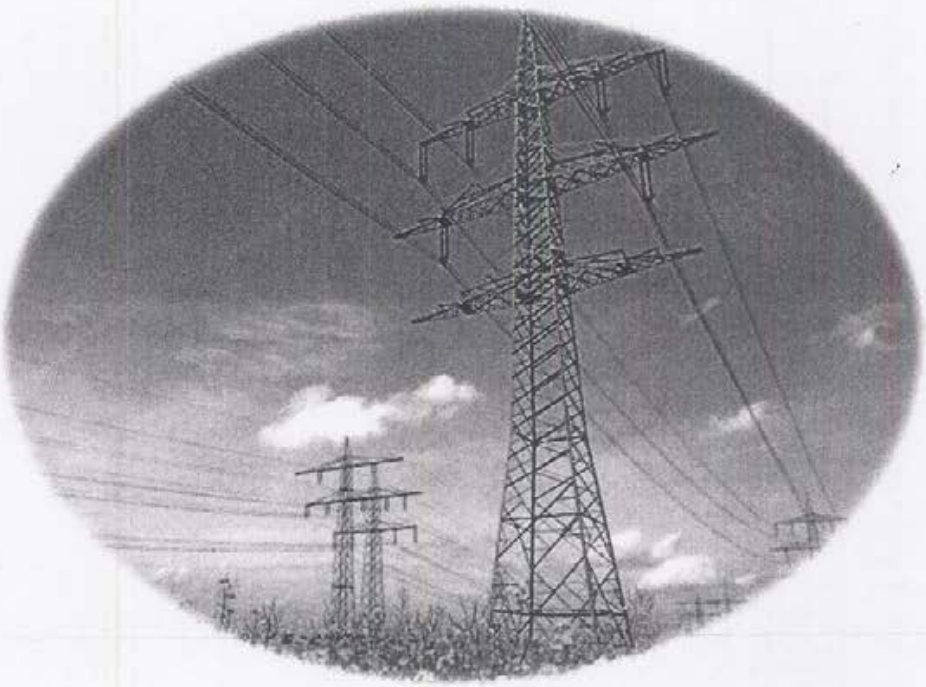

BUSINESS PLAN FOR MYT CONTROL PERIOD FROM FY 2017-18 TO FY 2019-20

Submitted by

pstcl

PUNJAB STATE TRANSMISSION CORPORATION LIMITED

8

BUSINESS PLAN FOR MYT CONTROL PERIOD FROM FY 2017-18 TO FY 2019-20

Submitted by

BEFORE THE PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
CHANDIGARH

FILING NO..... IN PETITION NO.....

IN THE MATTER OF:

Approval of PSTCL's Business Plan for MYT Control Period (FY 2017-18 to FY 2019-20) under Section 62 of the Electricity Act, 2003 read with Regulation-10 of PSERC (Terms and Conditions of Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014.

AND

IN THE MATTER OF:

Punjab State Transmission Corporation Limited.
Regd.Office: PSEB H.O. The Mall, Patiala.

NOTARY
UPINDERJIT SINGH
ADVOCATE NOTARY PUBLIC
Distt. Patiala (Pb.) India
Regd. No. 7342
GOVT. OF INDIA

AFFIDAVIT

I, Vinod Bansal, son of late Shri Kedar Nath Bansal aged 51 residing at Patiala do hereby solemnly affirms and state as under:

I am the Financial Advisor of Punjab State Transmission Corporation Limited, the petitioner in the above matter and am duly authorised by the Corporation to make this affidavit on its behalf.

The statement made in Sections 1 to 6 of the petition are true to my knowledge and are based on the information collected from the concerned offices of the PSTCL and believe them to be true.

The Contants of this Affidavit document have been read over to the deponent He/She has accepted found & Correct.

DEPONENT
CA. Vinod Bansal

VERIFICATION:

I, the deponent above named do hereby verify that the content of my above affidavit are true to my knowledge and belief and nothing material has been concealed there from.

Verified at Patiala on the date of 27th May, 2016.

DEPONENT
CA. Vinod Bansal

Identify the deponent to whom I know personally

Attested As Identified
NOTARY PUBLIC
PATIALA (Pb.) INDIA

27 MAY 2016

1164

20+5/2

AVTAR SINGH
Lic No. 422 HRC
Distt. Courts, Patiala

BEFORE THE PUNJAB STATE ELECTRICITY REGULATORY COMMISSION, CHANDIGARH

Case No._____

IN THE MATTER OF: Filing of the Petition for the approval of PSTCL's Business Plan for MYT Control Period (FY 2017-18 to FY 2019-20) under Section 62 of the Electricity Act, 2003 read with Regulation 10 of PSERC (Terms and Conditions of Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014

AND

IN THE MATTER OF Punjab State Transmission Corporation Limited (hereinafter referred as "PSTCL' or "the Petitioner")

The Petitioner respectfully submits as under: -

1. The Petitioner is a transmission licensee for transmission of electricity in the areas as notified by the Government of Punjab vide Notification No. 1/9/08-EB(PR) 196 dated April 16, 2010. PSTCL is vested with the function of intra-State transmission of electricity in the State of Punjab and the operation of State Load Despatch Centre. Further, in terms of Section 39 of the Act, the Government of Punjab declared PSTCL as the State Transmission Utility (STU).
2. The Petitioner submits that the Hon'ble Commission has issued the PSERC (Terms and Conditions of Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014 (hereinafter referred to as "PSERC MYT Regulations, 2014") in exercise of powers conferred on it by

Section 61 read with Section 181(2) of the Electricity Act 2003 (No. 36 of 2003) and to enable approval of Business Plan as per Regulation 10 of the said Regulations. The said Regulations shall be applicable to Generating Stations, Transmission system, SLDC and Distribution system where tariff for generation and transmission is not determined under Section 63 of the Electricity Act, 2003 through transparent process of competitive bidding in accordance with the guidelines issued by the Central Government.

3. The PSTCL has to file the Business Plan for the Hon'ble Commission's approval on or before 1st April of the year preceding the first year of the Control Period, i.e., on or before April 1, 2016, for a duration covering at least the entire Control Period.
4. However, PSTCL did not receive the data related to capital investment schemes from PSPCL in time. Hence, PSTCL filed a Petition before Hon'ble Commission to seek extension of timeline for filing the present Petition from March 31, 2016 to May 31, 2016. Hon'ble Commission vide Order dated April 1, 2016 granted the extension in timeline for filing of present Petition till May 31, 2016.
5. Accordingly, in line with the provisions of the PSERC MYT Regulations 2014, the Petitioner is hereby filing the **Petition for Approval of Business Plan for the Control Period from FY 2017-18 to FY 2019-20.**

PRAYER TO THE HON'BLE COMMISSION

The Petitioner respectfully prays to the Commission:

a) to admit the Petition seeking approval of Business Plan for FY 2017-18 to FY 2019-20 in accordance with Regulation 10 of the PSERC MYT Regulations, 2014;

b) to approve the Business Plan for Transmission and SLDC Business for FY 2017-18 to FY 2019-20 as proposed by the Petitioner in the above-said Petition;

c) to pass any other order/s as the Hon'ble Commission may deem fit and appropriate under the circumstances of the case and in the interest of justice;

d) to condone any error/ omission and to give opportunity to rectify the same;

e) The filing is being done based on the best available information and in case of any change, the Petitioner may be permitted to make further submissions, addition and alteration to this Petition as may be necessary from time to time.

Date: 27-05-2016

Petitioner

PSTCL, Patiala.

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LIST OF ABBREVIATIONS

ABT	Availability Based Tariff
APTEL	Appellate Tribunal for Electricity
ARR	Aggregate Revenue Requirement
ATC	Available Transfer Capacity
BCU	Bay Control Unit
CAGR	Compound Aggregate Growth Rate
CEA	Central Electricity Authority
CPI	Consumer Price Index
CT	Current Transformer
CSR	Corporate Social Responsibility
CWIP	Closing Work In Progress
DC	Direct Current
DG Set	Diesel Generator Set
DISCOM	Distribution Companies
EA, 2003	Electricity Act, 2003
EHV	Extra High Voltage
ERP	Enterprise Resource Planning
GDP	Gross Domestic Product
GFA	Gross Fixed Asset
GIS	Gas Insulated Substation
GOI	Government of India
GOP	Government of Punjab
HT	High Tension
IT	Information Technology
kV	Kilo Volt
LAN	Local Area Network

LIC	Life Insurance Corporation of India
LT	Low Tension
MOP	Ministry of Power
MYT	Multi Year Tariff
MU	Million Units
MVA	Mega Volt Ampere
MW	Mega Watt
NABARD	National Bank for Agriculture and Rural Development
NABL	National Accreditation for Testing and Calibration Laboratory
NEP	National Electricity Policy
NHPC	National Hydro Power Corporation
NIFPS	Nitrogen Injection based Fire Protection System
NRPC	National Regional Power Committee
NTPC	National Thermal Power Corporation
OLTC	On Line Tap Changer
OPGW	Optical Grid Wire
P&M	Protection and Maintenance
PAT	Profit After Tax
PLCC	Power Line Carrier Communication
PGCIL	Power Grid Corporation of India Limited
PMU	Phasor Measurement Unit
PSEB	Punjab State Electricity Board
PSERC	Punjab State Electricity Regulatory Commission
PSPCL	Punjab State Power Corporation Limited
PSTCL	Punjab State Power Transmission Limited
REC	Rural Electrification Corporation
ROE	Return on Equity

ROW	Right of Way
RTU	Remote Terminal Unit
SAS	Substation Automation System
SCADA	Supervisory Control and Data Acquisition
SLDC	State Load Desptach Centre
STU	State Transmission Utility
ULDC	Unified Load Desptach Centre
WAMS	Wide Area Measurement System
WAN	Wide Area Network
WPI	Wholesale Price Index

1 Introduction

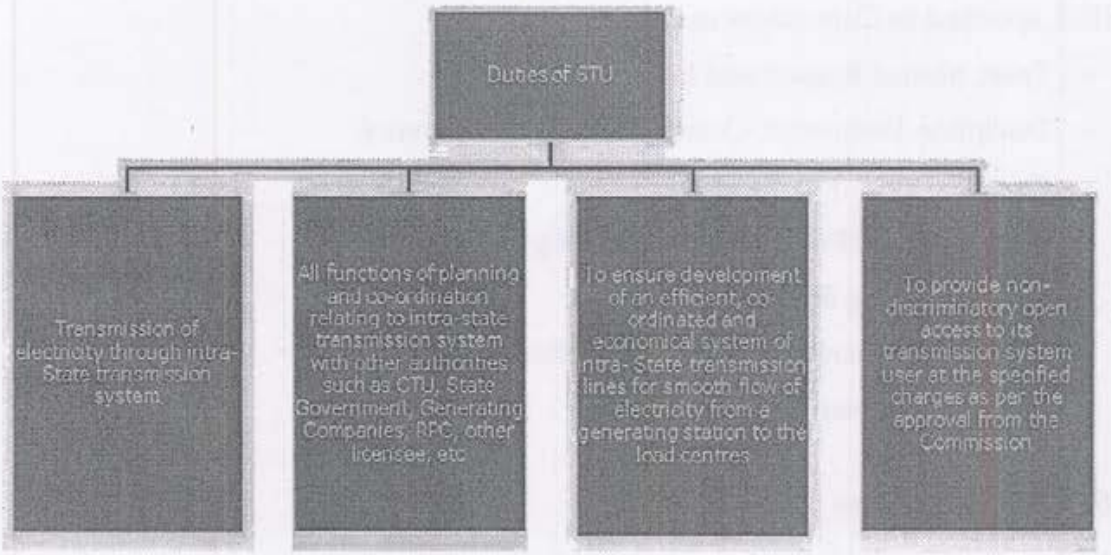
1.1 Background

The Electricity Act, 2003 ("the Act") was enacted by the Parliament of India on June 10, 2003, which mandated unbundling of the erstwhile State Electricity Boards, such that the Transmission activity is separated. In exercise of powers conferred under sub-section 4 of Section 131 of the Act, the Government of Punjab vide Notification No. 1/9/08-EB(PR) 196 dated April 16, 2010, restructured and unbundled the erstwhile Punjab State Electricity Board (PSEB) into two successor companies, viz., Punjab State Power Corporation Ltd. (PSPCL), to undertake generation and distribution business, and Punjab State Transmission Corporation Ltd., (PSTCL) to undertake transmission of electricity along with operation of SLDC functions. PSTCL was incorporated as a company under the provisions of the Companies Act, 1956 having its registered office at The Mall, Patiala.

PSTCL is vested with the function of intra-State transmission of electricity in the State of Punjab and the operation of State Load Despatch Centre. Further, in terms of Section 39 of the Act, the Government of Punjab declared PSTCL as the State Transmission Utility (STU), which is 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.

1.2 Duties of State Transmission Utility



1.3 Vision Statement of Company

The vision statement of PSTCL, specific to the business is as below:

"To be responsive, vibrant, reliable and efficient institution"

1.4 Corporate Mission of the Company

The Mission Statement of PSTCL, specific to the business is as below:

- Manage, upgrade and expand operational boundary on sound 'economic principles'.
- Arrest and bring down transmission losses and attain world class transmission system.
- Optimize revenue generation through alternative use of available resources, adopt cost control measures and explore unconditional revenue path.
- Adapt fair working practices, empower collectives and make PSTCL "a great institution".
- Pursue holistic Corporate Social Responsibilities.
- Make safety a way of life

1.5 Core Values

PSTCL specified its Core values as under:

- Trust, Mutual Respect and Industrial harmony.
- Discipline, Dedication, Commitment & Transparency.
- Dignity, Honesty & Integrity.
- Organizational Pride with Sincerity of purpose.
- Sharing, Caring & Concern.
- Operational Excellence & Professionalism.
- Creativity, Research & Development

1.6 Core Activities

PSTCL undertakes the following core activities:

Operation & Maintenance (O&M)

All the objectives comprising planning, implementation and control of:

Operational activities of EHV Transmission Lines and Substations as per Grid standards.

Maintenance activities to ensure their efficient and reliable working.

Asset management activities of the Transmission work to ensure commercial viability.

Projects

All the activity streams, comprising planning execution and control of engineering design, procurement and construction of EHV Transmission Lines, Substations and other utilities.

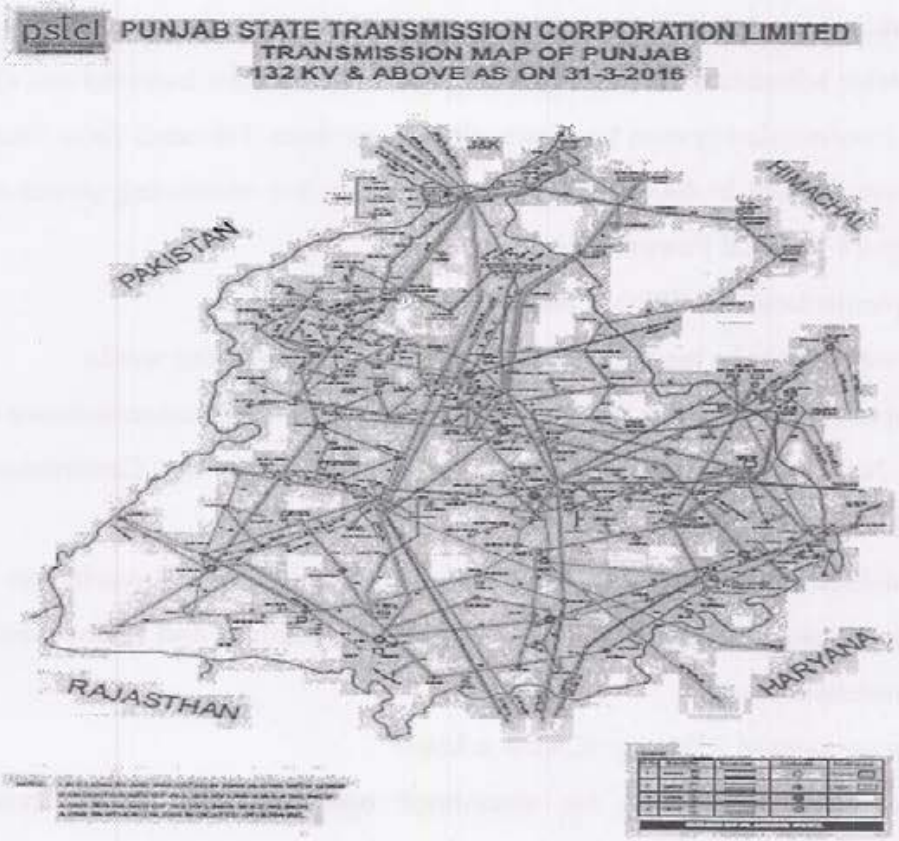
Load Dispatch (LD)

State Load Dispatch Centre is part of PSTCL. No separate legal entity has been formed for Load Dispatch. The activities comprise:

- 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 State of Punjab



1.8 Key actions taken to fulfil the Mission Statement

To fulfil the mission statement of the Company, PSTCL has taken the following actions:

a) Maintaining the Transmission System Availability above the normative annual transmission availability factor specified by the Hon'ble Punjab State

Electricity Regulatory Commission (Hon'ble PSERC or Hon'ble Commission).

b) Installation of boundary ABT meters at interface points between PSTCL and PSPCL to measure actual transmission loss.

c) Capital Expenditure incurred for upgrading and maintaining the existing transmission infrastructure in the State of Punjab.

d) Capital Expenditure incurred for new schemes and existing schemes where work is in progress.

e) Notable schemes on which capital expenditure has been incurred are: a) 400 kV transmission system for evacuating power from Talwandi Sabo Thermal Power Project; b) 400 kV transmission system for evacuating power from Rajpura Thermal Power Project.

f) Implementation of ERP has been initiated

g) Investments to be made in 220 kV and 132 kV transmission works

h) Proposal to establish a training centre for its employees in accordance with the National Training Policy issued by Ministry of Power, Government of India.

i) Established an oil and diagnostic lab and made investments for miscellaneous tools and plants required for operation and maintenance of transmission system

j) Procurement of RTUs for SCADA scheme

k) Substation Automation for unmanned operations at five (5) nos. of substations is being implemented.

l) Procurement of equipments including voice recording and Islanding scheme in Punjab

m) Periodic filing of ARR petition for determination of tariff and getting approval of the Hon'ble Commission for the capital expenditure works.

n) Vigil Policy adopted in compliance with provisions of the Companies Act and Set up an office for Chief Vigilance Officer to ensure fair working practices

o) Formulation of a Corporate Social Responsibility policy to promote sustainable and inclusive development for the benefit of the society at large as a responsible corporate citizen. The focus of CSR initiatives is on geographic areas that are impacted while discharging its statutory responsibilities under the Electricity Act, 2003 and the Rules framed thereunder.

p) Adoption of Corporate Horticulture Policy

q) Adoption of Safety Manual for safe working practices.

