

पावर ट्रांसमिशन कारपोरेशन ऑफ उत्तराखण्ड लि०
(उत्तराखण्ड सरकार का उपक्रम)
Power Transmission Corporation of Uttarakhand Ltd.
CIN: U40101UR2004GO1028675

कारपोरेट आफिस
CORPORATE OFFICE
प्रबन्ध निदेशक कार्यालय
Managing Director's Office

No. 1794 /MD/PTCUL/UERC

Dated: 30/11/2015

To,

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

Subject:-Filing of Petition for approval of Business Plan for PTCUL for Multi Year Tariff
Petition for control period 2016-17 to 2018-19.

Sir,

In reference to above mentioned subject, Petition for approval of Business Plan of PTCUL
for Multi Year Tariff Petition control period 2016-17 to 2018-19 is being submitted herewith.


Submitted for kind consideration and approval of the Hon'ble Commission.

Encl:

1. Draft No. 287963 dated 20.11.2015, for Rs. 50,00,000/-.
2. Petition.

Thanking you,

Yours Faithfully,


(S.S. Yadav)
Managing Director

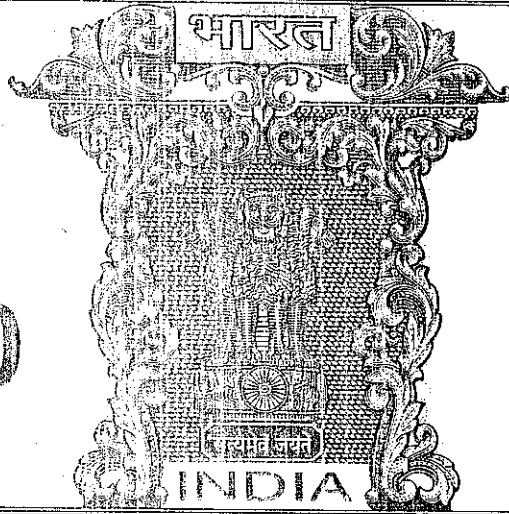
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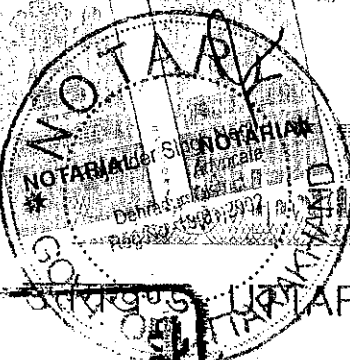
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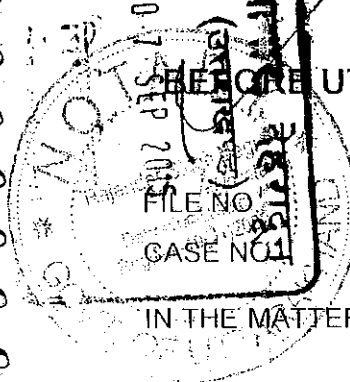


INDIA NON JUDICIAL



UTTARAKHAND

29AA 741512



BEFORE UTTARAKHAND ELECTRICITY REGULATORY COMMISSION,
DEHRADUN

IN THE MATTER OF: Filing of Petition for approval of Business Plan for PTCUL for Multi-
Year Tariff Petition for control period 2016-17 to 2018-19.

AND

IN THE MATTER OF: Power Transmission Corporation of Uttarakhand Ltd.
"Vidyut Bhawan", 132KV Substation Majra, Saharanpur Road,
Near I.S.B.T. Crossing, Dehradun 248002.

.....Petitioner

Affidavit

I, Sumer Singh Yadav, S/o Sh. Ram Sukh Yadav aged about 60 years, Managing Director, Power Transmission Corporation of Uttarakhand Ltd., "Vidyut Bhawan", 132KV Substation Majra, Saharanpur Road, Near I.S.B.T. Crossing, Dehradun, the deponent named above do hereby solemnly affirm and state on oath as under:-

S.S. YADAV
MANAGING DIRECTOR
POWER TRANSMISSION CORPORATION
OF UTTARAKHAND LTD., DEHRADUN

1. That the deponent is the Managing Director who is authorized as per the resolution of the company (In case the Petitioner is a Company) dated 27.11.2015 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

(Signature)
 (Deponent)
 S.S. YADAV
 MANAGING DIRECTOR,
 DEHRADUN CORPORATION
 POWER TRANSMISSION CORPORATION
 DEHRADUN
 OF UTTARAKHAND

I, Shailendra Pundir Advocate, Dehradun

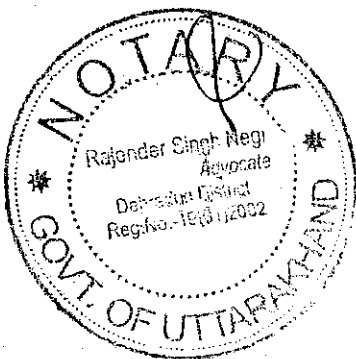
declare that the person making this affidavit is known to me through the Dehradun and I am satisfied that he is the same person alleging to be deponent himself.

(Signature)
 Advocate

Solemnly affirmed before me on this 30 day of 11 2015 at 3:10 a.m. / p.m. 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 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)



ATTESTED
(Signature)
 RAJENDER SINGH NEGI
 Advocate & NOTARY
 Collectorate Court Compound
 Dehra Dur

8. Details of index:

9. Particulars of fee remitted: Rs. 50,000.00 (Rs. Fifty Thousand) Demand Draft Number 287963 of Punjab National Bank, Dehradun dated 20.11.2015.


(Signature of the Petitioner)

S.S. YADAV

MANAGING DIRECTOR

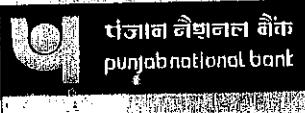
POWER TRANSMISSION CORPORATION
OF UTTARAKHAND LTD., DEHRADUN

I, Sumer Singh Yadav S/o Sh. Ram Sukh Yadav aged about 60 years, working as Managing Director, Power Transmission Corporation of Uttarakhand Ltd., "Vidyut Bhawan", 132KV Substation Majra, Saharanpur Road, Near I.S.B.T. Crossing, Dehradun, do verify that the contents of the Para 1 to 9 are true to my personal knowledge and are derived from official records, which are true from record, and para 1 to 9 are believed to be true on legal advice and that I have not suppressed any material fact.


(Signature of the Petitioner)

S.S. YADAV

MANAGING DIRECTOR
POWER TRANSMISSION CORPORATION
OF UTTARAKHAND LTD., DEHRADUN



इन्दिरा नगर, देहरादून (उत्तराखण्ड) (1556)
Indira Nagar, DEHRADUN (Uttarakhand) - 248001

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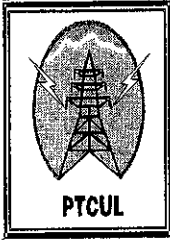
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S.S. YADAV
MANAGING DIRECTOR
POWER TRANSMISSION CORPORATION
OF UTTARAKHAND LTD., DEHRADUN



पावर ट्रांसमिशन कारपोरेशन ऑफ उत्तराखण्ड लि०

(उत्तराखण्ड सरकार का उपक्रम)

उपमहाप्रबन्धक (विधि) एव कम्पनी सचिव कार्यालय

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

दूरभाष नं० 0135-2642796 email:- praveentandon@ptcul.org

No: 487/DGM (L&CS)/PTCUL/

Dated 27.11.2015


CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE MEETING OF THE BOARD OF DIRECTORS OF POWER TRANSMISSION CORPORATION OF UTTARAKHAND LIMITED HELD ON 27TH NOVEMBER, 2015 AT 12:00 P.M AT UPCL, BOARD ROOM, VICTORIA CROSS VIJETA, "GABAR SINGH BHAWAN", KANWALI ROAD, DEHRADUN.

"RESOLVED THAT the Board be and hereby approves Business plan for PTCUL for MYT control period 2016-17 to 2018-19 and that the Managing Director/Director (Project) be and is hereby authorized to sign the Application/Petition for Business plan for PTCUL for MYT control period 2016-17 to 2018-19 for submission to the Hon'ble UERC".

"RESOLVED FURTHER THAT the Managing Director be and is 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."

Certified to be true


For Power Transmission Corporation of Uttarakhand Limited


(Praveen Tandon)
DGM (Legal) & CS.

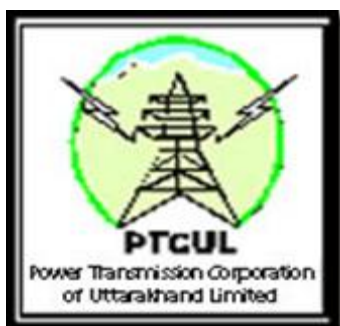
Date : 27-11-2015

Place: Dehradun.

मुख्यालय एवं पंजीकृत कार्यालय:- विद्युत भवन, नजदीक-आई०एस०बी०टी० क्रॉसिंग, सहारनपुर रोड, माजरा, देहरादून - 248002
कारपोरेट आईडी नं०: U40101UR2004GOI028675 दूरभाष नं० 0135-2642796 फैक्स नं० 0135-2643460 वेबसाइट


S.S. YADAV
MANAGING DIRECTOR
POWER TRANSMISSION CORPORATION
OF UTTARAKHAND LTD., DEHRADUN

BUSINESS PLAN FOR FY 2016-17 TO 2018-19



POWER TRANSMISSION CORPORATION OF UTTARAKHAND LIMITED

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EXECUTIVE SUMMARY

1. INTRODUCTION

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 31st May 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 31st May 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 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. 31st May 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.

2. OBJECTIVES

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 project the growth in transmission network infrastructure commensurate with the energy demand required for fuelling the economic growth targets of the State

- 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, 2015
- Aid in decision making leading to better Operational Efficiency: The Business Plan is prepared so as to be useful for 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, and thus improving the overall operational efficiency of the transmission network infrastructure

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 2015-16 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%.

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 2016-17 to FY 2018-19.

5. PROPOSED CAPITAL EXPENDITURE FOR FY 2016-17 TO 2018-19

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 3,670 MVA to 9,942 MVA by 2018-19.

The following table summarises the physical targets for the control period 2016-17 to 2018-19:

Table 1: Physical Targets for the control period 2016-17 to 2018-19

		Units	2015-16 (upto Oct'15)	2015-16 (Estimate)	2016-17	2017-18	2018-19
No. of Sub-Stations	400 kV	No./MV A	2/1185	3/1815	4/2445	4/2445	4/2445
	220 kV	No./MV A	8/2520	10/3090	17/3850	17/3850	17/3850
	132 kV	No./MV A	28/3057	30/3207	33/3407	35/3567	36/3647
Growth in Network	400 kV	Ckt. Km.	388	416	974	974	974
	220 kV	Ckt. Km.	807	818	1351	1351	1351
	132 kV	Ckt. Km.	1824	1973	2033	2053	2113
Total Sub-station Capacity		No./MV A	38/6272	43/8112	54/9702	56/9862	57/9942
Total Network Length		Ckt. Km.	3019	3207	4358	4378	4438

6. AGGREGATE REVENUE REQUIREMENT

The Projected Aggregate Revenue Requirement (ARR) of PTCUL for each year of the Control Period FY 2016-17 to FY 2018-19 is provided in table below:

Table 2: ARR for the Control Period

Particulars	2015-16 (Revised Estimate)	2016-17	2017-18	2018-19
Net O&M expenses	117.15	125.37	145.04	188.36
Interest charges	56.14	69.87	119.60	190.94
Guarantee Fees	0.00	0.00	0.00	0.00
Depreciation	57.45	73.58	112.79	172.51
Interest on Working Capital	11.11	15.19	15.53	22.24
Reasonable Return	35.07	49.28	83.80	136.40
Gap from previous years (FY 14-15)				
Provision for carrying cost on PDF		114.84		
Gross Expenditure	276.92	448.13	476.76	710.44
Less: Non-Tariff Income	2.54	2.67	2.80	2.94
Net Expenditure	274.38	445.46	473.96	707.49
Add : True up of previous years including carrying cost (including gap from 14-15)	40.71	37.15	0.00	
Less: SLDC related expense	8.42	9.57	13.93	21.64
Aggregate Revenue Requirement	306.67	473.04	460.03	685.85

A comparison with other transmission utilities on key parameters has been summarized below:

Table 3: Comparison with other transmission utilities for 2015-16

Particulars	Units	PTCUL	HVPN	PSTCL	UPPTCL
ARR	Rs. Cr.	306.65	1228.7	967.62	1713.21
Per Unit Tariff	Rs/kWH	0.22	0.36	0.19	0.17
Transformation Capacity	MVA	6762	19507	12189	68162
Energy Delivered	MU	13648	34131	50927	99458
O&M	Rs. Cr.	117.15	192.27	432.48	707.31

Particulars	Units	PTCUL	HVPN	PSTCL	UPPTCL
Employee Expenses	Rs. Cr.	68.08	139.51	341.87	503.99
A&G Expenses	Rs. Cr.	13.57	16.11	28.08	28.59
R&M Expenses	Rs. Cr.	35.5	36.65	62.53	174.73

1. INTRODUCTION

1.1. BACKGROUND

In accordance with the provisions of the Uttar Pradesh Reorganization Act 2000 (Act 29 of 2000), enacted by the Parliament of India on 25th August 2000, the State of Uttaranchal came into existence on 9th November 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 12th February 2001 and entrusted it with the business of transmission and distribution in the State. Subsequently, from 1st April 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 13th March 2001, signed between the Governments of Uttaranchal and Uttar Pradesh.

Uttarakhand is one of the few states in India which not only has high hydro potential of 18,175 MW but also have higher per capita consumption than the national average of 1000 kWh. (Per capita consumption of the state has steadily grown from 1,012 kWh in FY 12 to 1,154 kWh in FY 15). The present firm availability of the state is 2,361 MW (excluding share from unallocated quota). Historically, the state has to depend on short term procurement of power to the tune of 25% of its total energy requirement.

Meanwhile, Electricity Act 2003 was enacted by the Parliament of India on 10th June 2003, which 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 31st May 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 31st May 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 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. 31st May 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.

