Business Plan

Approval of Business Plan for Multi-Year Control Period

from FY 2019-20 to FY 2021-22

Petition No. 259/2018

For

Electricity Department of Daman & Diu

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 Annual Growth rate
Capital expenditure	Capital Expenditure
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGRF	Consumer Grievance Redressal Forum
CGS	Central Generating Stations
COD	Commercial Operation Date
Cr	Crores
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
IPP	Independent Power Producer
ISTS	Inter State Transmission System
JERC	Joint Electricity Regulatory Commission for the State of Goa and Union Territories
LT	Low Tension
MCLR	Marginal Cost of funds based Lending Rate
MU	Million Units
MYT	Multi-Year Tariff
NFA	Net Fixed Assets
NTPC	NTPC Ltd.
O&M	Operation and Maintenance
PLF	Plant Load Factor
PLR	Prime Lending Rate
PPA	Power Purchase Agreement

Abbreviation	Full Form
R&M	Repair and Maintenance
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. 259/2018

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, Daman and Diu .... Petitioner

ORDER

a) This Order is passed in respect of the Petition filed by the Electricity Department, Daman and Diu 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 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 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 hereby approves the Business Plan for the Control Period from FY 2019-20 to FY 2021-22 by way of this Order, 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 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 Daman and Diu.

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

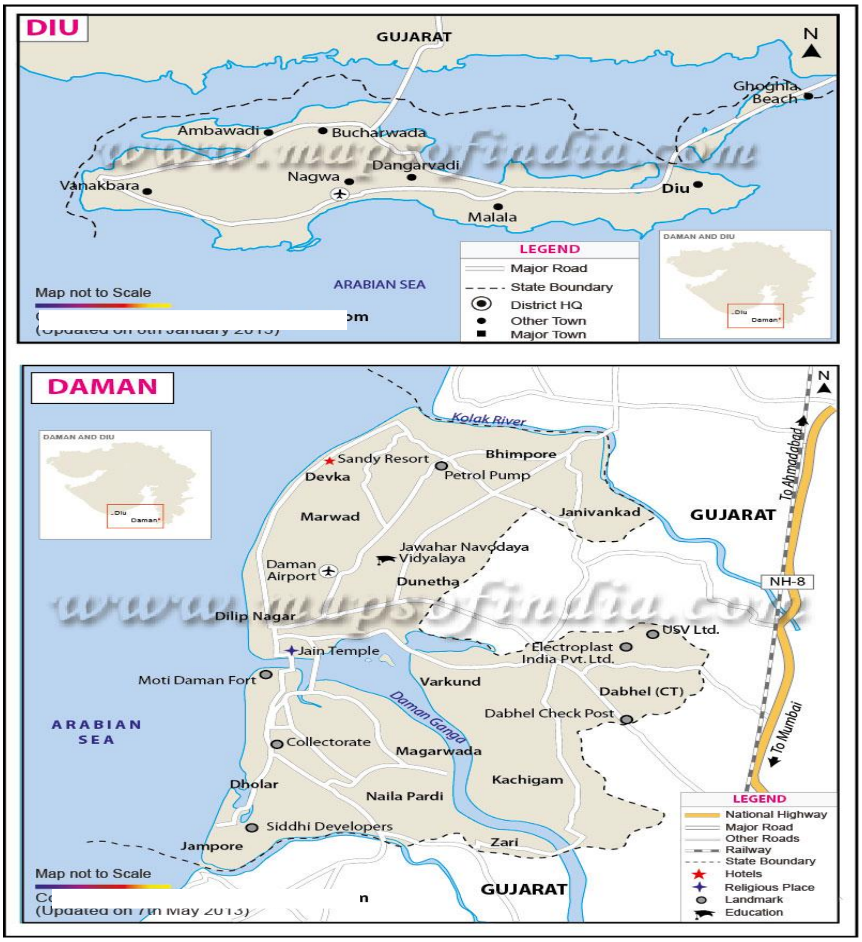
1.1 Joint Electricity Regulatory Commission

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 May 2, 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 "JERC" or "Commission") vide notification no. 23/52/2003-R&R (Vol. II) dated May 30, 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 Daman & Diu

The Union Territory of Daman and Diu (hereinafter referred to as "UT") covers a total area of 112 sq. km, with the Daman District comprising of an area of 72 sq. km and Diu District of 40 sq. km. In FY 2017-18, the power demand of the Territory was predominantly from HT and LT industries, contributing to 91% of sales.



1.3 Electricity Department of Daman & Diu

The Electricity Department of Daman and Diu (hereinafter called "EDDD"), is a deemed licensee under Section 14 of the Electricity Act 2003, and is carrying on the business of transmission, distribution and retail supply of electricity in the UT. It is responsible for ensuring quality and continuous power supply to every resident of Daman and Diu at the most economical rates.

The key duties being discharged by EDDD are:

- Laying and operating of such electric line, sub-station and electrical plant that is primarily maintained for the purpose of distributing electricity in the area of supply of 'Daman & Diu Electricity Department', in accordance with Electricity Act. 2003 (Act) and the Rules framed there under.
- Operating and maintaining sub-stations and dedicated transmission lines connected there with as per the provisions of the Act and the Rules framed there under.
- Arranging, in-coordination with the Generating Company(ies) operating in or outside the UT, for the supply of electricity required within the UT and for the distribution of the same in the most economical and efficient manner;
- Supplying electricity, as soon as practicable to any person requiring such supply, within its competency to do so under the said Act;
- Preparing and carrying out schemes for distribution and generally for promoting the use of electricity within the UT.

EDDD does not have its own generation and procures power from its allocation from various Central Generating Stations (CGS). It receives 70 MW from NTPC-SAIL plant located at Bhilai and 38 MW from Ratnagiri Gas and Power Private Limited (RGPPL).

The UT has also installed Solar capacity of 13.59 MW of which 10 MW is ground mounted and the remaining 3.59 MW is Solar rooftop plants. To promote the usage of Solar power to meet the growing demands of the UT, the Department is in the process of procuring 80 MW of Solar energy from NTPC and another 50 MW of Solar energy from SECI from FY 2019-20 onwards. Further, procurement of Solar power for 40 MW from open tender is also under the process.

Existing Network

The present distribution system of EDDD consists of 32.60 circuit km of 220 kV Double Circuit (D/C) lines, 88.70 kms of 66kV lines, 420.60 circuit kms of 11kV lines (O/H as well as U/G) and 773.71 circuit kms of LT OH & U/G lines. Presently, there are 102 numbers of 11 kV feeders and 6 numbers of 66 kV feeders in the network of Daman & Diu.

Daman gets power at 220/66 kV Magarwada Substation and 220/66 kV Ringanwada Substation. The 220/66 kV Magarwada Substation gets power from 220 kV (D/C) Ambethi-Magarwada line and from 220 kV (D/C) Magarwada (POWERGRID) Magarawada, Daman. The 220/66 KV Ringanwada Substation gets power from 220 kV (D/C) Magarwada (POWERGRID) Magarawada, Daman. Diu gets power from 66 kV Una Substation through 66 kV double circuit line emanating from 220 /66 kV Kansari Substation of GETCO.

The details of the transmission and distribution network of EDDD are as under:

Table 1: Transmission and Distribution System of EDDD

Sr.No.	Details	Daman (ckms)	Diu (ckms)	Total (ckms)
1	220 KV D/C line	32.60	--	**32.60**
2	66 KV D/C line	66.70	22.00	**88.70**
3	11KV line O/H	195.32	4.00	**199.32**
4	11KV line U/G	135.90	85.38	**221.28**

Sr.No.	Details	Daman (ckms)	Diu (ckms)	Total (ckms)
5	L.T. Line	442.00	80.30	**522.30**
6	L.T line U/G	144.20	107.21	**251.41**
7	Transformer Centre (Nos.)	778	117	**895 Nos.**

1.4 Electricity Regulatory Process in Daman & Diu

The Commission had issued the first Multi-Year Order for "Approval of Business Plan for the MYT Control Period FY 2016-17 to FY 2018-19" on 9 December 2015 in respect of EDDD.

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 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, 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.

EDDD submitted the current Petition for approval of 'Business Plan for MYT Control Period FY 2019-20 to FY 2021-22' vide letter no. ED/EE/JERC/2018-19/7779 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 numbered as Petition no. 259/2018.

1.7 Interaction with the Petitioner

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	Admission of the Petition by the Commission	04.09.2018
2	Deficiency Note issued by the Commission	12.09.2018
3	Replies to Deficiency Note received by the Commission	26.09.2018
4	Second Deficiency Note issued by the Commission	11.10.2018

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.

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 Petitioner uploaded the Petition on its website (www.dded.gov.in) for inviting objections and suggestions on the Petition.

The Commission 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 at Daman on 25 September 2018 from 3 PM onwards and at Diu on 10 October 2018 from 10 AM onwards. The Commission has also uploaded a copy of the Petition on its website to facilitate the stakeholders.

Table 3: Public Notices published by the Commission

Sl. No.	Date	Name of Newspaper	Language	Place of Circulation
1	05.09.2018, 21.09.2018, 22.09.2018	Asli Azadi	English	Daman
2	05.09.2018, 21.09.2018, 23.09.2018	Gujarat Samachar	Gujarati	Daman
3	05.09.2018, 21.09.2018, 22.09.2018	Savera India Times	Hindi	Daman
4	17.09.2018, 07.10.2018	The Times of India	English	Diu
5	17.09.2018, 07.10.2018	Gujarat Samachar	Gujarati	Diu
6	17.09.2018, 07.10.2018	Gujarat Vaibhav	Hindi	Diu

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 25 September 2018 for Daman, and 10 October 2018 for Diu.

The Commission has examined the issues and concerns raised by the stakeholders in writing and / or voiced by them. The major issues raised by the Stakeholders, the responses of the Petitioner thereon and the views of the Commission, have been summarized in Chapter 2 of this Order.

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 views 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 25 September 2018 at Daman, and on 10 October 2018 at Diu 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 objections 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. The Stakeholders' comments, response of the Petitioner and the views of the Commission are summarized below:

2.2.1 Public Hearing Notice

Stakeholder Comments

The stakeholders expressed their concern about low awareness of Public Hearing among the public and suggested different communication channels for increasing the awareness. Further, the stakeholders also suggested that the HT consumers should be informed of the Public Hearing separately.

Petitioner's Response

The Petitioner has informed that they have made efforts for publicizing the conduct of Public Hearing and in future will make extra efforts to ensure enough publicity.

Commission's View

The Commission takes a serious note of the Stakeholder's concerns regarding low awareness of public hearings and informs the Stakeholders about the public notices published by the Commission for inviting objections / suggestions from the stakeholders on the Business Plan Petition, in line with the relevant Regulations. The details of the publication of public notices are given in Chapter 1 of this Order. The Commission directs the Petitioner to follow the relevant Regulations in letter and spirit for creating the public awareness through timely publication of public notices or any other mode deemed appropriate by it in its area including pamphlets, banners, billboards etc. to be distributed / displayed at various important public places like Panchayat, Government offices, Marketplaces etc. , under intimation to the Commission.

2.2.2 Connection / Disconnection

Stakeholder Comments

- The stakeholders informed the Commission about the difficulty in obtaining new electricity connections from the department, as the department still emphasizes on providing occupancy certificate, which the residents usually do not possess. Hence, the stakeholders requested that the NOC from Panchayat may be accepted as a valid document for obtaining new connection.

