



## पावर ट्रांसमिशन कारपोरेशन ऑफ उत्तराखण्ड लि०

(उत्तराखण्ड सरकार का उपक्रम)

निदेशक (परिचालन) कार्यालय

विद्युत भवन, नजदीक-आई०एस०बी०टी० क्रॉसिंग, सहारनपुर रोड़, माजरा, देहरादून-248002

दूरभाष नं० 0135-2644495 फैक्स नं० 0135-2644495 email:- director.op@ptcul.org

No. 3613 /Dir(Op.)/PTCUL/UERC

Date: 15/12/2021

To,

The Secretary  
Uttarakhand Electricity Regulatory Commission  
"Vidyut Niyamak Bhawan",  
Near I.S.B.T., P.O. Majra  
Dehradun (Uttarakhand)

**Subject:- Regarding filing of Petition before Hon'ble UERC for approval of Business Plan for 3 years of the Control Period from FY 2022-23 to FY 2024-25 of PTCUL.**

Sir,

In reference to above mentioned subject, kindly find enclosed herewith the Petition for approval of Business Plan for 3 years of the Control Period from FY 2022-23 to FY 2024-25 of PTCUL, in accordance with the UERC (Conduct of Business) Regulations, 2014, Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2021 alongwith Petition fee to the Hon'ble Commission through RTGS amounting to Rs.1,00,000.00 (Rs. One Lacs Only) as per details provided in Form-I in accordance with Uttarakhand Electricity Regulatory Commission (Fees and Fines) (Second Amendment) Regulations, 2018.

It is humbly requested to the Hon'ble Commission to may kindly consider and accord approval of Business Plan for 3 years of the Control Period from FY 2022-23 to FY 2024-25 of PTCUL. The delay in filing the aforesaid Petition was condoned before the Hon'ble Commission vide Letter No. 484/CE(C&R)/PTCUL/ dated 29.11.2021 and Hon'ble UERC allowed time extension till 15.12.2021 vide Letter No. UERC/7/CL/507/2021-22/862 dated 01.12.2021 of the Hon'ble UERC.

Submitted for kind consideration of the Hon'ble Commission.

Thanking You,

Yours faithfully,

*Sanjaya*  
(Sanjaya Mittal) 15-12-2021  
Director (Operations)

Encls: PTCUL, Dehradun

1. Petition fee amounting to Rs. 1,00,000.00 /-(Rs. One Lac Only) through RTGS as per details shown in Form-I.
2. Tariff Petition (1No. original+6 Nos. copies)
3. Soft copy of Model & Petition (CD)

Cc:- Managing Director, PTCUL, Dehradun for kind information.

**BEFORE THE UTTARAKHAND ELECTRICITY REGULATORY COMMISSION,  
DEHRADUN**

IN THE MATTER OF: Filing of Business Plan for PTCUL for the MYT Control Period FY 2022-23 to  
FY 2024-25

AND

IN THE MATTER OF: Power Transmission Corporation of Uttarakhand Ltd.

“Vidyut Bhawan”, Near ISBT Crossing, Saharanpur Road,  
Majra, Dehradun 248002

.....Petitioner

1. **Specific Legal provisions under which the petition is being filed:** This Business Plan is being filed under Regulation 43 of UERC (Conduct of Business) Regulations, 2014 and Regulation 8 of the Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2021
2. **Limitation:** The Petitioner submits that the present petition is within the time period specified under UERC (Conduct of Business) Regulations, 2014 and Regulation 8 of the Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2021
3. **Facts of the case:** Petitioner vide Letter No. 484/CE(C&R)/PTCUL/ dated 29.11.2021 requested Hon'ble Commission to kindly accord time extension for filling the Business Plan and Multi Year Tariff Petition of both PTCUL and SLDC for at least 20 days.

The Hon'ble Commission vide its letter no. UERC/7/CL/507/2021-22/862 dated 01.12.2021 grants final opportunity till 15<sup>th</sup> December, 2021 to complete the tariff filings and also directed PTCUL to submit the final/provisional annual statement of accounts for FY 2020-21 alongwith monthly trial balances latest by 10.12.2021 for perusal of the Commission.

Further, as directed by the Hon'ble Commission, PTCUL vide letter no. 514/CE(C&R)/PTCUL/ dated 10.12.2021 submitted the Provisional & unaudited balance sheet for FY 2021-21 of PTCUL, Trial Balance for FY 2020-21 of PTCUL, MTB for FY 2020-21 of SLDC & SCADA and MTB for FY 2020-21 of O&M Division 400 kV Srinagar (UITP) for kind consideration of the Hon'ble Commission.

The Petitioner has requested the Hon'ble Commission to kindly approve the Business Plan for PTCUL for the fourth Control Period FY 2022-23 to FY 2024-25

4. **Cause of action:** The Petitioner has submitted its Business Plan for the fourth Control Period FY 2022-23 to FY 2024-25
5. **Details of Remedy Exhausted:** The petitioner declares that he has availed all the remedies available to him under the relevant provisions of applicable law and rules/regulations framed there under.
6. **Matter not previously filed or pending with any other court:** The Petitioner further declares that he has not previously filed any petition or writ petition or suit regarding the matter in respect of which this petition has been made, before the Hon'ble Commission, or any court or any other authority, nor any such writ petition or suit is pending before any of them.

7. **Relief sought:**

- (1) The petitioner prays for the approval of Business Plan of PTCUL for the fourth Control Period FY 2022-23 to FY 2024-25 along with all of its components.

*Key*  
**Director (Operations)**  
PTCUL

*SE(C&R)*

*Ad*

*h*

*a*

(2) Condone the delay in filing of the Business Plan Petition;

**8. Interim Order, if any, prayed for:**

No prayer for Interim Order has been made.

**9. Details of Index :**

S. No.	Particulars	Annexure	Page No.	
			From	To
1.	Form-I	-	A	B
2.	Form-II (Affidavit verifying the Petition)	-	C	E
3.	Certified True copy of the BoD Resolution	-	1	1
4.	Copy of Form-I with details of RTGS	-	2	2
5.	Business Plan Petition	-	3	48

**10. Particulars of fee remitted:**

Application fee amounting to Rs. 1,00,000.00 (Rs. One Lakh Only) is being submitted through RTGS. The Form-I with details of RTGS is annexed with this Tariff Petition.

**11. List of enclosures:**

S. No.	Particulars	Annexure	Page No.	
			From	To
1.	Form-I	-	A	B
2.	Form-II (Affidavit verifying the Petition)	-	C	E
3.	Certified True copy of the BoD Resolution	-	1	1
4.	Copy of Form-I with details of RTGS	-	2	2
5.	Business Plan Petition	-	3	48

For and on behalf of  
Power Transmission Corporation of Uttarakhand Limited

*Sanjaya*  
(Sanjaya Mittal) 15.12.2021  
Director (Operations)

Director (Operations)  
PTCUL, Dehradun

I, Sanjaya Mittal, S/o Shri Surendra Kumar Mittal aged about 59 years, working as Director (Operations), Power Transmission Corporation of Uttarakhand Ltd., "Vidyut Bhawan", Near ISBT Crossing, Saharanpur Road, Majra, Dehradun-248002, do verify that the contents of the Para 1 to 8 are true to my personal knowledge and are derived from official records, which are true from record, and para 1 to 8 are believed to be true on legal advice and that I have not suppressed any material fact.

*Sanjaya*  
(Sanjaya Mittal) 15.12.2021  
Director (Operations)

Director (Operations)  
PTCUL, Dehradun

*Sanjaya*  
-B-



सत्यमेव जयते

# INDIA NON JUDICIAL Government of Uttarakhand

## e-Stamp

Certificate No. : IN-UK18480354580898T  
Certificate Issued Date : 15-Mar-2021 01:14 PM  
Account Reference : NONACC (SV)/ uk1204904/ DEHRADUN/ UK-DH  
Unique Doc. Reference : SUBIN-UKUK120490440579078850869T  
Purchased by : PTCUL  
Description of Document : Article Miscellaneous  
Property Description : NA  
Consideration Price (Rs.) : 0  
(Zero)  
First Party : PTCUL  
Second Party : NA  
Stamp Duty Paid By : PTCUL  
Stamp Duty Amount(Rs.) : 10  
(Ten only)



Stamp Vendor  
Court Compound, Dehradun



.....Please write or type below this line.....

*Lanjay*  
15.12.2021  
Director (Operations)  
PTCUL, Dehradun

### Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
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3. In case of any discrepancy please inform the Competent Authority.

BEFORE UTTARAKHAND ELECTRICITY REGULATORY COMMISSION, DEHRADUN

FILE NO.

CASE NO.

IN THE MATTER OF:

Regarding filing of Petition before Hon'ble UERC for approval of Business Plan for 3 years of the Control Period from FY 2022-23 to FY 2024-25 of PTCUL.

IN THE MATTER OF:

Power Transmission Corporation of Uttarakhand Ltd.  
"Vidyut Bhawan", Near I.S.B.T. Crossing, Saharanpur Road,  
Majra, Dehradun, 248002.

..... Petitioner

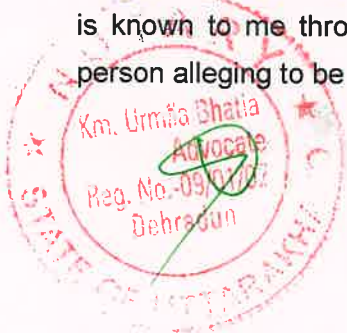
**Affidavit**

I, Sanjaya Mittal, S/o Shri Surendra Kumar Mittal, aged about 59, working as Director (Operations), Power Transmission Corporation of Uttarakhand Limited, the deponent named above do hereby solemnly affirm and state on oath as under: -

1. That the deponent is the Director (Operations) of Power Transmission Corporation of Uttarakhand, who is authorized as per the resolution of the company (In case the Petitioner is a Company) dated 14.12.2021 and is acquainted with the facts deposed to below.
2. I, the deponent named above do hereby verify that the contents of the paragraph Nos. 1 of the affidavit and the statements made and data presented in the accompanying petition are true to my personal knowledge and are based on present information/ records of the Company and are based on estimation arising from present data/ records of the company which I believe to be true and verify that no part of this affidavit is false and nothing material has been concealed.

*Sanjaya*  
(Deponent) 15.12.2021  
Director (Operations)  
PTCUL, Dehradun

I, *Urmila Bhatia* Advocate, do hereby declare that the person making this affidavit is known to me through the perusal of records and I am satisfied that he is the same person alleging to be deponent himself.



*Urmila Bhatia*  
(.....)  
Advocate


Solemnly affirmed before me on this 15 day of 12 2021 by the deponent who has been identified by the aforesaid Advocate.

I have satisfied myself by examining the deponent that he understood the contents of

— D —

been identified by the aforesaid Advocate.

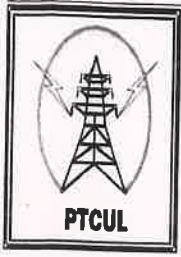
I have satisfied myself by examining the deponent that he understood the contents of the affidavit which has been read over and explained to him. He has also been explained about section 193 of Indian Penal Code that whoever intentionally gives false evidence in any of the proceedings of the Commission or fabricates evidence for purpose of being used in any of the proceedings shall be liable for punishment as per law.

  
(Notary Public)



This affidavit is sworn before me by  
Shri. Sandeep Mittal  
who is identified Shri. Urmila Bhatia  
at Dehradun on 15/11/2022

K.M. URMILA BHATIA  
Advocate & NOTARY, Dehradun



# पावर ट्रांसमिशन कारपोरेशन ऑफ उत्तराखण्ड लि०

(उत्तराखण्ड सरकार का उपक्रम)

महाप्रबन्धक (विधि एव कम्पनी सचिव) कार्यालय

विद्युत भवन, नजदीक-आई०एस०बी०टी० क्रॉसिंग, सहारनपुर रोड, माजरा, देहरादून-248002  
दूरभाष नं० 0135-2642796 email:- gmlcs@ptcul.org

No: 497 /GM (L&CS)/PTCUL/

Dated 14.12.2021

**CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE 77<sup>th</sup> MEETING OF THE BOARD OF DIRECTORS OF POWER TRANSMISSION CORPORATION OF UTTARAKHAND LIMITED HELD ON 13<sup>th</sup> DECEMBER, 2021 AT 3:30 PM AT BOARD ROOM, FIRST FLOOR, PTCUL, VIDYUT BHAWAN, MAJRA, OPP. ISBT CROSSING, DEHRADUN THROUGH VIDEO CONFERENCING.**

**To consider the Business Plan and Multi Year Tariff for the Control Period FY 2022-2023 to FY 2024-25 alongwith Truing up for FY 2020-21 & Annual Performance Review (APR) for FY 2021-22 of PTCUL.**

**"RESOLVED THAT** the Board be and hereby approves the Business Plan & MYT for 3 years of the Control Period from FY 2022-23 to FY 2024-25 alongwith Truing-up for FY 2020-21 and Annual Performance Review for FY 2021-22 of PTCUL and Authorize Managing Director/Any Director, PTCUL to sign the Application/Petition of Business Plan & MYT for 3 years of the Control Period from FY 2022-23 to FY 2024-25 alongwith Truing-up for FY 2020-21 and Annual Performance Review for FY 2021-22 of PTCUL for filing before the Hon'ble UERC."

**"RESOLVED FURTHER THAT** the Managing Director /Any Director be and hereby authorized to do all such acts, deeds and things as he may deem fit, proper and expedient to give effect to the above resolution and that GM (Legal & CS) is authorized to issue a Certified true copy of this resolution for the purpose of filing before the Hon'ble UERC pending finalization of the minutes of this meeting."

