



# **Business Plan**

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

Petition No. 264/2018

For

Electricity Department, Andaman & Nicobar  
Administration

31 December 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
A&N	Andaman & Nicobar
Act	The Electricity Act, 2003
ARR	Aggregate Revenue Requirement
CAGR	Compounded Annual Growth rate
Capex	Capital Expenditure
Cr	Crore
DDUGJY	Deen Dayal Upadhyay Gram Jyoti Yojana
DG	Diesel Generator
Discom	Distribution Company
DPR	Detailed Project Report
EDA&N	Electricity Department of Andaman & Nicobar
FY	Financial Year
HT	High Tension
IPDS	Integrated Power Development Scheme
IPP	Independent Power Producer
JERC	Joint Electricity Regulatory Commission for the State of Goa and Union Territories
kW	kilo Watt
kWh	kilo Watt Hour
LT	Low Tension
MNRE	Ministry of New & Renewable Energy
MoP	Ministry of Power
MU	Million Units
MW	Mega Watt
MYT	Multi Year Tariff
NTPC	National Thermal Power Corporation Limited
O&M	Operation and Maintenance
PBPH	Phoenix Bay Power House
REC	Renewable Energy Certificate
RoE	Return on Equity
RPO	Renewable Purchase Obligation
ST&D	Sub Transmission & Distribution
SERC	State Electricity Regulatory Commission
T&D	Transmission & Distribution
TVS	Technical Validation Session
UT	Union Territory
YoY	Year on Year

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**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. 264/2018

**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, Andaman & Nicobar Administration (EDA&N) ..... Petitioner

**ORDER**

- a) This order is passed in respect of the Petition filed by the Electricity Department, Andaman & Nicobar Administration for approval of its Business Plan for the MYT Control Period of three years commencing from 01 April 2019 to 31 March 2022.
- b) In exercise of the powers conferred on it by sub-Section (2) of Section 181 read with Section 36, Section 39, Section 40, Section 41, Section 51, Section 61, Section 62, Section 63, Section 64, Section 65 and Section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling it in this behalf, the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (except Delhi), after previous publication, issued the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Generation, Transmission and Distribution Multi Year Tariff) Regulations, 2018 on 10 August 2018.
- c) In terms of Regulations 8.1 and 16 of the aforesaid Regulations, the Petitioner has filed a Petition for approval of its Business Plan for the three-year Control Period 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 on 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 have been taken into consideration.
- e) Based on the information/documents submitted by the Petitioner and keeping in view the provisions of the Electricity Act, 2003 and the relevant Regulations framed thereunder, the Commission approves the Business Plan for the Control Period from FY 2019-20 to FY 2021-22 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.

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- f) **The Petitioner is now directed to submit the Multi Year Tariff Petition for the Control Period at the earliest, in terms of Multi Year Tariff Regulations. The Petitioner is also directed to submit the Tariff Proposal for the FY 2019-20 comprising of Fixed Charges and Energy Charges for all the categories in its Tariff Proposal.**
- g) Ordered as above, read with attached document giving detailed reasons, grounds and conditions.
- h) Copy of this Order be sent to the Petitioner, CEA and the Administration of Andaman & Nicobar.

Sd/-

**Neerja Mathur**  
**(Member)**

Sd/-

**M.K. Goel**  
**(Chairperson)**

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

Place: Gurugram

Date: 31 December 2018



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# ***1 Chapter 1: Introduction***

## ***1.1 Joint Electricity Regulatory Commission (JERC) Formation***

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 Island, 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.

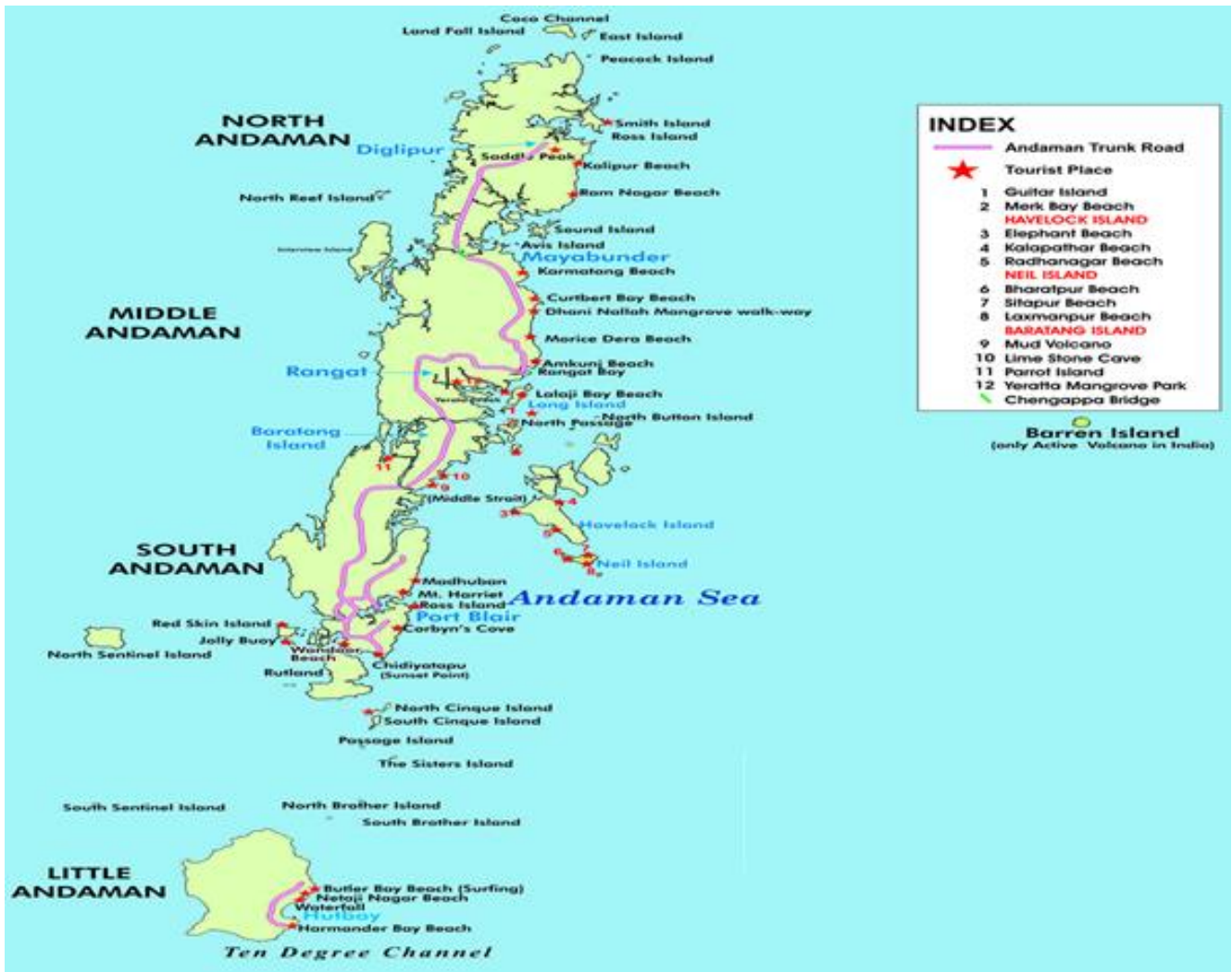
## ***1.2 Andaman & Nicobar Islands***

Andaman & Nicobar Islands (hereinafter referred to as “A&N”) is a cluster of islands scattered in the Bay of Bengal. These islands are separated from the rest of India by more than 1000 kms. The total area of the territory is 8249 sq.km out of which the forest cover is about 7589 sq. km. (92%). A&N is having population of 3,79,944 as per census provisional records and average growth rate of population is 6.68%. These islands are divided in three districts, viz., Andaman, Nicobar and North & Middle Andaman. The seat of the Administration is at Port Blair (South Andaman) in which 14.14 sq. km. area is under the jurisdiction of Port Blair Municipal Council.

The tempo of economic development has tremendously accelerated along with all-round expansion in the areas/sectors, viz., (i) Shipping Services, (ii) Civil Supplies, (iii) Education, (iv) Fisheries, (v) Tourism & Information Technology, (vi) Health, (vii) Industries, (viii) Rural Development, (ix) Social Welfare, (x) Transport, (xi) Increase in District Headquarters, (xii) Central Government Department, (xiii) Public Undertaking & other offices, (xiv) Services & Utilities, (xv) Defence Establishment, (xvi) Commercial Organisations/Business Centres, etc. Thus, these islands have reached the take off stage for total economic transformation. All these economic and infrastructure developments require power as a vital input and to play a key role for achieving overall transformation.

For operational purpose the area has been divided into 7 divisions and 26 sub-divisions. The Pictorial view of the Islands is given below:

### Andaman Group of Islands



### Nicobar Group of Islands



### 1.3 Electricity Department Andaman & Nicobar Administration (EDA&N)

The Electricity Department of Andaman & Nicobar Administration (hereinafter referred to as “EDA&N” or “Utility” or “Petitioner”) is solely responsible for power supply in the Union Territory (UT). Power requirements of EDA&N are met by own generating stations as well as power purchase.

Due to the geographical and topographical peculiarities of these islands including separation by sea over great distances, there is no single power grid for the entire electrified islands, instead, power house at various islands caters independently to the power requirements of area/islands.

EDA&N is operating and maintaining power generation, transmission and distribution system network in these islands for providing electric power supply to general public. It implements various Planned and Non-Planned for schemes augmentation of DG Generating Capacity, establishment of new power houses and T&D Systems. EDA&N is also functioning as a Nodal Agency for implementing renewable energy programme of the Ministry of New & Renewable Energy (MNRE) on these islands. Presently, EDA&N is headed by a Superintending Engineer, along with seven Executive Engineers and around thirty-eight Assistant Engineers for carrying out the task of power generation, transmission and distribution to the general public including schemes under renewable energy sources.

The key duties being discharged by EDA&N are:

- Laying and operating of such electric lines and sub-stations that are primarily maintained for the purpose of distributing electricity in the area of Andaman & Nicobar Islands, notwithstanding that such line, sub-station are high pressure cables or overhead lines or associated with such high-pressure cables or overhead lines; or used incidentally for the purpose of transmitting electricity for others, in accordance with Electricity Act, 2003 or the rules framed thereunder.
- 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;
- Generation of electricity for the supply of electricity required within the boundary of 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;
- Implementation of schemes for distribution and generally for promoting the use of electricity within the UT.