1.9 Objective of Business Plan

PSTCL, being the State Transmission Utility, is entrusted with the responsibility of planning, developing, operating and maintaining the State Transmission System to facilitate transmission of electricity from the source to load centres. Being a Transmission Licensee in the State of Punjab, the Aggregate Revenue Requirement (ARR) and Tariff for PSTCL is regulated by the Hon'ble Commission. The Hon'ble Commission is performing various functions as per Section 86(1) of the Act. Under the powers vested with it under Section 181 of the Act and in compliance to Section 61 of the Act, the Hon'ble Commission had notified the PSERC (Terms & Conditions for the Determination of Tariff) Regulations, 2005 and subsequent amendments, for determination of ARR and Tariff of Generating Company/Licensee.

Further, to increase private sector participation and to provide more certainty to the utilities regarding tariff, most State Electricity Regulatory Commission's including Hon'ble PSERC have moved from an annual tariff framework to a Multi-Year Tariff regime, with an aim to bring about clarity on regulatory principles, to reduce

regulatory risks and to incentivize efficient operations from utilities. The multi-year tariff framework provides greater regulatory certainty by providing utilities a longer period to plan, forecast and implement their efficiency improvement plan.

The Hon'ble Commission notified the PSERC (Terms and Conditions for Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014 (herein after referred as "PSERC MYT Regulations, 2014") on July 1, 2014. Further, as per the Hon'ble Commission's notification dated May 28, 2015, the effective date of enforcement of these Regulations shall be April 1, 2017 and the three-year Multi Year Tariff ("MYT") Control Period shall be from FY 2017-18 to FY 2019-20.

The Hon'ble Commission has mandated the submission of Business Plan prior to the approval of Multi Year Tariff Petitions. Regulation 10.1 of the PSERC MYT Regulations, 2014 specifies as under:

> *"The applicant shall file for approval of the Commission a business plan for its generation, transmission or distribution businesses, as the case may be, on or before 1st April of the year preceding the first year of control period for a duration covering at least the entire control period. The business plan shall cover details for each year of the control period."*

In view of the above, the PSTCL has to file the Business Plan for the Hon'ble Commission's approval on or before 1st April of the year preceding the first year of the Control Period, i.e., on or before April 1, 2016, for a duration covering at least the entire Control Period.

However, PSTCL did not receive the data related to capital investment schemes from PSPCL in time. Hence, PSTCL filed a Petition before Hon'ble Commission to seek extension of timeline for filing the present Petition from March 31, 2016 to May 31, 2016. Hon'ble Commission vide Order dated April 1, 2016 granted the extension in timeline for filing of present Petition till May 31, 2016.

Regulation 10.3 of the PSERC MYT Regulations, 2014 specifies as under:

> *"The business plan for transmission business shall be based on proposed generation capacity addition and future load forecasts of the State and shall contain among other things the following: (i) **Future plans of the company including efficiency improvement measures proposed to be introduced and technical requirement such as meeting reactive power requirements;** (ii) Plan for reduction in transmission losses; (iii) Plan for improvement in quality of transmission service and reliability; (iv) Metering arrangements; (v) Financial statements (which includes balance sheet, profit and loss statement and cash flow statement)- current and projected (at least for the control period duration) along with basis of projections; (vi) Any other new measure to be initiated by the licensee, e.g. automation, IT initiatives etc."(emphasis added)*

From the above, it is seen that the Business Plan is intended to give a comprehensive and an up-to-date picture of the Company, its market and the impact of new Regulations, and the strategies that PSTCL develops to achieve the Company's goals, carry out its mission and achieve its vision. Accordingly, PSTCL has attempted to develop this Business Plan for the 1st MYT Control Period with a view to chart out the growth strategy after considering projected revenue and expenses of the Company and evaluating its external business environment.

1.10 Approach and Methodology

PSPCL has prepared the Business Plan in accordance with the provisions of PSERC MYT Regulations, 2014. The financial projections of PSTCL have been prepared considering that it would be operating as a transmission service provider and the primary source of its revenue would be that earned for providing its service to the users of the transmission network.

The Business Plan for the MYT Control Period considers the following:

a) Plan is prepared considering the recent changes in the sector as well as the growth projections of PSTCL.
b) The Capital Investment Plan, load forecasting, loss reduction plan, generation plan, etc., have been incorporated as provided in the Transmission Plan.
c) For the projections of the ARR for the Control Period, FY 2016-17 is considered as Base Year and the projection of ARR for FY 2016-17 has been considered as per the Tariff Petition filed for FY 2016-17 before the Hon'ble PSERC in accordance with the PSERC (Terms & Conditions for the Determination of Tariff) Regulations, 2005. The projection for the Control Period has been considered as per PSERC MYT Regulations, 2014.
d) While preparing the Business Plan, PSTCL has proposed the norms that reflect the justified expenses projected to meet the operational needs.

2 Business Overview

2.1 Operational Performance

PSTCL has the prime responsibility of providing efficient transmission services within the State to the transmission system users. It is the planner and facilitator of the transmission system in the State for ensuring grid security, quality of supply, and performance in compliance with the Grid Code and Regulations framed under the Electricity Act, 2003.

PSTCL is one of the most efficient Transmission Utilities in India with availability of over 99.93% and very low transmission loss, which is below 3%, despite having a very old transmission system needing major up-gradation.

The major strengths of PSTCL are:

- High system availability- Planned shutdown for maintenance being done; Long-term and short-term Open Access being provided
- Low Transmission Losses

Many factors such as ageing of equipments, failure rate, Quality of Power, Grid Discipline, Network planning commensurate with generation and distribution, strengthening of network to cope up with the requirement of power, and Renovation and Modernization have to be considered for efficient power transmission operation.

PSTCL 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

2.1.1 Existing Transmission Network

After the erstwhile PSEB was unbundled on April 16, 2010, all the transmission related assets were transferred to PSTCL. PSTCL owns the transmission network over diverse topology and has a very old transmission system, which needs major up-gradation. The transmission network comprises of transmission assets at voltage level of 400 kV, 220 kV and 132 KV. Post the unbundling, capital investments were made to strengthen and enhance the capacity of the transmission network in the State. The existing network of PSTCL is summarised as under:

Transmission Lines

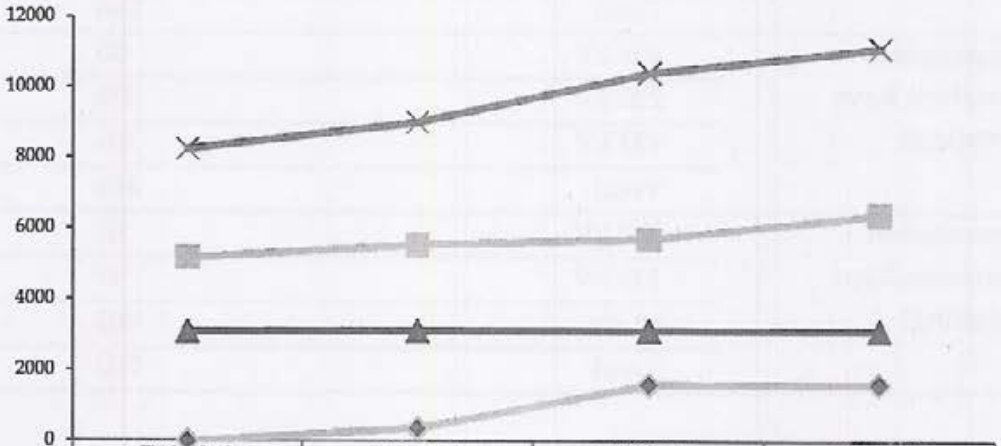
PSTCL has an extensive network of 400 kV, 220 kV, and 132 kV transmission lines to transmit bulk power generated at various generating stations in the State of Punjab and the share of power generated by Central Sector Stations to load centres in the State. The total length of transmission lines was 11,105 ckt-km as on September 30, 2015. The details of the Transmission Lines are as under:

Table 1: Transmission Lines as on March 31, 2016

Voltage Level	Single/Double Circuit	Transmission Line Length (ckt-km)
400 kV	Single Circuit	329
	Double Circuit	1271
220 kV	Single Circuit	3712
	Double Circuit	2673
132 kV	Single Circuit	2512
	Double Circuit	608
Total		11,105

The growth of transmission lines over previous years is depicted in the following Figure. It is observed that transmission lines have been increased by 30% from FY 2012-13 till FY 2015-16.

Figure 1: Growth in Transmission Lines (Ckt-kms)



	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
400 kV	0	368	1600	1600
220 kV	5146	5521	5697	6385
132 kV	3087	3112	3115	3120
Total	8234	9001	10411	11105

Sub-stations

PSTCL has a large number of sub-stations for transforming power into different voltage levels and to transmit the same to various load centres of the State through the transmission lines. PSTCL had a total of 166 nos. of sub-stations as on March 31, 2016, feeding the load centres through 732 nos. of outgoing bays at different voltage levels.

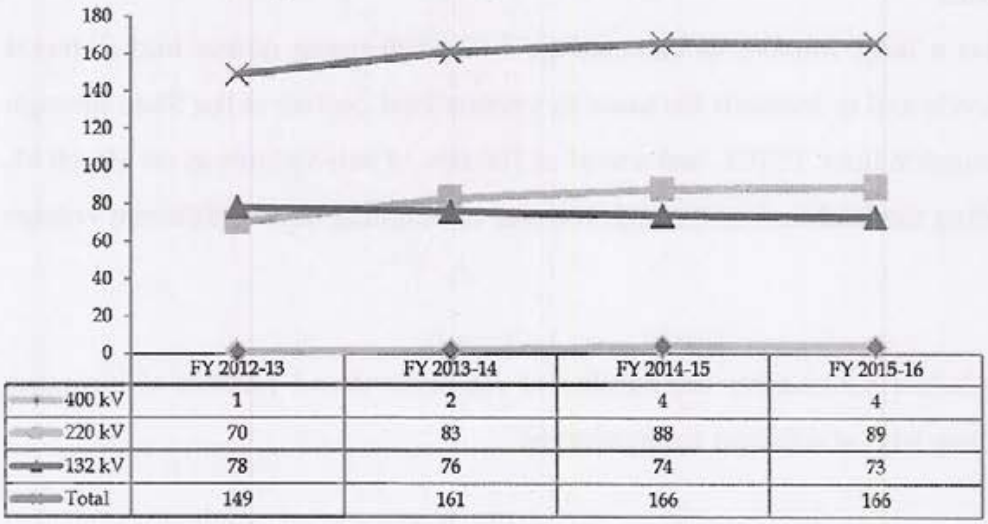
The table below summarises the number of sub-stations and number of incoming and outgoing bays at different voltage levels:

Table 2: Number of Sub-stations and bays as on March 31, 2016

Particulars	Voltage Level	Numbers
Sub-Stations	400 kV	4
	220 kV	89
	132 kV	73
	Total	166
Transmission Substation Bays (Incoming)	400 kV	20
	220 kV	275
	132 kV	203
	Total	498
Transmission Substation Bays (Outgoing)	220 kV	80
	132 kV	49
	66 kV	603
	Total	732

The growth in number of Sub-stations over previous years is depicted in the following Figure. It is observed that number of Sub-stations have been increased by 11% from FY 2012-13 till FY 2015-16.

Figure 2: Growth in Number of Substations



	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
400 kV	1	2	4	4
220 kV	70	83	88	89
132 kV	78	76	74	73
Total	149	161	166	166

Transmission System Capacity

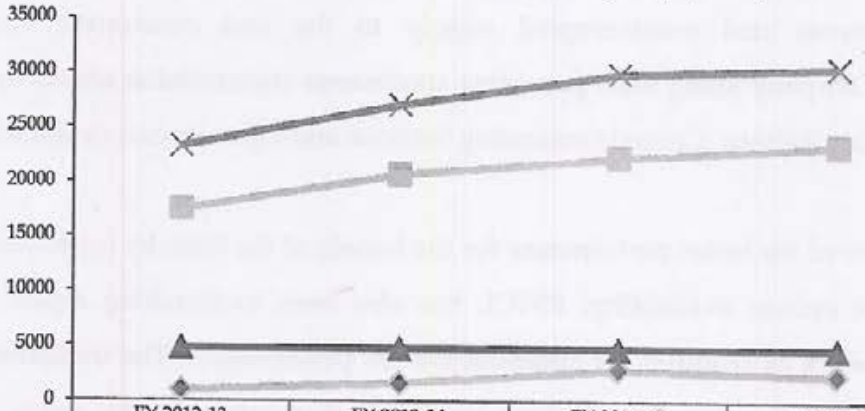
PSPTCL has been undertaking capital investment under various schemes to augment its transmission system capacity. The total transformation capacity of the system was 30,599 MVA as on March 31, 2016. The table below depicts the transformation capacity at various voltage levels:

Table 3: Transformation Capacity as on March 31, 2016

Voltage Level	Transformation Capacity (MVA)
400 kV Sub-Station	2,390
220 kV Sub-Station	23,438
132 kV Sub-Station	4,771
Total	30,599

The growth in transmission capacity over previous years is depicted in the following Figure. It is observed that transmission capacity has been increased by 32% from FY 2012-13 till FY 2015-16.

Figure 3: Growth in Transmission Capacity (MVA)



	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
400 kV	1000	1630	2890	2390
220 kV	17468	20718	22310	23438
132 kV	4793	4766	4781	4771
Total	23261	27114	29981	30599

2.1.2 Transmission Losses

Due to non-installation of ABT meters, PSTCL does not have a record of Transmission losses data from FY 2010-11 onwards. However, the work of installation of ABT meters was initiated with awarding of work order cum contract agreement with Wallaby Metering System (P) Ltd., now EDMI India Private Limited, for implementation of inter-State boundary metering-cum-Transmission Level Energy Audit Scheme. ABT meters and associated communication equipment/devices have been integrated with Central Data Centre. The transmission losses for the month of June 2015 and July 2015 are 2.19% and 2.88% respectively, which have been considered based on net energy exchange measured through ABT meters installed at boundary of interface points of PSTCL with Generating Stations, Inter-State Substations and Distribution Substations.

2.1.3 Transmission System Availability

The Transmission System Availability is an indicator of safe, secure and efficient operation of the transmission system. It indicates system reliability and stability to ensure continuous and uninterrupted supply to the end consumers of the Distribution Company along with providing continuous transmission access to the State Generating Stations, Central Generating Stations and Open Access customers.