**Certified to be true  
For Power Transmission Corporation of Uttarakhand Limited**

**(Praveen Tandon)  
GM (Legal & CS)**

**Date:**


**Place: Dehradun**


*Lanjay*

15.12.2021

**Director (Operations)  
PTCUL Dehradun**

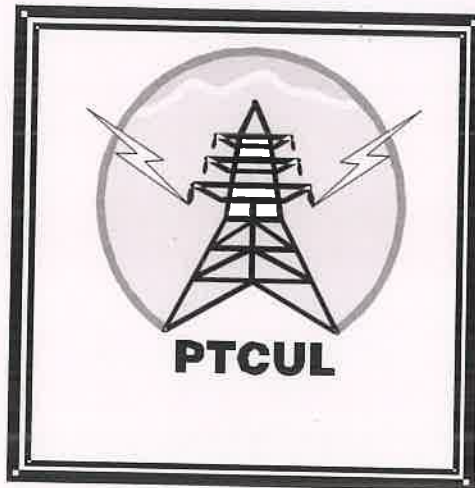
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Particulars		
1. Name of the Petitioner/Applicant		Power Transmission Corporation of Uttarakhand Limited.
2. Address of the Petitioner/Applicant		"Vidyut Bhawan", Near ISBT Crossing, Saharanpur Road, Majra, Dehradun-248002
3. Subject Matter		Payment of fee to UERC for filing of Business Plan for 3 years of control period from FY 2022-23 to FY 2024-25 before the Hon'ble UERC as per part D(1) (b) of clause 3 of UERC (fees & fines) (IIInd Amendment) regulation, 2018
4. Details of fee remitted		
(a)	UTR No./Transfer No.	M-1256891
(b)	Date of remittance	14-12-2021
(c)	Amount remitted	1,00,000/-
		 Assistant Account Officer Signature of authorized signatory with date Dehradun

  
15.12.2021

Director (Operations)  
PTCUL, Dehradun

POWER TRANSMISSION CORPORATION OF  
UTTARAKHAND LIMITED



PETITION  
FOR  
APPROVAL OF  
BUSINESS PLAN FOR CONTROL PERIOD FROM FY 2022-23 to FY 2024-25

SUBMITTED TO  
UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

15.12.2021

*Lanjay*

Director (Operations)  
PTCUL, Dehradun

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Director (Operations)  
PTCUL, Dehradun



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*Langar*

Director (Operations)  
PTCUL, Dehradun

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# 1. Executive Summary

## 1.1. Introduction

In exercise of powers conferred under sub-section 4 of Section 131 of the Electricity Act 2003, the Government of Uttarakhand through transfer scheme dated May 31, 2004 vested all the interests, rights and liabilities related to Power Transmission and Load Despatch of "Uttaranchal Power Corporation Limited" into itself and thereafter, re-vested them into a new company, the "Power Transmission Corporation of Uttaranchal Limited", now "Power Transmission Corporation of Uttarakhand Limited" (hereinafter referred to as 'PTCUL') after change of name of the State. The State Government, further vide another notification dated May 31, 2004 declared the Power Transmission Corporation of Uttarakhand as the State Transmission Utility (STU)

## 1.2. Objective

The key objectives of this business plan are:

- **Providing a tool for strategic planning:** The primary objective of the Business Plan is to analyse and anticipate the future requirements in advance and strategically plan for the capital investments, related means of financing and various associated costs and document them which would serve as an effective tool for monitoring and execution of future works. It is key to ensure that the growth in transmission network infrastructure is commensurate with the energy demand in the State
- **Lead to better Operational Efficiency:** The Business Plan is to contain the proposed Transmission Loss reduction trajectory for the Control Period along with the measures taken towards achieving the same, planning such a trajectory in advance sets targets that are to be achieved and makes planning more result-oriented.
- **Regulatory Compliance:** Meeting the regulatory compliance of submission of a Business Plan as mandated by the UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2021.

## 1.3. Operational Performance

Operational parameters and performance provide a basis for determining the financial viability and strategies for the company. Some of the operational performance parameters have been analysed in this section.

The availability factor of the transmission network for the year 2020-21 has been greater than 99%. PTCUL's transmission network availability level has been one of the most efficient among utilities in the country. The availability levels have steadily increased over the previous few years. PTCUL was awarded the prestigious "Gold Shield" for the year 2009-10 in the category of "Transmission System Availability" by Ministry of Power, Govt. of India.

PTCUL is one of the most efficient transmission utilities in the country. This fact has been reaffirmed time and again by the low level of transmission losses. The loss level over the past few years has always been below 2%.

## 1.4. Operational Plan

PTCUL has prepared the Business/Operational Plan taking into consideration all the factors, which would affect the operations of the company. It is submitted that the Business plan being a dynamic document may need to be updated at periodic intervals taking into account the changes in the internal and external environment and these changes would be intimated to the State Commission from time to time. The operational plans include the estimates of each capital expenditure scheme of PTCUL from FY 2022-23 to FY 2024-25.

## 1.5. Proposed Capitalization for FY 2022-23 to 2024-25

PTCUL is developing network for strengthening of Transmission System (132kV& above) to meet out the load growth requirement of Uttarakhand distribution system & also for evacuation of power from various generators i.e. Hydro as well as gas based, which are coming up in Uttarakhand.

The transmission schemes planned in the state would increase the present transformation capacity by 8674.5 MVA to 9769.5 MVA by the end of 2024-25.

The Capital investment plan proposes to increase the network length from 3244.068 Ckt.Km in 2021-22 to 3538.184 Ckt.Km in 2024-25 over the MYT Control Period.

The following table summarizes the capitalization for the Control Period 2022-23 to 2024-25:

Table 1: Capitalization in the MYT Control Period (INR Crore)

Particular	2020-21(Actual)	2021-22 (Estimate)	2022-23 (Proposed)	2023-24 (Proposed)	2024-25 (Proposed)
Capitalization	112.08	161.77	262.52	315.61	335.24

## 2. Introduction

### 2.1. Background

In accordance with the provisions of the Uttar Pradesh Reorganization Act 2000 (Act 29 of 2000), enacted by the Parliament of India on August 25, 2000, the State of Uttarakhand came into existence on November 9, 2000. Section 63(4) of the above Reorganization Act allowed the Government of Uttaranchal (hereinafter referred to as "GoU" or "State Government") to constitute a State Power Corporation at any time after the creation of the State. GoU, accordingly, established the Uttaranchal Power Corporation Limited (UPCL) under the Companies Act, 1956, on February 12, 2001 and entrusted it with the business of transmission and distribution in the State. Subsequently, from April 1, 2001, all works pertaining to the transmission, distribution and retail supply of electricity in the area of Uttaranchal were transferred from Uttar Pradesh Power Corporation Limited (UPPCL) to UPCL, in accordance with the Memorandum of Understanding dated March 13, 2001, signed between the Government of Uttaranchal and Government of Uttar Pradesh.

Electricity Act, 2003 enacted by the Parliament of India on June 10, 2003, mandated separate licenses for transmission and distribution activities. In exercise of powers conferred under sub-section 4 of Section 131 of the Electricity Act, 2003, therefore, the Government of Uttarakhand through transfer scheme dated May 31, 2004 first vested all the interests, rights and liabilities related to Power Transmission and Load Dispatch of "Uttaranchal Power Corporation Limited" into itself and thereafter, re-vested them into a new company, i.e. "Power Transmission Corporation of Uttaranchal Limited", now "Power Transmission Corporation of Uttarakhand Limited" (hereinafter referred to as 'PTCUL') after change of name of the State. The State Government, further vide another notification dated May 31, 2004 declared Power Transmission Corporation of Uttarakhand as the State Transmission Utility (STU) responsible for undertaking, amongst others, the following main functions:

- a) To undertake transmission of electricity through intra-state transmission system
- b) To discharge all functions of planning and co-ordination relating to intra-state transmission system
- c) To ensure development of an efficient, co-ordinated and economical system of intra-state transmission lines
- d) To provide non-discriminatory open access.

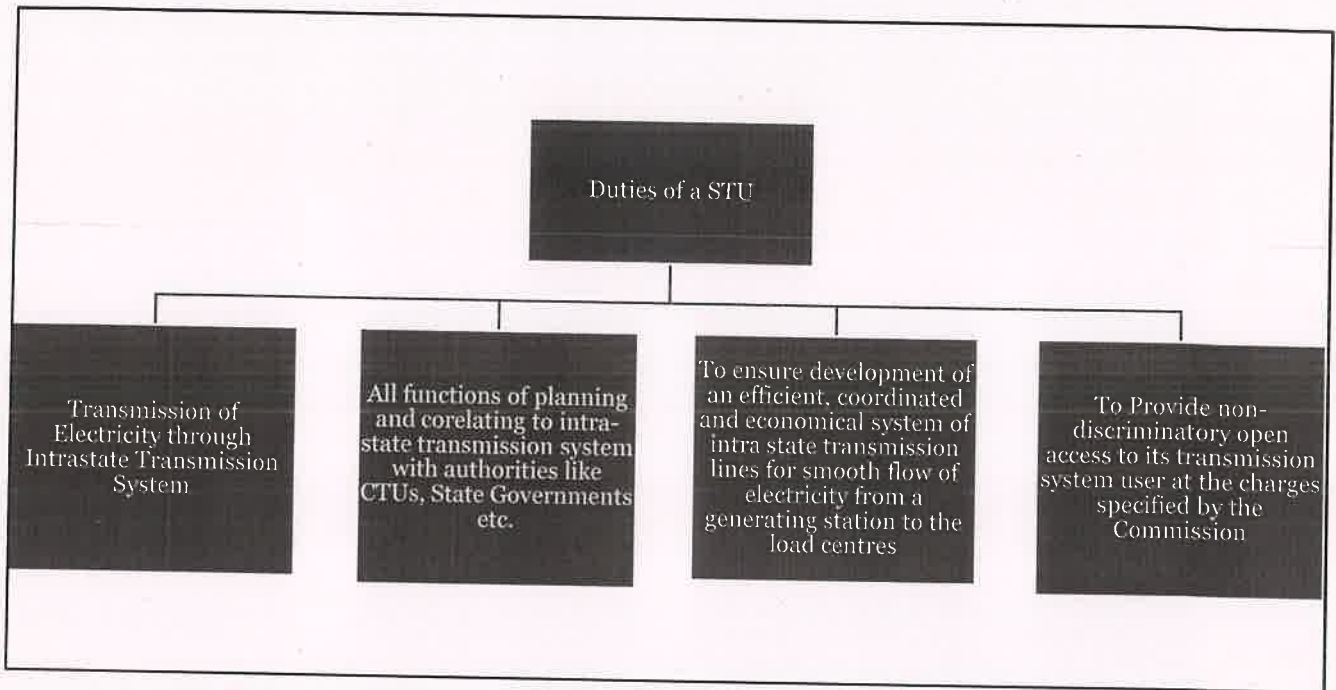
A new company in the State was thus, created to look after the functions of Intra-State Transmission and Load Dispatch w.e.f. May 31, 2004. In view of re-structured function of UPCL and creation of a separate company for looking after the transmission related works, the Uttarakhand Electricity Regulatory Commission (hereinafter referred to as the 'Hon'ble Commission' or the 'UERC' or the 'State Commission' or the 'Commission') amended the earlier "Transmission and Bulk Supply License" granted to UPCL and Transmission License was vested on PTCUL for carrying out transmission related works in the state vide Commission's order dated June 9, 2004.

Transmission network serves as an important link between the Generation and Distribution segments of electricity supply business. The issues and challenges pertaining to the transmission business are mostly in terms of keeping up with the growth needs of the other two segments. Considering that the peak demand is projected to increase to 2882 MW in FY 2024-25, the need to meet the demand and energy requirement by arranging supply from internal and external generation sources has acquired heightened importance and the transmission system has to be strengthened adequately and timely for maintaining grid stability and supply quality.

### 2.2. Duties of a STU

The main duties of a State Transmission Utility as provided in the sub-section (1) of Section 39 of the Electricity Act, 2003 are as below:

Figure 1: Duties of a STU



### 2.3. Corporate Vision, Aims and Objectives of PTCUL

#### Corporate Vision

PTCUL endeavors to be among the best of Power Transmission utility in India in Operating Efficiency, System Reliability Standards and Commercially Viable Operations

#### Corporate Aims

- To provide Reliable & Efficient Transmission Network throughout Uttarakhand at competitive cost.
- Adopt best practices of Project and Operations & Maintenance Management leading to System Efficiency, Reliability and Commercial Viability.
- Create a work environment which motivates & enhances Employee Performance, Value Systems and Reward Contribution.
- Develop and train employees towards upgrading their skills at work, enrich work content to made it more substantive and responsive to Company Goals.
- Imbibe transparency and accountability in all operational areas, be it Procurement, Construction, Operations and Maintenance.
- Expand horizons of activities in to contracting and others by leveraging the Company's available Technical and Project Expertise.
- Build, in essence PTCUL to a Company geared to high standards of Management Capabilities and Professional Performance.

#### Corporate Objectives

The main objectives of PTCUL are listed below:

- To acquire, establish, construct, take over, erect, lay, operate, run, manage, hire, lease, buy, sell, maintain, enlarge, alter, renovate, modernize, work and use electrical transmission lines and/or network through extra high voltage, medium voltage and low voltage lines and associated sub-stations, including cables, wire, accumulators, plants, motors meters, apparatus, computers and material

connected with transmission and wheeling of electrical energy along with ancillary services, telecommunication and telemetering equipment in the State of Uttaranchal and elsewhere. To undertake, for and on behalf of other erection, operation, maintenance, management of extra-high voltage, high voltage, medium voltage and low voltage, lines and associated sub-stations, equipment, apparatus, cable and wires.

