Business Plan

Approval of Business Plan for Multi-Year Control Period

from FY 2019-20 to FY 2021-22

Petition No. 261/2018

For

Electricity Department, Government of Puducherry

31 October 2018

JOINT ELECTRICITY REGULATORY COMMISSION
For the State of Goa and Union Territories,
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List of abbreviations

Abbreviation	Full Form
A&G	Administrative and General
ACoS	Average Cost of Supply
Act	The Electricity Act, 2003
AMR	Automatic Meter Reading
APR	Annual Performance Review
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal of Electricity
BPL	Below Poverty Line
CAGR	Compound Annualized Growth rate
Capex	Capital Expenditure
CC	Current Consumption
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGRF	Consumer Grievance Redressal Forum
CGS	Central Generating Stations
COD	Commercial Operation Date
Cr	Crores
DDUGJY	Deen Dayal Upadhyaya Gram Jyoti Yojana
Discom	Distribution Company
DSM	Deviation Settlement Mechanism
ED	Electricity Department
EHT	Extra High Tension
ERP	Enterprise Resource Planning
FPPCA	Fuel and Power Purchase Cost Adjustment
FY	Financial Year
GFA	Gross Fixed Assets
HT	High Tension
IEX	Indian Energy Exchange Limited
IPDS	Integrated Power Development Scheme
IPP	Independent Power Producer
ISTS	Inter State Transmission System
JERC	Joint Electricity Regulatory Commission for the state of Goa and Union Territories
KSEB	Kerala State Electricity Board Limited
LT	Low Tension
MCLR	Marginal Cost of funds based Lending Rate
MU	Million Units
MYT	Multi Year Tariff

Abbreviation	Full Form
NFA	Net Fixed Assets
NTPC	NTPC Ltd.
OHOB	One Hut One Bulb
O&M	Operation and Maintenance
PLF	Plant Load Factor
PLR	Prime Lending Rate
PSDF	Power System Development Fund
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
R-APDRP	Restructured Accelerated Power Development and Reforms Programme
REC	Renewable Energy Certificate
RLDC	Regional Load Despatch Centre
RoE	Return on Equity
RPO	Renewable Purchase Obligation
SBI PLR	SBI Prime Lending Rate
SERC	State Electricity Regulatory Commission
SLDC	State Load Despatch Center
SOP	Standard of Performance
T&D	Transmission & Distribution
TVS	Technical Validation Session
UI	Unscheduled Interchange
UT	Union Territory

Before the

Joint Electricity Regulatory Commission

For the State of Goa and Union Territories, Gurugram

QUORUM

Shri. M. K. Goel (Chairperson)
Smt. Neerja Mathur (Member)

Petition No. 261/2018

In the matter of

Approval of Business Plan for Multi-Year Control Period from FY 2019-20 to FY 2021-22.

And in the matter of

Electricity Department, Government of Puducherry .... Petitioner

ORDER

a) This Order is passed in respect of the Petition filed by the Electricity Department, Union Territory of Puducherry for approval of its Business Plan for the Multi-Year Control Period of three years commencing from 01 April 2019 to 31 March 2022.

b) In exercise of the powers conferred on it by sub-Section (2) of Section 181 read with Section 36, Section 39, Section 40, Section 41, Section 51, Section 61, Section 62, Section 63, Section 64, Section 65 and Section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling it in this behalf, the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (except Delhi), after previous publication, issued the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Generation, Transmission and Distribution Multi Year Tariff) Regulations, 2018 on 10 August 2018.

c) In terms of Regulation 8.1 and 16 of the aforesaid Regulations, the Petitioner has filed a Petition for approval of its Business Plan for three years Control Period i.e. from FY 2019-20 to FY 2021-22 with details for each year of the Control Period before the Commission.

d) After receiving the Petition, the Commission scrutinized the contents of the Petition and called for further information/data, wherever required, in the form of deficiency notes so as to take a prudent view of the Petition. Comments/objections/suggestions were also invited from the stakeholders and public hearing was conducted. All the comments/objections/suggestions made by the stakeholders in both written or verbal mode are taken into consideration.

e) Based on the information/documents submitted by the Petitioner and keeping in view the provisions of the Electricity Act, 2003 and the relevant Regulations framed thereunder, the Commission approves the Business Plan for the Control Period from FY 2019-20 to FY 2021-22, which covers the capital investment plan, sales forecast, power procurement plan, performance targets, fixation of T&D loss trajectory etc.

f) The Petitioner is now therefore directed to submit the Multi Year Tariff Petition for the Control Period on or before 30 November 2018, in terms of Regulation 9 of the aforesaid Regulations.

g) Ordered as above, read with attached document giving detailed reasons, grounds and conditions. Copy of this Order be sent to the Petitioner, CEA and the Administration of UT of Puducherry.

-Sd-	-Sd-
Neerja Mathur	**M.K. Goel**
(Member)	**(Chairperson)**

JOINT ELECTRICITY REGULATORY COMMISSION
(For the State of Goa and Union Territories)

Place: Gurugram
Date: 31 October 2018

1. Chapter 1: Introduction

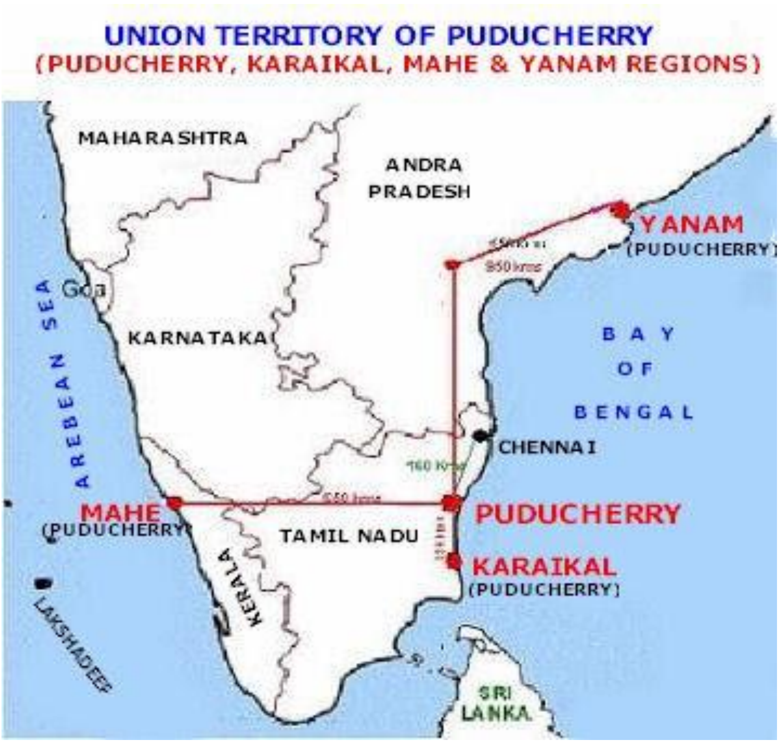
1.1 Joint Electricity Regulatory Commission

In exercise of powers conferred by the Electricity Act 2003, the Central Government constituted a Joint Electricity Regulatory Commission for all the Union Territories except Delhi to be known as "Joint Electricity Regulatory Commission for the Union Territories" vide notification no. 23/52/2003-R&R dated 2 May 2005. Later with the joining of the State of Goa, the Commission came to be known as "Joint Electricity Regulatory Commission for the State of Goa and Union Territories" (hereinafter referred to as "the JERC" or "Commission") vide notification no. 23/52/2003-R&R (Vol. II) dated 30 May 2008.

JERC is an autonomous body responsible for regulation of the power sector in the State of Goa and the Union Territories of Andaman & Nicobar Islands, Lakshadweep, Chandigarh, Daman & Diu, Dadra & Nagar Haveli and Puducherry, consisting of generation, transmission, distribution, trading and use of electricity. Its primary objective includes taking measures conducive to the development of the electricity industry, promoting competition therein, protecting interest of consumers and ensuring supply of electricity to all areas.

1.2 Union Territory of Puducherry

The Union Territory of Puducherry (hereinafter referred to as 'UT') covers an area of 492 sq. km and consists of four regions adjoining three Indian States of Tamil Nadu, Kerala and Andhra Pradesh. The four regions are located far apart, namely Puducherry and Karaikal regions surrounded by the state of Tamil Nadu, Mahe region adjoining Kerala and Yanam region adjoining Andhra Pradesh. Puducherry, which is the headquarters of the Union Territory, is located 160 km down south of Chennai while Karaikal is located further down south at about 150 km from Puducherry. Mahe is located horizontally opposite to Puducherry on the Western coast at a distance of about 653 km from Puducherry, 58 kms from Kozhikode and 24 kms from Kannur in Kerala State. Yanam is located up North of Puducherry on the eastern coast at about 840 km from Puducherry and 28 km from Kakinada. The 4.8 lakh consumers in the Territory are a mix of domestic, commercial, agriculture and industrial consumers.



1.3 Electricity Department, Govt. of Puducherry

The Electricity Department of UT Administration of Puducherry (hereinafter referred to as 'ED Puducherry' or 'EDP'), is a deemed licensee under Section 14 of the Electricity Act 2003 and is carrying out the business of transmission, distribution and retail supply of electricity in Puducherry, Karaikal, Yanam and Mahe regions of the Union Territory of Puducherry. ED Puducherry is divided into three circles, each headed by a Superintending Engineer. There are ten Technical Divisions across the three circles, each headed by an Executive Engineer.

The region wise profile (as on FY 2018-19) of the regions served by ED Puducherry is given below:

Table 1: Region wise profile (as on FY 2018-19) of the regions served by ED Puducherry

Sl. No.	Pondy Region	Karaikal Region	Mahe Region	Yanam Region	Total UT of Puducherry
Consumers Nos. Dispersion	74%	18%	4%	4%	100%
Connected Load (kW)	75%	15%	5%	5%	100%
Energy Sales (MU)	79%	16%	2%	2%	100%
Area (Sq. Km)	60%	32%	2%	6%	100%
T&D Losses (%)	13 %	13%	10%	10%	12.52%

The key duties being discharged by ED Puducherry are:

- To develop and maintain an efficient, coordinated and economical distribution system;
- To supply electricity on an application of the consumer in accordance with the provisions specified in the Electricity Act 2003;
- To provide non-discriminatory open access to the consumers;
- To establish a forum for redressal of grievances of the consumers.

The EDP does not have its own generation and procures power from various Central Generating Stations (CGS), neighbouring state utilities and the state-owned Puducherry Power Corporation Limited (PPCL), which runs a 32.5 MW gas-based combined cycle power plant in the Karaikal region. The entire power generated from PPCL is consumed within the Karaikal region.

EDP operates a transmission network of 230 kV & 110 kV and distribution network at 33 kV, 22 kV, 11 kV and at LT levels. It supplies power to consumers through its 18 EHV substations, 489 km of EHT line, 2294 km of HT line, 2877 distribution transformers and 3845 km of LT line. EDP also has 90 km of HT and 535 km of LT underground cabling for certain urban areas.

State Load Dispatch Center (SLDC), which is under the control of the ED (Puducherry), interacts with Regional Load Dispatch Centre (RLDC) for optimum scheduling and dispatch of electricity. It monitors grid operation on real time basis and passes on necessary instructions to field staff to control flow of energy.

1.4 Electricity Regulatory Process in Puducherry

The Commission had issued the first Multi-Year Order for "Approval of Business Plan for Multi-Year Control Period FY 2016-17 to FY 2018-19" on 4 December 2015 in respect of ED Puducherry.

1.5 Multi Year Tariff Regulations, 2018

The Commission notified the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Generation, Transmission and Distribution Multi Year Tariff) Regulations, 2018 on 10 August 2018. The said Regulations have been hereinafter referred to as the "JERC MYT Regulations". As per Clause 2.1.17 of these Regulations, the "Control Period" is defined as the multi-year period comprising of three financial years from FY 2019-20 to FY 2021-22.

These Regulations are applicable to all the generation companies and transmission and distribution licensees in the State of Goa and Union Territories of Andaman & Nicobar Islands, Lakshadweep, Chandigarh, Daman & Diu, Dadra & Nagar Haveli and Puducherry.

1.6 Filing and admission of Petition for Multi-Year Business Plan for FY 2019-22

As per Clause 8.1 of the JERC MYT Regulations, the Petitioner is required to file Business Plan Petition for three years Control Period i.e. from FY 2019-20 to FY 2021-22 with details for each year of the Control Period for approval of the Commission.

EDP submitted the current Petition for approval of 'Business Plan for Control Period FY 2019-20 to FY 2021-22' vide letter no. 71/ED/SE-cum HOD/EE-Gen/F-ARR/2018-19 dated 31 August 2018.

After initial scrutiny/analysis, the Petition on Business Plan for the Control Period FY 2019-20 to FY 2021-22 was admitted on 4 September 2018 and was marked as Petition no. 261/2018.

1.7 Interaction with the Petitioner

The Order has referred at numerous places to various actions taken by the "Commission". It may be mentioned for the sake of clarity that the term "Commission," except for the Hearing and Orders, denotes the Secretariat of the Commission responsible for carrying out technical due diligence and validation of data of the Petitions filed by the utilities, obtaining and analysing information/clarifications received from the utilities, and submitting relevant issues for consideration of the Commission.

A preliminary scrutiny/analysis of the Petition was conducted and certain deficiencies were observed. Accordingly, deficiency notes were issued to the Petitioner. Further, additional information/clarifications were solicited from the Petitioner as and when required. The Petitioner submitted its response on the issues through various letters/emails. The following table provides the list of interactions with the Petitioner along with the dates:

Table 2: Interactions with the Petitioner

S. No	Subject	Date
1	Receipt of Petition dated 31.8.2018, by the Commission	03.09.2018
2	Admission of the Petition by the Commission	04.09.2018
3	Deficiency Note issued by the Commission	11.09.2018, 12.09.2018, 27.09.2018
4	Date of Hearing fixed- Public Notice sent by the Commission	11.09.2018
5	Replies to the Deficiency Note received by the Commission	20.09.2018, 25.09.2018, 27.09.2018, 05.10.2018, 10.10.2018, 12.10.2018
6	Post Hearing replies to Stakeholders' Comments	12.10.2018

1.8 Public Hearing Process

The Commission directed the Petitioner to publish the Summary of the Business Plan proposal in the abridged form to ensure public participation. The public notices were published by the Petitioner for inviting objections / suggestions from the stakeholders on the Business Plan Petition as detailed below:

Table 3: Public Notices published by the Petitioner

Sl. No.	Date	Name of Newspaper	Place of circulation
1	15.09.2018	New Indian Express (English)	All the four Regions
2	15.09.2018	Dinamalar (Tamil)	Puducherry & Karaikal
3	15.09.2018	Dinakaran (Tamil)	Puducherry & Karaikal
4	23.09.2018	Kerala Kaumudi (Malayalam)	Mahe
5	28.09.2018	Eenadu (Telugu)	Yanam

The Petitioner also uploaded the Petition on its website (https://electricity.py.gov.in/) for inviting objections and suggestions on the Petition. Interested parties/stakeholders were requested to file their objections / suggestions on the Petition to the Commission with a copy to the Petitioner on or before 4 October 2018. The Commission has also uploaded the copy of the Petition on its website to facilitate the stakeholders.

The Commission received various objections/suggestions on the Petition. The Commission forwarded these to the Petitioner for communicating its reply to the objections. The Petitioner has sent its replies to the Commission as well as all the stakeholders who have given written comments and those who presented their comments during the Public Hearing conducted by the Commission.

The Commission also published Public Notices in the leading newspapers as tabled below, giving due intimation to the stakeholders, consumers and the public at large about the Public Hearing to be conducted by the Commission on 4 October 2018 from 10 AM onwards at PMSSS Hall, Laporte Street, Puducherry – 605 001.

Table 4: Public Notices published by the Commission

Sl. No.	Date (s)	Name of Newspaper	Place of Circulation
1	12.9.2018 and 2.10.2018	Malai Malar- Tamil	Pondicherry
2	12.9.2018 and 2.10.2018	The Daily Thanthi- Tamil	Pondicherry
3	12.9.2018 and 2.10.2018	The New Indian Express- English	Tamil Nadu
4	12.9.2018 and 2.10.2018	The New Indian Express- English	Villipuram

During the Public Hearing, the issues and concerns raised by the stakeholders in writing and/or voiced by them have been examined by the Commission. The major issues discussed, the responses of the Petitioner thereon and the views of the Commission, have been summarized in Chapter 2.