PSTCL has strived for better performance for the benefit of the State by continuously improving the system availability. PSTCL has also been undertaking repair and maintenance work as required for optimum system performance. The transmission system availability has consistently been on the higher side over the years. The details of Transmission System Availability are as shown below:

Table 4: System Availability over past five years

Voltage Level	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16*
400 kV	-	-	-	99.35%	99.70%	99.92%
220 kV	99.89%	99.85%	99.86%	99.87%	99.83%	99.91%
132 kV	99.82%	99.75%	99.89%	99.75%	99.82%	99.86%

*upto March 31, 2016

2.2 Financial Performance

For projecting the trajectory for the Control Period, the financial performance has also been reviewed. It may be noted that the financial statements of PSTCL and SLDC are combined for past period. The financial performance of PSTCL has been discussed below:

2.2.1 Revenue Statement

A brief synopsis of the audited Profit and Loss Accounts for FY 2011-12 to FY 2014-15 is given below:

Table 5: 1Profit and Loss Statements for FY 2011-12 to FY 2014-15 (Rs. Crore)

Particulars	FY 2011-12		FY 2012-13		FY 2013-14		FY 2014-15	
	Rs. Crore	% of total	Rs. Crore	% of total	Rs. Crore	% of total	Rs. Crore	% of total
INCOME								
Revenue from Operations	534.01	97%	894.65	98%	1323.13	98%	952.59	98%
Other income	18.53	3%	18.35	2%	24.27	2%	19.35	2%
Total	552.55	100%	913.00	100%	1347.40	100%	971.94	100%
EXPENDITURE								
Employee benefit expenses	263.65	44%	300.12	42%	339.44	39%	355.63	34%
Finance costs	178.89	30%	216.25	30%	268.70	31%	373.99	36%
Depreciation expenses	93.61	16%	108.78	15%	139.15	16%	228.91	22%
Other expenses		0%		0%		0%	-	0%
i) Repairs & Maintenance	27.89	5%	54.23	8%	46.87	5%	37.16	4%
ii) Administrative & General expense	11.29	2%	18.90	3%	38.34	4%	29.97	3%
iii) ULDC charges	17.11	3%	13.91	2%	9.41	1%	8.43	1%
iv) Others debits	0.12	0%	0.00	0%	18.38	2%	0.57	0%
Total	592.56	100%	712.19	100%	860.29	100%	1,034.65	100%
Profit/(Loss) before Tax	(40.01)		200.81		487.12		(62.71)	
Tax liability	(17.72)		42.14		106.59		0.00	
Profit/(Loss) after tax	(22.29)		158.66		380.52		(62.71)	

2.2.2 Analysis of Revenue Statement

Revenue from Operation

Revenue from operations has shown continuous growth since PSTCL's inception and increased from FY 2011-12 to FY 2013-14. Revenue in FY 2012-13 grew by 68% as compared to FY 2011-12, and grew by 48% in FY 2013-14 over the revenue of FY 2012-13. This increase in revenue from operations is indicative of increase in transmission capacity and its recovery through tariff. However, the revenue in FY 2014-15 has reduced by 28% over previous year.

Employee benefit expenses

Employee Expenses carries the maximum weight in terms of total expenditure incurred by PSTCL in any particular year. As per the Transfer Scheme, PSTCL has to contribute 11.36% to the Employee benefit trust for Pension, Gratuity and Leave. This cost is paid on actual basis and accounted for accordingly. Apart from this, employee benefit expenses include other terminal benefits such as National Pension Scheme, etc. It also includes salaries and allowances paid to the employees. In FY 2011-12, employee benefit expenses were 48% of the total revenues. Its share in total expenses has reduced from 44% in FY 2011-12 to 34% in FY 2014-15, respectively. This reduction is because of (i) increasing revenues, and (ii) change in accounting policy (FY 2013-14) on expenses in respect of payment of overtime charges, which have now been accounted for on accrual basis in compliance with the Accounting Standards.

Repair & Maintenance Expenses

PSTCL owns diverse network, operates in varied topology and wide range of voltage profile. Further, the transmission network of PSTCL is very old, with significant portion of assets surpassing their useful life. For ensuring the safe, secure

operation and maintaining the reliability, repairs and maintenance activities are required to be carried out, which reflected in revenue statement of PSTCL.

The amount spent on Repairs & Maintenance in FY 2012-13 was almost double of that spent in FY 2011-12. This can be attributed to the increase in repairs and maintenance of Plant & Machinery. However, R&M expenses have been decreased in subsequent years compared to expenses in FY 2012-13. R&M expenses contribute to 4%-8% of total expenses. R&M expenses capitalized increased by 63%.

Administrative & General Expenses

As a percentage of total expenses, contribution of A&G expenses have been 2%, 3% 4% and 3% for FY 2011-12, FY 2012-13, FY 2013-14 and FY 2014-15, respectively. However, in monetary terms the value of A&G expenses have increased by 67% in FY 2012-13 over FY 2011-12 and by 102% in FY 2013-14 over FY 2012-13. An increase of over 100% in A&G expenses can be attributed to increase in expenses on training. In FY 2012-13, expenditure incurred on training was approximately Rs. 4.03 Lakh, which jumped to approximately Rs. 77.71 Lakh in FY 2013-14. Apart from this, other major expenses incurred under the A&G head were outsourcing expenses for engagement of Personnel on Contract basis, which doubled in FY 2013-14 compared to FY 2012-13, Payment towards Progressive Punjab Investment Summit promotion campaign by Govt. of Punjab and Payment towards Cultural Cess funds of Govt. of Punjab. However, the A&G expenses in FY 2014-15 reduced by 22% over expenses of FY 2013-14.

Finance Cost

The finance cost of PSTCL has increased from Rs. 178.89 Crore to Rs. 373.98 Crore with CAGR of 28%. The contribution of Finance cost of total expenses is showing

increasing trend, i.e., from 30% in FY 2011-12 and FY 2012-13, 31% in FY 2013-14 and 36% in FY 2014-15.

The table below indicates the financial performance of PSTCL in FY 2011-12, FY 2012-13, FY 2013-14 and FY 2014-15.

Table 6: Summary of Profit/(loss) for PSTCL for FY 2011-12 to FY 2014-15

Particulars	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
Total Income	552.55	913.00	1,347.40	971.94
Total Expenditure	592.56	712.19	860.29	1034.65
Profit/(Loss) before Tax	(40.01)	200.81	487.12	(62.71)
Profit/(Loss) after Tax	(22.29)	158.66	380.82	(62.71)

Thus, PSTCL incurred a loss in FY 2011-12 & FY 2014-15 and profit in FY 2012-13 and FY 2013-14.

2.2.3 Balance Sheet

The Balance Sheet for PSTCL for the period from FY 2011-12 to FY 2014-15 is as given below:

Table 7: Balance Sheet for PSTCL for FY 2011-12 to FY 2014-15 (Rs. Crore)

Sr. No.	Particulars	As on 31st March on 2012	As on 31st March 2013	As on 31st March 2014	As on 31st March 2015
I	EQUITY AND LIABILITIES				
1	Shareholder's Funds				
	Share Capital	0.05	605.88	605.88	605.88
	Reserves & Surplus	1,778.31	1,939.24	2,322.94	2,261.82
	Total	1,778.36	2,545.13	2,928.83	2,867.70
2	Share Capital Pending allotment	605.83	0.00	0.00	0.00

Sr. No.	Particulars	As on 31st March on 2012	As on 31st March 2013	As on 31st March 2014	As on 31st March 2015
3	Non-Current Liabilities				
	Long Term Borrowings – Secured	1,322.29	2,021.43	2,563.80	3,089.29
	Long Term Borrowings – Unsecured	1,072.32	988.71	839.04	689.36
	Other long-term liabilities	141.53	139.55	138.89	152.07
	Long-term provisions	-	0.37	1.43	2.78
	Total	2,536.14	3,150.06	3,543.15	3,933,50
4	Current Liabilities				
	Short Term Borrowings	109.67	48.52	61.22	177.07
	Other current Liabilities	546.88	830.17	698.75	617.21
	Short-term provisions	-	42.15	148.76	148.77
	Total	656.55	920.83	908.73	943.05
5	GRAND TOTAL	5,576.88	6,616.01	7,380.71	7,744.25
II	ASSETS				
1	Non-current Assets				
	Tangible assets	4,073.31	4,556.14	5,167.10	6,425.90
	Capital Work in Progress	1,247.96	1,635.65	1,657.55	739.71
	Assets Not in use	0.70	0.00	0.00	0.00
	Long-term loans and advances	0.50	0.44	0.86	0.48
	Other non-current assets	76.10	80.74	72.84	66.37
	Total	5,398.56	6,272.97	6,898.35	7,232.47
2	Current Assets				
	Inventories	133.10	134.03	143.62	158.79
	Trade receivables	40.91	164.10	204.67	185.48
	Cash & cash equivalents	0.62	3.30	1.18	1.43
	Short-term loans & advances	3.13	40.43	130.09	163.89
	Other current assets	0.56	1.19	2.81	2.20
	Total	178.32	343.04	482.36	511.79
3	GRAND TOTAL	5,576.88	6,616.01	7,380.71	7,744.25

2.2.4 Analysis of Balance Sheet

Fixed Assets

After coming into existence post April 2010, total fixed assets of PSTCL have grown from FY 2011-12 to FY 2014-15 on account of major capacity addition and system augmentation schemes carried out by PSTCL to ensure the availability of system for smooth operations in the State of Punjab. Till FY 2012-13, PSTCL owned transmission lines and sub-stations of 220 kV and 132 kV capacity. In FY 2013-14, 400 kV transmission lines and sub-stations were added. Total fixed (tangible) assets of PSTCL had YoY growth of 12%, 13%, 24% in FY 2012-13, FY 2013-14 and FY 2014-15, respectively. Further, the capital work in progress amount has also increased due to new transmission schemes and system augmentation requirement for upcoming units in the State. However, the Capital Work in progress has reduced in FY 2014-15 because of capitalisation of pending works during the year.

Net Current Assets

Total current assets in FY 2012-13 have increased by 92% over FY 2011-12 levels on account of surge in short-term loans and advances, which rose from approximately Rs. 3.12 Crore in FY 2011-12 to Rs. 40.33 Crore in FY 2012-13. In addition, Trade receivables increased four-fold and cash and cash equivalents increased five-fold in FY 2012-13 over FY 2011-12.

Total current assets increased by 41% in FY 2013-14 over FY 2012-13. The major increase was in short-term loans and advances, which tripled in the said year compared to the previous year.

Total current assets increased by 6% in FY 2014-15 over FY 2013-14. This marginal increase is on account of increase in short term loan and advances and current investments. However, inventories have reduced in FY 2014-15.

Current liabilities

Current liabilities in FY 2012-13 grew by 40% over FY 2011-12 mainly on account of provision of Income Tax of Rs. 42.15 Crore and increase in cash credit of Rs. 38.84 Crore from State Bank of Patiala. However, there was a marginal decrease of 1% in current liabilities in FY 2013-14 over FY 2012-13 and increase of 4% in FY 2014-15 over FY 2013-14.

Shareholder's Funds and Non-Current Liabilities

The Share Capital of PSTCL has increased from Rs. 0.05 Crore to Rs. 605.88 Crore. The Reserves and Surplus has increased by 9% and 20% in FY 2012-13 and FY 2013-14, respectively, over the previous year. The secured loans have increased by 57% and 27% in FY 2012-13 and FY 2013-14, respectively, over the previous year.

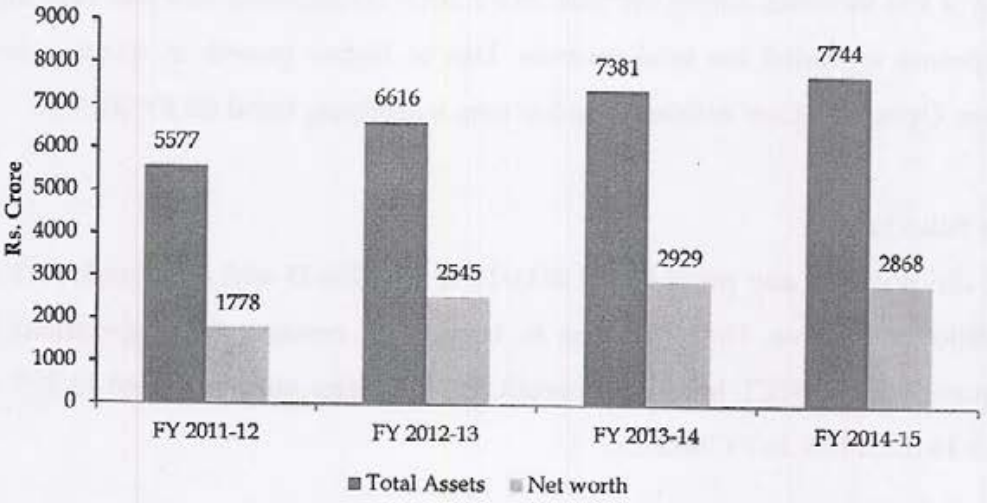
The progress made by PSTCL over three years is indicated in the following table:

Table 8: Asset Base and Net worth of PSTCL (Rs. Crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
Total Assets	5576.88	6616.01	7380.71	7744.25
Net worth	1778.36	2545.13	2928.83	2867.70

Thus, the assets of PSTCL have increased from Rs. 5576.88 Crore to Rs. 7744.25 Crore with annual growth of 12 % over three years. Also, Net Worth of PSTCL has increased from Rs. 1778.36 Crore to Rs. 2867.70 Crore with annual growth of 17% over three years. It is to be noted that Net worth has reduced in FY 2014-15 over previous year because of loss incurred by PSTCL during FY 2014-15.

Figure 4: Growth in Asset Base and Net Worth of PSTCL



2.2.5 Ratio Analysis

For assessing the financial performance of PSTCL, ratio analysis has been carried out based on Financial Statements for FY 2011-12 to FY 2013-14. The Ratio has been computed as under:

Table 9: Financial Ratios for PSTCL for FY 2011-12 to FY 2013-14

Particulars	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
Operating Cost to Sales	111%	80%	65%	106%
PAT to Sales	-4%	18%	29%	-6%
Approved RoE over asset base	5%	6%	6%	6%
Debt : Equity	1.41	1.20	1.18	1.38
Current Ratio	0.27	0.37	0.53	0.54

Operating Cost to Sales ratio

The operating cost to Sales ratio of PSTCL is in the range of 65% to 111% and has been declining over the period of three years from FY 2011-12 to FY 2013-14, positively impacting the profitability. However, in FY 2014-15, the ratio increased

because of loss incurred during the year. In FY 2011-12, operating cost was very high and expenses exceeded the total revenue. Due to higher growth in revenue over expenses, Operating Cost to Sales ratio has seen a declining trend till FY 2013-14.

PAT to Sales ratio

PSTCL did not earn any profit in FY 2011-12 & FY 2014-15 and as a result PAT to Sales ratio is negative. However, due to increase in revenue from operations in subsequent years, PSTCL has earned profit. PAT to Sales ratio increased to 29% in FY 2013-14 from 18% in FY 2012-13.

Approved RoE over asset base

As per PSERC Tariff Regulations, 2005, Return on Equity allowed was 15.5%. Over the three year period, the ratio of approved RoE over asset base has been in the range of 5%-6%. This marginal growth is because of lower equity investment in new assets.

Debt: Equity

The debt equity ratio has reduced over the years. It can be attributed to increase in equity funding by issuance of share capital in FY 2012-13 and decrease in unsecured loans over FY 2012-13 and FY 2013-14.

Current Ratio

Current ratio is indicative of firm's short term solvency. Current Ratio of PSTCL has been less than one indicating that its current liability is greater than current asset. Nonetheless, the ratio has seen an upward movement as current assets have increased by 93%, 41% and 6% in FY 2012-13, FY 2013-14 and FY 2014-15 respectively, whereas current liability increased by 40% and 4% in FY 2012-13 and FY 2014-15 and declined by 1% in FY 2013-14.

2.3 Human Resource Development

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 become more profitable. Employees are the most precious asset of an organization and a conducive environment is necessary to encourage creativity, innovation and performance excellence amongst them. The Company has focused its efforts to enhance the capabilities of employees to develop competent, trained and multi-disciplinary human capital. PSTCL has a satisfactory performance in recruitment, selection, training and development of the employees.

2.3.1 Training needs assessment and Training System

Training need analysis has been carried out in all the areas as the basis for devising the necessary 'Training System'. Due to fast changes in technology, there is a need to acquaint staff with the latest trends in field, in addition to the regular refresher courses.

Specific areas are identified on the basis of performance appraisal and individuals' feedback such as EHV Operation & Maintenance, Load Management, System Studies and Network Planning, EHV Construction of Sub-stations & Lines, Design & Engineering, Project Tendering, Procurement, Survey & Investigation, Project clearances, Testing and equipments, Civil works, Commercial & Regulatory affairs, Project Management, Information Technology, Finance & Accounts, Human Resources, General Management, Public Relation & Communication, Fire & Safety etc.

As the electricity industry is highly capital intensive, it necessitates the operation of the plant /substation equipments / Transmission line in the most safe and efficient

manner to minimize the cost of operation and a competitive spirit to achieve higher productivity and customer satisfaction. PSTCL believes that every employee should be trained to build the required skills for superior performance on the job.

It may be noted that during unbundling of erstwhile PSEB, all training infrastructure have been retained by PSPCL. With an objective to build capacity in the organisation and enhance the skill sets of its employees at different levels, PSTCL has decided to establish its own Training Institute at Ablowal.

At present, short-term courses are being arranged at regular intervals for staff by making arrangement with the outside agencies. Further, Executives and Staff have been sent to various training programmes and conferences to enrich their knowledge and experience.

2.3.2 Rewards and Recognition

Awards for Best Managed Substation and Transmission Line have been implemented for promoting competition in upkeep of the Substations and Transmission Lines. Efficient employees of various offices are also rewarded for promoting efficiency and competition amongst themselves.

2.4 Health and Safety Management in PSTCL

PSTCL believes that while operating the transmission system, safe and secure operation and safety of employees is of prime concern. PSTCL is committed to identify and assess all types of occupational health and safety risks and takes proactive steps to reduce the significant risk in turn to reduce the occurrences of incidents. Further, Safety Manual for PSTCL has been approved by the BOD and uploaded on website of PSTCL.

In order to promote the good health of the employees, seminars are held at regular intervals with cooperation and coordination with health expert. Further, to facilitate the cashless treatment to PSTCL's employees, Agenda for adopting suitable policy is under consideration of Board of Directors.

2.5 Environmental Policy in PSTCL

To provide the greenery and good environment, Corporate Horticulture Policy has been adopted by PSTCL. The Policy aims to keep the environment pollution free and make the surrounding of work place livelier through landscaping, Green belts and provision of flower pots. Under the said policy, it has been decided to develop 25% of total area of Substation as Green Area. This Policy has envisaged environmental, social, economic and aesthetic benefits.