- To co-ordinate the facilities for the inter State, regional and inter regional generation and efficient, economical and integrated transmission and supply of electricity. To levy and charge such fees and Wheeling charges from the generating, distribution Companies, licensees, bulk consumers as may be specified by appropriate Regulatory Commission.
- To facilitate and promote transmission, wheeling and inter connection arrangements within the State of Uttaranchal for the transmission and supply of electricity by economical and efficient utilization of the electricity.
- Till a separate SLDC is established as per law, for the time being, to establish, acquire, construct, take over the State Load Despatch Centre and run, manage supervise, operate the State Load Despatch Centre as the apex body to ensure integrated operation of the Power System in the State of Uttaranchal and optimum scheduling and dispatch of electricity within the State of Uttaranchal, monitor grid operation and levy and collect such fees and charges from the generating companies and licensees engaged in Intra-State Transmission of electricity as may be specified by appropriate Regulatory Commission. To schedule and dispatch generation of all units connected to the State power system including the centrally owned generating stations, in respect of the share assigned to the State and electricity purchased from other State undertakings.
- To study, investigate, collect information and data, review operations, plan research, design, prepare project reports, diagnose operational difficulties and weakness, and advise on the remedial measures to improve and modernize. To tender and/or finalize contract for transmission and wheeling of power from generating stations and other sources.

## 2.4. Core Activities

The Core activities of PTCUL as a State Transmission Utility (STU) can broadly be classified into Projects and Operations & Maintenance (O&M). The table below lists the major roles discharged under both divisions:

Table 2: Main Activities of PTCUL

Projects	Operations and Maintenance (O&M)
Planning execution, control of engineering design, procurement and construction of Transmission lines of varying capacity and length in Circuit Kilometres	Operational activities of Transmission lines and Substations as per the CEA Grid Standards.
Planning execution, control of engineering design, procurement and construction of Substations of varying capacity in MVA	Maintenance and augmentation activities of Lines and Substations to ensure their reliable and efficient functioning.

## 2.5. Power Map of Uttarakhand

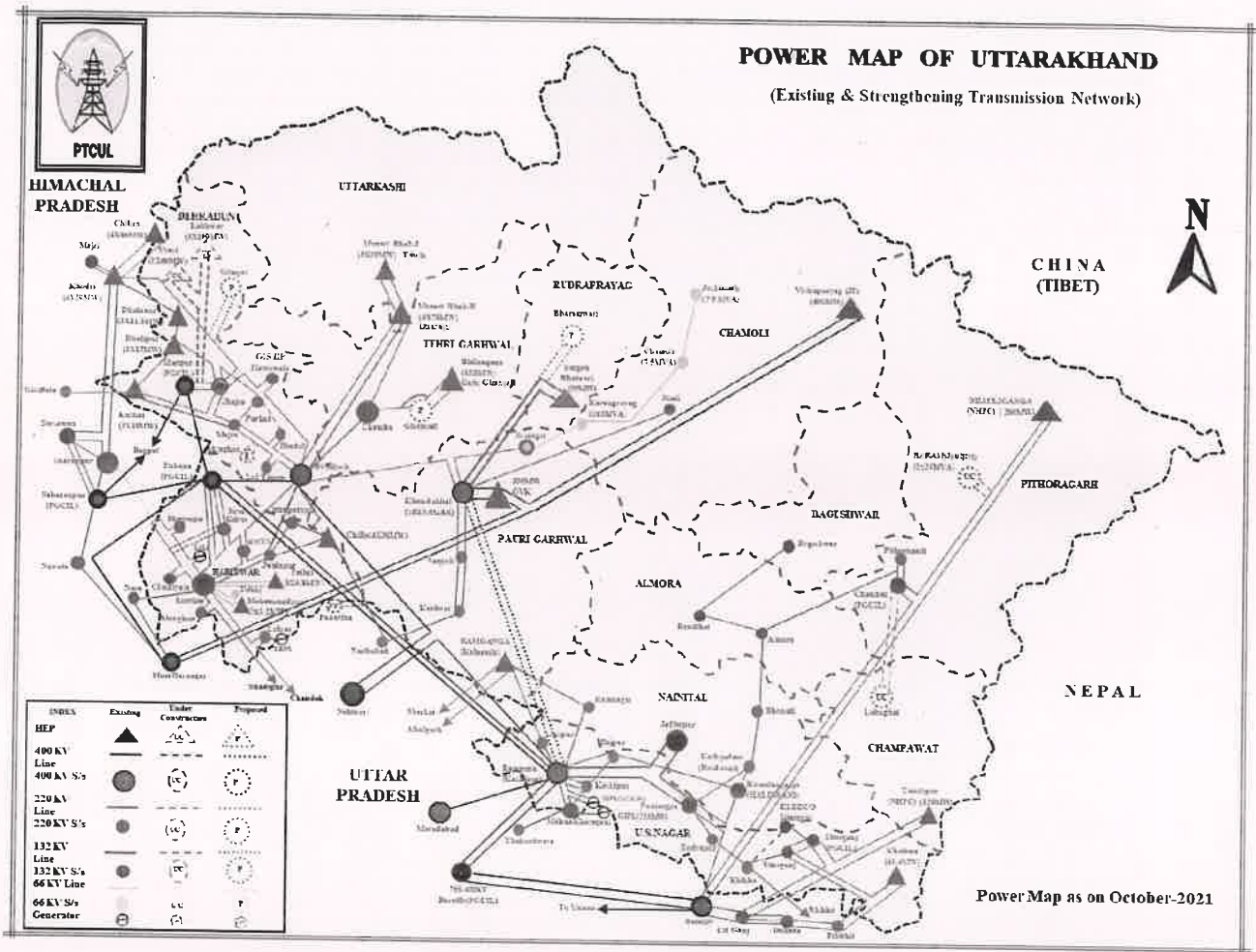
The power map of a region is a visual representation of its Power generation and transmission system. By utilizing symbols to depict various generating stations, transmission sub stations, transmission lines etc. on a physical map of the region, it enables both geographical and technical analyses of the extant and upcoming power system capabilities of that region.

The power map of Uttarakhand depicting the generating stations, transmission substations and major power lines that are operational or under construction in the state is as below:

*Lampay*

Director (Operations)  
PTCUL, Dehradun

Figure 2: Power Map of Uttarakhand



## 2.6. Key Objectives of Business Plan

The key objectives of this business plan have been listed below:

- **Providing a tool for strategic planning:** The primary objective of the Business Plan is to analyse and anticipate the future requirements in advance and strategically plan for the capital investments, related means of financing and various associated costs and document them, which would serve as an effective tool for monitoring and execution of future works. It is important to project the growth in transmission network infrastructure commensurate with the energy demand required for fueling the economic growth targets of the State.
- **Providing a roadmap for performance improvement:** The Business Plan shall contain a transmission loss reduction trajectory for the Control Period and measures to achieve the said reduction.
- **Aid in decision making leading to better Operational Efficiency:** The Business Plan is prepared to be useful to the Managing Board, associated stakeholders, the Hon'ble Commission and various government bodies. The future projections in the Plan would help the transmission utility in decision making and taking proactive actions, thus improving the overall operational efficiency of the transmission network infrastructure.
- Meeting the regulatory compliance of submission of a business plan as mandated by the UERC MYT Regulations, 2021

*Lanjay*

Director (Operations)  
PTCUL, Dehradun

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### 3. Business Overview: Operational

PTCUL is one of the efficient Transmission Utilities in India with availability of over 99% and very low transmission losses, which has been below 2% in past years.

The major strengths of PTCUL are:

- **High system availability:** A robust preventive maintenance plan improves the overall system availability and enables long term & short term open access without undue shutdowns
- **Low transmission losses:** A modern, technologically sophisticated network based on the best engineering practices ensures low transmission loss

Few of the major challenges being encountered by PTCUL are ageing equipment - failure rate, Quality of Power, Grid Discipline, Network planning commensurate with generation & distribution, strengthening network to cope up with quality of power, and Renovation and Modernization. To aid its expanding operations, PTCUL has also been steadily increasing its workforce in order to fill in the vacant posts.

#### 3.1. Current Infrastructure

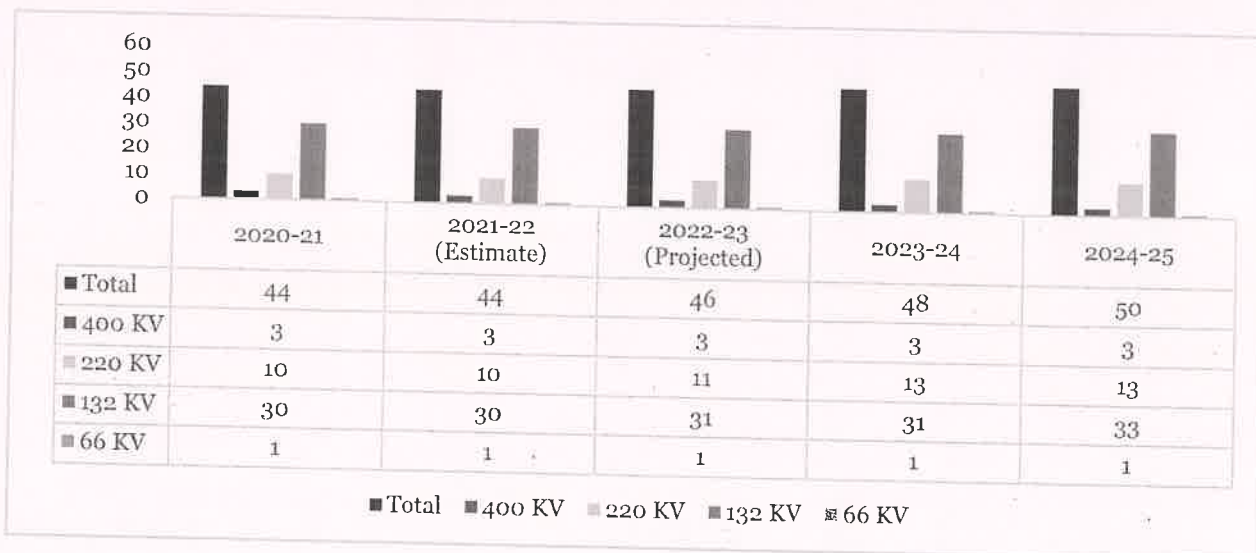
PTCUL has a network which is spread over 3244 Ckt Kms. of transmission line and has an installed transformation capacity of 8674.5 MVA (as of March, 2021) with a total of 44 substations. PTCUL is in the process of increasing its network capacity to handle the increasing demand in future years.

#### 3.2. Growth in Existing Infrastructure

PTCUL has been making steady progress in increasing the capacity of its transmission network ever since its inception in 2004. Increase of approximately 2000 Ckt. Kms. in the length of its transmission lines and of approximately 6000 MVA in the transformation capacity of its sub stations are a testament to PTCUL's commitment towards improving the power system of Uttarakhand. Keeping up with its tradition of development, PTCUL, through its Capital investment Plan has proposed large strides in capacity addition to the transmission network. The sections below graphically represent the increase in capacity over the preceding MYT Control Period and the proposed increment in capacity in the upcoming Control Period.

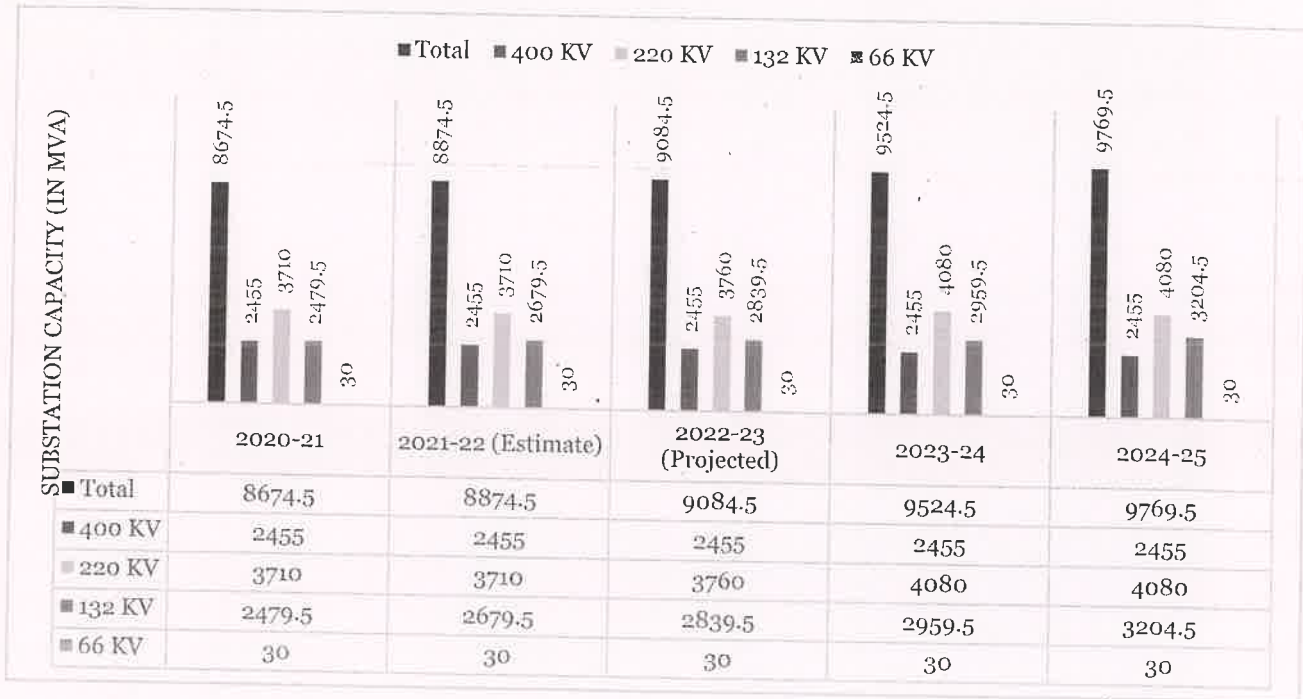
##### 3.2.1. Growth in number of Sub-stations