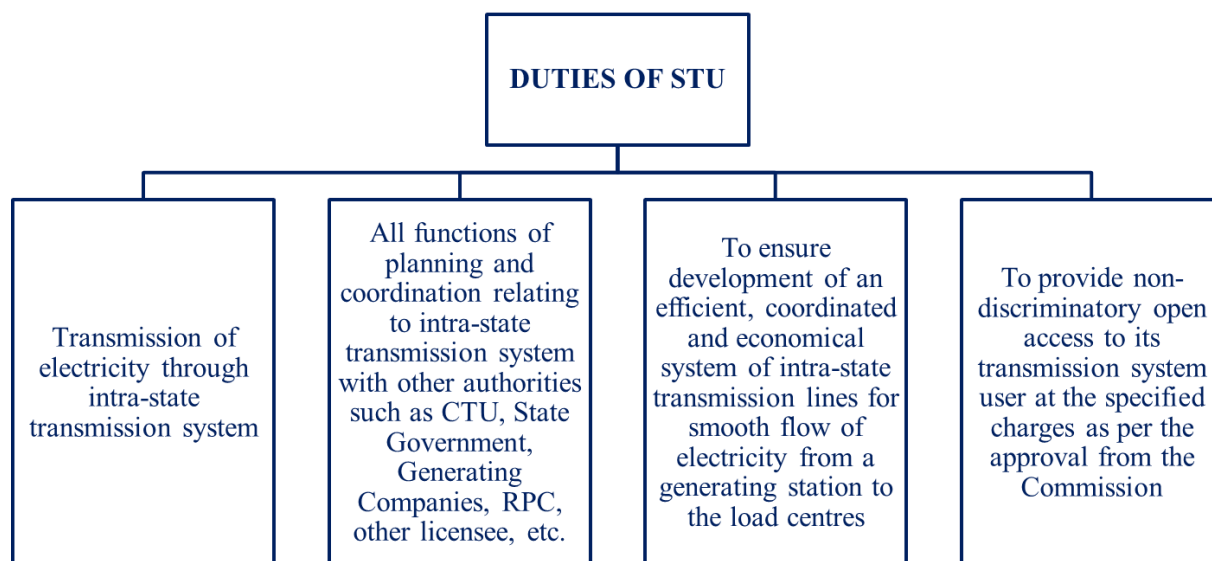
Transmission network serves as an important link between the Generation and Distribution segments of electricity supply business. The issues and challenges pertaining to the Transmission business are mostly in terms of keeping up with the growth needs of the other two segments. While the growth in the demand along with increasing electrification end drive the need to meet the peak demand and energy requirement by arranging supply from internal and external generation sources, the transmission system has to be strengthened adequately and timely for maintaining grid stability and supply quality.

The push for infrastructure enhancement also comes from 24x7- Power for All Program, a Joint Initiative of Government of India (GoI) and State Governments with the objective to provide 24x7 power available to all households, industry, commercial businesses, public needs, any other electricity consuming entity and adequate power to agriculture farm holdings by FY 19.

The programme will focus on harnessing the untapped potential of Renewable Energy Resources available in abundance in the state, bridging the gaps of transmission constraints and efficient use of available power at distribution end. The programme will look to redress the issues of reduction of AT&C losses, bridging the gap between ACS & ARR as well as customer centric initiatives for ultimate customer satisfaction. Availability of power and access to it can bring upon a change in the socio-economic environment of rural hilly areas which is very important to check migration of population from hills.

1.2. DUTIES OF AN STU

Figure 1: Duties of an STU



1.3. OBJECTIVES OF PTCUL

To plan and develop a well-coordinated intra- state transmission system;

- To provide transmission facilities to the state distribution companies (DISCOM’s) and any other Transmission System User (TSU) on payment of transmission charges;
- To provide long term and short term open access to consumers on payment of transmission and allied charges.
- To enter into new growth areas & enhance business value with secondary business

1.4. CORPORATE MISSION

- 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 make 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.

1.5. CORPORATE VISION

PTCUL endeavours to be among the best of Power Transmission utilities in India in operating efficiency, system reliability standards and commercially viable operations.

1.6. CORE ACTIVITIES

Project

All the activity streams, comprising of planning execution and control of engineering design, procurement and construction of EHV Transmission lines (TL) Substation (S/S) and other utilities.

Operation & Maintenance (O&M)

All the objectives comprising of planning, implementation and control of:

- Operational activities of EHVTLs and S/S and other utilities as per Grid standards.
- Maintenance activities to ensure their efficient and reliable working.
- Asset management activities of the Transmission work to ensure commercial viability.

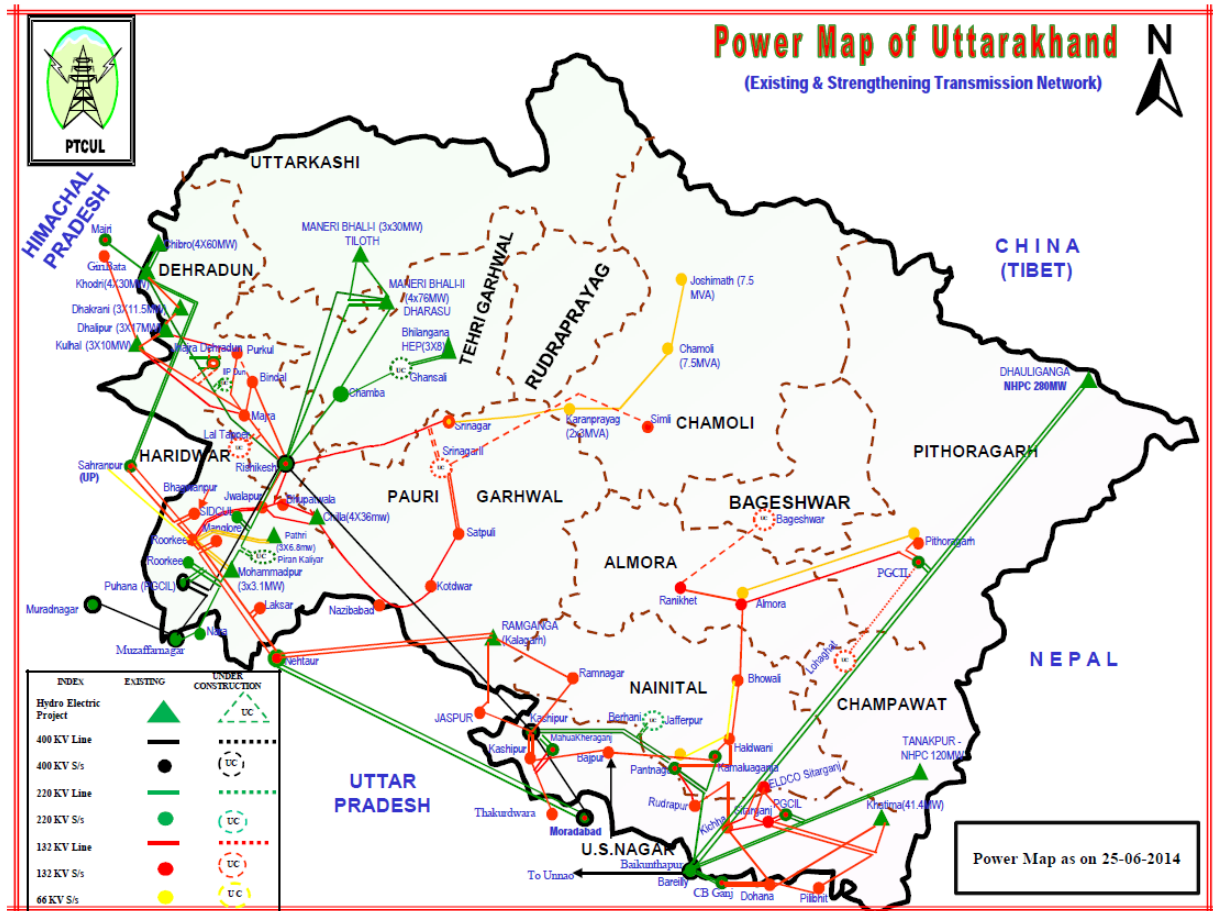
Load Dispatch (LD)

All the activities comprising of:

- Scheduling and dispatch of electricity within the state
- Monitoring grid operations
- Accounting for the quantity of electrical energy transmitted through the State Grid
- Supervising and controlling inter-state transmission system
- Carrying out real time operations for grid control and dispatch of electricity within the State

1.7. POWER MAP OF UTTARAKHAND

Figure 2: Power map of Uttarakhand



The state is well served by a network of Inter-state transmission lines at 765 kV (charged at 400 kV), 400 kV and 220 kV levels.

1.8. KEY OBJECTIVES OF THE 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 fuelling the economic growth targets of the State.
- Meeting the regulatory compliance of submission of a business plan as mandated by the UERC Tariff Regulations, 2015

- Aid in decision making leading to better Operational Efficiency: The Business Plan is prepared so as to be useful for 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, and thus improving the overall operational efficiency of the transmission network infrastructure

2. BUSINESS OVERVIEW: OPERATIONAL

PTCUL is one of the efficient Transmission Utility in India with availability of over 99% and very low transmission loss which has been below 2%.

The major strengths of PTCUL are:

- High system availability- planned shutdown for maintenance being done; Long term & short term open access being provided
- Extremely low transmission losses

Few of the major factors being encountered by PTCUL are ageing equipments - 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.

2.1 ROLE OF PTCUL AS A TRANSMISSION UTILITY

PTCUL handles the load from various generating stations including:

- State generating stations;
- Allocation from central generating stations;
- Independent Power Producers (IPPs);
- Captive power plant;
- Renewable power integration

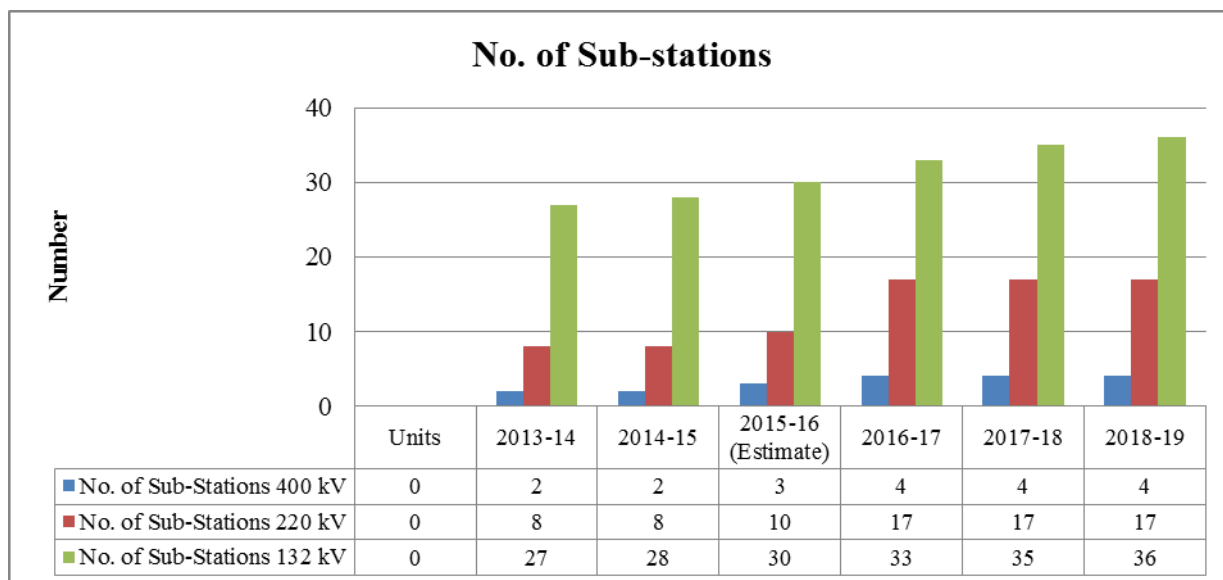
2.2 CURRENT INFRASTRUCTURE DETAILS

PTCUL has a network which is spread over 3019 CktKms of transmission line and has installed a total of 38 substation (as of September, 2015). PTCUL is in the process of rapidly increasing its network capacity and the substations to handle the new generation capacities coming up in the next five years.

2.3 GROWTH IN SUB STATION LEVEL

A number of sub-stations have been commissioned and proposed to meet the growing load needs of critical regions and improve the system efficiency. The actual and proposed growth in the number of sub-stations from the years 2013-14 to 2018-19 has been depicted below:

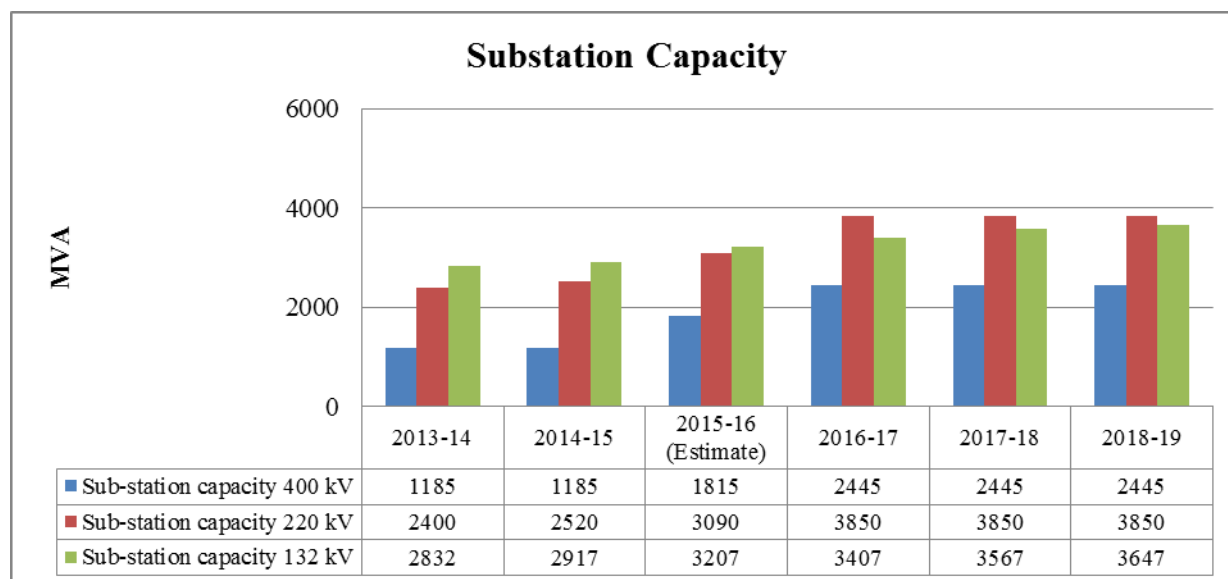
Figure 3: No of Sub-stations



2.4 GROWTH IN SUB-STATION CAPACITY

Increasing capacity for efficient grid management and peak contingency has been addressed with several proposed projects. The actual and proposed growth in the sub-stations capacity from the years 2013-14 to 2018-19 has been depicted below:

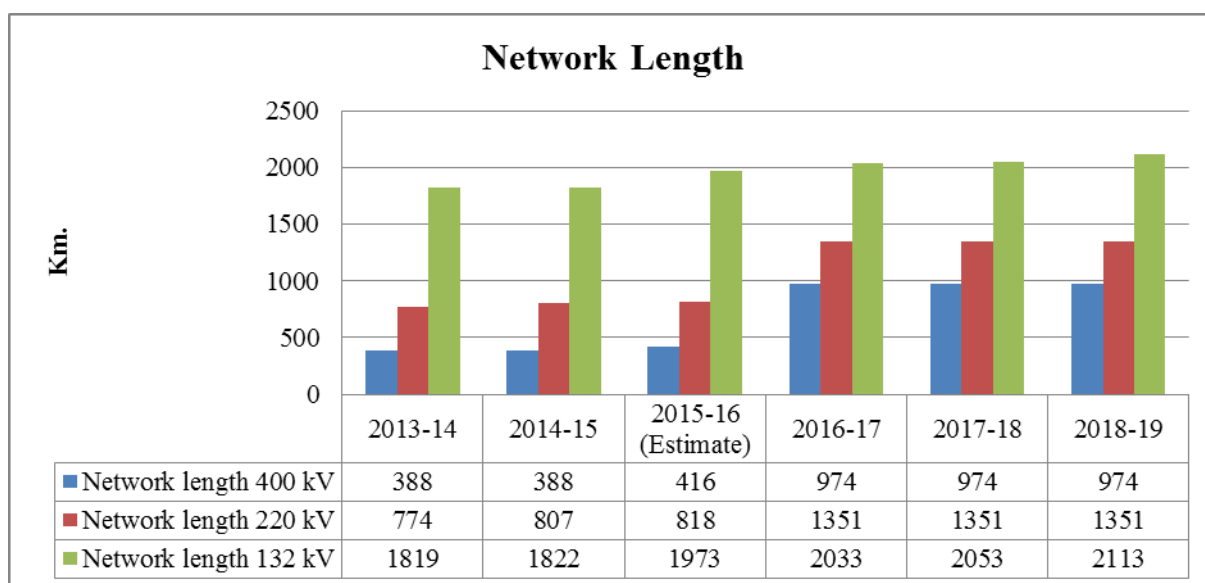
Figure 4: Sub-station capacity



2.5 GROWTH IN NETWORK LEVEL

The growth in the network level is shown below:

Figure 5: Growth in Network



Even though there has been a substantial increase in the Network, there are a few congestion points in the current network of PTCUL. These have been identified and are being resolved through various mitigation solutions. The CAPEX plan for the control period 2016-17 to 2018-19 has been made keeping in mind the congestion points currently being encountered by PTCUL.