The present Installed Capacity of EDA&N is approximately 114 MW from various generating stations. The current demand mainly comprises of the domestic and commercial category, which contributed approximately 76% to the total sales of the EDA&N in FY 2017-18.

The table below gives an overview of present infrastructure of EDA&N as of 31.03.2018.

*Table 1: Present Infrastructure*

S.No.	Particulars	Details
1	Total Installed Capacity	114 MW
1(a)	Diesel Generation (Including 19.83 MW hired)	102 MW
1(b)	Hydro Generation	5MW
1(c)	Solar Generation	6MW
2	33 kV lines	497 km
3	11 kV lines	894km
4	LT Lines (415 V)	3474 km
5	Distribution Transformer	980 Nos.
6	Capacity of Distribution Transformer 33kV S/S	163 MVA

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## **1.4 Electricity Regulatory Process in Andaman & Nicobar Islands**

The Commission had issued the first Multi-Year Tariff Order for “Approval of Business Plan for Multi-Year Control Period FY 2016-17 to FY 2018-19” on 28 December 2015 in respect of EDA&N.

## **1.5 Multi Year Tariff Regulations, 2018**

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

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

## **1.6 Filing and admission of Petition for Multi-Year Business Plan from FY 2019-20 to FY 2021-22**

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

The EDA&N submitted the current Petition for approval of ‘Business Plan for MYT Control Period FY 2019-20 to FY 2021-22’ on 10 September, 2018.

After initial scrutiny/analysis, the Petition on Business Plan for the Control Period from FY 2019-20 to FY 2021-22 was admitted on 18 September, 2018 and was marked as Petition no. 264/2018.

## **1.7 Interaction with the Petitioner**

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

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

*Table 2: Interactions with the Petitioner*

<b>S. No</b>	<b>Subject</b>	<b>Date</b>
1	Receipt of Petition by the Commission (By Email)	September 09, 2018
2	Receipt of Petition by the Commission (Hard Copy)	September 27, 2018
3	Admission of the Petition by the Commission	September 18, 2018
4	Deficiency note issued by the Commission	September 17, 2018
5	Reply to the Deficiency Note received by the Commission	October 05, 2018

## 1.8 Public Hearing Process

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

*Table 3: Public Notices published by the Petitioner*

Sr.No.	Date	Name of Newspaper	Place of circulation
1	23.11.2018	Info Andaman	Port Blair
2	26.11.2018	The Daily Telegram	Port Blair
3	28.11.2018	Andaman Nicobar Dweep Samachar	Port Blair
4	29.11.2018	The Phoenix Post	Port Blair

The Petitioner also uploaded the Petition on its website (<http://electricity.and.nic.in>) for inviting objections and suggestions on the Petition. Interested parties/stakeholders were requested to file their objections / suggestions on the Petition to the Commission with a copy to the Petitioner on or before 26.11.2018. The Commission has also uploaded the copy of the Petition on its website to facilitate the stakeholders.

The Commission also published Public Notices in the leading newspapers as tabled below, giving due intimation to the stakeholders, consumers and the public at large about the Public Hearing to be conducted by the Commission on December 3, 2018 from 15:00 hours onwards at Marine Community Hall, Mohan Nagar Port Blair. The details of the public notices published by the Commission is as below:

*Table 4: Public Notices published by the Commission*

S.No.	Date	Name of Newspaper	Place of Circulation
1	07.11.2018	The Echo in India (English)	Port Blair
2	07.11.2018	Arthik Lipi (Bengali)	Port Blair
3	08.11.2018	The Andaman Express (English)	Port Blair
4	29.11.2018	The Echo in India (English)	Port Blair
5	29.11.2018	Arthik Lipi (Bengali)	Port Blair
6	29.11.2018	The Andaman Express (English)	Port Blair

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

## 1.9 Organization of the Order

This Order is organized in the following chapters:

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



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## ***2 Chapter 2: Stakeholder Consultation***

### ***2.1 Regulatory Process***

The Public Hearing was held on 03 December 2018 at Port Blair in respect of the Multi-Year Business Plan Petition for the Control Period from FY 2019-20 to FY 2021-22. During the Public Hearing, stakeholders presented their views in person before the Commission. All the participants from the public, who had not submitted written comments earlier, were also given an equal opportunity to present their views/suggestions/objections in respect of the Petition. The list of objectors is attached as Annexure 1 to this order.

### ***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 Sector responsive and efficient. The details of issues raised by the Stakeholders, response of the Petitioner thereon and the views of the Commission on the same are as follows:

#### ***2.2.1 Tariff Related Issues***

##### **Stakeholder Comments**

- Stakeholders submitted that EDA&N charges the consumers on the basis of connected load irrespective of the units consumed. When most of the consumers are on long vacation during summer and consume relatively very less energy, the consumers are billed on the basis of connected load. Further, most of the consumers have LED bulbs / tubes and other energy efficiency devices which consume less units and at the same time most of the residents of the Island are government servants whose consumption is time bound and under such circumstances it is justified to charge the consumers on the basis of actual units consumed rather than on the basis of the connected load.

##### **Petitioner's Response**

- The tariff approved by the Commission consists of only energy charges with the minimum charges based on connected load. The tariff is charged based on energy charges approved by the Commission based on actual consumption. However, in case the meter of consumer is not working, the billing is done based on connected load. In cases, when the consumers are going on a long leave, they can inform the Division office of EDA&N in advance so that their bills can be raised based on actual consumption instead of connected load.

##### **Commission's View**

- The Commission notes the Stakeholder comments regarding billing on the basis of connected load. The Commission has observed that this issue is more relevant when the consumer meter is not functioning. In such cases, the consumer should inform EDA&N for the replacement of the defective meter and EDA&N should take adequate steps to replace the meter and the ED shall bill the consumers as per the provisions of JERC (Electricity Supply Code) Regulations, 2018.
- The Commission in its Tariff Order dated February 26, 2018 for FY 2018-19 directed the Petitioner to discontinue the minimum monthly charges and adopt fixed charges in the subsequent Tariff order for EDA&N. The Commission's direction in this regard is reproduced below:

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*“The Commission observes that under the present tariff structure, the ED-A&N is charging minimum monthly charges. Applicability of such minimum charges has been discontinued and fixed charges have been introduced across majority of the states in India in line with the provisions of the Tariff Policy. The Commission intends to introduce fixed charges in place of minimum charges in the subsequent Tariff Order for ED-A&N. Therefore, the Petitioner is directed to submit a detailed tariff proposal for introduction of fixed charges across categories supported by details of number of consumers, connected load / contracted demand, etc. in the subsequent tariff filing.”*

**The Commission again directs the Petitioner to submit the tariff proposal for introduction of fixed charges in FY 2091-20 across all categories supported by details of number of consumers, connected load / contracted demand, etc. in the MYT Petition.**

## **2.2.2 Differential Tariff for Regions having Hydro Power**

### **Stakeholder Comments**

- Stakeholders submitted that EDA&N generates 4.90 MU of electricity through Hydro power in Diglipur and Mayabunder to supply more than 90% of the consumers in that region. The Tariff charged to regions in which the Hydro power plants are located is on the basis of expenditure being incurred to generate electricity through Diesel. As the power generation cost through Diesel is much higher than hydro power, the tariff for the region in which hydro power is supplied should be cheaper than other regions.

### **Petitioner’s Response**

- EDA&N generates electricity at various Islands and also procures power from different sources. All the electricity generated and purchased is pooled and distributed to various consumers. Hence, the tariff is calculated on the basis of pooled cost of generation and power purchase and no power is allocated to any specific consumers.

### **Commission’s View**

- The Commission would like to inform the Stakeholder that the power generated from a particular source is not allocated to any specific consumers. The power generated from all the sources and power purchased from various sources is pooled and distributed to various consumers and accordingly the pooled cost of generation and power purchase is considered while approving the ARR and tariff.

# 3 Chapter 3: Approval of the various components of the Multi-Year Business Plan Petition for the Control Period from 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
- Transmission and Distribution (T&D) loss
- Power Procurement Plan
- Capital Investment Plan
- Manpower Plan

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

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

### 3.2.1 Overall approach

#### Petitioner's submission

The Petitioner has submitted the estimates for number of consumers, connected load, and sales for FY 2018-19 and projected the same for the upcoming Control Period FY 2019-20 to FY 2021-22 based on the 5 years CAGR (FY 2012-13 to FY 2017-18).

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

*Table 5: Summary of category-wise Number of Consumers and Growth Rate considered by the Petitioner for Projections*

Number of Consumers	Actuals						CAGR Considered (5 Year)
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	
Domestic	93757	97738	99888	104111	107598	110547	3.35%
Commercial	17291	17885	18304	18958	18974	20056	3.01%
Industry	501	514	533	534	550	579	2.94%
Bulk	56	57	61	63	64	64	2.71%
Public Lighting	649	626	624	668	676	688	1.17%
Irrigation, Pumps & Agriculture	218	226	251	288	321	374	11.40%
<b>Total</b>	<b>112472</b>	<b>117046</b>	<b>119661</b>	<b>124622</b>	<b>128183</b>	<b>132308</b>	



Table 6: Summary of Category-wise Connected Load (kW) and Growth Rate Considered by Petitioner for Projections

Connected Load (kW)	Actuals						CAGR Considered (5 Year)
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	
Domestic	92541	97672	108899	121988	124671	145189	9.43%
Commercial	51773	59771	46667	48646	49807	57670	2.18%
Industry	10577	10801	14038	15227	15790	21602	15.35%
Bulk	9312	10081	9874	10844	11605	12388	5.87%
Public Lighting	2957	3560	2556	2715	2706	2832	0.00%
Irrigation, Pumps & Agriculture	718	805	699	802	891	1016	7.19%
<b>Total</b>	<b>167877</b>	<b>182690</b>	<b>182733</b>	<b>200222</b>	<b>205470</b>	<b>240697</b>	

Table 7: Summary of Category-wise Sales (MU) and Growth Rate Considered by Petitioner for Projections