Figure 3: Growth in Number of Sub Stations



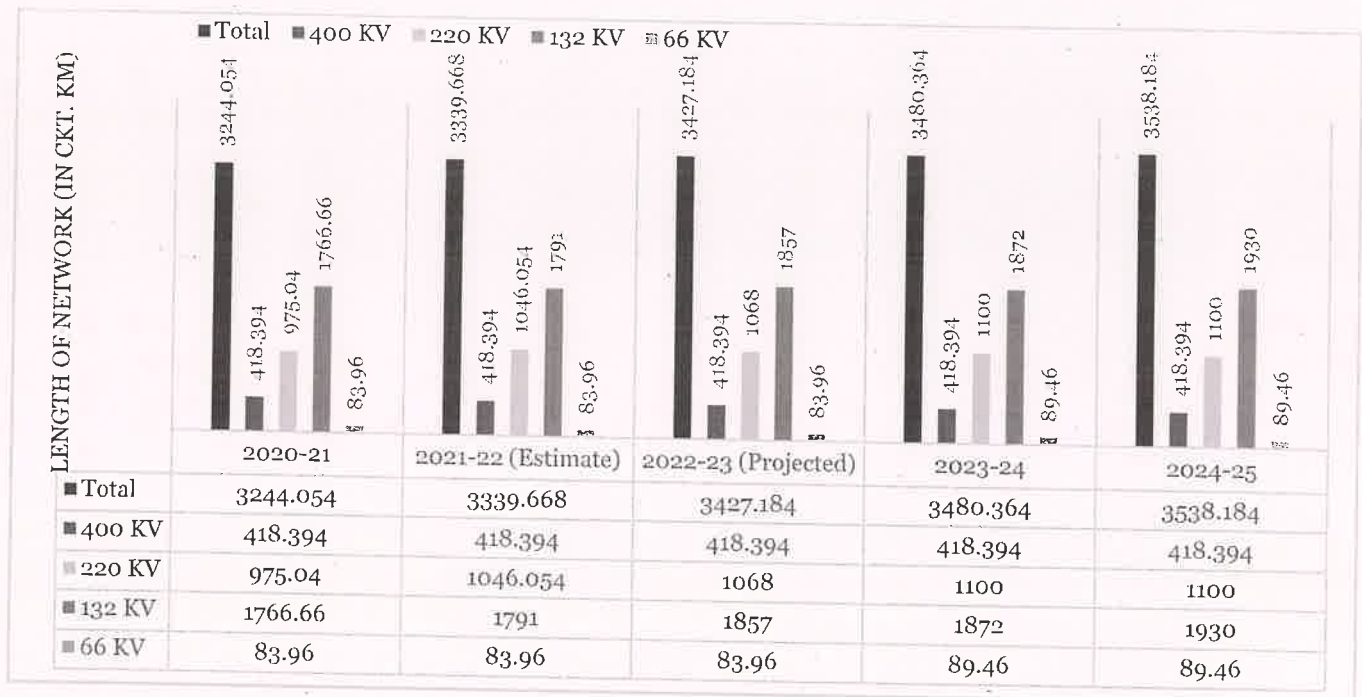
### 3.2.2. Growth in Sub-station Capacity

Figure 4: Growth in Sub Station Capacity



### 3.2.3. Growth in Network Level

Figure 5: Growth in Network



### 3.2.4. Congestion points and mitigation Solution

Even though there has been a substantial increase in the network, there are a few congestion points in the current network of PTCL. These have been identified and are being resolved through various mitigation solutions. The Capital Expenditure plan for the Control Period from 2022-23 to 2024-25 has been made

keeping in mind the congestion points currently being encountered by PTCUL. The table below lists the constraints observed in the network, the mitigation actions being currently undertaken and status of the said actions.

Table 3 : Congestion points and mitigation Solutions proposed

S.No.	Constraints/Bottlenecks in Intra State Transmission System as per SLDC	Proposed/Under Implementation Transmission System
1.	Loading on 400/220 kV Kashipur ICTs are not N-1 compliant in case of low gas generation.	Proposal of additional 01 no. 315 MVA 400/220 KV T/F is under process.
2.	Loading on 220 KV Puhana (Roorkee, PGCIL)- Roorkee line and lines at 220 KV Roorkee S/s are not N-1 compliant.	400/220 kV S/s Landhora has been proposed under UTSDIP scheme to provide N-1 contingency and reliability of power supply Roorkee area.
3.	Overloading of 160 MVA ICTs at 400 KV Kashipur Substation.	Proposal of additional 01no. 160 MVA 220/132 KV T/F is under process.
4.	160 MVA ICTs are not N-1 compliant at 220 KV Roorkee Substation.	Construction of 400/220 kV Landhora and 220/132/33 kV S/s Manglore has been proposed under UTSDIP scheme.
5.	220 KV radial feeder for 220 KV Haldwani Substation.	Proposal for construction of 220 KV LILO of 220 KV Kashipur (400 KV S/s) - 220 KV Pantnagar at Barhaini (BAZPUR) to connect 220 KV S/s Kamaluaganja, Haldwani will be explored by using existing corridor of 132 KV BJP - KLG line on multi voltage/multi-circuit towers.
6.	132 KV radial feeder for 132 KV Ranikhet & Bageshwar Substation.	Under Construction Khutani SHP (21MW) and Melkhet SHP (24MW) are under construction and these SHPs will be connected to 132/33 kV S/s Bageshwar through 132 kV line, which will enable N-1 contingency condition for 132 kV S/s Bageshwar & Ranikhet.
7.	132 KV radial feeder for 132 KV ELDICO Sitarganj.	Constuction of 132 KV Kichha-ELDICO Sitarganj line is under progress. Presently, held up due to ROW near KICHHA.
8.	Single 40 MVA T/F at Laltapper Substation	132 kV Laltappar S/s was planned with 2x40 MVA capacity. Presently this S/s is operating only with 01 No 40 MVA transformer due to shifting of 01 No 40 MVA transformer as per field requirement. Proposal for additional 01 No. 40 MVA Transformer is under consideration.
9.	80 MVA T/Fs at 220 kV Substation SIDCUL, Haridwar are not N-1 compliant.	After commissioning of under construction 132/33 kV S/s Padartha will also provide relief to 220/132/33 kV S/s SIDCUL Haridwar by sharing of load. Further, possibility of new 220/33 or 220/132/33 kV S/s in SIDCUL Haridwar area will be explored considering the load growth of SIDCUL Haridwar area.

S.No.	Constraints/Bottlenecks in Intra State Transmission System as per SLDC	Proposed/Under Implementation Transmission System
<b>132/33 KV Transformers at Following Substations are not N-1 Compliant in peak hours as per SLDC</b>		
1.	132 KV Manglore Substation.	Increasing capacity is under implementation (from 2x40 MVA to 40+80 MVA)
2	132 KV Khatima Substation.	Construction of 132 KV S/s Khatima-II is proposed under UTSDIP scheme.
3.	132 KV ELDICO Sitarganj Substation.	Increasing capacity of 40 MVA is proposed.
4.	132 KV Rudrapur Substation.	After commissioning of 220/33 KV Jafarpur S/s shall provide relief to existing 132/33 kV S/s Rudrapur after shifting of some 33 kV feeder from Rudrapur S/s to Jaffarpur S/s.
5.	132 KV Ramnagar Substation.	Proposal of increasing capacity by replacing existing 20 MVA T/F with 40 MVA T/F under consideration.
6.	220 KV Rishikesh Substation.	Proposal of increasing capacity of 40 MVA is under consideration.
7.	220 kV Haldwani Substation	Increasing capacity is under implementation (from 2x40 MVA to 3x40 MVA)
8.	132 kV Purkul Substation	Proposal of increasing capacity is under consideration (from 40+20 to 2x40+20 MVA) .
9.	220 kV Roorkee Substation	Construction of 220/132/33 kV S/s Manglore has been proposed under UTSDIP scheme.
10.	132 kV Bhagwanpur Substation	Construction of 220/132/33 kV S/s Manglore has been proposed under UTSDIP scheme.
11.	132 kV Haldwani (Kathgodam) Substation	Construction of 132/33 kV GIS S/s Dhaulakhera S/s has been proposed under UTSDIP scheme.
12.	132 kV Kashipur Substation	Construction of 132/33 kV GIS S/s Sarvarkhera S/s has been proposed under UTSDIP scheme.

### 3.3. Operational Performance

Operational parameters and performance provide a basis for determining the financial viability and strategies for the company. Some of the operational performance parameters have been analysed in this section.

#### 3.3.1. System Availability

PTCUL was awarded the prestigious "Gold Shield" for the year 2009-10 in the category of "Transmission System Availability" by Ministry of Power, Govt. of India. The availability factor of the transmission network for the year 2021-22 (until September 2021) was 99.68%. PTCUL's transmission network availability level has been one of the most efficient among utilities in the country. It is a constant endeavour for PTCUL to improve the availability level significantly over the years. The table below shows the actual availability for FY 2018-19 to FY

2020-21, estimated availability for FY 2021-22 based on first half of the year and the projected availability for FY 2022-23 to FY 2024-25.

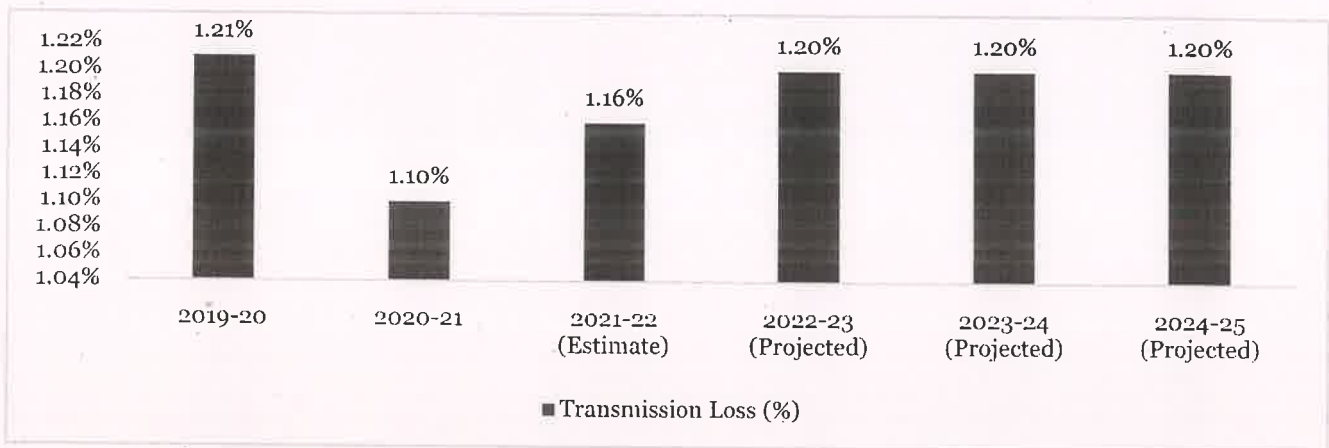
Table 4: System Availability for the last Control Period and projections for the upcoming Control Period

	2019-20 (A)	2020-21 (A)	2021-22 (E)	2022-23 (P)	2023-24 (P)	2024-25 (P)
System Availability	99.23	99.56	99.69	99.70	99.75	99.80

### 3.3.2. Transmission Losses

PTCUL is one of the most efficient transmission utilities in the country. This is demonstrated by the low level of transmission losses in the network. The loss level over the past years has been below 2%. It is humbly submitted that further reduction in transmission losses may be constrained by technical limitation. The table below shows the actual losses for FY 2019-20 to FY 2020-21, estimated losses for FY 2021-22 based on first half of the year and the projected losses for FY 2022-23 to FY 2024-25.

Figure 6: Projected Transmission Losses

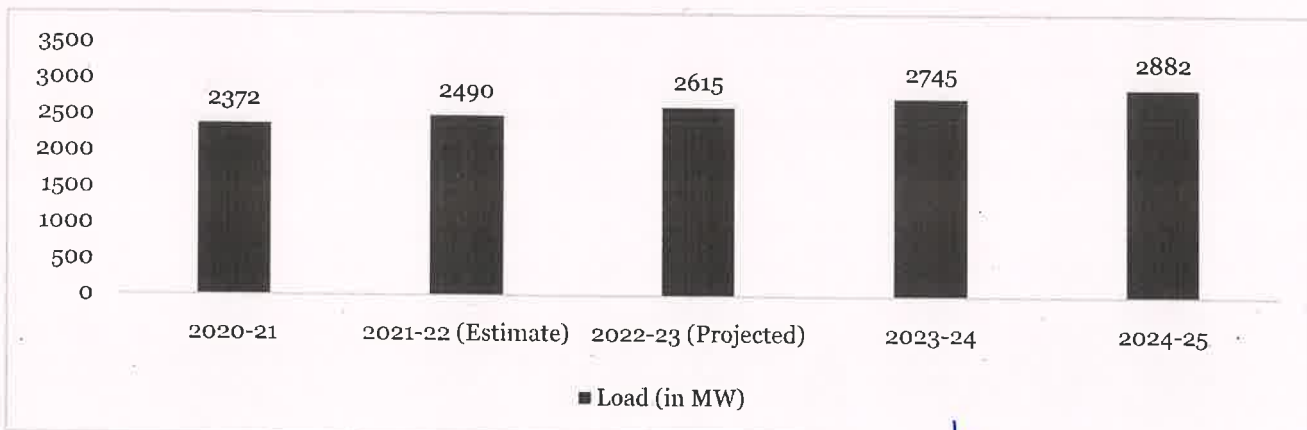


### 3.4. Projections of Growth in load and energy carried by the Transmission System

#### 3.4.1. Load Growth

The expected Peak Load growth in Uttarakhand for the Control Period is as given in the figure below.