1.9 Organization of the Order

This Order is organized in the following chapters:

- **Chapter 1** of the Order provides the background and brief description of the Territory, Utility and Regulatory process undertaken by the Commission.
- **Chapter 2** of the Order provides the summary of various suggestions and objections raised by the stakeholders, followed by the response of the Petitioner and the rulings of the Commission on these issues.
- **Chapter 3** discusses the submissions of the Petitioner in its Business Plan Petition and the Commission's views thereon.

2 Chapter 2: Stakeholder Consultations

2.1 Regulatory Process

The Public Hearing was held on 4 October 2018 at Puducherry in respect of the Multi-Year Business Plan Petition for Control Period from FY 2019-20 to FY 2021-22. During the Public Hearing, stakeholders presented their views in person before the Commission. All the participants from the public, who had not submitted written comments earlier, were also given an equal opportunity to present their views/suggestions in respect of the Petition.

2.2 Suggestions/ Objections of the Stakeholders, Response of the Petitioner and the Commission's Views

The Commission is appreciative of the efforts of various stakeholders in providing their suggestions/comments/observations to make the Electricity Distribution Sector responsive and efficient. The Commission has noted the concerns of all stakeholders and has tried to address them to the extent possible in the subsequent sections and/or through directives. During the Public Hearing, all the stakeholders were also requested to send their comments / suggestions to the Commission, which shall be addressed appropriately. The Stakeholders' comments, response of the Petitioner and the views of the Commission are summarized below:

2.2.1 Transmission & Distribution Losses

Stakeholder Comments

- In order to reduce the T&D loss in a span of 4/5 years, the huge investment proposed by the department will be recovered through tariff. However, the loss is mainly because of theft. T&D loss of 13.75% is not a correct figure and it may be about 20.00 %. In Yanam, one major theft case of M/s. Kanaga Durga is still pending for redressal.
- In the Business Plan Petition, the reduction in T&D loss proposed from 2015-16 to 2021-22 is hardly 2%, but the investment proposed is INR 300 Cr, which is not justifiable.

Petitioner's Response

- In order to ensure stable, reliable and quality power supply at all times and also to meet the growing power demand, the strengthening of both Transmission and Distribution systems under JICA loan has been considered as the department is not in a position to get sufficient funds from the Government. Various works contemplated in the project will also enable the department to bring down the Transmission & Distribution losses to the level of less than 10% in a span of four to five years.

Commission's View

- The Commission notes the Stakeholder comments that the loss reduction being proposed at 2% from FY 2015-16 to FY 2021-22 is low. The Commission also notes the explanation provided by the Petitioner regarding capital expenditure being essential for reducing transmission and distribution losses. Keeping in view the proposed/approved capital expenditure and other constraints, the Commission has approved a steeper loss reduction trajectory than that proposed by the Petitioner.

2.2.2 Capital Investment Plan

Stakeholder Comments

- No capital expenditure has been proposed for rural electrification and cable conversion. The scheme of conversion of OH cables at Mada Koil street, Villianur has not been covered in the Business Plan and the same has to be included.

- Replacement of old equipment with new ones has been considered in the present Business Plan, but the Depreciation of the old equipment has not been taken into consideration.

Petitioner's Response

- Based on the directions of the Commission, the public has been briefed about the works proposed in the Business Plan.

Commission's View

- The Commission appreciates Stakeholders' concerns regarding the overhead cable conversion and rural electrification. The Commission has observed from the detailed submissions of proposed capital expenditure schemes by the Petitioner that capital expenditure in the nature of rural electrification, cable conversion schemes etc. already forms a part of these schemes.
- The Commission would like to inform that the depreciation of the old equipment would be worked out in line with the extant JERC MYT Regulations at the time of issuance of the Multi-Year Tariff Order.
- In respect of Villianur village, the Commission directs the Petitioner to have an assessment of the Villianur area and feasibility of conversion of the OH cables, under intimation to the Commission.

2.2.3 Operations & Maintenance

Stakeholder Comments

- Manpower of the Department has to be increased for attending fuse going off and breakdown calls thereby ensuring reliable power supply to the public. The manpower required for the future projects and their salaries have to be included in the Business Plan Petition.
- Separate quantum of funds has to be provided in the Business Plan Petition for technology upgradation in the section office level and all O&M office should be updated with the latest technology for smooth running of the O&M.

Petitioner's Response

- The Petitioner has responded to look into the matter appropriately.

Commission's View

- The Commission appreciates the concerns regarding sufficiency of the technical manpower as raised by the Stakeholders. The Commission directs the Petitioner to put forward a detailed proposal duly indicating the requisite manpower required at each level in light of the suggestions of the Stakeholders along with the cost estimates for consideration of the Commission in the MYT Petition.
- The Commission also observes that with regard to technological upgradations, the capital expenditure has been proposed by the Petitioner under various schemes. The Commission directs the Petitioner to ensure implementation of all proposed schemes, as approved by the Commission, in a timely manner.

2.2.4 Metering

Stakeholder Comments

- The anomalies in smart meters provided in the town areas have to be rectified. A provision has to be made in the Business Plan Petition to test the newly installed smart meters in case of any complaint by the consumers. Necessary lab facility for testing such meters should be added in the Petition.
- Before introducing the Automatic Meter Reading (AMR) meter, the power theft needs to be controlled.

Petitioner's Response

- In order to ensure the functioning of the meters in all the services, the department has considered the entire requirement of meters under various central funding schemes in order to make use of the benefits extended by the Govt. of India and the replacement of all electromechanical and defective static meters are under progress.

Commission's View

- The Commission appreciates the concerns regarding functioning of smart meters and notes that the Petitioner has proposed capital expenditure for smart energy meters under its distribution schemes. The Commission directs Petitioner to ensure that testing of such meters is carried out in accordance with the relevant provisions under JERC (Electricity Supply Code) Regulations as applicable from time to time.

- The Commission further notes the Stakeholder's concerns regarding power theft and directs the Petitioner to ensure that adequate steps are taken in a timely manner to address this issue through execution of its various distribution schemes.

2.2.5 Billing and Standards of Performance

Stakeholder Comments

- The defaulter list for non-payment of Current Consumption (CC) charges has been published in the dailies. If the department had taken steps in time to disconnect the supply, this would have been avoided.
- The expenditure towards press notification made for publication of the list of the defaulters in payment of CC charges should be recovered proportionately from the defaulters concerned along with the arrears and not to be paid from the Government money.
- Huge delay in taking the meter reading and feeding the same into the system results in consumers being forced to pay the CC charges for more than thirty days and being charged under the higher slab.
- The existing billing software is outdated and as such provision of funds for the new billing software has to be earmarked in the Business Plan Petition.
- 1912 toll free number is not working during the night hours. The Staff of the Electricity Department are under work to rule protest. Hence, it is requested to take necessary action for attending the breakdown during night hours.

Petitioner's Response

- Special disconnection drive is being conducted by the department after making prior announcement in the public media to recover dues. Even the Goverment departments/ local bodies are being pursued to make payment.

- In order to ensure proper accounting of energy and also to nullify the complaints of the public in the billing and collection systems, the department is already in the process of entrusting the works of upgradation of the existing billing software with the latest technology to M/s National Informatics Centre, Puducherry and the same will be completed on priority.

- No specific response has been given by the Petitioner regarding delay in meter reading, availability of toll free number and redressal of breakdown complaints. The Petitioner has stated that even though the general complaints related to the Electricity department are very meager, the comments made by the public are related to minor issues such as wider publication about hearing, non-availability of 1912 during night time etc.

Commission's View

- The Commission notes the Stakeholder's observations regarding default list published by the Petitioner and the costs thereof. The Commission directs the Petitioner to act proactively and in accordance with JERC (Electricity Supply Code) Regulations applicable from time to time, to address such issues of default.

- The Commission notes Stakeholder's concerns regarding obsolescence of existing billing software and directs the Petitioner to ensure that adequate steps are taken for uninterrupted execution of upgradation works of the existing billing software.

- As regards the Stakeholder's comments regarding delay in meter reading leading to inflated Current Consumption charges due to more than 30 days of billing resulting in shifting to higher slab, the Commission directs the Petitioner to strictly follow the billing practices in accordance with the JERC (Electricity Supply Code) Regulations applicable from time to time.

- The Commission expresses its deep concern on the response of the Petitioner that the general complaints are very meager and the complaints are related to minor issues and directs the Petitioner to ensure that the service levels are maintained in line with the JERC (Standards of Performance) Regulations applicable from time to time.

2.2.6 Tariff related issues

Stakeholder Comments

- The issue of necessity of conducting a Public Hearing when there is no tariff hike was raised.
- The common public is already suffering from tariff hike. Any further hike through the Business Plan Petition will further burden the public.
- The powers vested to Hon'ble JERC over the fixation of tariff to Puducherry is not known.

Petitioner's Response

- The Petitioner has responded that this public hearing does not pertain to tariff determination.

Commission's View

- The Commission would like to inform the Stakeholders that it is mandated under the Electricity Act to regulate the power sector of specified territories under its jurisdiction through the Regulations, Orders and Directions in a transparent manner. The Business Plan Petition shall not result in any increase in the tariff.

- The Commission notes the queries raised by Stakeholders and reiterates that the Commission carries out the approval of Business Plan, Multi Year Tariff and Annual Tariff petitions for the State of Goa and Union Territories (except Delhi), in exercise of powers conferred on it by sub-Section (2) of Section 181 read with Section 36, Section 39, Section 40, Section 51, Section 61, Section 62, Section 63, Section 64, Section 65 and Section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling it in this behalf.

- The Commission notes stakeholder's comments and observes that most of these comments are in respect of Tariff Petition and would be suitably taken up/ addressed during the stakeholder consultation for Tariff Petition.

2.2.7 Public Hearing Notice

Stakeholder Comments

- Only a meager number of public are present for the Public Hearing. This is because the date of Public Hearing has not been announced well in advance. The Commission has to conduct the Public Hearing again with wider publicity due to poor participation in the current Hearing.
- The Department has not placed any Notice or banner in the main office stating that the Public Hearing is scheduled to be held on 4 October 2018. Such publications will help in more public participation. Public notice on the Public Hearing should have been sent to all O&M offices for display in the notice board for the information of the public. Public Grievance meeting has not been conducted in the past two years in Villianur.
- In the newspaper, there is no mention about which topic is to be discussed in the Hearing. In some newspapers, it is announced as public grievance meeting. The advertisement has to be given in local language in a bigger space in the dailies so that there will be more participation from the public.
- The Business Plan pamphlet circulated is very brief, without the details of the works proposed.

Petitioner's Response

- The public has criticized the press release for public hearing two days prior to the hearing, without knowing the publication made by the Commission one in advance and other notices prior to the hearing.
- Most of the public have made their comments based on the brief write up provided at the hall of public hearing, without taking cognizance of the availability of the Business Plan on the website of the Hon'ble Commission and Electricity Department. No public has approached the department for the copy of Business Plan.

Commission's View

- The Commission notes Stakeholder's concerns regarding advance notification of public hearings and informs that public notices published by the Petitioner and the Commission for inviting objections / suggestions from the stakeholders on the Business Plan Petition were done well in advance in line with the relevant Regulations. The details of public notices are given in Chapter 1 of this Order.
- The Commission notes Stakeholder's concerns regarding the public hearing being covered by media as a public grievance meeting and inadequate coverage in local languages. The Commission informs that the Stakeholders should rely on official public notices published by the Petitioner and the Commission, which have been published in local languages (Tamil, Telugu, Malayalam) in addition to English by the Petitioner and the Commission.
- The Commission informs that the detailed Business Plan Petition, as submitted by the Petitioner, has been available on Commission's website since 14 September 2018. The pamphlets distributed by Petitioner are in addition to this detailed Petition for capturing highlights of the Business Plan.

2.2.8 Other Comments

Stakeholder Comments

1. Regarding the action taken by the Department against the tying of Cable TV wires on the Electricity poles, are the Cable TV operators authorised to carry out such works? Any approval of the Government has been obtained in this regard.
2. The service has been effected violating the safety measures to one apartment in Krishna Nagar without horizontal clearance. Action to be taken against the erring official.

3. Status of achievements of the previous Business Plan Petition have not been discussed in the current Petition.
4. The role of CGRF is not known to all. The location of the office and purpose of formation of CGRF may be widely advertised to the public for smooth running of the Public Hearing.
5. Solar power generation needs to be mandated for schools and Government buildings. Energy conservation has to be strictly adhered to in Government Offices.

Petitioner's Response

1. Streamlining of stringing of cables by the cable TV operators in the department poles is in process and the same will be implemented after issuance of the approval of the Government
2. The Petitioner hasn't specifically addressed any of the other issues raised by the Stakeholders.

Commission's View

1. The Commission notes Stakeholder's concerns regarding stringing of the cables by the cable TV operators to electricity poles and observes that Petitioner is making efforts to streamline the same. The Commission directs the Petitioner to ensure that such works are expedited, subject to relevant approvals.
2. The Commission notes Stakeholder's concern and directs the Petitioner to ensure that safety measures are not violated in any manner while executing day to day works of the Petitioner.
3. The Commission, while approving the Business Plan of the Petitioner, has analyzed the achievements of the Petitioner on parameters such as T&D losses and RPO vis a vis the previous Business Plan trajectories. The Commission has also analyzed trends of previous years for projection of other parameters of sales, consumer and load projections. All these achievements have been discussed in various sections of this Business Plan Order.
4. The Commission notes Stakeholder's concern regarding lack of awareness about CGRF. The Commission directs that the same may be adequately publicized to bring to the notice of consumers, including on the periodic bills raised to the consumers, in line with JERC (Electricity Supply Code) Regulations applicable from time to time. The Commission would also like to inform that the relevant CGRF Regulations framed and notified by it containing information regarding the redressal of grievances of the consumer are available on the website of the Commission.
5. The Commission notes Stakeholder's suggestions regarding mandating of solar power and energy efficiency measures for schools and government buildings. The Commission, though doesn't exercise control over the functioning of such government departments or schools, promotes solar and other renewable energy sources through the targets of Renewable Purchase Obligation specified for the Licensees under its jurisdiction.

3 Chapter 3: Approval of the various components of the Multi-Year Business Plan Petition for the Control Period FY 2019-20 to FY 2021-22

3.1 Introduction

This chapter deals with the key aspects of the Business Plan Petition submitted by the Petitioner, and is structured as below.

- Forecast of Number of Consumers, Connected Load and Sales for the Control Period
- Intra-State Transmission and Distribution (T&D) loss
- Power Procurement Plan
- Capital Investment Plan
- Manpower Plan

In the subsequent sections, the Commission has recorded Petitioner's submissions and analysed them. The Commission has subsequently recorded its reasoning while approving each of the components.

3.2 Forecast of Number of Consumers, Connected Load and Sales for the Control Period

3.2.1 Overall Approach

Petitioner's submission

The Petitioner has chosen FY 2018-19 as the Base Year based on the audited accounts of FY 2015-16 & FY 2016-17 and unaudited actual figures of FY 2017-18. The Petitioner has used past years' CAGR to forecast the number of consumers, connected load and sales for FY 2018-19 and the upcoming Control Period. The Petitioner has also considered external factors like macroeconomic growth, increase in energy efficient LED lighting etc. for projections of some consumer categories.