- The stakeholders expressed their concern regarding disconnection of electricity connections of the tribal people for non-payment of bills and that the disconnections are being carried out without giving them an opportunity to pay. Further, some relief was sought by the marginalized sections in the bills due to addition of late payment charges to the bills for non-payment of past dues. In addition, the stakeholders also suggested recovery of past dues from Government departments.

Petitioner's Response

- The Petitioner has assured to look into the matter; and, also that it will abide by the JERC Supply Code Regulations in this regard.

Commission's View

- The Commission notes the Stakeholder's observations regarding the difficulty being faced by them in obtaining new connections on account of non-availability of occupancy certificates and informs that the details regarding documentation requirements for availing new connections are being modified by the Commission in the JERC (Electricity Supply Code) Regulations. The Petitioner is directed to act in accordance with JERC (Electricity Supply Code) Regulations applicable from time to time, while providing new electricity connections.

- The Commission notes the Stakeholder's concerns regarding disconnection due to non-payment of dues, imposition of late payment surcharge and lack of enough time to settle the dues. The Commission directs the Petitioner to act in accordance with JERC (Electricity Supply Code) Regulations applicable from time to time, to address these issues. The Commission also expresses its deep concern regarding non-recovery of dues from Government departments and directs the Petitioner to recover these dues, if any, in accordance with JERC (Electricity Supply Code) Regulations applicable from time to time, and submit a status report to the Commission within 30 days of this Order.

2.2.3 Filling of vacant CGRF Post

Stakeholder Comments

The Stakeholders requested the Commission to fill the vacant positions of CGRF (Consumer Grievance Redressal Forum).

Petitioner's Response

The Petitioner has assured to take necessary action for filling the vacant positions of CGRF.

Commission's View

The Commission appreciates the Stakeholder's concerns and informs that the Commission has already directed the Petitioner vide letters dated 13 July 2018 and 8 October 2018 to take necessary action to fill vacant position of CGRF. The Commission directs the Petitioner to ensure filling up of vacant CGRF positions immediately and submit the compliance report to the Commission, within 30 days of this Order.

2.2.4 Technical training to HT consumers

Stakeholder Comments

One of the Stakeholder suggested the Commission to direct the department to conduct training sessions for HT consumers on topics such as best practices for right installation of equipment for reduction of line losses.

Petitioner's Response

The Petitioner has agreed to conduct such technical trainings to facilitate the stakeholders.

Commission's View

The Commission appreciates the concern expressed by the Stakeholder and directs the Petitioner to conduct training sessions for HT consumers and other consumers on such technical issues as may be of importance to the Stakeholders, under intimation to the Commission.

3 Chapter 3: Approval of various components of the Business Plan Petition for the Multi-Year 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
- Other Expenditure

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. Due to abnormal trends in some categories, the Petitioner has resorted to using normalized CAGR rates or assuming a subjective rate for projections.

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

Table 4: Summary of category wise Number of Consumers and growth rate considered by the Petitioner for projections

No. of Consumers	Actuals						CAGR			
Consumer Category	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	6 year	5 year	4 year	CAGR considered
Domestic	42,507	43,962	45,298	46,420	47,403	48,287	2.58%	2.37%	2.15%	2.58%
Commercial	8,158	7,972	8,037	8,209	7,875	7,815	-0.86%	-0.50%	-0.93%	2.00%
Agriculture	1,173	1,191	1,195	1,243	1,283	1,344	2.76%	3.07%	3.99%	2.76%
LT Industry	1,926	1,799	1,755	1,817	1,755	1,706	-2.40%	-1.32%	-0.94%	2.00%
HT/EHT Industry	801	798	786	784	800	807	0.15%	0.28%	0.88%	0.15%
Public Lighting	369	339	524	529	571	633	11.40%	16.90%	6.50%	11.40%

No. of Consumers	Actuals						CAGR			
Consumer Category	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	6 year	5 year	4 year	CAGR considered
Public Water Works	77	71	109	125	127	125	10.18%	15.19%	4.67%	10.18%
Temp. Supply	-	-	-	11	366	414	-	-	-	-
Total	**55,011**	**56,132**	**57,704**	**59,138**	**60,180**	**61,131**				

Table 5: Summary of category wise Connected Load and growth rate considered by the Petitioner for projections

Connected Load (kVA)	Actuals						CAGR			
Consumer Category	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	6 year	5 year	4 year	CAGR considered
Domestic	55,080	55,991	1,17,161	1,19,557	1,21,827	1,31,652	19.04%	23.83%	3.96%	8.00%
Commercial	18,180	17,654	19,322	19,761	20,781	23,722	5.47%	7.67%	7.08%	5.47%
Agriculture	2,252	2,512	3,617	3,672	3,812	4,003	12.19%	12.35%	3.44%	3.44%
LT Industry	96,818	97,780	1,00,284	1,07,471	1,04,148	1,08,683	2.34%	2.68%	2.72%	2.34%
HT/EHT Industry	4,83,024	4,88,495	4,86,708	5,05,321	5,36,544	5,51,163	2.67%	3.06%	4.23%	2.67%
Public Lighting	1,919	1,649	1,657	1,690	880	1,405	-6.04%	-3.92%	-5.35%	2.00%
Public Water Works	654	664	795	795	795	794	3.96%	4.57%	-0.04%	3.96%
Temp. Supply	-	-	-	28	673	1,986	-	-	742.2%	-
Total	**6,57,927**	**6,64,745**	**7,29,544**	**7,58,295**	**7,89,460**	**8,23,408**				

Table 6: Summary of category wise Sales and growth rate considered by the Petitioner for projections

Sales (MU)	Actuals							CAGR			
Consumer Category	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	7 year	5 year	4 year	CAGR considered
Domestic	73.85	77.79	84.16	83.06	88.20	97.89	121.32	8.63%	9.57%	13.46%	8.63%
LIG/ Kutir Jyoti	0.10	0.04	0.08	0.08	0.09	0.10	0.10	0.0%	5.74%	7.72%	0.00%
Commercial	33.83	38.74	46.75	41.57	49.93	55.37	57.74	9.32%	5.42%	11.57%	9.32%
Agriculture	2.70	4.22	3.05	2.30	2.46	2.81	4.83	10.18%	12.18%	28.06%	8.00%
LT Industry	156.84	161.21	169.59	153.70	160.54	179.85	195.61	3.75%	3.63%	8.37%	3.75%
HT/EHT Industry	1,496.83	1,572.81	1,441.53	1,648.27	1,795.47	1,864.44	1,984.77	4.81%	8.32%	6.39%	9.00%
Public Lighting	5.59	6.51	7.06	8.80	7.43	7.89	9.48	9.20%	7.65%	2.51%	9.21%
Public Water Works	0.92	1.12	1.20	3.28	2.68	3.22	3.49	24.88%	30.59%	2.09%	2.12%
Temp. Supply	0.51	0.51	0.67	1.09	1.23	2.17	-	-	-	-	-
Total	**1,771.2**	**1,863.0**	**1,754.1**	**1,942.2**	**2,108.0**	**2,213.7**	**2,377.3**				

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

Table 7: 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	48,287	2.58%	49,534	50813	52126	53472
Commercial	7,815	2.00%	7,971	8131	8293	8459
Agriculture	1,344	2.76%	1,381	1419	1458	1499
LT Industry	1,706	2.00%	1,740	1775	1810	1847
HT/EHT Industry	807	0.15%	808	809	811	812
Public Lighting	633	11.40%	705	786	875	975
Public Water Works	125	10.18%	138	152	167	184
Temp. Supply	414	-	-	-	-	-
Total	**61,131**		**62,278**	**63,885**	**65,541**	**67,247**

Table 8: Petitioner's submission on projection of Connected Load for upcoming Control Period

Connected Load (kVA)	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	1,31,652	8.00%	142184	153559	165844	179111
Commercial	23,722	5.47%	25019	26386	27828	29349
Agriculture	4,003	3.44%	4141	4283	4430	4582
LT Industry	1,08,683	2.34%	111225	113827	116489	119214
HT/EHT Industry	5,51,163	2.67%	565903	581038	596577	612532
Public Lighting	1,405	2.00%	1433	1462	1491	1521
Public Water Works	794	3.96%	825	858	892	927
Temp. Supply	1986	-	-	-	-	-
Total	**8,23,408**		**850,730**	**881,412**	**913,552**	**947,237**

Table 9: Petitioner's submission on projection of Sales for upcoming Control Period

Sales (MU)	Actual (Unaudited)	Base Year (RE)	CAGR Considered	Projections		
Consumer Category	FY 2017-18	FY 2018-19		FY 2019-20	FY 2020-21	FY 2021-22
Domestic	97.89	144.99	8.63%	157.49	171.08	185.84
Commercial	57.74	63.07	9.32%	68.95	75.37	82.40
Agriculture	4.83	5.19	8.00%	5.61	6.06	6.54
LT Industry	195.61	194.55	3.75%	201.85	209.42	217.28
HT/EHT Industry	1,984.77	2,079.33	9.00%	2,266.47	2,470.45	2,692.79
Public Lighting	9.48	8.93	9.21%	9.75	10.65	11.63
Public Water Works	3.49	3.75	2.12%	3.83	3.91	3.99
Total	**2,377.3**	**2,499.81**		**2,713.94**	**2,946.93**	**3,200.46**

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 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, connected load and sales are primarily based 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 growth
    - CAGR (multiple periods)
    - Specific (per-consumer) consumption
    - Specific sales per kVA of connected load, wherever the number of consumers are low
    - Energy efficiency measures

3.2.2 Category-wise analysis

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

Table 10: Historical Year-on-Year growth and CAGR for Number of Consumers

No. of Consumers	YoY Growth					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	6 year	5 year	4 year	3 year
Domestic	3.42%	3.04%	2.48%	2.12%	1.86%	2.58%	2.37%	2.15%	1.99%
Commercial	-2.28%	0.82%	2.14%	-4.07%	-0.76%	-0.86%	-0.50%	-0.93%	-2.43%
Agriculture	1.53%	0.34%	4.02%	3.22%	4.75%	2.76%	3.07%	3.99%	3.98%
LT Industry	-6.59%	-2.45%	3.53%	-3.41%	-2.79%	-2.40%	-1.32%	-0.94%	-3.10%
HT/EHT Industry	-0.37%	-1.50%	-0.25%	2.04%	0.88%	0.15%	0.28%	0.88%	1.46%
Public Lighting	-8.13%	54.57%	0.95%	7.94%	10.86%	11.40%	16.90%	6.50%	9.39%
Public Water Works	-7.79%	53.52%	14.68%	1.60%	-1.57%	10.18%	15.19%	4.67%	0.00%
Temp. Supply	-	-	-	3227.3%	13.11%	-	-	-	513.48%
Total	2.04%	2.80%	2.49%	1.76%	1.58%	2.13%	2.16%	1.94%	1.67%

Table 11: Historical Year-on-Year growth and CAGR for Connected Load

Connected Load	YoY Growth					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	6 year	5 year	4 year	3 year
Domestic	1.65%	109.25%	2.05%	1.90%	8.06%	19.04%	23.83%	3.96%	4.94%
Commercial	-2.89%	9.45%	2.27%	5.16%	14.15%	5.47%	7.67%	7.08%	9.56%
Agriculture	11.55%	43.99%	1.52%	3.81%	5.01%	12.19%	12.35%	3.44%	4.41%
LT Industry	0.99%	2.56%	7.17%	-3.09%	4.35%	2.34%	2.68%	2.72%	0.56%
HT/EHT Industry	1.13%	-0.37%	3.82%	6.18%	2.72%	2.67%	3.06%	4.23%	4.44%
Public Lighting	-14.07%	0.49%	1.99%	-47.93%	59.66%	-6.04%	-3.92%	-5.35%	-8.82%
Public Water Works	1.53%	19.73%	0.00%	0.00%	-0.13%	3.96%	4.57%	-0.04%	-0.06%
Temp. Supply	-	-	-	2303.6%	195.10%	-	-	-	-
Total	1.04%	9.75%	3.94%	4.11%	4.30%	4.59%	5.50%	4.12%	4.20%