2.6 Corporate Social Responsibility (CSR)

CSR Policy has already been adopted by PSTCL and CSR Trust has been formed to carry out CSR Policies and activities.

3 Market Assessment

Electricity being a concurrent subject, the power sector in India is the combined responsibility of Central and State Governments. The Act 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. During the last decade, adequate investment in intra-State and inter-State transmission infrastructure has been made 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.

3.1 Statutory and Regulatory Framework

The Statutory and Regulatory Framework is depicted in following figure:

Figure 5: Statutory and Regulatory Framework for Punjab

National Level Framework	State Level Framework
• Electricity Act, 2003 • National Electricity Policy • Tariff Policy	• PSERC MYT Regulations, 2014 • PSERC (Punjab State Grid Code) Regulations, 2013 • PSERC (Terms and Conditions of Intra-State Open Access) Regulations, 2011

3.1.1 National Level Framework

Electricity Act, 2003

The Act requires State Governments to initiate major changes in industry structure and operation of Power Sector in the State. The broad objectives of the Act 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

Section 2(73) of the Act defines a 'Transmission licensee' as a licensee authorised to establish and operate transmission lines. Further Section 40 of the Act defines the duties of the transmission licensees as below:

> ***"Section 40. (Duties of transmission licensees):***
>
> *It shall be the duty of a transmission licensee -*
>
> *(a) to build, maintain and operate an efficient, co-ordinated and economical inter-State transmission system or intra-State transmission system, as the case may be;*
>
> *(b) to comply with the directions of the Regional Load Despatch Centre and the State Load Despatch Centre as the case may be;*
>
> *(c) to provide non-discriminatory open access to its transmission system for use by-*
>
> *(i) any licensee or generating company on payment of the transmission charges; or*
>
> *(ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the*

transmission charges and a surcharge thereon, as may be specified by the State Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy"

Also, as discussed earlier, PSTCL is notified as State Transmission Utility and has to undertake the functions of State Transmission Utility as specified in Section 39 of the Act as under:

*"**Section 39. (State Transmission Utility and functions):***

(1) The State Government may notify the Board or a Government company as the State Transmission Utility:

Provided that the State Transmission Utility shall not engage in the business of trading in electricity:

Provided further that the State Government may transfer, and vest any property, interest in property, rights and liabilities connected with, and personnel involved in transmission of electricity, of such State Transmission Utility, to a company or companies to be incorporated under the Companies Act,1956 to function as transmission licensee through a transfer scheme to be effected in the manner specified under Part XIII and such company or companies shall be deemed to be transmission licensees under this Act.

(2) The functions of the State Transmission Utility shall be -

(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 with –

(i) Central Transmission Utility;

(ii) State Governments;

(iii) generating companies;

(iv) Regional Power Committees;

(v) Authority;

(vi) licensees;

(vii) any other person notified by the State Government in this behalf;

(c) to ensure development of an efficient, co-ordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centres;

(d) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges ; or

(ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy:

Provided further that such surcharge and cross subsidies shall be progressively reduced in the manner as may be specified by the State Commission:

Provided also that the manner of payment and utilisation of the surcharge shall be specified by the State Commission:

Provided also that such surcharge shall not be leviable in case open access is provided to a person who has established a captive generating plant for carrying the electricity to the destination of his own use."

National Electricity Policy (NEP)

The National Electricity Policy (NEP) notified by Government of India, mandates that every State Electricity Regulatory Commission should determine the Transmission Charges by June 2005. NEP further advocates nationwide uniformity and consistency in Transmission Pricing in order to facilitate cost effective transmission of power across the country. NEP stipulates that State Transmission Utility has 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. 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.

Tariff Policy

The Tariff Policy was notified by Ministry of Power (MoP), GoI on 6th January 2006 and revised Tariff Policy was notified on January 28, 2016, deals with several aspects pertaining to Transmission as under –

- Transmission Pricing
- Approach for allocation of Transmission Loss
- Other issues in transmission

The Tariff Policy, as far as transmission is concerned, seeks to achieve the following objectives:

i. Ensure optimal development of the transmission network to promote efficient utilization of generation and transmission assets in the country;
ii. Attract required investments in the transmission sector and provide adequate returns.

It is desirable to move to a system of loss compensation based on incremental losses as present deficiencies in transmission capacities are overcome through network expansion. Further, it is mentioned that, in extraordinary circumstances including threat to security to the State, public order or natural calamity, if the Central Government allocates power out of the unallocated share of the Central Generating Stations or otherwise, such allocation of power will have priority over short-term, medium-term and long-term access in this order.

Revised Tariff Policy also covers the aspect of the ancillary services, wherein Central Commission may introduce norms and framework for ancillary services, including the method of sharing the charges, necessary to support the power system or grid operation for maintaining power quality, reliability and security of the grid. Similar framework shall also be adopted by the State Commission.

3.1.2 State Level Framework

The Hon'ble Commission notified the PSERC MYT Regulations, 2014, to determine the tariff for transmission of electricity in the State.

PSTCL has been vested with the function of electricity transmission by the State Government of Punjab post its formation on April 16, 2010. The Business of the Company includes:

- Transmission of electricity in the State
- Providing evacuation arrangement in synchronisation with the capacity addition
- Prepare a Transmission Plan
- Maintain Grid Stability and Security
- Manage Load dispatch operation in the state

Apart from this, operation of PSTCL is also governed by PSERC (Punjab State Grid Code) Regulations, 2013, in order to operate the intra-State Transmission System in integration with National Grid.

In order to provide non-discriminatory Open Access, PSERC (Terms and Conditions of Intra-State Open Access) Regulations, 2011 is applicable to PSTCL.

3.2 Industry Scenario

Electricity is a necessity for agriculture, agro-based industry, service industry and manufacturing industry. In short, electricity is needed to undertake economic activity, which in turn boosts the country's gross domestic product. India's GDP grew by 7.5% in FY 2014-15 after years of economic slowdown and in the same year electricity sector grew by 8.2%. This shows there is a co-relation between growth in electricity sector and overall growth of the country.

Table 10: Electricity Demand and Supply in India

FY	Energy (MU)				Peak Demand (MW)			
	Demand	Availability	Shortage	%	Demand	Met	Shortage	%
2004	559,264	519,398	39,866	7.1	84,574	75,066	9,508	11.2
2005	591,373	548,115	43,258	7.3	87,906	77,652	10,254	11.7
2006	631,024	578,511	52,513	8.3	93,214	81,792	11,422	12.3
2007	693,057	624,716	68,341	9.9	100,715	86,818	13,897	13.8
2008	777,052	664,660	72,392	9.8	108,866	90,793	18,073	16.6
2009	777,039	691,038	86,001	11.1	109,809	96,785	13,024	11.9
2010	830,594	746,644	83,950	10.1	119,166	104,009	15,157	12.7
2011	937,199	857,886	79,313	8.5	130,006	116,191	13,815	10.6
2012	998,114	911,204	86,905	8.7	135,453	123,294	12,159	9
2013	1,002,257	959,829	42,428	4.2	135,918	129,815	6103	4.5
2014	1,068,923	1,030,785	38,138	3.6	148,166	141,160	7006	4.7

Source: CEA's LGBR Reports

The data pertaining to last 10 years (after enactment of Electricity Act, 2003) shows that the gap between Energy demand and Energy availability in 2014 has reduced to half of what it was in 2004. Similarly, the gap between Peak demand and Peak

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demand met in 2014 has reduced by more than fifty percent compared to 2004. Similarly, region-wise demand supply gap for FY 2013-14 is shown in the following Table:

Table 11: Regional Demand-Supply gap as on 31.03.2014

States	Energy (MU)			Peak Demand (MW)		
	Demand	Availability	Shortage	Demand	Met	Shortage
Northern	309463	290880	-18583	45934	42774	-3160
Western	294659	291856	-2803	41335	40331	-1004
Southern	277245	258444	-18801	39015	36048	-2967
Eastern	108203	106783	-1420	15888	15598	-290
North-Eastern	12687	11866	-821	2164	2048	-116

Source: CEA

It is seen that Northern Region suffers from huge shortage of power especially when compared to Western and Eastern Region. The shortage in the Northern Region is relatively higher than shortage of Western Region and Eastern Region.

Further, the demand supply position of State of Punjab is given in the following table:

Table 12: Demand-Supply position for Punjab

States	Energy (MU)				Peak Demand (MW)			
	Demand	Availability	Shortage	%	Demand	Met	Shortage	%
FY 2009-10	46426	39977	-6449	-13.9	9786	7407	-2379	-24.3
FY 2010-11	45249	42513	-2736	-6	9399	8007	-1392	-14.8
FY 2011-12	46264	44824	-1440	-3.1	10471	8834	-1637	-15.6
FY 2012-13	47996	45389	-2607	-5.4	11520	9074	-2446	-21.2
FY 2013-14	47347	46610	-737	-1.6	10141	8903	-1238	-12.2
FY 2014-15	48864	48380	-484	-1	11534	10155	-1379	-11.96

Thus, Peak shortage has been reduced from 24.3% to 11.96% in last five years because of the increase in the availability of power. Also, Energy shortage has been reduced from 13.9% to 1 % in last five years. To ensure adequate power, two new thermal power plants, namely Rajpura and Talwandi Sabo, have been built by private developers, which were awarded through competitively bidding. In view of the increasing power generation capacity, PSTCL aims to augment transmission capacity to evacuate the power from the generating power plants.

In the State of Punjab, the distribution licensee, PSPCL is receiving the power through the network of the single transmission licensee, PSTCL. Apart from this, some of the short term Open Access consumers, which are connected to network of PSPCL and/or PSTCL also share the capacity of transmission network. For safe and

secure operation of technical and commercial transactions, after taking into account the network security, it is pertinent to understand the transfer capability of the control area. Further, Punjab State Grid Code specifies that Available Transfer Capability (ATC) of the inter-control area transmission system available for scheduling commercial transactions (through long-term access, medium-term open access and short-term open access) in a specific direction shall be Total Transfer Capability less Transmission Reliability Margin.

The Transmission Reliability Margin signifies the amount of margin kept in the total transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. Earlier, Transmission Reliability Margin for Punjab area was decided as 300 MW, however, it was further revised to 500 MW with effect from May 2015.

The ATC along with its allocation to Long-Term, Medium-Term and Short-Term Open Access consumers for the past period is given in the following table:

Table 13: Available Transfer Capability for Punjab (in MW)

Duration	Total Transfer Capability (MW)	Reliability Margin (MW)	Available Transfer Capability (MW)	Long-Term Access and Medium-Term Open Access (MW)	ATC for Short-Term Open Access (MW)
May 2013 to July 2013	5600	300	5300	3350	1950
May 2014 to July 2014	5700	300	5400	3790	1610
May 2015 to August 2015	6200	500	5700	4033	1667

Considering the present demand of transmission capacity and Available Transfer Capability, there is no congestion in the intra-State transmission network of PSTCL. Further, PSTCL also aims to plan intra-State network in such a way that it would avoid congestion in network and ensure the smooth operation of technical and commercial transactions.

In light of the foregoing, considering the growing demand in the State and the need to provide secure and safe transmission system for market participants, PSTCL has to be maintain and improve its operational performance and capital investment for transmission network.

4 Operational Plan

PSTCL has proposed its Operational Plan after taking into account all factors, which would affect the operation of PSTCL and requirements specified in PSERC MYT Regulations, 2014. The elements of the Operational Plan are dynamic in nature and need to be updated at periodic intervals after taking into account the changes in the internal and external environment. The Operational Plan includes the projections for the Control Period from FY 2017-18 to FY 2019-20.

4.1 Proposed Generation Capacity Addition

While preparing the Capital Investment Plan, PSTCL has considered the various generating stations, which are expected to be commissioned within the State during the Control Period including NTPC/NHPC stations from which power share has been allocated to the State of Punjab. The generating stations and their expected date of commercial operation, as considered by PSTCL are as under:

Table 14: List of Generating Stations to be commissioned

Sr. No.	Name of the Plant	Plant Capacity (MW)	Share Gross (MW)	Commissioning Schedule
1	Kishan Ganga HEP (NTPC)	3x110=330 MW	33	Sep 2016 (Unit 1), Oct 2016 (Unit 2), Nov 2016 (Unit 3)
2	Talwandi Sabo TPS (Sterlite)	3x660 = 1980 MW	1980	Unit-1 (Already Commissioned)
				Unit-2 (Dec 2015) Unit-3 (Apr 2016)
3	Mukerian Hydel Project Stage-II	9x2 = 18 MW	18	Apr 2016
4	GVK Gondiwal Sahib TPS	2x270=540 MW	540	Unit 1 and 2 (Apr 2016)

4.2 Demand/Load forecasts of the State

During the Control Period, the demand will increase further, which will require to be met through additional sources of power. Being the only transmission licensee in the State, PSTCL is required to ensure adequate capacity of transmission network for smooth flow of power for meeting the demand. For the demand estimation during the Control Period, PSTCL sought the estimated demand from the transmission system users. Demand has been estimated based on the following philosophy:

a) Energy requirement of new houses that are likely to be constructed in the coming years is based on CAGR of 3.46% (Based on census data of 2001 & 2011) in number of urban households and CAGR of 1.79% in number of rural households.

b) The annual energy requirement for consumers other than domestic is expected to grow at a constant CAGR of 7.5% per annum.

c) The average load factor of 54.64% is considered based on the actual data published by CEA.

The estimated demand and energy requirement for the Control Period is as under:

Table 15: Estimated Demand for the Control Period

Particulars	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Energy Requirement (MU)	52,383	56,620	61,215	66,483	70,899
Peak Demand (MW)	10,904	11,743	12,514	13,399	14,289

It may be noted that the transformation capacity of PSTCL transmission network as on March 31, 2016 is 30599 MVA, which is sufficient to cater to the estimated demand of 10,904 MW as mentioned in the above Table.

Considering the present transformation capacity at various voltage level and estimated demand during the Control Period, the additional transformation capacity required during the Control Period would be 1657 MVA, 1902 MVA and 1913 MVA for the respective year of the Control Period.

PSTCL, while preparing the Capital Investment Plan, has taken into account the estimated demand of the State and has proposed capacity addition to the network. The proposed capacity addition vis-a-vis capacity addition required is shown in the Table given below:

Table 16: Transmission Capacity Addition required and proposed (MVA)

Particulars	FY 2017-18	FY 2018-19	FY 2019-20	Total
Transmission Capacity addition required	1,657	1,902	1,913	5473
Transmission Capacity addition proposed	707	2262	2320	5288

4.3 Capital Investment Plan

PSTCL has submitted the Capital Investment Plan separately along with this Business Plan Petition, as per Regulation 9 of the PSERC MYT Regulations, 2014. The summary of Capital Investment proposed for PSTCL and SLDC during the Control Period is as under:

Table 17: Capital Investment Plan proposed for the Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
1	Transmission			
1.1	Opening CWIP	226.40	323.19	313.42

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
1.2	Capital Expenditure	250.67	294.79	234.25
1.3	Capitalisation	153.88	304.56	350.89
1.4	Closing CWIP	323.19	313.42	196.79
2	SLDC			
2.1	Opening CWIP	-	-	-
2.2	Capital Expenditure	10.00	10.00	10.00
2.3	Capitalisation	10.00	10.00	10.00
2.4	Closing CWIP	-	-	-
3	Transmission + SLDC			
3.1	Opening CWIP	226.40	323.19	313.42
3.2	Capital Expenditure	260.67	304.79	244.25
3.3	Capitalisation	163.88	314.56	360.89
3.4	Closing CWIP	323.19	313.42	196.79

4.4 Plan for Operational Improvement

In addition to the Capital Investment Plan, PSTCL proposes to bring in technological innovation and further improvement in the operation of the transmission network.

4.4.1 Implementation of Life Extension Schemes

PSTCL is implementing Life Extension Schemes for replacement of old equipments in 220/132 kV substations as well as transmission line elements so as to reduce the failures and interruptions/occurrences. The benefits to be gained by implementation of the scheme are:

a) Reduction in interruptions and occurrences.

b) Increase in reliability and availability.

c) Trouble free operation of switchyard equipments.

4.4.2 Optimisation of loading of transmission network

In order to reduce the transmission losses and operate the transmission system safely and optimally, PSTCL monitors the loading of transmission lines and ICTs/transformers regularly. Moreover, system studies are carried out on routine

basis , keeping in view various expected scenarios in line with the transmission planning criteria specified by CEA. In case of any constraints, i.e., overloading on the basis of system studies or input data from P&M/SLDC department, due action is taken for optimising the loading of the system.

4.4.3 Voltage Control and Reactive Power Management

The monitoring and controlling the transmission system in real time basis requires the optimal control over four parameters such as real power, reactive power, voltage and current. It is technically understood that real power flow control related to current control and reactive power flow control is related to voltage control in the system. The voltage control and reactive power management shall be exercise with tap changing, providing capacitor banks, providing reactors, etc. It is submitted that voltage control by tap changing of power transformers after receiving the inputs from P&M department. At present, PSTCL has made provision of 80 MVAr reactors at 400 kV Substations at Makhu, Nakodar and Muktsar.

