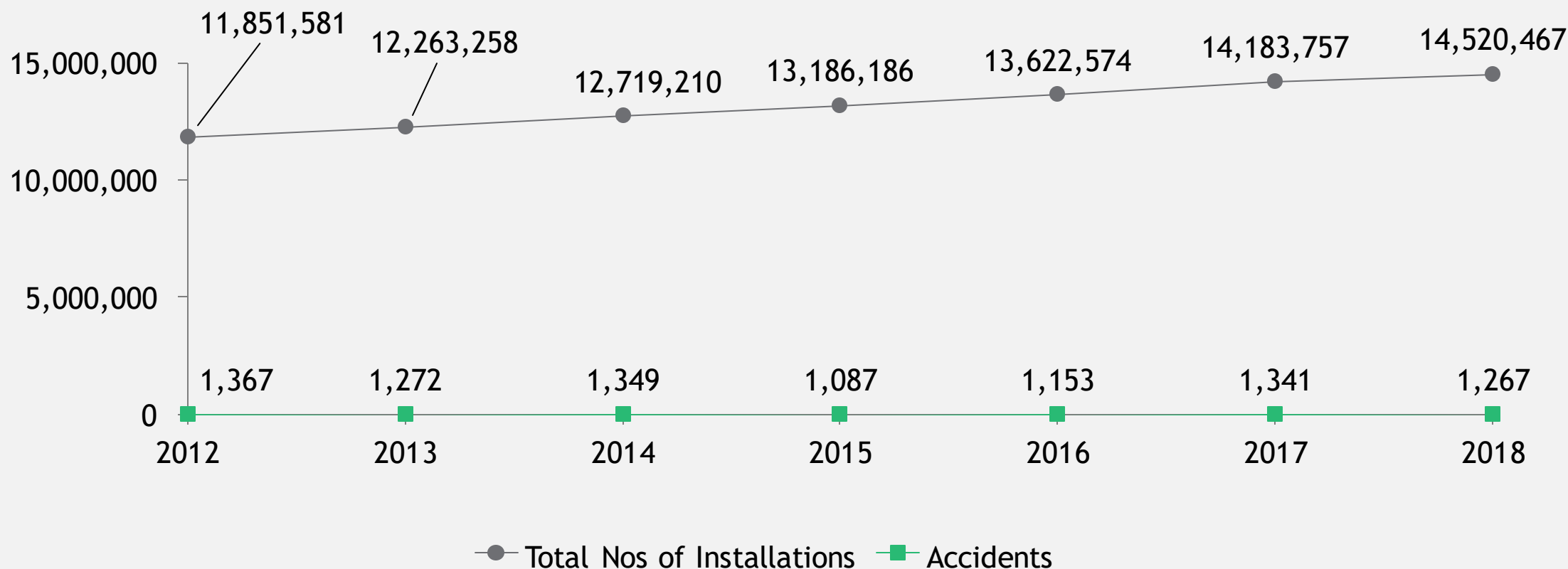
Significant growth in residential installations



Network has become increasingly complex



...but the number of electrical accidents has remained almost stagnant over the years



Number of accidents per consumer and per unit infrastructure have also decreased

Indicator Type	Indicator/Ratio (Higher is Better)	2011-12	2018-19
Accidents per Consumer	$\frac{\text{Total Number of Consumers}}{\text{Total Accidents}}$	8670	13058
Accidents per Unit Infrastructure	$\frac{\text{Total Length of Transmission Line in KM}}{\text{Total Number of Accidents in Transmission Line}}$	92	530
	$\frac{\text{Total Number of Distribution Transformers}}{\text{Total Number of Accidents on Industrial Installations}}$	5467	17484
	$\frac{\text{Total Number of Distribution Transformers}}{\text{Total Number of accidents on other than Industrial Installations}}$	1822	48875
	$\frac{\text{Total Number of Distribution Transformers}}{\text{Total Number of accidents in Distribution System}}$	1071	2246

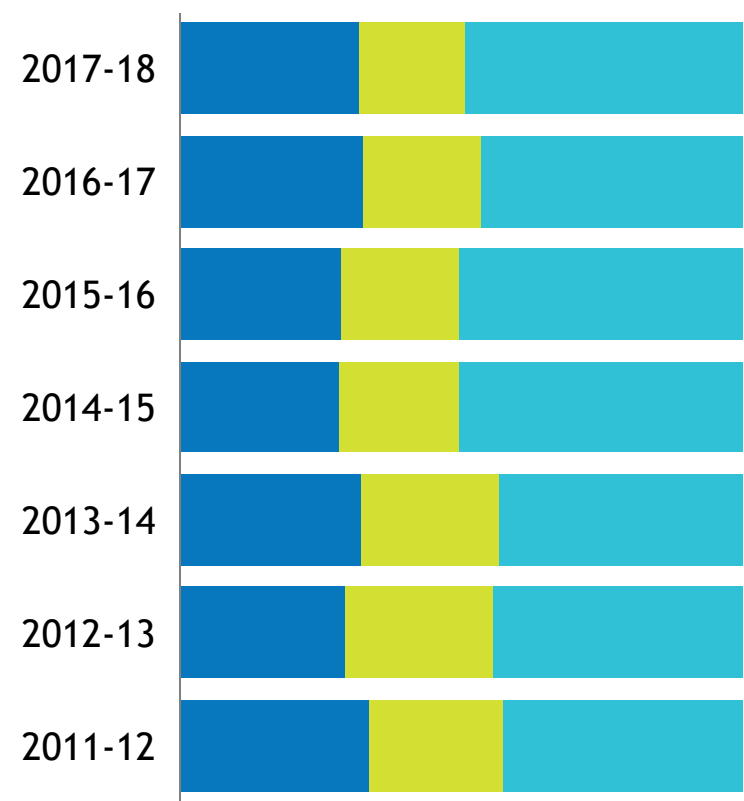
The inspectorate's vision of 'Zero Accident' is at the center of this analysis. Electrical accidents (no matter how small their number is) must be focused and addressed through systematic interventions.