Sales (MU)	Actuals						CAGR Considered (5 Year)
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	
Domestic	101.36	107.38	115.54	121.17	129.90	127.38	4.68%
Commercial	55.22	56.93	60.69	59.16	59.68	56.86	0.59%
Industry	11.17	11.97	13.38	15.42	17.98	17.49	9.39%
Bulk	28.98	29.32	29.93	33.47	35.63	32.05	1.80%
Public Lighting	8.72	9.24	9.05	8.93	8.65	7.61	0.00%
Irrigation, Pumps & Agriculture	0.91	0.87	0.87	0.94	1.04	0.98	2.39%
<b>Total</b>	<b>206.35</b>	<b>215.71</b>	<b>229.46</b>	<b>239.09</b>	<b>252.88</b>	<b>242.39</b>	

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

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

Number of Consumers	Actual (Unaudited)	CAGR Considered	Base Year (Estimated)	Projections		
				FY 2018-19	FY 2019-20	FY 2020-21
Domestic	110547	3.35%	114250	118077	122032	126119
Commercial	20056	3.01%	20660	21282	21923	22583
Industry	579	2.94%	596	614	632	650
Bulk	64	2.71%	66	68	69	71
Public Lighting	688	1.17%	696	704	713	721
Irrigation, Pumps & Agriculture	374	11.40%	417	464	517	576
<b>Total</b>	<b>132308</b>		<b>136684</b>	<b>141208</b>	<b>145885</b>	<b>150721</b>

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

Connected Load (kW)	Actual (Unaudited)	CAGR Considered	Base Year (Estimated)	Projections		
Consumer Category	FY 2017-18		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	145189	9.43%	158874	173849	190236	208167
Commercial	57670	2.18%	58928	60214	61527	62869
Industry	21602	15.35%	24919	28744	33157	38248
Bulk	12388	5.87%	13116	13886	14702	15566
Public Lighting	2832	0.00%	2832	2832	2832	2832
Irrigation, Pumps & Agriculture	1016	7.19%	1089	1168	1252	1342
<b>Total</b>	<b>240697</b>		<b>259733</b>	<b>280644</b>	<b>303633</b>	<b>328926</b>

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

Sales (MU)	Actual (Unaudited)	CAGR Considered	Base Year (Estimated)	Projections		
Consumer Category	FY 2017-18		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	127.38	4.68%	133.34	139.58	146.10	152.94
Commercial	56.86	0.59%	57.19	57.53	57.86	58.20
Industry	17.49	9.39%	19.14	20.94	22.90	25.05
Bulk	32.05	1.80%	32.63	33.22	33.82	34.43
Public Lighting	7.61	0.00%	7.61	7.61	7.61	7.61
Irrigation, Pumps & Agriculture	0.98	2.39%	1.01	1.03	1.05	1.08
<b>Total</b>	<b>242.39</b>		<b>250.92</b>	<b>259.90</b>	<b>269.35</b>	<b>279.30</b>

### Commission’s Analysis

The Commission sought the details of pending applications for new connections along with corresponding connected load/contract demand from the Petitioner. In response to the same, the Petitioner submitted that the new electric connections are released from time to time, when the requests are received and hence no such applications are kept pending for new connection.

The Commission in its Tariff Order dated February 26, 2018 for FY 2018-19 directed the Petitioner to maintain island-wise, month-wise and slab wise detailed break up of category-wise sales, number of consumers, connected load, peak load, T&D losses, plant-wise generation on monthly basis for all years, fuel consumption in each plant, etc., and submit the details. The Petitioner has only submitted the Island-wise Generation/Power Generation Capacity available to meet the demand and has not submitted the other details. **The Commission again directs the Petitioner to submit the island-wise information for category-wise sales, number of consumers, connected load, peak load, T&D losses, plant-wise generation on monthly basis and fuel cost in each plant for all the years within 30 days from the issuance of this Order.**

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

- The Base Year considered by the Petitioner is FY 2018-19 and the same is in line with the JERC MYT Regulations. The Commission has also considered FY 2018-19 as the Base Year for carrying out projections. The values for FY 2018-19 have been arrived at by considering relevant growth rates approved by the Commission for respective categories and applying the same to FY 2017-18 values.
- The growth rates considered by the Petitioner for projecting number of consumers, load and sales are based primarily on historical CAGRs. The Petitioner has consistently assumed the 5-year CAGR (from FY

2012-13 to FY 2017-18). The Commission has determined growth rates separately for each consumer category based on past trends and other relevant parameters given below:

- Year on Year (YoY) growth
- CAGR (multiple periods)
- Specific (per-consumer) consumption
- Load shedding during FY 2017-18

### 3.2.2 Category-wise Analysis

The historical Year on Year growth and CAGR for number of consumers is as shown in the following Table:

*Table 11: Historical Year-on-Year growth and CAGR for Number of Consumers*

No. of Consumers	Y-o-Y Growth for Number of Consumers					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5-year	4-year	3-year	2-year
<b>Domestic</b>	4.2%	2.2%	4.2%	3.3%	2.7%	3.35%	3.13%	3.44%	2.86%
<b>Commercial</b>	3.4%	2.3%	3.6%	0.1%	5.7%	3.01%	2.91%	3.09%	4.13%
<b>Industry</b>	2.6%	3.7%	0.2%	3.0%	5.3%	2.94%	3.02%	2.80%	0.79%
<b>Bulk</b>	1.8%	7.0%	3.3%	1.6%	0.0%	2.71%	2.94%	1.61%	1.49%
<b>Public Lighting</b>	-3.5%	-0.3%	7.1%	1.2%	1.8%	1.17%	2.39%	3.31%	13.96%
<b>Irrigation, Pumps &amp; Agriculture</b>	3.7%	11.1%	14.7%	11.5%	16.5%	11.40%	13.42%	14.22%	3.04%

The historical Year on Year growth and CAGR for Connected Load is as shown in the following Table:

*Table 12: Historical Year-on-Year growth and CAGR for Connected Load*

Connected Load	Y-o-Y Growth for Connected load					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5-year	4-year	3-year	2-year
<b>Domestic</b>	5.5%	11.5%	12.0%	2.2%	16.5%	9.43%	10.42%	10.06%	8.88%
<b>Commercial</b>	15.4%	-21.9%	4.2%	2.4%	15.8%	2.18%	-0.89%	7.31%	19.11%
<b>Industry</b>	2.1%	30.0%	8.5%	3.7%	36.8%	15.35%	18.92%	15.45%	6.88%
<b>Bulk</b>	8.3%	-2.1%	9.8%	7.0%	6.7%	5.87%	5.29%	7.85%	2.13%
<b>Public Lighting</b>	20.4%	-28.2%	6.2%	-0.3%	4.7%	-0.86%	-5.56%	3.48%	12.55%
<b>Irrigation, Pumps &amp; Agriculture</b>	12.1%	-13.2%	14.7%	11.1%	14.0%	7.19%	5.99%	13.28%	9.64%

The historical Year on Year growth and CAGR for Sales is as shown in the following Table:

*Table 13: Historical Year-on-Year growth and CAGR for Sales*

Sales	Y-o-Y Growth for Sales					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5-year	4-year	3-year	2-year
<b>Domestic</b>	5.9%	7.6%	4.9%	7.2%	-1.9%	6.24%	6.32%	5.89%	6.41%
<b>Commercial</b>	3.1%	6.6%	-2.5%	0.9%	-4.7%	2.70%	2.60%	1.30%	3.26%
<b>Industry</b>	7.2%	11.8%	15.2%	16.6%	-2.7%	15.30%	17.43%	19.38%	21.50%
<b>Bulk</b>	1.2%	2.1%	11.8%	6.5%	-10.0%	5.39%	6.47%	7.98%	6.10%

Sales	Y-o-Y Growth for Sales					CAGR			
Consumer Category	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	5-year	4-year	3-year	2-year
<b>Public Lighting</b>	6.0%	-2.1%	-1.3%	-3.1%	-12.0%	0.19%	-1.20%	-0.92%	-0.71%
<b>Irrigation, Pumps &amp; Agriculture</b>	-4.4%	0.0%	8.0%	10.6%	-5.8%	5.89%	8.64%	11.68%	13.54%

The Commission observed that the actual sales during the FY 2017-18 has reduced to 242.39 MU as compared to actual sales of 252.88 MU during FY 2016-17, though the number of consumers and connected load have increased in FY 2017-18 as compared to FY 2016-17. Further, it is also observed that the reduction in total sales is primarily on the account of reduction in sales to the Commercial category. Apart from Commercial category, reduction in sales to Domestic category and Bulk consumers category has also been observed. In response to the deficiency note raised in this regard, the Petitioner submitted that reduction in sales for FY 2017-18 was due to reduced generation from M/s SPCL (IPP 20 MW) and power shortages. The Petitioner during the discussions submitted that due to power shortage in FY 2017-18, load shedding was carried out and industrial as well as large commercial consumers were asked to operate their DG sets. Further, during the discussions, the Petitioner informed that the issue of power shortage was faced only during FY 2017-18, and in FY 2018-19 there is no power shortage.

As submitted by the Petitioner, the reduction in sales during the FY 2017-18 is due to load shedding on account of power shortages. Thus, the sales figures reported by the Petitioner for FY 2017-18 are restricted sales. It would not be appropriate to project the sales for future years based on actual restricted sales for FY 2017-18. Hence, the Commission has re-assessed the sales for FY 2017-18. The Commission has considered the CAGR of 4 years (FY 2012-13 to FY 2016-17) and have applied the same to actual sales for FY 2016-17 for re-assessing the sales of FY 2017-18. The re-assessed sales of FY 2017-18 has been considered for projecting the sales of FY 2018-19 and the upcoming control period.

The Table below shows the actual and re-assessed sales figure for FY 2017-18.

*Table 14: Category-wise actuals Sales (MU) and re-assessed sales for FY 2017-18.*

Sales (MU)	Actuals						4-Year CAGR (FY 2012-13 to FY 2016-17)	CAGR Considered	FY 2017-18 (Re-assessed)
Consumer Category	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18			
Domestic	101.36	107.38	115.54	121.17	129.90	127.38	6.40%	6.40%	138.21
Commercial	55.22	56.93	60.69	59.16	59.68	56.86	1.96%	1.96%	60.85
Industry	11.17	11.97	13.38	15.42	17.98	17.49	12.64%	10.00%	19.78
Bulk	28.98	29.32	29.93	33.47	35.63	32.05	5.30%	5.30%	37.52
Public Lighting	8.72	9.24	9.05	8.93	8.65	7.61	0.00%	0.00%	8.65
Irrigation, Pumps & Agriculture	0.91	0.87	0.87	0.94	1.04	0.98	3.39%	3.39%	1.08
<b>Total</b>	<b>206.35</b>	<b>215.71</b>	<b>229.46</b>	<b>239.09</b>	<b>252.88</b>	<b>242.39</b>			<b>266.08</b>

### 3.2.3 Category-wise analysis

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

#### **Domestic**

##### **Petitioner's submission**

The Petitioner has considered the CAGR of last 5 years for projecting the number of consumers, connected load and sales for domestic category. Accordingly, the Petitioner has used growth rate of 3.35% (Refer Table 5), 9.43% (Refer Table 6) and 4.68% (Refer Table 7) for number of consumers, connected load and sales, respectively.