Table 4: Congestion points and mitigation solution

S.No.	Constraints in STU (PTCUL) observed by SLDC	Mitigation project proposed between FY 16 and FY 19	Status
1	Overloading of 160 MVA, 220/132 KV Transformer at 220 kV Rishikesh	Increasing Capacity at 220 KV S/s Rishikesh from 2 x 160 to 3 x 160 MVA	Under construction
2	Overloading of (2X80) MVA, 132/33 KV Transformer at 220 kV S/s SIDCUL, Haridwar	Augumentaion at 220 KV S/s SIDCUL, Haridwar by installation of 01 No. 50 MVA 220/33 KV Transformer	Under construction
3	Overloading of (2X80) MVA, 132/33 KV Transformer at 220 kV S/s Pantnagar	Augumentaion at 220 KV S/s SIDCUL, Pantnagar by installation of 02 No. 50 MVA	Under construction

S.No.	Constraints in STU (PTCUL) observed by SLDC	Mitigation project proposed between FY 16 and FY 19	Status
		220/33 KV Transformer	
4	Overloading of (2X40) MVA, 132/33 KV Transformer at 220 kV S/s Jhajra Sub-station	Increasing Capacity at 220 KV S/s Jhajra from 2 x 40 to 2 x 80 MVA at 132/33 KV Voltage level.	Under construction
5	Overloading of 160 MVA, 220/132 KV Transformer at 220 kV S/s Roorkee	Construction of 400/220/132 KV proposed 400/220/132 KV S/s Landhora	Proposed
6	Overloading of 220 kV Roorkee-Puhana line	LILO of 220 KV Roorkee-Nara Line at proposed 400/220/132 KV S/s Landhora	Proposed
7	Overloading of (2X40) MVA, 132/33 KV Transformer at 132 kV Jwalapur Sub-station	Increasing Capacity at 132 KV S/s Jwalapur from 2 x 40 to 3 x 40 MVA	Under construction
8	132 kV radial feeder for 132 kV S/s Srinagar	LILO of 132 KV Rishikesh-Srinagar line at 400/220/132 KV S/s Srinagar	Under construction
9	Overloading of 132 kV SIDCUL-Jwalapur line	Construction of 132 KV SIDCUL-Jwalapur line (additional circuit).	Under construction
10	132 kV radial feeder for 132 kV S/s ELDICO, Sitarganj	Construction of 132 KV ELDICO Sitarganj -Kiccha line	Under construction
11	132 kV radial feeder for 132 kV S/s Laksar	LILO of 132 KV Laksar-Nehataur line at proposed 400/220/132 KV S/s Landhora	Proposed
12	132 kV radial feeder for 132 kV S/s Manglaur	LILO of 132 KV Manlaur-Nehataur line at proposed 400/220/132 KV S/s Landhora	Proposed

2.6 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.

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 2015-16 (until 30 September, 2015) was 99.17%. 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.

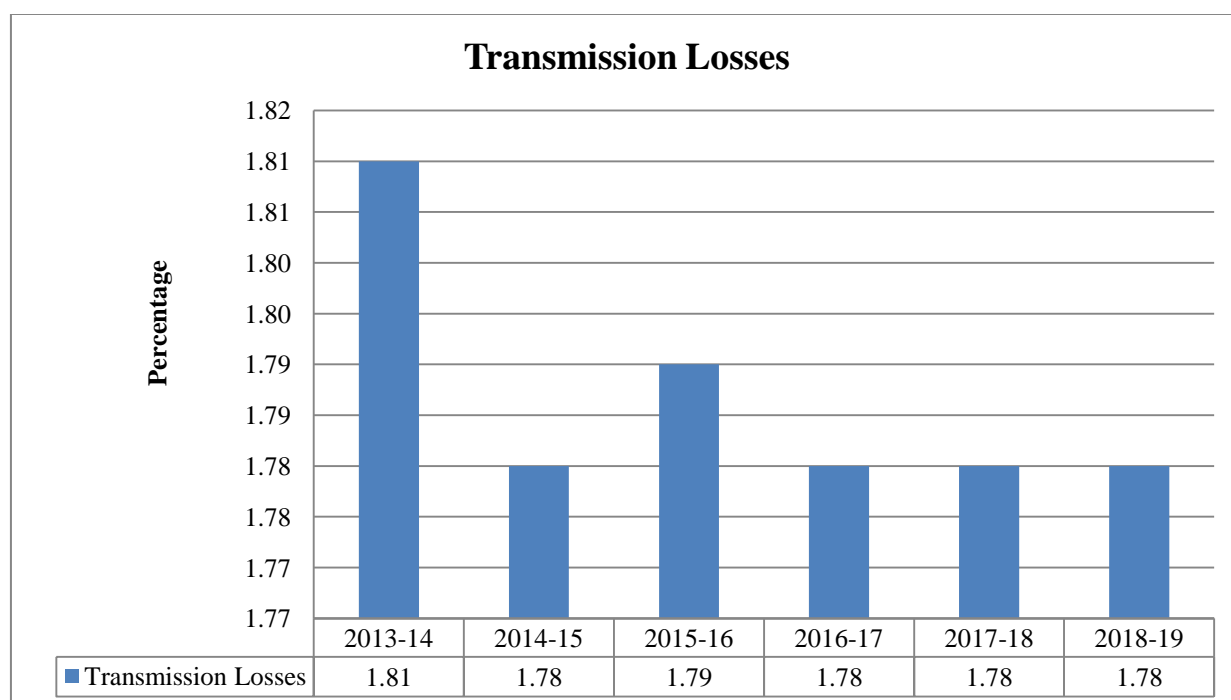
Table 5: System Availability

	2013-14	2014-15	2015-16	2015-16	2016-17	2017-18	2018-19
System Availability	99.31%	99.33%	>99%	>99%	>99%	>99%	>99%

2.7 TRANSMISSION LOSSES

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%.

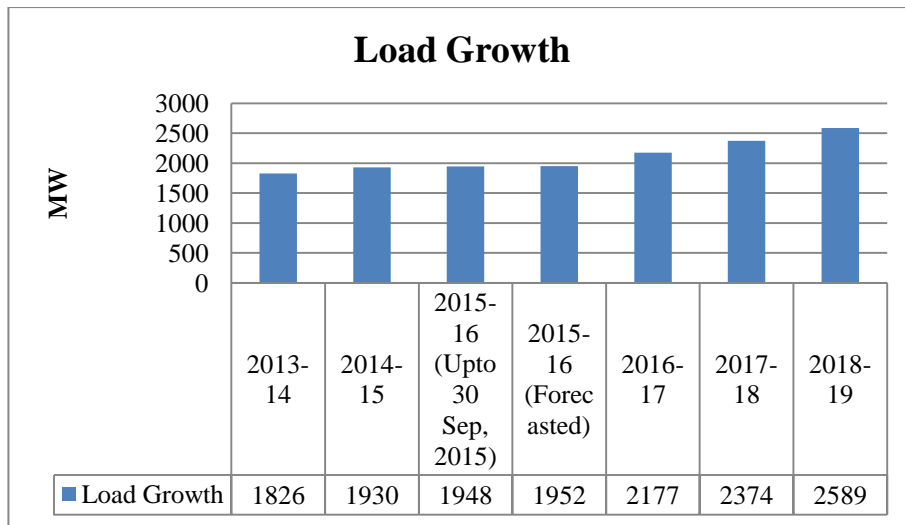
Figure 6: Transmission losses



2.8 LOAD GROWTH

The present load growth of 1948 MW (Upto September 30, 2015) is expected to grow to 2589 MW, an approximately 7.6% growth year-on-year. PTCUL has considered a more conservative growth estimate compared to the load growth of approximately 10% year-on-year suggested by the report ‘24X7 Power For all’ taking into consideration different implementation variables and state economic conditions. The forecasted load growth is shown in the figure as follows:

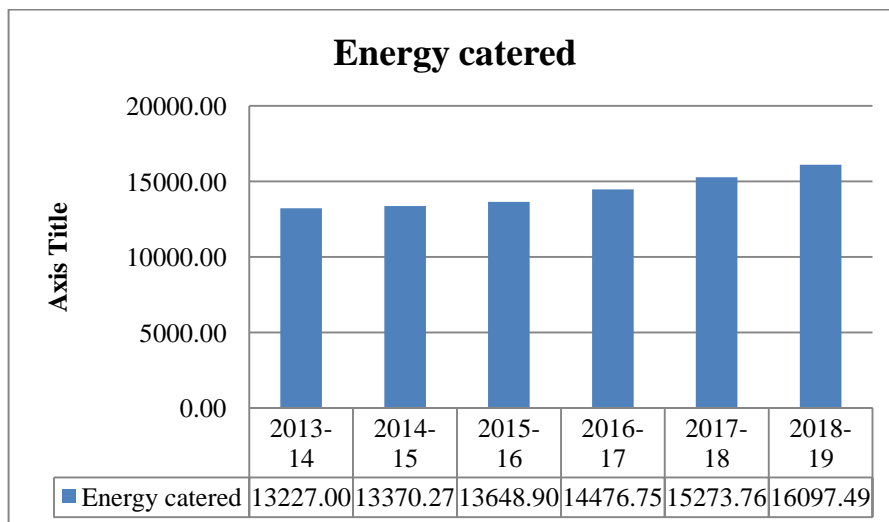
Figure 7: Load Growth



2.9 ENERGY CATERED

PTCUL has steadily increased the level of energy catered to ensure required availability. 13648.9 MU of energy is expected to be served in 2015-16, and 16097.5 MU in FY 2018-19, an approximately 4.2% year-on-year growth.

Figure 8: Energy Catered



3. REGULATORY FRAMEWORK

3.1 BACKGROUND

As per the Constitution, the power sector in India was the combined responsibility of Central and State Government. Over the years, reforms in Indian power sector have been driven by the Union Government in an endeavour to achieve sustainable growth & improvement in operational efficiencies. One of the hallmarks of this reform Agenda is the Electricity Act, 2003 (hereinafter referred as EA, 2003 or simply the “Act” unless specified otherwise).

The Electricity Act 2003 attempts to induce competition in electricity sector for creating an environment conducive to supply of good quality of electricity to all categories of consumers at affordable/reasonable prices. The access to electricity markets for captive generators, open access participants and parallel licensees has led to evolution of multi buyer market mechanism. Adequate investment in Intra-state and Inter-state transmission infrastructure would also be required for supporting power generation. This vibrant power market would facilitate competitive merchant power plants to be set up pursuant to the promotional policies like mega power plants etc, and incentives offered by the Government such as availability of state specific resources like land, water, rebate in local taxes, etc.

3.2 ENABLING PROVISIONS IN ELECTRICITY ACT, 2003

The Government of India has notified the Electricity Act, 2003 with effect from 10th June 2003 which requires the State Governments to initiate major changes in the Industry Structure and Operations of the state power sector. The broad objectives of the Electricity Act, 2003 as incorporated in its preamble is 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 has introduced a number of innovative concepts like de-licensing of generation, power trading, Open Access, Appellate Tribunal, etc., and special provisions for the rural areas. The Act has made it mandatory for all the States to restructure their SEBs.

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.
- 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.
- 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 has envisaged competition in transmission and has 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.

CTUs and STUs functions as specified in the Act are:

- Transmission;
- 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

3.3 LEGAL STRUCTURE OF POWER TRANSMISSION 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, and PGCIL, which is engaged in interstate power transmission.

At the state level, state governments control the sector through the erstwhile state electricity boards (SEBs) and electricity departments (EDs). In many states the SEBs are now unbundled or corporatized as per the EA 2003. Separate utilities are responsible for generation, transmission, and distribution, usually within their own states and territories. Intra-state transmission is exclusive domain of SEBs and State Transmission Utilities (STUs) formed out of unbundled SEBs.

	Inter State & Inter Region Transmission	Intra State Transmission
Policy	Ministry of Power, Govt of India	Energy Department of State Govt
Planning & Standards	Central Electricity Authority	
Regulation	Central Electricity Regulatory Commission	State Electricity Regulatory Commission
Asset Creation, Operations	Central Transmission Utility (PGCIL)	State Transmission Utility

3.4 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 also 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 also for development of power market.

The Policy notes 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 specifies 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 12th February, 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.

3.5 NATIONAL TARIFF POLICY

Some of transmission related provisions of National Tariff Policy which have implication with regard to the National Electricity Plan are:

- Adequate and timely investments and also efficient and coordinated action to develop a robust and integrated power system for the country.
- Augmenting transmission capacity keeping in view the massive increase planned in generation and also for development of power market.
- While planning new generation capacities, requirement of associated transmission capacity would need to be worked out simultaneously in order to avoid mismatch between generation capacity and transmission facilities.
 - The Central Government would facilitate the continued development of the National Grid for providing adequate infrastructure for inter-state transmission of power and to ensure that underutilized generation capacity is facilitated to generate electricity for its transmission from surplus regions to deficit regions.
 - The Central Transmission Utility (CTU) and State Transmission Utility (STU) have the key responsibility of network planning and development based on the National Electricity Plan in coordination with all concerned agencies as provided in the Act. The CTU would need to coordinate with the STUs for achievement of

the shared objective of eliminating transmission constraints in cost effective manner.