Summary of the past data and the CAGR considered by the Petitioner for each category for projecting number of consumers, connected load and sales is as given in the tables below:

Table 5: Category wise Consumers and growth rate considered by the Petitioner for projections

Number of Consumers	Actuals					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	3 year	4 year	5 year	CAGR considered
Domestic	2,72,198	2,86,495	3,06,385	3,13,367	3,25,845	3.13%	4.38%	4.60%	4.60%
OHOB	35,537	35,539	35,539	35,539	35,537	0.00%	0.00%	0.00%	0.00%
Commercial	45,311	46,938	51,674	52,087	53,962	2.19%	4.76%	4.47%	4.47%
Agriculture	6,810	6,849	6,854	6,900	6,940	0.63%	0.44%	0.47%	0.47%
Street lighting	49,524	49,893	50,055	50,250	50,434	0.38%	0.36%	0.46%	0.46%
LT Industrial+ Water tank	6,338	6,423	6,556	6,616	6,668	0.85%	1.26%	1.28%	1.28%
HT-I	434	412	433	439	453	2.28%	3.21%	1.08%	2.28%

Number of Consumers	Actuals					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	3 year	4 year	5 year	CAGR considered
HT-II	49	53	53	60	61	7.28%	4.80%	5.63%	5.63%
HT-III	7	7	7	7	7	0.00%	0.00%	0.00%	0.00%
Total	4,16,208	4,32,609	4,57,556	4,65,265	4,79,907				

Table 6: Category wise Connected Load and growth rate considered by the Petitioner for projections

Connected Load (kW)	Actuals					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	3 year	4 year	5 year	CAGR considered
Domestic	4,81,581	4,64,613	4,84,510	5,06,829	5,30,206	4.61%	4.50%	2.43%	4.61%
OHOB	2,843	2,843	2,843	2,843	2,843	0.00%	0.00%	0.00%	0.00%
Commercial	94,945	97,345	1,02,331	1,09,627	1,19,092	7.88%	6.95%	5.83%	7.88%
Agriculture	44,654	44,654	44,654	44,654	44,654	0.00%	0.00%	0.00%	0.00%
Public lighting	5,936	5,971	5,998	6,058	6,119	1.00%	0.82%	0.76%	1.00%
LT Industrial & water tank	1,15,406	1,16,954	1,20,428	1,22,804	1,25,234	1.98%	2.31%	2.06%	1.98%
HT 1	2,90,950	3,12,731	3,22,656	3,33,098	3,44,093	3.27%	3.24%	4.28%	3.27%
HT 2 - Government & water tank	18,500	22,918	25,210	27,731	30,504	10.0%	10.0%	13.3%	10.0%
HT 3 – EHT	90,500	1,04,483	1,09,695	1,15,167	1,20,912	4.99%	4.99%	7.51%	4.99%
Total	11,45,314	11,72,511	12,18,325	12,68,810	13,23,657				

Table 7: Category wise Sales and growth rate considered by the Petitioner for projections

Sales (MU)	Actuals					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	3 year	4 year	5 year	CAGR Considered
Domestic	600.00	635.22	675.00	699.82	723.3	3.51%	4.42%	4.78%	4.78%
OHOB	12.09	10.00	10.00	10.21	10.2	1.19%	0.79%	-4.07%	1.19%
Commercial	181.00	182.22	198.00	210.92	216.4	4.55%	5.90%	4.57%	4.57%
Agriculture	57.00	57.00	57.00	57.28	57.6	0.53%	0.36%	0.27%	0.27%
Street lighting	26.00	26.00	26.00	24.24	24.5	-2.97%	-1.99%	-1.49%	0.00%
LT Industries + Water tank	226.10	198.90	205.00	190.67	185.6	-4.85%	-2.28%	-4.81%	0.00%
Temporary	10.1	6.1	7.0	8.0	8.5	10.06%	11.48%	-4.28%	10.06%
HT-I	878.01	875.29	892.00	944.15	897.3	0.30%	0.83%	0.55%	2.50%
HT-II	48.77	55.96	60.00	62.03	98.4	28.07%	20.70%	19.19%	19.19%
HT-III	326.65	319.60	268.00	258.96	326.9	10.44%	0.76%	0.02%	2.50%
Total	2,365.72	2,366.31	2,398.00	2,466.27	2,548.76				

The Petitioner's projections of number of consumers, connected load and sales for the FY 2018-19 and the upcoming Multi-Year Control Period are as given in the tables below:

Table 8: Petitioner's submission on projection of Number of Consumers for upcoming Control Period

Number of Consumers	Actual (Unaudited)	CAGR Considered	Base Year (RE)	Projections		
Consumer Category	**FY 2017-18**		**FY 2018-19**	**FY 2019-20**	**FY 2020-21**	**FY 2021-22**
Domestic	3,25,845	4.60%	3,40,834	3,56,512	3,72,911	3,90,065
OHOB	35,537	0.00%	35,537	35,537	35,537	35,537
Commercial	53,962	4.47%	56,371	58,888	61,518	64,265
Agriculture	6,940	0.47%	6,973	7,006	7,039	7,072
Street lighting	50,434	0.46%	50,664	50,895	51,127	51,361
LT Industrial + Water tank	6,668	1.28%	6,753	6,839	6,927	7,015
HT 1	453	2.28%	463	474	485	496
HT 2	61	5.63%	64	68	72	76
HT 3	7	0.00%	7	7	7	7
Total	**4,79,907**		**497667**	**516227**	**535623**	**555894**

Table 9: Petitioner's submission on projection of Connected Load for upcoming Multi-Year Control Period

Connected Load (kW)	Actual (Unaudited)	CAGR Considered	Base Year (RE)	Projections		
Consumer Category	**FY 2017-18**		**FY 2018-19**	**FY 2019-20**	**FY 2020-21**	**FY 2021-22**
Domestic	5,30,206	4.61%	554691	580259	607006	634986
OHOB	2,843	0.00%	2843	2843	2843	2843
Commercial	1,19,092	7.88%	130876	141188	152312	164313
Agriculture	44,654	0.00%	44654	44654	44654	44654
Public lighting	6,119	1.00%	6181	6243	6306	6369
LT Industrial & water tank	1,25,234	1.98%	127718	130242	132815	135439
HT 1	3,44,093	3.27%	361298	373107	385302	397896
HT 2	30,504	10.0%	32029	35232	38755	42630
HT 3	1,20,912	4.99%	126958	133291	139940	146921
Total	**13,23,657**		**1387248**	**1447059**	**1509934**	**1576052**

Table 10: Petitioner's submission on projection of Sales for upcoming Multi-Year Control Period

Sales (MU)	Actual (Unaudited)	CAGR Considered	Base Year (RE)	Projections		
Consumer Category	**FY 2017-18**		**FY 2018-19**	**FY 2019-20**	**FY 2020-21**	**FY 2021-22**
Domestic	699.82	4.78%	757.87	794.12	832.09	871.89
OHOB	10.21	1.19%	10.36	10.49	10.61	10.74
Commercial	210.92	4.57%	226.30	236.63	247.44	258.75
Agriculture	57.28	0.27%	57.76	57.92	58.07	58.23
Street lighting	24.24	0.00%	24.48	12.24	12.24	12.24
LT Industries + Water tank	190.67	0.00%	185.61	185.61	185.61	185.61
Temp LT	8.0	10.06%	9.33	10.27	11.31	12.44
HT 1	944.15	2.50%	919.77	942.77	966.34	990.50

Sales (MU)	Actual (Unaudited)	CAGR Considered	Base Year (RE)	Projections		
Consumer Category	FY 2017-18		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
HT 2 - Government & water tank	62.03	19.19%	117.29	139.79	166.61	198.58
HT 3 – EHT	258.96	2.50%	335.07	343.45	352.04	360.84
Total	2,466.27		**2643.85**	**2733.29**	**2842.36**	**2959.80**

The Petitioner in its reply to the Deficiency Note raised by the Commission also submitted the category wise number of pending applications for new service connections and service connections effected. The details submitted by the Petitioner are as given below:

Table 11: Category wise number of pending applications for new service connections

Consumer Category	Pending applications on 01.04. 2017	Connected Load (KW)	Connections serviced in FY 18	Connected Load (KW)	Pending applications on 01.04. 2018	Connected Load (KW)	Connections serviced in FY 19[1]	Connected Load (KW)	Pending applications on 01.09. 2018	Connected Load (KW)
Commercial	204	1127	1372	7288	416	2524	540	2636	562	2885
Domestic	1450	6633	7767	33369	2567	11161	5446	19611	5716	19830
Agriculture	13	52	24	114	20	86	23	110	12	67
LT Industry	15	1188	27	948	42	2642	12	246	50	1851
HT Industry	1	153	3	757	3	451			1	170
EHV consumer	1	7149	1	7149					2	8500
Total	**1684**	**16301**	**9194**	**49625**	**3048**	**16864**	**6021**	**22604**	**6343**	**33304**

Commission's Analysis

The overall approach of the Commission for projecting the number of consumers, connected load and sales for FY 2018-19 and the upcoming Multi-Year Control Period is described below:

- The Base Year considered by the Petitioner is FY 2018-19 and the same is in line with the JERC MYT Regulations. The Commission has also considered FY 2018-19 as the Base Year for carrying out projections, though the values projected have been adjusted to reflect the growth rates approved by the Commission hereunder for respective categories.
- The Growth rates considered by the Petitioner for projecting number of consumers, load and sales are based primarily on historical CAGRs. The Commission has determined Growth rates separately for each consumer category based on past trends and other relevant parameters given below:
    - Year on Year (YoY) growth
    - CAGR (multiple periods)
    - Specific (per-consumer) consumption
    - Specific sales per kW of connected load
    - Pending applications for connections
    - Connections released / serviced cycle time
    - Energy efficiency measures

3.2.2 Category-wise analysis

The historical Year on Year growth and CAGR for number of consumers, load and sales is given in the following tables:

[1] Connections serviced for the first five months of FY 19 i.e. till August 2018

Table 12: Historical Year-on-Year growth and CAGR for Number of Consumers

Consumer Category	YoY Growth for Number of Consumers				CAGR			
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5 year	4 year	3 year	2 year
Domestic	5.25%	6.94%	2.28%	3.98%	4.60%	4.38%	3.13%	3.98%
OHOB	0.01%	0.00%	0.00%	-0.01%	0.00%	0.00%	0.00%	-0.01%
Commercial	3.59%	10.09%	0.80%	3.60%	4.47%	4.76%	2.19%	3.60%
Agriculture	0.57%	0.07%	0.67%	0.58%	0.47%	0.44%	0.63%	0.58%
Street lighting	0.75%	0.32%	0.39%	0.37%	0.46%	0.36%	0.38%	0.37%
LT Industrial + Water tank	1.34%	2.07%	0.92%	0.79%	1.28%	1.26%	0.85%	0.79%
HT-I	-5.07%	5.10%	1.39%	3.19%	1.08%	3.21%	2.28%	3.19%
HT-II	8.16%	0.00%	13.21%	1.67%	5.63%	4.80%	7.28%	1.67%
HT-III	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	3.94%	5.77%	1.68%	3.15%	3.62%	3.52%	2.41%	3.15%

Table 13: Historical Year-on-Year growth and CAGR for Connected Load

Consumer Category	YoY Growth for Connected Load				CAGR			
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5 year	4 year	3 year	2 year
Domestic	-3.52%	4.28%	4.61%	4.61%	2.43%	4.50%	4.61%	4.61%
OHOB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Commercial	2.53%	5.12%	7.13%	8.63%	5.83%	6.95%	7.88%	8.63%
Agriculture	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Street lighting	0.59%	0.45%	1.00%	1.01%	0.76%	0.82%	1.00%	1.01%
LT Industrial+ Water tank	1.34%	2.97%	1.97%	1.98%	2.06%	2.31%	1.98%	1.98%
HT-I	7.49%	3.17%	3.24%	3.30%	4.28%	3.24%	3.27%	3.30%
HT-II	23.88%	10.00%	10.00%	10.00%	13.32%	10.00 %	10.00%	10.00%
HT-III	15.45%	4.99%	4.99%	4.99%	7.51%	4.99%	4.99%	4.99%
Total	2.37%	3.91%	4.14%	4.32%	3.68%	4.12%	4.23%	4.32%

Table 14: Historical Year-on-Year growth and CAGR for Sales

Consumer Category	YoY Growth for Sales				CAGR			
	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5 year	4 year	3 year	2 year
Domestic	5.87%	6.26%	3.68%	3.35%	4.78%	4.42%	3.51%	3.35%
OHOB	-17.29%	0.00%	2.10%	0.29%	-4.07%	0.79%	1.19%	0.29%
Commercial	0.67%	8.66%	6.53%	2.60%	4.57%	5.90%	4.55%	2.60%
Agriculture	0.00%	0.00%	0.49%	0.58%	0.27%	0.36%	0.53%	0.58%
Street lighting	0.00%	0.00%	-6.78%	1.01%	-1.49%	-1.99%	-2.97%	1.01%
LT Industrial+ Water tank	-12.03%	3.07%	-6.99%	-2.65%	-4.81%	-2.28%	-4.85%	-2.65%
Temp LT	-39.41%	14.38%	14.29%	6.00%	-4.28%	11.48%	10.06%	6.00%
HT-I	-0.31%	1.91%	5.85%	-4.96%	0.55%	0.83%	0.30%	-4.96%
HT-II	14.74%	7.22%	3.38%	58.66%	19.19%	20.70%	28.07%	58.66%
HT-III	-2.16%	-16.15%	-3.37%	26.23%	0.02%	0.76%	10.44%	26.23%
Total	0.03%	1.34%	2.85%	3.34%	1.88%	2.51%	3.10%	3.34%

The historical data given above, along with other parameters, as applicable, have been used for category wise analysis as described below.

Domestic

Petitioner's submission

The Petitioner has considered the CAGR of last 5 years for sales growth (4.78%) and consumer growth (4.60%) for future projections. Though the growth rates observed in the last 3 years (CAGR of 3.51% and 3.13% for sales growth and consumer growth respectively) are comparatively lower, the Petitioner believes that increased urbanization and purchasing power will influence higher than expected sales growth, and Petitioner's efforts to provide last mile connectivity and 24x7 power supply will influence higher than expected consumer growth. For load growth, the Petitioner has considered the 3-year CAGR i.e. 4.61%.

Commission's analysis

The Commission observes that Petitioner has proposed a CAGR of 4.6% in number of consumers, which translates into addition of ~ 14,989 connections in FY 2018-19 and ~ 15,678 in FY 2019-20. The Commission has analysed the connections data in *Table 11* and observes that in FY 2017-18, the Petitioner could service only 7,767 connections for domestic category. The Commission also observes that in the 5 months from April to August of FY 2018-19, the Petitioner has added 5,446 connections and has a pendency of 5,716 connections. The Commission opines that given the Petitioner's historical pace of adding new connections, the Petitioner would at best be able to take care of the pendency of new connections, which is in line with the 3 year CAGR observed. Therefore, the Commission approves CAGR for last 3 years for projecting number of consumers.

The Commission has analysed the specific (per consumer) consumption and observes that the same has remained virtually stagnant (in the range of 2203 to 2233 units) over the past 3 years. Accordingly, the Commission opines that the primary driver for sales growth in domestic category would be growth in number of consumers. Therefore, the Commission is of the opinion that it is prudent to approve CAGR for last 3 years for sales growth, in line with consumer growth projections. The Commission agrees with Petitioner's submission for load growth projections and hence approves the CAGR for last 3 years. The growth rates approved by the Commission are as given below:

Table 15: Growth rates approved by the Commission for Domestic category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
Domestic	4.60%	3.13%	4.61%	4.61%	4.78%	3.51%

Hut Services / OHOB

Petitioner's submission

As the Petitioner has no plans to provide new OHOB connections, the Petitioner has not considered any growth in the number of consumers for the upcoming Control Period. However, the Petitioner has assumed that the consumption would continue to increase slightly based on the observed trends in the last 3 years (CAGR of 1.19%). For load growth, the Petitioner has considered the 3-year CAGR i.e. 0.0%.

Commission's analysis

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers, connected load and sales are consistent with the trends observed in the past data. Therefore, the Commission has approved the growth rates submitted by the Petitioner. The growth rates approved by the Commission are as given below:

Table 16: Growth rates approved by the Commission for OHOB category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
OHOB	0.00%	0.00%	0.00%	0.00%	1.19%	1.19%

Commercial

Petitioner's submission

The Petitioner has considered the 5-year CAGR for consumer growth and sales growth of 4.47% and 4.57% respectively. The rationale provided by the Petitioner for considering the above growth rates is the expected increase in tourism during the upcoming Control Period. For load growth, the Petitioner has considered the 3-year CAGR i.e. 7.88%.

Commission's analysis

The Commission is of the opinion that the 3-year CAGR is more representative of the historical trend in data due to considerable YoY sales growth slowdown observed in FY 2017-18. The Commission also observes that over this period of 3 years, the specific consumption has grown at 2.31% from 3832 (FY 2015-16) to 4010 (FY 2017-18) and the number of Consumers have grown at a CAGR of 2.19%. Since these trends over past 3 years seem to be more consistent than the 5-year trends, the Commission approves the 3-year CAGR for projecting growth in number of consumers, sales and load. The growth rates approved by the Commission are as given below:

Table 17: Growth rates approved by the Commission for Commercial category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
Commercial	4.47%	2.19%	7.88%	7.88%	4.57%	4.55%

Agriculture consumers

Petitioner's submission

The Petitioner expects the consumer growth, load growth and sales growth to remain stagnant in this category based on the trends observed in the past data. Therefore, the Petitioner has considered CAGR of 0.47% (5-year) and 0.27% (5-year) for consumer growth and sales growth respectively. For load growth, the Petitioner has considered the 3-year CAGR i.e. 0.0%.