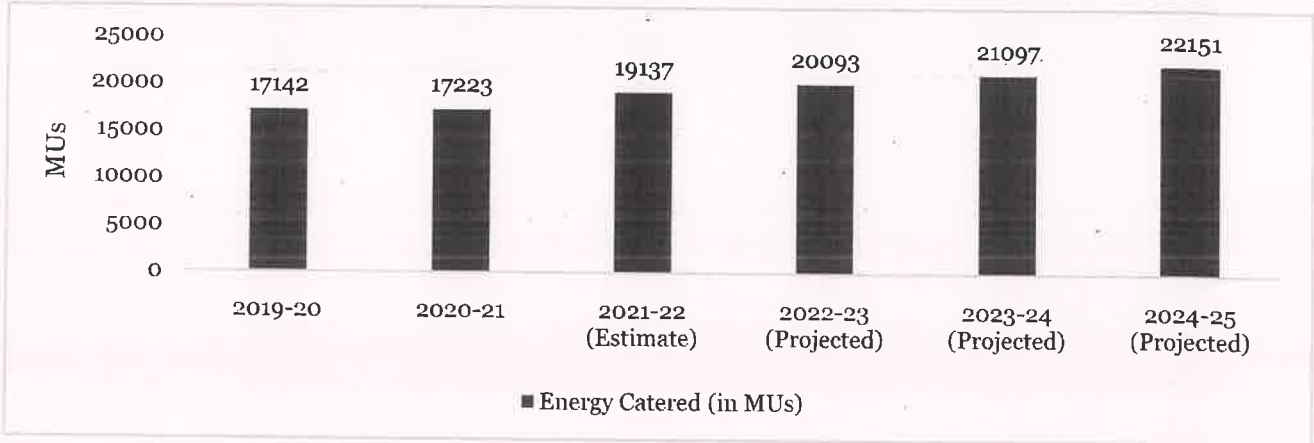
Figure 7: Expected Load Growth in the MYT Control Period



### 3.4.2. Energy Catered

PTCUL projects increase in the quantum of energy delivered to its transmission system by the trajectory given below:

Figure 8: Growth in energy catered



*Sanjay*

*Sanjay*  
Director (Operations)  
PTCUL, Dehradun

# 4. Regulatory Framework

## 4.1. Background

As per the Constitution, the power sector in India is the combined responsibility of Central and State Government. Over the years, reforms in Indian power sector have been driven by the Union and State Governments in an endeavour to achieve sustainable growth & improvement in operational efficiencies. One of the cornerstones of this reform Agenda is the Electricity Act, 2003.

## 4.2. Enabling Provisions in Electricity Act, 2003

The Government of India notified the Electricity Act, 2003 with effect from June 10,2003, which required the State Governments to initiate major changes in the Industry Structure and Operations of the state power sector. The preamble to the Electricity Act, 2003 states its broad objectives:

*“An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and for taking measures conducive to development of electricity industry through way of reforms and restructuring, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalisation of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto.”*

It introduced a number of new concepts in Indian power sector like de-licensing of generation, power trading, Open Access, etc., and special provisions for the rural areas. The Act made it mandatory for all the States to restructure the Electricity Boards. The major provisions of the Electricity Act 2003 related to transmission are:

- As per Section 3 of the Electricity Act 2003, the CEA has been entrusted with the responsibility of preparing the National Electricity Plan in accordance with the National Electricity Policy and notify such plans once in five years.
- Preparation, publication and notification of National Electricity Plan by the Central Electricity Authority. (Section 4)
- Private sector participation in transmission through grant of license by the appropriate Regulatory Commission. (Sections 12,13,14,15)
- CTU (Central Transmission Utility) / STU (State Transmission utility) to be deemed transmission licensee. (Section 14)
- Planning, coordination, development and undertaking transmission of electricity through inter-state system by the Central Transmission Utility. (Section 38)
- Planning, coordination, development and undertaking transmission of electricity through intra-state system by the State Transmission Utilities. (Section 39)
- Licensee to provide non-discriminatory open access to any licensee or generating company and to any consumer as and when open access is provided by SERC in Transmission. (Section 40)
- Open access to be provided against payment of transmission charges as determined by CERC/SERC. (Section 38)
- Advise to the Central Government on matters relating to the national electricity policy, formulate short-term and perspective plans for development of electricity system and coordinate the activities of the planning agencies. (Section 3)

- Governments, licensees or the generating companies for improved and coordinated operation of electricity system under their ownership, and advise the Appropriate Governments and Appropriate Commissions on technical matters relating to generation, transmission and distribution of electricity by the Central Electricity Authority. (Section 73)
- Regulation and tariff determination for inter-state transmission by the Central Electricity Regulatory Commission. (Section 79)
- Facilitation and tariff determination for intra-state transmission by the State Electricity Regulatory Commissions. (Section 86)

Also, the Electricity Act envisaged competition in transmission and carries provisions for grant of Transmission Licenses by the Central Electricity Regulatory Commission (CERC) as well as State Electricity Regulatory Commissions (SERCs). Further, the Act has created a conducive environment for investments in all segments of the industry, both for public sector and private sector, by removing barrier to entry in different segments.

The functions of CTU and STU as specified in the Act are:

- Transmission of electricity;
- Planning & co-ordination of transmission system;
- Development of efficient and economical transmission lines from generating stations to load centres;
- Providing non-discriminatory open access to the system to open access customers

### 4.3. Legal Structure of Power Sector in India

The Ministry of Power of the Government of India (GoI) is at the helm of Indian Power Industry, providing policy guidance to the sector. The Central Electricity Authority (CEA) constituted under Electricity Supply Act 1948, is a body for advising GoI on technical matters and is responsible for preparing National Electricity Plan in accordance with the National Electricity Policy.

The Central Electricity Regulatory Commission established as per the Electricity Regulatory Commission Act, 1998, regulates the power sector at national level including functioning of central power utilities like the NTPC and NHPC, which are engaged in generation of power, and PGCIL, which is engaged in inter-state power transmission.

At the state level, state governments controlled the sector through the erstwhile state electricity boards (SEBs) and electricity departments (EDs). In most of the states the SEBs are now unbundled and corporatized as per the EA 2003. Separate utilities are responsible for generation, transmission, and distribution, usually within their own states and territories.

Figure 9: Legal Structure of the Power Sector in India

Roles Discharged	Interstate & Inter Region Transmission	Intra State Transmission
Policy	Ministry of Power, GoI	Energy Departments and Ministries of the State Government
Planning and Standards	Central Electricity Authority	
Regulation	Central Electricity Regulatory Commission	State Electricity Regulatory Commission
Asset Creation/Operations	Central Transmission Utility	State Transmission Utility

## 4.4. National Electricity Policy

The National Electricity Policy was notified by GoI as per provisions of the Act on February 12, 2005. This Policy aims at accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources, technology available to exploit these resources, economics of generation using different resources and energy security issues.

The development of the National Grid is an important feature of the Policy. The Policy states that the Transmission System requires adequate and timely investments and efficient and coordinated action to develop a robust and integrated power system for the country. It further recognizes that there is need for adequately augmenting transmission capacity in view of the massive increase planned in generation and for development of power market.

The Policy noted that in view of the required magnitude of the expansion of the sector, a sizeable part of the investment requirement will need to be brought in from the private sector. In keeping with this, it specified that special mechanisms would be created to encourage private investment in the transmission sector so that sufficient investments are made for achieving the objective of demand to be fully met by 2012.

The National Electricity Policy notified on February 12, 2005 inter-alia states that –

*“5.3.1 The Transmission System requires adequate and timely investments and also efficient and coordinated action to develop a robust and integrated power system for the country.*

*5.3.2 Keeping in view the massive increase planned in generation and also for development of power market, there is need for adequately augmenting transmission capacity.....*

*5.3.10 Special mechanisms would be created to encourage private investment in transmission sector so that sufficient investments are made for achieving the objective of demand to be fully met by 2012.*

*5.8.1 ..... Considering the magnitude of the expansion of the sector required, a sizeable part of the investments will also need to be brought in from the private sector. The Act creates a conducive environment for investments in all segments of the industry, both for public sector and private sector, by removing barrier to entry in different segments. Section 63 of the Act provides for participation of suppliers on competitive basis in different segments which will further encourage private sector investment.”*

In order to facilitate the smooth and rapid development of transmission capacity in the country as envisaged in the National Electricity Policy, some transmission projects will be identified for tariff based competitive bidding, in which Private Investors and Transmission Utilities, both Central and State, can participate.

## 4.5. National Tariff Policy

Some important provisions in the National Tariff Policy pertaining to transmission of electricity are outlined in the following sections:

### 4.5.1. Objectives of the Policy

The tariff policy seeks to achieve the following objectives concerning Transmission:

- Ensuring optimal development of the transmission network ahead of generation with adequate margin for reliability and to promote efficient utilization of generation and transmission assets in the country;
- Attracting the required investments in the transmission sector and providing adequate returns

### 4.5.2. Pricing

- A Transmission tariff framework, sensitive to distance, direction and related to quantum of power flow, to be implemented with the objective of promoting effective utilization of all assets across the country and accelerated development of new transmission capacities that are required

- Transmission system users to share the total transmission cost in proportion to their respective utilization of the transmission system
- For smooth operation of the grid, efforts should be made to develop transmission system ahead of generation
- Tariff determination and adherence to Standards of Performance shall be carried out in accordance with the norms specified by the Central Commission

### 4.5.3. Other Issues

- Financial incentives and disincentives should be implemented for the CTU and the STU around the Key Performance Indicators (KPI) like efficient network construction, system availability and loss reduction.
- All available information should be shared with intending users by the CTU/STU and the load dispatch centers, particularly information on available transmission capacity and load flow studies
- If the Central Government, in case of some extraordinary circumstance, allocates power out of the unallocated share of the Central Generating Stations or otherwise, such allocation of power will have priority over short-term, medium-term and long-term access in this order
- The State Commission shall adopt the norms and framework for ancillary services as specified by the Central Commission in consultation with the Central Electricity Authority, SERCs/JERCs, CTUs/STUs and NLDC/RLDC/SLDCs

## 4.6. SERC Regulations

In accordance with Section 181 of the Electricity Act, 2003, the State Electricity Regulatory Commissions are empowered to notify Regulations consistent with the Act and the rules. Some of the currently applicable key regulations specified by the Uttarakhand State Electricity Regulatory Commission are outlined below:

Table 5: UERC - Current Regulations applicable in the state

S. No.	Purview	Name of Regulation
1.	Code Of Conduct	Uttarakhand Electricity Regulatory Commission (Conduct of Business) Regulations, 2014
2.	Tariff determination	Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2021
3.	Fee and Fines	Uttarakhand Electricity Regulatory Commission (Fees and Fines) Regulations, 2002 (Second Amendment in 2018)
4.	Grid Code	Uttarakhand Electricity Regulatory Commission (State Grid Code) Regulations, 2016
5.	Open Access	Uttarakhand Electricity Regulatory Commission (Terms and Conditions of Intra-State Open Access) Regulations, 2015 (Second amendment in 2018)
6.	Appointment and functioning of Ombudsman	UERC (Appointment & Functioning of Ombudsman) Regulations, 2004 (Fifth amendment in 2021)
7.	Distribution Code	Uttarakhand Electricity Regulatory Commission (Distribution Code) Regulations, 2018

S. No.	Purview	Name of Regulation
8.	RE tariff	UERC (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) Regulations, 2018

#### **4.7. Regulatory Background for the Business Plan - UERC MYT Regulations, 2021**

As per clause 8(1)(b) of UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2021, the Transmission Licensee has to submit a Business Plan containing capital investment with relevant information on expenditure, financing and capitalisation, as well as proposed transmission loss trajectory for the entire Control Period. The relevant extract is reproduced as under:

*"b)The Business Plan for the Transmission Licenses shall be for the entire control period and shall, interalia,contain-*

- (i) Capital investment plan which should be commensurate with load growth and quality improvement proposed in the business plan alongwith its cost-benefit analysis. The investment plan should also include yearly phasing of capital expenditure alongwith the source of funding, financing plan and corresponding capitalisation schedule. The system augmentation/expansion plan to be submitted as a part of Capital Investment Plan by the Transmission Licensee shall be consistent with the load growth forecast/ generation evacuation requirement during the Control Period. Further, the Capital Investment Plan shall be in conformity with the plans made by the CEA/CTU/ STU/Distribution Licensee;*
- (ii) The appropriate capital structure of each scheme proposed and cost of financing (interest on debt) and return on equity, terms of the existing loan agreements, etc;*
- (iii) Transmission loss reduction trajectory for each year of the control period, including details of the measures proposed to be taken for achieving the target loss;"*

Further, the Regulation 8(2) of the UERC MYT Regulations, 2021 requires the Petitioner to submit manpower planning for Control period as part of Business Plan.