- Network expansion should be planned and implemented keeping in view the anticipated transmission needs that would be incident on the system in the open access regime. Prior agreement with the beneficiaries would not be a pre-condition for network expansion.
- Structured information dissemination and disclosure procedures should be developed by the CTU and STUs to ensure that all stakeholders are aware of the status of generation and transmission projects and plans.
- Open access in transmission has been introduced to promote competition amongst the generating companies. This should lead to availability of cheaper power. The Act mandates non-discriminatory open access in transmission.
- To facilitate orderly growth and development of the power sector and also for secure and reliable operation of the grid, adequate margins in transmission system should be created. The transmission capacity would be planned and built to cater to both the redundancy levels and margins keeping in view international standards and practices.
- 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.

3.6 SERC REGULATIONS

Regulations were enacted by the Regulatory Commission in compliance with the provisions of the EA 2003 and as guided by the National Tariff Policy and National Electricity Policy. Some of the key regulations which were enacted by the Uttarakhand State Electricity Regulatory Commission as outlined below:

Table 6: Regulations

S.No.	Name of the Regulation
1.	Grid Code
2.	Multi Year Tariff Regulations, 2015
3.	Intra State Open Access Regulations, 2015
4.	Fees, fines and Charges Regulations
5.	Appointment & Functioning of Ombudsman, 2010

3.7 UERC (TERMS AND CONDITIONS FOR DETERMINATION OF MULTI YEAR TARIFF) REGULATIONS, 2015

As per clause 8(1)(b) of UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2015, 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. 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;

4. CURRENT PROJECTS

PTCUL is undertaking various projects to improve its network strength. The table below lists the major projects that are currently being undertaken.

Table 7: Current projects

S No	Name of the Project	Region	Approved Cost	Estimated Date of completion
			(Rs Crore)	
220 KV LINES :				
1	Construction of LILO of Rosnabad-Puhana 220 KV line at 220 Kv s/s Pirankaliyar	Garhwal	9.91	Dec-16
2	Construction of LILO of Lakhwar-Vyasi 220 KV double circuit Line	Garhwal	146.52	Oct-17
3	Construction of 220 Kv line from 400 KV PGCIL s/s to 220 KV s/s Dehradun	Garhwal	26.34	Jun-16
4	LILO of 220 KV Dhauliganga - Pithoragarh Line at 220 KV S/S Baram	Kumaon	26.09	Jun-18
220 KV SUB STATIONS				
5	220 KV GIS s/s IIP, Harrawala , Dehradun	Garhwal	131.14	Dec-16
6	220 KV s/s PiranKaliyar (2*50 MVA)	Garhwal	66.12	Dec-16
7	220 KV S/S Jaffarpur	Kumaon	74.61	Jun-17
8	LILO Of 220KV Kashipur-Pantnagar line at 220KV S/s Jafarpur	Kumaon	8.34	Jun-17
9	220 KV S/S Baram	Kumaon	120.84	Jun-18
132 KV LINES				
10	132 KV D/C Srinagar -Simli Line	Garhwal	118.52	Jan-16
11	132 kV Simli S/s	Garwal	9.4	Jan-16
12	Construction of LILO of 132 KV Purkul-Dhalipur Line at 220 KV s/s Dehradun	Garhwal	0.8	Jan-16
13	LILO of 132 KV Kulhal-Majra Line at 220	Garhwal	0.8	Jul-15

S No	Name of the Project	Region	Approved Cost	Estimated Date of completion
			(Rs Crore)	
	KV S/s Dehradun			
14	LILO of 132 KV Majra-Rishikesh line at 132 KV S/S Laltappar	Garhwal	1.74	Feb-15
15	Construction of 132 KV Purkul- Bindal link line (10.73 Km.)	Garhwal	8	Dec-16
16	132KV Ranikhet -Bageshwar Line	Kumaon	60.18	Jun-17
17	Stringing of 132 KV Kichha - Sitarganj Line	Kumaon	2.3	Jun-16
18	132KV Pithoragarh - Lohaghat Line	Kumaon	82.07	Mar-18
19	Amalgation of 132 KV Lines at 132 KV S/S Khatima II	Kumaon	20	Mar-18
132 KV SUB STATIONS				
20	Construction of 132 KV s/s Srinagar	Garhwal	19.77	Dec-15
21	132 KV S/s LalTappar, Dehradun	Garhwal	24.92	Feb-15
22	132KV S/S Bageshwar	Kumaon	92.78	Jun-17
23	132 KV S/S Khatima II	Kumaon	30	Mar-18
24	Increasing capacity of 132 KV S/S Kathgodam (Haldwani) form 40 MVA to 80 MVA	Kumaon	3.03	Aug-15
25	Increasing capacity of 132 KV S/S Bhowali form 30 MVA to 50 MVA	Kumaon	2.44	Aug-15
26	Increasing capacity of 132 KV S/S Almora form 40 MVA to 60 MVA	Kumaon	2.78	Jan-15
27	Increasing capacity of 132 KV S/S Bazpur form 80 MVA to 120 MVA	Kumaon	5.62	Sep-15
MISC. WORKS				
28	Construction of 1 no. 220KV Bay at 220	Kumaon	1.52	Mar-15

S No	Name of the Project	Region	Approved Cost	Estimated Date of completion
			(Rs Crore)	
	KV S/s Pantnagar(REC)			
29	Augmentation of 220KV S/s Pantnagar along with construction of 02 Nos 220 KV Bays and 02 Nos 33 KV Bays.(REC)	Kumaon	12.38	Mar-16
30	Development of Switchyard including dismantling chain link fencing and re-erection for 2x50 MVA T/F at 220 KV S/s Pantnagar.(REC)	Kumaon	0.36	Mar-16

With the objectives of enhancing the grid system to cater to increasing load demands and improving the overall efficiency of the infrastructure setup, several projects have been initiated, a few of which are outlined as follows:

- 1. Construction of LILO of Rosnabad-Puhana 220 KV line at 220 Kv s/s Pirankaliyar**– With the construction of this line, the proposed 220KV Sub-station Piran - Kaliyar (Imlekhera) will be energized and supply in different area of Haridwar District will improve. The contract award for this project is currently under process.
- 2. Construction of LILO of Lakhwar-Vyasi 220 KV double circuit Line** - This line is essential for the power evacuation of the proposed Hydro Projects Lakhwar 300MW and Vyasi 120 MW of UJVN Ltd. Detailed survey work for this project has been completed as of Nov-2015.
- 3. Construction of 220 Kv line from 400 KV PGCIL s/s to 220 KV s/s Dehradun**- With the construction of this line, the 220KV S/s Dehradun will be connected to the 400KV S/s Sherpur PGCIL, which is planned to be connected to the 765KV S/s Abdullapur Haryana. Hence, this particular Grid line of Uttarakhand will be directly connected to Haryana. Infrastructure and equipment are being currently setup for this project.

4. **220 KV GIS s/s IIP, Harrawala , Dehradun** – With this project, the increasing load demand of Dehradun area will meet out. The contract for this project has been awarded, and the Design and Engineering work is currently underway.
5. **220 KV s/s PiranKaliyar (2*50 MVA)** – With this Sub-station, the supply of PiranKaliyar and other area of Haridwar District will improve. The contract for this project has been awarded, and the Design and Engineering work is currently under way.
6. **132 KV D/C Srinagar -Simli Line**–With this line, the supply of district Chamoli and Rudraprayag will be improve and increasing load demand will meet out. Infrastructure and equipment are being currently setup for this project.
7. **Construction of LILO of 132 KV Purkul-Dhalipur Line at 220 KV s/s Dehradun and LILO of 132 KV Kulhal-Majra Line at 220 KV S/s Dehradun** – With the construction of the line, the supply reliability and increasing load demand in Dehradun area will improve.
8. **LILO of 132 KV Majra-Rishikesh line at 132 KV S/S Laltappar**–With this project, the supply of Laltapper area and other areas of Dehradun District will improve and 132KV S/s Majra will get load relief.
9. **Construction of 132 KV Purkul- Bindal link line**– With the construction of this line, the supply reliability and increasing load demand in Dehradun area will improve. Retendering for balance work is under progress.
10. **132KV Ranikhet -Bageshwar Line** –With the construction of this line, the supply of District Bageshwar will be improve.
11. **132 kV Simli S/s** - Supply of District Chamoli and Rudraprayag will improve and increasing load demand will meet out. The Sub-station for this project has been completed and it will be energized on completion of Line.
12. **Construction of 132 KV s/s Srinagar** - After construction of this S/s 132KV S/s Satpuli, 132KV S/s Srinagar and 132KV S/s Simli will take power directly from 400/220/132KV S/s Srinagar.

13. **132 KV S/s LalTappar, Dehradun** - Supply of Laltapper area and other areas of Dehradun District will improve and 132KV S/s Majrawill relieve some of its load.
14. **LILO of 220 KV Dhauliganga - Pithoragarh Line at 220 KV S/S Baram** - Increasing load demand of Dharchula Town/Baram Town/Munsiyari Town/Didihat Town area will meet out. The contract for this project has been awarded, and the Design and Engineering work is under progress
15. **220 KV S/S Jaffarpur** - To cater to the increasing load of Gadarpur Town/Zafarpur Town/DineshpurTown and adjoining area. The tender for this project has already been awarded, and the Forest Land transfer is in progress.
16. **LILO Of 220KV Kashipur-Pantnagar line at 220KV S/s Jafarpur** - To cater to the increasing load of Gadarpur Town/ZafarpurTown/DineshpurTown and adjoining area.
17. **220 KV S/S Baram** – For the increasing load demand of Dharchula Town/Baram Town/Munsiyari Town/Didihat Town, the new substation will help in the load of the area to meet out. The land for this project is undergoing the purchase process.
18. **132KV Ranikhet -Bageshwar Line** - Supply of Bageshwar Town/Kapkot Town/KandaTown/Garur Town/SomeshwarTown willimprove with the construction f this line.
19. **132KV Pithoragarh - Lohaghat Line** - Supply of Lohaghat Town/ Champawat Town/DevidhuraTown (Whole Champawat District) will be improved. Detailed survey work is in progress for this project.
20. **Stringing of 132 KV Kichha - Sitarganj Line** - Supply of Sitarganj area/Kichha area/ELDICO Industrial Area will be improved.
21. **Amalgation of 132 KV Lines at 132 KV S/S Khatima II** - For Reliability of Power Supply of Khatima/Tanakpur/Nanakmatta and Industrial area of Khatima Town.
22. **132KV S/S Bageshwar** - Supply of Bageshwar Town/Kapkot Town/KandaTown/Garur Town/SomeshwarTown will be improved. The Civil and Substation Engineering work is currently underway.

23. **132 KV S/S Khatima II** - For Reliability of Power Supply of Khatima/Tanakpur/Nanakmatta and Industrial area of Khatima Town.

5. HUMAN RESOURCES

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 it more profitable. It is not a surprise then that PTCUL, which has been adjudged the best power utility in India by the Ministry of Power, employs an excellent talent pool. It has a satisfactory performance in recruitment, selection, training and then development of the employees.

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 focussed approach is required are as follows:

- Shortage of qualified manpower for performing day to day responsibilities
- Norms not updated periodically leading to higher workload on Field Staff
- High levels of employee stagnation, leading to lower motivation levels
- No system to evaluate employee capabilities, job requirements
- Huge number of Cadres, and across cadre disparities
- Not adequate focus on Employee Development
- Performance management system not aligned to business needs
- Lack of rewards and recognition systems for good performance across levels
- Roles and Responsibilities not clearly defined particularly between Field and Corporate Offices
- Lack of communication across the organisation, which hampers creation of positive culture
- Delegation of Powers, not documented and referenced properly leading to misinterpretations
- Discontent among people on implementation of Transfer Policy and long term focus
- Basic Hygiene factors like claims processing, salaries, advances, loans take longer time to clear
- Perception of Right people are not getting posted in the right places

PTCUL has reviewed the organisational structure in the light of the changing business needs and particularly to strengthen the functions such as Regulatory, Commercial, Engineering, Legal, Human Resources and Finance & Accounts and has developed a detailed manpower

planning process defined with adequate focus on short, medium and long term needs. It has projected that the net additions to the employee work force in FY 2016-17 would be 126 employees and the number of employees retiring would be 18, bringing the total work force to 964. The recruitment and retirement plan for employees in PTCUL is given as follows:

Table 8: Employee planning

Particulars	FY 2013-14	FY 2014-15	FY'2015 -16	FY'2016 -17	FY'2017 -18	FY'2018 -19
Opening no. of Employees	825	784	752	845	953	960
Employees recruited	5	3	132	126	38	35
Retirement (including resigned and death cases)	46	35	39	18	31	17
Closing No. of Employees	784	752	845	953	960	978
Gn	-4.97%	-4.08%	12.37%	12.78%	0.73%	1.88%

This business plan assesses the cost in respect of such fresh recruitments, their recruitment cost and training and development cost. This section discusses:

- Some of the key initiatives undertaken on the human resource front
- Projections of the training costs in the next 3 years

5.1 EMPLOYEES' SUGGESTION SCHEME (ESS)

The ESS has been one of major initiatives undertaken at PTCUL. The programme was introduced in order to encourage creative thinking vis-à-vis inspiring and channelizing the ideas/suggestions to promote organization wide problem solving and improvement/achievement orientation. The aim of the scheme is to foster a sense of belonging, ownership, collaboration and strengthen employee-management relationship.

Awards under the ESS:

- Suggestions resulting in saving which are of recurring nature and likely to benefit the company for time to come, 10% of first years annual savings may be recommended as award subject to a maximum of Rs. 10,000.
- In case of one time savings, 10% of saving may be recommended as award subject to a maximum of Rs. 7,500
- Suggestions where savings/benefits cannot be assessed on monetary terms will be rewarded to a maximum of Rs. 500 per suggestion

- In case the suggestion happens to be of exceptional nature the amount of award may be recommended beyond Rs. 15,000 by the suggestion committee.
- In addition to cash awards, commendation or appreciation letter will be issued to the individual award winner.
- A token of Rs.100 will be given for each suggestion worth considering.

5.2 GRIEVANCE REDRESSAL SCHEME (GRS)

PTCUL aims to be a dynamic, forward looking organization with a motivated and satisfied workforce. In order to maintain high employee morale and motivate them towards better productivity it is essential and important to treat every employee with dignity but to address their genuine grievances in time within framework of company's policies/rules.

Objective of GRS:

- To attempt to resolve grievance through verbal discussion at first instance.
- To handle/redress an individual employee's grievance within framework of policy/rules in a prescribed/reasonable time period.
- To promote better communication, mutual trust, harmonious relationship between employees and management.
- To provide various stages of grievance redressal to enable an aggrieved employee to seek remedy, if necessary, even from the highest level of authority within framework of rules.