Chief Electrical Inspector, Gandhinagar, Gujarat

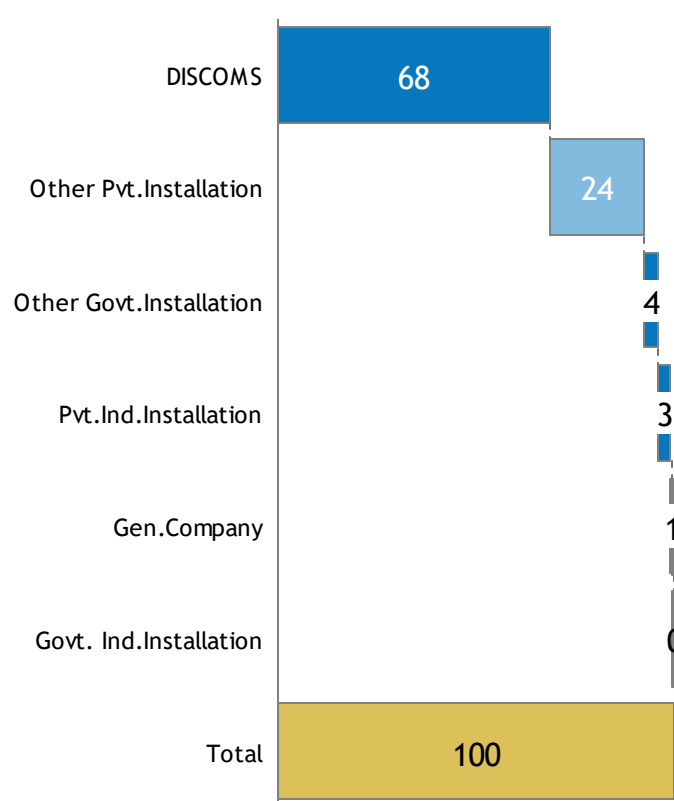
Major sources and root causes of electrical accidents identified - DISCOMs to be addressed first

Category of Accident	Major Source(s) of Accident	Root Cause(s)
Human Fatal	• DISCOMs • Other Private Installations	• Accidental Live Contact • Defective Installation • Unauthorised Work (recent)
Human Non-Fatal	• DISCOMs	• Neglect of Safety Measures
Animal Fatal	• DISCOMs	• Conductor Snap • Lack of Maintenance

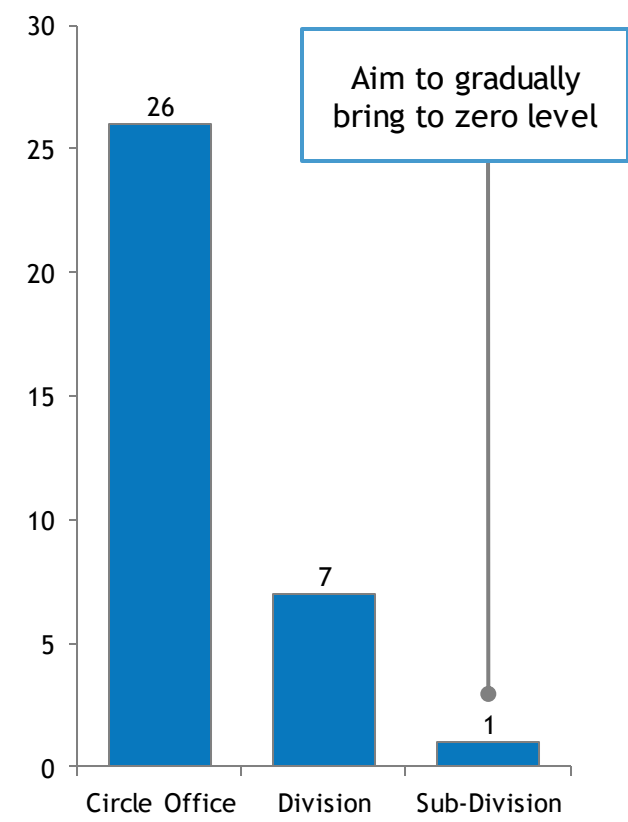
About half of total accidents Human Fatal in nature; more than 2/3rd of total accidents occurring in DISCOMs



Animal Fatal (%) Human Fatal (%)
Human Non-fatal (%)



% of total electrical accidents



DISCOM Accidents per...

Saurashtra & South zones must be targeted on priority

Electrical Accidents during the Year 2018-19

Zone	Human Fatal	Human Non-Fatal	Animal Fatal	Total Accidents
Saurashtra zone	256	67	129	452
South zone	128	85	98	311
Central zone	120	44	69	233
North zone	81	35	52	168
Total	585	231	348	1164



Measures to Curb Electrical Accidents

DISCOMs to
take measures
to reduce
accidents

The infographic features a central blue circle with the text 'DISCOMs to take measures to reduce accidents'. To the right of this circle, a vertical line with circular markers at each point connects six numbered items. Each item consists of a blue circle with a white number, followed by a text block. The text is in a clean, sans-serif font. The background is a light gray gradient.

1

During 2018-19 out of total 1164 accidents, 646 (i.e. 55.5%) accidents took place across 623 Sub-Divisions of DISCOMs in the State translating into 1.04 accident per Sub-Division.

2

DISCOMs have been requested to direct every Sub-Division to achieve zero accident in its area of jurisdiction.

3

The Sub-Divisions achieving zero accident during the year may be rewarded by letter of appreciation.