Recently, PSTCL has appointed CPRI to carry out studies of PSTCL's system and suggest the optimal placement of reactive compensation by means of capacitors or reactors. Hence, assessment of additional requirements for capacitors and reactors would be possible only after the completion of such studies.

4.4.4 Modernization of Protection System

PSTCL has taken active steps towards modernisation of its protection system. As per CEA Regulations, it is mandatory to replace old electro-mechanical relays with numerical ones on EHV transmission elements, especially relays like distance protection schemes, differential relays and bus-bar differential schemes. PSTCL has already replaced distance relays, bus-bar differential relays, and differential relays on 220 kV and above voltage level transmission elements. Efforts are in process to

replace electro-mechanical back up relays also in the next two years in a phased manner. Similarly, procurement process for replacing old and obsolete relays installed on 132 kV elements is also underway.

4.4.5 Proactive O&M Practices

Modern Diagnostic Testing Equipment

Around four years back, PSTCL initiated a process of setting up its own oil & diagnostic lab. This lab is now fully functional and in-house testing facilities for all "In Service" & "New" Transformer Oils are available. Facility for study of residual life assessment technique such as Furan Analysis, Dissolved Gas Analysis, Insulation diagnostic analysis (to assess % of water in paper insulation), Insulation analysis based on frequency domain & time domain analysis, Direct line impedance measurement, Sweep Frequency Response Analysis, OLTC analyser for plotting dynamic curve of tap changing, CT saturation, & B-H curve plotting, Corona Camera, SF_6 leakage detection, circuit breaker analyser, etc., are available at the lab. Apart from this, testing equipment of all the protection squads has been modernized through REC Scheme 6853. New equipment was procured from world class manufacturers and matches with equipment used by Companies like PGCIL, NTPC, etc.

In the Oil and diagnostic testing lab, some of the testing facilities are unique and match standards of Companies like PGCIL, NTPC, etc. For future period, construction of independent building, along with NABL accreditation, is in progress. Also, some new testing equipment such as water content measurement, DC earth fault tester, vibration meter, DG set, thermo vision cameras, partial discharge monitoring system, etc., are also proposed.

Hotline Maintenance Technique

Hotline Maintenance equipment is available with Hotline divisions for working upto 400 kV voltage level. Because of severe shortage of manpower in Hotline Teams, various training programmes for Hotline Maintenance Technique are held. Special tools have been procured so as to work online, i.e., without taking any shutdowns, etc.

Concept of predictive maintenance practices

As of now, there are nine protection teams, eleven transmission teams and 25 nos. of O&M divisions engaged in operation and maintenance of 400 kV, 220 kV and 132 kV substations. In addition to the above, one protection team exclusively for 400 kV Substations, three transmission teams at 400 kV Substations, 25 nos. of maintenance hubs, one team to handle Substation Automation work, etc., have been proposed. This will streamline the preventive and predictive maintenance work. Schedule for periodical maintenance and testing has been got approved from Protection Coordination Committee formed under Punjab State Grid Code. With availability of facilities of diagnostic tools and tests in oil and diagnostic lab at Ludhiana, concept of predictive Maintenance is being implemented.

Bay Control Unit (BCU) based Substation Automation System (SAS)

SAS is fully functional at all 400 kV substations of PSTCL. For 220 kV substations, new panels being procured are BCU based. All new relays being procured are also SAS compatible.

Modernisation of Routine Mechanical Work

In order to lower dependence on manual labour, new truck mounted cranes and working platforms are being procured to make the Substation maintenance work easier.

Underground Cables for avoiding ROW issues

Further, to overcome Right of Way (RoW) constraints in urban areas, PSTCL proposes underground cabling as an alternative to overhead transmission lines. In urban areas, it is very difficult to obtain Right of Way (ROW) for transmission lines, as the tower requires substantial footprint. With conventional transmission towers, area required for erecting one tower is substantial, which leads to reluctance on the part of landlords to permit construction of Transmission lines through their premises.

An alternative to this perennial problem is the use of monopole, which is a tubular structure requiring much less footprint. Furthermore, these are aesthetically pleasing and do not tarnish the beauty of the premises. PSTCL is now proposing to use these monopoles at specific locations (primarily in urban area) where conventional towers are not practically feasible. PSTCL has already started using 'narrow base' towers, which require less footprint compared to the conventional towers. PSTCL has also envisaged erection of Double ckt. and multi circuit towers, looking into the future requirements of additional circuits (lines), which can be strung on the same tower.

4.4.6 Substation Monitoring System

At present, there are 87 nos. of Substations (7 nos. of 400kV & 765 kV, 63 nos. of 220kV and 17 nos. of 132kV Substations) including 15 Generating stations which have been integrated with the SCADA system/SAS and data is being received at the SLDC Control Centre. However, 102 nos. of Substations (2 generating and 100 Substations) are still not integrated and need to be provided with the RTUs. During FY 2016-17, it is proposed to provide RTU in 45 nos. of Substations. The remaining Substations along with replacement, if any, is proposed to be covered in FY 2017-18 depending upon the availability of communication connectivity.

4.4.7 Power Transformer Monitoring System

Fibre Optic based temperature measurement of winding and oil

Since SAS is fully functional at all 400 kV Substations, fibre optic based temperature measurement has been implemented at all 400 kV Substations.

Tap Changer cum transformer monitoring system

RTCC Panels are available for all power transformers, which monitor cooling systems like fans and pumps, temperature of transformer winding & oil, master follower scheme of OLTC operation, tap position, etc. Apart from this, in 400 kV Substations, all this information is available through SAS, i.e, fibre optic cable.

Oil Monitoring system

On line oil monitoring systems are installed at all 400 kV class ICTs and information of various parameters such as water content and gas formation in the ICT is available for analysis.

Nitrogen Injection based fire protection system (NIFPS)

All new power transformers (>100 MVA) are commissioned with NIFPS in service. For old power transformers already in service, NIFPS is being installed in a phased manner.

4.4.8 Gas Insulated Substations in Urban/Industrial Area

Gas Insulated Substation (GIS) is nowadays a very popular technology to erect substations is densely populated area where land availability is scarce and land cost is also very high. However, Gas Insulated Substations are very costly as compared to conventional Air Insulated Substations. So, use of this technology is justified primarily in metro cities. Apart from this, availability of right of way for transmission lines emanating from substation is also one of the key factors deciding

the setting up of GIS in densely populated areas. PSTCL has not undertaken any project for erection of GIS. However, PSTCL is looking forward to erect GIS considering the necessity of erection of substation and availability of right of way for transmission lines.

4.4.9 Implementation of Smart Grid Pilot Projects

As regards the implementation of Smart Grid projects, PSTCL has decided to undertake pilot projects during the Control Period. At present, pilot project of Substation Automation System (SAS) is ongoing. The Work Order for complete engineering, supply, erection, testing and commissioning of SAS for 5 nos. of 220 kV Substations has been placed on Siemens Ltd., Gurgaon. The following substations are covered under this project:

a) 220 kV Mohali-I Substation
b) 220 kV Mohali-II Substation
c) 220 kV Kharar Substation
d) 220 kV Lalru Substation
e) 220 kV Dera Bassi Substation

The scope of the project includes data acquisition from remote location and to make possible the control of all 220 kV switchyard equipments (i.e., circuit breakers and isolators) both from local and remote location through HMI.

4.4.10 Establishment of comprehensive communication network using OPGW

At present, PSTCL is using Power Line Carrier Communication (PLCC) for data transfer from substation to substation and from substations to State Load Dispatch Centre (SLDC). This type of Communication has limited data handling capabilities and is very sluggish. Because of limited frequency band, there occurs frequency

congestion at major Substations, where a large volume of data is to be handled. PSTCL has a very wide network of transmission lines covering the entire State of Punjab. By laying fibre optic cable along these transmission lines (for which ROW is with PSTCL), a very efficient and high speed communication network can be established. OPGW can be utilised for SAS, video conferencing between various Sub-stations, video monitoring of substations. It can serve as a backbone for in-house PSTCL IT implementation and computer (LAN/WAN/Internet) networking. In line with the decision taken in National Regional Power Committee (NRPC), 564 kms of OPGW was installed on the transmission lines of PSTCL by PGCIL and the installation of 1450 kms of OPGW is under process in the second phase.

PSTCL is also, planning to establish their own network in the near future. Since, the investment required is huge, private participation in this field is proposed. The private party who would be executing this will be able to put the network to commercial use after reserving / allotting the required number of fibres for PSTCL.

Apart from the own use of OPGW, PSTCL proposes the option of giving spare OPGW on lease to interested Telecom/ISP companies. The income earned from such leasing of OPGW shall be considered as Non-tariff Income and will ease burden on the consumers.

4.4.11 WAMS technology and PMU development

Wide Area Measurement System (WAMS) based unified real time dynamic State Measurement projects are being implemented by PGCIL across the country. This schemes involves application of sychronphasor technology at STU and inter-State Transmission System in unified manner. The objective of this scheme is real time measurements, monitoring and visualisation of power system as well as taking preventive or corrective actions in new regime of grid management with improved

efficiency and to facilitate the increased penetration of renewable generation into grid as well as optimal utilisation of resources. PGCIL will implement the above said scheme in the following two stages;

a) Stage I – Installation of total 1186 nos. of PMUs at remote locations at 400 kV level & above and 220 kV generation switchyards where fibe optic communication links are available, Phasor Data Concentrators at all SLDCs, development of analytics software, etc.
b) Stage II – Installation of 554 nos. of PMUs and approx. 11,000 km of OPGW along with associated terminal equipments.

PGCIL shall fund the above said scheme of Rs. 656 Crore from Power System Development Fund. In Punjab, three nos. of remote locations i.e., 220 kV GNDTP, Bathinda Substations, 220 kV GHTP, Lehra Mohabbat Substation and 220 kV GGSTP Ropar Substations, shall be covered for installation of PMUs and this projects is likely to be commissioned by April 2018.

4.4.12 Disaster Management Control for Operation of Transmission System

The power sector plays an important role in economic growth of the country. Power system network is witnessing phenomenal changes and new power system elements are added to the network at quick intervals. Under these conditions operating and maintaining the grid in a satisfactory manner is a challenge. In order to deal with contingencies like partial or total black out in the Punjab Control area, SLDC is regularly updating "System Restoration Procedure for Punjab Control Area" in line with provision in Regulation 5.8 of the Indian Electricity Grid Code, 2010. The restoration procedure along with list of contact details of Nodal Officers (in case of any Grid disturbance in Punjab Control Area) is available on Punjab SLDC website.

4.4.13 Cyber security related measures for SLDC

PSTCL has proposed the capital investment during the Control Period towards technology up-gradation. The investment already made and proposed for the Control Period on technology up-gradation would make the power system modernized. The way to manage the power system would be changed because of the introduction of new technology in the power system. The Power system is being managed through integrated Information technology, Communications, Automation and Control. In the process of becoming a *smarter* power system, it is increasing its vulnerability to potential cyber-attacks. Considering the risk arising because of technology up-gradation, it is equally important to place an appropriate security mechanism to protect the power systems from potential cyber-attacks so as to ensure reliable and secure operation of the Grid.

It is necessary to introduce an appropriate cyber security mechanism to protect the intra-State Transmission System in future years. This is of high importance as more and more activities e.g., grid monitoring, power scheduling, etc., are targeted towards web application.

As a preliminary measures, an internet security system has been provided at SLDC to tackle the issues related to internet security threats, which includes web and application filter, Intrusion Prevention System, Gateway Anti-Virus, Gateway Anti-Spam, etc. In addition to above, a provision of separate firewall(s) for SCADA/EMS system also exist at SLDC Control Room.

As regards the further cyber security measures, firstly, PSTCL will focus on capacity building. PSTCL will actively participate in various national level for a on cyber security and will arrange various training programmes for PSTCL's staff.

Based on this, PSTCL will think of appropriate cyber security mechanism, which includes identification of vulnerable assets, preparation of guidelines/procedures, communications protocols, etc.

4.4.14 Security for the Transmission Substations

At present, PSTCL has maintained the security arrangements for its 400 kV, 220 kV and 132 kV substations as per standard industry practice. PSTCL feels that transmission substation, being the critical asset for maintaining the continuity of power supply, are vulnerable. Hence, high level security arrangements are required for transmission substation and other vital installations of the transmission system at critical locations, especially in border area, as a continuous threat is perceived in the Border Region. Security arrangement has been heightened in the wake of Pathankot terrorist attacks. In view of this, PSTCL is exercising various options for intensifying security arrangements for transmission substations at critical location, such as real time monitoring through CCTV, deputing extra specialised security manpower, etc. PSTCL requests the Hon'ble Commission to consider the expenses towards the additional security arrangements, over and above the O&M Expenses to be allowed, during the Control Period. PSTCL will submit the action plan on the security arrangements in its Multi Year Tariff Petition for the Control Period to be filed before the Hon'ble Commission.

4.5 Strengthening of SLDC

Section 32 of the Act stipulates the Functions of SLDC as under:

> *"32. (**Functions of State Load Despatch Centres**): — (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."

In the State of Punjab, SLDC functions as an independent body and efficiently carries out the processes in coordination with PSTCL and other Transmission System Users.

For fulfilling the above said functions, SLDC have been supported with adequate technology and infrastructure.

4.6 Plan for reduction in Transmission Losses

As discussed earlier, boundary metering has been completed by PSTCL and ABT meters and associated communication equipment/devices have been integrated with Central Data Centre. The actual transmission losses and energy audit data is regularly available. It may be noted that the transmission losses for the months of June 2015 and July 2015 are 2.19% and 2.88%, respectively.

The following metering arrangement has been made under Intra-state Boundary Metering cum Transmission Level Energy Audit Scheme:

a) First part of the Scheme is to implement the Intra-State Boundary Metering, to fulfill the designated responsibility of the SLDC to keep account of energy transactions in the State between various utilities/entities as well as for calculating the overall transmission grid losses. To fulfill this purpose 0.2s class accuracy ABT meters have been specified in Punjab State Grid Code as well as IEGC. ABT meters with advanced remote communication capabilities have been installed at all the interface/ boundary points between different utilities/entities including inter-State points with PGCIL, BBMB, Himachal Pradesh, Jammu & Kashmir, Haryana, and Rajasthan. These ABT meters are specified to report data every minute through their individual communication devices using GPRS/V-SAT, so that energy transactions could be monitored in real time. This part of the project enables CEC system at SLDC to monitor and calculate inter exchanges taking place at interstate boundary points, Gross Energy Generation at each of the PSPCL & 3 nos. of IPPs Generating Plants in Punjab, Energy Sent Out from each of these Generating Plant to PSTCL as well as directly to PSPCL and overall Grid loss of the PSTCL for each block compatible with ABT regime. Till date, 731 nos. of ABT meters (Main & Check both) have been installed at various boundary points.

b) Second part of the scheme is to implement the transmission level energy audit so that quantum of energy flow through equipments could be measured and their individual losses could be calculated. However, at present, 436 nos. of conventional energy meters of 0.2s class accuracy are installed at all the identified locations, where existing meters were not already available or where these were defunct, so that no metering point in the transmission system remains un-metered. The locations where existing meters already installed, which are not compatible for integration with the

Scheme, shall also be provided with additional meters compatible with the Scheme so that data is available at SLDC for energy audit purpose.

Further, PSTCL submits that the transmission losses in transmission network depends upon various factors such as shift of load centres, energy injection and drawal into the network and the extent of inherent technical loss pertaining to the transmission equipments in use. PSTCL continuously strives to reduce the technical losses in the system. PSTCL is regularly monitoring the loading of transmission lines and power transformers/ICTs and makes all possible efforts to optimize the loading of this equipment to reduce the technical losses in the system.

As regards the trajectory of transmission losses during the Control Period, PSTCL submits that the actual transmission losses are in the range of 2.19%-2.88%. No past data of transmission losses is available and also the data for actual losses for whole year is also not yet available, hence, it would be difficult to establish baseline for transmission losses.

It may be noted that transmission loss for the other States in the country are in the range of 1.80% - 4.99% as given in the following table:

Table 18: Benchmarking of Transmission Losses for FY 2014-15

Sr. No.	State (Transmission Utility)	Transmission Loss (%)
1	Andhra Pradesh (APTRANSCO)	4.02%
2	Chhattisgarh (CSPTCL)	3.22%
3	Gujarat (GETCO)	4.99%
4	Haryana	2.48%
5	Madhya Pradesh	3.00%

Sr. No.	State (Transmission Utility)	Transmission Loss (%)
6	Maharashtra (InSTS)	3.98%
7	Telangana	4.02%
8	Uttarakhand (PTCUL)	1.80%
9	Uttar Pradesh (UPTCL)	3.59%

As can be seen from the above Table, transmission loss level of PSTCL is lowest than majority of the States. This is the result of continuous efforts taken by PSTCL. Further reduction in transmission losses from such low level of transmission loss would be much more difficult and require additional efforts.

In view of the above, based on the actual data of transmission losses available till now, PSTCL has projected the following trajectory for transmission losses for the Control Period.

Table 19: Transmission Losses Trajectory for Control Period

Particulars	FY 2017-18	FY 2018-19	FY 2019-20
Transmission Loss (%)	2.80%	2.60%	2.50%

PSTCL further submits that it will revisit the trajectory of transmission losses based on actual transmission losses for subsequent months and submit to the Hon'ble Commission during Multi Year Tariff Petition for the Control Period.