##### **Commission's analysis**

The Commission notes that the CAGR considered by the Petitioner for projecting the number of consumers and connected load appears to be appropriate considering the trends observed in the past. The Commission observes that the Petitioner has proposed a CAGR of 3.35% in number of consumers, which translates to addition of ~3703 connections in FY 2018-19 and ~3827 connections in FY 2019-20. The Commission has analysed the new connections data for previous years and observed that the new connections (Refer Table 5) in FY 2015-16, FY 2016-17 and FY 2017-18 were 4223, 3487, and 2949, respectively. The projection of new connections and connected load by the Petitioner appears to be in line with past trends and the Commission approves the proposed CAGR in number of consumers and connected load.

The Commission has analysed the specific (per consumer) consumption and observes that the same has marginally increased (from 1157 in FY 2015-16 to 1207 in FY 2017-18). The Commission also observed that the YoY growth in sales has been steadily increasing from FY 2013-14 to FY 2016-17 (from 5.9% to 7.2%). As discussed above, the Commission has re-assessed the sales for FY 2017-18 considering the 4-year CAGR (FY 2012-13 to FY 2016-17) of 6.40% and accordingly projected the sales for the future years. As sales during FY 2017-18 has reduced due to load shedding, the Commission is of opinion that it would be prudent to consider 4-year CAGR of 6.40% from FY 2012-13 to FY 2016-17 for sales growth. Hence, the Commission has considered the growth rate of 6.40% for projecting the sales.

The Commission agrees with the Petitioner's submission for load growth projections and hence, approves the CAGR for last 5 years. The growth rates approved by the Commission are as below:

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

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
<b>Domestic</b>	3.35%	3.35%	9.43%	9.43%	4.68%	6.40%

#### **Commercial**

##### **Petitioner's submission**

The Petitioner has considered the CAGR of last 5 years for projecting the number of consumers, connected load and sales for commercial category. Accordingly, the Petitioner has used growth rate of 3.01% (Refer Table 5), 2.18% (Refer Table 6) and 0.59% (Refer Table 7) for number of consumers, connected load and sales, respectively.

##### **Commission's analysis**

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers and connected load are consistent with the trends observed in the past. Therefore, the Commission has approved the growth rates for number of consumers and connected load as submitted by the Petitioner. The Commission observes that the commercial category consumers contribute around 25% of the total sales and hence, considering the Petitioner's projections of sales growth of 0.59% will not be appropriate as the same is based on restricted sales for FY 2017-18. As discussed above, the Commission has re-assessed the sales for FY 2017-18 based on 4-year CAGR (FY 2012-13 to FY 2016-17) of 1.96% and accordingly projected the sales for the future years. The Commission has considered growth rate of revised CAGR of 1.96% for projecting sales for the commercial category. The growth rates approved by the Commission is as shown in the following table:

*Table 16: 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
<b>Commercial</b>	3.01%	3.01%	2.18%	2.18%	0.59%	1.96%

## **Industry**

### **Petitioner's submission**

The Petitioner has considered the CAGR of past 5 years for projecting the number of consumers, connected load and sales for industry category. Accordingly, the Petitioner has used growth rate of 2.94% (Refer Table 5), 15.35% (Refer Table 6) and 9.39% (Refer Table 7) for number of consumers, connected load and sales, respectively.

### **Commission's analysis**

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers is consistent with the trends observed in the past. Therefore, the Commission has approved the growth rate as submitted by the Petitioner for projecting number of consumers. The Commission observed that the connected load is increasing at higher rate i.e., 15.35% CAGR for last 5 years as compared to number of consumers i.e., 2.94% CAGR for last 5 years. The Commission finds it appropriate to consider the normative growth rate of 8% for projecting the connected load for the upcoming Control Period.

The Commission observes that there is a decline in YoY growth of sales (-2.7%) in FY 2017-18. Excluding FY 2017-18, the YoY growth from FY 2012-13 to FY 2016-17 is the range of 7.2% to 16.6%, and hence the Commission has re-assessed the sales of FY 2017-18. It is observed that the 4-year CAGR (FY 2012-13 to FY 2016-17) of 12.64% and 3-year CAGR (FY 2013-14 to FY 2016-17) of 14.52% are very high and it may not be appropriate to consider the same for re-assessing the sales for FY 2017-18 and projecting the sales for the next Control Period. Hence, the Commission has considered the moderate growth rate of 10.00% for re-assessing the sales for FY 2017-18 and projecting the sales for the upcoming control period for the industrial category.

The growth rates approved by the Commission are as shown in the following Table:

*Table 17: Growth rates approved by the Commission for 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
<b>Industry</b>	2.94%	2.94%	15.35%	8.00%	9.39%	10.00%

## **Bulk**

### **Petitioner's submission**

The Petitioner has considered the CAGR of past 5 years for projecting the number of consumers and connected load for bulk category. However, for forecasting sales, the Petitioner has used a normative growth rate. Accordingly, the Petitioner has used growth rate of 2.71% (Refer Table 5), 5.87% (Refer Table 6) and 1.80% (Refer Table 7) for number of consumers, connected load and sales, respectively.

### **Commission's analysis**

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers and connected load are consistent with the trends observed in the past. Hence, the Commission has approved the growth rates of number of consumer and connected load as submitted by the Petitioner. The Commission has re-assessed the sales for FY 2017-18 based on 4-year CAGR (FY 2012-13 to FY 2016-17) of 5.30% and has considered the same for projecting the sales for the future years. The growth rates approved by the Commission are as below.



*Table 18: Growth rates approved by the Commission for Bulk category*

Consumer Category	Growth in no. of consumers		Load growth		Sales growth	
	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved	CAGR submitted	CAGR approved
<b>Bulk</b>	2.71%	2.71%	5.87%	5.87%	1.80%	5.30%

## **Public Lighting**

### **Petitioner’s submission**

The Petitioner has considered the CAGR of last 5 years for projecting the number of consumers for public lighting category. However, projections for connected load and sales for the Control Period have been kept the same as that of FY 2017-18. Accordingly, the Petitioner has used growth rate of 1.17% (Refer Table 5) 0.00% (Refer Table 6) and 0.00% (Refer Table 7) for number of consumers, connected load and sales, respectively.

### **Commission’s analysis**

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers and connected load are consistent with the trends observed in the past. As discussed above, the Commission has re-assessed the sales for all the categories except for public lighting category, as the 4 year CAGR, 3 year CAGR, 2 year CAGR are following a negative trend so the Commission has not considered growth rate for the projecting the sales and kept same as that of FY 2016-17.

Therefore, the Commission has approved the growth rates submitted by the Petitioner, as given in the following Table:

*Table 19: 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
<b>Public Lighting</b>	1.17%	1.17%	0.0%	0.0%	0.0%	0.0%

## **Irrigation, Pumps & Agriculture**

### **Petitioner’s submission**

The Petitioner has considered the CAGR of last 5 years for projecting the number of consumers and connected load for irrigation, pumps & agriculture category. The Petitioner has considered the growth rate for sales as 2.39% for the upcoming Control Period. Accordingly, the Petitioner has used growth rate of 11.40% (Refer Table 5), 7.19% (Refer Table 6) and 2.39% (Refer Table 7) for number of consumers, connected load and sales, respectively.

### **Commission’s analysis**

The Commission is of the opinion that CAGR considered by the Petitioner for projecting number of consumers and connected load are consistent with the trends observed in the past. Hence, the Commission has approved the growth rates of number of consumers and connected load as submitted by the Petitioner. The Commission observes that there is decline in sales, the YoY growth rate of sales (-5.8%) in FY 2017-18. Excluding FY 2017-18, the YoY growth from FY 2014-15 to FY 2016-17 is in the range of 0% to 10.68%. As discussed above, the Commission has re-assessed the sales for FY 2017-18 based on 4-year CAGR (FY 2012-13 to FY 2016-17) of 3.39% and has considered the same for projecting the sales for the future years.

The growth rates approved by the Commission are as below:

*Table 20: Growth rates approved by the Commission for Irrigation, Pumps & 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
<b>Irrigation, Pumps &amp; Agriculture</b>	11.40%	11.40%	7.19%	7.19%	2.39%	3.39%

### 3.2.4 Projections of Number of Consumers approved by the Commission

A Summary of the projection of number of consumers approved by the Commission for the upcoming Control Period based on approved CAGRs is given below:

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

Number of Consumers	CAGR Approved	Estimated	Approved Projections		
		Base Year	Control Period		
Consumer Category		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Domestic</b>	3.35%	114250	118077	122032	126119
<b>Commercial</b>	3.01%	20660	21282	21923	22583
<b>Industry</b>	2.94%	596	614	632	650
<b>Bulk</b>	2.71%	66	68	69	71
<b>Public Lighting</b>	1.17%	696	704	713	721
<b>Irrigation, Pumps &amp; Agriculture</b>	11.40%	417	464	517	576
<b>Total</b>		<b>136684</b>	<b>141208</b>	<b>145885</b>	<b>150721</b>

### 3.2.5 Projections of Connected Load approved by the Commission

A Summary of the projections of connected load approved by the Commission for the upcoming Control Period based on approved CAGRs is given in the following Table:

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

Connected Load (kW)	CAGR Approved	Estimated	Approved Projections		
		Base Year	Control Period		
Consumer Category		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Domestic</b>	9.43%	158874	173850	190236	208168
<b>Commercial</b>	2.18%	58928	60213	61526	62868
<b>Industry</b>	8.00%	23330	25197	27212	29389
<b>Bulk</b>	5.87%	13116	13886	14702	15566
<b>Public Lighting</b>	0%	2832	2832	2832	2832
<b>Irrigation, Pumps &amp; Agriculture</b>	7.19%	1089	1167	1251	1341
<b>Total</b>		<b>258169</b>	<b>277144</b>	<b>297760</b>	<b>320164</b>



### 3.2.6 Projections of Sales approved by the Commission

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

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

Sales (MU)	CAGR Approved	Estimated	Approved Projections		
		Base Year	Control Period		
Consumer Category		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Domestic	6.40%	147.06	156.46	166.48	177.13
Commercial	1.96%	62.04	63.26	64.50	65.76
Industry	10.00%	21.76	23.93	26.32	28.96
Bulk	5.30%	39.51	41.60	43.81	46.13
Public Lighting	0.00%	8.65	8.65	8.65	8.65
Irrigation, Pumps & Agriculture	3.39%	1.11	1.15	1.19	1.23
<b>Total</b>		<b>280.12</b>	<b>295.06</b>	<b>310.95</b>	<b>327.86</b>

### 3.3 Transmission & Distribution (T&D) losses

#### Petitioner's submission

The Petitioner has submitted that it has been constantly endeavouring to reduce its T&D losses. Further, it has submitted that it has been able to reduce the loss level from 19.18% in FY 2012-13 to 15.34% in FY 2017-18. The Petitioner has submitted that the reduction in T&D losses in its distribution area is due to the system improvement and augmentation work executed each year under the planned schemes.