4

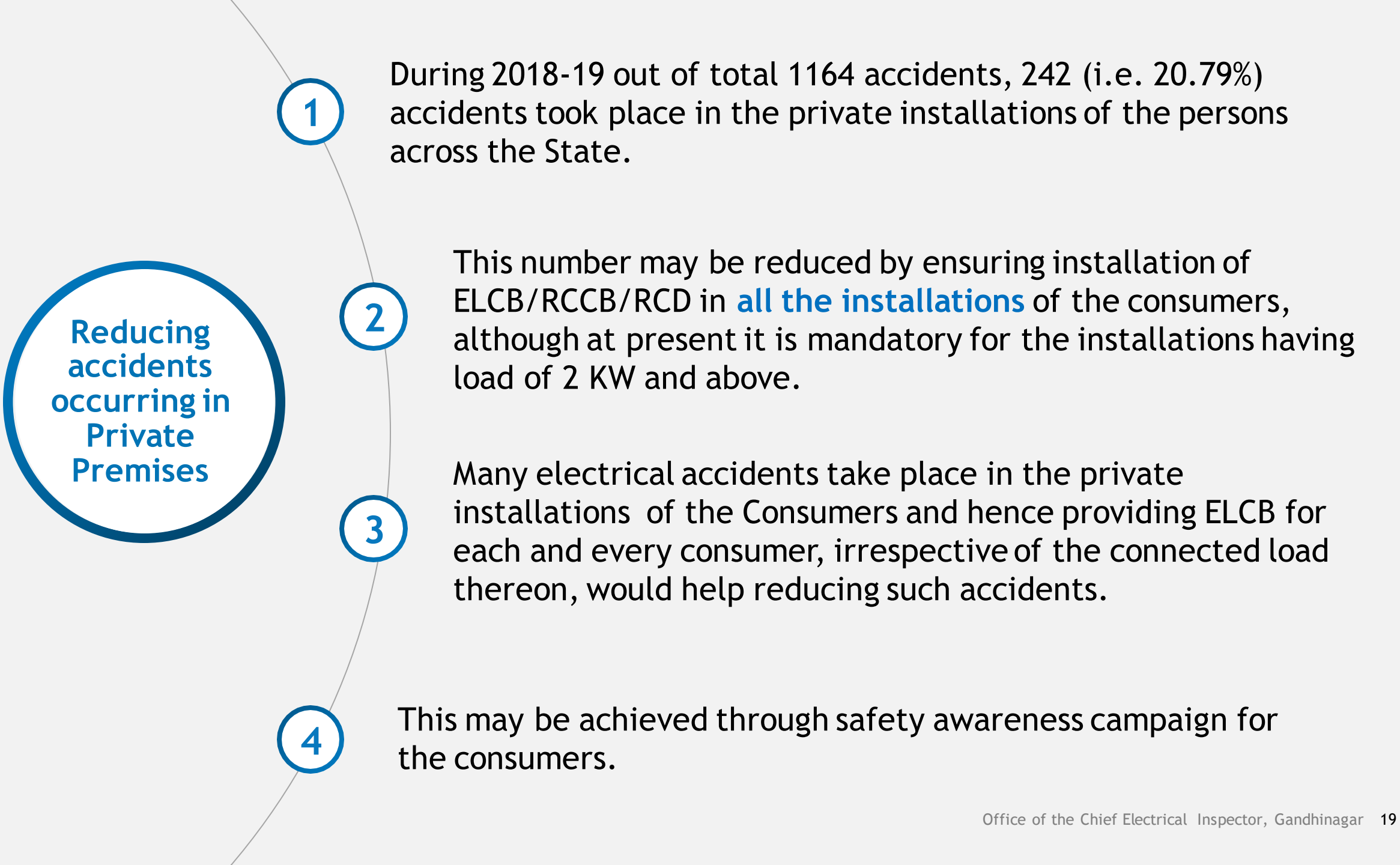
The Sub-Divisions where number of accidents increase as compared to the previous year shall be answerable and accountable for the same.

5

Every Sub-Division shall ensure that recurrence of the accident does not happen within the particular Sub-Division due to the same reason.

6

Electrical Safety Officer is designated at every Sub-Division who shall act in pursuance of regulation 5.



The infographic features a central blue circle with the text 'Reducing accidents occurring in Private Premises'. To its right, a vertical line with four circular nodes (numbered 1 to 4) connects four text blocks. The nodes are blue with white numbers. The text blocks are black, with the word 'installations' in blue in the second block. The background is light gray.

Reducing accidents occurring in Private Premises

1

During 2018-19 out of total 1164 accidents, 242 (i.e. 20.79%) accidents took place in the private installations of the persons across the State.

2

This number may be reduced by ensuring installation of ELCB/RCCB/RCD in **all the installations** of the consumers, although at present it is mandatory for the installations having load of 2 KW and above.

3

Many electrical accidents take place in the private installations of the Consumers and hence providing ELCB for each and every consumer, irrespective of the connected load thereon, would help reducing such accidents.

4

This may be achieved through safety awareness campaign for the consumers.

3 safety measures currently taken prior to commencement of new supply

Mandatory Inspection before energizing >650 V installations

Electrical installations having voltage level exceeding 650 V are inspected by the Electrical Inspectors prior to energisation as provided in **Regulation 43** of the CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 and permission to energise such electrical installations is granted if electrical safety parameters are observed. If the installation is found unsafe, appropriate actions are advised for rectification of the defects and energisation permission is granted once the defects are complied with and thereafter supply is commenced by the DISCOM.

Electrical Contractors test installations <650 V before energizing, DISCOMs verify

No pre-energizing inspection is carried out by the Electrical Inspectorate for the **installations having voltage level up to 650 V**. Supply to such installations is commenced by the DISCOMs upon receiving the test report of the Licensed Electrical Contractor. The role of the Licensed Electrical Contractor and the DISCOMs become very much critical with regard to verification of observance of safety parameters of such installations before commencement of supply so as to avoid mishaps and accidents.