Table 12: Historical Year-on-Year growth and CAGR for Sales

Sales	YoY Growth						CAGR				
Consumer Category	**FY 2012-13**	**FY 2013-14**	**FY 2014-15**	**FY 2015-16**	**FY 2016-17**	**FY 2017-18**	**7 year**	**6 year**	**5 year**	**4 year**	**3 year**
Domestic	5.34%	8.19%	-1.31%	6.19%	10.99%	23.94%	8.63%	9.30%	9.57%	13.46%	17.28%
LIG/ Kutir Jyoti	-60.0%	100.0%	0.00%	12.50%	11.11%	0.00%	0.0%	20.11%	5.74%	7.72%	5.41%
Commercial	14.51%	20.68%	-11.08%	20.11%	10.9%	4.28%	9.32%	8.31%	5.42%	11.57%	7.54%
Agriculture	56.3%	-27.73%	-24.59%	6.96%	14.23%	71.89%	10.18%	2.74%	12.18%	28.06%	40.12%
LT Industry	2.79%	5.20%	-9.37%	4.45%	12.03%	8.76%	3.75%	3.94%	3.63%	8.37%	10.38%
HT/EHT Industry	5.08%	-8.35%	14.34%	8.93%	3.84%	6.45%	4.81%	4.76%	8.32%	6.39%	5.14%
Public Lighting	16.46%	8.45%	24.65%	-15.57%	6.19%	20.15%	9.20%	7.81%	7.65%	2.51%	12.96%
Public Water Works	21.74%	7.14%	173.33%	-18.29%	20.15%	8.39%	24.88%	25.52%	30.59%	2.09%	14.12%
Temp. Supply	0.00%	31.37%	62.69%	12.84%	76.42%	-	-	-	-	-	-
Total	5.18%	-5.84%	10.72%	8.54%	5.01%	7.39%	5.03%	5.00%	7.90%	6.97%	6.20%

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 7 years for sales growth (8.63%) and that of last 6 years for consumer growth (2.58%) for future projections. However, for load growth the Petitioner has considered a normalized CAGR of 8.0%.

Commission's analysis

The Commission observes that the Petitioner has considered CAGR of last 6 years for consumer growth. The Commission had directed the Petitioner to submit details of pending/new connections for domestic category, which would be crucial to analyze projections since the UT is already 100% electrified. However, since the Petitioner has failed to submit the same, the Commission has examined the historical trends such as YoY growth rate and CAGR for different periods and accordingly approves the 6-year CAGR of 2.58% for growth in number of consumers.

To project overall sales growth, the Commission has examined the trends of sales per consumer, and observes that the sales per consumer has peaked in FY 2017-18 to ~ 2500 units per consumer per annum, when the same was averaging around ~1900 throughout the previous 5 years (FY 2012-13 to FY 2016-17). Based on the Petitioner's submission, the CAGR of sales per consumer works out to 5.9% for the Control Period, increasing the per consumer sales per annum from ~ 2500 units (actuals, FY 2017-18) to ~ 3160 units (projected, FY 2021-22). Considering the nature of domestic consumption and increased demand for energy efficient lighting and appliances under UJALA scheme, Commission does not expect that there would be a significant rise in consumption levels per consumer over the three years of the Control Period. Based on the analysis of trends discussed above, the Commission believes that the 5-year CAGR (FY 2012-13 to FY 2016-17) of 3.05% for sales per consumer would be a more appropriate projection. Therefore, the Commission approves a more conservative growth rate of 5.71% for sales projections for the Control Period. In the absence of a discernable trend with respect to load growth, the Commission approves the Petitioner's assumption of a normalized CAGR of 8% for projection of connected load.

Table 13: 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	2.58%	2.58%	8.00%	8.00%	8.63%	5.71%

Commercial

Petitioner's submission

The Petitioner has considered 7 year CAGR of 9.32% for sales growth and a normative 2% consumer growth. For load growth, the Petitioner has considered the 6-year CAGR i.e. 5.47%.

Commission's analysis

The Commission observes that the number of consumers in this category is reducing since FY 2015-16. In response to the clarification sought from EDDD in this regard in the deficiency note, EDDD has submitted that the sudden reduction is attributable to the metering drive for recovery of arrears. The connections of all the consumers who had high amount of arrears and who were unwilling to clear the same were permanently disconnected and referred to the Revenue Recovery Court (RRC). Further, some consumers have also requested for disconnections. As a result, the CAGR's over the years have been negative.

The Commission notes the explanation provided by the Petitioner and observes that despite this reasoning, the Petitioner has assumed a CAGR of 2% for projecting number of consumers, though without much reasoning. The Commission has analyzed the past YoY growth trends and CAGRs and observes that there has been no period of positive CAGR, though there has been marginal YoY growth for couple of years. Therefore, in order to maintain a progressive outlook, the Commission approves the lowest observed positive YoY growth rate of 0.82% (FY 2014-15) for the projection of number of consumers.

The Commission observes that the consumption per consumer has been increasing since FY 2013-14 in the range of 5%-23% YoY (exception of FY 2014-15), though the same has moderated over the past 3 years. Based on the Petitioner's submission, the CAGR of sales per consumer works out to 7.2% for the Control Period, increasing the per consumer sales per annum from ~ 7400 units (actuals, FY 2017-18) to ~ 9750 units (projected, FY 2021-22). Based on the analysis of trends, the Commission believes that the 5-year CAGR of 5.95% for sales per consumer would be a more appropriate projection. Therefore, based on the analysis of consumer growth and sales per consumer, the Commission approves a sales growth of 6.81% for the Control Period. Since the connected load has been steadily increasing, the Commission approves the 6-year CAGR of 5.47% for projection of connected load, as submitted by the Petitioner.

Table 14: 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	2.00%	0.82%	5.47%	5.47%	9.32%	6.81%

Agriculture consumers

Petitioner's submission

For projection of the sales in the agriculture category a normalized CAGR of 8% has been considered by the Petitioner. The consumer growth has been assumed as per the 6-year CAGR of 2.76%. The Petitioner has assumed the 4-year CAGR of 3.44% for load growth of agriculture category.

Commission's analysis

The Commission observes that over the past 6 years, the number of agricultural consumers have grown at a YoY growth rate ranging between 1% and 5%. The Commission therefore agrees with Petitioner's submission and considers it prudent to approve 6-year CAGR of 2.76%.

On analyzing the sales per consumer trends, the Commission notes that FY 2017-18 witnessed a sharp rise of ~64% in the consumption per consumer. The Commission believes that such a sharp rise is unsustainable, considering the energy efficiency measures being undertaken under the schemes such as KUSUM (Kisan Urja Suraksha Evam Utthaan Mahaabhiyan) etc. Based on the Petitioner's submission, the CAGR of sales per consumer works out to 5.1% for the Control Period, increasing the per consumer sales per annum from ~ 3600 units (actuals of FY 2017-18 after sharp YoY rise) to ~ 4400 units (projected, FY 2021-22). Based on the analysis of trends, the Commission believes that the least observed positive YoY growth of 2.83% for sales per consumer would be a more appropriate projection. Therefore, based on the analysis of consumer growth and sales per consumer, the Commission approves a sales growth of 5.66% for the Control Period. For projection of connected load, the Commission observes a steep YoY growth of 44% in FY 2014-15, followed by a steady increase in growth rates; hence, the Commission considers it prudent to accept the Petitioner's assumption of a 4-year CAGR of 3.44%.

Table 15: 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	2.76%	2.76%	3.44%	3.44%	8.00%	5.66%

LT Industry

Petitioner's submission

Considering the inconsistency in past trends, the Petitioner has assumed 2% CAGR for consumer growth. However, as the growth in the last 5 years has been on a general upward trend in terms of sales, the Petitioner has assumed a 7-year CAGR of 3.75% for projecting the sales. For load growth, the Petitioner has considered the 6-year CAGR i.e. 2.34%

Commission's analysis

The Commission notes that the number of consumers have declined due to Petitioner's drive on collection of arrears. This has led to a reduction in the number of consumers to below FY 2014-15 levels in FY 2017-18. The Commission also observes an overall negative trend in number of consumers. Accordingly, the Commission assumes that this category will not witness significant increase in number of consumers. However, for maintaining a positive outlook in the light of initiatives like Make in India, Commission approves a marginal growth rate of 1% for projecting number of consumers. The analysis of the sales per consumer trend indicates a consistent increase in sales per consumer, with the exception of FY 2014-15, from ~94,269 units (FY 2013-14) to ~ 114,660 units (FY 2017-18) reflecting a CAGR of 5.02%. However, based on the Petitioner's submission, the CAGR of sales per consumer works out to only 1.72% for the Control Period. Therefore, based on the analysis of consumer growth (CAGR approved as 1%) and sales per consumer (CAGR of 5.02%), the Commission approves a sales growth of 6.07% for the Control Period. Keeping in line with load trends of past years, for projection of connected load, the Commission approves the 6-year CAGR of 2.34%, as submitted by the Petitioner.

Table 16: Growth rates approved by the Commission for LT industry 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 Industry	2.00%	1.00%	2.34%	2.34%	3.75%	6.07%

HT/EHT Industry

Petitioner's submission

Due to optimistic macroeconomic outlook in the near future and expectation of higher load growth at the 220 KV level, the Petitioner has assumed a normalised CAGR of 9.00% for sales growth. With regard to the consumer and load growth projections, the Petitioner has assumed the 6-year CAGR of 0.15% and 2.67% respectively.

Commission's analysis

The HT/EHT category forms the largest portion of sales for the territory. The Commission understands that any deviation in the consumption profile of this category has significant impact on power deficit / surplus situation, power purchase costs and revenues of the territory. However, the Petitioner has only relied upon positive macroeconomic outlook in general for carrying out its projections, instead of a more detailed analysis of the upcoming / planned industrial growth. By their very nature, HT industries would apply for electricity connections / increase in existing load well in advance and thus it is expected that Utility should be well aware of the upcoming requirements. The Commission, therefore, had directed the Petitioner to provide the data of upcoming/pending connections, at least for this FY and the upcoming one. However, since the Petitioner has not furnished such data, the Commission has relied on the past data trends for carrying out projections. The Commission directs the Petitioner to provide the requisite details at the time of Mid Term Review to be undertaken by the Commission in accordance with extant JERC MYT Regulations.

The Commission observes that from FY 2013-14 to FY 2015-16 the number of consumers has declined, however since FY 2016-17 the YoY growth rate has been marginally positive. Observing the past trends and Petitioner's submissions, the Commission approves 6-year CAGR of 0.15% for number of consumer projections. On analyzing the sales per kVA of connected load trend, the Commission notes that the sales per kVA of connected load has grown at a CAGR of 2.03% from FY 2012-13 to FY 2017-18. However, based on the Petitioner's submission, the CAGR of sales per kVA of connected load works out to 6.16% for the Control Period, which is not in line with the historical trend. Therefore, based on the analysis of consumer growth and sales per kVA of connected load, the Commission opines that the 6-year CAGR of 4.76% is more appropriate for the Control Period, even with a positive economic outlook. The Commission observes the YoY connected load growth rate of 2.65% in FY 2017-18, the consistent increase in load per consumer and notes the Petitioner's expectation of higher load growth at the 220 kV level and accordingly approves the 6-year CAGR of 2.67%.