5.3 TRAINING & DEVELOPMENT

PTCUL recognises that the key focus of training is on Induction Level training and in house refresher programs. The key objectives for a sound training and development policy are:

- Upgrade standard knowledge for continual improvement
- Skills enhancement of the employees
- Positive behaviour change in employees towards his fellow employees & organization
- Preparing employees for higher responsibility by providing appropriate skills
- Reduction in occurrence of accidents through safety awareness & safety training
- Creating conducive work culture & work environment through knowledge sharing
- Provide opportunity to update business & technology through external interaction

Table 9: Training Initiatives undertaken from 01.04.2015 onwards:

S.No	Name of Training	Name of Institute	Venue of Training	Date of Training	No. of Days	No. of participants
1	FIDIC-Contract Management	ADB & FIDIC Geneva	New Delhi	22.06.2015 to 24.06.2015	3 Days	1
2	FIDIC-Contract Management Training of Trainers (TOT) for mature projects	ADB & FIDIC Geneva	New Delhi	25.06.2015 to 27.06.2015	3 Days	2
3	Uttarakhand Power Conclave-2015	CNFC	Pacific Hotel	25.06.2015	1 Day	10
4	Disaster Management in Hydro Power Plants	ADB	Madhuban Hotel	29.06.2015 to 30.06.2015	2 Days	5
5	Power System Operation	PSTI, Bangalore	PSTI, Bangalore	06.07.2015 to 18.07.2015	2 Weeks	3
6	EPF	EPFO, Dehradun	PTCUL, VidhyutBhawan, Dehradun	09.07.2015	1 Day	47
7	Power System Reliabilities	NPTI, Faridabad	NPTI, Faridabad	19.07.2015 to 24.07.2015	1 Week	1
8	Regulatory Framework in Power Sector	ADB & UPES, Dehradun	UPES, Dehradun	23.07.2015 to 25.07.2015	3 Days	7
9	Induction Training (AE (Civil), JE (Elect), JE (Civil))	NPTI, (NR) Badarpur, New Delhi	NPTI, (NR) Badarpur, New Delhi	27.07.2015 to 07.08.2015	2 weeks	50
10	Project Management Competency Development Program	ADB	Hotel Solitary, Dehradun	28.07.2015 to 31.07.2015	4 Days	5
11	Regulatory Framework in Power Sector	NPTI, Faridabad	NPTI, Faridabad	04.08.2015 to 08.08.2015	1 Week	1
12	Totality of Project Management	International Institute of Projects & Program Management and C.B.I.P New Delhi	C.B.I.P New Delhi	17.08.2015 to 19.08.2015	3 Days	4

S.No	Name of Training	Name of Institute	Venue of Training	Date of Training	No. of Days	No. of participants
		(ADB)				
13	E-Governance	IT Department, GoU	IT Department, GoU	20.08.2015 to 21.08.2015	2 Days	3
14	Advance Power System Protection	UPES, Dehradun (ADB)	UPES, Dehradun	25.08.2015 to 28.08.2015	4 Days	7
15	SMART GRID & Smart Meeting Technologies and Applications	ESCI, IEI and CSDEC, IEI	IEI, HP State Centre, Engineers Bhawan, Victoria Place, Nigam Vihar, Shimla	01.09.2015 to 03.09.2015	3 Days	3
16	Managing Stress, Conflicts & Discipline	Doon Business School, Selaqui, Dehradun (ADB)	Doon Business School, Selaqui, Dehradun	07.09.2015	1 Day	8
17	Power System Operation	PSTI, Banglore	PSTI, Banglore	07.09.2015 to 19.09.2015	2 Weeks	2
18	Project Management	Project Management Institute (PMI) North India Chapter	Ujjwal, UJVN Ltd, Maharani Bag, Dehradun	15.09.2015	2:30 Hour	6
19	Mental Stress and Naturopathy	Human Body Owner's (Dr. Naveen Sabharwall)	Meeting Room, Ist Floor, PTCUL, Dehradun	18.09.2015 (12:00 AM to 01:00 PM)	1 Hour	16
20	Open Access, Power Trading & Tariff-ABT Scenario (T&D)	UPES, Dehradun (ADB)	UPES, Dehradun	21.09.2015 to 24.09.2015	4 Days	7
21	Tariff Policy and Submission of ARRs-Regulatory Compliance	REC, Hyderabad (ADB)	CIRE Campus, Hyderabad	06.10.2015 to 09.10.2015	5 Days	2

S.No	Name of Training	Name of Institute	Venue of Training	Date of Training	No. of Days	No. of participants
22	Microsoft Project	CADD Centre, Bindal, Dehradun (ADB)	CADD Centre, Bindal, Dehradun (ADB)	13.10.2015 to 17.10.2015	5 Days	4
23	Implementation of customized Software for integrated Accounting, payroll and Material Management System (PSL)	Presentation By M/s Bandyopadhyaya Bhowmik & Company	UPCL, Board Room, Dehradun	15.10.2015 to 16.10.2015	2 Days	6
24	Excellence in Supervision	UPC, Dehradun	Hotel Sand Stone, Dehradun	28.10.2015 to 29.10.2015	2 Days	4
25	Microsoft Project (Iind Phase)	CADD Centre, Bindal, Dehradun (ADB)	CADD Centre, Bindal, Dehradun (ADB)	02.11.2015 to 06.11.2015	5 Days	3
26	Power System Operation	PSTI, Banglore	PSTI, Banglore	15.02.2016 to 27.02.2016	2 Weeks	2

PTCUL has proposed to undertake the following training programs in the years 2016-17 to 2018-19. The proposed number of employees identified for training along with the proposed training expenses is also provided.

Table 10: Training Initiatives undertaken from 01.04.2016 onwards:

S.No	Training	Duration	Employees Level / Category	Training Fee per Emp. (Rs.)	No of Emp. In a Batch	Total Training Fee (Rs.)	TA/D A (Rs.)	Estimated Total Exp. (Rs.)
	Induction Training							
1	For JE (2 Batch)	30 Days	C	70000	60	4200000	90000	4290000
2	For TG-I/II (2 Batch)	30 Days	C	70000	60	4200000	90000	4290000

S.No	Training	Durati on	Empl oyees Level / Cate gory	Traini ng Fee per Emp. (Rs.)	No of Emp. In a Batch	Total Training Fee (Rs.)	TA/D A (Rs.)	Estimate d Total Exp. (Rs.)
3	For Asst. Accountant (1 Batch)	7 Days	C	30000	30	900000	3750 0	937500
	Technical Training					0	0	0
1	O&M Related Training for JE (2 Batch)	15 Days	C	40000	60	2400000	7500 0	2475000
2	O&M Related Training for TG- I/II (2 Batch)	15 Days	C	35000	60	2100000	7500 0	2175000
	Specialized Technical Training							
1	Project Management for Power System Engineers	5 Days	A & B	14000	10	140000	2200 0	162000
2	O&m of Transformers and Circuit Breakers	5 Days	A & B	14000	20	280000	4400 0	324000
3	O&M of EHV Transmission Lines	5 Days	A & B	14000	10	140000	2200 0	162000
4	Point of Connection Tariff Regulation & Tutorials	5 Days	A & B	14000	5	70000	1100 0	81000
5	Advanced Power System Protection	5 Days	A & B	14000	5	70000	1100 0	81000
6	Quality Management in O&M of EHV S/s & Lines	5 Days	A & B	18000	10	180000	2200 0	202000
7	EHV S/s - Design, Erection, O&M	5 Days	A & B	16000	5	80000	1100 0	91000
8	Overhead Power Transmission Line Survey	5 Days	A & B	24000	5	120000	1100 0	131000
9	Project Planning Monitoring & Control System	5 Days	A & B	21000	5	105000	2750 0	132500
10	Testing & Commissioning of Electrical Equipment in	5 Days	A & B	24000	5	120000	1100 0	131000

S.No	Training	Durati on	Empl oyees Level / Cate gory	Traini ng Fee per Emp. (Rs.)	No of Emp. In a Batch	Total Training Fee (Rs.)	TA/D A (Rs.)	Estimate d Total Exp. (Rs.)
	Power Utility							
11	Disaster Management, Electrical Safety procedure and Accident prevention	5 Days	A & B	6500	5	32500	1100 0	43500
12	400KV/220KV Sub Station-Design, Operation & Maintenance (Latest Procedures)	5 Days	A & B	13000	5	65000	1100 0	76000
13	Development in Design & Construction of Transmission Lines	5 Days	A & B	26500	5	132500	1100 0	143500
14	Open Access, a Role of LDCs and Power Markets	4 Days	A & B	13500	5	67500	1100 0	78500
15	Reactive Power Management	4 Days	A & B	17500	5	87500	1100 0	98500
16	Best Practices in O&M of EHV Switchgear	4 Days	A & B	19000	5	95000	1100 0	106000
17	Power Business, Tariff and Regulations	3 Days	A & B	10500	5	52500	1100 0	63500
18	IE Act, Rules and Deregulation	3 Days	A & B	10500	10	105000	2200 0	127000
19	Smart Grid	3 Days	A & B	10500	5	52500	1100 0	63500
20	Unified Load Dispatch & Communication	3 Days	A & B	10500	5	52500	1100 0	63500
21	Electricity Regulation Governance, Policy and Commercial Issues	2 Days	A & B	11000	5	55000	1100 0	66000
22	Safety in Power Transmission and Behavior Based Safety management	2 Days	A & B	11000	30	330000	6600 0	396000
23	"CSI Workshop on Cyber Security	1 Day	A & B	6000	5	30000	1100 0	41000

S.No	Training	Durati on	Empl oyees Level / Cate gory	Traini ng Fee per Emp. (Rs.)	No of Emp. In a Batch	Total Training Fee (Rs.)	TA/D A (Rs.)	Estimate d Total Exp. (Rs.)
	&Surveillance"							
	Professional Training					0	0	0
1	IT & Computer Training	15 Days	A & B & C	4500	60	270000	1800 0	288000
2	Decision Making & Problem Solving	5 Days	B & C	32500	10	325000	2200 0	347000
3	Communication & Presentation Skills	4 Days	B & C	18000	10	180000	2200 0	202000
4	MDP on Contract Management & Arbitration	3 Days	A & B	32000	4	128000	8800	136800
5	Accounts and Finance Training	3 Days	B & C	15000	30	450000	6600 0	516000
6	Presentation and Disclosures of Financial Statements- As per the revised schedule VI to the companies Act, 1956	2 Days	A & B & C	10000	30	300000	6600 0	366000
7	Domestic Inquiry	2 Days	A & B & C	10500	5	52500	1100 0	63500
8	RTI-2005	2 Days	A & B & C	1100	60	66000	1800 0	84000
	Managerial & Supervisory					0	0	0
1	Interpersonal Effectiveness and Team Building	3 Days	A & B	30000	10	300000	2200 0	322000
2	In-House Training Programme on Supervisory Skill Development of PTCUL Employees	3 Days	C	7000	50	350000	1100 00	460000
3	Tax Deduction at Source and Cash & Accounts Management including Double Entry System of	3 Days	B & C	15000	15	225000	2700 0	252000

S.No	Training	Durati on	Empl oyees Level / Cate gory	Traini ng Fee per Emp. (Rs.)	No of Emp. In a Batch	Total Training Fee (Rs.)	TA/D A (Rs.)	Estimate d Total Exp. (Rs.)
	Book-keeping							
4	Developing Efficiency and Effectiveness of Pas, PS, and Office Staff Including Multitasking Staff with Special Emphasis on Behaviourial Skills and Use of Latest Information Technology.	3 Days	C	15000	5	75000	9000	84000
5	Administrative Vigilance Depttal Proceeding and observing Norms & Guide of Apex Court for Protection of Women Employees against Sexual Harassment at Workplace	3 Days	A & B & C	15000	5	75000	9000	84000
6	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	3 Days	B & C	15000	10	150000	1800 0	168000
7	Development of Skill in field of Noting & Drafting, Filing System,	3 Days	C	15000	20	300000	4400 0	344000

S.No	Training	Durati on	Empl oyees Level / Cate gory	Traini ng Fee per Emp. (Rs.)	No of Emp. In a Batch	Total Training Fee (Rs.)	TA/D A (Rs.)	Estimate d Total Exp. (Rs.)
	Record Management and improving efficiency and effectiveness and in soft skills.							
8	Disciplinary Rules, Agencies and Procedure (Including CCA Rules & Constitutional Provisions)	3 Days	A & B & C	18500	5	92500	11000	103500
9	Establishment Matter (GPF/EPF, Gratuity, Pension etc.)	2 Days	B & C	6500	60	390000	132000	522000
10	Interpersonal Skills at workplace	2 Days	B & C	21000	5	105000	11000	116000
11	Works and Works Accounts Management Executive of Civil/Electrical Work keeping of Accounts, Duties and Responsibilities of Executive Engineers, Asstt. Engineers & Divisional Accountant.	2 Days	A & B & C	12500	20	250000	36000	286000

As per PTCUL Training Policy, efforts are made to impart an average 05 day Training per employee during each year. The Training needs are identified keeping in view the organizational functions in each area and availability of Trained manpower and existing knowledge/skill for effective discharge of functions. The needs are identified and enlisted after discussion with CE (O&M) Garhwal, CE (O&M) Kumaun & CE (Project) and other Senior Officers. The Training as per identified needs would be imparted through outside sponsorship

and organizing in-house programmes with outside experts during the years of i.e. 2016-17 to 2018-19

The projected training expenses for the years 2016-17 to 2018-19 are expected to be around Rs. 2.17 Cr.

At the end of each year, Training Incharge would review the training plan w.r.t.

- Training needs executed
- Feed backs of training reviewed
- Training needs not fulfilled during the year and reasons thereof

After identifying the gaps, fresh training needs will be identified as per organizational requirement and budgeting would be revised if required.

6. 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 2016-17 to FY 2018-19.

6.1 PROPOSED CAPITAL EXPENDITURE FOR FY 2016-17 TO 2018-19

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

The following table summarises the physical targets for 2016-17 to 2018-19:

Table 11: Physical Targets for 2016-17 to 2018-19

		Units	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
No. of Sub-Stations	400 kV	No./MVA	2/1185	2/1185	3/1815	4/2445	4/2445	4/2445
	220 kV	No./MVA	8/2400	8/2520	10/3090	17/3850	17/3850	17/3850
	132 kV	No./MVA	27/2832	28/2917	30/3207	33/3407	35/3567	36/3647
Growth in Network	400 kV	Ckt. Km.	388	388	416	974	974	974
	220 kV	Ckt. Km.	774	807	818	1351	1351	1351
	132 kV	Ckt. Km.	1819	1822	1973	2033	2053	2113
Total S/s Capacity		No./MVA	37/6417	38/6622	43/8112	54/9702	56/9862	57/9942
Total Network Length		Ckt. Km.	2981	3017	3207	4358	4378	4438

In the succeeding paragraphs, PTCUL has discussed the schemes undertaken by to finance major projects and operations, and has also provided the details of the ongoing and proposed capital investment schemes for the period FY 2016-17 to 2018-19.