Strict actions by Licensing Board on fraudulent Test Report of installations by the Contractor, DISCOMs must also ensure

As experienced, many a times, **Electrical Contractors submit Installation Test Reports to the DISCOMs without actually carrying out any testing** thereby jeopardizing safety. **Electrical Inspectorate takes strict actions against the electrical contractor** who is found guilty and involved in such malpractice or certifying unsafe work. It is, therefore, very much desirable that **the DISCOMs should also verify the safety of the installations before commencing supply** to such installations.

Safety Measures to be ensured for DISCOM installations

- 1 Efficient earthing.
- 2 Adequate protection for Transformer Centres.
- 3 Safe vertical clearance of live exposed parts from the ground.
- 4 Duly closed and safe distribution box on Transformer Centres.
- 5 Provision of appropriate fuse/Switch/Breaker etc. in safe position.
- 6 Proper and appropriate guarding at road crossing and line crossing.
- 7 Adequate horizontal clearance of the building from the nearest conductor of the line.
- 8 Suitably positioned stay insulators in guy supports.
- 9 Safely covered jumpers.
- 10 Safe crossing of electric lines.
- 11 Safety of the installation in public place is ensured.

Measures pursuant to CEA Safety Regulations (I/VIII)

The licensee engaged into generation, Transmission or distribution has to **designate Electrical Safety Officer** as required under **Regulation 5** of the CEA (Measures Relating to Safety and Electric Supply) Regulations, 2010 to ensure electrical safety of the employee working on electrical equipments. She/he has to ensure that compliance of the safety regulations is carried out.

The robustness of the overhead HT/LT lines in terms of **current rating and mechanical strength** under certain environment condition should be maintained and verified by licensee to avoid untoward mishaps pursuant to **Regulation 12**.

The licensee has to take all **precautionary steps to ensure the safety** of supply lines, wires fitting and apparatus under his control as specified in **Regulation 13**. Routine and Preventive maintenance of HT/LT networks has to be carried out to avoid electrical accident at such installations having larger size and volume.

A suitable **earthed terminal** in an accessible position at or near the point of commencement of supply has to be provided by the licensee at the consumer's premises for the consumer's use as per **Regulation 16** for single phase consumers. Body of consumer's appliances connected with such earthed terminal can prevent electrocution if leakage of current in equipment body takes place.

Measures pursuant to CEA Safety Regulations (II/VIII)

The owner of the building shall ensure that they are **inaccessible** where **bare conductors** are used and provide switches in readily accessible position for rendering them dead whenever necessary as per **Regulation 17**.

The owner of every installation of voltage exceeding 250V shall affix permanently in a conspicuous position a **danger notice** in Hindi or English and the local language of the District, with a sign of skull and bones of a design as per IS -2551 on- every motor, generator, transformer and other electrical plant and equipment together with apparatus used for controlling or regulating the same; all supports of overhead lines of voltage exceeding 650V which can be easily climbed upon without the aid of ladder or special appliances; luminous tube sign requiring supply, X-ray and similar high frequency installations of voltage exceeding 550V but not exceeding 33kV, as provided in **Regulation 18**.

Violation of regulation regarding mandatory utilization of **safety gears** like hand gloves, rubber shoes, insulated ladders or ladder van, safety belt, earthing device, helmet, line tester, test lamps by the personnel engaged in the electrical work or the contractor or the employees of the licensee may lead to electrical mishaps. Mandatory Practice of using **Personal Protective Equipment (PPE)** as per **Regulation 19** helps protecting a person in an adverse situation while working on live or dead electrical installation.

Measures pursuant to CEA Safety Regulations (III/VIII)

Every person owning a vehicle, **traveling crane**, or the like to which electricity is supplied from an external source shall ensure that it is efficiently controlled by a suitable switch enabling **all voltage to be cut off in one operation** and, where such vehicle, traveling crane or the like runs on metal rails, the owner shall ensure that **the rails are electrically continuous and earthed**, as provided **in Regulation 20**.

Flexible cables shall not be used for portable or transportable motors, generators, transformers, rectifiers, electric drills, electric sprayers, welding sets or any other **portable or transportable apparatus** unless they are heavily insulated and adequately protected from mechanical injury as provided in **Regulation 21**. Where the protection is by means of metallic covering, the covering shall be in metallic connection with the frame of any such apparatus and earthed. The cables shall be three core type and four core type for portable and transportable apparatus working on single phase and three phase supply respectively and the wire meant to be used for ground connection shall be easily identifiable.

Street boxes shall not contain any gas pipes and precautions shall be taken to prevent any influx of water or gas as per **Regulation 23**.

The owner of every generating station, sub-station, junction-box or pillar in which there are any circuits or apparatus, whether intended for operation at different voltages or at the same voltage, shall ensure by means of indication of a permanent nature that the respective **circuits are readily distinguishable** from one another, as per **Regulation 24**.

Measures pursuant to CEA Safety Regulations (IV/VIII)

The owner of every installation including sub-station, double pole structure, four pole structure or any other structure having **more than one feed**, shall ensure by means of indication of permanent nature, that the installation is **readily distinguishable** from other installations as per **Regulation 25**.

It is the responsibility of the owners that all circuits and apparatus shall so arrange that there shall be no danger of any part thereof becoming **accidentally charged to any voltage beyond the limits** of voltage for which they are intended, as per **Regulation 26**.

Fire buckets filled with clean dry sand and ready for immediate use for extinguishing fires in addition to fire extinguishers suitable for dealing with fires, shall be conspicuously marked and kept in all generating stations, enclosed sub-stations and switching-stations in convenient location as per **Regulation 27**.

To ensure electrical safety it is necessary that **instructions**, in English or Hindi and the local language of the District and where Hindi is the local language, in English and Hindi **for the resuscitation of persons suffering from electric shock**, shall be affixed in a conspicuous place in every generating station, enclosed sub-station, enclosed switching station, mines and in every factory in which electricity is used and in such other premises where electricity is used as per **Regulation 28**.