The actual distribution losses are as given below:

Table 24: Actual T&D losses (%)

FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
19.18%	19.39%	19.96%	18.90%	17.11%	15.34%

The Petitioner requested the Commission to set realistic targets in view of the fact that the current loss level is very low and reduction of loss below the current level would be difficult. Accordingly, the Petitioner has proposed 0.5% reduction in each year in T&D loss target for the Control Period in view of difficulty in loss reduction below 14%. The T&D loss trajectory proposed by the Petitioner for FY 2018-19 and 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 (Estimated)	FY 2019-20	FY 2020-21	FY 2021-22
14.84%	14.34%	13.84%	13.34%

#### 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 are given in the following Table:

*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)
<b>FY 2016-17</b>	16.50%	17.11% (A)
<b>FY 2017-18</b>	16.00%	15.34% (A)
<b>FY 2018-19</b>	15.50%	14.84% (E)

The Commission appreciates the efforts put in by the Petitioner in overachieving the targets specified by the Commission in FY 2017-18. The Commission also takes the note of difficulties expressed by the Petitioner in further reducing T&D losses and the reduction in T&D losses proposed by the Petitioner. In view of capital expenditure proposed by the Petitioner and nature of schemes planned to be carried out, the Commission is of the opinion that the Petitioner should be in a position to further reduce losses in the Control Period from FY 2019-20 to FY 2021-22 as projected by the Petitioner. Accordingly, the Commission approves the T&D loss trajectory as proposed by the Petitioner for the upcoming Control Period as given below:

*Table 27: T&D loss trajectory approved by the Commission in the upcoming Control Period*

	FY 2019-20		FY 2020-21		FY 2021-22	
	Petitioner's submission	Approved by Commission	Petitioner's submission	Approved by Commission	Petitioner's submission	Approved by Commission
<b>T&amp;D loss trajectory (%)</b>	14.34%	14.34%	13.84%	13.84%	13.34%	13.34%

## 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 retail sales projections with T&D loss trajectory proposed by the Petitioner. A summary of the energy requirement as estimated by the Petitioner is as given below:

*Table 28: Energy requirement as estimated by the Petitioner for the upcoming Control Period*

Energy Requirement	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	Actual	Estimated	Projected	Projected	Projected
<b>Energy Sales (MU)</b>					
LT Supply	242.39	250.92	259.90	269.35	279.31
HT Supply	-	-	-	-	-
<b>Total Energy Sales (MU)</b>	242.39	250.92	259.90	269.35	279.31
<b>Overall T&amp;D Losses (%)</b>	<b>15.34%</b>	<b>14.84%</b>	<b>14.34%</b>	<b>13.84%</b>	<b>13.34%</b>
Overall T&D Losses (MU)	43.92	43.73	43.51	43.27	43.00
<b>Total Energy Requirement (MU)</b>	<b>286.31</b>	<b>294.65</b>	<b>303.41</b>	<b>312.61</b>	<b>322.31</b>

#### 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 for A&N estimated by the Commission for the upcoming Control Period is as given below:

Table 29: Energy requirement approved by the Commission

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	Estimated	Approved		
Energy Sales	280.12	295.06	310.95	327.86
<b>Overall T&amp;D Losses (%)</b>	14.84%	14.34%	13.84%	13.34%
Overall T&D Losses (MU)	48.81	49.39	49.95	50.47
<b>Total Energy Requirement</b>	<b>328.94</b>	<b>344.45</b>	<b>360.89</b>	<b>378.33</b>

The main reason for substantial variation in Energy Requirement as approved by the Commission with respect to the Petitioner's projection is due to variation in sales projection approved by the Commission. As discussed earlier, the Commission has projected the category-wise sales for the next Control Period after re-assessing the sales on unrestricted basis for FY 2017-18.

### 3.4.2 Generation and Power Purchase Quantum

#### Petitioner's submission

The Petitioner has submitted that the energy requirement of EDA&N is mainly met from own generation and power purchase from HPP & NTPC (SPV). There is no availability of power from Central Generating Stations or from other sources/open market/Power Exchanges, etc. Own generation accounts for around 50% of the total power requirement for FY 2017-18 and balance 50% of power requirement is met from power purchase and it is estimated that approximately 37.35% and 62.65% of the total energy requirement for FY 2018-19 shall be met by own generation and power purchase, respectively. The present scenario is likely to continue and it is projected that energy requirement for FY 2019-20, FY 2020-21 and FY 2021-22 and mix of own generation and power purchase shall be approximately in the ratio of 25-35 : 75-65.

The Petitioner has projected the power generation/procurement sources for the Control Period as follows:

Table 30: Details of the power procurement sources for Control Period from FY 2019-20 to FY 2021-22

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	Estimated	Projected	Projected	Projected
Power Purchase (MU)	184.59	221.61	221.61	221.61
Own Generation (MU)	110.05	81.80	91.01	100.69
Total (MU)	<b>294.65</b>	<b>303.41</b>	<b>312.62</b>	<b>322.31</b>

#### Commission's analysis

As per Regulation 12.1 of the MYT Regulations, 2018, power purchase is an uncontrollable parameter. Thus, the power purchase has to be revisited every year by the Commission based on the audited accounts.

The Commission vide the deficiency note, asked the Petitioner to justify substantial reduction in its own generation from FY 2018-19 onwards. In reply to this, the Petitioner submitted that maximum own generating plants of the EDA&N are very old requiring gradual phasing out and also with high fuel/operational cost. Hence, EDA&N is gradually increasing the power purchase component through IPPs to meet the total power requirement. This has resulted in decrease in projected own generation during the Control Period.

The Commission vide the deficiency note, asked the Petitioner to submit the estimate of availability of power to meet the base load and peak load requirement on month-wise basis in MU for A&N Islands as a whole and Island-wise separately. In response to the same, the Petitioner submitted the Island-wise sources of power purchase, including own generation as shown in the Table below:

*Table 31: Details of the power procurement from power purchase and own generation*

Particulars	Own Generation/ Purchase	FY 2019-20	FY 2020-21	FY 2021-22
		Total Capacity (MW)	Total Capacity (MW)	Total Capacity (MW)
Hired Power Plant- I	Purchase	5.00	5.00	5.00
Hired Power Plant-II	Purchase	10.00	10.00	10.00
G/ Charama (SPV) NTPC	Purchase	5.00	5.00	5.00
Chatham	Own	15.00	15.00	15.00
Phoenix Bay	Own	15.80	15.80	15.80
Raj Niwas	Own	0.512	0.512	0.512
Raj Niwas (solar)	Own	0.05	0.05	0.05
Roof top	Own	1.006	1.006	1.006
Secretariat & Medical	Own	0.256	0.256	0.256
NTPC DG Power Plant	Purchase	5.00	5.00	5.00
NTPC DG Power Plant	Purchase	10.00	10.00	10.00
DG PBPH	Own	4.00	4.00	4.00
Neil Island	Own	2.096	2.096	2.096
DG Power Plant at Neil	Purchase	0.960	0.960	0.960
Havelock	Own	4.280	4.280	4.280
DG Power Plant at Havelock	Own	3.00	3.00	3.00
Rutland	Own	0.024	0.024	0.024
Baratang	Own	0.512	0.512	0.512
Rangat	Own	8.20	8.20	8.20
Long Island	Own	0.64	0.64	0.64
Strait Island	Own	0.015	0.015	0.015
Hanspuri	Own	0.053	0.053	0.053
Gandhi Nagar	Purchase	0.06	0.06	0.06
Ganesh Nagar	Purchase	0.065	0.065	0.065
Shanti Nagar	Purchase	0.065	0.065	0.065
Smith Island (Sagar Deep)	Purchase	0.04	0.04	0.04
Mayabunder HPP	Purchase	0.512	0.512	0.512
Sita Nagar	Own	4.33	4.33	4.33
KHEP**	Own	5.25	5.25	5.25
Hutbay	Own	3.25	3.25	3.25
Dugong Creek	Own	0.047	0.047	0.047
Car Nicobar	Own	4.38	4.38	4.38
Kamorta	Own	1.62	1.62	1.62
Champion	Own	0.34	0.34	0.34
Katchal	Own	1.012	1.012	1.012
Teressa	Own	0.61	0.61	0.61
Chowra	Own	0.20	0.20	0.20
Campbell Bay	Own	3.60	3.60	3.60
<b>Total (MW)</b>		<b>116.82</b>	<b>116.82</b>	<b>116.82</b>

As shown in the Table above, the Petitioner has provided the information related to total capacity in MW from various sources. However, the Petitioner has not submitted the projections of energy availability as sought by the Commission. There is substantial variation in energy requirement projections approved by the Commission and as proposed by the Petitioner. **Hence, the Commission directs the Petitioner to submit the Station-wise energy availability to meet the energy requirement for A&N Islands as a whole and Island-wise separately for each year of the Control Period in its MYT Petition.**

### 3.4.3 Energy Balance

#### Petitioner's submission

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

Table 32: Energy Balance as estimated by the Petitioner

Energy Balance	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	Actual	Estimated	Projected	Projected	Projected
<b>Energy Sales (MU)</b>					
LT Supply	242.39	250.92	259.90	269.35	279.31
HT Supply	-	-	-	-	-
<b>Total Energy Sales</b>	242.39	250.92	259.90	269.35	279.31
<b>Overall T&amp;D Losses (%)</b>	<b>15.34%</b>	<b>14.84%</b>	<b>14.34%</b>	<b>13.84%</b>	<b>13.34%</b>
Overall T&D Losses (MU)	43.92	43.73	43.51	43.27	43.00
<b>Total Energy Requirement (MU)</b>	<b>286.31</b>	<b>294.65</b>	<b>303.41</b>	<b>312.62</b>	<b>322.31</b>
<b>Energy Availability at Periphery</b>					
Power Purchase (MU)	143.37	184.59	221.61	221.61	221.61
Own Generation (MU)	142.94	110.05	81.8	91.01	100.69
<b>Total Energy Availability (MU)</b>	<b>286.31</b>	<b>294.65</b>	<b>303.41</b>	<b>312.62</b>	<b>322.31</b>
Energy Surplus/ Gap	-	-	-	-	-

#### Commission's analysis

In the absence of source-wise availability of power from various sources, the Commission is not in a position to approve the source wise energy availability to meet the projected energy requirement approved by the Commission. Hence, the Commission will approve the Energy Balance projections for Second Control Period in its MYT Order based on the source-wise energy availability projections submitted by the Petitioner as a part of MYT Petition.