6.2 PROJECT SCHEMES

Table 12: Project Schemes

S No	Scheme/ Funding Agency	Year	Projects	Proposed Completion Date	Scheme Cost Rs Crore
Plant and Machinery					
1	PFC III	FY 2016-17	220 KV GIS s/s IIP, Harrawala , Dehradun	Dec-16	131.14
2	PFC	FY 2017-18	220 KV S/S Jaffarpur	Jun-17	74.61
3	PFC	FY 2017-18	LILO Of 220KV Kashipur-Pantnagar line at 220KV S/s Jafarpur	Jun-17	8.34
4	REC II	FY 2015-16	132 kV Simili s/s	Jan-16	12.67
5	REC II	FY 2015-16	Construction of 132 KV s/s Srinagar	Dec-15	19.77
6	REC II	FY 2017-18	132KV S/S Bageshwar	Jun-17	92.78
7	REC IV	FY 2014-15	Construction of 132 KV s/s Haridwar road, Dehradun (80 MVA)	Feb-15	24.93
8	REC IV	FY 2013-14	220 KV s/s Dehradun (320 MVA)	Jan-14	51.74
9	REC IV	FY 2012-13	132 KV S/S Sitarganj (Eldico)	Dec-12	19.76
10	REC VI	FY 2016-17	220 KV s/s PiranKaliyar (2*50 MVA)	Dec-16	41.83
11	REC VII	FY 2017-18	132 KV S/S Lohaghat	Mar-18	39.71
12	REC X	FY 2017-18	Construction of 220 KV s/s Ghansali	Mar-18	122.65
13	REC XIII	FY 2018-19	220 KV S/S Baram	Jun-18	120.84
14	REC	FY 2019-20	220 KV S/S Almora	Jun-19	120.84
15	REC	FY 2017-18	132 KV S/S Khatima II	Mar-18	30
Line and Cables					
1	PFC	FY 2016-17	Construction of LILO of Jhajra- Rishikech Line at 220KV s/s Harrawala,	Dec-16	0.53

S No	Scheme/ Funding Agency	Year	Projects	Proposed Completion Date	Scheme Cost Rs Crore
			Dehradun		
2	REC I and III	FY 2015-16	1321 KV D/C Srinagar -Simli Line	Jan-16	118.52
3	REC II	FY 2017-18	132KV Ranikhet - Bageshwar Line	Jun-17	61.11
4	REC IV	FY 2015-16	Construction of LILO of 132 KV Purkul-Dhalipur Line at 220 KV s/s Dehradun	Jan-16	2.62
5	REC IV	FY 2015-16	Construction of LILO of 132 KV Kulhal-Mjara Line at 220 KV s/s Dehradun	Jul-15	2.15
6	REC IV	FY 2014-15	Construction of LILO of 132 KV Majra-Rishikesh at 132 Kv s/s haridwar road, Dehradun	Feb-15	1.74
7	REC IV	FY 2016-17	Construction of 132 KV Purkul- Bindal link line (10.73 Km.)	Dec-16	5.96
8	REC IV	FY 2013-14	Construction of LILO of 220 KV Khodri-Rishikesh line at 220 KV s/s Dehradun	Jan-14	1.09
9	REC IV	FY 2012-13	Stringing of 132 KV Kichha - Sitarganj Line	Dec-12	2.3
10	REC VI	FY 2016-17	Construction of LILO of Rosnabad- Puhana 220 KV line at 220 Kv s/s Pirankaliyar	Dec-16	7.96
11	REC VII	FY 2017-18	132KV Pithoragarh - Lohaghat Line	Mar-18	64.05
12	REC VIII	FY 2017-18	Construction of LILO of Lakhwar- Vyasi 220 KV double circuit Line	Oct-17	98.45

S No	Scheme/ Funding Agency	Year	Projects	Proposed Completion Date	Scheme Cost Rs Crore
13	REC XII	FY 2016-17	Construction of 220 Kv line from 400 KV PGCIL s/s to 220 KV s/s Dehradun	Jun-16	21.2
14	REC XIII	FY 2018-19	LILo of 220 KV Dhauliganga - Pithoragarh Line at 220 KV S/S Baram	Jun-18	26.09
15	REC	FY 2019-20	220 KV Jauljibi - Almora Line	Jun-19	189
16	REC	FY 2017-18	Amalgation of 132 KV Lines at 132 KV S/S Khatima II	Mar-18	20

Under the REC-New scheme, 27 works were planned having a total capital outlay of Rs. 1319.76 crore. REC had granted the approval to fund the entire cost of the schemes. 4 works have been funded by PFC with a total capital outlay of Rs. 214.62 Cr.

6.3 SYSTEM IMPROVEMENT SCHEMES

For increasing capacity of 132 KV S/S Kathgodam from 40 MVA to 80 MVA, 132 KV S/S Bhowali from 30 MVA to 50 MVA, 132 KV S/S Almora from 40 MVA to 60 MVA, and 132 KV S/S Bazpur from 80 MVA to 120 MVA have been undertaken with financing acquired from PFC. Rural Electrification Corporation has approved to fund schemes for construction of 1 no. 220KV Bay at 220 KV S/s Pantnagar, Augmentation of 220KV S/s Pantnagar along with construction of 02Nos 220 KV Bays and 02 Nos 33 KV Bays, and development of Switchyard including dismantling chain link fencing and re-erection for 2x50 MVA T/F at 220 KV S/s Pantnagar. In addition to the given scheme projects, there are more schemes which are at the DPR stage. Following are the system improvement schemes undertaken in FY 2015-16:

Table 13: System Improvement Schemes, 2015-16

S No	Scheme	Project	Estimated Cost (in Rs. Crores)
1	PFC	Increasing capacity of 132 KV S/S Kathgodam form 40 MVA to 80 MVA	3.03
2	PFC	Increasing capacity of 132 KV S/S Bhowali form 30 MVA to 50 MVA	2.44

S No	Scheme	Project	Estimated Cost (in Rs. Crores)
3	PFC	Increasing capacity of 132 KV S/S Almora form 40 MVA to 60 MVA	2.78
4	PFC	Increasing capacity of 132 KV S/S Bazpur form 80 MVA to 120 MVA	5.62
5	REC	Construction of 1 no. 220KV Bay at 220 KV S/s Pantnagar(REC)	1.523
6	REC	Augmentation of 220KV S/s Pantnagaralongwith construction of 02Nos 220 KV Bays and 02 Nos 33 KV Bays.(REC)	12.375
7	REC	Development of Switchyard including dismantling chain link fencing and re-erection for 2x50 MVA T/F at 220 KV S/s Pantnagar.(REC)	0.36

6.4 PROGRESS OF GIS SUB-STATIONS

PTCUL has decided to construct GIS Substation where space is constraint. The GIS Sub-station offers the following advantages over AIS Sub-station.

- o Land development cost is very less due to lesser space requirement for substation.
- o Maintenance cost is very less as compare to AIS as all the switching devices are operating in the SF6 insulating medium.
- o GIS substation increases the availability and reliability of power system as all parts of GIS are inside the close metallic enclosure and not affected by environment.
- o In GIS substation automation system can be easily installed due to its modular design. This type of substation can be operated from remote end and reduces the operation cost.
- o Due to smaller size of substation the earth cutting and tree cutting (in case of hilly region having trees) involved is very less hence good for environment point of view.
- o The life of GIS equipment is very high as compare to AIS equipment. All internal components of GIS are guaranteed for maintenance free for minimum 10 years.

Few of the GIS substations in various stages of implementation are: 220 KV GIS s/s IIP, Harrawala (Dehradun), 220 KV s/s Baram (GIS), 132 KV GIS substation Araghar, 220/33 KV GIS substation Selaqui(2X50) MVA and 400/220/132 KV GIS Landhora.

6.5 YEAR WISE CAPITAL INVESTMENT

The year wise phasing of the capital investment is provided in the table below.

Table 14: Year wise Phasing of the Capital Investment

	2014-15	2015-16	2016-17	2017-18	2018-19
Capital Investment	105.30	249.51	758.08	1488.73	1426.47

(Figures in Rs Crore)

7. FUTURE BUSINESS PLANS

With focus on relieving congestion points, growing infrastructure and improving quality of energy delivered, several projects have been proposed for expansion and improvement of the system.

Table 15: Future Projects

S No	Name of the Project	Region	Approved Cost	Estimated Date of completion
			(Rs Crore)	
1	Construction of 2 Nos. 220KV Bay at 400KV Substation, Kashipur	Kumaon	2.14	Mar-19
2	Construction of 220 KV D/C line from PGCIL S/s, Sitarganj-Khurpiya Farm line	Kumaon	73.5	Mar-19
3	Construction of LILO of 220 KV Bareilly-Pantnagar line at Khurpiya Farm	Kumaon	5.25	Mar-19
4	Construction of 220/132/33 KV S/s at Khurpiya Farm	Kumaon	90	Mar-19
5	Construction of 2 nos 220 KV bays at 220 KV S/s PGCIL, Sitarganj.	Kumaon	5	Mar-19
7	Civil Work at 220/132 KV S/S RamnagarRoorkee	Garhwal	3.03	Sep-18
8	Civil work, 220 KV S/S Pantnagar	Kumaon	0.82	Dec-18
9	Srtringing of Second circuit of 132 KV D/C Satpuli- Kotdwar Line with Single Panther conductor	Garhwal	22.75	Dec-17
10	Srtringing of Second circuit of 132 KV D/C Srinagar -Simli Line with Single Panther conductor	Garhwal	30.51	Mar-19
11	132 KV Simli-Gairsain line	Garhwal	65.66	Mar-19
12	Construction of LILO of 132 KV Rudrapur-Kichhaline at Khurpia farm.	Kumaon	3	Mar-19
14	Termination of 132KV CPP line at proposed 220KV s/s Khurpiya Farm at Kichha	Kumaon	2	Mar-19
15	Replacement of ACSR panther conductor with HPC conductor of 132 KV Kashipur- Mahuakheraganj (220) line	Kumaon	10.3	Mar-19
16	Strengthening of 132KV Haldwani-Bhowali line by replacement through HPC conductor.	Kumaon	14	Mar-19

S No	Name of the Project	Region	Approved Cost	Estimated Date of completion
			(Rs Crore)	
17	LILO of 132KV Kathgodam-Pantnagar line at proposed 132KV Golapar S/s (App. 15KM)	Kumaon	15	Mar-19
18	Construction of 132KV S/Ckt line on D/C Towers for 132KV Golapar(Proposed) S/s from 220KV Khurpia Farm (Proposed) S/s (App.30KM)	Kumaon	30	Mar-19
19	Construction of 132 KV LILO line for 132 KV S/s Khatima-II	Kumaon	12	Mar-19
20	Construction of 132 KV LILO line for 132 KV S/s SIDCUL Phase-II, Sitarganj	Kumaon	10	Mar-19
21	Replacement of ACSR Panther conductor in 132 KV PGCIL-SIDCUL Sitarganj line with ACCC Casablanca conductor	Kumaon	19.74	Mar-19
22	Replacement of ACSR Panther conductor in 132 KV Kichha-Sitarganj line with ACCC Casablanca conductor	Kumaon	28.12	Mar-19
23	Replacement of ACSR Wolf conductor in 132 KV Piliphit-Khatima D/C line with ACCC copenhagen conductor	Kumaon	76.5	Mar-19
24	132 KV substation Gairsain	Garhwal	92.85	Mar-19
25	Replacement of Old 2X3x5 MVA Transformer with 2X20 MVA Transformer at 132 KV Substation, Ranikhet	Kumaon	0.507	Mar-19
27	Construction of 132 KV Substation, Bhikiasain along with associated transmission line at 132 KV Substation, Ranikhet (30Kms)	Kumaon	80	Mar-19
28	Replacement of Old 2X3x5 MVA Transformer with 2X20 MVA Transformer at 132 KV Substation, Pithoragarh	Kumaon	6.6	Mar-19
29	Construction of 04 Nos of 33 KV bays at 132 KV S/S Bazpur (Deposit)	Kumaon	1.7	Mar-19
30	Construction of 132 KV Mahuakheraganj(220)- Jaspur (21 Kms) with 01 No. bay at 132 KV Substation, Jaspur	Kumaon	21	Mar-19
31	Replacement of 1X3x5MVA Transformer bank with new 20MVA Transformer at 132 KV Substation, Bhowali	Kumaon	2	Mar-19

S No	Name of the Project	Region	Approved Cost	Estimated Date of completion
			(Rs Crore)	
32	Construction of 132/33KV S/s at Golapar, Haldwani	Kumaon	53	Mar-19
33	Construction of 132/33 KV S/s, Khatima-II	Kumaon	40	Mar-19
34	Construction of 132/33 KV S/s at SIDCUL Phase-II Sitarganj	Kumaon	40	Mar-19
35	Increasing capacity of 132 KV S/S Bazpur from 1x40+1x80MVA to 2x80MVA.	Kumaon	11	Mar-19
37	Construction of 132 KV transfer bus and extension of switchyard at 132 KV S/S Bazpur	Kumaon	3.5	Mar-19
38	Construction of boundary wall/ flood protection wall around 132 KV S/S Bazpur	Kumaon	2	Mar-19
39	Construction of 132 KV substation Araghar	Garhwal	71.36	Mar-18
40	Construction of 220 KV substation Ghansali	Garhwal	124.8	Mar-18
	Construction of LILO of 132 JV Laltappar -Majra Line at 132 KV s/s Araghar	Garhwal	50.81	Mar-18

The implementation of these projects will be key to improving power supply and meeting out increased loads in different regions.

Key strategic directions formulated to achieve requisite objectives have been proposed in this business plan:

1. **Development of reliable infrastructure** – transmission system and associated equipment required for system strengthening, and efficient electricity transfer from power plants in the state to various load centers inside and state and out of the state.
2. **Efficient Monitoring and Control of transmission network-** For efficient monitoring and control, the development of Control Centers for better visibility of the state power system has been initiated. PTCUL will also look to monitor the loading of lines and substations on periodic basis keeping in view the actual growth in loading of the load centers along with changes in consumer mix. Subsequently, measures will be required for reconductoring of lines with high capacity conductor or plan alternate network to reduce overloading of the lines which are likely to be overloaded.

3. **Demand planning and forecasting**—Important requirements for a transmission system are being able to clearly identify the state wide demand through approximate demand forecasts, so as to build transmission networks and strengthen its inter-state networks for power evacuation in an appropriate manner. PTCUL would also require:

- a. Updated long-term assessment of demand (MW) and energy requirement on a monthly basis. The forecast shall include the unrestricted demand and energy requirement of all categories of consumers. The assessment shall be based on historical data, load requirement projections in accordance with the business plan and forecasted impact of implementation of efficiency improvement programmes including but not limited to T&D loss reduction initiatives and DSM programmes.
- b. Estimate of the current demand levels and energy requirement for peaks and for off-peak hours for all categories.
- c. The seasonal variation in demand & energy requirement due to various factors such as needs during agriculture seasons, winter seasons etc. should be taken in to account.

Such an information base will help PTCUL to better project the capital investment and manpower augmentation required for enhancement of its transmission network, and to better plan for or recommend procurement of power from balancing capacities.