Commission's analysis

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers, connected load and sales are consistent with the trends observed in the past data. Therefore, the Commission has approved the growth rates submitted by the Petitioner. The growth rates approved by the Commission are as given below:

Table 18: Growth rates approved by the Commission for Agriculture category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
Agriculture	0.47%	0.47%	0.00%	0.00%	0.27%	0.27%

Street lighting

Petitioner's submission

The Petitioner has considered moderate growth rate based on 5 year CAGR of 0.46% for projecting number of consumers. However, due to planned replacements of existing streetlights with LED lights in the near future, the Petitioner has assumed that there will be no further sales growth in the category for FY 2018-19 and the upcoming Control Period. For load growth, the Petitioner has considered the 3-year CAGR i.e. 1.0%.

Commission's analysis

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers, connected load and sales are consistent with the trends observed in the past data. Therefore, the Commission has approved the growth rates submitted by the Petitioner. The growth rates approved by the Commission are as given in the following table:

Table 19: Growth rates approved by the Commission for Street lighting category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
Street lighting	0.46%	0.46%	1.00%	1.00%	0.00%	0.00%

LT industries and water tank

Petitioner's submission

The Petitioner has considered 5 year CAGR (1.28%) for consumer growth. However, as the growth in the last 5 years has been on a downward trend in terms of sales, the Petitioner has considered a CAGR of 0.0% as per its overall approach. For load growth, the Petitioner has considered the 3-year CAGR i.e. 1.98%

Commission's analysis

As growth in number of consumers has been steadily slowing down in the last 3 years, the Commission believes that the 3-year CAGR of 0.85% is more representative of the trend in the past data. Furthermore, the Commission notes that the growth rate considered for sales is consistent with the Petitioner's overall approach of assuming a no growth scenario for future projections if negative growth rates are observed in the past data. With respect to the growth in connected load, the Commission opines that the 3-year CAGR considered by the Petitioner is consistent with past trends and hence approves the same. The growth rates approved by the Commission are as given below:

Table 20: Growth rates approved by the Commission for LT industries and water tanks category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
LT industries and water tanks	1.28%	0.85%	1.98%	1.98%	0.00%	0.00%

Temporary Supply

Petitioner's submission

The Petitioner has submitted that, as temporary connections do not follow any particular pattern, the sales have been projected at a 5-year CAGR of 10.08%.

Commission's analysis

The Commission agrees with the Petitioner that the temporary supply does not follow any particular trend. Considering the same, the growth rate for sales approved by the Commission is as given in the following table:

Table 21: Growth rates approved by the Commission for Temporary supply category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
Temporary supply	N/A	N/A	N/A	N/A	10.06%	10.06%

HT-1 (Industrial & Commercial)

Petitioner's submission

Due to optimistic macroeconomic outlook in the near future, the Petitioner has considered a normalised CAGR of 2.50% for sales growth despite low CAGR in the past. With regard to the consumer and load growth projections, the Petitioner has considered the 3 year CAGR of 2.28% and 3.27% respectively.

Commission's analysis

The Commission is of the opinion that the 3-year CAGR considered by the Petitioner for projecting consumer growth is consistent with the trends observed in the last 3 years. With respect to the growth in connected load, the Commission opines that the 3-year CAGR considered by the Petitioner is consistent with historical trends and hence approves the same. However, the Commission observes that over the past 3 years, sales per kW of connected load has been declining (CAGR of -2.88%). Based on sales per kW of connected load and load growth observed in the last 3 years, the sales growth translates to ~0.30%. Therefore, the Commission opines that 3-year CAGR of 0.30% for sales growth is more representative of past trends as against a normative 2.50% growth considered by the Petitioner. The growth rates approved by the Commission are as given below:

Table 22: Growth rates approved by the Commission for HT-1 category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
HT-1 (Industrial & Commercial)	2.28%	2.28%	3.27%	3.27%	2.50%	0.30%

HT-2 (State and Central Govt. Establishments)

Petitioner's submission

Due to expected growth in infrastructure development such as water works and sewage treatment plants, the Petitioner believes that the CAGR observed in the last 5 years for consumer growth and sales growth (5.63% and 19.19% respectively) will continue in the upcoming Control Period. For load growth projections, the Petitioner has considered the 3-year CAGR of 10.00%.

Commission's analysis

The Commission observes that the primary reason for ~19% growth in sales over the past 5 years is the significant jump of 59% in FY 2017-18 over FY 2016-17 (outlier). Furthermore, excluding this outlier, the CAGR for FY 2013-14 to FY 2016-17 works out to 8.34%. Therefore, the Commission opines that a normative growth rate of 10% should be a fair estimation of sales growth in the subsequent years, despite the expected growth in infrastructure development. Furthermore, based on the trends observed, the Commission approves 5-year CAGR of 5.63% for consumer growth. With respect to the growth in connected load, the Commission opines that the 3-year CAGR considered by the Petitioner is consistent with past trends and hence approves the same. The growth rates approved by the Commission are as given below:

Table 23: Growth rates approved by the Commission for HT-2 category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
HT-2 (State and Central Govt. Establishments)	5.63%	5.63%	10.00%	10.00%	19.19%	10.00%

HT-3 (Industrial Extra High Tension)

Petitioner's submission

Based on the historical trends, the Petitioner on a conservative approach has not considered any addition in number of consumers during the Control Period. However, the Petitioner has considered a nominal growth of 2.5% in sales for the upcoming Control Period. For load growth projections, the Petitioner has considered the 3-year CAGR of 4.99%.

Commission's analysis

As no new consumers were added to the category during the last 5 years, the Commission approves the 0% CAGR considered by the Petitioner for consumer growth. With respect to the growth in connected load, the Commission opines that the 3-year CAGR considered by the Petitioner is consistent with past trends and hence approves the same. However, the Commission observes that the sharp increase in sales per kW of connected load in FY 2017-18 (a 20.2% increase from FY 2016-17) is an outlier resulting in inflated 3-year CAGR for sales growth. Therefore, the Commission opines that the 5-year CAGR of 0.02% is more representative of the historical trend observed in sales. The growth rates approved by the Commission are as given in the following table:

Table 24: Growth rates approved by the Commission for HT-3 category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
HT-3 (Industrial Extra High Tension)	0.00%	0.00%	4.99%	4.99%	2.50%	0.02%

3.2.3 Projections of Number of Consumers approved by the Commission

The summary of the projections of number of consumers approved by the Commission for the upcoming Control Period based on CAGRs approved is given below:

Table 25: Consumer growth projections approved by the Commission for the upcoming Control Period

Number of Consumers	CAGR Approved	Revised Estimate	Approved Projections		
		Base Year	Control Period		
Consumer Category		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	3.13%	336,044	346,562	357,410	368,596
OHOB	0.00%	35,537	35,537	35,537	35,537
Commercial	2.19%	55,144	56,351	57,586	58,847
Agriculture	0.47%	6,973	7,005	7,038	7,071
Street lighting	0.46%	50,666	50,899	51,133	51,368
LT industrial + water tank	0.85%	6,725	6,782	6,839	6,898
HT-I	2.28%	463	474	485	496
HT-II	5.63%	64	68	72	76
HT-III	0.00%	7	7	7	7
Total		**491,623**	**503,685**	**516,107**	**528,896**

3.2.4 Projections of Connected Load approved by the Commission

The summary of the projections of connected load approved by the Commission for the upcoming Control Period based on CAGRs approved is given in the following table:

Table 26: Load growth projections approved by the Commission for the upcoming Control Period

Connected Load (kW)	CAGR Approved	Revised Estimate	Approved Projections		
		Base Year	Control Period		
Consumer Category		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	4.61%	554,648	580,218	606,966	634,947
OHOB	0.00%	2,843	2,843	2,843	2,843
Commercial	7.88%	128,476	138,600	149,522	161,304
Agriculture	0.00%	44,654	44,654	44,654	44,654
Street lighting	1.00%	6,180	6,242	6,304	6,367
LT industrial + water tank	1.98%	127,714	130,242	132,821	135,451
HT-I	3.27%	355,345	366,965	378,964	391,356
HT-II	10.00%	33,554	36,910	40,601	44,661
HT-III	4.99%	126,946	133,280	139,931	146,913
Total		**1,380,360**	**1,439,954**	**1,502,606**	**1,568,496**

3.2.5 Projections of Sales approved by the Commission

The summary of the projections of sales approved by the Commission for the upcoming Control Period based on CAGRs approved is given below:

Table 27: Sales growth projections approved by the Commission for the upcoming Control Period

Sales (MU)	CAGR Approved	Revised Estimate	Approved Projections		
		Base Year	Control Period		
Consumer Category		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	3.51%	748.67	774.95	802.15	830.30
OHOB	1.19%	10.36	10.49	10.61	10.74
Commercial	4.55%	226.26	236.55	247.31	258.57
Agriculture	0.27%	57.77	57.92	58.08	58.23
Street lighting	0.00%	24.48	24.48	24.48	24.48
LT industrial + water tank	0.00%	185.61	185.61	185.61	185.61
Temp LT	10.06%	9.33	10.27	11.31	12.44
HT-I	0.30%	900.03	902.73	905.44	908.16
HT-II	10.00%	108.25	119.08	130.98	144.08
HT-III	0.02%	326.97	327.03	327.10	327.16
Total		**2,597.72**	**2,649.10**	**2,703.06**	**2,759.77**

3.3 Intra-State Transmission and Distribution (T&D) loss

Petitioner's submission

The actual T&D losses incurred by the Petitioner in the last 3 years is as given below:

Table 28: Actual T&D losses (%)

FY 2015-16	FY 2016-17	FY 2017-18
13.67%	13.78%	13.75%

The Petitioner has submitted that due to constraints in mobilizing required capital funds in the existing Control Period and due to delay in acquiring necessary CEA approvals, the Petitioner was unable to carry out the schemes required to improve the transmission and distribution systems, and hence failed to meet the T&D targets approved by the Commission. Accordingly, for the upcoming Control Period, the Petitioner has proposed a T&D loss trajectory based on the actual T&D losses incurred in FY 2017-18.

The Petitioner further submits that the impact of the schemes related to improvements in transmission and distribution systems proposed for the upcoming Control Period will only be evident in the third Control Period.

The T&D loss trajectory proposed by the Petitioner for FY 2018-19 and the upcoming Control Period is as given below:

Table 29: T&D loss (%) trajectory proposed by the Petitioner for the upcoming Control Period

Base Year	Projections		
FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
13.00%	12.50%	12.00%	11.75%

Commission's analysis

The T&D losses approved by the Commission for the existing Control Period (FY 2016-17 to FY 2018-19) vis-à-vis T&D losses achieved by the Petitioner during the same period is given in the following table:

Table 30: T&D losses approved by the Commission for the existing Control Period vis-à-vis T&D losses achieved by the Petitioner

	T&D loss (%)	
	Approved	Actuals (A)/ Estimate (E)
FY 2016-17	11.50%	13.78% (A)
FY 2017-18	11.25%	13.75% (A)
FY 2018-19	11.00%	13.00% (E)

The Commission observes that the Petitioner did not meet the T&D loss targets in the existing Control Period and has already been penalized in FY 2016-17 (INR 26.99 Cr) for failing to do so. Further, Clause 6.1 of the JERC MYT Regulations states the following:

"*Provided further that the Commission may change the values for Base Year and consequently the trajectory of parameters for Control Period, considering the actual figures from audited accounts.*"

Accordingly, the Commission has set the T&D loss trajectory for the upcoming Control Period based on the actual T&D losses in FY 2016-17 and FY 2017-18 and the estimate provided by the Petitioner for FY 2018-19.

In respect of the T&D loss trajectory proposed by Petitioner for the upcoming Control Period, the Commission is of the opinion that that the proposed trajectory is not commensurate with the capital expenditure plan and capitalisation plan proposed by the Petitioner. The Commission observes that the CEA approvals for JICA loans are in place for the Intra-State transmission and distribution strengthening schemes that are planned by the Petitioner for the upcoming Control Period. Therefore, the Commission is of the opinion that the impact of the same would be reduced T&D losses during the last two years of the Control Period. Accordingly, the Commission has approved the Petitioner's submission of T&D loss for FY 2019-20, but has set a steeper trajectory of T&D losses for the subsequent years. The T&D loss trajectory approved by the Commission for the upcoming Control Period is given below:

Table 31: Intra-state T&D loss trajectory approved by the Commission for the upcoming Control Period

	FY 2019-20		FY 2020-21		FY 2021-22	
	Petitioner's submission	Approved by Commission	Petitioner's submission	Approved by Commission	Petitioner's submission	Approved by Commission
T&D loss trajectory (%)	12.50%	12.50%	12.00%	11.75%	11.75%	11.00%

3.4 Power Procurement Plan

3.4.1 Energy Requirement

Petitioner's submission

The Petitioner has submitted the projection of energy requirement at the periphery by grossing up the consumption projections in *Table 27* with distribution loss trajectory proposed by the Petitioner. The summary of the energy requirement as estimated by the Petitioner is as given below:

Table 32: Energy requirement as estimated by the Petitioner for the upcoming Control Period

Energy Requirement	Revised Estimate	Projected		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Total Sales within the UT (MU)	**2,644**	**2,733**	**2,842**	**2,960**
Loss (%)	13.00%	12.50%	12.00%	11.75%
Loss (MU)	395	390	388	394
Sales- UI/ Export to Exchange (MU)	-	-	-	-
Total Energy Requirement at UT Periphery (MU)	**3,039**	**3,124**	**3,230**	**3,354**
Transmission Losses (%)	4.07%	4.07%	4.07%	4.07%
Transmission Losses (MU)	129	133	137	142
Total (MU)	**3,168**	**3,256**	**3,367**	**3,496**

Commission's analysis

Based on the sales projections approved by the Commission in *Table 27* and the T&D losses approved by the Commission in *Table 31*, the energy requirement at UT periphery estimated by the Commission for the upcoming Control Period is given below:

Table 33: Energy requirement at UT periphery approved by the Commission

Particulars (MU)	Formula	Revised Estimate[2]	Approved		
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Sales	A	2597.72	2649.10	2703.06	2759.77
T&D losses (%)	B	13.00%	12.50%	11.75%	11.00%
Total energy requirement	**C=A/(1-B)**	**2985.89**	**3027.60**	**3062.96**	**3100.87**
Less: Own Generation	D	216.37	216.37	216.37	216.37
Total energy requirement at UT periphery	**E=C-D**	**2,769.52**	**2,811.23**	**2,846.59**	**2,884.50**
Less: Renewable Procurement	F	**-**	**71.61**	**69.50**	**198.69**
Total energy requirement at UT periphery from firm allocation	G=E-F	2,769.52	2,739.62	2,777.09	2,685.81
Transmission loss (%)	H	4.07%	4.07%	4.07%	4.07%
Total energy to be purchased from firm allocation	I=G/(1-H)	2887.10	2855.93	2895.00	2799.84
Add: Renewable Procurement	J	-	71.61	69.50	198.69
Total energy to be purchased	**K=I+J**	**2,887.10**	**2,927.54**	**2,964.49**	**2,998.52**

3.4.2 Power Purchase Quantum

Petitioner's submission

The Petitioner has made the following assumptions for projecting the quantum of power purchase for the upcoming Control Period:

- **Allocation from CGS:** The firm allocation and allocation from the unallocated quota from the central generating stations has been considered based on the notification of the Southern Region Power Committee vide SRPC Order No: SRPC/SE-1/4(REA)/2018/ dated 24.08.2018. The same share of allocation as per the SRPC Order has been assumed for all the years of the Control Period
- **Power purchase from new stations:** The Petitioner has envisaged purchase of power from two new generating stations for FY 2018-19 and the upcoming Control Period:
    - 57.24 MW (allocated + unallocated) share of allocation from NLC TS-1 from FY 2019-20 onwards, as the plant is expected to achieve COD in FY 2019-20
    - 150 MUs from TNEB at Karaikal for the Base Year FY 2018-19 only
- **Plant Load Factor (PLF):** The Petitioner has considered the PLF of stations as per SRPC Order dated 24.08.2018. The justification provided by the Petitioner is that the present scenario for the conventional power stations is very volatile and competitive, and hence the past data cannot be relied upon for the correct picture.
- **Auxiliary consumption:** The Petitioner has considered the auxiliary consumption of central generating stations specified in the SRPC Order dated 24.08.2018. For nuclear generation power plants, the auxiliary consumption has been assumed to be 10% for all the years of the Control Period
- **Inter-State transmission losses:** The Petitioner has considered the actual POWERGRID losses of 4.07% for the year FY 2017-18 and the entire Control Period without any changes. For PPCL and KSEB, no external losses have been considered as these are within the periphery of the licensee area

[2] The values for FY 2018-19 shown here are revised estimates made by the Commission, used only for the purpose of projections for the Control Period

The inputs and assumptions in the power purchase plan for each generating station is as given in *Table 34* and the quantum of power purchase proposed by the Petitioner for FY 2018-19 and the upcoming Control Period is as given in *Table 35*.