Table 17: Growth rates approved by the Commission for HT/EHT 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/EHT Industry	0.15%	0.15%	2.67%	2.67%	9.00%	4.76%

Public lighting

Petitioner's submission

The Petitioner has assumed consumer growth rate based on 6-year CAGR of 11.40% and 7-year CAGR of 9.20% for sales projections. For load growth, due to lack of a consistent trend, the Petitioner has considered a normalized growth of 2.00%.

Commission's analysis

The Commission observes that the high growth rate assumed by the Petitioner for consumer growth based on 6-year CAGR of 11.4% includes the outlier of ~55% YoY growth in FY 2014-15. In the absence of any data on the number of planned / pending connections for public lighting that would cause such a huge jump in number of consumers, the Commission observes that CAGR of 11.4% for the entire Control Period is not prudent. In order to remove the effect of this outlier, the Commission approves 4-year CAGR of 6.50% for projecting the growth of number of consumers. Further, with the thrust on energy efficient lighting under the UJALA scheme, the Commission expects to witness only a marginal growth in sales per consumer. Therefore, despite the Petitioner's high growth rate assumption of 9.21% for energy sales, the Commission has approved the sales growth equal to the 5-year CAGR of 7.65%. However, in light of the inconsistent trends of connected load and the expectation of marginal increase in connected load for this category in the coming years, the Commission accepts and approves the Petitioners assumption of 2.00% for load projections.

Table 18: Growth rates approved by the Commission for Public 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
Public Lighting	11.40%	6.50%	2.00%	2.00%	9.20%	7.65%

Public Water Works

Petitioner's submission

Due to expected growth in infrastructure development such as water works etc., the Petitioner believes that the CAGR observed in the last 6 years of 10.18% for consumer growth will continue in the upcoming Control Period. The Petitioner believes that the CAGR of 2.12% is appropriate for sales projections. For load growth projections, the Petitioner has considered the 6-year CAGR of 3.96%.

Commission's analysis

The Commission observes that after a significant jump in FY 2014-15 and FY 2015-16, the YoY growth of number of consumers has been marginal. Therefore, the Commission considers that 6-year CAGR of 10.18% assumed by Petitioner would not be prudent for the entire Control Period and approves 4-year CAGR of 4.67% for growth in number of consumers. The Commission observes that this category has high growth rates in sales per kVA of connected load, with the same increasing from ~ 1713 units (FY 2012-13) to ~ 4395 units (FY 2017-18). However, based on the Petitioner's submission, the CAGR of sales per kVA of connected load works out to -1.80% for the Control Period, reducing the per kVA of connected load sales per annum from ~ 4,545 units (FY 2018-19) to 4,304 units (FY 2021-22). The Commission does not find the reduction in per kVA of connected load sales per annum appropriate in the absence of any data, considering wear and tear of existing water works' plant & equipment and marginal addition of new equipment. Therefore, the Commission approves CAGR of the last 2 years i.e. 14.12% for projecting sales. Keeping in line with the observed high sales per kVA of connected load, the Commission finds it appropriate to approve a load growth of 3.96%, which is equal to the 6-year CAGR.

Table 19: Growth rates approved by the Commission for Public Water Works category

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
Public Water Works	10.18%	4.67%	3.96%	3.96%	2.12%	14.12%

Temporary Supply

Petitioner's submission

The Petitioner has submitted that, as temporary connections do not follow any particular pattern, it has not considered any particular growth rate for projections.

Commission's analysis

The Commission agrees with the Petitioner that the temporary supply does not follow any particular trend. However, the Commission opines that projections for the category cannot be ignored. Therefore, the Commission has considered 0% as growth rate for growth in number of consumers and connected load. The Commission further observes that Petitioner has not submitted the sales data for this category for FY 2017-18. Therefore, the Commission has worked out the sales of 6.4 MUs for FY 2017-18 using the sales per kVA of connected load for FY 2016-17 and connected load for FY 2017-18, and has considered the same for FY 2018-19 and for the Control Period without any escalation.

Table 20: 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	0.00	N/A	0.00	N/A	0.00

3.2.3 Consumer growth projections approved by the Commission

The summary of the projections for number of consumer growth for the Base Year and the upcoming Control Period based on CAGRs approved by the Commission is given below:

Table 21: Consumer growth projections approved by the Commission for the upcoming Control Period

Number of Consumers	CAGR Approved	Revised Estimate	Approved Projections		
Consumer Category		Base Year	Control Period		
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	2.58%	49,533	50,811	52,122	53,467
Commercial	0.82%	7,879	7,944	8,009	8,075
Agriculture	2.76%	1,381	1,419	1,458	1,498
LT Industry	1.00%	1,723	1,740	1,757	1,775
HT/EHT Industry	0.15%	808	809	810	811
Public Lighting	6.50%	674	718	765	815
Public Water Works	4.67%	131	137	143	150
Temp. Supply	0.00%	414	414	414	414
Total		**62,543**	**63,992**	**65,478**	**67,005**

3.2.4 Load growth projections approved by the Commission

The summary of the projections for load growth for the Base Year and the upcoming Control Period based on CAGRs approved by the Commission is given below:

Table 22: Load growth projections approved by the Commission for the upcoming Control Period

Connected Load (kVA)	CAGR Approved	Revised Estimate	Approved Projections		
Consumer Category		Base Year	Control Period		
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	8.00%	142,184.16	153,558.89	165,843.60	179,111.09
Commercial	5.47%	25,019.59	26,388.17	27,831.60	29,353.99
Agriculture	3.44%	4,140.70	4,283.14	4,430.48	4,582.89
LT Industry	2.34%	111,226.18	113,828.87	116,492.47	119,218.39
HT/EHT Industry	2.67%	565,879.05	580,988.02	596,500.40	612,426.96
Public Lighting	2.00%	1,433.10	1,461.76	1,491.00	1,520.82
Public Water Works	3.96%	825.44	858.13	892.11	927.44
Temp. Supply	0.00%	1,986.00	1,986.00	1,986.00	1,986.00
Total		**852,694**	**883,353**	**915,468**	**949,128**

3.2.5 Sales growth projections approved by the Commission

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

Table 23: Sales growth projections approved by the Commission for the upcoming Control Period

Sales (MU)	CAGR Approved	Revised Estimate	Approved Projections		
Consumer Category		Base Year	Control Period		
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	5.71%	128.25	135.57	143.31	151.49
Commercial	6.81%	61.67	65.87	70.36	75.15

Sales (MU)	CAGR Approved	Revised Estimate	Approved Projections		
Consumer Category		Base Year	Control Period		
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Agriculture	5.66%	5.10	5.39	5.70	6.02
LT Industry	6.07%	207.48	220.08	233.44	247.61
HT/EHT Industry	4.76%	2,079.25	2,178.22	2,281.90	2,390.52
Public Lighting	7.65%	10.21	10.99	11.83	12.73
Public Water Works	14.12%	3.98	4.55	5.19	5.92
Temp. Supply	0.00%	6.40	6.40	6.40	6.40
Total		**2,502.44**	**2,627.16**	**2,758.22**	**2,895.94**

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

Petitioner's submission

The actual transmission & distribution losses incurred by the Petitioner in the last 2 years are as given below:

Table 24: Actual T&D losses (%)

FY 2016-17	FY 2017-18
8.48%	6.85%

The Petitioner has submitted that it has achieved T&D loss level of 6.85% for FY 2017-18 as against the target of 8.40%. It further submitted that reduction of T&D loss below 10% involves significant amount of capital expenditure and that it will be EDDD's endeavour to bring the T&D loss level further down in the subsequent years. Accordingly, revised estimates for T&D losses for FY 2018-19 and trajectory proposed by the Petitioner for the upcoming Control Period is as given below:

Table 25: T&D loss (%) trajectory proposed by the Petitioner for the upcoming Control Period

Base Year	Projections		
FY 2018-19 (RE)	FY 2019-20	FY 2020-21	FY 2021-22
6.80%	6.70%	6.60%	6.50%

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 below:

Table 26: T&D losses approved by the Commission in 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	8.50%	8.48% (A)
FY 2017-18	8.40%	6.85% (A)
FY 2018-19	8.30%	6.80% (E)

The Commission takes the note of difficulties expressed by the Petitioner in further reducing the T&D losses. The Commission would like to point out that approx. 83% of the total sales is towards HT and EHT industries in the FY 2017-18, where losses are very low. In view of capital expenditure proposed by the Petitioner and nature of schemes planned to be carried out, the Commission opines that the Petitioner should be in a position to further reduce losses in the upcoming Control Period. Accordingly, the Commission approves the trajectory proposed by the Petitioner.

Table 27: T&D loss trajectory approved by the Commission

	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 (%)	6.70%	6.70%	6.60%	6.60%	6.50%	6.50%

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 sales projections with distribution loss trajectory proposed by the Petitioner. The summary of the energy requirement as estimated by the Petitioner is as given below:

Table 28: Energy requirement proposed by the Petitioner

Particulars (MU)	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
Sales	2,499.81	2,713.94	2,946.93	3,200.46
Open Access Sales	0.00	0.00	0.00	0.00
Less: Energy Savings	0.00	0.00	0.00	0.00
Total Sales	2,499.81	2,713.94	2,946.93	3,200.46
Add: Losses	182.39	194.89	208.24	222.49
T&D Losses (%)	6.80%	6.70%	6.60%	6.50%
Energy Required at Periphery	**2682.19**	**2908.83**	**3155.17**	**3422.95**
Add: Sales to common pool consumer	1.69	2.22	1.60	3.58
Less: Own Generation	18.63	18.63	18.63	18.63
Total energy requirement at UT periphery	**2665.25**	**2892.42**	**3138.14**	**3407.90**
Less: Energy Purchased through UI at Periphery	71.21	0.00	0.00	0.00
Less: Purchase from Traders	0.00	0.00	0.00	0.00
Less: Open Access Purchase	0.00	0.00	0.00	0.00
Total Energy Required at Periphery	**2594.05**	**2892.42**	**3138.14**	**3407.90**
Transmission loss	98.55	109.88	119.22	129.47
Transmission loss (%)	3.66%	3.66%	3.66%	3.66%
Total Energy to be purchased	**2692.60**	**3002.30**	**3257.36**	**3537.36**

Commission's analysis

Based on the sales projections approved by the Commission in *Table 23* and the T&D losses approved by the Commission in*Table 27*, the energy requirement at UT periphery and the total energy input estimated by the Commission for the upcoming Control Period is given below:

Table 29: Energy requirement at UT periphery and total energy input approved by the Commission

Particulars (MU)	Revised Estimate[1]	Approved		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Sales	2502.44	2627.16	2758.22	2895.94

[1] 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

Particulars (MU)	Revised Estimate[1]	Approved		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
T&D Losses (%)	6.80%	6.70%	6.60%	6.50%
Total energy requirement	**2685.02**	**2815.87**	**2953.13**	**3097.26**
Add: Sales to common pool consumer	1.69	2.22	1.60	3.58
Less: Own Generation (Solar)	18.63	18.63	18.63	18.63
Less: Energy Purchased through DSM	71.21	0.00	0.00	0.00
Total energy requirement at UT periphery	**2596.87**	**2799.46**	**2936.10**	**3082.21**

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 various generating stations has been considered based on the revised allocation issued by the Western Region Power Committee (WRPC) vide No. WRPC/Comml-I/6/Alloc/2018/5733 dated 28 June 2018. For projecting the power purchase from eastern region NTPC generating stations, an allocation of 1.30 MW from KhSTPP has been taken into account
- **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:
    - 7.34 MW allocation from Lara Super Thermal Power Station from second half of FY 2018-19
    - 4.50 MW allocation from Gadarwara Unit I. Further, 4.50 MW allocation from Gadarwara Unit II by June 2019
- **No purchase of power from Ratnagiri:** The Petitioner expects that it will not be getting any power from Ratnagiri for FY 2018-19 and the upcoming Control Period, hence no power purchase from the power plant has been considered
- **Plant Load Factor (PLF):** The Petitioner submits that it has considered the average of plant load factor for previous years.
- **Auxiliary consumption:** The Petitioner has considered an auxiliary consumption of 9% and 3% for coal and gas based generating stations, respectively
- **Inter-State transmission losses:** The Petitioner has considered 3.66% Inter-State transmission losses

Further, to meet the Solar RPO for the Control Period, the Petitioner has submitted that it is in the process of purchasing 80 MW power from NTPC, 50 MW from Solar Energy Corporation of India (SECI), and 40 MW from open tender on long term basis (25 years) on Power Purchase Agreement (PPA) basis. Additionally, EDDD has an installed capacity of 13.59 MW of Solar plants in its territory, out of which 10 MW is ground mounted and 3.59 MW is Solar rooftop. It is expected that an additional 1 MW of rooftop Solar plant will be added to the existing capacity during the Control Period.