4. **Supply forecasting**—The utility should be able to determine the planning and operation of its transmission networks, by developing an approach which incorporates important criterion for sufficient transmission system capacity such that peak demand can be met without intermittent generation, and for sufficient transmission system capacity to accommodate all types of generation in order to meet varying levels of demand efficiently. Such an approach would increase the emphasis on ensuring appropriate balance between the constraint costs with the costs of the transmission reinforcements. It would also aim to provide a better overall view of what the optimum investment is likely to be and give an assessment likely to be closer to the right minimum cost solution. By providing a better ‘first estimate’ of the optimal capacity requirements it brings efficiency to the planning process as it provides a better starting point before a more detailed assessment is carried out and this will simplify and streamline the design process. The planned network consists of the current transmission system, all current sanctioned reinforcements by that year

plus all reinforcements identified, during studies for previous years, required to meet compliance.

5. Strengthening operations of SLDC

SLDC will endeavour to function as an independent organization in the future and efficiently carry out the processes of data acquisition and early accounting for the state in coordination with PTCUL.

Section 32 of the Electricity Act 2003 requires that:

(1) The State Load Despatch Centre shall be the apex body to ensure integrated operation of the power system in a State.

(2) The State Load Despatch Centre shall -

(a) be responsible for optimum scheduling and despatch of electricity within a State, in accordance with the contracts entered into with the licensees or the generating companies operating in that State;

(b) monitor grid operations;

(c) keep accounts of the quantity of electricity transmitted through the State grid;

(d) exercise supervision and control over the intra-state transmission system; and

(e) be responsible for carrying out real time operations for grid control and despatch of electricity within the State through secure and economic operation of the State grid in accordance with the Grid Standards and the State Grid Code.

(3) The State Load Despatch Centre may levy and collect such fee and charges from the generating companies and licensees engaged in intra-State transmission of electricity as may be specified by the State Commission.

As required by sections 32(1), 32(2)(b), 32(2)(d) and 32(2)(e) of the EA 2003, integrated operations are not possible in the absence of RTUs at all generating stations and sub-stations. Further, communication equipment which can transmit time synchronized information to SLDC is required.

Optimal Scheduling and Dispatch, as required by section 32(2)(a) is possible only when the Declared Capacity (DC) of all generation plants, and demand at various interface points between PTCUL and UPCL for all 15 minute blocks in a day is available with the SLDC. Not only does this require infrastructure but also procedures for submission

of DC by generators connected in the control area of SLDC Uttarakhand and demand by UPCL.

Further, SLDC is also required to maintain energy accounts of electricity transmitted through the state grid. This requires energy and transmission flow accounting procedures to be in place besides the infrastructure requirement.

Secure and Reliable operation is a critical requirement. SLDC is bound by section 33 of the Electricity Act, 2003 to give directions to various grid connected entities and also penalize them in case of violation. This again, requires infrastructure and procedures for the same to be in place.

For quick reference, Section 33 of the EA, 2003 is reproduced below:

33. (1) The State Load Despatch Centre in a State may give such directions and exercise such supervision and control as may be required for ensuring the integrated grid operations and for achieving the maximum economy and efficiency in the operation of power system in that State.

(2) Every licensee, generating company, generating station, substation and any other person connected with the operation of the power system shall comply with the direction issued by the State Load Despatch Centre under subsection (1).

(3) The State Load Despatch Centre shall comply with the directions of the Regional Load Despatch Centre.

(4) If any dispute arises with reference to the quality of electricity or safe, secure and integrated operation of the State grid or in relation to any direction given under subsection (1), it shall be referred to the State Commission for decision:

Provided that pending the decision of the State Commission, the direction of the State Load Despatch Centre shall be complied with by the licensee or generating company.

(5) If any licensee, generating company or any other person fails to comply with the directions issued under sub-section(1), he shall be liable to penalty not exceeding rupees five lacs.

The following sections briefly discuss the above mentioned requirements.

6. Standardization Of Energy Accounting / Transmission Accounting Procedures

- a. To be able to reduce the burden of Unscheduled Interchange from the Inter-State grid, it is imperative that proper procedures of energy accounting be developed. This will enable:
 - i. Accounting of energy injected into the state grid by each power plant, its deviation from the schedule and hence contribution of each generator towards Unscheduled Interchange from the grid;
 - ii. Accounting of energy withdrawal from the grid by the distribution licensee, deviation from the schedule at each location in the state grid, contribution of each large consumer and the distribution company individually in causing Unscheduled Interchange from the Inter-State Transmission System;
 - iii. Computation of losses at all voltage levels and feeder-wise;
 - iv. Transmission accounting is necessitated because
 - v. Regional Transmission deviation Accounts prepared by RPCs penalize the beneficiary states for using the Inter-State transmission systems beyond the schedule and these penalties need to be charged from the actual users which cause such deviation;
 - vi. Transmission scheduling needs to be done at the level of the state also to have a signal for the need for capacity augmentation.
- b. The above procedures are important from the point of view of not only reducing the costs of operation of the power system but also aligning the developments in the state power system with those in the wholesale power market, which is regulated by Hon'ble CERC.

7. Standardization Of Scheduling And Dispatch Procedures

- a. This procedure shall apply to all long term/medium term and short term open access transactions whether engaged in intra-state and/or inter-state. The communication of 'declaration of capability' (DC), 'generation or injection schedule' and 'drawl schedule' to SLDC shall be the primary responsibility of the generating station or beneficiary/licensee and open access customer, as the case may be.
- b. Dispatch procedures govern the 'dispatch schedule' for 'generating stations and injecting entities' which typically comprise of MW as per 'drawl

schedule' and MWh derived by apportioning MWh in DC in the ratio of 'MW in DC' and that declared in the 'drawl schedule'.

- c. Making real-time data available at SLDC / ALDC - The requirements for data visibility and interfacing requirements at SLDC / ALDC are as detailed in the following note.
- d. For effective utilization of the SLDC investments, all the Power Plants (including those owned by UJVNL) should abide by the following:
 - i. Install Remote Terminal Units which are capable of communication with LD Centres in IEC-104 Protocol.
 - ii. Install suitable Communication media for data transmission. The typical bandwidth requirement for real-time data communication is 64 Kbps and depends upon data volume.
 - iii. IPP/ CPP/State-owned Power plants may be required by the Hon'ble UERC to submit complete proposal along with schematic diagram for RTU installation and data communication with LD Centres
 - iv. Integration of IPP/ CPP station data into the SCADA systems at SLDC & ALDC on IEC 104 protocol.
 - v. Completion of all above should be under the scope and responsibility of IPP/ CPP /State-owned Power Station.
 - vi. SCADA system provided at nearest substation of PTCUL shall serve the purpose of monitoring/ control of power plant data/ operations at local level and also of visibility of real-time data at SLDC / ALDC

8. Aggregate Revenue Requirement

8.1 MYT FRAMEWORK

In line with the Electricity Act, 2003, the Hon'ble Commission has issued the (Terms and Conditions for Determination of Tariff) Regulations, 2015. In the Regulations, the Hon'ble Commission has approved a control period from April 1, 2016 onwards up to FY 2018-19 i.e. March 31, 2019 for the purpose of determination of Tariff for the transmission utility i.e. PTCUL.

Regulation 57 of UERC Tariff Regulations 2015 provides that

“The Annual Transmission Charges for each financial year of the Control Period shall provide for the recovery of the Aggregate Revenue Requirement of the Transmission Licensee for the respective financial year of the Control Period, as reduced by the amount of non-tariff income, income from Other Business and short-term open access charges, as approved by the Commission and shall be computed in the following manner:

Aggregate Revenue Requirement, is the sum of:

- (a) Operation and maintenance expenses;
- (b) Lease Charges;
- (c) Interest and Finance Charges on loan capital;
- (d) Return on equity capital;
- (e) Income-tax;
- (f) Depreciation;
- (g) Interest on working capital and deposits from Transmission System Users; and

Annual Transmission Charges of Transmission Licensee = Aggregate Revenue Requirement, as above,

Minus:

- (h) Non-Tariff Income;

(i) Short-Term Open Access Charges and

(j) Income from Other Business to the extent specified in these Regulations.”

PTCUL is submitting the projections for ARR for each of the years for the Control period FY 2016-17 to FY 2018-19 in line with the methodology defined in the UERC Tariff Regulations 2015.

Further, as per the tariff order, PTCUL’s revenue can be divided into two streams:

- Revenue from intra state transmission of energy which would be recoverable from the distribution utility i.e. UPCL (currently the sole beneficiary)
- Revenue from intra-state lines being used by generators for inter-state transfer of power and charges for the use of these lines to inter-state consumers through CTU in accordance with the PoC mechanism adopted by the Hon’ble CERC.

Details of the assumptions along with justification for arriving at the various parameters of the ARR are summarized in the sections below. The annual accounts of FY 2014-15 have been used as the basis for projections for the Control period. Also, PTCUL has considered the capital expenditure for each year of the Control period in line with the detailed Business Plan for the control period submitted to the Hon’ble Commission for approval.

ARR for the control period FY 2016-17 to FY 2018-19 in respect of intra state transmission network

PTCUL is responsible for constructing and maintenance of the transmission infrastructure in the State after the unbundling of the transmission and distribution function of UPCL in on 31st May 2004. Therefore, PTCUL was declared the State Transmission Utility by the Government of Uttarakhand. In compliance to the UERC Tariff Regulations 2015, PTCUL is required to file aggregate revenue requirement for the control period FY 2015-16 to FY 2018-19 with the Hon’ble Commission for approval.

In this section PTCUL has outlined the broad details of the capital expenditure proposed to be undertaken during the control period i.e. FY 2016-17 to FY 2018-19 in line with the Business Plan as per the tariff order. Further, PTCUL has projected the aggregate revenue requirement for each year of the Control Period in this section. The approach and assumptions adopted by

PTCUL for projection of each parameter for determination of aggregate revenue requirement during the period is detailed in paragraphs below.

8.2 CAPITAL EXPENDITURE FOR THE CONTROL PERIOD

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

The year wise phasing of the capital investment and corresponding capitalization during the Control Period FY 2016-17 to FY 2018-19 is provided in the table below.

Table 16: Proposed Capital Expenditure and capitalization (Figures in Rs Crore)

Planned Schemes	2015-16	2016-17	2017-18	2018-19	Total
Capital Expenditure	58.76	758.08	1488.73	1426.47	3673.28
Capitalization	130.89	373.13	1111.93	1150.04	2635.10

8.3 DEPRECIATION

The projected gross fixed asset has been provided in the foregoing section. Depreciation for the year has been calculated on the opening gross fixed asset base considering the rates prescribed by the Tariff Regulations, 2015. Pro-rata depreciation has been calculated for assets which are in operation for part of the year. Average rate of 5.28% has been considered for computing the depreciation.

The tables below indicate the Depreciation for each year of the Control Period:

Table 17: Proposed Depreciation for FY 2016-17 to FY 2018-19 (Figures in Rs Crore)

Particulars	FY 16 (Revised Estimate)	FY 17	FY 18	FY 19
Opening Depreciable GFA	968.95	1207.0758	1580.2086	2692.1374
Addition in GFA	238.13	373.1328	1111.9288	1150.039
Less: Grants				
Depreciable assets of addition	238.13	373.1328	1111.9288	1150.039
Less: Closing GFA eligible for depreciation	1207.08	1580.2086	2692.1374	3842.1764
Depreciation Rate (%)	5.28%	5.28%	5.28%	5.28%

Particulars	FY 16 (Revised Estimate)	FY 17	FY 18	FY 19
Depreciation	57.45	73.58	112.79	172.51

8.4 INTEREST ON LOAN

The interest expenditure on account of long-term loans depends on the outstanding loan, repayments, and prevailing interest rates on the outstanding loans. Further, the projected capital expenditure and the funding of the same also have a large bearing on the long-term interest expenditure.

The funding for new capital expenditure in the control period has been assumed to be undertaken at a normative debt: equity ratio of 70:30 in accordance with the Tariff Regulations, 2011 and accordingly the new loan additions during the year has been estimated. The revised interest rates based on the actual effective weighted average interest rate of 12.31% as per audited accounts for FY 2015-16 has been considered for calculation of interest charges for the control period. The Tariff Regulation, 2015 prescribe that the normative loan outstanding shall be worked out by deducting the cumulative repayment as admitted by the Commission from the gross normative loan. The normative repayment for each year has been considered equal to the depreciation for that year. The interest on loans is projected in the table below:

Table 18: Interest on loans projected in the plan period (Figures in Rs Crore)

Debt Profile	FY 16 (Revised Estimate)	FY 17	FY 18	FY 19
Opening Loan	408.23	482.20	653.21	1257.82
Addition	166.69	261.19	778.35	805.03
Repayment	57.45	73.58	112.79	172.51
Closing	517.47	669.81	1318.77	1890.34
Effective Interest Rate	12.13%	12.13%	12.13%	12.13%
Interest Expense	56.14	69.87	119.60	190.94

8.5 RETURN ON EQUITY

PTCUL has considered return on the equity portion of the capitalised assets. Considering the opening equity computed in aforementioned table, and considering the planned capitalisation,

the computations in respect of equity eligible for return for the plan period and the corresponding RoE are provided in the tables below:

Table 19: Computation of reasonable return for the control period (Figures in Rs Crore)

Debt Profile	FY 16 (Revised Estimate)	FY 17	FY 18	FY 19
Opening Equity	190.51	261.95	373.89	707.46
Addition	71.44	111.94	333.58	345.01
Closing Equity	261.95	373.89	707.46	1052.48
Return on equity rate	15.50%	15.50%	15.50%	15.50%
RoE	35.07	49.28	83.80	136.40

In the previous Tariff Orders issued by the Hon'ble Commission, the return on equity was not allowed to PTCUL on the ground that the equity provided by the Govt of Uttarakhand was out of Power Development Fund which was realized from the consumers in form of a cess.

As per the provisions of the National Tariff Policy, 2006 notified by the Central Government, "The rate of return should be such that it allows generation of reasonable surplus for growth of the sector". In view of the same, PTCUL has considered in the tariff order that due to non-consideration of equity infused by the GoU for the purpose of computation of return on equity in the Tariff Orders, the surplus allowed in the ARR for the respective years is negligible. This disallowance not only restricts internal surplus generation but also adversely impacts the financial position of PTCUL.

8.6 REVENUE GAP AND CARRYING COST

Based on the true-up of FY 2014-15, the revenue gap computed for the respective year is provided in table below:

Table 20: Proposed Revenue Gap for FY 2014-15 (Figures in Rs Crore)

Financial year	2014-15
Revenue Surplus /(Gap)	(26.47)

The Petitioner requests the Hon'ble Commission to allow recovery of the revenue gap of FY 2014-15 in the transmission charges to be approved by the Hon'ble Commission for FY 2016-17 and also allow for carrying cost on the under-recovered amount during FY 2015-16.

Accordingly, the Petitioner has computed the carrying cost on the revenue gap for FY 2014-15 considering the applicable SBI PLR rate which is provided in the table below:

Table 21: Capital Expenditure and capitalization for control period (Figures in Rs Crore)

Particulars	2014-15	2015-16	2016-17	Total
Opening Revenue Gap (including carrying cost)		30.37	34.71	
Addition	26.47			
Closing Revenue Gap	26.47	30.37	0.00	
Interest Rate	14.75%	14.29%	14.05%	
Carrying Cost	3.90	4.34	2.44	10.68
Effective gap including carrying cost				37.15

PTCUL requests the Hon'ble Commission to include the effective gap (including carrying cost) of Rs. 37.15 Crore in the ARR for FY 2016-17 for recovery through transmission charges.