### 3.4.4 Renewable Purchase Obligation (RPO)

#### Petitioner's submission

The Renewable Purchase Obligation (RPO) for the Utilities has been specified by the Commission vide JERC for State of Goa & Union Territories (Procurement of Renewable Energy), 2010, First Amendment Regulations, 2014, Second Amendment Regulations, 2015, and Third Amendment Regulations, 2016.

The Petitioner submitted that it intends to meet RPO as per the direction of the Commission and has planned to meet the Solar RPO partially from the purchase of solar power from roof top projects and other solar power plants within the UT of Andaman & Nicobar Administration while the balance solar obligation is proposed to be met through purchase of Renewable Energy Certificates (REC) proportionate to the deficit in RPO procurement.

Further, the Petitioner submitted that RPO towards non-solar power shall be met through EDA&N's own hydro power plants. The Petitioner has submitted that it is exploring the possibilities of other sources of non-solar renewable power and the shortfall in the RPO requirement for the same is proposed to be met by purchase of non-solar REC's.

A Summary of projected Solar and Non-Solar RPO for the Control Period as submitted by the Petitioner is as given below:

*Table 33: Units to be Purchased under RPO*

Description	FY 2019-20	FY 2020-21	FY 2021-22
<b>Solar Obligation</b>			
Solar RPO (%)	4.70%	6.10%	8.00%
Projected sales (MU)	259.90	269.35	279.31
Less: Hydro Sources (MU)	12.81	12.81	12.81
Sales Excluding Hydro Sources (MU)	247.09	256.54	266.49
Total power to be procured to meet solar Obligation (MU)	<b>11.61</b>	<b>15.65</b>	<b>21.32</b>
<b>Non -Solar Obligation</b>			
Non-Solar RPO (%)	6.80%	8.00%	9.00%
Total power to be procured to meet non-solar Obligation (MU)	<b>16.80</b>	<b>20.52</b>	<b>23.98</b>

### Commission's analysis

The Commission has made note of the submission of the Petitioner and expects the Petitioner to comply with RPO targets. Actual compliance in respect of the pending RPO obligations would be reviewed at the time of true-up of the respective years and supporting details such as purchase of RECs, and bills from solar/non-solar plants for the respective years must be submitted along with the MYT filing.

In view of the sales projections approved by the Commission in Section 3.2.6, the Commission approves the RPO for each year of the Control Period based on the JERC (Procurement of Renewable Energy) Regulations, 2010 and subsequent amendments thereof, as shown below:

*Table 34: RPO obligation approved by the Commission*

Description	FY 2019-20	FY 2020-21	FY 2021-22
<b>Sales (MU)</b>	295.06	310.95	327.86
Less: Hydro Sources (MU)	12.81	12.81	12.81
Sales Excluding Hydro Sources (MU)	282.25	298.14	315.05
<b>RPO Obligation (%)</b>			
Solar	4.70%	6.10%	8.00%
Non-Solar	6.80%	8.00%	9.00%
<b>RPO Obligation for the Year (MU)</b>			
Solar	<b>13.27</b>	<b>18.19</b>	<b>25.20</b>
Non-Solar	<b>19.19</b>	<b>23.85</b>	<b>28.35</b>

## 3.5 Capital Investment Plan

### 3.5.1 Details of capital expenditure and capitalisation

The Petitioner in its Petition has submitted the scheme wise details of ongoing and proposed capital expenditure and capitalisation that it plans to implement in the upcoming Control Period. A Summary of scheme wise capital expenditure and capitalisation proposed by the Petitioner is given below:

Table 35: Summary of Scheme Wise Capital expenditure for Ongoing and New Schemes

Sr. No.	Scheme	Original Cost (Rs. Cr.)	Expenditure up to FY 2017-18 (Rs. Cr.)	Proposed Expenditure (INR Cr)			
				2018-19	2019-20	2020-21	2021-22
<b>Ongoing Schemes</b>							
1	Augmentation of 3 MW DG Capacity at Havelock Island	18.07	12.45	5.61	0.00	0.00	0.00
<b>New Schemes</b>							
1	Erection & Commissioning of New 4 MW DG Powerplant.	20.00	0.00	0.00	10.00	0.00	10.00
2	Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing sub-station	5.92	0.00	0.00	1.45	2.02	2.45
3	New Commissioning and improvement & augmentation of existing 33/11 kV sub-station including HT/LT Panels, HT/LT Shunt capacitors etc.	38.72	0.00	0.00	0.00	0.00	38.72
4	Laying of HT/LT new cable	20.25	0.00	0.00	4.87	8.28	7.10
<b>Total</b>		<b>102.96</b>	<b>12.45</b>	<b>5.61</b>	<b>16.32</b>	<b>10.30</b>	<b>58.27</b>

Table 36: Summary of Scheme wise Capitalisation for Ongoing and New Schemes

Sr. No.	Name of Scheme	Proposed Capitalisation (Rs. Cr)				Total Amount (Rs. Crore)
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	
<b>Ongoing Schemes</b>						
1	Augmentation of 3 MW DG Capacity at Havelock Island	5.61	0.00	0.00	0.00	5.61
<b>New Schemes</b>						
1	Erection & Commissioning of New 4 MW DG Power plant.	0.00	0.00	20.00	0.00	20.00

Sr. No.	Name of Scheme	Proposed Capitalisation (Rs. Cr)				Total Amount (Rs. Crore)
		FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	
2	Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing sub-station	0.00	1.45	2.02	2.45	5.92
3	New Commissioning and improvement & augmentation of existing 33/11 kV sub-station including HT/LT Panels, HT/LT Shunt capacitors etc.	0.00	0.00	0.00	38.72	38.72
4	Laying of HT/LT new cable	0.00	4.87	8.28	7.10	20.25
<b>Total</b>		<b>5.61</b>	<b>6.32</b>	<b>30.30</b>	<b>48.27</b>	<b>90.50</b>

The Commission has analysed scheme wise additional capital expenditure and capitalisation for the ongoing and new schemes in the following section.

### **Ongoing scheme(s)**

#### **Petitioner's submission**

The Petitioner has submitted that the EDA&N is in the process of implementing schemes for system improvement.

#### **Augmentation of 3 MW DG Capacity at Havelock Island**

The capital expenditure and capitalisation details submitted by the Petitioner is given below.

*Table 37: Capital expenditure and capitalization for ongoing schemes*

Sr. No.	Scheme	Original Cost (Rs. Cr.)	Expenditure up to FY 2017-18 (Rs. Cr.)	Proposed Expenditure (INR Cr)				Capitalisation schedule
				2018-19	2019-20	2020-21	2021-22	
1	Augmentation of 3 MW DG Capacity at Havelock Island	18.07	12.45	5.61	0.00	0.00	0.00	FY 2018-19

The Petitioner submitted that upon implementation of the said scheme, it will be able to meet the future load demand due to growth of consumers and also due to derating of DG sets. The ongoing scheme for Installation/ Augmentation/Replacement of 3 MW DG generating capacity at Havelock Island is expected to be completed at the end of the FY 2018-19.

#### **Commission's analysis**

The Commission in its Order on Business Plan for the first Control Period (FY 2016-17-FY 2018-19) had approved the capital expenditure towards installation/augmentation/replacement of 3 MW DG capacity at Havelock Island of Rs. 8.87 Crore, Rs. 8.87 Crore and Rs. 7.00 Crore in FY 2016-17, FY 2017-18 and FY 2018-19, respectively. Thus, the total amount approved by the Commission for this scheme is Rs 24.74 Crore. The actual expenditure incurred till FY 2017-18 is Rs 12.45 Crore and estimated expenditure during FY 2018-19 is Rs 5.61 Crore. Thus, the total expenditure for the scheme as submitted by the Petitioner works out to Rs 18.06 Crore, which is well within the overall amount of Rs 24.74 Crore approved by the Commission. Hence, the Commission approves the proposed expenditure of Rs 5.61 Crore towards this scheme in FY 2018-19. However, this capital expenditure



does not pertain to the upcoming Control Period. **The Commission directs the Petitioner to submit the complete details of actual capital expenditure for this scheme in the MYT Petition.**

## New schemes

### **Petitioner's submission**

The Petitioner plans to carry out the capital expenditure during the Control Period for augmentation and expansion of its capacity and to reduce the T&D loss in the system. EDA&N has undertaken significant capital expenditure during the previous Control Period from FY 2016-17 to FY 2018-19 and has plans to implement schemes for development of infrastructure during the upcoming Control Period from FY 2019-20 to FY 2021-22. The capital expenditure plan includes the details of various capital expenditure schemes in the identified areas and their respective estimates for each year of the MYT Control Period from FY 2019-20 to FY 2021-22.