Measures pursuant to CEA Safety Regulations (V/VIII)

To enhance electrical safety it shall be ensure that no electrical installation work, including additions, alterations, repairs and adjustments to existing installations, except such replacement of lamps; fans, fuses, switches, domestic appliances of voltage not exceeding 250V shall be carried out upon the premises of or on behalf of any consumer, supplier, owner or occupier for the purpose of supply to such consumer, supplier, owner or occupier except by an **electrical contractor licensed** in this behalf by the State Government and under the direct supervision of a person holding a certificate of competency and by a person holding a permit issued or recognized by the State Government, as provided in **Regulation 29**.

Where an installation is already connected to the supply system of the supplier or trader, every such installation shall be **periodically inspected** and tested by the Electrical Inspector as per **Regulation 30**, so that the defective installations can be identified and the mishaps or electrical accidents shall be avoided.

It is necessary to obtain prior permission of the Electrical Inspector for the **generating units exceeding capacity of 10 KW** as per **Regulation 32** to ensure electrical safety.

The supplier shall not connect with his works the installation or apparatus on the premises of any applicant for supply unless he **is reasonably satisfied** that the connection will not at the time of making the connection cause a leakage from that installation or apparatus of a magnitude detrimental to **safety** as per **Regulation 33**.

Measures pursuant to CEA Safety Regulations (VI/VIII)

If there is leakage in the system of a consumer which is likely to affect injuriously the use of electricity by the supplier or by other persons, or which is **likely to cause danger**, the supplier shall discontinue the supply of electricity to the installation as per **Regulation 34** and do not commence or recommence the supply until the defects are not rectified to avoid the accidents.

It is necessary to comply with all the conditions specified in **Regulation 35 to enhance the electrical safety** when the electricity is supplied, transformed, converted, inverted or used or continued to be supplied, transformed, converted, inverted or used.

The supply of electricity shall not be commenced or recommenced in **multi-storied buildings** without the approval in writing of the Electrical Inspector as provided in **Regulation-36**. The supplier or owner of the installation shall provide at the point of commencement of supply; a suitable isolating device with cut-out or breaker to operate on all phases except neutral in the 3-phase, 4-wire circuit and fixed in a conspicuous position at not more than 1.70 meters above the ground so as to completely isolate the supply to the building in case of emergency. The owner or occupier of a multi-storied building shall ensure that electrical installations and works inside the building are carried out and maintained in such a manner as to prevent danger due to shock and fire hazards, and the installation is carried out in accordance with the relevant codes of practice. No other service pipes and cables shall be taken along the ducts provided for laying power cables and all ducts provided for power cables and other services shall be provided with fire barrier at each floor crossing.

Measures pursuant to CEA Safety Regulations (VII/VIII)

The supply of electricity to every electrical installation other than voltage not exceeding 250 V below 2 kW and those installations of voltage not exceeding 250 V which do not attract provisions of section 54 of the Act, **shall be controlled by an earth leakage protective device** so as to disconnect the supply instantly on the occurrence of earth fault or leakage of current as per **Regulation 42**.

All the **electrical installations** of above notified voltage **are required to be inspected by the Electrical Inspector before commencement of supply** or recommencement after shutdown for six months and above as per **Regulations 43** to ensure electrical safety.

The owner shall ensure that isolators and the controlling circuit breakers shall be **interlocked** so that the isolators cannot be operated unless the corresponding breaker is in open position. Necessary interlocks shall be provided as per **Regulation 45**.

Clearances from buildings of lines of voltage and service lines **not exceeding 650 volts** shall be maintained as per **Regulation 60**.

Clearances from buildings of lines of voltage exceeding 650 volts shall be maintained as per **Regulation 61**.

To ensure that the clearances specified in Regulation 60 and 61 are kept maintained due to subsequent developments nearby, the procedure to be followed is specified in Regulation 63 for preventing development leading to probable electrical mishaps or accident due to unsafe clearances.

Measures pursuant to CEA Safety Regulations (VIII/VIII)

Rods, pipes or similar materials shall be taken below, or in the vicinity of, any bare overhead conductors or lines if these contravene the provisions of regulations 60 and 61, such materials" are **transported under the direct supervision of a person designated** in this behalf by the owner of such overhead conductors or lines. No rods, pipes or other similar materials shall be brought within the flash over distance of bare live conductors or lines, as per **Regulation 64**.

Where an overhead line crosses or is in proximity to any telecommunication line, the owner of either the overhead line or the **telecommunication line**, whoever lays his line later, shall arrange to provide for protective devices or **guarding arrangement** as per **Regulation 69**.

No service-line of tapping shall be taken off an overhead line except at a point of support and the **number of tapping per conductor shall not be more than four** in case of connections at **voltage not exceeding 650 V** as per **Regulation 71**.