5 Financial Plan

5.1 Segregation of Transmission and SLDC Business

As regards the segregation of Transmission and SLDC Business, Regulation 7 of PSERC MYT Regulations, 2014 specifies as under:

> *"7. SEGREGATION OF ARR OF SLDC AND TRANSMISSION BUSINESS*
>
> *7.1 The STU shall have separate accounts for SLDC and transmission business. The STU, based on segregated accounts, shall submit separate ARRs for SLDC and transmission businesses. The ARR for SLDC shall be used to determine SLDC Charges and the ARR for transmission business to determine transmission charges.*
>
> *7.2. For such period until accounts are segregated, STU shall prepare an Allocation Statement to apportion costs and revenues to respective businesses.*
>
> *7.3. The Allocation Statement shall be considered by the Commission only if it is approved by the Board of Directors and validated by the certificate of the Statutory Auditors of the STU, and it shall be accompanied with an explanation of the methodology which shall be consistent over the control period."*

In this regard, PSTCL submits that separate ARR for Transmission and SLDC business is being submitted. PSTCL is submitting the separate ARR for Transmission and SLDC business on the basis of allocation considered in previous year's tariff Petition.

5.2 Projection of Aggregate Revenue Requirement

5.2.1 Baseline Values

Regulation 8.1 of PSERC MYT Regulations, 2014 specifies that baseline values for the Control Period shall be determined by the Hon'ble Commission and the projections for the Control Period shall be based on these figures. These baseline values shall be inter-alia based on figures approved by the Hon'ble Commission in the past, latest audited accounts, estimate of the expected figures for the relevant year, industry benchmarks/norms and other factors considered appropriate by the Hon'ble Commission. PSTCL has already submitted the ARR Petition for FY 2016-17, which is pending for approval before the Hon'ble Commission. The latest audited annual accounts for FY 2014-15 is available with PSTCL. The projections for the Control Period on the basis of accounts of FY 2014-15 would not be appropriate considering non-availability of actual figures for FY 2015-16 and pending approval of ARR for FY 2016-17. Hence, PSTCL has considered values for FY 2016-17 submitted in ARR Petition before the Hon'ble Commission, as baseline values for projecting the ARR for the Business Plan.

Further, PSTCL is required to file MYT Petition by November 30, 2016. Till that time, it is expected that audited figures for FY 2015-16 will be available and ARR for FY 2016-17 will also be approved. Accordingly, PSTCL will have more clarity for considering the baseline values for Control Period at the time of filing the MYT Petition.

5.2.2 Components of ARR for Transmission and SLDC Business

Regulation 15.1 of PSERC MYT Regulations, 2014 specifies the components of ARR of Transmission and SLDC Business as under:

> *"15.1. The ARR of the Transmission business and SLDC business shall comprise of the following components:*

a. Return on Equity;

b. Interest and Finance Charges on Loan Capital;

c. Interest Charges on Working Capital;

d. Depreciation;

e. Operation and Maintenance Expenses;

f. ULDC Charges;

g. Statutory levies and taxes, if any. "

PSTCL has projected the components of ARR for the Control Period in subsequent sections.

5.2.3 Capital Expenditure and Capitalisation

PSTCL has considered the capital expenditure and capitalisation for its Transmission and SLDC Business in line with the Capital Investment Plan being submitted to the Hon'ble Commission. The capital expenditure and capitalisation for the Control Period is as under:

Table 20: Capital Expenditure and Capitalisation for the Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission			
1	Capital Expenditure	250.67	294.79	234.25
2	Capitalisation	153.88	304.56	350.89
	SLDC			
3	Capital Expenditure	10.00	10.00	10.00
4	Capitalisation	10.00	10.00	10.00

5.2.4 Means of Finance

Regulation 19 of PSERC MYT Regulations, 2014 specifies as under:

"19. DEBT EQUITY RATIO

... ...

19.2. New Projects – For capital expenditure projects declared under commercial operation on or after the effective date:

a. A Normative debt-equity ratio of 70:30 shall be considered for the purpose of determination of Tariff;

b. In case the actual equity employed is in excess of 30%, the amount of equity for the purpose of tariff determination shall be limited to 30%, and the balance amount shall be considered as normative loan;

c. In case, the actual equity employed is less than 30%, the actual debt-equity ratio shall be considered;

d. The premium, if any raised by the Applicant while issuing share capital and investment of internal accruals created out of free reserve, shall also be reckoned as paid up capital for the purpose of computing return on equity subject to the normative debt-equity ratio of 70:30, provided such premium amount and internal accruals are actually utilized for meeting capital expenditure of the Applicant 's business. "

The above said provides the normative debt: equity ratio as 70:30. However, PSTCL proposes to carry out capital works with debt financing. The above capital works shall be carried out mostly by taking loan from banks and financial institutions.

5.2.5 Return on Equity

Regulation 20 of PSERC MYT Regulations, 2014 specifies as under:

"20. RETURN ON EQUITY

Return on Equity shall be computed at the rate of 15.5% on the paid up equity capital determined in accordance with regulation 19:

Provided that assets funded by consumer contributions, capital subsidies/Govt. grants shall not form part of the capital base for the purpose of calculation of Return on Equity."

PSTCL has computed Return on Equity for the Control Period in view of the above said Regulations as given in the following table:

Table 21: Return on Equity for the Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission			
1	Opening Equity for the year	1011.05	1011.05	1011.05
2	Addition of Equity during the year	0.00	0.00	0.00
3	Closing Equity for the year	1011.05	1011.05	1011.05
4	Rate of RoE	15.50%	15.50%	15.50%
5	Return on Equity	156.71	156.71	156.71

No Return on Equity has been considered for SLDC Business, as its opening equity is nil.

5.2.6 Income Tax

Regulation 23 of PSERC MYT Regulations, 2014 has allowed recovery of Income Tax, as part of ARR, as under:

> *"23. INCOME TAX*
>
> *23.1 Obligatory taxes, if any, on the income of the generating company or the licensee or the SLDC from its core/licensed business shall be computed as an expense and shall be recovered from the customers/consumers:*
>
> *Provided that tax on any income other than the core/licensed business shall not constitute a pass through component in tariff and tax on such other income shall be payable by the generating company or the licensee or the SLDC.*
>
> ***23.2 Tax on income, if actually liable to be paid, shall be limited to tax on return on equity allowed, excluding incentives.***
>
> *..... "(emphasis added)*

Income Tax has been limited to tax on Return on Equity, excluding incentives. The Income Tax on incentive has been specifically excluded by the Hon'ble Commission in these Regulations. In this regard, PSTCL submits the following:

a) The tariff is approved based on ARR, which includes the profit equal to RoE allowed by the Hon'ble Commission. If PSTCL reduces its expenses during the year after taking exhaustive efforts on efficiency improvement, the profit would be more than the RoE allowed by the Hon'ble Commission. However, as per the above said Regulations, PSTCL has to bear the Income Tax on account of such efficiency improvement, as Income Tax has been limited to tax on RoE, as income tax on profits due to such efficiency improvement will be disallowed. In totality, PSTCL will be losing out on account of efficiency improvement, which is against the spirit of the Electricity Act, 2003 and Tariff Policy.

b) The Hon'ble Commission, while approving the tariff for the Control Period is likely to allow the past period recoveries, which reflects only on revenue side of PSTCL, as the expenses have already been booked in the respective year. In such case, the Income Tax would be more than tax on ROE. This will also add burden on the PSTCL.

c) In previous years, the Income Tax has been allowed based on the lower of Tax on ROE and the actual Income Tax. As the actual Income Tax in previous years was lower, due to higher expenditure vis-a-vis the revenue, the lower Income Tax has been allowed. Now, in the future years, when the revenue is higher on account of past recoveries, the profits and hence, the actual Income Tax will be higher, but the same shall be limited to the tax on ROE. Hence, PSTCL will never be able to recover the tax on the legitimate past recoveries. If the Income Tax is allowed upto the RoE in all years, irrespective of the actual

Income Tax, then over the period, the recovery of Income Tax will tally with the Income Tax actually paid, which will be fair to PSTCL.

In view of the above, PSTCL prays to the Hon'ble Commission that Income Tax should not be limited to tax on RoE allowed and should be allowed at actuals, as PSTCL is not recovering any amount that has not been approved for recovery by the Hon'ble Commission.

PSTCL has referred MERC (Multi Year Tariff) Regulations, 2015 applicable for the State of Maharashtra, wherein specific relief has been considered for Income tax by allowing on actual basis. The relevant extract of Regulations is as under:

"33. Income Tax –

33.1 The Commission, in its MYT Order, shall provisionally approve Income Tax payable for each year of the Control Period based on the actual Income Tax paid by the Generating Company or Licensee or MSLDC, in case the Generating Company or Licensee or MSLDC has not engaged in any other regulated or unregulated Business or Other Business, as allowed by the Commission relating to the electricity Business regulated by the Commission, ***as per latest available Audited Accounts, subject to prudence check :***

Provided that in case the Generating Company or Licensee or MSLDC has engaged in any other regulated or unregulated Business or Other Business, and the ***actual Income Tax paid by the Generating Company or Licensee or MSLDC has to be allocated to the different Businesses, then the Income Tax shall be provisionally allowed based on the Income Tax on the regulatory Profit Before Tax,*** *as allowed by the Commission relating to the electricity Business regulated by the Commission, subject to prudence check :*

Provided further that no Income Tax shall be considered on the amount of income from Delayed Payment Charges or Interest on Delayed Payment or Income from Other Business, as well as on the income from any source that has not been considered for computing the Aggregate Revenue Requirement :

Provided also that no Income Tax shall be considered on the amount of efficiency gains and incentive approved by the Commission, irrespective of whether or not the amount of such efficiency gains and incentive are billed separately :

Provided also that the Income Tax shall be computed for the Generating Company as a whole, and not Unit-wise/Station-wise." (emphasis added)

Regulation 67 of PSERC MYT Regulations, 2014 specifies as under:

"67. POWER OF RELAXATION

The Commission may in public interest and for reasons to be recorded in writing, relax any of the provision of these regulations. "

The Hon'ble Commission by exercising its power under above said Regulation may relax the provision of regulations. PSTCL humbly requests the Hon'ble Commission to allow the Income Tax on actual basis, by exercising its powers under Regulation 67 of PSERC MYT Regulations, 2014.

At this stage, PSTCL has computed the Income Tax on RoE with the applicable MAT rate, without prejudice to above said prayer for allowing Income Tax at actuals. The Income tax projected by PSTCL for the Control Period is as under:

Table 22: Income Tax for the Control Period (Rs. Crore)

Particulars	FY 2017-18	FY 2018-19	FY 2019-20
Income Tax for Transmission	33.45	33.45	33.45

5.2.7 Depreciation

Regulation 21 of the PSERC MYT Regulations, 2014 specifies as under:

"21. DEPRECIATION

For the purpose of tariff determination, depreciation shall be calculated in the following manner:

21.1. The value base for the purpose of depreciation shall be the capital cost of the assets admitted by the Commission:

Provided that land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset;

Provided further that depreciation shall be calculated after deduction of consumer contributions, capital subsidies/ Government grants.

21.2. The cost of the asset shall include additional capitalization.

21.3. The cost shall include foreign currency funding converted to equivalent rupees at the exchange rate prevalent on the date when foreign currency shall actually be availed but not later than the date of commercial operation.

21.4. Depreciation for generation and transmission assets shall be calculated annually as per straight line method over the useful life of the asset at the rate of depreciation specified by the Central Electricity Regulatory Commission from time to time.

21.5. Depreciation for distribution assets and other assets not specified by CERC shall be at the rates notified by the Commission:

Provided that the total depreciation during the life of the asset shall not exceed 90% of the original cost;

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation/ put in use of the asset shall be spread over the balance useful life of the assets;

Provided further that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site.

21.6. Depreciation shall be chargeable from the first year of commercial operation/asset is put in use. In case of commercial operation of the asset/put in use of asset for part of the year, depreciation shall be charged on pro rata basis."

PSTCL has computed the depreciation in accordance with the above said Regulations considering estimated GFA as on April 1, 2017 and projected addition of assets during the Control Period. The Closing GFA as submitted in ARR Petition for FY 2016-17 has been considered as Opening GFA for FY 2017-18. PSTCL has considered the scheduled depreciation rate of 5.17% for Transmission and SLDC business.

Accordingly, PSTCL submits the depreciation for the Control Period as under:

Table 23: Depreciation for the Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission			
1	Opening GFA	6652.83	6806.71	7111.27
2	Addition of GFA	153.88	304.56	350.89
3	Closing GFA	6806.71	7111.27	7462.15
4	Depreciation	347.93	359.78	376.72
	SLDC			
5	Opening GFA	32.70	42.70	52.70
6	Addition of GFA	10.00	10.00	10.00
7	Closing GFA	42.70	52.70	62.70
8	Depreciation	1.95	2.47	2.98

5.2.8 Interest and Finance Charges on Loan Capital

Regulation 24 of the PSERC MYT Regulations, 2014 specifies as under:

> *"24. INTEREST ON LOAN CAPITAL*
>
> *24.1. For existing loan capital, interest and finance charges on loan capital shall be computed on the outstanding loans, duly taking into account the actual rate of interest and the schedule of repayment as per the terms and conditions of relevant agreements. The rate of interest shall be the actual rate of interest paid/payable (other than working capital loans) on loans by the licensee or the State Bank of India Advance Rate as on April 1 of the relevant year, whichever is less.*

24.2. Interest and finance charges on the actual loan capital for new investments shall be computed on the loans, duly taking into account the actual rate of interest and the schedule of repayment as per the terms and conditions of relevant agreements. The rate of interest shall be the actual rate of interest paid/payable (other than working capital loans) on loans by the licensee or the State Bank of India Advance Rate as on April 1 of the relevant year, whichever is less.

24.3. The repayment for each year of the tariff period shall be deemed to be equal to the depreciation allowed for the corresponding year. In case of de-capitalisation of assets, the repayment shall be adjusted by taking into account cumulative depreciation made to the extent of de-capitalisation.

24.4. The Commission shall allow obligatory taxes on interest, finance charges (including guarantee fee payable to the Government) and any exchange rate difference arising from foreign currency borrowings, as finance cost.

24.5. The interest on excess equity treated as loan shall be serviced at the weighted average interest rate of actual loan taken from the lenders. "

PSTCL, for computing the Interest on Long Term Loan capital, has considered the closing loan balances as submitted in the ARR Petition for FY 2016-17, as opening loan balances for FY 2017-18. Outstanding existing loans at the end of FY 2016-17 include loans from REC, LIC, Commercial banks, Loan from PSPCL and GPF Liability. The repayment of these existing loans has been considered as per their repayment schedule.

PSTCL has proposed loans from REC and NABARD for the proposed investments for Transmission Business and loan from REC for proposed investment for SLDC for the Control Period. The repayment for each year of the Control Period has been considered equivalent to depreciation for the respective year.

Accordingly, interest on loan capital for the Control Period has been submitted as under:

Table 24: Interest on Loan capital for the Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission Business			
1	Opening Loan Balance	4075.88	3978.62	3913.63
2	Addition of loan during year	250.67	294.79	234.25
3	Repayment of loan during year	347.93	359.78	376.72
4	Closing Loan Balance	3978.62	3913.63	3771.16
5	Interest Rate (%)	11.48%	11.55%	11.48%
6	Gross Interest Expenses	462.38	455.66	441.28
7	Less: Interest Capitalisation	31.55	36.75	29.30
8	Interest Expenses	430.83	418.91	411.98
	SLDC			
1	Opening Loan Balance	24.75	32.80	40.33
2	Addition of loan during year	10.00	10.00	10.00
3	Repayment of loan during year	1.95	2.47	2.98
4	Closing Loan Balance	32.80	40.33	47.35
5	Interest Rate (%)	11.66%	11.66%	11.66%
6	Gross Interest Expenses	3.36	4.26	5.11
7	Less: Interest Capitalisation	0.00	0.00	0.00
8	Interest Expenses	3.36	4.26	5.11

5.2.9 O&M Expenses

Regulation 26 of the PSERC MYT Regulations, 2014 and its subsequent first amendment, specifies as under:

"26.1. The O&M expenses for the nth year of the Control Period shall be approved based on the formula shown below:

$O\&M_n = (R\&M_n + EMP_n + A\&G_n) \times (1-X_n)$

Where,

- *$R\&M_n$ – Repair and Maintenance Costs of the Applicant for the n_{th} year;*

- *EMP_n – Employee Cost of the Applicant for the n_{th} year;*
- *$A\&G_n$ – Administrative and General Costs of the Applicant for the n_{th} year;*

The above components shall be computed in the manner specified below:

(i) $R\&M_n + A\&G_n = K*GFA*(WPI_n/WPI_{n-1})$

Where,

- *"K" is a constant (expressed in %) governing the relationship between R&M and A&G expenses and Gross Fixed Assets (GFA) for the nth year. The value of "K" will be specified by the Commission in the MYT order.*
- *'GFA' is the average value of the gross fixed assets of the nth year.*
- *WPIn means the average rate (on monthly basis) of Wholesale Price Index (all commodities) over the year for the nth year.*

(ii) $EMP_n = (EMP_{n-1})*(INDEX_n/INDEX_{n-1})$

- ***$INDEX_n$*** *- Inflation Factor to be used for indexing the Employee Cost.*
- *This will be a combination of the Consumer Price Index (CPI) and the Wholesale Price Index (WPI) of nth year and shall be calculated as under:-*

*INDEXn = 0.50*CPIn + 0.50*WPIn*

'WPIn' means the average rate (on monthly basis) of Wholesale Price Index (all commodities) over the year for the nth year.