*"(2)The Applicant shall also submit the details in respect of its manpower planning for the Control Period as part of Business Plan."*

*Sanja*

**Director (Operations)  
PTCUL, Dehradun**

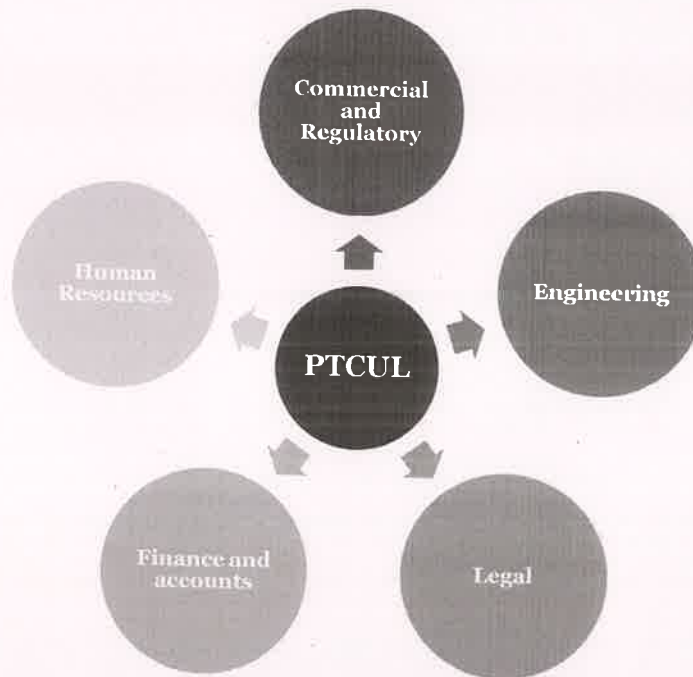
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# 5. Human Resources

## 5.1. Need for HR plan and initiatives

A vital ingredient in the effective functioning of an organization is the adequacy and efficiency of its work force. By employing competent professionals, the organization can not only achieve higher levels of efficiency, but also bring down costs and make itself more profitable. It is not a surprise then that PTCUL, which has been accorded the status of one of the best transmission utilities by the Ministry of Power, employs an excellent talent pool. A broad classification of the workforce in PTCUL is illustrated by the figure below:

Figure 10: Departments in PTCUL



Changing business environment, market competition and regulatory compliance requirements make it essential for any organization to regularly assess its staffing pattern for optimal utilization. In a typical state utility, the key issues in Human Resources where a focused approach is required are as follows:

- Shortage of appropriately qualified manpower for performing day to day responsibilities
- Norms and Standards of work not updated periodically leading to increased workload on field staff
- High level of employee stagnation, leading to lower motivation and efficiency levels
- No evaluation and incentive system in place
- Large number of Cadres giving rise to disparities
- Inadequate focus on Employee Development
- Misalignment between Performance management system and business needs
- Unclear demarcation between field and corporate offices
- Inefficient channels of communication in the organisation
- Inefficient documentation and referencing practices leading to misinterpretations and confusion
- Delays in implementation of Transfer and other Policies leading to discontent among the employees
- Basic Hygiene factors like claims processing, salaries, advances, loans take longer time to clear
- Perception of malpractices in employee deployment

Taking into consideration the short, medium and long-term needs of all the departments of the organization, a recruitment plan has been drawn. This plan seeks to ensure the presence of an adequate workforce comprising of employees who can discharge the duties delegated to them with efficiency and effectiveness.

PTCUL's recruitment performance for the upcoming MYT Control Period is tabulated below:

Table 6: HR plan of PTCUL for the upcoming MYT Control Period FY 2019-20 to FY 2021-22

Particulars	FY 2020-21 (A)	FY 2021-22 (E)	FY 2022-23 (P)	FY 2023-24 (P)	FY 2024-25 (P)
Opening number of Employees	808	826	908	1018	1066
Number of Employees recruited	31	89	124	62	0
Number of Employees retired	13	7	14	14	12
Closing Number of Employees	826	908	1018	1066	1054

A – Actual; E - Estimated; P - Projected

## 5.2. HR initiatives proposed for the MYT Control Period

Aimed at the resolution of the issues mentioned above and assurance of conformity to the accepted standards of employee and organization performance, PTCUL frames Human Resource initiatives for every Control Period and strives for adherence to said initiatives. The initiatives for the upcoming MYT Control Period are listed below:

- The recruitment plan provided for the Control Period will be followed along with the induction training for the recruited employees as per the requirements of the utility
- Timely assignment of workforce to vacant posts
- Implementation of a Performance evaluation and incentivizing mechanism based on relevant KPIs
- Measures to motivate employees towards improving and aligning their skills with the Corporation's goals shall be devised based on the guidelines of the Government.
- In house and institutional training schedules as provided in the ARR shall be followed

The HR division at PTCUL bases its initiatives on three principles:

- **Maintaining a high level of Employee Motivation**
  - **Incentives:** In recognition of the sincere efforts put in by the employees which benefit the company and ensure its growth, PTCUL gives out part of its profits as incentives to the employees
  - **Promotions:** PTCUL, always dedicated to the welfare of its employees, has developed a system for timely promotion of employees deserving or due for promotions to senior ranks in the corporation
  - **Activities:** Activities like sports and games on special occasions like Independence day, Republic day etc. inculcate a sense of co-ordination and teamwork and also help the employees break through the mould of monotony that often decreases their motivation levels
- **Human Resource Development**

PTCUL is of the view that its employees must stay abreast of all the ongoing developments in the power sector that may aid, directly or indirectly, it in realizing its Vision. Towards this goal, PTCUL organizes various trainings and enters into contracts with other training agencies to ensure the development of the skill sets of its employees. The training plan in the ensuing section discusses PTCUL's Human Resource Development ideology and methodology in detail.

- **Improving Administration:** PTCUL believes that a robust manpower administration system is an indispensable part of the corporation's HR policy and thus seeks to make changes and introduce practices that strengthen the administrative backbone that the corporation is based on.
  - Biometric attendance has been mandated for all employees in both corporate and field offices to develop and maintain a transparent attendance system that will encourage compliance and discipline
  - To meet its business targets, PTCUL has amended its recruitment methodology which now enables timely recruitment of employees and seamless acclimatization of recruits in their new posts

The HR plan, submitted in an earlier section, sets ambitious but possible recruitment targets for the third Control Period FY 2022-23 to FY 2024-25.

### **5.3. Training and development plan**

PTCUL recognizes the importance of training and development programs to:

- Ensure smooth inductions/transitions for new employees so that they are able to efficiently perform the duties assigned to them in a relatively short span of time
- Ensure that the existing workforce is sufficiently updated with recent developments in the sector, both from financial and technical perspectives

Towards the realization of these broad goals, PTCUL organizes various internal programs for both induction and continuous training. It also encourages its employees to participate in various conferences and symposiums to enhance their knowledge, learn best industry practices and assimilate them in the workings of the utility.

The key objectives for a sound training and development policy are:

- Upgrade standard knowledge for continual improvement
- Exhaustive enhancement of the employees' technical skills
- Bring about positive behavioral changes in employees and inculcate a sense of responsibility and ownership towards the organization
- Ensure safety and wellbeing of the field employees by regular sensitizations and trainings
- Creating a conducive work culture for the development of employees by encouraging knowledge sharing and healthy communication
- Provide opportunities to update repositories of business and technical best practices through external interactions and meetings

PTCUL has developed a detailed training plan for the MYT Control Period FY 2022-23 to FY 2024-25. Comprising of a vast array of programs, this comprehensive plan has the requisite coverage of topics to ensure that PTCUL meets its HR goals for the Control Period.



S. No.	Training Name	Duration	Employee Grade	Fee per Employee (INR)	Number of employees per batch	Total Fee (INR)	Allowances (INR)	Total expenditure (INR)
	(Offline/Online)							
5	Advanced Power System Protection (Offline/Online)	3 Days	A & B	15000	4	60000	8000	<b>68000</b>
6	Material Management, Procurement Procedures & e-Procurement (Offline/Online)	3 Days	A & B	15000	4	60000	8000	<b>68000</b>
7	Overhead Power Transmission Line Survey (Offline/Online)	3 Days	A & B	15000	4	60000	8000	<b>68000</b>
8	Project Planning Monitoring & Control System (Offline/Online)	3 Days	A & B	15000	4	60000	8000	<b>68000</b>
9	Testing & Commissioning of Electrical Equipment in Power Utility (Offline/Online)	4 Days	A & B	20000	4	80000	8000	<b>88000</b>
10	Disaster Management, Electrical Safety procedure and Accident prevention (Offline/Online)	4 Days	A & B	20000	4	80000	8000	<b>88000</b>
11	400KV/220KV Sub Station- Design, Operation & Maintenance (Latest Procedures) (Offline/Online)	5 Days	A & B	25000	4	100000	8000	<b>108000</b>
12	Development in Design & Construction of Transmission Lines (Offline/Online)	5 Days	A & B	25000	4	100000	8000	<b>108000</b>



S. No.	Training Name	Duration	Employee Grade	Fee per Employee (INR)	Number of employees per batch	Total Fee (INR)	Allowances (INR)	Total expenditure (INR)
	Technology & Regulatory Framework (Offline/Online)							
24	Solar Photovoltaic System Design And Installation (Offline/Online)	4 Days	A & B	20000	5	100000	10000	110000
25	Power System Communication SCADA & EMS (Offline/Online)	4 Days	A & B	20000	4	80000	8000	88000
26	Switchyard & GIS (Offline/Online)	4 Days	A & B	20000	4	80000	8000	88000
27	CSI Workshop on Cyber Security & Surveillance (Offline/Online)	1 Day	A & B	5000	5	25000	10000	35000
<b>Professional Training</b>								
1	IT & Computer Training (Offline/Online)	6 Days	A & B & C	4500	20	90000	30000	120000
2	Decision Making & Problem Solving (Offline/Online)	5 Days	B & C	25000	5	125000	7500	132500
3	Communication & Presentation Skills (Offline/Online)	4 Days	B & C	20000	5	100000	7500	107500
4	MDP on Contract Management & Arbitration (Offline/Online)	3 Days	A & B	15000	4	60000	6000	66000
5	Accounts and Finance Training (Offline/Online)	3 Days	B & C	15000	5	75000	7500	82500
6	Presentation and Disclosures of Financial Statements- As per the revised	2 Days	A & B & C	10000	20	200000	30000	230000

S. No.	Training Name	Duration	Employee Grade	Fee per Employee (INR)	Number of employees per batch	Total Fee (INR)	Allowances (INR)	Total expenditure (INR)
	schedule VI to the companies Act, 1956 (Offline/Online)							
7	Domestic & Departmental Enquiry (Offline/Online)	4 Days	A & B & C	20000	8	160000	12000	172000
8	RTI Act - 2005 (Offline/Online)	2 Days	A & B & C	1500	80	120000	0	120000
<b>Managerial &amp; Supervisory</b>								
1	Interpersonal Effectiveness and Team Building (Offline/Online)	3 Days	A & B	2250	50	112500	0	112500
2	In-House Training Programme on Supervisory Skill Development of PTCUL Employees (Offline/Online)	3 Days	C	2250	50	112500	0	112500
3	Tax Deduction at Source and Cash & Accounts Management including Double Entry System of Book-keeping (Offline/Online)	3 Days	B & C	2250	20	45000	0	45000
4	Developing Efficiency and Effectiveness of Pas, PS, and Office Staff Including Multitasking Staff with Special Emphasis on Behavioural Skills and Use of Latest Information Technology. (Offline/Online)	3 Days	C	2250	5	11250	0	11250

S. No.	Training Name	Duration	Employee Grade	Fee per Employee (INR)	Number of employees per batch	Total Fee (INR)	Allowances (INR)	Total expenditure (INR)
5	Administrative Vigilance Dept. Proceeding and observing Norms & Guide of Apex Court for Protection of Women Employees against Sexual Harassment at Workplace (Offline/Online)	3 Days	A & B & C	2250	10	22500	0	22500
6	Establishment Matter GPF/EPF, Gratuity, Pension, Revised Pension, Family Pension, New Pension Scheme and Other Retirement benefits. Govt. Purchasing Procedure E-mail Tendering, Drafting of Contract, inspection Negotiation, delivery of Goods & Stores (Offline/Online)	3 Days	B & C	2250	40	90000	0	90000
7	Development of Skill in field of Noting & Drafting, Filing System, Record Management and improving efficiency and effectiveness and in soft skills. (Offline/Online)	3 Days	C	2250	40	90000	0	90000
8	Disciplinary Rules, Agencies and Procedure (Including CCA Rules &	3 Days	A & B & C	2250	40	90000	0	90000

S. No.	Training Name	Duration	Employee Grade	Fee per Employee (INR)	Number of employees per batch	Total Fee (INR)	Allowances (INR)	Total expenditure (INR)
	Constitutional Provisions) (Offline/Online)							
9	Labour Laws (Offline/Online)	3 Days	A & B & C	2250	5	11250	0	11250
10	Interpersonal Skills at workplace (Offline/Online)	2 Days	B & C	1500	15	22500	0	22500
11	Works and Works Accounts Management Executive of Civil/Electrical Work keeping of Accounts, Duties and Responsibilities of Executive Engineers, Asstt. Engineers & Divisional Accountant. (Offline/Online)	2 Days	A & B & C	1500	10	15000	0	15000
12	Management of Change for Employee Engagement (Offline/Online)	3 Days	A & B & C	2250	10	22500	0	22500
13	Stress Management (Offline/Online)	3 Days	A & B & C	2250	30	67500	0	67500
14	Goods & Service Tax (Offline/Online)	4 Days	B & C	3000	10	30000	0	30000
15	Yoga & Meditation (Offline/Online)	3 Days	A & B & C	2250	80	180000	0	180000
	<b>Total</b>					<b>14327500</b>	<b>715500</b>	<b>15043000</b>

## 6. Technical Initiatives taken by PTCUL

The Operations and Maintenance (O&M) division of PTCUL plans periodic initiatives aimed at improvement of the existing transmission system and standardized maintenance of the different components of the system to ensure their satisfactory performance. Following are the major initiatives it has undertaken and proposes to undertake in the upcoming MYT Control Period:

- To enhance communication, MS Earth wires have been replaced with Optical Power Ground Wires (OPGW) which are based on the principle of optical communication and provide for higher speed, lower noise levels and increase the overall efficiency of the SCADA system
- To ease the overloading of transmission lines in Haldwani and Sitarganj area, the transmission lines have been enhanced by replacing old ACSR conductors with High Temperature Low Sag (HTLS) conductors that are capable of transmitting greater amounts of energy at higher loads with lower losses
- To resolve the recurring Right of Way (RoW) issues it faces while Commissioning new transmission assets, PTCUL has been decided to use Monopole towers connected with EHV lines so as to minimize the area infringed by the project and minimize the required proximity between towers
- PTCUL seeks to incorporate EHV lines in its transmission system to minimize losses and maximize the quanta of energy carried; an EHV testing laboratory and training centre has been proposed to accomplish the pre requisite R&D for such a large scale transformation.