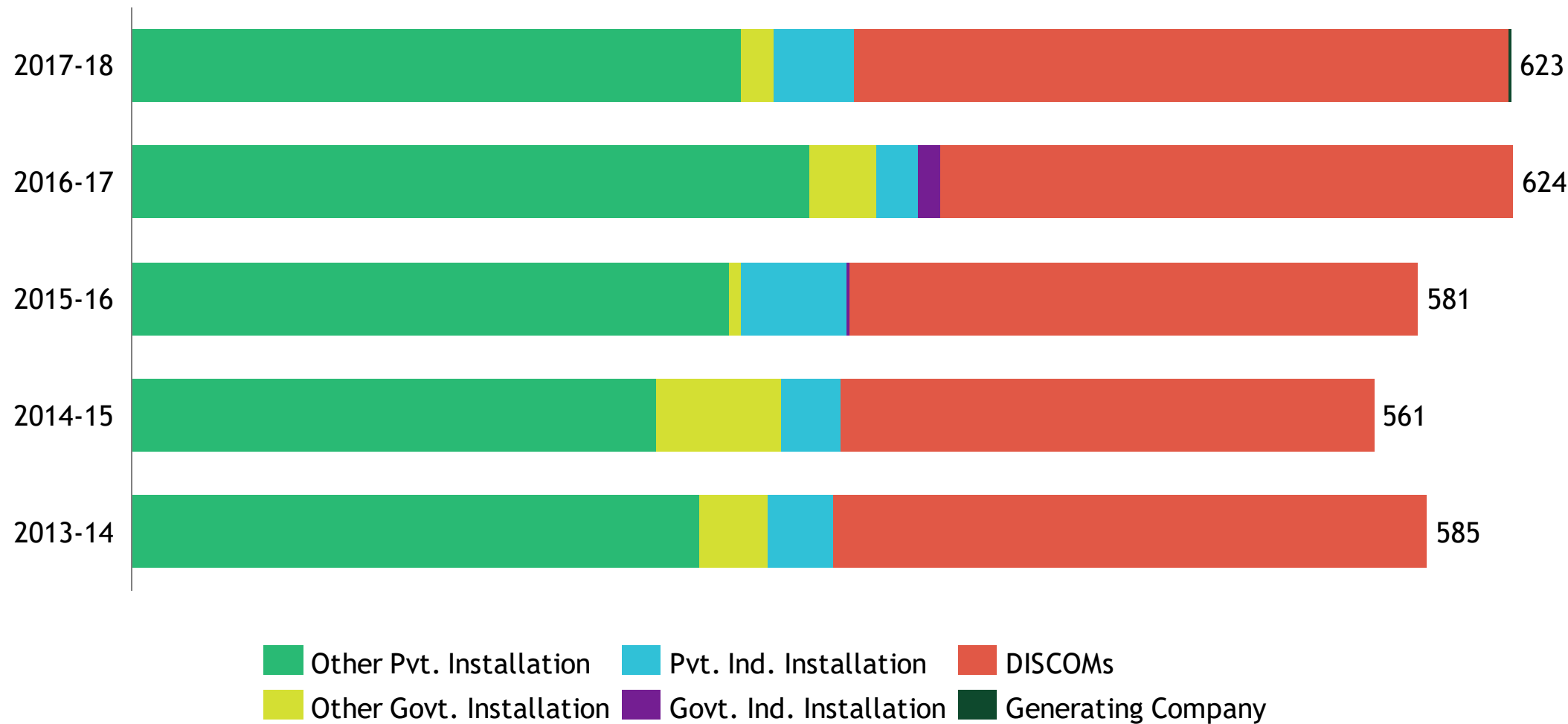
The owner of every overhead line, sub-station or generating station which is exposed to lightning shall adopt efficient **means for diverting to earth any electrical surges due to lightning** which may result into injuries as per **Regulation 74**.

Thank You!