'CPIn' means the average rate (on monthly basis) of Consumer Price Index (Industrial workers) over the year for the nth year.

... ...

(iii) X_n is an efficiency factor for nth year

The value of X_n shall be determined by the Commission in its first MYT order for the Control Period."

PSTCL has considered the Terminal benefits including Pension and Gratuity, Leave encashment, Medical Reimbursement, etc., separately, under the employee

expenses. PSTCL has considered the yearly escalation of 8.02% (i.e., 4-year CAGR from FY 2012-13 to FY 2016-17) for projecting the terminal benefits for the Control Period.

Further, PSTCL submits that because of the recent dip in Wholesale Price Index numbers, the escalation factor for Employee Expenses using above said Regulation works out to 1.29%. This is grossly inadequate considering even the average rise in salaries and other expenses. The Hon'ble Commission would appreciate that in any industry with poachable talent, it is important that salaries are raised at least at par with the industry average to retain employees. Considering the fact that Employee Expenses form the biggest chunk in the overall operational expenditure, a mere 1.29% hike in Employee Expenses is grossly insufficient to maintain salaries even at industry average.

Moreover, Employee Expenses are driven primarily by retail inflation, i.e. CPI. The Dearness Allowances in the salaries of the employees is linked to CPI Industrial Workers index numbers. PSERC MYT Regulations, 2014 has linked employee expenses to 50% CPI and 50% WPI Index. The Employee expense forecast will be approved for a period of three years. Correspondingly, the escalation factor considered should also be based on longer-term data and should not rely only on short-term data. Employing a short-term inflation to forecast employee expenses has the potential of leaving the Company out of pocket and short of cash to pay its employees or incur appropriate level of general and operational expenses.

In view of the above, PSTCL has proposed the escalation factor of 7.39%, which is the average of 50% CPI and WPI for FY 2011-12 to FY 2014-15. PSTCL request the Hon'ble Commission to consider the escalation factor for projection of Employee expenses as submitted by PSTCL, by exercising its powers under Regulation 66 & 67

of PSERC MYT Regulations, 2014. Accordingly, PSTCL has considered the employee expenses for Transmission Business and SLDC for Control Period as under:

Table 25: Employee Expenses for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission Business			
1	Terminal Benefits	245.77	265.48	286.77
2	Other Employee Costs	184.64	198.28	212.93
3	Total Employee Costs	430.42	463.76	499.70
	SLDC			
4	Employee Expenses	7.23	7.76	8.33

PSTCL has not considered impact of wage revision of 7th Pay Commission during the Control Period. PSTCL craves leave to submit these expenses on actual basis, since these expenses are being allowed on actual basis as per Regulation 26 of PSERC MYT Regulations, 2014.

PSTCL has claimed the impact of progressive funding in ARR & Tariff Petition for FY 2014-15. However, Hon'ble Commission in its Tariff Order for FY 2014-15 dated August 22, 2014 disallowed the impact of progressive funding. Aggrieved by this decision of Hon'ble Commission, PSTCL filed an appeal before Hon'ble APTEL in Appeal No. 262 of 2014. Hon'ble Commission vide its Judgment dated January 14, 2016 has upheld the decision of Hon'ble Commission. PSTCL has filed a Second Appeal before Hon'ble Supreme Court. PSTCL has also not considered the impact of progressive funding as the matter is pending before Hon'ble Supreme Court. However, PSTCL reserves right to claim the impact of Progressive funding subject to decision of Hon'ble Supreme Court.

It may be noted that R&M expenses and A&G Expenses has been linked to K factor and WPI index. K is the constant governing the relationship between R&M and

A&G Expenses and Gross Fixed Assets. For computing K, PSTCL has analysed actual audited R&M and A&G expenses and GFA for Transmission Business, as shown below:

Table 26: Computation of K (Rs. Crore)

Sr. No.	Particulars	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
1	Opening GFA	2270.98	2344.20	2935.18	3682.17
2	Closing GFA	2344.20	2935.18	3682.17	5176.93
3	R&M Expenses	25.96	52.19	45.46	36.04
4	A&G Expenses	10.73	17.83	37.60	29.39
5	R&M and A&G Expenses as % of Average GFA (K)	1.59%	2.65%	2.51%	1.48%

It is observed from the above table that value of K (constant in terms of %) has increased in FY 2012-13 and then reduced in subsequent years. PSTCL has considered K constant for Transmission as 1.48% i.e., K value for FY 2014-15 based on actual expenses. Similarly, K constant for SLDC has been considered as 24.11% i.e., K value for FY 2014-15 based on actual expenses.

Further, PSTCL submits that because of recent dip in Wholesale Price Index numbers, the escalation factor using above said Regulation works out to be negative as (2.42%). This is grossly inadequate considering even the average rise in R&M and A&G expenses. Hence, for the purpose of R&M and A&G Expenses, PSTCL has considered the escalation factor of 6.07% (i.e., average of increase in WPI from FY 2011-12 to FY 2014-15). PSTCL has also considered the Audit Fee and Licence and ARR fees over and above the R&M and A&G expenses computed above.

PSTCL request the Hon'ble Commission to consider the escalation factor for projection of R&M and A&G expenses as submitted by PSTCL, by exercising its powers under Regulation 66 & 67 of PSERC MYT Regulations, 2014.

Accordingly, PSTCL has projected combined R&M and A&G expenses for Transmission and SLDC Business as under:

Table 27: R&M and A&G Expenses for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission Business			
1	Opening GFA	6652.83	6806.71	7111.27
2	Closing GFA	6806.71	7111.27	7462.15
3	Average GFA	6729.77	6958.99	7286.71
4	K factor	1.48%	1.48%	1.48%
5	Escalation factor	6.07%	6.07%	6.07%
5	Gross R&M and A&G Expenses	105.44	109.03	114.17
6	Add: Audit Fee	1.00	1.00	1.00
7	Add: Licence Fee and ARR Fee	0.50	0.50	0.50
8	Add: Others	0.00	0.00	0.00
9	Total R&M and A&G Expenses	106.94	110.53	115.67
	SLDC			
1	Opening GFA	32.70	42.70	52.70
2	Closing GFA	42.70	52.70	62.70
3	Average GFA	37.70	47.70	57.70
4	K factor	24.11%	24.11%	24.11%
5	Escalation factor	6.07%	6.07%	6.07%
5	R&M Expenses	9.64	12.20	14.76

5.2.10 Interest on Working Capital

Regulation 54 of the PSERC MYT Regulations, 2014 specifies as under:

"54. INTEREST ON WORKING CAPITAL

54.1 Components of Working Capital

The Working Capital shall cover the following:

i. O&M Expenses for 1 month;

ii. Maintenance spares @ 15% of the O&M expenses;

iii. Receivables equivalent to two (2) months of fixed cost calculated on normative target availability.

54.2 Rate of Interest

The rate of interest on working capital shall be as per regulation 25.1."

PSTCL has computed the working capital requirement according to the above said Regulations for its Transmission Business and SLDC. The weighted average rate of Interest has been worked out as 11.72%. The computation of Interest on Working Capital for the Control Period is as under:

Table 28: Interest on Working Capital Expenses for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Transmission Business			
1	Receivables for two months	257.69	264.13	273.01
2	Maintenance spares @15% of O&M	80.60	86.14	92.30
3	O&M Expenses for one month	44.78	47.86	51.28
4	Total Working Capital	383.08	398.14	416.59
5	Rate of Interest (%)	11.72%	11.72%	11.72%
6	Interest on Working Capital	44.90	46.66	48.82
	SLDC			
1	Receivables for two months	6.74	7.70	8.66
2	Maintenance spares @15% of O&M	2.53	2.99	3.46
3	O&M Expenses for one month	1.41	1.66	1.92
4	Total Working Capital	10.67	12.35	14.05
5	Rate of Interest (%)	11.72%	11.72%	11.72%
6	Interest on Working Capital	1.27	1.47	1.67

5.2.11 ULDC Charges

PSTCL has projected ULDC charges for SLDC by applying escalation factor of 6.07%, same as considered for R&M and A&G expenses, over the ULDC charges proposed for FY 2016-17 in ARR Petition, submitted to the Hon'ble Commission. ULDC charges proposed for Control Period is as under:

Table 29: ULDC Charges for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
1	ULDC Charges-SLDC own share	3.18	3.38	3.58
2	ULDC Charges-BBMB share	1.59	1.69	1.79
3	ULDC Charges-Central Sector share	2.65	2.81	2.98
4	NRLDC fees and charges	4.24	4.50	4.77
5	OPGW charges	5.30	5.63	5.97
6	URTDSM	0.11	0.11	0.12
7	Grand Total	17.08	18.11	19.21

5.2.12 Non-Tariff Income

Regulation 28 of PSERC MYT Regulations, 2014 specifies the indicative list for Non-Tariff Income. The income from late payment surcharge is also considered under Non-Tariff income.

In this regard, PSTCL submits that the objective of introduction of Delayed Payment Charge on payment of bills was to bring in discipline in payments by Licensees. For any Utility, it would always be preferable to have minimum time gap between the raising of bills and receiving the payment against that bill. Any delay in payment of bills affects the cash flow of the Utilities, hence, surcharge on late payment is levied. PSERC MYT Regulations, 2014 allows only "Normative Working Capital" and hence any payments or receipts not falling within the normative payable-receivable cycle are separately covered through payment security mechanisms such as late payment surcharge. Such payment security mechanisms ensure that the loss suffered by the

receiver on account of delay in receipt of payment or any gain realized by defaulting on the payable side is neutralized through the application of late payment surcharge. In other words, this mechanism of Payment Security is completely outside the purview of Regulated ARR, which permits only normative working capital interest. Therefore, PSTCL submits that either the late payment surcharge should not form part of the ARR, or if revenue from late payment surcharge is included in Non-Tariff Income, correspondingly higher interest on working capital should be allowed on the cost-side to represent the funding cost for delays in receipt of revenue. Including only Income would mean that the revenue earned by the Licensee through late payment surcharge to fund the additional funding cost is not retained with the Licensee, but is passed through to the consumers, while the additional cost incurred due to the delay in receipt of payment, is not passed on to the consumers.

PSTCL has earned Non-tariff income in the past for rental charges of staff quarters, sale of tender forms, income from staff welfare activities, etc. This income received is primarily related to fixed activities and is not likely to increase in the future. Hence, PSTCL has considered the Non-tariff income at the same level as proposed for FY 2016-17 in its ARR Petition submitted to the Hon'ble Commission. PSTCL has considered Non-tariff Income of Rs. 5 Crore for Transmission Business and Rs. 0.10 Crore for SLDC for Control Period.

Table 30: Non Tariff Income for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
1	Non-tariff Income for Transmission Business	5.00	5.00	5.00
2	Non-tariff Income for SLDC	0.10	0.10	0.10

5.2.13 Summary of ARR

The summary of ARR for Transmission Business for Control Period is as under:

Table 31: ARR for Transmission Business for Control Period (Rs. Crore)

Sr. No.	Particulars	Transmission Business			SLDC			Combined Transmission + SLDC		
		FY 2017-18	FY 2018-19	FY 2019-20	FY 2017-18	FY 2018-19	FY 2019-20	FY 2017-18	FY 2018-19	FY 2019-20
1	Employee Expenses	430.42	463.76	499.70	7.23	7.76	8.33	437.64	471.52	508.03
2	R&M and A&G expenses	106.94	110.53	115.67	9.64	12.20	14.76	116.58	122.73	130.43
3	Depreciation	347.93	359.78	376.72	1.95	2.47	2.98	349.88	362.25	379.71
4	Interest on Loan Capital	430.83	418.91	411.98	3.36	4.26	5.11	434.18	423.17	417.10
5	Interest on Working Capital	44.90	46.66	48.82	1.27	1.47	1.67	46.17	48.13	50.49
6	ULDC Charges	-	-	-	17.08	18.11	19.21	17.08	18.11	19.21
7	Return on Equity	156.71	156.71	156.71	-	-	-	156.71	156.71	156.71
8	Income Tax	33.45	33.45	33.45	-	-	-	33.45	33.45	33.45
9	Aggregate Revenue Requirement	1551.17	1589.80	1643.05	40.52	46.27	52.07	1591.69	1636.07	1695.12
10	Less: Non-Tariff Income	5.00	5.00	5.00	0.10	0.10	0.10	5.10	5.10	5.10
11	**Net Aggregate Revenue Requirement**	**1546.17**	**1584.80**	**1638.05**	**40.42**	**46.17**	**51.97**	**1586.59**	**1630.97**	**1690.02**

5.3 Past revenue gaps and Combined ARR

At present, PSTCL in its ARR Petition for FY 2016-17 has claimed Net ARR of Rs. 1963.72 Crore including pas revenue gaps of Rs. 508.52 Crore, arising out of True-up for FY 2012-13 and FY 2013-14 and APR for FY 2015-16. Since, the tariff Order for FY 2016-17 is awaited, it is assumed that the past revenue gaps of Rs. 508.62 Crore would be allowed to PSTCL in the Tariff Order for FY 2016-17. Hence, the same has not been considered in the MYT ARR for the Control Period.

Further, it may be noted that since audited account for FY 2014-15 are available; PSTCL has worked out the tentative revenue gap for FY 2014-15 as Rs. 239.08 Crore, considering the Net ARR of Rs. 1191.67 Crore and Revenue of Rs. 952.59 Crore. This revenue gap of Rs. 239.08 Crore has to be recovered in the transmission tariff for FY 2017-18. Accordingly, the ARR for the Control Period has been considered as under:

Table 32: Projected Combined ARR for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
1	Net ARR	1455.20	1586.59	1630.97	1690.02
2	Past revenue gaps	508.62	239.08	0.00	0.00
3	**Combined ARR**	**1963.72**	**1,825.67**	**1,630.97**	**1,690.02**
4	% increase in Net ARR		9.03%	2.80%	3.62%
5	% increase in Combined ARR		(7.03)%	(10.66)%	3.62%

In view of the above, it is noted that projected Net ARR has been increased by 9.03% in first year of during the Control Period; however the projected combined ARR has been reduced by 7.03%. The effective increase in transmission tariff would depend upon the past revenue gaps considered for recovery during Control Period. In light of foregoing, PSTCL has proposed the increased in transmission Tariff of 9.03%, 2.80% and 3.62% for each year of the Control Period.

5.4 Projection of Financial Statement

PSTCL has projected the Financial Statements for the Control Period with the following assumptions:

a) Financial Statements has been projected combined for Transmission Business and SLDC.

b) The projected ARR for FY 2016-17 has been considered as base for projecting the P&L for the control period.

c) Since, the Tariff Order for FY 2016-17 is yet to be issued by Hon'ble Commission, the revenue for FY 2016-17 is assumed as ARR projected by PSTCL in its Petition including the past revenue gaps. Accordingly, the revenue of Rs. 1963.52 Crore has been considered for FY 2016-17.

d) It is assumed that transmission charges and SLDC charges combined would increase by 9.03%, 2.80% and 3.62%in each year for the Control Period to recover ARR projected by PSTCL.

e) Interest expenses has been considered based on estimated long term and short term loan outstanding as on March 31, 2017.

f) All other expenditure except Interest charges has been considered as projected in Aggregate Revenue Requirement for the Control Period.