PTCUL has achieved a Transmission System Availability of 99.68% with the transmission losses at a measly 1.11% for first half of FY 2021-22. This commendable performance is, in part, due to the modern practices employed and progressive initiatives taken by the O&M division.

### 6.1. Transmission Losses of PTCUL

In the process of supplying electricity to consumers, energy losses occur mainly due to technical and commercial reasons. Energy losses in PTCUL network (transmission system) are purely technical in nature due to energy dissipation in conductors and other equipment used in the transmission lines, and electromagnetic losses in the transformers at various sub stations of PTCUL. Actual Transmission losses in Northern region for the last year have fluctuated between 2.66% to 4.96% (data obtained from the NRLDC website from the webpage - <https://nrldc.in/Websitedata/OpenAccess/docs/OALosses.pdf>) whereas the actual Transmission losses of Intrastate transmission network of Uttarakhand owned and operated by PTCUL for the last year are 1.10% of the total energy input into the system. The transmission losses in the Intrastate Network owned by PTCUL are significantly lower than the Northern region's average, highlighting PTCUL's imitable performance in controlling Transmission losses.

At present, there is no tool available to predict the exact values or the range of losses in the network for the upcoming Control Period. But, considering the prevalent trends, the estimated losses of PTCUL (Intrastate transmission network of Uttarakhand) for the ensuing years can be estimated at 1.2%. The PTCUL plans to incorporate EHV lines in its Transmission system and shall plan for the same in the upcoming Control Period. EHV lines will enable further reduction in Transmission losses and Transmission of greater amount of electricity over longer distances.

*Sanyam*

Director (Operations)  
PTCUL, Dehradun

# 7. Operational Plan for the Control Period

## 7.1. Physical targets for the Control Period

The following table summarizes the physical targets of transmission capacity – Length of lines in ckt.Km and transformer capacity at the substations. PTCUL seeks to achieve these targets by Commissioning of new lines and substations as well as renovations and augmentations to the existing ones.

Table 8: Physical targets for the Control Period

		Units	2020-21	2021-22 (Estimate)	2022-23	2023-24	2024-25
No. of Sub Stations	400 kV	No./MVA	3/2455	3/2455	3/2455	3/2455	3/2455
	220 kV	No./MVA	10/3710	10/3710	11/3760	13/4080	13/4080
	132 kV	No./MVA	30/2479.5	30/2679.5	31/2839.5	31/2959.5	33/3204.5
	66 kV	No./MVA	1/30	1/30	1/30	1/30	1/30
Growth in Network	400 kV	Ckt. Km.	418.394	418.394	418.394	418.394	418.394
	220 kV	Ckt. Km.	975.054	1046.054	1068.010	1100.410	1100.41
	132 kV	Ckt. Km.	1766.660	1791.260	1856.820	1872.100	1929.920
	66 kV	Ckt. Km.	83.960	83.960	83.96	89.46	89.46
<b>Number of Sub-stations</b>	<b>No.</b>	<b>44</b>	<b>44</b>	<b>46</b>	<b>48</b>	<b>50</b>	
<b>Total Substation Capacity</b>	<b>No./MVA</b>	<b>8674.5</b>	<b>8874.5</b>	<b>9084.5</b>	<b>9524.5</b>	<b>9769.5</b>	
<b>Total Network Length</b>	<b>Ckt. Km.</b>	<b>3244.068</b>	<b>3339.668</b>	<b>3427.184</b>	<b>3480.364</b>	<b>3538.184</b>	

## 7.2. Project Schemes

As per the UERC MYT Regulations, 2021, the Transmission Licensee is to submit a Capital Investment Plan, which should be commensurate with load growth and performance improvement proposed in the Business Plan.

The following works have been proposed for the fourth MYT Control Period as part of Project Schemes under PTCUL's Capital Investment Plan. These schemes will create new lines and sub stations for the transmission utility and aid in meeting the increasing demand for power with greater efficiency.

Table 9: Project Schemes

S.No.	Scheme/Funding Agency	Year	Project Details	Proposed Completion Date	Cost (in INR Crore)	Increase in Capacity
<b>132 kV lines</b>						
1.	PFC09303039	2022-23	132 kV LILO of Chilla-Nazibabad line	Apr-22	15.00	13 CKm
2.	REC 5765	2022-23	132 kV Single Circuit line on D/C tower from Pithoragarh to Champawat (Lohagat)	Apr-22	64.05	41.560 Ckm
3.	REC 10009	2022-23	132kV Single Circuit Bindal-Purkul Line	Dec-22	5.96	11 Ckm
4.	ADB	2024-25	Construction of 132 kV D/C transmission line from 220 kV S/s Mahuakheraganj to 132 kV S/s Jaspur, Length of line - 23.32 km.	Dec-24	17.7	46.62 Ckm
5.	ADB	2024-25	Construction of LILO of 132 kV Khatima-Sitarganj Transmission line at proposed 132/33 kV Substation Khatima-II, Length of line - 2.0 km	Apr-24	4.3	4 Ckm
6.	ADB	2024-25	LILO of 132 kV Majra-Laltappar at 132 kV S/s Araghar line through laying of 132 kV cable	Apr-24	50.81	7.2 Ckm
<b>Sub Total (132 kV Lines)</b>					<b>157.82</b>	
1.	PFC09303039	2022-23	Construction of 132/33 kV S/s, Patanjali Padartha, Haridwar.	Apr-22	29.04	80 MVA
2.	Funding to be tied up	2022-23	132KV S/S Laltappar	Mar-23	3.68	40 MVA
3.	Deposit	2022-23	Work of increasing the capacity of substation from 2X40 MVA to 3X40MVA for energizing 03 No. 2X10 MVA 33/11KV GIS substation of UPCL from 132 KV substation ELDECO Sitarganj, U.S. Nagar under deposit	Aug-22	10.21	40 MVA
4.	Funding to be tied up	2022-23	Augmentation from ( 1X40 MVA +1X20 MVA) to (2X40	Apr-22	4.6	40 MVA

S.No.	Scheme/Funding Agency	Year	Project Details	Proposed Completion Date	Cost (in INR Crore)	Increase in Capacity
			MVA+1X20 MVA) at 132 KV Substation Purkul			
5.	Funding to be tied up	2023-24	Augmentation of Transformation capacity from 2x40 MVA (132/33 KV) to 3x40 MVA (132/33 KV) by procurement, installation, testing & commissioning of 01 No. additional 132/33 KV 40 MVA T/F and construction of associated 132/33 KV bay (Rishikesh)	Mar-24	8	40 MVA
6.	ADB	2024-25	132 /33 kV (2x40MVA) GIS Substation Khatima-II	Apr-24	75.3	2* 40 MVA
7.	ADB	2024-24	132/33 kV GIS S/s at Araghar	Apr-24	71.36	80 MVA
<b>Sub Total (220 kV S/s)</b>					<b>202.19</b>	
<b>220 kV Lines</b>						
1.	REC- 9031	2022-23	LILO of 220 kV Dhauliganga-Pithoragarh PGCIL Line at 220/33 kV GIS S/s Baram, Jaulijivi (Pithoragarh)	Apr-22	26.09	21.956 Ckm
2.	ADB	2023-24	LILO of 220 kV Khodri-Jhajhra line at proposed 220 kV GIS S/s Selaqui (Dehradun)	Mar-24	50.21	1.4 Ckm
3.	PFC 09303049	2023-24	220kV DC Transmission Line from interconnection point of Singoli - Bhatwari HEP to proposed 220kV S/s Rudrapur ( Baramwari)	Mar-24	32.08	31 Ckm
<b>Sub Total (220 kV Lines)</b>					<b>108.38</b>	
<b>220 kV S/s</b>						
1.	REC-9031	2022-23	220/33 kV GIS S/s at Baram (Jaulajivi), Pithoragarh	Apr-22	85	50 MVA
2.	ADB	2023-24	220/33 kV GIS S/s Selaqui, Dehradun	Mar-24	82.71	100 MVA

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S.No.	Scheme/Funding Agency	Year	Project Details	Proposed Completion Date	Cost (in INR Crore)	Increase in Capacity
3.	Funding to be tied up	2023-24	220/33 kV GIS S/s Rudrapur (Baramwari) District Rudraprayag	Sep-23	103.17	60 MVA
<b>Sub Total (220 kV S/s)</b>					<b>270.88</b>	
<b>Total</b>					<b>739.27</b>	

### 7.2.1. Brief Descriptions of some Major Projects

The projects tabulated above aim at relieving excess load, augmenting the existing capacity of the Transmission network, mitigating the constraints faced by the system and meeting the increasing demands and needs of the generation and distribution sectors. Some major projects are listed with their brief descriptions:

#### 7.2.1.1. Projects proposed for Capitalization in 2022-23

- **132 kV LILO of Chilla-Nazibabad line and construction of 132/33 kV S/s, Patanjali Padartha, Haridwar** – The substation is required to meet out the growing load demand of Dist. Haridwar. This substation will improve the reliability and quality of power supply to nearby area.
- **Work of increasing the capacity of substation from 2X40 MVA to 3X40MVA for energizing 03 No. 2X10 MVA 33/11KV GIS substation of UPCL from 132 KV substation ELDECO Sitarganj, U.S. Nagar under deposit** – The project is proposed to meet out the load demand of SIDCUL.
- **132KV S/S Laltappar** - To meet out T-1 contingency, future load demand and strengthening/reliability of power supply.

#### 7.2.1.2. Projects proposed for Capitalization in 2023-24

- **LILO of 220 kV Khodri-Jhajhra line at proposed 220 kV GIS S/s Selaqui (Dehradun)**– The proposed system will meet the load growth of Selaqui, its nearby area and industrial load growth of Selaqui. This substation will also overcome tripping of 33 kV industrial Feeder of Selaqui area by providing additional Source of power supply in addition to existing 220/132/33 kV S/s Jhajhra and will provide relief to existing 220 kV S/s Jhajhra by sharing of load.

#### 7.2.1.3. Projects proposed for Capitalization in 2024-25

- **Construction of 132 kV D/C transmission line from 220 kV S/s Mahuakheraganj to 132 kV S/s Jaspur, Length of line - 23.32 km** - This line is required for N-1 contingency condition and meeting future load growth of Jaspur area. The implementation of increasing capacity at 132/33 kV S/s Jaspur from 2x40 MVA to 3x40 MVA and provision of 01 no 132 kV and 33 kV bay is under implementation.
- **LILO of 132 kV Majra-Laltappar at 132 kV S/s Araghar line through laying of 132 kV cable**–The proposed system will meet the load growth of Araghar and its nearby area. This substation will also provide additional Source of power supply in addition to existing 132/33 kV S/s Majra and Bindal. This S/s will also provide relief to existing 132/33 kV S/s Bindal by sharing of load.
- **132 /33 kV (2x40MVA) GIS Substation Khatima-II** –The proposed Substation will improve the reliability and quality of power supply in Khatima area and this S/s will also meet the load growth of Khatima area.

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### 7.2.2. Proposed UITP Projects

The Uttarakhand Integrated Transmission Project (UITP) was conceived to develop an optimal evacuation system for evacuating power from the cluster of hydroelectric generating stations in the four river basins of the State to the common pooling points from which power will be evacuated by PGCIL. PTCUL has taken the initiative to develop UITPs and proposes to build a 400 kV GIS Switching Substation at Pipalkoti, District-Chamoli. However, as per CEA meeting held on dated 30.03.2021, implementation of Pipalkoti switching station to be kept pending till intimation of revised commissioning schedule of Tapovan Vishnugad HEP from NTPC and may be taken up in the matching time frame. Revised Schedule of Tapovan-Vishnugad HEP yet to be received after natural calamity happened on 07 Feb 2021.

### 7.3. System Strengthening/Augmentation Schemes

Apart from the Project Schemes mentioned above, which will directly add new components to the transmission system, PTCUL also plans to augment and strengthen the existing lines and sub stations by replacement of old transformers, commissioning of new bays, increasing capacity of existing sub stations, replacing the conductors in transmission lines etc. These schemes are being submitted as a part of the Capital Investment Plan as System Strengthening/Augmentation/Improvement schemes.