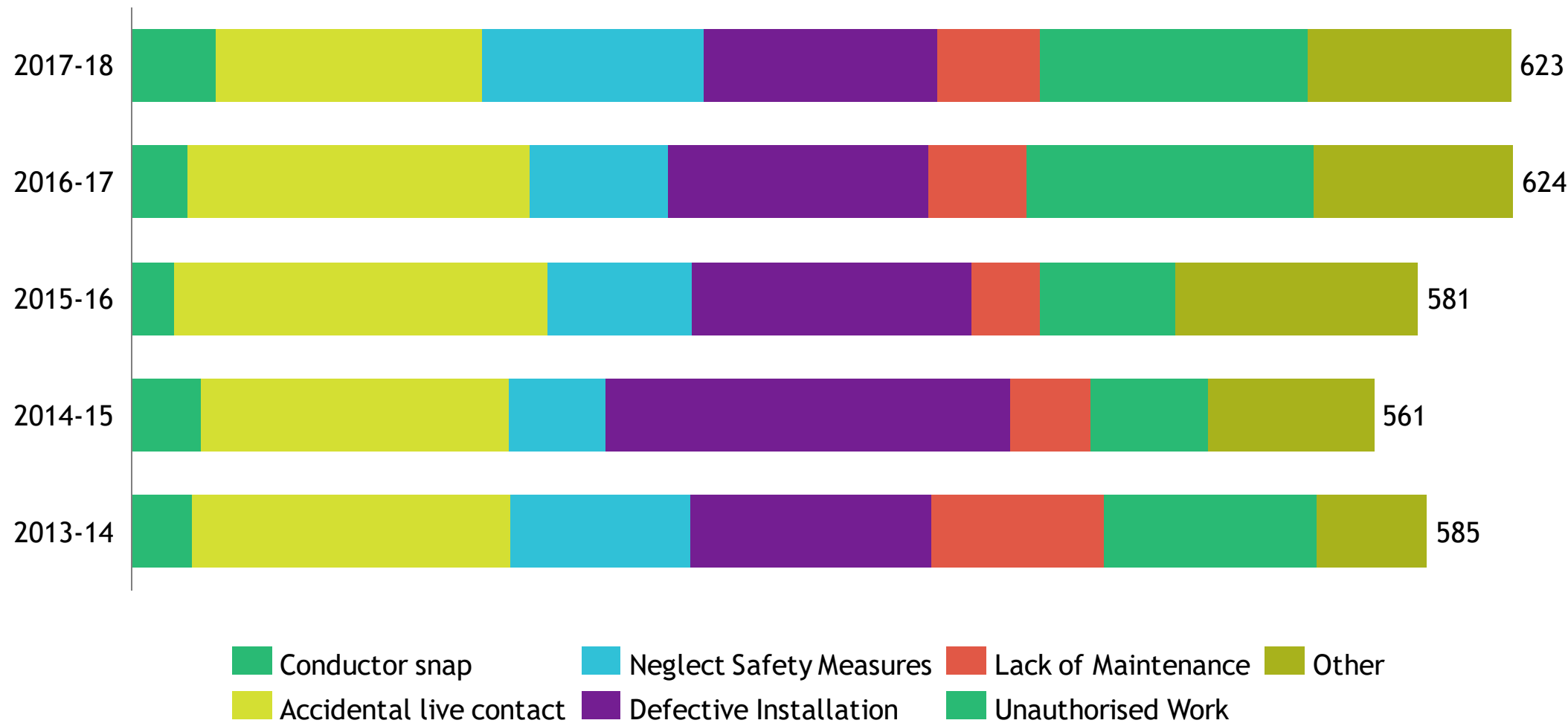


Backup Slides

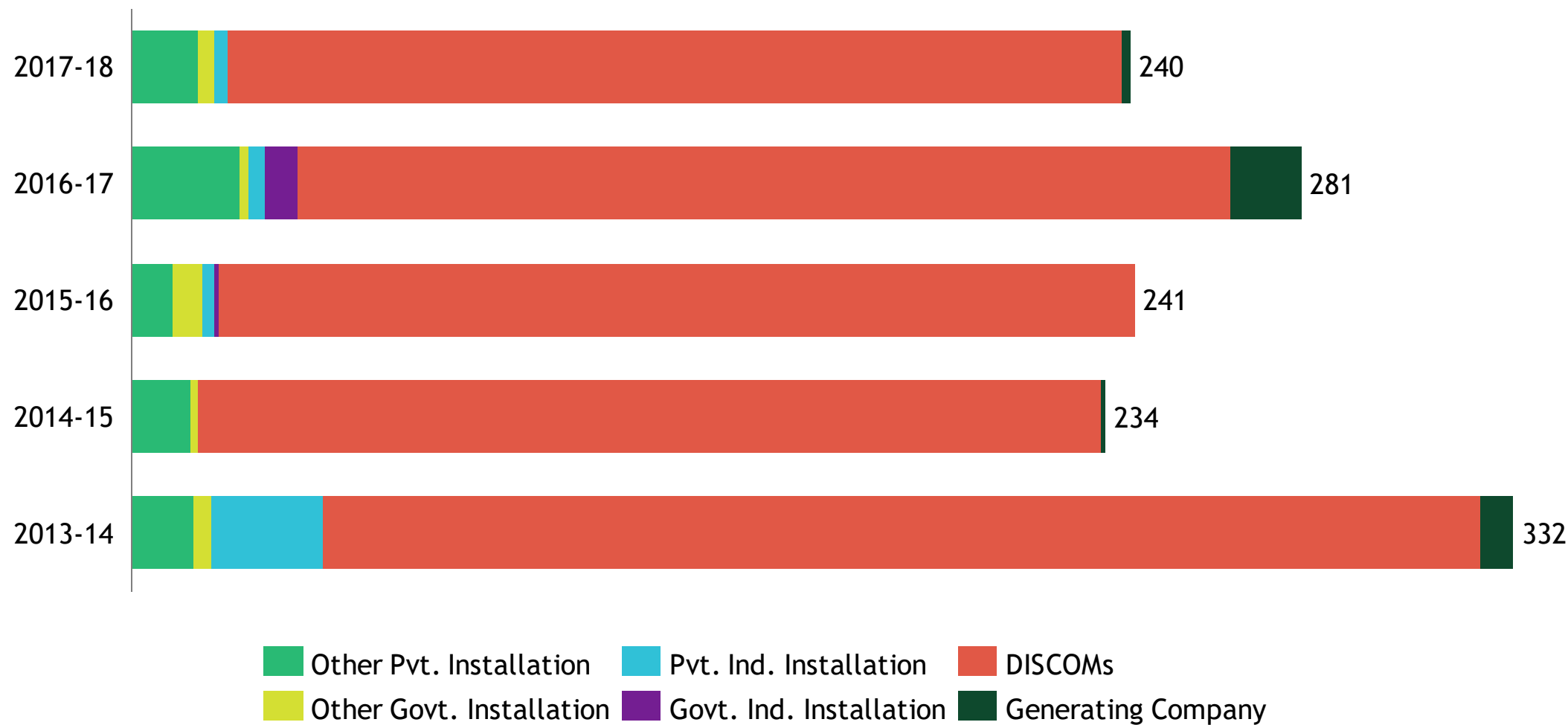
DISCOMs, Other Pvt. Installations are primary sources of Human Fatal Accidents