Commission's Analysis

The Commission has employed the following approach and assumptions to forecast the quantum of power procurement for the upcoming Control Period:

- **Allocation from CGS:** The firm allocation and allocation from the unallocated quota from the central generating stations has been considered based on SRPC's Regional Energy Account for the month of August, 2018 vide SRPC Order No: SRPC/SE-1/4(REA)/2018/ dated 20.09.2018 (against the REA for July 2018 as considered by the Petitioner). The same share of allocation as per the SRPC Order has been assumed for all the years of the Control Period
- **Power purchase from new stations:** The Commission has used the Petitioner's assumptions Petitioner as given below:
    - 57.24 MW (allocated + unallocated) share of allocation from NLC TS-1 from FY 2019-20 onwards, as the plant is expected to achieve COD in FY 2019-20
    - 150 MUs from TNEB at Karaikal for the Base Year FY 2018-19 only
- **Plant Load Factor (PLF):** The Commission has made the following assumptions with respect to PLF:
    - **NTPC, NLC and NPCIL plants:** The Commission initially considered the historical PLF trends for the said plants. However, due to vast disparities observed in the actual power procurement quantum in the previous years and the projected power procurement quantum observed in this approach, the Commission has considered the latest PLF as assumed by the Petitioner
    - **Other plants:** PLF assumed by the Petitioner
- **Auxiliary consumption:** The Commission has considered the assumptions made by the Petitioner as below:
    - Auxiliary consumption of central generating stations as specified in the SRPC Order dated 20.09.2018
    - For nuclear generation power plants, the auxiliary consumption has been assumed to be 10% for all the years of the Control Period
- **Inter-State transmission losses:** The Commission has considered the actual POWERGRID losses of FY 2017-18 i.e. 4.07% for the Base Year (FY 2017-18) and the entire Control Period without any changes, as per Petitioner's submission. However, for renewable sources and PPCL, the external losses have been considered as zero.

The quantum of power procurement projected by the Commission for the upcoming Control Period is given in *Table 36*.

Table 34: Inputs and assumptions for power purchase as per the Petitioner

Sr. No.	Source	Capacity (MW)	Firm allocation to Licensee		PLF (in %)	Gross Generation (MU)	Aux consumption (%)	Net Generation (MU)	Base Year (FY 2018-19) - MU
			%	MW					
A	**Central Sector Power Stations**								
I	**NTPC**	**5,600.00**		**175.91**	-			-	**1,150.03**
	KSTPS								
	RSTPS Stage I & II	2,100	3.49	73.33	81%	14,842.08	7%	13,850.63	483.66
	RSTPS Stage -III	500	3.72	18.61	89%	3,878.27	6%	3,655.27	136.01
	Talcher Stage- II	2,000	3.23	64.68	81%	14,156.51	6%	13,342.51	431.50
	Simhadri Stage- II	1,000	1.93	19.29	62%	5,408.77	5%	5,124.81	98.86
II	***NLC***	**3,390.00**		**176.23**		-		-	**952.80**
	NLC TPS II Stage I	630	12.11	76.31	78%	4,307.53	10%	3,876.78	469.56
	NLC TPS II Stage II	840	3.61	30.30	75%	5,526.45	10%	4,973.81	179.41
	NLC TPS I (Expn)	420	3.94	16.54	67%	2,453.00	9%	2,244.49	88.39
	NLC TPS II (Expn)	500	4.07	20.36	28%	1,224.12	10%	1,101.71	44.85
	NTPL	1,000	3.27	32.72	63%	5,561.46	6%	5,213.87	170.60
						-		-	
III	***NPCIL***	**3,320.00**		**117.79**		-		-	**595.67**
	MAPS	440	1.91	8.40	71%	2,720.90	10%	2,448.81	46.77
	KAPS Stage I	440	4.66	20.50	85%	3,283.18	10%	2,954.86	137.70
	KAPS Stage II	440	4.20	18.48	86%	3,322.80	10%	2,990.52	125.60
	Kudankulam U1	1,000	3.69	36.90	44%	3,828.12	10%	3,445.31	127.13
	Kudankulam U2	1,000	3.35	33.50	60%	5,256.00	10%	4,730.40	158.47
IV	***Others***	**2,500.00**		**87.57**		-		-	**307.08**
	TNEB (Karaikal)			-		-		-	150.00
	Vallur Thermal Project	1,500	2.02	30.33	63%	8,325.50	7%	7,768.53	157.08
	New NLC TS-I	1,000		57.24	50%	4,380.00	10%	3,942.00	0.00
V	**Renewable Sources**								
	Solar								
	Non-Solar								
B	**Within State Generations**								216.37
I	**PPCL**	32.50	100	33	80%	227.76	5%	216.37	216.37
	Total	**14,842.50**	-	**589.98**	-			-	**3,167.93**

Table 35: Power purchase plan proposed by the Petitioner for the upcoming Control Period

Sr. No.	Source	Power Purchase (MUs)			
		Base Year Projections	Projections		
		2018-19	2019-20	2020-21	2021-22
A	**Central Sector Power Stations**				
I	**NTPC**	**1,150.03**	**1,150.03**	**1,150.03**	**1,150.03**
	RSTPS Stage I & II	483.66	483.66	483.66	483.66
	RSTPS Stage -III	136.01	136.01	136.01	136.01
	Talcher Stage- II	431.50	431.50	431.50	431.50
	Simhadri Stage- II	98.86	98.86	98.86	98.86
		-			
II	***NLC***	**952.80**	**952.80**	**952.80**	**952.80**
	NLC TPS II Stage I	469.56	469.56	469.56	469.56
	NLC TPS II Stage II	179.41	179.41	179.41	179.41
	NLC TPS I (Expn)	88.39	88.39	88.39	88.39
	NLC TPS II (Expn)	44.85	44.85	44.85	44.85
	NTPL	170.60	170.60	170.60	170.60
		-			
III	***NPCIL***	**595.67**	**595.67**	**595.67**	**595.67**
	MAPS	46.77	46.77	46.77	46.77
	KAPS Stage I	137.70	137.70	137.70	137.70
	KAPS Stage II	125.60	125.60	125.60	125.60
	Kudankulam U1	127.13	127.13	127.13	127.13
	Kudankulam U2	158.47	158.47	158.47	158.47
IV	***Others***	**307.08**	**269.90**	**382.72**	**382.72**
	TNEB (Karaikal)	150.00	-	-	-
	Vallur Thermal Project	157.08	157.08	157.08	157.08
	New NLC TS-I	-	*112.82*	225.64	225.64
V	**Renewable Sources**	**-**	**71.61**	**69.50**	**198.69**
	Solar	-	71.61	69.50	100.00
	Non-Solar	-			98.69
B	**Within State Generations**	**216.37**	216.37	216.37	216.37
1	**PPCL**	**216.37**	216.37	216.37	216.37
		-			
	Total	**3,167.93**	**3,256.38**	**3,367.09**	**3,496.28**

Table 36: Power purchase plan approved by the Commission for the upcoming Control Period

Sr. No.	Source	Capacity (MW)	Weighted average allocation to Licensee		Avg. PLF (in %)	Gross Generation (MU)	Aux consumption (%)	Net Generation (MU)	Base Year (FY 2018-19)[3]	Approved Projections (MU)		
			%	MW						2019-20	2020-21	2021-22
A	**Central Sector Power Stations**								**3,039.73**	**3,074.15**	**3,184.86**	**3,314.05**
I	**NTPC**	**5,600.00**		**179.56**	**-**			**-**	**1,171.17**	**1,171.17**	**1,171.17**	**1,171.17**
	KSTPS											
	RSTPS Stage I & II	*2,100*	*3.54%*	*74.38*	*80.68%*	*525.71*	*6.68%*	*490.59*	490.59	490.59	490.59	490.59
	RSTPS Stage -III	*500*	*3.76%*	*18.79*	*88.55%*	*145.71*	*5.75%*	*137.33*	137.33	137.33	137.33	137.33
	Talcher Stage- II	*2,000*	*3.25%*	*65.00*	*80.80%*	*460.09*	*5.75%*	*433.63*	433.63	433.63	433.63	433.63
	Simhadri Stage- II	*1,000*	*2.14%*	*21.39*	*61.74%*	*115.69*	*5.25%*	*109.62*	109.62	109.62	109.62	109.62
II	***NLC***	**3,390.00**		**177.83**		-		-	**961.46**	**961.46**	**961.46**	**961.46**
	NLC TPS II Stage I	*630*	*12.11%*	*76.31*	*78.05%*	*521.77*	*10.00%*	*469.59*	469.59	469.59	469.59	469.59
	NLC TPS II Stage II	*840*	*3.61%*	*30.36*	*75.10%*	*199.73*	*10.00%*	*179.75*	179.75	179.75	179.75	179.75
	NLC TPS I (Expn)	*420*	*3.94%*	*16.54*	*66.67%*	*96.62*	*8.50%*	*88.41*	88.41	88.41	88.41	88.41
	NLC TPS II (Expn)	*500*	*4.06%*	*20.29*	*27.95%*	*49.67*	*10.00%*	*44.71*	44.71	44.71	44.71	44.71
	NTPL	*1,000*	*3.43%*	*34.33*	*63.49%*	*190.92*	*6.25%*	*178.99*	178.99	178.99	178.99	178.99
						-		-				
III	***NPCIL***	**3,320.00**		**117.79**		-		-	**595.67**	**595.67**	**595.67**	**595.67**
	MAPS	*440*	*1.91%*	*8.40*	*70.59%*	*51.97*	*10.00%*	*46.77*	46.77	46.77	46.77	46.77
	KAPS Stage I	*440*	*4.66%*	*20.50*	*85.18%*	*153.00*	*10.00%*	*137.70*	137.70	137.70	137.70	137.70
	KAPS Stage II	*440*	*4.20%*	*18.48*	*86.21%*	*139.56*	*10.00%*	*125.60*	125.60	125.60	125.60	125.60
	Kudankulam U1	*1,000*	*3.69%*	*36.90*	*43.70%*	*141.26*	*10.00%*	*127.13*	127.13	127.13	127.13	127.13
	Kudankulam U2	*1,000*	*3.35%*	*33.50*	*60.00%*	*176.08*	*10.00%*	*158.47*	158.47	158.47	158.47	158.47
IV	***Others***	**2,500.00**		**88.41**		-		-	**311.43**	**274.25**	**387.07**	**387.07**
	TNEB (Karaikal)			-		-		-	150.00	-	-	-

[3] The values for FY 2018-19 shown here are revised estimates made by the Commission, used only for the purpose of projections for the Control Period

Sr. No.	Source	Capacity (MW)	Weighted average allocation to Licensee		Avg. PLF (in %)	Gross Generation (MU)	Aux consumption (%)	Net Generation (MU)	Base Year (FY 2018-19)[3]	Approved Projections (MU)		
			%	MW						2019-20	2020-21	2021-22
	Vallur Thermal Project	*1,500*	*2.08%*	*31.17*	*63.36%*	*173.00*	*6.69%*	*161.43*	161.43	161.43	161.43	161.43
	New NLC TS-I	*1,000*		*57.24*	*50.00%*	*250.71*	*10.00%*	*225.64*	-	*112.82*	225.64	225.64
V	**Renewable Sources**									**71.61**	**69.50**	**198.69**
	Solar									71.61	69.50	100.00
	Non-Solar											98.69
	RECs											
B	**Within State Generations**								**216.37**	**216.37**	**216.37**	**216.37**
I	**PPCL**	32.50	100.00%	32.50	80.00%	*227.76*	*5%*	*216.37*	216.37	216.37	216.37	216.37
C	**Total**								**3,256.10**	**3,290.53**	**3,401.24**	**3,530.43**
D	**Total (excluding Renewable sources and PPCL)**								3,039.73	3,002.55	3,115.37	3,115.37
E	**POWERGRID Losses**											
	Transmission Loss (%)								4.07%	4.07%	4.07%	4.07%
	Transmission Loss (MU)								123.80	122.28	126.88	126.88
F	**Total power available at periphery from firm sources**								**2,915.93**	**2,880.26**	**2,988.49**	**2,988.49**
G	**Total Power available at periphery (including Renewable sources)**								**2,915.93**	**2,951.87**	**3,057.99**	**3,187.18**

3.4.3 Energy Balance

Petitioner's submission

The energy balance for FY 2018-19 and the upcoming Control Period as estimated by the Petitioner is as given below:

Table 37: Energy balance as estimated by Petitioner

Particulars (MU)	Estimated	Projections		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Total Energy Requirement at UT Periphery	3,038.91	3,123.75	3,229.96	3,353.89
Total Energy Available at UT Periphery	3,092.93	3,123.75	3,229.96	3,353.89
(Deficit)/Surplus	54.02	0.00	0.00	0.00

The Petitioner has proposed the sale of surplus power for FY 2018-19.

Commission's Analysis

The energy balance for the upcoming Control Period based on the Commission's analysis is given below:

Table 38: Energy balance projections approved by the Commission

Particulars (MU)	Revised Estimate[4]	Approved		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Energy Required at UT Periphery	2,769.52	2,811.23	2,846.59	2,884.50
Energy Available at UT Periphery (including Renewable sources)	2,915.93	2,951.87	3,057.99	3,187.18
(Deficit)/Surplus	**146.41**	**140.64**	**211.40**	**302.68**
Power purchase from Common Pool / UI / Traders / Exchange / Others	-	-	-	-
Sale of Surplus Power	**146.41**	**140.64**	**211.40**	**302.68**

3.4.4 Renewable Purchase Obligation (RPO)

Petitioner's submission

The Petitioner has considered the RPO targets for each year of the Control Period as per the Joint Electricity Regulatory Commission for State of Goa & Union Territories (Procurement of Renewable Energy), Third Amendment Regulations, 2016 notified on 22 August 2016. As per the aforementioned Regulations, if the Petitioner fails to reach the RPO targets for a year, the Petitioner has to compensate by purchasing Renewable Energy Certificates (REC) proportionate to the deficit in procurement.

The Petitioner plans to fulfil the RPO targets for FY 2018-19 through the purchase of REC certificates. For FY 2019-20, FY 2020-21 and FY 2021-22, the petitioner has planned to buy physical power of 71.61 MU, 69.50 MU and 198.69 MU respectively and the remaining from the REC.