Table 10: System Improvement Schemes proposed for the MYT Control Period FY 2022-23 to FY 2024-25

S.No.	Year	Project Details	Proposed Completion Date	Cost (in INR Crore)
1.	2022-23	Supply and Installation of 01 no 160 MVA T/F and its associated 220 kV HV side & 132 kV LV side bay at 400 kV S/s Kashipur.	Apr-22	18.39
2.	2022-23	2x5MVAR capacitor Bank	Mar-23	0.5
3.	2023-24	Procurement & Erection of 220/132 KV, 160MVA Transformer (Rishikesh).	Mar-24	7.5
4.	2023-24	Supply & Erection of 20 MVA Transformer at 132KV S/S IDPL Rishikesh. Name of Department:- AIIMS, Rishikesh.	Mar-24	2
5.	2023-24	Stringing of Second Circuit of 132 kV S/C line on D/c tower between 400 kV S/s Kashipur to 132 kV Bazpur on ACSR Panther Conductor	Mar-24	2.08
6.	2023-24	Supply and Installation of 125 MVAR Reactor and its associated bay and related work at 400 kV S/s Kashipur	Mar-24	11.34
7.	2023-24	Construction of 66 kV D/C line for LILO of 66 kV Karanprayag-Kothiyalsain line at 132 kV Substation Simli	Mar-24	3.31
8.	2023-24	Construction of 132 kV and 66 kV and 66 kV Bays and Installation of 3X20 MVA, 132/66 kV Transformer at 132 kV Substation Simli	Mar-24	13.21

S.No.	Year	Project Details	Proposed Completion Date	Cost (in INR Crore)
9.	2024-25	Strengthening of 132KV Haldwani-Bhowali line by replacement through HTLS conductor.	Mar-25	14.56
10.	2024-25	Replacement of ACSR Panther Conductor in single Ckt.. Sitarganj (PGCIL) -SIDCUL Sitarganj Line (22 KM) with HTLS Conductor	Mar-25	20.93
11.	2024-25	Replacement of ACSR Panther Conductor of 1st Ckt. of 132 kV Kichha-Sitarganj Line with HTLS Conductor	Mar-25	29.73
12.	2024-25	Work of replacement of old ACSR panther conductor with HPC conductor in 132 KV Kashipur(400) – Kashipur Ckt-I line at 132 KV Substation, Kashipur	Mar-25	3.00
13.	2024-25	Work of replacement of old ACSR panther conductor with HPC conductor in 132 KV Kashipur(400) – Kashipur Ckt-II line at 132 KV Substation, Kashipur	Mar-25	3.20
14.	2024-25	Work of replacement of old ACSR panther conductor with HPC conductor in Kashipur-Mahuakherganj line at 132 KV Substation, Kashipur	Mar-25	6.40
15.	2024-25	Provision of Hybrid module (due to space constraint) for construction of Transfer Bus at 132KV S/s, Pithoragarh	Mar-25	1.65
16.	2024-25	Replacement of Old 2X3x5 MVA Transformer with 2X20 MVA Transformer at 132 KV Substation, Ranikhet	Mar-25	4.29
17.	2024-25	Replacement of Old 2X3x5 MVA Transformer with 2X20 MVA Transformer at 132 KV Substation, Pithoragarh	Mar-25	4.30
18.	2024-25	Increasing capacity of 132 KV S/S Ramnagar from 1x20+1x40MVA to 2x40MVA	Mar-25	4.16
19.	2024-25	Increasing capacity of 132 KV S/S Bazpur from 1x80+1x40MVA to 1x80+2x40MVA	Mar-25	4.60
20.	2024-25	Construction of Boundary wall for protection at 220KV S/s, Kamaluaganja	Mar-25	2.00
21.	2024-25	Construction of 02 Nos. 220KV Bay at 220KV S/s, PGCIL, Sitarganj	Mar-25	5.20
22.	2024-25	Replacement of 1x3x5 MVA Transformer bank - 1 with new 20MVA Transformer at 132 KV S/s Bhowali .	Mar-25	2.08

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S.No.	Year	Project Details	Proposed Completion Date	Cost (in INR Crore)
23.	2024-25	Increasing capacity of existing 33KV Capacitor Bank from 2X5 MVAR to 3X5 MVAR at 132KV Substation, Almora	Mar-25	0.42
24.	2024-25	Supply and Commissioning of 2X5 MVAR capacitor bank at 132 KV Substation, Kathgodam	Mar-25	0.47
25.	2024-25	Provision of additional 2X5 MVAR 33 KV Capacitor Bank at 132 KV Substation, Pithorgarh	Mar-25	0.58
26.	2024-25	Construction of 132 KV transfer bus and extension of switchyard at 132 KV S/S Bazpur	Mar-25	3.64
27.	2024-25	Increasing of existing 33KV Capacitor Bank from 2X5 MVAR TO 2X10 MVAR at 132KV Substation, Bazpur	Mar-25	0.83
28.	2024-25	Increasing capacity of existing 33KV Capacitor Bank from 2X5 MVAR TO 2X10 MVAR at 132KV Substation, Jaspur	Mar-25	0.83
29.	2024-25	Construction of Boundary wall for flood protection at 132KV S/s, Bazpur	Mar-25	2.00
30.	2024-25	Installation of 2x10 MVAR Cap. Bank at 132 KV S/S Kashipur	Mar-25	0.90
<b>Total</b>				<b>174.10</b>

### 7.3.1. Brief descriptions of major System Strengthening Projects proposed for the Control Period

#### 7.3.1.1. Projects to be Capitalization in 2023-24

- **Stringing of Second Circuit of 132 kV S/C line on D/c tower between 400 kV S/s Kashipur to 132 kV Bazpur on ACSR Panther Conductor** – The project is being undertaken to strengthen the grid and ensure uninterrupted and reliable Power Bazpur and meet out N-1 contingencies.
- **Supply and Installation of 125 MVAR Reactor and its associated bay and related work at 400 kV S/s Kashipur** – The project is being undertaken to improve quality of power by reactive power compensation & power factor correction as per direction of CEA.
- **Construction of 66 kV D/C line for LILO of 66 kV Karanprayag-Kothiyalsain line at 132 kV Substation Simli and Construction of 132 kV and 66 kV and 66 kV Bays and Installation of 3X20 MVA, 132/66 kV Transformer at 132 kV Substation Simli**– After execution of this scheme
  - An alternate power supply to 66 KV S/S Karanprayag and 66 KV Substation Kothiyalsain will be available which will be beneficial for consumers of District Chamoli, various defence establishments and Yatra route of Sh. Badrinath Dham.

- Quality & Reliability of power in remote areas of District Chamoli will also improve.
- Alternate power source for 132 KV Substation Srinagar (G) will be available.

### 7.3.1.2. Projects to be Capitalization in 2024-25

- **Replacement of Old 2X3x5 MVA Transformer with 2X20 MVA Transformer at 132 KV Substation, Ranikhet** – To meet the load demand of Ranikhet District.
- **Replacement of Old 2X3x5 MVA Transformer with 2X20 MVA Transformer at 132 KV Substation, Pithoragarh** – To meet the load demand of Pithoragarh District
- **Replacement of 1x3x5 MVA Transformer bank - 1 with new 20MVA Transformer at 132 KV S/s Bhowali** - To meet future load growth & improve reliability of power
- **Supply and Commissioning of 2X5 MVAR capacitor bank at 132 KV Substation, Kathgodam**- To improve quality of power by reactive power compensation & power factor correction
- **Construction of 132 KV transfer bus and extension of switchyard at 132 KV S/S Bazpur-TBC** can be utilized to Provide redundancy and can help in maintaining availability
- **Construction of Boundary wall for flood protection at 132KV S/s, Bazpur** - To improve quality of power by reactive power compensation & power factor correction

## 7.4. Unique Features of the Capital Investment Plan

The Capital Investment Plan has been made with due consideration given to the the load growth forecast/ generation evacuation requirement during the Control Period. Further, it is in conformity with the plans made by the CEA/CTU/Distribution Licensee. The PTCUL proposes to build GIS substations and renovate existing lines by replacing old conductor with HTLS conductors.

### 7.4.1. GIS Sub Stations

For the fourth MYT Control Period FY 2022-23 to FY 2024-25, PTCUL has proposed the construction of four GIS (Gas Insulated Sub Station):

- 220/33 kV GIS at Baram (Jaulajivi), Pithoragarh
- 220/33 kV GIS at Selaqui, Dehradun
- 220/33 kV GIS Rudrapur (Baramwari) District Rudraprayag
- 132 /33 kV (2x40MVA) GIS at Khatima-II
- 132/33 kV GIS at Araghar

Listed below are some major advantages of GIS sub stations:

- Lower land development cost due to lesser space requirement for substation
- Lower maintenance cost as compared to AIS (Air Insulated Sub Stations) as all the switching devices operate in the SF6 (Sulphur Hexafluoride) insulating medium
- GIS increase the availability and reliability of power system as all parts are sealed inside closed metallic enclosures and thus are shielded from thedeteriorative environmental effects
- Automation systems are easier to install in GIS due to their modular design making it possible for such sub stations to be operated from remote locations (Load Despatch Centres) which in turn reduces the operation cost
- GIS, being smaller and more compact, are possible to build in hilly regions which abound in Uttarakhand

- GIS are more eco-friendly than their air insulated counterparts as they don't require excessive land development activities (which involve deforestation)
- Renovation costs are much lower for GIS equipment as their life is higher as compare to AIS equipment

PTCUL has more GIS planned for completion in FY 2025-26:

- 132/33 kV (2x40 MVA), GIS Substation, Dhaulakhera.

### 7.4.2. Renovation of existing lines by using HTLS conductors

PTCUL, in its Capital Investment plan has proposed the replacements of old ACSR Wolf/Panther conductors with High Temperature Low Sag (HTLS) conductors on its transmission lines.

With a different composition (ACCC – Aluminium Conductor Composite Core) than aluminium-conductor steel-reinforced (ACSR) cables, these have the ability to transmit approximately twice as much energy as an ACSR cable of the same size and weight. Apart from this, HTLS cables are lighter and have a lower coefficient of thermal expansion; making them ideal for higher temperatures, (often prevalent in the lower reaches of Uttarakhand).

These properties render advantages to the HTLS conductor lines over normal ACSR conductor lines and makes it an ideal retrofitting option for old transmission cables.

Some important HTLS replacement projects proposed to be completed in the fourth MYT period are listed below:

- 132 kV Haldwani-Bhowali Line
- 132 kV SIDCUL-Sitarganj Line
- 132 kV Kicchha-Sitarganj Line

### 7.5. Funding Structure

The Petitioner proposes to finance the projects in debt:equity ratio of 70:30. The debt shall be raised from institutions like REC, PFC or other financial institutions. For ADB loans the projects will be financed in debt:equity ratio of 80:20. Considering this funding scheme, the debt and equity addition corresponding to the proposed capitalization in the MYT Control Period FY 2022-23 to FY 2024-25 is shown in the table below.

Table 11: Debt and Equity for the MYT Control Period FY 2022-23 to FY 2024-25

Particular	FY 2022-23	FY 2023-24	FY 2024-25
Capitalization Proposed (in INR Cr)	262.52	315.61	335.24
Debt (in INR Cr)	176.61	224.88	256.61
Equity (in INR Cr)	75.69	77.39	78.62
Deposit	10.21	2.00	-
Grant	-	11.34	-

### 7.6. Capital Investment Plan-Phasing

As per the UERC Tariff Regulations, 2021, Regulation 8(b), clause (i), a Transmission Licensee must submit:

*“Capital investment plan which should be commensurate with load growth and quality improvement proposed in the business plan alongwith its cost-benefit analysis. The investment plan should also include yearly phasing of capital expenditure alongwith the source of funding, financing plan and corresponding capitalisation schedule”*

*Handwritten initials: #, SM, J, Aio*

PTCUL has included a year wise phasing of the proposed capitalization in its capital investment plan based on trends with works of similar nature carried out in the past which is provided in the table below:

Table 12: Year Wise Capital Investment in INR Cr.

Particular	2022-23 (P)	2023-24 (P)	2024-25 (P)	Total
Capitalization	262.52	315.61	335.24	<b>913.36</b>

A – Actual; E - Estimated; P - Projected

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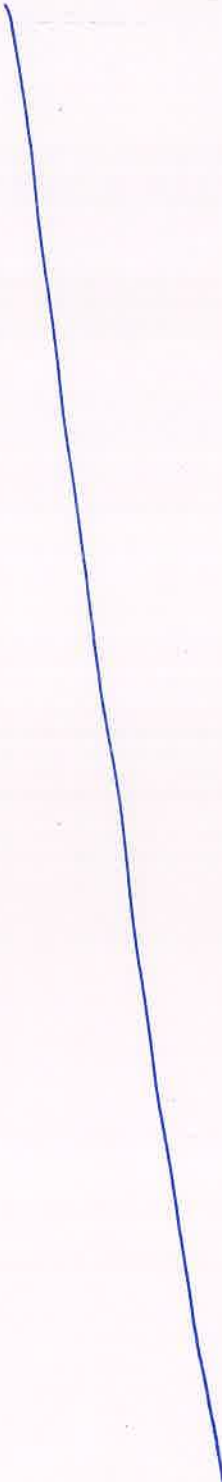
## 8. Future Business Plans

With focus on relieving congestion points, growing infrastructure and improving quality and quantity of energy delivered, PTCUL has drawn a long-term plan comprising of projects expected to be completed after the fourth MYT period FY 2022-23 to FY 2024-25. Some major projects from this long term plan are tabulated below.

Table 13: Future Business Plans

S.No.	Name of the Project	Region	Approved Cost (INRCrore)	Estimated Date of Completion
1.	132 kV LILO of Manglore-Ashai line and Manglore-Air Liquid line	Roorkee district	2.21	Mar-26
2.	Construction of LILO of 132 kV Kathgodam-Rudrapur Line at 132 kV Sub-Station Dhaulakhera (Haldwani), Length of line - 0.6 km.	Haldwani district	1.48	Mar-26
3.	132/33 kV (2x40 MVA), GIS Substation, Dhaulakhera.	Champawat district	70.69	Mar-26
4.	132 KV Sub-station Lohagat	Lohaghat district	93.16	Apr-25
5.	132 KV Second Circuit Stringing on D/C tower from Pithoragarh to Champawat (Lohagat)	Champawat district	5.08	Apr-25
6.	400 kV LILO of Kashipur-Puhana line	Kashipur district	27.04	Mar-26
7.	400/220 kV AIS Substation, Landhora	Roorkee district	165.91	Apr-25
8.	220 kV LILO of Manglore-Nara Line, Landhora	Roorkee district	51.79	Apr-25
9.	220 kV LILO of Roorkee-Nara Line	Roorkee district	4.14	Mar-26
10.	220/132/33 kV AIS Substation, Manglore	Roorkee district	131.72	Apr-25
11.	Replacement of ACSR Wolf Conductor in D/c Of 132 kV Khatima-Pilibhit Line (44.54 Kms) by HTLS Conductor	Haldwani district	65.78	Apr-25
12.	Augmentation of 400 KV S/S Kashipur from 2X315 MVA to 3X315 MVA T/F capacity including construction of associated 400 KV and 220 KV	Kashipur district	32.10	Apr-25

S.No.	Name of the Project	Region	Approved Cost (INRCrore)	Estimated Date of Completion
	bays.			
<b>Total</b>			<b>651.10</b>	



Sanjay

*[Handwritten initials and marks]*