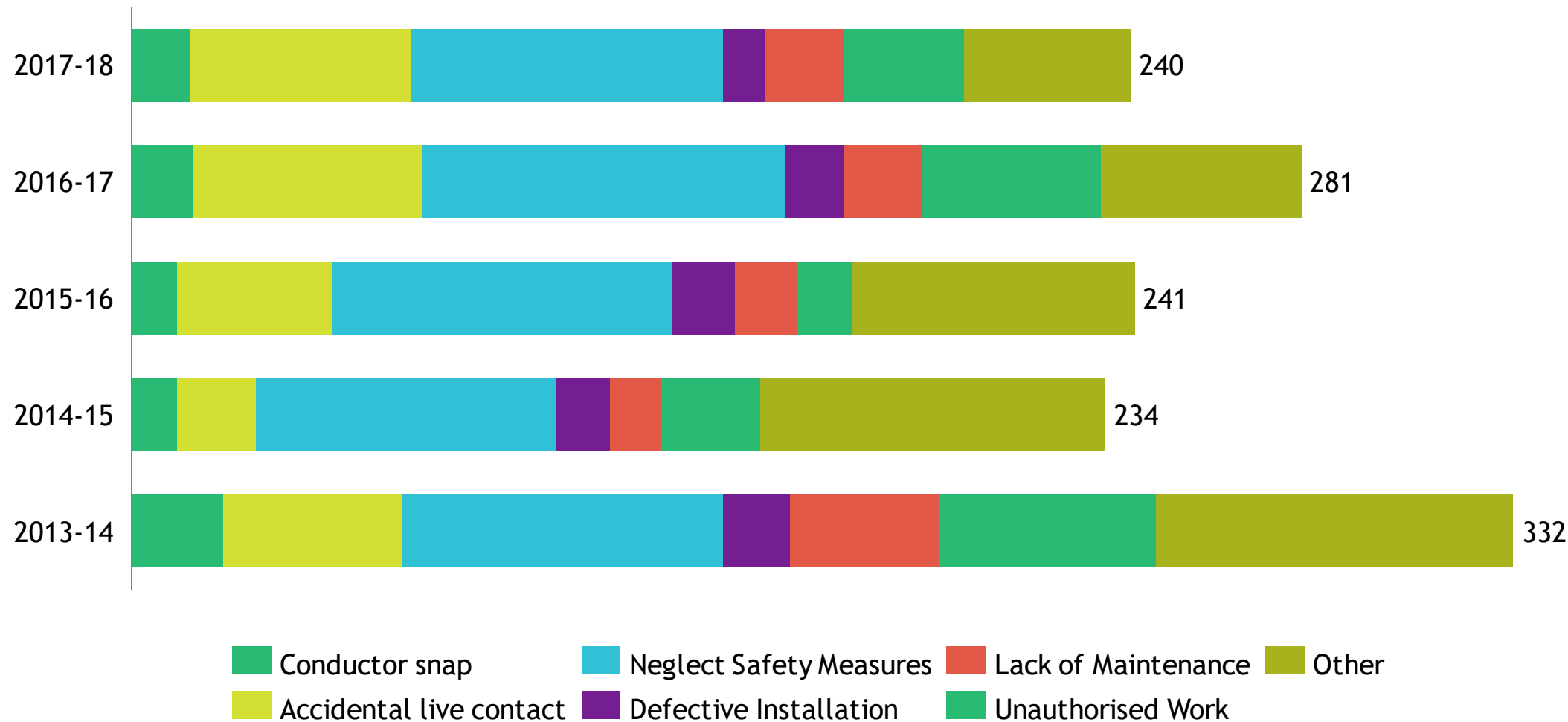
Most Human Fatal Accidents caused by accidental live contact, defective installations and unauthorized work



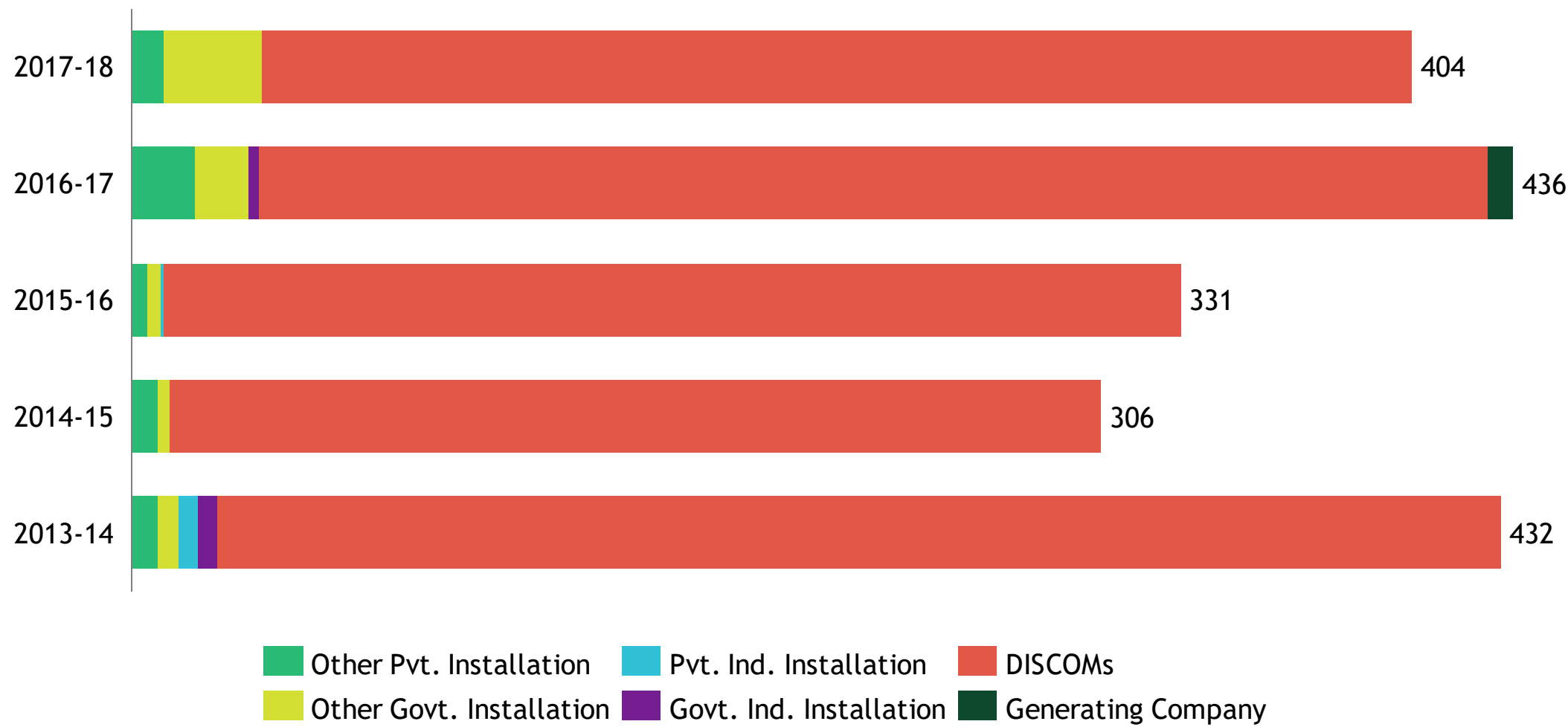
DISCOMs are primary sources of Human Non-Fatal Accidents



Most Human Non-Fatal Accidents caused by neglect of safety measures



DISCOMs are primary sources of Animal Fatal Accidents



Most Animal Fatal Accidents caused by conductor snap and lack of maintenance