A Summary of capital expenditure projections of new schemes for the upcoming Control Period is given in the following table:

*Table 38: Capital expenditure plan proposed by the Petitioner for the upcoming Control Period*

Sr. No.	Name of Scheme	Total estimated amount (Rs. Cr)	Proposed Expenditure (Rs. Cr)		
			FY 2019-20	FY 2020-21	FY 2021-22
1	Erection & Commissioning of New 4 MW DG Powerplant.	20.00	10.00	10.00	0.00
2	Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing sub-station	5.92	1.45	2.02	2.45
3	New Commissioning and improvement & augmentation of existing 33/11 kV sub-station including HT/LT Panels, HT/LT Shunt capacitors etc.	38.72	0.00	0.00	38.72
4	Laying of HT/LT new cable	20.25	4.87	8.28	7.10
	<b>Total</b>	<b>84.89</b>	<b>16.32</b>	<b>20.30</b>	<b>48.27</b>

A summary of scheme-wise and year-wise capitalisation proposed by the Petitioner for the upcoming Control Period is as given in the following Table:

*Table 39: Proposed Capitalisation plan for the upcoming Control Period*

Sr. No.	Name of Scheme	Proposed Capitalisation (Rs. Cr)			Total Amount (Rs. Crore)
		FY 2019-20	FY 2020-21	FY 2021-22	
1	Erection & Commissioning of New 4 MW DG Power plant.	0.00	20.00	0.00	20.00
2	Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing sub-station	1.45	2.02	2.45	5.92
3	New Commissioning and improvement & augmentation of existing 33/11 kV sub-station including HT/LT Panels, HT/LT Shunt capacitors etc.	0.00	0.00	38.72	38.72
4	Laying of HT/LT new cable	4.87	8.28	7.10	20.25
	<b>Total</b>	<b>6.32</b>	<b>30.30</b>	<b>48.27</b>	<b>84.89</b>

The overview of the capital expenditure and capitalisation plan proposed by the Petitioner for the upcoming Control Period is as given in the Table below:

*Table 40: Year-Wise Capital Expenditure and Capitalisation as proposed by the Petitioner*

Particulars (Rs. Cr.)	FY 2019-20	FY 2020-21	FY 2021-22
<b>Capital Expenditure</b>	16.32	20.30	48.27
<b>Capitalisation</b>	6.32	30.30	48.27

### Commission's analysis

The Commission has analysed actual achievement of capital expenditure and capitalisation of the Petitioner vis-à-vis that approved by the Commission in the previous Business Plan of MYT Control Period from FY 2016-17 to FY 2018-19 as given in the following table:

*Table 41: Capital expenditure achieved by the Petitioner vis-à-vis approved by the Commission*

Particulars	FY 2016-17		FY 2017-18		FY 2018-19		Total		
	Approved	Actual	Approved	Actual	Approved	Estimated	Approved	Actual/Estimated	% Achievement
<b>Capital Expenditure (Rs. Cr)</b>	21.38	10.21	21.58	11.16	18.70	9.95	61.66	31.32	50.79%

*Table 42: Capitalisation achieved by the Petitioner vis-à-vis approved by the Commission*

Particulars	FY 2016-17		FY 2017-18		FY 2018-19		Total		
	Approved	Actual	Approved	Actual	Approved	Estimated	Approved	Actual/Estimated	% Achievement
<b>Capitalisation (Rs. Cr)</b>	21.38	10.21	21.58	11.16	18.70	9.95	61.66	31.32	50.79%

The Commission observes that the Petitioner has achieved only 50.79% of approved capital expenditure and approved capitalisation for MYT Control Period from FY 2016-17 to FY 2018-19.

The Commission sought detailed justification for the capital expenditure being substantially lower than the approved capital expenditure for the respective years. The Petitioner in response submitted that it has executed the schemes as per the budgetary allocation from the Govt. for the respective years.

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

## **Scheme wise Analysis of Proposed Capital Expenditure and Capitalisation for FY 2019-20 to FY 2021-22**

### **A. Erection & Commissioning of New 4 MW DG Power plant**

#### **Petitioner's Submission**

The Petitioner has proposed erection and commissioning of new 4 MW DG power plant at Phoenix Bay Power House (PBPH) complex, Andaman, is required for high-efficient and reliable supply of electricity and is expected to be completed before November 2020. The proposed scheme will help to meet future load demand due to growth of consumers and in reducing the operation and maintenance costs.

The Petitioner in its reply to the Deficiency Note raised by the Commission submitted that an additional DG set is always preferred in order to meet the contingencies during inclement weather conditions and to overcome harsh logistics issues being far flung places. The proposed scheme for erection and commissioning of 4 MW DG with total expenditure of Rs. 2000 Lakh is for PBPH. PBPH (5 x 1.2 MW DG Sets) were installed immediately after tsunami in 2004 on war footing and have been utilized up to its optimum loading and are prone to frequent failure. The 11 KV switchgears and panels are also failing and sufficient time is needed to rectify the failure. This new DG sets may replace the existing DG sets to cater to the increasing load of the city.

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

*Table 43: Capital expenditure and capitalisation schedule proposed by the Petitioner for erection & commissioning of new 4 MW DG Power plant.*

Name of Scheme	Particulars	Proposed (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Erection &amp; Commissioning of New 4 MW DG Power plant</b>	Capital Expenditure	10.00	10.00	0.00	<b>20.00</b>
	Capitalisation	0.00	20.00	0.00	<b>20.00</b>

### Commission's analysis

The Commission is of view that as the utility is primarily dependent on the generation through the DG sets only, the capital expenditure towards refurbishment of existing capacity is essential for ensuring the availability of reliable supply. The Commission, thus, approves the capital expenditure as proposed by the Petitioner for the Control Period.

A Summary of capital expenditure and capitalisation approved for the upcoming Control Period is given below.

*Table 44: Capital expenditure and capitalisation schedule approved by the Commission for erection & Commissioning of new 4 MW DG Power plant.*

Name of Scheme	Particulars	Approved (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Erection &amp; Commissioning of New 4 MW DG Power plant</b>	Capital Expenditure	10.00	10.00	0.00	<b>20.00</b>
	Capitalisation	0.00	20.00	0.00	<b>20.00</b>

**Therefore, the Commission approves a total capital expenditure of Rs. 20.00 Cr and total capitalisation of Rs. 20.00 Cr for the upcoming Control Period for this scheme. The Commission directs the Petitioner to submit the Detailed Project Report including detailed justification and Cost Benefit Analysis for this scheme as a part of MYT Petition.**

### **B. Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing substation**

#### **Petitioner's Submission**

The Petitioner has proposed new installation/replacement/augmentation on the existing distribution transformer (Total 60 nos. of distribution transformers) at 33 kV/11 kV existing sub-station including HT/LT panels. The proposed scheme will help to meet the increasing load demand due to growth of consumers and also for replacement of defective transformers, for reducing T&D loss.

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

*Table 45: Capital expenditure and capitalisation schedule proposed by the Petitioner for Installation of Step-up & Step-down T/f at 33 kV/11 kV sub-station*

Name of Scheme	Particulars	Proposed (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing sub-station</b>	Capital Expenditure	1.45	2.02	2.45	<b>5.92</b>
	Capitalisation	1.45	2.02	2.45	<b>5.92</b>

### Commission's analysis

The Commission vide deficiency note has sought the details of Distribution Transformers (DTRs) required to meet increasing demand and replacement for the existing DTRs and cost benefit analysis for the proposed scheme. The Petitioner in response has provided the details of DTRs along with the capacity to be installed for the upcoming Control Period and the year-wise cost analysis of DTRs.

The Commission notes the submissions of the Petitioner and is of the view that the said capital expenditure is necessary for maintaining the reliability and availability of the distribution infrastructure.

The Commission, thus, approves the capital expenditure as proposed by the Petitioner for the Control Period. A Summary of capital expenditure and capitalisation approved for the upcoming Control Period is given below:

*Table 46: Capital expenditure and capitalisation schedule approved by the Commission for Installation of Step-up & Step-down T/f at 33 kV/11 kV sub-station*

Name of Scheme	Particulars	Approved (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Installation of Step-up and Step- down Distribution transformer at 33kV/11kV existing sub-station</b>	Capital Expenditure	1.45	2.02	2.45	<b>5.92</b>
	Capitalisation	1.45	2.02	2.45	<b>5.92</b>

**Therefore, the Commission approves total capital expenditure of Rs. 5.92 Cr and total capitalisation of Rs. 5.92 Cr for the upcoming Control Period for this scheme. The Commission directs the Petitioner to submit the Detailed Project Report including detailed justification and Cost Benefit Analysis for this scheme as a part of MYT Petition.**

### **C. New Commissioning and improvement & augmentation of existing 33 kV/11 kV sub-station**

#### **Petitioner's Submission**

The Petitioner has proposed scheme which will provide commissioning of new sub-station and the replacement of existing 33/11 kV sub-station including HT/LT panels. HT/LT shunt capacitors and replacement of old and obsolete panels and other allied equipment. This proposed scheme will help in continuous and reliable distribution of electricity.

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

*Table 47: Capital expenditure and capitalisation schedule proposed by the Petitioner for Commissioning and improvement & augmentation of existing 33 kV/11 kV sub-station*

Name of Scheme	Particulars	Proposed (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Commissioning and improvement &amp; augmentation of existing 33 kV/11 kV sub-station</b>	Capital Expenditure	0.00	0.00	38.72	<b>38.72</b>
	Capitalisation	0.00	0.00	38.72	<b>38.72</b>

## Commission's Analysis

The Commission vide deficiency note sought complete details of the proposed scheme along with cost benefit analysis. The Petitioner in response to the same submitted that the DPRs under Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) and Integrated Power Development Scheme (IPDS) were prepared and submitted by EDA&N to MoP, New Delhi for Strengthening of Sub Transmission and Distribution (ST&D) of existing infrastructure to ensure reliable and quality power to Rural and Urban consumers. MoP, New Delhi has sanctioned Rs. 20.96 Crore and Rs. 17.86 Crore under the schemes of DDUGJY and IPDS, respectively. However, due to poor response to the tenders, MOP has been requested vide letter dated 19.04.2018 for directing any of the Central Public Sector Undertaking to take up the work proposed under the above schemes. In the minutes of the RPM meeting held on 06/06/2018, A&N Administration was directed to approach NTPC for execution of the work under these schemes and the same is under process with NTPC.

The Commission held discussion with the Petitioner with regard to the actual status of this proposed scheme. The Petitioner informed that the discussions with NTPC and other Central Sector Utilities are in progress for taking up with these works.