Based on the above inputs and assumptions, the Petitioner has projected the availability of power from tie-up sources as below:

Table 30: Power purchase quantum proposed by the Petitioner for the upcoming Control Period

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
NTPC Stations				
KSTPP	339.51	336.38	336.38	336.38
KSTPP-III	39.87	39.05	39.05	39.05
VSTPP-I	86.43	87.23	87.23	87.23

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
VSTPP-II	61.02	60.43	60.43	60.43
VSTPP- III	76.47	74.42	74.42	74.42
VSTPP- IV	86.37	83.10	83.10	83.10
VSTPS-V	55.62	53.30	53.30	53.30
KAWAS	150.32	159.68	159.68	159.68
JGPP	163.29	177.66	177.66	177.66
Sipat-I	148.38	139.38	139.38	139.38
Sipat-II	59.69	54.66	54.66	54.66
MSTPS-I	54.00	47.36	47.36	47.36
MOUDA-II	118.77	109.49	109.49	109.49
KHSTPP-II	8.65	7.24	7.24	7.24
SOLAPUR	86.58	85.00	85.00	85.00
LARA	24.53	49.73	49.73	49.73
GADARWARA	12.53	55.92	60.98	60.98
Subtotal - NTPC	**1572.04**	**1620.05**	**1625.11**	**1625.11**
NSPCL - Bhilai	**483.98**	**494.41**	**494.41**	**494.41**
NPCIL				
KAPS	47.71	64.92	64.92	64.92
TAPS 3& 4	75.16	74.97	74.97	74.97
Subtotal - NPCIL	**122.86**	**139.90**	**139.90**	**139.90**
Others				
Ratnagiri	0.00	0.00	0.00	0.00
Subtotal - Others	**0.00**	**0.00**	**0.00**	**0.00**
Power purchase from Other Sources				
Indian E. Exchange/Bilateral	443.71	395.00	645.00	925.00
UI	71.21	0.00	0.00	0.00
Solar	18.63	18.63	18.63	18.63
Non Solar (Hydro)	70.00	70.00	70.00	70.00
Solar REC	0.00	0.00	0.00	0.00
Non Solar REC	0.00	0.00	0.00	0.00
Solar (SECI, NTPC)	0.00	282.95	282.95	282.95
Subtotal – Other Sources	**603.54**	**766.58**	**1016.58**	**1296.58**
Total Power Purchase	**2782.43**	**3020.94**	**3275.99**	**3555.99**

Commission's Analysis

The Commission has employed the following approach and assumptions to forecast the power purchase from tied-up sources for the upcoming Control Period:

- **Allocation from Central Generating Stations (CGS):** The Commission has considered firm allocation and allocation from the unallocated quota from the central generating stations based on average allocation for FY 2017-18. The same has been obtained from Regional Energy Account (REA) of western region prepared by WRPC vide letter number WRPC/Comml.-I/ABTREA/2018/3.0 dated 5 April 2018. The same share of allocation has been assumed for all the years of the upcoming Control Period.
- **Power purchase from new stations:** The Commission has considered the assumptions made by the Petitioner as below:
    - 7.34 MW allocation from Lara Super Thermal Power Station from second half of FY 2018-19
    - 4.50 MW allocation from Gadarwara Unit I. Further, 4.50 MW allocation from Gadarwara Unit II by June 2019
- **Plant Load Factor (PLF):** The Commission has made the following assumptions with respect to PLF:
    - **NTPC, NSPCL plants:** The Commission has considered the load factor as average of PLF for previous four years and 5 months of FY 2018-19, obtained from CEA's Monthly Generation Overview Report. However, for Lara STPS and Gadardwara STPS, due to lack of past data, the Commission has assumed a PLF of 15% for FY 2018-19 (as per CEA Generation Report for August 2018) and the Petitioner's assumptions for the remaining years
    - **NPCIL:** The Commission has considered the load factor as average of PLF for previous four years and 5 months of FY 2018-19, obtained from CEA's generation overview report. However, for Kakrapara Atomic Power Station (KAPS), the Commission has not considered zero PLF as the plant is under shutdown since FY 2016-17, instead has considered PLF average of FY 2014-15 and FY 2015-16
- **Auxiliary consumption:** The Commission has considered the Auxiliary consumption based on normative auxiliary consumption allowed in Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 for thermal power plants. Accordingly, auxiliary consumption of 7.75% and 2.50% is considered for coal and gas based plants respectively[3]. However, for nuclear generation power plants, the auxiliary consumption has been assumed as 10%.
- **Inter-State transmission losses:** The Commission has considered Inter-State transmission losses as 3.66% for all years of the upcoming Control Period, as per the Petitioner's submission.

The quantum of power procurement projected by the Commission for the upcoming Control Period is given in *Table 31*.

It may be observed that, for a few plants such as Kawas Gas based Power Plant (KGPP), Jhanor Gandhar Gas based Power Plant (GGPP), Mauda Super Thermal Power Project (Stage 2), and Solapur Super Thermal Power Station; there is a significant difference between power availability projected by the Petitioner and that determined by the Commission. Whereas the Petitioner has submitted that their PLF assumptions are based on past years data, reference to CEA Monthly Generation Overview Report shows different PLF values for the period FY 2014-15 to 5 months of FY 2018-19. The Commission has therefore used average of PLF of FY 2014-15 to 2017-18 and 5 months of FY 2018-19 for carrying out the projections.

Table 31: Power purchase plan approved by the Commission for the upcoming Control Period

Sr. No.	Source	Capacity (MW)	Weighted average allocation to Licensee		Avg. PLF	Gross Generation (MU)	Aux consumption (%)	Net Generation (MU)	Power Purchase (MU)			
									Revised Estimate[2]	Approved		
			%	MW					2018-19	2019-20	2020-21	2021-22
1	2	3	4		5	6	7	8	9	10	11	12
A	**Central Sector Power Stations**											
I	**NTPC**	**18,014**		**257.80**		**1,21,428.76**		**1,12,219.01**	**1,327.85**	**1413.71**	**1418.77**	**1418.77**
	KSTPP	2,100	2.30%	48.22	89%	16,394.88	7.75%	15,124.28	347.30	347.30	347.30	347.30
	KSTPP-III	500	1.12%	5.61	89%	3,903.54	7.75%	3,601.02	40.38	40.38	40.38	40.38
	VSTPP-I	1,260	0.99%	12.49	83%	9,160.99	7.75%	8,451.01	83.76	83.76	83.76	83.76
	VSTPP-II	1,000	0.86%	8.63	83%	7,270.62	7.75%	6,707.15	57.88	57.88	57.88	57.88
	VSTPP- III	1,000	1.06%	10.64	83%	7,270.62	7.75%	6,707.15	71.36	71.36	71.36	71.36
	VSTPP- IV	1,000	1.20%	12.00	83%	7,270.62	7.75%	6,707.15	80.45	80.45	80.45	80.45
	VSTPS-V	500	1.63%	8.17	83%	3,635.31	7.75%	3,353.58	54.77	54.77	54.77	54.77
	KAWAS	656	5.02%	32.94	31%	1,769.56	2.50%	1,725.32	86.60	86.60	86.60	86.60
	GGPP	657	5.13%	33.76	36%	2,058.66	2.50%	2,007.20	103.07	103.07	103.07	103.07
	Sipat-I	1,980	1.21%	23.92	88%	15,283.20	7.75%	14,098.75	170.30	170.30	170.30	170.30
	Sipat-II	1,000	0.95%	9.50	88%	7,718.79	7.75%	7,120.58	67.61	67.61	67.61	67.61
	MSTPS-I	500	1.38%	6.91	42%	1,855.81	7.75%	1,711.98	23.67	23.67	23.67	23.67
	MOUDA-II	1,000	1.49%	14.88	42%	3,711.61	7.75%	3,423.96	50.93	50.93	50.93	50.93
	SOLAPUR	660	1.90%	12.53	61%	3,531.29	7.75%	3,257.61	61.87	61.87	61.87	61.87
	LARA[3]	1,600	0.46%	7.34	85%	11,913.60	9.00%	*10,841.38*	8.92	49.73	49.73	49.73
	GADARWARA[3]	1,600	0.56%	9.00	85%	11,913.60	9.00%	*10,841.38*	10.86	55.92	60.98	60.98
	KHSTPP-II	1,000	0.13%	1.30	77%	6,766.05	7.75%	6,241.68	8.11	8.11	8.11	8.11
II	**NPCIL**	**1,520**		**21.29**		**10,383.18**		**9,344.86**	**129.02**	**129.02**	**129.02**	**129.02**

[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

[3] For Lara and Gadarwara stations, capacity allocation, PLF and auxiliary consumption for the Control Period have been considered based on the Petitioner's submission

Sr. No.	Source	Capacity (MW)	Weighted average allocation to Licensee		Avg. PLF	Gross Generation (MU)	Aux consumption (%)	Net Generation (MU)	Power Purchase (MU)			
									Revised Estimate[2]	Approved		
			%	MW					2018-19	2019-20	2020-21	2021-22
1	2	3	4		5	6	7	8	9	10	11	12
	KAPS	440	2.04%	8.98	72%	2,776.13	10.00%	2,498.52	50.97	50.97	50.97	50.97
	TAPP 3&4	1,080	1.14%	12.31	80%	7,607.05	10.00%	6,846.35	78.05	78.05	78.05	78.05
III	**Others**	**2,467**		**80.96**		**3,625.50**		**3,344.52**	**541.54**	**541.54**	**541.54**	**541.54**
	NSPCL Bhillai	500	16.19%	80.96	83%	3,625.50	7.75%	3,344.52	541.54	541.54	541.54	541.54
	Ratnagiri	1,967	0.00%	0.00	0%	-	7.75%	-	-	-	-	-
IV	**Renewable Sources**								**88.63**	**371.58**	**371.58**	**371.58**
	Solar								18.63	301.58	301.58	301.58
	Non-Solar								70.00	70.00	70.00	70.00
V	**Total (excluding Renewable source)**								**1,998.41**	***2,084.27***	***2,089.33***	***2,089.33***
VI	**POWERGRID Losses**											
	Transmission Loss (%)								3.66%	3.66%	3.66%	3.66%
	Transmission Loss (MU)								73.14	76.28	76.47	76.47
VII	**Total power available at periphery from firm sources**								**1925.26**	**2,007.99**	**2,012.86**	**2,012.86**
VIII	**Total Power available at periphery (including Renewable sources)**								**2,013.89**	**2,379.57**	**2,384.44**	**2,384.44**