Projected P&L Statement for the Control Period is as under:

Table 33: Projected P&L Statement for PSTCL for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
1	**Revenue**			
2	Revenue from Transmission Tariff	1546.17	1584.80	1638.05
3	Revenue From SLDC	40.42	46.17	51.97
4	Other Income	5.10	5.10	5.10
5	Revenue towards recovery of past revenue gaps	239.08	-	-
6	**Total Revenue**	**1,830.77**	**1,636.07**	**1,695.12**
7	**Expenditure**			
8	Employee Expenses	437.64	471.52	508.03
9	R&M and A&G Expenses	116.58	122.73	130.43
10	Depreciation	349.88	362.25	379.71
11	Interest Charges	491.50	465.35	431.00
12	ULDC Charges	17.08	18.11	19.21
13	Past Revenue gaps	239.08	-	-
14	**Total Expenditure**	**1,651.76**	**1,439.96**	**1,468.37**
15	**PBT**	**179.01**	**196.11**	**226.75**
16	Tax	38.20	41.85	48.39
17	**PAT**	**140.81**	**154.25**	**178.35**

The projected Balance Sheet for Control Period is as under:

Table 34: Projected Balance Sheet for PSTCL for Control Period (Rs. Crore)

Particulars	FY 2017-18	FY 2018-19	FY 2019-20
EQUITY AND LIABILITIES			
Shareholders Fund			
Share Capital	605.88	605.88	605.88
Reserve Funds	1,864.11	1,864.11	1,864.11
Surplus	889.58	1,043.83	1,222.18
Total	3,359.57	3,513.82	3,692.18
Non-Current liabilities			
Long-term borrowings	3,797.40	3,688.97	3,533.22
Other long-term liabilities	163.40	167.36	171.42
Long-term provisions	3.51	3.79	4.09
Total	**3,964.31**	**3,860.12**	**3,708.73**
Current Liabilities			
Short-term borrowings	186.83	186.83	186.83
Other current liabilities	686.67	559.98	424.30
Short-term provisions	187.51	202.54	218.78
Total	**1,061.01**	**949.35**	**829.91**
Grand Total	**8,384.88**	**8,323.29**	**8,230.82**
ASSETS			
Non-Current Assets			
Net Fixed Assets	7,181.20	7,133.51	7,114.69
Capital Work in Progress	323.19	313.42	196.79
Long term Loan and advances	0.48	0.48	0.48
Other non-current assets	66.37	66.37	66.37
Total	**7,571.23**	**7,513.78**	**7,378.33**
Current Assets			
Inventories	308.90	325.19	345.57
Trade receivables	305.13	272.68	282.52
Cash & cash equivalents	1.43	1.43	1.43
Short-term loans & advances	195.57	207.44	220.02
Other current assets	2.62	2.78	2.95
Total	**813.65**	**809.52**	**852.49**
Grand Total	**8,384.88**	**8,323.29**	**8,230.82**

The Projected Cash Flow Statement for Control period is as under:

Particulars	FY 2017-18	FY 2018-19	FY 2019-20
Cash Flow from Operating Activities			
P&L Account (after tax)	140.81	154.25	178.35
Add:			
Depreciation	349.88	362.25	379.71
Interest and finance charges	491.50	465.35	431.00
Operating Profit before working capital changes	982.18	981.85	989.06
Adjusted For:			
Decrease/(Increase) in current assets	(77.10)	4.13	(42.98)
Increase/(Decrease) in current liabilities	62.81	(111.65)	(119.44)
Net cash from Operating Activities (A)	**967.89**	**874.33**	**826.64**
Cash Flow from investing activities			
Acquisition of fixed assets	(163.88)	(314.56)	(360.89)
Decrease/(Increase) in capital work in progress	(96.79)	9.77	116.63
Net cash used in investing activities (B)	**(260.67)**	**(304.79)**	**(244.25)**
Cash Flow from financing activities			
Change in long term borrowing	(152.56)	(104.19)	(151.39)
Change in short term borrowing	(63.17)	-	-
Interest and Finance Charges	(491.50)	(465.35)	(431.00)
Net cash used in financing activities (C)	**(707.23)**	**(569.54)**	**(582.39)**
Net increase/(decrease) in cash and cash equivalents (A+B+C)	**0.00**	**0.00**	**0.00**

5.5 Submission to the Hon'ble Commission

PSTCL submits that the performance of the transmission system is a function of several input parameters, viz., energy transactions, vintage and technological advancement across its network etc. PSTCL has made sustained efforts to streamline its processes over the years as inherited from the erstwhile PSEB period.

PSTCL humbly submits that it has prepared the Business Plan considering the factors which are within control of PSTCL, however, PSTCL further requests the Hon'ble Commission to allow submission of further information and/or revision due to change in any accountable and non-accountable or uncontrollable parameters for future years as part of the subsequent submissions. The projections of ARR for Control Period from FY 2017-18 to FY 2019-20, are in accordance with PSERC MYT Tariff Regulations, 2014.

Further, PSTCL humbly requests the Hon'ble Commission to admit this Business Plan and approve the Aggregate Revenue Requirement for the Control Period from FY 2017-18 to FY 2019-20, as provided in the Business Plan.

6 Prayers

The Petitioner respectfully prays to the Hon'ble Commission:

a) to admit the Petition seeking approval of Business Plan for FY 2017-18 to FY 2019-20 in accordance with Regulation 10 of the PSERC MYT Regulations, 2014;

b) to approve the Business Plan for Transmission and SLDC Business for FY 2017-18 to FY 2019-20 as proposed by the Petitioner in the above-said Petition;

c) to pass any other order/s as the Hon'ble Commission may deem fit and appropriate under the circumstances of the case and in the interest of justice;

d) to condone any error/ omission and to give opportunity to rectify the same;

e) The filing is being done based on the best available information and in case of any change, the Petitioner may be permitted to make further submissions, addition and alteration to this Petition as may be necessary from time to time.

27/5/16

PUNJAB STATE TRANSMISSION CORPORATION LIMITED
Regd. Office: PSEB Head Office,The Mall Patiala-147001,Punjab, India.
Corporate Identity Number: U40109PB2010SGC033814 (www.pstcl.org)
(O/o Financial Advisor(Commercial & Regulatory Cell,3rd Floor, Shakti Sadan, Patiala)
Fax/Ph.No.0175-2206523 Email: fa@pstcl.org

To

The Registrar,
Punjab State Electricity Regulatory Commission,
SCO NO.220-221, Sector-34-A,
Chandigarh.

Memo No. 2692 /FA/Comml.-703
Dated: 26/9/16

Subject: **Petition No. 45 of 2016:- For the approval of PSTCL's Business Plan for MYT Control Period (FY 2017-18 to FY 2019-20) under Section 62 of the Electricity Act, 2003 read with Regulation-10 of PSERC (Terms and Conditions of Determination of Generation, Transmission, Wheeling and Retail Supply Tariff) Regulations, 2014.**

Please refer to Hon'ble Commission order dated 16.08.2016 conveyed vide memo no. PSERC/Reg/4461 dated 16.08.2016 and subsequently Minutes of the meeting held on 31.08.2016 conveyed vide memo no. PSERC/Tariff/T/198/5277 dated 9.09.2016, PSTCL hereby submits the replies/revised submissions on the observations/deficiencies pertaining to Capital Investment Plan for the Control Period from FY 2017-18 to FY 2019-20.

REPLY TO DEFECIENCIES

1. **Segregation of Cost relating to Transmission and SLDC businesses:** Work-wise allocation statement to apportion following costs and revenue to Transmission and SLDC Businesses for previous 5 years i.e., from FY 2012-13 to FY 2016-17 and also for the Control period i.e., from FY 2017-18 to FY 2019-20 be provided and it should be accompanied with an explanation of the methodology which should be consistent over the control period. The work-wise allocation

statement should be duly approved by the Board of Directors and validated by a certificate of the Statutory Auditors.

i. Employee Cost;
   a) Terminal benefits
   b) Other Employee cost
ii. R&M expenses
iii. A&G expenses
iv. Interest and finance charges
   a) Interest on working capital loan
   b) Interest on long term loans
v. Depreciation containing information regarding life of assets, opening balance of Gross fixed assets, addition & deletion of assets, rate of depreciation, etc.
vi. Non-tariff income
vii. Return on equity

PSTCL's Reply:

PSTCL has been notified as State Transmission Utility for the State of Punjab. Section 31 of the Electricity Act, 2003 stipulates as under:

> ***"Section 31. (Constitution of State Load Despatch Centres):*** *--- (1) The State Government shall establish a Centre to be known as the State Load Despatch Centre for the purposes of exercising the powers and discharging the functions under this Part.*
>
> *(2) The State Load Despatch Centre shall be operated by a Government company or any authority or corporation established or constituted by or under any State Act, as may be notified by the State Government:*
>
> *Provided that until a Government company or any authority or corporation is notified by the State Government,* ***the State Transmission Utility shall operate the State Load Despatch Centre:***
>
> *Provided further that no State Load Despatch Centre shall engage in the business of trading in electricity." (emphasis added)*

In view of the above provisions of the Act, State Load Despatch Centre is operated by PSTCL. The cost for each function i.e., Transmission and SLDC, has been segregated to the extent possible. PSTCL has been submitting the separate Aggregate Revenue Requirements (ARRs) for Transmission and SLDC Business for past years. The Hon'ble Commission also approved the separate ARRs for Transmission and SLDC in past Tariff Orders. The expenses considered under Transmission and SLDC are the actual expenses incurred by PSTCL, which was also duly recognized by the Hon'ble Commission in past true-up orders. Hence,

the same have been carried forward for projection of ARRs for the Control period in the Business Plan. It is further submitted that the Business Plan Petition submitted by PSTCL was duly approved by the Board of Directors of PSTCL.

2. **Segregation of Return on Equity (ROE) between Transmission and SLDC Businesses:** In the Business Plan, PSTCL has claimed ROE of Rs. 156.71 Crore (Table 21) for each year of the Control Period for Transmission Business and ROE for SLDC business as Nil. PSTCL should submit separate ROE for Transmission Business and SLDC Business for all years of the Control Period.

PSTCL's Reply:

PSTCL submits that it is vested with the function of intra-State transmission of electricity in the State of Punjab along with operation of SLDC functions and; assets and liabilities are vested in PSTCL as per Transfer scheme. SLDC has not been allocated any equity since it is a part of PSTCL and not an independent company. This philosophy has also been admitted by the Hon'ble Commission in past Tariff Orders and accordingly approved the Return on Equity for Transmission Business only. However, PSTCL is in the process of identifying the separate assets and liabilities for SLDC.

3. **Annual accounts of PSTCL for FY 2014-15 and FY 2015-16:** PSTCL should furnish Audited Annual Accounts for Transmission Business and SLDC Business separately along with reports of Statutory Auditor and CAG, with reply thereon of the management for FY 2014-15 and FY 2015-16.

PSTCL's Reply:

The Audited Annual accounts for PSTCL are combined accounts for Transmission and SLDC, since, SLDC is not incorporated as separate company and only functions as an independent unit of PSTCL.

PSTCL hereby submits the Audited Annual Accounts for FY 2014-15 along with reports of Statutory Auditor and CAG, with reply thereon of the management as **Annexure-I** to this document. PSTCL will submit the Audited accounts for FY 2015-16 once it is finalized.

Revision in Business Plan Projections

PSTCL submits that it has projected ARR for Transmission Business and SLDC for the Control Period based on ARR Petition for FY 2016-17 filed before the Hon'ble Commission. The Tariff Order for FY 2016-17 was issued by Hon'ble Commission on July 27, 2016. There have been major changes in the expenses allowed vis-à-vis claimed in the Petition. The Capital Investment Plan has also undergone changes due to change in priorities of the certain capital works. All these have impacted the earlier Business Plan projections.

PSTCL humbly submits that these projections may further change during the Multi Year Tariff Petition since the actual data for six months for FY 2016-17 would be available only at the end of October 2016 month. Moreover, PSTCL is likely to seek True up of FY 2014-15 and FY 2015-16 in the Multi Year Tariff Petition, so the impact of the revenue gap/(surplus) for the Control period will depend upon the approval of past revenue gaps by the Hon'ble Commission. However, PSTCL has considered the tentative revenue gap of Rs. 239.08 Crore for FY 2014-15 as submitted in its Business Plan Petition for projections for the Control Period. In view of this, PSTCL submits the revised Business Plan Projections in **Annexure-II** to this document.

DA/As above

26/9/16

Financial Advisor,
PSTCL, Patiala.

26/9/16

Annexure II – Revised Business Plan Projections

The Aggregate Revenue Requirement for Transmission and SLDC for the Control Period is shown in the following table:

Table 1: ARR for Transmission Business for Control Period (Rs. Crore)

Sr. No.	Particulars	Transmission Business			SLDC			Combined Transmission + SLDC		
		FY 2017-18	FY 2018-19	FY 2019-20	FY 2017-18	FY 2018-19	FY 2019-20	FY 2017-18	FY 2018-19	FY 2019-20
1	Employee Expenses	430.42	463.76	499.70	7.23	7.76	8.33	437.64	471.52	508.03
2	R&M and A&G expenses	103.15	108.25	112.95	8.82	11.38	13.93	111.97	119.63	126.88
3	Depreciation	335.11	351.92	367.39	1.78	2.30	2.82	336.90	354.21	370.21
4	Interest on Loan Capital	413.40	402.70	386.45	2.96	3.94	4.85	416.36	406.64	391.30
5	Interest on Working Capital	42.80	45.11	47.25	1.22	1.42	1.62	44.02	46.53	48.87
6	ULDC Charges	-	-	-	17.08	18.11	19.21	17.08	18.11	19.21
7	Return on Equity	102.55	116.83	125.85	-	-	-	102.55	116.83	125.85
8	Income Tax	21.89	24.93	26.86	-	-	-	21.89	24.93	26.86
9	**Aggregate Revenue Requirement**	**1449.32**	**1513.50**	**1566.44**	**39.09**	**44.91**	**50.77**	**1488.41**	**1558.40**	**1617.21**
10	Less: Non-Tariff Income	5.00	5.00	5.00	0.10	0.10	0.10	5.10	5.10	5.10
11	**Net Aggregate Revenue Requirement**	**1444.32**	**1508.50**	**1561.44**	**38.99**	**44.81**	**50.67**	**1483.31**	**1553.30**	**1612.11**

The Aggregate Revenue Requirement for the Control Period has been projected considering the methodology adopted in the Business Plan Petition.

The projected Employee expenses comprises of Terminal Benefits and the other employee costs. The projected terminal benefits include terminal benefits of Rs. 238.84 Crore for FY 2017-18, Rs. 257.99 Crore for FY 2018-19 and Rs. 278.68 Crore for FY 2019-20 for the employees of erstwhile PSEB and; terminal benefits of Rs. 6.93 Crore for FY 2017-18, Rs. 7.49 Crore for FY 2018-19 and Rs. 8.09 Crore for FY 2019-20for new employees recruited by PSTCL. PSTCL has also revised the computation of other heads of ARR based on revised capital expenditure and revised funding of capital expenditure.

Projected P&L Statement for the Control Period is as under:

Table 2: Projected P&L Statement for PSTCL for Control Period (Rs. Crore)

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
	Revenue			
1	Revenue from Transmission Tariff	1,423.32	1,487.50	1,540.44
2	Revenue from Open Access Charges	21.00	21.00	21.00
3	Revenue From SLDC	38.99	44.81	50.67
4	Other Income	5.10	5.10	5.10
5	Revenue towards recovery of past revenue gaps	239.08	-	-
6	**Total Revenue**	**1,727.49**	**1,558.40**	**1,617.21**
	Expenditure			
7	Employee Expenses	437.64	471.52	508.03
8	R&M and A&G Expenses	111.97	119.63	126.88
9	Depreciation	336.90	354.21	370.21
10	Interest Charges	462.36	437.64	416.30
11	ULDC Charges	17.08	18.11	19.21
12	**Total Expenditure**	**1,365.95**	**1,401.12**	**1,440.63**
13	**PBT**	**361.54**	**157.29**	**176.58**
14	Tax	77.16	33.57	37.68
15	**PAT**	**284.38**	**123.72**	**138.89**

The projected Balance Sheet for Control Period is as under:

Table 3: Projected Balance Sheet for PSTCL for Control Period (Rs. Crore)

Particulars	FY 2017-18	FY 2018-19	FY 2019-20
EQUITY AND LIABILITIES			
Shareholders Fund			
Share Capital	605.88	605.88	605.88
Reserve Funds	1,864.11	1,864.11	1,864.11
Surplus	1,001.50	1,125.22	1,264.11
Total	**3,471.49**	**3,595.21**	**3,734.10**
Non-Current liabilities			
Long-term borrowings	3,918.23	3,757.62	3,512.95
Other long-term liabilities	163.40	167.36	171.42
Long-term provisions	3.51	3.79	4.09
Total	**4,085.14**	**3,928.77**	**3,688.46**
Current Liabilities			
Short-term borrowings	176.67	176.67	176.67
Other current liabilities	500.88	421.02	333.09
Short-term provisions	187.51	202.54	218.78
Total	**865.06**	**800.23**	**728.54**
Grand Total	**8,421.69**	**8,324.21**	**8,151.11**
ASSETS			
Non-Current Assets			
Net Fixed Assets	6,993.00	7,118.55	6,887.34
Capital Work in Progress	577.63	350.47	366.80
Long term Loan and advances	0.48	0.48	0.48
Other non-current assets	66.37	66.37	66.37
Total	**7,637.48**	**7,535.87**	**7,320.99**
Current Assets			
Inventories	296.68	316.96	336.18
Trade receivables	287.91	259.73	269.53
Cash & cash equivalents	1.43	1.43	1.43
Short-term loans & advances	195.57	207.44	220.02
Other current assets	2.62	2.78	2.95
Total	**784.22**	**788.34**	**830.11**
Grand Total	**8,421.69**	**8,324.21**	**8,151.11**

The Projected Cash Flow Statement for Control period is as under:

Particulars	FY 2017-18	FY 2018-19	FY 2019-20
Cash Flow from Operating Activities			
P&L Account (after tax)	284.38	123.72	138.89
Add:			
Depreciation	336.90	354.21	370.21
Interest and finance charges	462.36	437.64	416.30
Operating Profit before working capital changes	**1,083.64**	**915.57**	**925.40**
Adjusted For:			
Decrease/(Increase) in current assets	(47.67)	(4.13)	(41.77)
Increase/(Decrease) in current liabilities	(87.06)	(64.82)	(71.69)
Net cash from Operating Activities (A)	**948.91**	**846.62**	**811.94**
Cash Flow from investing activities			
Acquisition of fixed assets	(190.19)	(479.76)	(139.01)
Decrease/(Increase) in capital work in progress	(191.32)	227.16	(16.33)
Net cash used in investing activities (B)	**(381.50)**	**(252.61)**	**(155.33)**
Cash Flow from financing activities			
Change in long term borrowing	(31.72)	(156.37)	(240.31)
Change in short term borrowing	(73.33)	-	-
Interest and Finance Charges	(462.36)	(437.64)	(416.30)
Net cash used in financing activities (C)	**(567.41)**	**(594.01)**	**(656.60)**
Net increase/(decrease) in cash and cash equivalents (A+B+C)	**0.00**	**0.00**	**0.00**