The plan for meeting RPO submitted by the Petitioner is as given in the following table:

[4] The values for FY 2018-19 shown here are revised estimates made by the Commission, used only for the purpose of projections for the Control Period

Table 39: RPO plan proposed by the Petitioner for the upcoming Control Period

Sl. No.	Description	Unit	Base Year (RE)		Projections					
			FY 2018-19		FY 2019-20		FY 2020-21		FY 2021-22	
			Physical	REC	Physical	REC	Physical	REC	Physical	REC
1	Sales Within State	MUs	2,643.85		2,733.29		2,842.36		2,959.80	
2	RPO Obligation	%	**9.00%**		**11.50%**		**14.10%**		**17.00%**	
	- Solar	%	3.60%		4.70%		6.10%		8.00%	
	- Non Solar	%	5.40%		6.80%		8.00%		9.00%	
3	RPO Obligation	MUs	**237.95**		**314.33**		**400.77**		**503.17**	
	- Solar	MUs	95.18		128.46		173.78		236.78	
	- Non Solar	MUs	142.77		185.86		227.39		266.38	
4	RPO Purchase	MUs								
	- Solar	MUs	**0.00**	**237.95**	**71.61**	**342.72**	**69.50**	**331.28**	**100.00**	**304.48**
	- Non Solar	MUs	**0.00**		**0.00**		**0.00**		**98.69**	

Commission's analysis

The Commission expects that the Petitioner to make all efforts in earnest to increase procurement from solar and non-solar sources. Furthermore, actual compliance in respect of the pending RPO would be reviewed at the time of true up of the respective years and supporting details such as purchase of RECs, bills from solar/non-solar plants for the respective years must be submitted during the MYT filing. However, the Commission acknowledges the efforts planned to procure more renewables for FY 2020-21 and FY 2021-22. In view of the sales projections approved by the Commission in section 3.2.5, the requirements of procurement from renewable sources in order to be compliant with RPO targets are given in the table below:

Table 40: RPO plan approved by the Commission

Description	Revised Estimate[5]	Approved		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Sales within State (MU)	2597.72	2649.10	2703.06	2759.77
RPO Target (%)	**9.00%**	**11.50%**	**14.10%**	**17.00%**
Solar	3.60%	4.70%	6.10%	8.00%
Non-Solar	5.40%	6.80%	8.00%	9.00%
RPO Target (MU)	**233.80**	**304.65**	**381.13**	**469.16**
Solar	93.52	124.51	164.89	220.78
Non-Solar	140.28	180.14	216.25	248.38
RPO Compliance (Procurement and own generation)	**-**	**71.61**	**69.50**	**198.69**
Solar	-	71.61	69.50	100.00
Non-Solar	-	-	-	98.69
RPO Compliance (REC certificate purchase)	**233.80**	**233.04**	**311.64**	**270.47**
Solar	93.52	52.90	95.39	120.78
Non-Solar	140.28	180.14	216.25	149.69

[5] The values for FY 2018-19 shown here are revised estimates made by the Commission, used only for the purpose of projections for the Control Period

3.5 Capital Investment Plan

3.5.1 Details of capital expenditure and capitalisation

Summary of scheme wise capital expenditure and capitalisation

Petitioner's submission

The Petitioner has proposed various Transmission, Distribution & Generation schemes for the upcoming Control Period. The summary of actual capital expenditure (FY 2016 – 17 & FY 2017 – 18), estimated capital expenditure (FY 2018 – 19) and projections for the upcoming Control Period (FY 2019 – 22) is given below:

Table 41: Capital expenditure plan proposed by the Petitioner for the upcoming Control Period

Sr. No.	Particulars	Actuals (INR Cr)		Estimated (INR Cr)	Projections (In INR Cr)		
		FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
A	**Transmission Schemes**						
1	Establishment of New Substations		10.34	11.33	9.85	38.03	23.86
2	Augmentation of System Capacity			6.87	11.73	6.86	6.86
3	Renovation and Modernization Works of Existing Capacity				4.76	14.30	17.53
4	Replacement of Capacitor Banks				4.00		
	Land acquisition						
5	Erection/ establishment/ upgradation of 230kV and 110kV Substations		2.23		85.00	69.44	58.42
	Total Transmission		**12.57**	**18.20**	**115.34**	**128.63**	**106.67**
B	**Distribution Schemes**						
1	R-APDRP Part-A Works			4.16			
2	R-APDRP Part-B Works			32.15	9.73		
3	System Strengthening Schemes				5.52	97.47	95.51
4	Normal Development Schemes		16.85	22.42	15.00	15.00	15.00
5	Rural Electrification (BNP)[6]						
6	100% Metering Programme[6]						
7	Conversion of HT Overhead lines into UG cables[6]						
8	Reliable communication			1.77	4.00	1.60	
9	IPDS			11.00	10.65		
10	DDUGJY			10.00	10.15		
11	PSDF			7.88	10.06		
	Total Distribution		**16.85**	**89.38**	**65.11**	**114.07**	**110.51**
C	**Generation**						
1	Solar Power Generation					42.63	77.71
A+B+C	**Total Capital expenditure**	**0.00**	**29.42**	**107.58**	**180.45**	**285.33**	**294.89**

[6] Capital expenditure included in Normal Development Schemes

The summary of actual capitalisation (FY 2016 – 17 & FY 2017 – 18), estimated capitalisation (FY 2018 – 19) and projections for the upcoming Control Period (FY 2019 – 22) is given below:

Table 42: Proposed capitalisation plan for the upcoming Control Period

Sr. No.	Particulars	Actuals (INR Cr)		Projections (INR Cr)			
		FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
A	**Transmission Schemes**						
1	Establishment of New Substations			51.50			19.71
2	Augmentation of System Capacity				11.73		13.72
3	Renovation and Modernization Works of Existing Capacity						30.52
4	Replacement of Capacitor Banks				4.04		
	Land acquisition						
5	Erection/ establishment/ upgradation of 230kV and 110kV Substations	3.21			6.49	40.02	140.21
	Total Transmission	3.21	-	51.50	22.26	40.02	204.16
B	**Distribution Schemes**						
1	R-APDRP Part-A Works			8.32			
2	R-APDRP Part-B Works	6.71	16.79	49.45	9.83		
3	System Strengthening Schemes				5.52	48.74	96.50
4	Normal Development Schemes	5.33		11.71	25.00	15.00	15.00
5	Rural Electrification (BNP)						
6	100% Metering Programme						
7	Conversion of HT Overhead lines into UG cables						
8	Reliable communication			0.89	2.00	0.80	
9	IPDS			4.00	4.66		
10	DDUGJY			4.00	4.06		
11	PSDF			7.02	6.17		
	Total Distribution	12.04	16.79	85.39	57.24	64.54	111.50
C	**Generation**						
1	Solar Power Generation					16.05	
A+B+C	**Total Capitalization**	**15.25**	**16.79**	**136.89**	**79.50**	**120.61**	**315.66**

The Petitioner also submits that the majority of capital expenditure would be allocated towards establishment of new substations and system strengthening schemes under R-APDRP, IPDS, DDUGJY and PSDF. In addition, significant amount of capital expenditure would also be allocated towards renovation and modernization / augmentation of system capacity. The Petitioner also claims that the proposed capital expenditure would be helpful to achieve the loss targets set by the Petitioner in its distribution loss trajectory and to meet any additional load surging due to increase in demand.

Commission's analysis

The Commission observes that Petitioner is proposing a generation capital expenditure of INR 120.34 Cr and Capitalisation of INR 16.05 Cr for the upcoming Control Period. The Commission disallows such capital expenditure and capitalisation for the purpose of determination of Annual Revenue Requirements components (Depreciation, Interest on Loan and Return on Equity) for the upcoming Control Period since Petitioner is a Licensee for Transmission and Distribution of electricity. The Commission also directs the Petitioner to file a separate Petition for determination of tariff and hereafter separate accounts for this business.

The Commission has analysed actual achievement of capital expenditure and capitalisation of the Petitioner vis-à-vis the same approved in the previous Business Plan Order for FY 2016-17 and FY 2017-18 as given below:

Table 43: Capital expenditure achieved by the Petitioner vis-à-vis approved by the Commission

Particulars	FY 2016-17		FY 2017-18		Total		
	Approved	Actual	Approved	Actual	Approved	Actual	% Achievement
Capital Expenditure (INR Cr)	80.56	-	206.53	29.42	287.09	29.42	10%

Table 44: Capitalisation achieved by the Petitioner vis-à-vis approved by the Commission

Particulars	FY 2015-16		FY 2016-17		FY 2017-18		Total		
	Approved (APR)	Actual	Approved (MYT)	Actual	Approved (MYT)	Actual	Approved	Actual	% Ach
Capitalisation (INR Cr)	63.29	26.94	90.53	15.25	156.14	16.79	309.96	58.98	19%

The Commission observes that the Petitioner has achieved only ~ 10% of approved capital expenditure for FY 2016 – 17 to FY 2017 – 18 and ~19% of approved capitalisation for FY 2015 – 16 to FY 2017 – 18. The Commission observes that the Petitioner has relied on reasons such as lack of necessary approvals from CEA to acquire funding. Further, provision 8.5 (f) of the JERC MYT Regulations states the following:

"The Licensee shall submit a report for every quarter detailing the progress of the capital expenditure and capitalisation undertaken against that proposed in the Capital Investment Plan, on or before the last Day of the month succeeding the respective quarter for review by the Commission."

The Commission observes that the Petitioner has not informed the Commission regarding the execution and completion of the schemes undertaken by it in the existing Control Period on a quarterly basis. Accordingly, if the Petitioner consistently fails to meet the approved capital expenditure and capitalisation during each quarter or if the Petitioner fails to provide the above reports on time, the Commission would be constrained to reduce the approved capital expenditure and capitalisation. The Commission opines that Petitioner should do all efforts to ensure that it informs the Commission about the status of each scheme on a quarterly basis.

<u>Overall approach of the Commission</u>

For the base year of FY 2018 – 19, the Commission has compared the capital expenditure and capitalisation estimated by the Petitioner with that approved by the Commission vide its Tariff Order dated 28 March 2018. Any discrepancies in the scheme wise estimated capital expenditure and capitalisation vis-à-vis that approved for FY 2018 – 19 have been factored in while determining the capital expenditure for the Control Period. The capital expenditure and capitalisation approved by the Commission vide its Tariff Order dated 28 March 2018 for FY 2018 – 19 is given in the following table:

Table 45: Capital expenditure and capitalisation approved by the Commission for FY 2018-19 in its Tariff Order dated 28 March 2018

Particulars	Capital Expenditure (INR Cr)	Capitalisation (INR Cr)
Plan Schemes	46.64	17.33
R-APDRP Project	5.00	16.67
DDUGJY & IPDS	16.67	12.00
Total	**68.31**	**54.31**

For the upcoming Control Period, the Commission has compared capital expenditure and capitalisation proposed by the Petitioner with CEA approvals, DPRs and other documents submitted by the Petitioner along with the Business Plan Petition and replies to Deficiency Notes. Based on the Petitioner's submissions and the overall approach discussed herein, the scheme wise analysis of proposed capital expenditure plan by the Commission is as given in subsequent sections.

1. R-APDRP Scheme

Petitioner's Submission

This is a centrally sponsored scheme, with the Power Finance Corporation (PFC) nominated as the nodal agency to make the above program operational. The benefits envisaged by the Petitioner are as below:

- Actual demonstrable performance in loss reduction
- Establishment of reliable and automated systems for sustained collection of accurate base line data
- Adoption of information technology in the areas of accounting and auditing which will enable objective evaluation of the program before and after implementation

The project is being carried out in two parts - PART A will cover preparation of base-line data for the project area covering consumer indexing, GIS mapping, metering of distribution transformers and feeders and automatic data logging for all distribution transformers and feeders. It will also include adoption of IT applications for meter reading, billing and collection, energy accounting and auditing. PART B covers renovation, modernisation and strengthening of 11kV Sub Station and distribution systems.

Present Status of the Programme:

- Survey of consumer indexing, Preparation of Design document for installation of hardware and peripherals, Finalisation of Network Service Provider, Supply of Hardware were completed
- Currently, the scheme is stalled due to litigation between M/s Navayuga, ITIA and TANGEDCO
- The time line for completion of the project has been extended up to 31 December 2018 for R-APDRP (Part-A) and up to March 2019 for R-APDRP (Part-B)

The Petitioner in its reply to the Commission's Deficiency Note has submitted the following additional details:

- Due to the ongoing litigation with respect to the upgradation of Billing Software (a component of R-APDRP Part A works) with the implementing agency, the Petitioner has decided to entrust the implementation with a different agency i.e. M/s National Informatics Centre, Puducherry. The Petitioner estimates that the minimum period for development of new billing software would be 18 months
- The SCADA DMS covered under R–APDRP Part A is in the final stage of completion
- With respect to R-APDRP Part B scheme, replacement of 86 oil switches into SF6 Ring Main Units (RMU) under this scheme has been completed and a tender has already been floated for replacement of other 125 oil switches

Capital expenditure proposed by the Petitioner for the above scheme is as given in the following table:

Table 46: Capital expenditure proposed by the Petitioner for R-APDRP schemes

Scheme(s)	Projections (INR Cr)			
	FY 2018-19 (RE)	FY 2019-20	FY 2020-21	FY 2021-22
R-APDRP Part-A Works	4.16		-	-
R-APDRP Part-B Works	32.15	9.73	-	-
Total	**36.31**	**9.73**	**-**	**-**

Capitalisation proposed by the Petitioner for the above scheme is as given below:

Table 47: Capitalisation proposed by the Petitioner for R-APDRP schemes

Scheme(s)	Projections (INR Cr)			
	FY 2018-19 (RE)	FY 2019-20	FY 2020-21	FY 2021-22
R-APDRP Part-A Works	8.32	-	-	-
R-APDRP Part-B Works	49.45	9.83	-	-
Total	**57.77**	**9.83**	**-**	**-**

Commission's Analysis

The capital expenditure and capitalisation approved by the Commission for FY 2018-19 with respect to R-APDRP schemes is INR 5 Cr and INR 16.67 Cr respectively (as shown in *Table 45*). However, the Petitioner has proposed total capital expenditure of INR 36.31 Cr and total capitalisation of INR 57.77 Cr respectively for FY 2018-19, which is higher than that approved by the Commission vide its Tariff Order dated 28 March 2018. Accordingly, the Commission has considered INR 5 Cr of capital expenditure and INR 16.67 Cr of capitalisation for FY 2018-19. The balance capital expenditure and capitalisation have been adjusted in the subsequent years as explained below.

<u>R-APDRP Part A works</u>

With respect to R-APDRP Part A works (capital expenditure INR 4.16 Cr for FY 2018 – 19), the Commission notes that the SCADA DMS is in the final stage of completion. The Commission also notes that the upgradation of billing software has been delayed due to litigation between M/s Navayuga and TANGEDCO. The issue is being addressed by the Petitioner by ordering for development of new software on M/S National Informatics Centre, Puducherry for INR 0.94 Cr which is likely to be completed in 18 months (i.e. by end of FY 2019-20). Accordingly, the Commission has considered capital expenditure of INR 3.22 Cr for FY 2018-19 and approves the balance INR 0.94 Cr for FY 2019-20.

As regards the capitalisation of INR 8.32 Cr proposed by the Petitioner for FY 2018 – 19, the Commission observes that capital expenditure of INR 4.16 Cr was done till FY 2014 – 15 (Business Plan Order FY 2016 – 19) and balance INR 4.16 Cr would be completed only by end of FY 2019 – 20 (as discussed above). The Commission therefore approves capitalisation of INR 8.32 Cr in FY 2020-21 as against the same amount proposed in FY 2018-19 by the Petitioner for R-APDRP Part A.

<u>R-APDRP Part B works</u>

With respect to R-APDRP Part B works, the Commission notes that till date, replacement of 86 oil switches with SF6 Ring Main Units (RMU) has been carried out and further replacement of 125 oil switches would be done in the near future.

The Commission had considered INR 5 Cr for both the schemes combined in its Tariff Order dated 28 March 2018 out of which INR 3.22 Cr has been considered in Part A (discussed above) for FY 2018 – 19. Therefore, the Commission has considered capital expenditure of INR 1.78 Cr for Part B for FY 2018-19. Based on the total scheme cost of ~ INR 83 Cr, the balance capital expenditure of INR 40.10 Cr has been approved for FY 2019-20.

As regards the capitalisation of INR 49.45 Cr proposed by the Petitioner for FY 2018 – 19 the Commission had approved INR 16.67 Cr in its Tariff Order dated 28 March 2018. The Commission also observes that actual capitalisation of INR 23.5 Cr was completed till FY 2017 – 18. Therefore, out of ~ INR 83 Cr scheme capital cost, INR 40.17 Cr of capitalisation would be done till FY 2018 – 19. Consequently, the balance remaining for upcoming Control Period would be INR 42.61 Cr. The Commission therefore approves capitalisation of INR 42.61 Cr in FY 2019 – 20 for R-APDRP Part B.

The summary of capital expenditure and capitalisation approved for the upcoming Control Period is given below:

Table 48: Summary of capital expenditure approved for R-APDRP Schemes

Scheme(s)	Actuals (INR Cr)				Approved in TO[7]	Approved (INR Cr)			
	2014-15[8]	FY 2015-16[9]	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	Total
R-APDRP Part-A Works	4.167	-	-	-	3.22	0.94	-	-	0.94
R-APDRP Part-B Works	12.71	28.19	-	-	1.78	40.10	-	-	40.10
Total	**16.877**	**28.19**	**-**	**-**	**5.00**	**41.04**	**-**	**-**	**41.04**

Table 49: Summary of capitalisation approved for R-APDRP Schemes

Scheme(s)	Actuals (INR Cr)		Approved in TO[10]	Approved (INR Cr)			
	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	Total
R-APDRP Part-A Works	-	-	-	-	8.32	-	8.32
R-APDRP Part-B Works	6.71	16.79	16.67	42.61	-	-	42.61
Total	**6.71**	**16.79**	**16.67**	**42.61**	**8.32**	**-**	**50.93**

Therefore, the Commission approves a total capital expenditure of INR 41.04 Cr and total capitalisation of INR 50.93 Cr for the upcoming Control Period for R-APDRP Part A & Part B schemes.

2. Japan International Cooperation Agency (JICA) funded schemes

Petitioner's Submission

The Petitioner is planning on availing loan from JICA for upgrading / carrying out significant improvement in the transmission and distribution network. The summary of proposed capital expenditure is detailed list of projects is as given below. The detailed list of JICA funded schemes has been given in the Annexure to this Order.