3.4.3 Energy Balance

Petitioner's submission

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

Table 32: Energy Balance proposed by the Petitioner

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
Retail Sales (a)	2,499.81	2,713.94	2,946.93	3,200.46
Open Access Sales (b)	0.00	0.00	0.00	0.00
Less: Energy Savings (c)	0.00	0.00	0.00	0.00
Total Sales (d=a+b-c)	2,499.81	2,713.94	2,946.93	3,200.46
Distribution Loss (MU) (e=g-d)	182.39	194.89	208.24	222.49
Distribution Loss (%) (f=e/g)	6.80%	6.70%	6.60%	6.50%
Energy Required at Periphery (g)	2682.19	2908.83	3155.17	3422.95
Sale to common pool consumer/UI Sale(h)	1.69	2.22	1.60	3.58
Own generation (i)	18.63	18.63	18.63	18.63
Total energy requirement at UT periphery(j=g+h-i)	**2665.25**	**2892.42**	**3138.14**	**3407.90**
Less: Energy Purchased through UI at Periphery (k)	71.21	0.00	0.00	0.00
Less: Open Access Purchase at Periphery (l)	0.00	0.00	0.00	0.00
Energy requirement at UT periphery from tied up sources (m=j-k-l)	**2594.05**	**2892.42**	**3138.14**	**3407.90**
Interstate loss (MU) (n=o-m)	98.55	109.88	119.22	129.47
Interstate loss (%)	3.66%	3.66%	3.66%	3.66%
Energy requirement at UT periphery from generator end (o)	2692.60	3002.30	3257.36	3537.36
Total Energy requirement from tied up sources & UI at generator end (p=o+k)	2763.80	3002.30	3257.36	3537.36
Total Energy requirement in UT including Open Access (q=p+l)	**2763.80**	**3002.30**	**3257.36**	**3537.36**

Commission's Analysis

The Commission notes that the Petitioner is resorting to short-term procurement of power through Common Pool / UI / Traders / Exchange for almost 22% of its total power requirement for FY 2018-19. The proportion further increases to 25% by the end of the Control Period. The Commission strongly feels that this arrangement is not sustainable and results in exposure of consumers to risk of fluctuating tariffs. Additionally, the Draft Amendments to the Electricity Act state that the average annual power requirement should be availed through long-term or medium term PPA's; the extract of the draft Act is as follows:

"..It shall be mandatory for the Distribution Company to show to the respective Commission that they have tied up long term/ medium term PPAs to meet the annual average power requirement in their area of supply, failing which their license shall be liable to be suspended.."

Therefore, in line with the above-proposed statutory direction, the Commission directs the Petitioner to explore long-term / medium term power purchase arrangements and thereby minimizing its dependence on more risk free sources of power.

Table 33: Energy Balance approved by the Commission

Particulars	Revised Estimate[4]	Approved		
	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Energy Required				
Sales (A)	2502.44	2627.16	2758.22	2895.94
T&D Losses (B)	6.80%	6.70%	6.60%	6.50%
Energy Required at UT Periphery (C = A/(1-B))	**2685.02**	**2815.87**	**2953.13**	**3097.26**
Sales to common pool consumer (D)	1.69	2.22	1.60	3.58
Less: Own Generation (E)	18.63	18.63	18.63	18.63
Less: Energy purchased under DSM (F)	71.21	0.00	0.00	0.00
Total energy requirement at UT periphery (G = C+D-E-F)	**2596.87**	**2799.41**	**2936.10**	**3082.21**
Energy Available				
Energy available from tied up sources (at Generator Periphery) - Conventional (H)	1,998.41	2084.27	2089.33	2089.33
Inter State Transmission loss (I)	3.66%	3.66%	3.66%	3.66%
Inter State Transmission Losses (J=H*I)	73.14	76.28	76.46	76.46
Energy available at UT periphery (K=H-J)	**1,925.26**	**2,007.99**	**2,012.86**	**2,012.86**
Energy available from Renewable sources (L)	88.63	371.58	371.58	371.58
Total energy available at UT periphery (M = K+L)	**2,013.89**	**2,379.57**	**2,384.44**	**2,384.44**
(Deficit)/ Surplus (N)	(582.98)	(419.85)	(551.65)	(697.77)
Total Energy Available at UT periphery (M-N)	**2596.87**	**2799.42**	**2936.09**	**3082.21**

3.4.4 Renewable Purchase Obligation

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 RPO procurement.

For the purpose of the Business Plan petition, for FY 2018-19 and FY 2019-20, the Petitioner plans to fulfil the RPO targets through the mix of purchase of physical power and purchase of REC certificates. The Petitioner has submitted that it is in the process of purchasing 80 MW power from NTPC, 50 MW from Solar Energy Corporation of India (SECI), and 40 MW from open tender on long-term basis (25 years) on Power Purchase Agreement (PPA) basis. Additionally, EDDD has an installed capacity of 13.59 MW of Solar plants in its territory, out of which 10 MW is ground mounted and 3.59 MW is Solar rooftop. It is expected that an additional 1 MW of rooftop Solar plant will be added to the existing capacity during the Control Period. The plan for meeting RPO submitted by the Petitioner is as given below:

Table 34: RPO plan proposed by the Petitioner for the upcoming Control Period

Description	FY 2019-20	FY 2020-21	FY 2021-22
Sales within State (MU)	**2,713.94**	**2,946.93**	**3,200.46**
RPO obligation (%)	**11.50%**	**14.10%**	**17.00%**
Solar	4.70%	6.10%	8.00%

[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

Description	FY 2019-20	FY 2020-21	FY 2021-22
Non-Solar	6.80%	8.00%	9.00%
RPO obligation for the year (MU)	**312.10**	**415.52**	**544.08**
Solar	127.56	179.76	256.04
Non-Solar	184.55	235.75	288.04
RPO Compliance (Procurement and own generation)	**371.58**	**371.58**	**371.58**
Solar	301.58	301.58	301.58
Non-Solar	70.00	70.00	70.00
RPO Compliance (REC purchase)	**114.55**	**165.75**	**218.04**
Solar	0.00	0.00	0.00
Non-Solar	114.55	165.75	218.04

Commission's analysis

In the current RPO compliance plan submitted by the Petitioner, the Commission acknowledges the efforts planned to procure more renewables from FY 2019-20 onwards. However, the Commission observes that, though the Petitioner is consistently meeting / surpassing its Solar obligations, it is reliant on REC purchases to meet its non-Solar obligations. The Commission expects the Petitioner to make all efforts to increase procurement of power from non-Solar sources. Further, the 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.

In accordance with the sales projections approved by the Commission, the RPO targets are given below:

Table 35: RPO targets approved by the Commission

	Revised Estimate[5]	Approved		
Description	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Sales within State (MU)	2502.44	2627.16	2758.22	2895.94
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 for the year (MU)	**225.22**	**302.12**	**388.91**	**492.31**
Solar	90.09	123.48	168.25	231.68
Non-Solar	135.13	178.65	220.66	260.63
RPO Compliance (Procurement and own generation) (MU)	**88.63**	**371.58**	**371.58**	**371.58**
Solar (including SECI)	18.63	301.58	301.58	301.58
Non-Solar	70.00	70.00	70.00	70.00
RPO Compliance (REC purchase) (MU)	**136.59**	**108.65**	**150.66**	**190.63**
Solar	71.46	0.00	0.00	0.00
Non-Solar	65.13	108.65	150.66	190.63

[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 capital expenditure and capitalisation for New schemes

Petitioner's submission

The Petitioner has proposed various Transmission and Distribution schemes for the upcoming Control Period. The summary of capital expenditure projections and capitalisation schedule for the upcoming Control Period is given below:

Table 36: Capital expenditure plan and capitalisation schedule proposed by the Petitioner for the upcoming Control Period

Sr. No.	Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Total	Capitalisation Schedule
			FY 2019-20	FY 2020-21	FY 2021-22		
1	Establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman along with associated 220 KV multi circuit Magarwada-Dabhel transmission line via Kachigam	49.60	10.00	20.00	19.60	49.60	FY 2021-22
2	Establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	31.52	15.00	16.52	-	31.52	FY 2020-21
3	Establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	32.58	5.00	15.00	12.58	32.58	FY 2021-22
4	Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	8.00	8.00	-	-	8.00	FY 2019-20
5	Inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	4.50	4.50	-	-	4.50	FY 2019-20
6	Installation of 2.64 MVAR capacitor bank at 66 KV Substation in Daman	39.00	15.00	24.00	-	39.00	FY 2020-21
7	Implementation of SCADA system at 66 Sub stations along with necessary hardware replacement	15.00	5.00	5.00	5.00	15.00	FY 2021-22
8	Normal Development Works and release of service connection	13.50	4.50	4.50	4.50	13.50	FY 2021-22
9	Providing Underground power Distribution system in Daman & Diu city / rural areas and	60.00	20.00	20.00	20.00	60.00	FY 2021-22

Sr. No.	Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Total	Capitalisation Schedule
			FY 2019-20	FY 2020-21	FY 2021-22		
	extension of the scheme to Industrial Estates						
10	Implementation of Advance Metering Infrastructure (Smart Metering Solution) in Daman and Diu	56.43	10.00	25.00	21.43	56.43	FY 2020-21
11	Construction of new control room building, shifting, and commissioning of existing/new equipment at 66 KV Substation at Dalwada and Dabhel, Daman.	14.00	7.00	7.00	-	14.00	FY 2020-21
12	Improvement and renovation of 220 KV and 66 KV Sub station	10.00	2.00	4.00	4.00	10.00	FY 2021-22
13	Replacement of 4 nos. of 10 MVA old power transformers at 66/11 KV Dabhel, Ringanwada, Varkund and Malala Substation .	5.12	2.00	2.00	1.12	5.12	FY 2021-22
	Total	**339.25**	**108.00**	**143.02**	**88.23**	**339.25**	

Commission's analysis

The Commission has analysed actual achievement of capitalisation of the Petitioner vis-à-vis the same approved in the last three previous trued up years as given below:

Table 37: Capitalisation achieved by the Petitioner vis-à-vis approved by the Commission

Particulars	FY 2014-15		FY 2015-16		FY 2016-17		Total	
	Approved	Actual	Approved	Actual	Approved	Actual	Approved	Actual
Capitalisation (INR Cr)	57.17	57.17	17.27	61.90	54.70	65.52	129.14	184.59

The Commission observes that EDDD has been consistently achieving more than the approved targets for capitalization during the last three years. However, 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. 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 as per Clause 8.5 (f) of the JERC MYT Regulations:

"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."

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.