8.7 RETURN ON EQUITY ON ACCOUNT OF POWER DEVELOPMENT FUND

As per the Hon'ble Appellate Tribunal of Electricity (ATE) dated 15th May 2015 in R.P. No. 2 of 2015 in Appeal No. 163 of 2015,

“The Tribunal has upheld the findings of the State Commission in the impugned order but has not given any finding relating to disallowance of ROE on the funds deployed by the State Government from PDF towards capital cost of the project. We feel that the findings of this Tribunal in Appeal no. 189 of 2005 will be applicable to the present case. If the State Commission has not provided the amount as a grant and has invested the amount as equity, ROE has to be allowed as per the Regulations of the State Commission. Accordingly this issue is decided in favour of the Petitioner.”

It is submitted that the matter on Return on Equity on the PDF funds was discussed in detail as part of this judgment wherein the Hon'ble APTEL has viewed that Return on Equity should be allowed irrespective of the source of equity being invested in the company/ utility unless classified as grant. Therefore, PTCUL requests the Hon'ble Commission to allow return on equity on the NABARD, REC Old and REC IV schemes as well which have been developed by utilizing the State Government equity. The computation of Return on equity on these schemes is provided in table below:

Table 22: Details of Capitalization as per Accounts of PTCUL (Rs. Cr.)

Capitalization as per Accounts	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Nabard	-	-	69.14	93.12	27.87	42.89	12.17	49.42	1.67	1.14
REC Old	3.21	18.86	-	4.61	-	0.02	45.27	64.03	8.98	54.20
REC IV	-	-	-	-	-	-	20.67	22.64	22.85	50.60

Table 23: Equity Portion of the Schemes and Computation of RoE as per Regulations (Rs.Cr.)

Capitalization as per Accounts	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Nabard Equity @19%	-	-	13.14	17.69	5.30	8.15	2.31	9.39	0.32	0.22
REC Old Equity @18%	0.58	3.39	-	0.83	-	0.00	8.15	11.53	1.62	9.76
REC IV @30%	-	-	-	-	-	-	2.93*	6.79	6.86	15.18
Total	0.58	3.39	13.14	18.52	5.30	8.15	13.39	27.71	8.79	25.15

Capitalization as per Accounts	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Equity										
Opening Equity	0	0.58	3.97	17.11	35.63	40.93	49.08	62.47	90.18	98.97
Return	14.00 %	14.00 %	14.00 %	14.00 %	14.00 %	14.00 %	14.00 %	14.00 %	14.00 %	15.50 %
RoE	-	0.08	0.56	2.40	4.99	5.73	6.87	8.75	12.63	15.34

Further, PTCUL requests the Hon'ble Commission to approve appropriate carrying cost on the above computed return on equity as computed below:

Table 24: Return on Equity including Carrying cost (Rs.Cr.)

Capitalization as per Accounts	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
Opening	0.68	3.30	9.00	16.19	25.36	37.97	57.13	82.03	93.88	107.30
Addition	2.40	4.99	5.73	6.87	8.75	12.63	15.34			
Closing	3.07	8.29	14.73	23.06	34.11	50.60	72.47	82.03	93.88	-
Rate for Carrying Cost	12.25 %	12.25 %	12.25 %	11.75 %	13.00 %	14.75 %	14.75 %	14.45 %	14.29 %	14.05 %
Carrying Cost	0.23	0.71	1.45	2.31	3.87	6.53	9.56	11.85	13.42	7.54
Closing Bal including Carrying Cost	3.30	9.00	16.19	25.36	37.97	57.13	82.03	93.88	107.30	114.84

As computed above, the total impact of Rs. 114.84 Crore (including carrying cost) is required to be approved on account of the Return on Equity disallowed on the NABARD, REC Old and REC IV schemes to PTCUL.

8.8 TOTAL OPERATION AND MAINTENANCE EXPENSES

Considering the foregoing sections, the total Operation and Maintenance Expenses have been summarised in the table below:

Table 25: Projected Operation and Maintenance Expenses in the control period (Figures in Rs Crore)

Particulars	2015-16 (Revised Estimate)	2016-17	2017-18	2018-19
Employee Expenses	68.08	74.87	82.06	90.95
R&M Expenses	35.50	32.80	44.48	78.07
A&G Expenses	13.57	17.70	18.50	19.35
Total O&M Expenses	117.15	125.37	145.04	188.36

8.9 NON-TARIFF EXPENSES

The actual non-tariff income of Rs. 2.42 Crore was recorded for FY 2014-15. For the purposes of projections for the MYT petition, PTCUL has considered a year on year increase of 5% in the non-tariff incomes for years FY 16 to FY 19.

8.10 INTEREST ON WORKING CAPITAL

It is understood that the payments received by PTCUL from UPCL would be subject to the provisions of tax deducted at source under Section 194 J of the Income Tax Act as the payment for transmission and wheeling charges are considered as ‘fees for technical services’.

According to the current provisions of Section 194J, 10% TDS is the applicable charge. This would lead to certain cash flow deferment as 10% tax would be withheld by UPCL upon payment of transmission and wheeling charges to PTCUL. However since the normative working capital is provided to the PTCUL as per the framework of the regulations, it will tide over the cash flow issue on this account.

The interest on working capital is worked out on normative basis and is based on norms specified under the Regulation 33 (1) of UERC MYT Regulations, 2015. Effective SBI PLR for respective years has been considered as the interest rate for computing the interest on working

capital in line with the regulations. Accordingly the interest on working capital has been calculated as given below:

Table 26: Interest on Working Capital (Figures in Rs Crore)

Particulars	2015-16 (Revised Estimate)	2016-17	2017-18	2018-19
O&M for One month	8.62	10.45	12.09	15.70
maintenance @15% of O&M	18.03	18.81	21.76	28.25
2 months receivables	51.11	78.84	76.67	114.31
WC Requirement	77.76	108.09	110.51	158.26
SBI PLR	14.29%	14.05%	14.05%	14.05%
Interest on WC	11.11	15.19	15.53	22.24

8.11 INCOME TAX AND OTHER TAXES

As per Regulation 34 of the Tariff Regulations, 2015; income tax payable for each year of the control period is based on the actual income tax paid. Any variation in income tax actually paid & approved shall be reimbursed at the time of truing up for each year of the control period. Taxes on incomes and other taxes would be recovered on actual basis as and when incurred.

8.12 INCENTIVE FOR ACHIEVING TARGET AVAILABILITY

In accordance with the Tariff Regulations 2015, Incentive depends on the actual availability at the end of the year, hence same shall be considered at the time of truing up.

8.13 AGGREGATE REVENUE REQUIREMENT FOR FY 2016-17 AND FY 2018-19

Based on the parameters discussed in the above paragraphs, the Projected Aggregate Revenue Requirement (ARR) of PTCUL for each year of the Control Period FY 2016-17 to FY 2018-19 is provided in table below:

Table 27: ARR for Intra State Transmission for FY 2016-17 to FY 2018-19 (Figures in Rs Crore)

Particulars	2015-16 (Revised Estimate)	2016-17	2017-18	2018-19
Net O&M expenses	117.15	125.37	145.04	188.36
Interest charges	56.14	69.87	119.60	190.94
Guarantee Fees	0.00	0.00	0.00	0.00
Depreciation	57.45	73.58	112.79	172.51
Interest on Working Capital	11.11	15.19	15.53	22.24
Reasonable Return	35.07	49.28	83.80	136.40
Gap from previous years (FY 14-15)				
Provision for carrying cost on PDF		114.84		
Gross Expenditure	276.92	448.13	476.76	710.44
Less: Non-Tariff Income	2.54	2.67	2.80	2.94
Net Expenditure	274.38	445.46	473.96	707.49
Add : True up of previous years including carrying cost (including gap from 14-15)	40.71	37.15	0.00	
Less: SLDC related expense	8.42	9.57	13.93	21.64
Aggregate Revenue Requirement	306.67	473.04	460.03	685.85

8.14 ARR FOR THE CONTROL PERIOD FY 2016-17 TO FY 2018-19 IN RESPECT OF BHILANGANA III (GHUTTU)- GHANSALI LINE

Capitalisation and GFA

The actual expenditure of 220 kV Bhilangana-III – Ghansali Line as Rs. 21.80 Crore against the Commission approved cost of Rs. 21.91 Crore. In line with the hon'ble Commission's approach, PTCUL has considered only 50% of capital cost incurred, i.e. Rs 10.90 Cr as GFA for calculation of tariff.

Depreciation

PTCUL has considered average depreciation rate of 5.28% for determining the depreciation for each year of the control period, which works out to be Rs. 0.58 Crore for each year of the Control Period.

Means of Finance

PTCUL has considered Debt-Equity ratio of REC-IV Scheme of 70:30 as approved by the Commission for 220 kV D/C Bhilangana-III –Ghansali Line also. Accordingly, out of total project cost of Rs. 10.90 Crore, the Debt component works out to Rs. 7.63 Crore and Equity component works out to Rs. 3.27 Crore.

Interest on Loan

PTCUL has claimed interest based on the interest rate of REC-IV @ 13.78%. PTCUL has considered closing loan for FY 2015-16 as approved by the Hon'ble Commission in its order dated 6th May, 2013 as opening loan for FY 2016-17. PTCUL has considered the repayment equal to depreciation in accordance with UERC Tariff Regulations, 2015. The table below shows the interest charges claimed for each year of the Control Period:

Table 28: Interest on loans projected for Control Period (Figures in Rs Crore)

Debt Profile	FY 17	FY 18	FY 19
Opening Loan	5.12	4.54	3.96
Normative Repayment (equal to depreciation)	0.58	0.58	0.58
Closing Loan	4.54	3.96	3.38
Average Loan	4.83	4.25	3.67
Interest Rate	13.78%	13.78%	13.78%
Interest on Loan	0.67	0.59	0.51

Return on Equity

PTCUL has considered return on the equity portion of the capitalised assets. PTCUL has considering the opening equity as approved by the Hon'ble Commission in its order dated 6th May, 2013.

Table 29: Computation of reasonable return for the control period (Figures in Rs Crore)

Equity Profile	FY 17	FY 18	FY 19
Opening Equity*	3.27	3.27	3.27
Addition	0.00	0.00	0.00
Closing Equity*	3.27	3.27	3.27
Return on equity rate	15.50%	15.50%	15.50%
RoE	0.51	0.51	0.51

*Includes equity infused by GoU through PDF.

In the previous Tariff Orders issued by the Hon'ble Commission, the return on equity was not allowed to PTCUL on the ground that the equity provided by the Govt of Uttarakhand was out of Power Development Fund which was realized from the consumers in form of a cess.

As per the Hon'ble Appellate Tribunal of Electricity (ATE) dated 15th May 2015 in R.P. No. 2 of 2015 in Appeal No. 163 of 2015,

“The Tribunal has upheld the findings of the State Commission in the impugned order but has not given any finding relating to disallowance of ROE on the funds deployed by the State Government from PDF towards capital cost of the project. We feel that the findings of this Tribunal in Appeal no. 189 of 2005 will be applicable to the present case. If the State Commission has not provided the amount as a grant and has invested the amount as equity, ROE has to be allowed as per the Regulations of the State Commission. Accordingly this issue is decided in favour of the Petitioner.”

Hon'ble Supreme Court in its Order dated 12th Oct, 2015 has stayed the order of the Hon'ble ATE. PTCUL is in process of seeking clarification and removing stay on allowing return on equity on fund received through PDF. PTCUL is hopeful of receiving the clarification and removing the stay in the current financial year, hence PTCUL has claimed return on equity of fund received through PDF (as provided in the petition).

Operation & Maintenance (O&M) expenses

PTCUL has considered the approved O&M expense for FY 2014-15 by the hon'ble Commission in its order dated 6th May, 2013 as base O&M expenses and escalated the same using average CPI and WPI (50% CPI and 50% WPI) for last three year, i.e. 7.16%.

Table 30: Projected O&M Expenses in the Control Period (Figures in Rs. Crores)

Particulars	2016-17	2017-18	2018-19
O&M Expenses	0.23	0.25	0.26

Interest on Working Capital

The interest on working capital is worked out on normative basis and is based on norms specified under the Regulation 33 (1) of UERC MYT Regulations, 2015. Effective SBI PLR for respective years has been considered as the interest rate for computing the interest on working capital in line with the regulations. Accordingly the interest on working capital has been calculated as given below:

Table 31: Interest on Working Capital (Figures in Rs Crore)

Particulars	2016-17	2017-18	2018-19
O&M for One month	0.02	12.09	15.70
maintenance @15% of O&M	0.03	21.76	28.25
2 months receivables	0.34	0.33	0.32
WC Requirement	0.39	0.38	0.37
SBI PLR	14.05%	14.05%	14.05%
Interest on WC	0.05	0.05	0.05

Non-Tariff Income

PTCUL has not proposed any Non-Tariff income.

Annual Transmission Charges (ATC) of 220 kV D/C Bhilangana-III – Ghansali Line

Based on the parameters discussed in the above paragraphs, the Projected Aggregate Revenue Requirement (ARR) of 200kV D/C Bhilangana-II-Ghansali Line for each year of the Control Period FY 2016-17 to FY 2018-19 is provided in table below:

Table 32: ARR for Bhilangana-III–Ghansali Line for FY 2016-17 to FY 2018-19 (In Rs Cr)

Particulars	2016-17	2017-18	2018-19
Net O&M expenses	0.23	0.25	0.26
Interest charges	0.67	0.59	0.51
Depreciation	0.58	0.58	0.58
Interest on Working Capital	0.05	0.05	0.05
Reasonable Return	0.51	0.51	0.51
Net Expenditure	2.03	1.96	1.90
Aggregate Revenue Requirement	2.03	1.96	1.90

9. TRANSMISSION LOSS IMPROVEMENT

Currently PTCUL has less than 2% transmission loss. PTCUL has 400 kV, 220 kV and 132 kV transmission lines. It is a well-known fact that % losses increase with increase in line length and % losses are higher at lower voltage levels. Line Length at 400 kV is less than 175 km. At 220 kV, the average line length is approximately 39 kms, with range between 4.8 km to 80 km. At 132 kV, average line length is 26 kms, with a range of 0.42 km - 105.5 km. With these line lengths the technical losses should be technically between 1%-2%. Further the losses also depend on:

1. Real power loading of the lines - which depends on the extent of over-drawal by UPCL - which is recorded by the UI charges payable by the state of Uttarakhand - losses increase as a square of real power loading of its transmission lines;

Reactive power that the lines carry - which is beyond the discretionary control of PTCUL because the same depends on the nature of demand drawn by UPCL

Therefore, based on the above facts, PTCUL has been doing its best to achieve low transmission loss levels. Loss reduction beyond the current level depends entirely on the users of the transmission network.