Table 50: Summary of capital expenditure under JICA Loans for the upcoming Control Period

Sr. No.	Particulars	Projections (In INR Crores)		
		FY 2019-20	FY 2020-21	FY 2021-22
A	**Transmission Schemes**			
1	Establishment of New Substations	9.85	38.03	23.86
2	Augmentation of System Capacity	11.73	6.86	6.86

[7] Based on the total capital expenditure approved in Tariff Order dated 28 March 2018
[8] Figures obtained from Approval Order for the existing Control Period
[9] Worked out by the Commission from data available for other years (apart from FY 2015-16). For FY 2015-16, a detailed break up of capital expenditure was not available
[10] Based on the total capitalisation approved in Tariff Order dated 28 March 2018

Sr. No.	Particulars	Projections (In INR Crores)		
		FY 2019-20	FY 2020-21	FY 2021-22
3	Renovation and Modernization Works of Existing Capacity	4.76	14.30	17.53
4	Replacement of Capacitor Banks	4.00		
	Land acquisition			
5	Erection/ establishment/ upgradation of 230kV and 110kV Substations	85.00	69.44	58.42
	Total Transmission	**116.55**	**128.63**	**106.67**
B	**Distribution Schemes**			
1	System Strengthening Schemes	5.52	97.47	95.51
	Total Distribution	**5.52**	**97.47**	**95.51**
C	**Generation**			
1	Solar Power Generation		42.63	77.71
	Total Generation		**42.63**	**77.71**
A+B+C	**Total Capital expenditure**	**122.07**	**268.73**	**279.88**

The summary of capitalisation proposed by the Petitioner for the upcoming Control Period is given below:

Table 51: Summary of capitalisation proposed by the Petitioner for schemes under JICA loans

Sr. No.	Particulars	Projections (INR Cr)		
		FY 2019-20	FY 2020-21	FY 2021-22
A	**Transmission Schemes**			
1	Establishment of New Substations			19.71
2	Augmentation of System Capacity	11.73		13.72
3	Renovation and Mordenization Works of Existing Capacity			30.52
4	Replacement of Capacitor Banks	4.04		
	Land acquisition			
5	Erection/ establishment/ upgradation of 230kV and 110kV Substations	6.49	40.02	140.21
	Total Transmission	22.26	40.02	204.16
B	**Distribution Schemes**			
1	System Strengthening Schemes	5.52	48.74	96.50
	Total Distribution			
C	**Generation**			
1	Solar Power Generation		16.05	
	Total Generation		**16.05**	
A+B+C	**Total Capitalization**	**27.78**	**104.81**	**300.66**

The benefits envisaged by the Petitioner via above schemes are:

- T&D loss reduction and thereby ensuring financial viability of operation.
- Meet the load growth due to strengthening of the system.
- Quality and reliable power supply to the consumers at affordable cost.
- Efficient and transparent billing system.

- Better services.
- Procurement of renewable power without significant financial burden

The Petitioner has also obtained the CEA approval for INR 377.413 Cr of transmission schemes, INR 369.125 Cr of distribution strengthening schemes and INR 236.90 Cr for solar power distribution schemes, amounting to a total of INR 983.43 Cr until FY 2023-24.

Commission's Analysis

The Commission notes that the Petitioner had proposed the same scheme during its previous Business Plan Petition as well, but could not make any progress on account of lack of CEA approval of the same. The Commission notes that the Petitioner has now provided the necessary approvals from CEA for the above schemes. However, as discussed in beginning of this Section 3.5.1, capital expenditure for Generation has not been considered. As regards the transmission and distribution schemes, in view of CEA's approval, the Commission approves the capital expenditure and capitalisation as projected by the Petitioner, subject to submission of quarterly updates as per Clause 8.5 (f) of the JERC MYT Regulations.

Table 52: Capital expenditure approved by the Commission for the upcoming Control Period for schemes under JICA loans

Sr. No.	Particulars	Approved (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
A	Transmission Schemes	116.55	128.63	106.67	351.85
B	Distribution Schemes	5.52	97.47	95.51	198.50
A+B	**Total Capital expenditure**	**122.07**	**226.1**	**202.18**	**550.35**

Table 53: Capitalisation approved by the Commission for the upcoming Control Period for schemes under JICA loans

Sr. No.	Particulars	Approved (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
A	**Transmission Schemes**	22.26	40.02	204.16	266.44
B	**Distribution Schemes**	5.52	48.74	96.50	150.76
A+B	Total	**27.78**	**88.76**	**300.66**	**417.20**

Therefore, the Commission approves a total capital expenditure of INR 550.35 Cr and total capitalisation of INR 417.20 Cr for the upcoming Control Period for schemes under JICA loans.

<u>3. Integrated Power Development Scheme (IPDS) & Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) Schemes</u>

Petitioner's Submission

<u>IPDS Schemes</u>

The Petitioner has submitted that the scheme will be executed within a period of 24 months from date of LoA by utility. The Petitioner has also submitted that a grant of 60% (maximum of 75% on achievement of milestone) can be availed from GoI, and PFC has been appointed as the nodal agency for the scheme.

The benefits envisaged by the Petitioner are:

- Reduction in AT&C losses
- Line loss reduction
- Ensuring better accounting
- Better voltage profile
- Decrease in DT failure
- Curbing the theft/ pilferage and unaccounted usage

Present status:

- The administrative approval of Government of Puducherry has been obtained based on the approval accorded by Ministry of Power
- Tenders have been floated for various works under this scheme and entire works are proposed to be completed in the year FY 2019-20

The Petitioner in its reply to the Commission's Deficiency Note has also submitted that the total cost of the scheme would be INR 21.63 Cr.

The summary of capital expenditure and capitalisation proposed by the Petitioner is as given below:

Table 54: Summary of capital expenditure and capitalisation proposed by the Petitioner for IPDS

Proposed Capital Expenditure (INR Cr)				Proposed Capitalisation (INR Cr)			
FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
11.00	10.65	-	-	4.00	4.66		

DDUGJY Schemes

Brief overview of the project:

- Project to be implemented in UT of Puducherry with a total proposed project cost of INR 20.15 Cr
- Out of the total project cost, 75% of the project cost will be received as grant from the Govt. of India and the balance 25% amount will be availed as loan from REC
- Under this scheme, various distribution transformers and associated spur lines, LT overhead lines and 22 kV and 11 kV feeders are proposed for system strengthening

Present status of the project:

- The administrative approval of Government of Puducherry has been obtained based on the approval accorded by Ministry of Power
- Tenders have been floated for various works under this scheme and entire works are proposed to be completed in the year FY 2019-20

The Petitioner in its reply to the Commission's Deficiency Note has also submitted the DPR for DDUGJY. The total cost of the scheme estimated in the DPR is INR 41.77 Cr.

The summary of capital expenditure and capitalisation proposed by the Petitioner is as given below:

Table 55: Summary of capital expenditure and capitalisation proposed by the Petitioner for DDUGJY

Proposed Capital Expenditure (INR Cr)				Proposed Capitalisation (INR Cr)			
FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
10.00	10.15	-	-	4.00	4.06		

Commission's Analysis

The Commission observes from DPRs of IPDS scheme that the total capital cost is INR 21.63 Cr and that for DDUGJY is INR 41.78 Cr. However, the Commission also observes that Petitioner has considered a capital expenditure of only INR 20.15 Cr for DDUGJY. Therefore, the Commission has analysed the schemes based on project capital costs as INR 21.65 Cr for IPDS and 20.15 Cr for DDUGJY (total INR 41.80 Cr).

In respect of DDUGJY and IPDS, the capital expenditure and capitalisation approved by the Commission for FY 2018-19 is INR 16.67 Cr and INR 12 Cr respectively (as shown in *Table 45*). However, the Petitioner has proposed total capital expenditure of INR 21 Cr and total capitalisation of INR 8 Cr for FY 2018-19.

Since the capital expenditure proposed for FY 2018 – 19 is higher than that approved by the Commission vide its Tariff Order dated 28 March 2018, the Commission has considered INR 16.67 Cr of capital expenditure for FY 2018 – 19 by proportionally distributing the amount between DDUGJY & IPDS schemes. Out of the total capital cost of INR 41.80 Cr, the Commission therefore approves balance amount of INR 25.13 Cr as capital expenditure for the upcoming Control Period.

With respect to the capitalisation proposed, the Commission observes that the capitalisation proposed by the Petitioner is less than the proposed capital expenditure for the said schemes. The Commission also observes that the proposed capitalisation is less than the amount approved by the Commission for FY 2018-19. The Commission has approved INR 8.72 Cr as capitalisation for the upcoming Control Period, as submitted by the Petitioner.

The summary of capital expenditure and capitalisation approved for the upcoming Control Period is given below:

Table 56: Summary of capital expenditure approved for DDUGJY and IPDS

Scheme(s)	Approved in TO[11]	Approved (INR Cr)			
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	Total
DDUGJY	7.94	12.21	-	-	12.21
IPDS	8.73	12.92	-	-	12.92
Total	**16.67**	**25.13**			**25.13**

Table 57: Summary of capitalisation approved for DDUGJY and IPDS

Scheme(s)	Revised Estimate[12]	Approved (INR Cr)			
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	Total
DDUGJY	4.00	4.06	-	-	4.06
IPDS	4.00	4.66	-	-	4.66
Total	**8.00**	**8.72**			**8.72**

Therefore, the Commission approves a total capital expenditure of INR 25.13 Cr and total capitalisation of INR 8.72 Cr for the upcoming Control Period for DDUGJY & IPDS schemes.

4. Other Schemes

Petitioner's Submission

PSDF Schemes

The Petitioner has submitted that Renovation and Modernisation of indoor and outdoor equipment in Villianur and Bahour 230/110KV Auto Sub Stations at an estimated cost of INR 10.56 Crores is being executed under Power System Development Fund of Government of India. Out of sanctioned project cost, Rs.9.50 Crores is grant from GoI and balance amount will be met from the Puducherry State Plan Funds.

Present Status of the project:

- The Battery Bank in the sub-station have been installed during 2017-18
- Tenders for erection of indoor equipment for an amount of Rs.4.474 Crores had been finalized and approval of the Government of Puducherry to be accorded in July 2018. Work to be completed during 2018-19
- Tenders for erection of outdoor equipment for an estimated cost of Rs.5.83 Crores have been floated. Work to be completed during 2019

The summary of the proposed capital expenditure and capitalisation is as given in the following table:

[11] Tariff Order dated 28 March 2018
[12] The values for FY 2018-19 shown here are revised estimates made by the Commission, used only for the purpose of projections for the Control Period

Table 58: Summary of capital expenditure and capitalisation proposed by the Petitioner for Schemes under PSDF

Proposed Capital Expenditure (INR Cr)				Proposed Capitalisation (INR Cr)			
FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
7.88	10.06	-	-	7.02	6.17		

Other Schemes (excluding PSDF Schemes)

The summary of capital expenditure and capitalisation proposed by the Petitioner is given below:

Table 59: Summary of capital expenditure and capitalisation proposed by the Petitioner for Other Schemes (excluding PSDF Schemes)

Particulars	Proposed Capital Expenditure (INR Cr)				Proposed Capitalisation (INR Cr)			
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Establishment of New Substations	11.33	10.06	-	-	51.50	-	-	-
Augmentation of System Capacity	6.87	-	-	-	-	-	-	-
Normal Development Schemes	22.42	15.00	15.00	15.00	11.71	25.00	15.00	15.00
Reliable communication	1.77	4.00	1.60	-	0.89	2.00	0.80	-

Commission's Analysis

In respect of Planned schemes (which includes Establishment of New Substations, Augmentation of System Capacity, Normal Development Schemes, Reliable communication Schemes and PSDF Schemes), the capital expenditure and capitalisation approved by the Commission for FY 2018-19 in its Tariff Order dated 28 March 2018 is INR 46.64 Cr and INR 17.33 Cr respectively (as shown in *Table 45*). However, the Petitioner has proposed total capital expenditure of INR 50.27 Cr and total capitalisation of INR 71.12 Cr for FY 2018-19, which is higher than that approved by the Commission in its Tariff Order dated 28 March 2018. Accordingly, for capital expenditure, with the exception of PSDF schemes, the Commission has considered the capital expenditure proposed by the Petitioner for all schemes under Planned schemes. For PSDF, the Commission has only considered INR 0.50 Cr for FY 2018-19, and the balance capital expenditure for PSDF has been adjusted in the subsequent years as explained below. The total capital expenditure now considered for FY 2018-19 is INR 42.89 Cr, which is lesser than the capital expenditure of INR 46.64 Cr approved by the Commission for FY 2018-19 in its Tariff Order dated 28 March 2018. For capitalisation, as the Petitioner has proposed INR 71.12 Cr against the approved value of INR 17.33 Cr in the Tariff Order, the Commission has considered INR 17.33 Cr for FY 2018-19. Accordingly, for PSDF, the Commission has considered no capitalisation for FY 2018-19 and the complete capitalisation has been approved for FY 2019-20 as explained below. For the remaining schemes under Planned schemes, the balance capitalisation of INR 64.1 Cr has been proportionately considered for each of the scheme based on the approved capitalisation of INR 17.33 Cr.

PSDF Schemes

The Commission notes that the total capital expenditure submitted by the Petitioner under PSDF is INR 10.56 Cr. However, the Petitioner has proposed total expenditure of 17.94 Cr in the submitted Excel model. Considering the discrepancy, the Commission approves the capital expenditure proposed in the Business Plan Petition. Therefore, the Commission approves the capital expenditure of INR 10.06 Cr submitted by the Petitioner for FY 2019-20 and accordingly, only the remaining INR 0.5 Cr has been approved for FY 2018-19.

With respect to the capitalisation schedule submitted by the Petitioner, the total capitalisation proposed by the Petitioner (INR 13.19 Cr) is higher than the capital expenditure envisaged (10.56 Cr). The Commission therefore has not considered any capitalisation for FY 2018-19 and the complete capitalisation of INR 10.56 Cr has been approved for FY 2019-20.

Normal Development Schemes

Under this scheme, the Commission approves the capital expenditure of INR 45 Cr submitted by the Petitioner for the upcoming Control Period. With respect to the Capitalisation schedule, the Commission proportionately approves the capitalisation for FY 2018-19 based on the approved capitalisation of INR 17.33 Cr in the Tariff Order dated 28 March 2018. The balance capitalisation of INR 8.54 Cr has been approved for FY 2019-20. With respect to capitalisation schedule submitted for the upcoming Control Period, the Commission approves the capitalisation of INR 55 Cr submitted by the Petitioner.

Reliable communication

Under this scheme, the Commission approves the capital expenditure of INR 5.60 Cr submitted by the Petitioner for the upcoming Control Period. With respect to the Capitalisation schedule, the Commission proportionately approves the capitalisation for FY 2018-19 based on the approved capitalisation of INR 17.33 Cr in the Tariff Order dated 28 March 2018. The balance capitalisation of INR 0.65 Cr has been approved for FY 2019-20. With respect to capitalisation schedule submitted for the upcoming Control Period, the Commission approves the capitalisation of INR 2.80 Cr submitted by the Petitioner.

The summary of capital expenditure and capitalisation approved for FY 2018-19 and the upcoming Control Period is given below:

Table 60: Summary of capital expenditure approved for other schemes including PSDF Schemes for the upcoming Control Period

Scheme(s)	Approved in TO[11] (INR Cr)	Approved (INR Cr)			
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	Total
Establishment of New Substations	11.33	-	-	-	-
Augmentation of System Capacity	6.87	-	-	-	-
Normal Development Schemes	22.42	15.00	15.00	15.00	45.00
Reliable communication	1.77	4.00	1.60	-	5.60
PSDF	0.50	10.06	-	-	10.06
Total	**42.89**	**29.06**	**16.60**	**15.00**	**60.66**

Table 61: Summary of capitalisation approved for other schemes including PSDF Schemes for the upcoming Control Period

Scheme(s)	Approved in TO[11] (INR Cr)	Approved (INR Cr)			
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	Total
Establishment of New Substations	13.92	7.75	-	-	7.75
Augmentation of System Capacity	-	-	-	-	-
Normal Development Schemes	3.17	33.54	15.00	15.00	63.54
Reliable communication	0.24	2.65	0.80	-	3.45
PSDF	-	10.56	-	-	10.56
Total	**17.33**	**54.5**	**15.80**	**15.00**	**85.30**

Therefore, the Commission approves a total capital expenditure of INR 60.66 Cr and total capitalisation of INR 85.3 Cr for the upcoming Control Period for Other schemes.