Overall approach of the Commission

For the upcoming Control Period, the Commission has compared capital expenditure and capitalisation proposed by the Petitioner with DPRs submitted by the Petitioner along with the Business Plan petition and replies to Deficiency Notes. If the Petitioner has failed to submit the DPRs / Technical Clearance letters from CEA for any of the proposed scheme for the upcoming Control Period or the submitted proofs/details are missing the required information, the Commission has not approved any of the capital expenditure and capitalisation proposed for the said schemes. However, to credit the Petitioner for past achievements of capital expenditure and capitalisation, the Commission may make some exceptions, subject to Petitioner furnishing documents within 30 days of this Order. 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. Establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman along with associated 220 KV multi circuit Magarwada-Dabhel transmission line via Kachigam

Petitioner's Submission

The Petitioner has submitted that at present Dabhel Substation is connected with 220/66 kV Magarwada Substation through double circuit 66 KV line via 66 kV Kachigam line and present load on this circuit is 212 MW, which cannot be catered from existing system. Therefore the Petitioner has proposed to establish 220/66 KV, 2x100 MVA Substation at Dabhel and the same Substation will be connected to Magarwada 400/220 KV Substation (POWERGRID). By implementing this scheme Daman district will be connected to CTU system and reliability of Power supply will be increased and line losses can be reduced.

This scheme will provide third 220 KV power source to the UT of Daman and will improve the voltage regulation of the electrical system and reduce the line losses by ensuring extra High voltage transmission of lines. It will improve power supply and will ensure stand by feeding arrangement in case major breakdown on 220 KV Magarwada Substation or 220 KV Ringanwada S/s, Dabhel Substation will be connected to CTU networks.

The Petitioner in its reply to the Deficiency Note raised by the Commission has also submitted that it has submitted the scheme to the CEA for technical sanctions.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 38: Capital expenditure and capitalisation schedule proposed by the Petitioner for establishment of new 66/11 KV Sub Station at village Sayali

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Scheme for establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman along with associated 220 KV multi-circuit Magarwada-Dabhel transmission line via Kachigam	49.60	10.00	20.00	19.60	FY 2021-22

Commission's Analysis

The Commission appreciates the efforts made by the Petitioner to improve the existing T&D network and reduce the T&D losses. It notes the submission of the scheme made to the CEA for technical sanction and directs the Petitioner to submit the letter to the Commission at the earliest. Therefore, based on the DPR submitted, and subject to obtaining the technical sanction letter, the Commission approves the capital expenditure schedule as proposed by the Petitioner.

The Commission also directs that it shall not consider any cost escalations due to controllable delays. Additionally, as stated above, the Commission opines that the Petitioner should do all efforts to ensure that it informs the Commission about the status of each scheme on a quarterly basis as per Clause 8.5 (f) of the JERC MYT Regulations.

The capital expenditure and capitalisation approved for the upcoming Control Period for this scheme is given below:

Table 39: Capital expenditure approved by the Commission for establishment of new 66/11 KV Sub Station at village Sayali

Name of Scheme	Approved Expenditure (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman along with associated 220 KV multi-circuit Magarwada-Dabhel transmission line via Kachigam	10.00	20.00	19.60	49.60

Table 40: Capitalisation schedule approved by the Commission for establishment of new 66/11 KV Sub Station at village Sayali

Name of Scheme	Approved Capitalisation (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	-	-	49.60	49.60

Therefore, the Commission approves a total capital expenditure of INR 49.60 Cr and total capitalisation of INR 49.60 Cr for the upcoming Control Period.

2. Establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman

Petitioner's Submission

The Petitioner has submitted that the 66 kV Dhabel Substation is presently fed from 66 kV Magarwada Dhabel via Kachigam line. Being a lengthy 66 kV feeder the losses are on a higher side, hence in order to lower the losses and provide a stable and reliable power to the industries and residential consumers at Dabhel it is proposed to establish the 66/11 KV 2x20 MVA GIS S/S. Also, at present in Daman all the 07 Nos. S/S's at Kachigam, Dalwada, Dabhel, Varkund Ringanwada, Magarwada and Bhimpore are loaded up to their optimum capacity. As Daman is a small UT with limited financial and technical sanction powers, it is generally not advisable to load the Substation by more than 80% of its capacity to avoid heavy load shedding in the eventuality of outage of any power transformers. The Petitioner submits that considering the present load growth it is expected that the Maximum demand of Daman area could be around 400 MWs at the end of 12th Five Year Plan. Keeping in view of the loading of existing Substation and future load, it is essential to establish a new 66/11 KV GIS Substation Dabhel, Daman to cope up with the forth-coming loading of this area.

The Petitioner in its reply to the Deficiency Note raised by the Commission has also submitted that the Petitioner is in the process for issue of the Work Order for the project

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given in the following table:

Table 41: Capital expenditure and capitalisation schedule proposed by the Petitioner for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	31.52	15.00	16.52	-	FY 2020-21

Commission's Analysis

The Commission notes that the Petitioner has submitted the technical clearance letter from CEA, from which the Commission observes that there is a mismatch between capital expenditure schedule proposed by the Petitioner and the capital expenditure schedule specified in the CEA letter. As per the CEA letter, INR 16 Cr of capital expenditure was estimated in FY 2017-18 and the balance expenditure in FY 2018-19. The Commission observes that even after obtaining the technical sanction, the Petitioner has not been able to issue a Work Order over the last 2 years leading to further delays. Since the scheme has its importance with respect to the loading of existing Substation and future load, the Commission directs the Petitioner to expedite the process and ensure completion of the scheme within the suggested revised timelines. The Commission also directs that it shall not allow any cost escalation on account of controllable factors.

The capital expenditure and capitalisation approved for the said scheme for the upcoming Control Period is given below:

Table 42: Capital expenditure approved by the Commission for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman

Name of Scheme	Approved Expenditure (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	15.00	16.52	-	31.52

Table 43: Capitalisation schedule approved by the Commission for establishment of establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman

Name of Scheme	Approved Capitalisation (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	-	31.52	-	31.52

Therefore, the Commission approves a total capital expenditure of INR 31.52 Cr and total capitalisation of INR 31.52 Cr for the upcoming Control Period.

3. Establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman

Petitioner's Submission

The Petitioner has submitted that the present demand of Panchal industrial area is about 8.25 MW which is being met by existing 66/11 KV Bhimpore S/s. this maximum demand of Panchal area is expected to increase to about 27 MW by FY 2021-22. As Bhimpore Substation is about 3 km away from the industrial area and there is no space for further augmentation of Bhimpore S/s, it is proposed to establish new 2X20 MVA, 66/11 KV Substation at load centre at Panchal to meet the expected demand in the area. The scheme provides for erection of 66 KV line and 66/11 KV GIS SUBSTATION along with all associated equipment at Bhimpore area in order to share the enhanced loading of existing 66/11 KV Substation and to meet future load growth to improve regulation.

The Petitioner submitted that the technical sanction for the scheme has been obtained from CEA, and it is presently under process for issue of Administrative Approval and Expenditure sanction order.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 44: Capital expenditure and capitalisation schedule proposed by the Petitioner for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Scheme for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	32.58	5.00	15.00	12.58	FY 2021-22

Commission's Analysis

The Commission notes the importance of the scheme with respect to the loading of existing Substation and future load. The Petitioner has submitted the technical clearance letter from CEA, from which the Commission observes that there is a mismatch between capital expenditure schedule proposed by the Petitioner and the capital expenditure schedule specified in the CEA letter. As per the CEA letter, INR 16 Cr of capital expenditure was estimated in FY 2017-18 and the balance expenditure in FY 2018-19, signifying completion in 2 years. The Commission observes that even after obtaining the technical sanction, the Petitioner has not been able to issue a Work Order over the last 2 years leading to further delays. The Commission states that it shall not consider any cost escalations in cases of delays due to controllable factors, including internal approval process of the Petitioner. The Commission therefore approves INR 16 Cr of capital expenditure in FY 2019-20 and the balance expenditure of INR 16.58 Cr in FY 2020-21 based on the completion schedule proposed in the Technical clearance letter. Accordingly, the Commission has also approved the capitalization in FY 2020-21 itself.

Table 45: Capital expenditure approved by the Commission for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman

Name of Scheme	Approved Expenditure (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	16.00	16.58	-	32.58

Table 46: Capitalisation schedule approved by the Commission for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman

Name of Scheme	Approved Capitalisation (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	-	32.58	-	32.58

Therefore, the Commission approves a total capital expenditure of INR 32.58 Cr and total capitalisation of INR 32.58 Cr for the upcoming Control Period.

4. Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman

Petitioner's Submission

The Petitioner has submitted that the existing 66/11 KV Substations at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman are heavily loaded (almost 70 %) then its capacity and load is increasing day by day so to cope up with existing demand new transformers as well as bays has to be installed which requires extra space which is not available in the Substation therefore department is going to adopt new technology i.e. hybrid bay system, as its occupy half the space of current installed bay and provide better efficiency and less maintenance then current system. It's costing will be 20 % higher than existing bays but keeping in mind less space consumption and low maintenance cost the overall cost is justified

The Petitioner submitted that scheme has been submitted to the CEA for technical sanction.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 47: Capital expenditure and capitalisation schedule proposed by the Petitioner for establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	8.00	8.00	-	-	FY 2019-20

Commission's Analysis

On examining the DPR, the Commission observes that there is a mismatch between the capital expenditure amount proposed by the Petitioner (INR 8 Cr) and the capital expenditure amount mentioned in the DPR (INR 3.19 Cr). Accordingly, the Commission approves INR 3.19 Cr of capital expenditure and the same amount towards capitalisation in the FY 2019-20.

Table 48: Capital expenditure approved by the Commission for establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman

Name of Scheme	Approved Expenditure (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	3.19	-	-	3.19

Table 49: Capitalisation schedule approved by the Commission for establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman

Name of Scheme	Approved Capitalisation (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	3.19	-	-	3.19

Therefore, the Commission approves a total capital expenditure of INR 3.19 Cr and total capitalisation of INR 3.19 Cr for the upcoming Control Period.

5. Interconnection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL

Petitioner's Submission

The Petitioner has submitted that presently the entire load of Eurocaustic is fed from 66/11 KV Kachigam S/s. also, the load of Dabhel Substation is fed through 66 KV Magarwada-Kachigam line resulting in overloading of the line. Considering the future industrial growth and to make supply reliable thereby relaxing the loading of 66 KV Magarwada – Kachigam line it is proposed to erect 66 KV D/c line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to Eurocaustic.

The Petitioner submitted that scheme has been submitted to the CEA for technical sanction.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 50: Capital expenditure and capitalisation schedule proposed by the Petitioner for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	4.50	4.50	-	-	FY 2019-20

Commission's Analysis

On examining the DPR, the Commission observes that there is a mismatch between the capital expenditure amount proposed by the Petitioner and the capital expenditure schedule mentioned in the DPR. As per the DPR, the project cost is estimated at INR 6.36 Cr, with completion of the scheme in FY 2017-18. However the Petitioner has proposed the capital expenditure in FY 2019-20 in the Petition. The Petitioner has submitted the scheme to the CEA for technical sanction. Accordingly, subject to the CEA approval, the Commission approves INR 6.36 Cr of capital expenditure in FY 2019-20. Further, the Commission approves capitalisation of the scheme in FY 2019-20 as per the Petitioner's submission. The Commission also directs that it shall not consider cost escalations due to controllable factors.

Table 51: Capital expenditure approved by the Commission for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL

Name of Scheme	Approved Expenditure (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	6.36	-	-	6.36

Table 52: Capitalisation schedule approved by the Commission for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL

Name of Scheme	Approved Capitalisation (INR Cr)			
	FY 2019-20	FY 2020-21	FY 2021-22	Total
Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	6.36	-	-	6.36

Therefore, the Commission approves a total capital expenditure of INR 6.36 Cr and total capitalisation of INR 6.36 Cr for the upcoming Control Period.

6. Installation of 2.64 MVAR capacitor bank at 66 KV Substation in Daman

Petitioner's submission

The Petitioner has submitted that objective of the scheme is to improve the power factor at the 66 kV Substation s. Due to poor power factor, the EDDD has to pay the reactive energy charges. With the installation of the capacitor bank, the EDDD proposes to reduce the reactive energy by improving the power factor.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 53: Capital expenditure and capitalisation schedule proposed by the Petitioner for installation of 2.64 MVAR capacitor bank at 66 KV Substation in Daman

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Installation of 2.64 MVAR capacitor bank at 66 KV Substation in Daman	39.00	15.00	24.00	-	FY 2020-21

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

7. Implementation of SCADA system at 66 Sub stations along with necessary hardware replacement

Petitioner's submission

The Petitioner has submitted that it is planning to implement the SCADA system in five nos. of 66/11 KV Substation at Daman

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 54: Capital expenditure and capitalisation schedule proposed by the Petitioner for implementation of SCADA system at 66 Sub stations along with necessary hardware replacement

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Implementation of SCADA system at 66 Sub stations along with necessary hardware replacement	15.00	5.00	5.00	5.00	FY 2021-22

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

8. Normal Development Works and release of service connection

Petitioner's submission

The Petitioner submits that the under this scheme it plans to provide additional distribution network with transformer centers & associated HT/LT service lines for arranging power supply to various categories of HT&LT consumers and to augment existing power distribution system by adding new transformer centers. The Petitioner submits that the works under this scheme are carried out on the basis of 15% revenue return per annum as per its terms & conditions.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 55: Capital expenditure and capitalisation schedule proposed by the Petitioner for Normal Development Works and release of service connection

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Normal Development Works and release of service connection	13.50	4.50	4.50	4.50	FY 2021-22

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

9. Providing Underground power Distribution system in Daman & Diu city / rural areas and extension of the scheme to Industrial Estates

Petitioner's submission

The Petitioner submits that the main objective of this scheme is to provide total U/G cable power distribution system and removing O/H lines to render uninterrupted and stable power supply to urban, rural, and industrial areas of Daman & Diu. This move is expected to yield additional revenue due to sale of Power to Industrial consumers because of increase of power supply reliability index to 99.5%. The Petitioner identifies this scheme to be important especially because, Diu city is subject to heavy rain, salty weather and frequent cyclones, it has become necessary to provide the city / rural with Underground cable system, so that reliable power supply and beauty of the City is maintained. The scheme has gained more relevance after Diu has been selected by the Smart City Mission to be developed into a Smart City.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 56: Capital expenditure and capitalisation schedule proposed by the Petitioner for providing Underground power Distribution system in Daman & Diu city / rural areas and extension of the scheme to Industrial Estates

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Providing Underground power Distribution system in Daman & Diu city / rural areas and extension of the scheme to Industrial Estates	60.00	20.00	20.00	20.00	FY 2021-22

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

10. Implementation of Advance Metering Infrastructure (Smart Metering Solution) in Daman and Diu

Petitioner's submission

The Petitioner submits that it envisages implementing the scheme under the flagship program of the GoI i.e. the IPDS scheme. The objective of the scheme is to establish a project that will have a sustainable impact by increasing the revenue through increase in the billing efficiency and reduction of O&M cost. The Petitioner also submits that the Power Finance Corporation (PFC) shall be the nodal agency for operationalization and implementation of the scheme under the overall guidance of the MOP.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 57: Capital expenditure and capitalisation schedule proposed by the Petitioner for implementation of Advance Metering Infrastructure (Smart Metering Solution) in Daman and Diu

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Implementation of Advance Metering Infrastructure (Smart Metering Solution) in Daman and Diu	56.43	10.00	25.00	21.43	FY 2020-21

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

11. Construction of new control room building, shifting, and commissioning of existing/new equipment at 66 KV Substation at Dalwada and Dabhel, Daman.

Petitioner's submission

The Petitioner submits that the existing 66/11 KV Substation at Dalwada was commissioned in 1991 and the 66/11 KV Substation at Dabhel was commissioned in 1996. The building is very old and there is water leakage in the building during rainy season. Hence, it proposes to construct a new control room.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 58: Capital expenditure and capitalisation schedule proposed by the Petitioner for construction of new control room building, shifting and commissioning of existing/new equipment at 66 KV Substation at Dalwada and Dabhel, Daman

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Scheme for construction of new control room building, shifting and commissioning of existing/new equipment at 66 KV Substation at Dalwada and Dabhel, Daman	14.00	7.00	7.00	-	FY 2020-21

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

12. Improvement and renovation of 220 KV and 66 KV Sub station

Petitioner's submission

The Petitioner submits that the existing 220/66 KV Substation at Magarwada, Moti Daman was commissioned in the year 2003. Due to heavy salinity climate in Daman the Substation equipment like breakers, isolators and other items are corroded and required to be replaced for better performance and proper functioning of the S/S.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 59: Capital expenditure and capitalisation schedule proposed by the Petitioner for improvement and renovation of 220 KV and 66 KV Sub station

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Improvement and renovation of 220 KV and 66 KV Sub station	10.00	2.00	4.00	4.00	FY 2021-22

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said schemes.

13. Replacement of 4 nos. of 10 MVA old power transformers at 66/11 KV Dabhel, Ringanwada, Varkund and Malala Substation

Petitioner's submission

The Petitioner submits that the power transformers at 66/11 KV Dabhel, Ringanwada, Varkund and Malala Substation are very old and were commissioned in the year 1991 to 1994. These transformers are loaded nearly up to 80% to 85% of its maximum capacity for long duration period which has weakened the insulating materials. Hence, it is proposed to replace the old transformers by new transformers in order to avoid any power interruption due to its breakdown.

The capital expenditure and capitalisation schedule proposed by the Petitioner for the above scheme is as given below:

Table 60: Capital expenditure and capitalisation schedule proposed by the Petitioner for replacement of 4 nos. of 10 MVA old power transformers at 66/11 KV Dabhel, Ringanwada, Varkund and Malala Substation

Name of Scheme	Total estimated amount (INR Cr)	Proposed Expenditure (INR Cr)			Capitalisation Schedule
		FY 2019-20	FY 2020-21	FY 2021-22	
Replacement of 4 nos. of 10 MVA old power transformers at 66/11 KV Dabhel, Ringanwada, Varkund and Malala Substation .	5.12	2.00	2.00	1.12	FY 2021-22

Commission's analysis

The Commission notes that the Petitioner has failed to submit the DPR/ Technical clearances for the above scheme. As per the overall approach adopted by the Commission, as the Petitioner has failed to submit the DPRs / Work orders/ technical clearance letters for any of the proposed scheme, the Commission has not approved the capital expenditure and capitalisation proposed for the said 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 61: Summary of capital expenditure approved by the Commission for the upcoming Control Period

Sr. No.	Name of Scheme	Approved Expenditure (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
New Schemes					
1	Scheme for establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman along with associated 220 KV multi-circuit Magarwada-Dabhel transmission line via Kachigam	10.00	20.00	19.60	49.60
2	Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	15.00	16.52	-	31.52
3	Scheme for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	16.00	16.58	-	32.58
4	Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	3.19	-	-	3.19
5	Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	6.36	-	-	6.36
	Total Capital Expenditure	**50.55**	**53.10**	**19.60**	**123.25**

Therefore, the Commission approves a total capital expenditure of INR 123.25 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 62: Summary of capitalisation approved by the Commission for the upcoming Control Period

Sr. No.	Name of Scheme	Approved Capitalisation (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
New Schemes					
1	Scheme for establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman along with associated 220 KV multi-circuit Magarwada-Dabhel transmission line via Kachigam	-	-	49.60	49.60
2	Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station along with associated line at Dabhel, Daman	-	31.52	-	31.52
3	Scheme for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	-	32.58	-	32.58
4	Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	3.19	-	-	3.19

Sr. No.	Name of Scheme	Approved Capitalisation (INR Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
New Schemes					
5	Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	6.36	-	-	6.36
	Total Capitalisation	**9.55**	**64.10**	**49.60**	**123.25**

Therefore, the Commission approves a total capitalisation of INR 123.25 Cr for the upcoming Control Period.

The Commission, in line with the overall approach, has not approved schemes with capital expenditure and capitalisation of INR 213.05 Cr, for which DPRs / technical sanctions were not furnished by the Petitioner. The Commission advises the Petitioner to furnish the relevant documents while submitting the MYT Petition, for Commission's consideration, to enable it to pass on the impact of the same in the Multi Year Tariff Order.

3.5.2 Funding Plan

Petitioner's submission

The Petitioner has submitted that it will consider budgetary funding for financing the capital schemes, except for smart metering project funded by Power Finance Corporation (PFC) under the IPDS scheme.

Commission's analysis

The Petitioner has proposed to fund the capital investment schemes using budgetary funding, except for smart metering scheme which shall be financed by PFC. However, the Petitioner can only consider equity up to 30% of the capital cost and the rest shall be treated as normative debt as per Clause 26.2 of the JERC MYT Regulations:

"*Provided also that if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as a normative loan for the Licensee for determination of tariff:*"

Based on the analysis of proposed funding for each of the schemes, the approved funding plan is given in the table below:

Table 63: Approved funding plan for the upcoming Control Period

Sr. No.	Sources of Funds	FY 2019-20	FY 2020-21	FY 2021-22	Total
A	**Total Capital Expenditure in INR Cr**	**50.55**	**53.10**	**19.60**	**123.25**
B	**Debt (%)**	70%	70%	70%	70%
C	**Equity (%)**	30%	30%	30%	30%
D	**Normative Debt (INR Cr) (B xA)**	35.39	37.17	13.72	86.28
E	**Equity (INR Cr) (C x A)**	15.16	15.93	5.88	36.97

3.6 Other Expenditure

3.6.1 Expenses related to safety of manpower

Petitioner's submission

The Petitioner has proposed expenditure of INR 0.50 Cr for each year of Control Period, to be spent on procurement of safety equipment, safety related trainings etc.

Commission's Analysis

The Petitioner is directed to submit details for approval of costs related aspects in the MYT Petition. Further, the Petitioner shall also provide details pertaining to proposed expenditure viz. expenditure under this head in last three years, the basis for assuming the amount and the initiatives planned to be carried out using the proposed amount.

3.6.2 Expenses related to CGRF

Petitioner's submission

The Petitioner has submitted that the actual expenditure on CGRF was INR 17.58 lakhs in FY 2017-18. Further, the Petitioner has proposed the following expenditure related to CGRF for the upcoming Control Period.

Table 64: Proposed expenditure on CGRF

Year	Expenditure (INR Cr)
FY 2019-20	0.21
FY 2020-21	0.23
FY 2021-22	0.26

Commission's Analysis

The Commission observes that these expenses form part of the ARR and shall be approved by the Commission subsequently at the time of approval of the MYT Petition. The Petitioner is directed to submit the details pertaining to the proposed expenditure under this head in last three years, the basis for considering the proposed amount including any other expenditure planned to be carried out under this proposed amount.

3.6.3 Expenses related to training/skilling/reskilling of the man power

Petitioner's submission

The Petitioner has proposed expenditure of INR 0.25 Cr for each year of Control Period, to be spent on training/skilling/reskilling of the manpower.

Commission's Analysis

The Commission observes that these expenses form part of the ARR and shall be approved by the Commission subsequently at the time of approval of the MYT Petition. The Petitioner is directed to submit the details pertaining to the proposed expenditure under this head in last three years and the basis for considering the proposed amount including any other expenditure planned to be carried out under this proposed amount.