Summary of capital expenditure approved by the Commission

The summary of capital expenditure approved by the Commission for the upcoming Control Period is given below:

Table 62: Summary of capital expenditure approved by the Commission for the upcoming Control Period

Sr. No.	Particulars	Approved (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
A	**Transmission Schemes**				
1	Establishment of New Substations	9.85	38.03	23.86	71.74
2	Augmentation of System Capacity	11.73	6.86	6.86	25.45
3	Renovation and Modernization Works of Existing Capacity	4.76	14.30	17.53	36.59
4	Replacement of Capacitor Banks	4.00	-	-	4.00
5	Erection/ establishment/ upgradation of 230kV and 110kV Substations	85.00	69.44	58.42	212.86
	Total Transmission	**115.34**	**128.63**	**106.67**	**350.64**
		-	-	-	
B	**Distribution Schemes**	-	-	-	
1	R-APDRP Part-A Works	0.94	-	-	0.94
2	R-APDRP Part-B Works	40.10	-	-	40.10
3	System Strengthening Schemes	5.52	97.47	95.51	198.50
4	Normal Development Schemes	15.00	15.00	15.00	45.00
5	Reliable communication	4.00	1.60		5.60
6	IPDS	12.92	-	-	12.92
7	DDUGJY	12.21	-	-	12.21
8	PSDF	10.56	-	-	10.56
	Total Distribution	**101.25**	**114.07**	**110.51**	**325.83**
A+B	**Total Capital expenditure**	**216.59**	**242.7**	**217.18**	**676.47**

Therefore, the Commission approves a total capital expenditure of INR 676.47 Cr for the upcoming Control Period.

Summary of capitalisation approved by the Commission

The summary of capitalisation approved by the Commission for the upcoming Control Period is given below:

Table 63: Summary of capitalisation approved by the Commission for the upcoming Control Period

Sr. No.	Particulars	Approved (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
A	**Transmission Schemes**				
1	Establishment of New Substations	-	-	19.71	19.71
2	Augmentation of System Capacity	11.73	-	13.72	25.45
3	Renovation and Modernization Works of Existing Capacity	-	-	30.52	30.52
4	Replacement of Capacitor Banks	4.04	-	-	4.04
5	Erection/ establishment/ upgradation of 230kV and 110kV Substations	6.49	40.02	140.21	186.72
	Total Transmission	**22.26**	**40.02**	**204.16**	**266.44**

Sr. No.	Particulars	Approved (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
B	**Distribution Schemes**	-	-	-	
1	R-APDRP Part-A Works	-	-	-	
2	R-APDRP Part-B Works	42.61	-	-	42.61
3	System Strengthening Schemes	5.52	48.74	96.50	150.76
4	Normal Development Schemes	33.54	15.00	15.00	63.54
5	Reliable communication	2.65	0.80		3.45
6	IPDS	4.66	-	-	4.66
7	DDUGJY	4.06	-	-	4.06
8	PSDF	10.56	-	-	10.56
	Total Distribution	**103.60**	**64.54**	**111.50**	**279.64**
A+B	**Total Capitalisation**	**125.86**	**104.56**	**315.66**	**546.08**

Therefore, the Commission approves a total capitalisation of INR 546.08 Cr for the upcoming Control Period.

3.5.2 Funding Plan

Petitioner's submission

The Petitioner's funding plan for the proposed capital expenditure plan is as given in *Table 64*.

Table 64: Proposed funding plan for the upcoming Control Period

Sr. No.	Sources of Funds	Component	FY 2019-20	FY 2020-21	FY 2021-22
1	Japan International Co-Operation Agency (JICA)	Debt	116.15	254.45	262.36
2	Power Finance Corporation (PFC)	Debt	18.45		
A	**Total Debt (1+2)**		**134.6**	**254.45**	**262.36**
3	EDP Funding from Budgetary Allocation	Equity	22.07	22.95	23.77
B	**Total Equity (3)**		**22.07**	**22.95**	**23.77**
C	Grant from Central Govt Schemes	Grant	23.83	7.95	8.77
D	Consumer Contributions				
E	**Total Capital Expenditure (A+B+C+D)**		**180.50**	**285.35**	**294.90**
F	**Debt**		**86%**	**92%**	**92%**
G	**Equity**		**14%**	**8%**	**8%**

The Petitioner has also submitted the following additional details with respect to the loans that are planned to be availed:

- Process of availing the JICA loan is still at a nascent stage and more details will be submitted to the Commission once the details are finalized
- The disbursement from PFC has been availed against the scheme under R-APDRP Part A and B. As per the Central Government scheme the same may be converted into grant if the operational targets are achieved. In case of non-achievement of those operational targets the same disbursements will be considered as loan which may have an interest rate of 12% - 13%. Therefore this is an early stage at present to consider the PFC disbursement as loan or grant
- Loan from REC availed in the previous financial year (INR 35.74 Cr) will be serviced during the upcoming Control Period

Commission's analysis

For the difference in capital expenditure approved by the Commission vis-à-vis Petitioner's submission, funding requirement has been determined as follows:

- For R-APDRP, 100% debt funding from PFC
- For DDUGJY, 75% Grant from GoI and balance 25% debt from REC
- For IPDS, 75% Grant from GoI and balance 25% equity from Budgetary Allocation
- For PSDF, balance amount from Budgetary Allocation

Based on the analysis of funding of difference in capital expenditure approved by the Commission vis-à-vis Petitioner's submission, the approved funding plan is given in the table below:

Table 65: Approved funding plan for the upcoming Control Period

Sr. No.	Sources of Funds	Component	Approved (INR Cr)		
			FY 2019-20	FY 2020-21	FY 2021-22
1	Japan International Co-Operation Agency (JICA)	Debt	116.15	211.82	184.65
2	Power Finance Corporation (PFC)	Debt	49.76		
	REC	Debt	0.52		
A	**Total Debt (1+2)**		**166.43**	**211.82**	**184.65**
3	EDP Funding from Budgetary Allocation	Equity	23.14	22.95	23.77
B	**Total Equity (3)**		**23.14**	**22.95**	**23.77**
C	Grant from Central Govt Schemes	Grant	27.08	7.95	8.77
D	Consumer Contributions				
E	**Total Capital Expenditure (A+B+C+D)**		**216.64**	**242.72**	**217.19**
F	**Debt**		**88%**	**90%**	**89%**
G	**Equity**		**12%**	**10%**	**11%**

3.6 Manpower Plan

Petitioner's submission

The Petitioner has forecasted the number of employees based on the retirements and recruitments in the existing Control Period. Actual and forecasted number of employees submitted by the Petitioner is as given in *Table 66*.

Table 66: Actual and forecasted number of employees submitted by the Petitioner

Particulars	Actuals			Projections		
	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Number of employees as on 1st April (A)	2179	2265	2233	2203	2137	2242
Employees on deputation/ foreign service as on 1st April (B)						
Total number of employees (C=A-B)	2179	2265	2233	2203	2137	2242
Number of employees retired/ retiring during the year (D)	53	62	110	106	95	93
Net transfers (E)						
Recruitment (F)	139	30	80	40	200	150
Number of employees at the end of the year (G=C-D-E+F)	**2265**	**2233**	**2203**	**2137**	**2242**	**2299**

The Petitioner has provided the following additional details with respect to level-wise employee details as on 31 March 2018 in its reply to the Deficiency Note raised by the Commission.

Table 67: Level-wise employee details as on 31 March 2018 submitted by the Petitioner

Level	No. of employees
Grade A	22
Grade B	400
Grade C	1811
Total	**2233**

The Petitioner also adds that 90 posts in Grade B and 380 posts in Grade C in the current year would be filled. Additionally, 58 posts of Junior Engineers is also expected to be filled. With respect to the Government approvals for FY 2018-19, the Petitioner expects the approvals to be received from the Government in the month of October/November.

Commission's analysis

The Commission approves the Petitioner's additional manpower requirement. However, the Commission directs the Petitioner to furnish the Government approvals along with the MYT Petition to be submitted at the time of Multi-Year Tariff determination.

Annexure

Proposed works under JICA loan assistance

Table 68: Proposed works under JICA loan assistance

Sl. No.	Particulars	Capital Expenditure (in INR Lakh)			
			Projections		
		Project Cost	FY 2019-20	FY 2020-21	FY 2021-22
A	**Transmission schemes**				
1	**Establishment of New Sub-stations**				
	New 110/22 KV Gas Insulated Substation at Thavalakuppam with 2x25 MVA Capacity	2570.79		1285.39	1028.32
	New 110/22KV AIR Insulated Substation at Mannadipet with 2x16 MVA capacity.	1665.29		832.65	416.32
	New 110/11 KV Gas insulated Substation at Kottucherry with 2x16 MVA capacity.	2188.71		1094.35	547.18
	New 110/22 KV Gas Insulated Substation at Lawspet with 2x25 MVA Capacity	1970.79	985.39	591.24	394.16
	Sub-Total		985.39	3803.63	2385.97
2	**Augmentation of System capacity**				
	Augmentation of SS by providing Additional 80 MVA at Bahour 230/110 KV Substation	672.08		336.04	336.04
	Augmentation of SS by providing Additional 100 MVA at Villianur 230/110 KV Substation	699.99		350.00	350.00
	Augmentation of SS by providing Additional 100 MVA at Thondamanatham 230/110 KV SS	699.99	699.99		
	Augmentation of capacity of Thethampakkam 110/22KV SS with 2X16MVA Power Transformer	286.93	286.93		
	Augmentation of capacity of Villianur 110/22KV Sub-station with 1X25MVA Power Transformer	185.80	185.80		
			1172.72	686.04	686.04
3	**Renovation and Modernization works of existing Capacity**				
	Renovation and Modernization of existing Pallur 110/11 KV SS into GIS with replacement 2X 10MVA Power Transformers	1335.07		667.53	333.77
	Renovation and Modernization of existing MARAPALAM 110/22-11 KV SS into GIS with INDOOR 22 &11KV gas insulated switchgears.	2623.65	655.91	655.91	1311.82
	Renovation and Modernisation of Mettacur 110/11KV SS at Yanam	427.86	213.93	106.97	106.97
	Sub-Total		869.84	1430.41	1752.56
4	**Replacement of Capacitor Banks**				
	Providing of New 22KV , 2.4 MVAR capacitor Banks at six existing SS in Puducherry (28.8MVAr)	274.52	274.52		
	Providing of New 11KV, 2.4 MVAR capacitor Banks at various SS in Karaikal, Mahe and Yanam (16.8MVAr)	129.73	129.73		
	Sub-Total		404.25		
5	**Erection/ establishment/ upgradation of 230kV and 110kV Sub-stations**				
	Augmentation of capacity of Eripakkam 110/22KV Sub-station with 2X25MVA Power Transformer with Renovation of110KV Bay Equipments	649.01	649.01		

Sl. No.	Particulars	Capital Expenditure (in INR Lakh)			
			Projections		
		Project Cost	FY 2019-20	FY 2020-21	FY 2021-22
	Augmentation of capacity of Thirubuvanai 110/22KV Sub-station with 2X25MVA Power Transformer with 110KV Bay Extension/ Renovation	780.90	546.63	234.27	
	Augmentation of capacity of Sedharapet 110/22KV Sub-station with 2X25MVA Power Transformer and renovation of 110KV Bay Equipments	649.01	259.60	194.70	194.70
	Augmentation of capacity of Bahoor 110/22KV Sub-station with 2X25MVA Power Transformer with 110KV Bay Extension / Replacement.	649.01	324.50	194.70	129.80
	Augmentation of capacity (2x25MVA) and Renovation and Modernization of existing 110/11KV Air Insulated Sorakudy SS	689.87	275.95	275.95	137.97
	Augmentation of Capacity(2x 25MVA) and Renovation of 110/22 KV Kalapet Air Insulated SS with GIS	1466.74	440.02	586.70	440.02
	New 22 KV Bay Extension and its equipment in existing Sub-stations	736.36	245.45	245.45	245.45
	New 11 KV Bay Extension and its equipment in existing Sub-stations	121.02	60.51	60.51	
	Erection of 110 KV DC line on DC Towers between Mannadipet-Thirubhuvanai SS (LILO)	736.01	220.80	220.80	294.40
	110KV Bay Extension at existing Kurumbapet 110/22 KV SS and 110 KV Cable laying from Kurumbapet SS to Proposed Lawspet 110/22 KV SS.	2434.10	1217.05	1217.05	
	110KV Bay Extension at existing Vengatta Nagar 110/22-11 KV SS and Cable Laying from Vengatta Nagra SS to Proposed Lawspet 110/22 KV SS.	1530.33	765.16	382.58	382.58
	110KV Bay Extension at existing Sorakudy 110/11 KV sub-station and 110kv cable laying from Sorakudy SS to proposed Kottucherry 110/11KV Sub-station.	3337.88		1001.36	1335.15
	110KV Bay Extension at existing Pillaitheruvasal 110/11 KV Sub-statio and 110KV cable laying from Pillaitheruvasal SS to proposed Kottucherry 110/11KV Sub-station.	2132.84	853.14	639.85	639.85
	110KV cable laying from Marapalam SS to proposed Thavalakuppam 110/22KV Sub-station.	2695.72	1347.86	673.93	673.93
	110 KV Bay extension at existing Korkadu 110/22KV SS and 110KV cable laying from Korkadu SS to proposed Thavalakuppam 110/22KV Sub-station.	2735.36	683.84	683.84	1367.68
	Providing of Numerical Relays and SCADA &SS Automation at Existing EHV Sub-stations	665.99	333.00	333.00	
	Sub-Total		8222.52	6944.69	5841.55
	Total Transmission	37741.33	11654.73	12864.77	10666.12
B	**Distribution Schemes**				
	Erection of new 22KV HT Overhead feeders	1229.77	102.48	204.96	307.44
	Laying of new HT UG Cable feeder with 11KV, 3x 400 Sq.mm XLPE Cable	6322.48		1975.77	1580.62
	Replacement of existing LT UG Cable in the entire Puducherry Town	6453.25		1613.31	1613.31
	Conversion of LT OH Distribution System into LT UG Cable in the Puducherry Town area	3280.82		820.21	820.21

Sl. No.	Particulars	Capital Expenditure (in INR Lakh) Projections			
		Project Cost	FY 2019-20	FY 2020-21	FY 2021-22
	Conversion of LT OH Distribution System into UG Cable in Karaikal Town area	2258.44		564.61	564.61
	Conversion of LT OH Distribution System into UG Cable in Yanam	705.26		352.63	352.63
	Conversion of LT OH Distribution System into UG Cable in Mahe	463.68		231.84	231.84
	Provision of Aerial bunched cables for replacement of Over Head HT/LT lines	734.92		183.73	183.73
	Provision of Single pole mounted three ph. 63KVA DT under HVDS System.	90.30		36.12	54.18
	Erection of 22/0.433KV, 200KVA Energy efficient Distribution Transformer with HT and LT works	2372.47		593.12	593.12
	Erection of 22/0.433KV, 315KVA Energy efficient Distribution Transformer with HT and LT works	1420.15		315.59	315.59
	Erection of 11/0.433KV, 315KVA Energy efficient Distribution Transformer with HT and LT works	885.96		221.49	221.49
	Erection of 11/0.433KV, 200KVA Energy efficient Distribution Transformer with HT and LT works	1519.60		483.51	483.51
	Automatic Power Factor Controller for Distribution Transformers	0.00			
	54 KVAR	172.31			
	90 KVAR	248.12			
	Establishment of SCADA/DMS for Karaikal regions	1291.75			
	Erection of 3 Panel SF6 RMU Suitable for SCADA System	2415.94		517.70	690.27
	Provision of Sectionalizer/Load Break Switch in 22/11KV OH feeders	1268.60		522.36	373.12
	Provision of AUTO RECLOSURE for 22/11KV OH feeders	976.82		344.76	344.76
	Provision of single /Three Phase, Smart Energy Meter	2250.00	450.00	600.00	600.00
	Provision of Wedge Connectors				
	Provision of wedge connectors in 1000 DT Structure	173.60		52.08	69.44
	Provision of wedge connectors in 2000 HT cut points & Jumper connection	192.01		57.60	76.80
	Provision of wedge connectors in 6000 LT cut points & Jumper connection	186.26		55.88	74.50
	SUB-TOTAL	36912.51	552.48	9747.28	9551.17
	Solar Distribution				
	6.5 MW ROOF -TOP SOLAR GENERATION	4263.38		4263.38	
	25 MW Ground Mounted Solar Plant with land	19427.0			7770.8
	SUB-TOTAL	23690.4	0.00	4263.38	7770.8
	Total Distribution	60602.9	552.48	14010.65	17321.97
	GRAND TOTAL (A+B)	98344.2	12207.2	26875.43	27988.09