The Commission observes that the proposed scheme is under consideration by NTPC for execution of work. There is no such assurance that NTPC will agree to execute the works as the matter is still in discussion. As per the Petitioner, the capital expenditure and capitalisation for this scheme is proposed to be incurred in the FY 2021-22 and till now the execution agency is also not finalised. In the absence of details of the scheme and considering the current status, the Commission has not approved the capital expenditure for this scheme in this Order. **The Petitioner is directed to submit DPR along with the justification cost benefit analysis of the proposed scheme in the MYT Petition** and the Commission will take a view on this scheme based on details submitted by the Petitioner and status of execution in the MYT Order.

A Summary of capital expenditure and capitalisation approved for the upcoming Control Period is given below.

*Table 48: Capital expenditure and capitalisation schedule approved by the Commission for Commissioning and improvement & augmentation of existing 33 kV/11 kV sub-station*

Name of Scheme	Particulars	Approved (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Commissioning and improvement &amp; augmentation of existing 33 kV/11 kV sub-station</b>	Capital Expenditure	0.00	0.00	0.00	<b>0.00</b>
	Capitalisation	0.00	0.00	0.00	<b>0.00</b>

## D. Laying of HT/LT cable line

### Petitioner's Submission

The Petitioner has proposed scheme of laying of HT/LT cable line and also replacement of old and defective cables in all the islands will help in fulfilling increased load demand and reduce the Repair and Maintenance cost for the existing defective cable line.

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

*Table 49: Capital expenditure and capitalisation schedule proposed by the Petitioner for laying of HT/LT cable line*

Name of Scheme	Particulars	Proposed (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>Laying of HT/LT Cable line</b>	Capital Expenditure	4.87	8.28	7.10	<b>20.25</b>
	Capitalisation	4.87	8.28	7.10	<b>20.25</b>

## Commission's Analysis

The Commission vide deficiency note sought detailed breakup of voltage level-wise new and replacement of cable for the proposed scheme. The Petitioner in response submitted the details of the new HT/LT Cable Lines required to cope up with the rising load and demand and for replacement of existing cable lines in terms of total km with HT/LT voltage levels proposed during the upcoming Control Period from FY 2019-20 to FY 2021-22. The details are as given below:

*Table 50: Cost Analysis of Laying HT/LT Lines*

Financial Year	HT/LT Lines (km) with expected cost		
	HT Line (33/11 kV)	LT Line (0.433 kV)	Cost (Rs. Cr)
2019-20	20	18	4.87
2020-21	40	22	8.28
2021-22	30	25	7.10
<b>Total</b>	<b>90</b>	<b>65</b>	<b>20.25</b>

The Commission is of view that the said capital expenditure is necessary for issuing the new connections and for maintaining the reliability and availability of the distribution infrastructure.

The Commission, thus, approves the capital expenditure as proposed by the Petitioner for the Control Period. A Summary of capital expenditure and capitalisation approved for the upcoming Control Period is given below:

*Table 51: Capital expenditure and capitalisation schedule approved by the Commission for laying of HT/LT cable line*

Name of Scheme	Particulars	Approved (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
Laying of HT/LT Cable line	Capital Expenditure	4.87	8.28	7.10	<b>20.25</b>
	Capitalisation	4.87	8.28	7.10	<b>20.25</b>

**Therefore, the Commission approves a total capital expenditure of Rs. 20.25 Cr and total capitalisation of Rs. 20.25 Cr for the upcoming Control Period for this scheme. The Commission directs the Petitioner to submit the Detailed Project Report including detailed justification and Cost Benefit Analysis for this scheme as a part of MYT Petition.**

### Summary of capital expenditure approved by the Commission

A Summary of capital expenditure approved by the Commission for the upcoming Control Period is given below.

*Table 52: Summary of capital expenditure approved by the Commission for the upcoming Control Period*

Sr. No.	Name of Scheme	Approved Capital Expenditure (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>New Schemes</b>					
1	Erection & Commissioning of New 4 MW DG Powerplant.	10.00	10.00	0.00	20.00
2	Installation of Step-up and Step-down Distribution transformer at 33kV/11kV existing sub-station	1.45	2.02	2.45	5.92



Sr. No.	Name of Scheme	Approved Capital Expenditure (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
3	New Commissioning and improvement & augmentation of existing 33/11 kV sub-station including HT/LT Panels, HT/LT Shunt capacitors etc.	0.00	0.00	0.00	0.00
4	Laying of HT/LT new cable	4.87	8.28	7.10	20.25
	<b>Total</b>	<b>16.32</b>	<b>20.30</b>	<b>9.55</b>	<b>46.17</b>

**Therefore, the Commission approves a total capital expenditure of Rs. 46.17 Cr for the upcoming Control Period.**

Regulation 8.5 (f) of the JERC MYT Regulations, 2018 in this regard stipulates as follows:

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

**The Commission directs the Petitioner to submit a quarterly report for every quarter on actual capital expenditure and capitalisation starting from first quarter of FY 2019-20.**

### **3.5.1.1 Summary of capitalisation approved by the Commission**

A Summary of capitalisation approved by the Commission for the upcoming Control Period is given below:

*Table 53: Summary of capitalisation approved by the Commission for the upcoming Control Period*

Sr. No.	Name of Scheme	Approved Capitalisation (Rs. Cr)			
		FY 2019-20	FY 2020-21	FY 2021-22	Total
<b>New Schemes</b>					
1	Erection & Commissioning of New 4 MW DG Powerplant.	0.00	20.00	0.00	20.00
2	Installation of Step-up and Step-down Distribution transformer at 33kV/11kV existing sub-station	1.45	2.02	2.45	5.92
3	New Commissioning and improvement & augmentation of existing 33/11 kV sub-station including HT/LT Panels, HT/LT Shunt capacitors etc.	0.00	0.00	0.00	0.00
4	Laying of HT/LT new cable	4.87	8.28	7.10	20.25
	<b>Total</b>	<b>6.32</b>	<b>30.30</b>	<b>9.55</b>	<b>46.17</b>

**Therefore, the Commission approves a total capitalisation of Rs. 46.17 Cr for the upcoming Control Period. As can be seen from above, there is no capitalisation of any ongoing scheme of the previous Control Period which is spilling over the Upcoming Control Period.**

## **3.5.2 Funding Plan**

### **Petitioner’s submission**

The Petitioner has submitted that the entire proposed capital expenditure is to be funded through equity infusion by Government of India (GoI) through budgetary support without any external borrowings. There are no loan borrowings proposed by the Petitioner for the capital expenditure.

Further, the Petitioner submitted that as per Regulation 24 of MYT Regulations, 2018, any equity deployed in excess of 30% of the capital cost of the project is required to be treated as normative loan. Since, the entire capital expenditure in various schemes shall be infused by the GoI, the Petitioner requested the Commission to consider the funding of various schemes in accordance with Regulation 24 of MYT Regulations, 2018 and approve the

same. The breakup of the financing of the capital expenditure during the upcoming Control Period is as given in the table below:

*Table 54: Proposed funding details for the upcoming Control Period*

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Proposed Capital Expenditure (Rs. Cr)	16.32	20.30	48.27
<b>Actual Funding</b>			
100% Equity from GoI (Rs. Cr)	16.32	20.30	48.27
<b>Proposed Funding in line with Regulation 24 (b) of JERC MYT Regulations, 2018.</b>			
Equity (30%) (Rs. Cr)	4.89	6.09	14.88
Debt (Normative Debt in excess of 30% Equity) (Rs. Cr)	11.42	14.21	33.78
<b>Total Funding (Rs. Cr)</b>	<b>16.32</b>	<b>20.30</b>	<b>48.27</b>

### Commission's analysis

Based on the revised capital expenditure approved by the Commission, the approved funding details is given in the table below:

*Table 55: Approved funding plan for the upcoming Control Period*

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Approved Capital Expenditure	16.32	20.30	9.55
<b>Actual Funding</b>			
100% Equity from GoI	16.32	20.30	9.55

The Commission has approved the funding as 100% Equity from GoI as proposed by the Petitioner. However, for computing the various components of ARR in MYT Order, the Commission will consider the Debt and Equity percentage as per Regulation 24 of MYT Regulations, 2018 and any equity deployed in excess of 30% of the capital cost of the project will be treated as normative loan.

## 3.6 Other Expenditure

### 3.6.1 Expenses related to Training of manpower

#### Petitioner's submission

The Petitioner plans to conduct/arrange training programmes every year in the upcoming Control Period for different categories of employees. The Petitioner has estimated the cost with respect to the training programmes as given in the Table below:

*Table 56: Manpower training cost proposed by the Petitioner*

Particulars	FY 2019-20 Rs. Lakh	FY 2020-21 Rs. Lakh	FY 2021-22 Rs. Lakh
<b>Residential</b>	-	1.04	1.04
<b>Non-Residential</b>	28.50	0.85	0.85



### Commission's Analysis

The Commission has gone through the submissions of the Petitioner. **The Commission directs the Petitioner to submit the complete details of proposed expenditure under this head including the basis for arriving at the amount and the initiatives planned, in the MYT Petition.** Further, the Petitioner should also submit the details of actual expenditure under this head in last three years.

### 3.6.2 Expenses related to Safety of manpower

#### Petitioner's submission

The Petitioner, in order to ensure safety of its manpower has proposed expenditure towards procurement of safety materials such as firefighting equipment and cap, shoes, etc., for its manpower. The Petitioner has estimated the cost with respect to the safety measures as given in the Table below:

Table 57: Safety Measures expenditure proposed by the Petitioner

Particulars	FY 2019-20 Rs. Lakh	FY 2020-21 Rs. Lakh	FY 2021-22 Rs. Lakh
Safety Measures	2.00	4.00	2.00

### Commission's Analysis

The Commission has gone through the submissions of the Petitioner. **The Commission directs the Petitioner to submit the complete details of proposed expenditure under this head including the basis for arriving at the amount and the initiatives planned in the MYT Petition.** Further, the Petitioner should also submit the details of actual expenditure under this head in last three years.

### 3.7 Manpower Plan

#### Petitioner's submission

The Petitioner has forecasted the number of employees based on the retirements and recruitments for the Control Period from FY 2019-20 to FY 2021-22. The forecasted number of employees submitted by the Petitioner is as given in the Table below:

Table 58: Projections of number of employees as submitted by Petitioner

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
No. of employees as on 1 <sup>st</sup> April	2272	2378	2455	2567
No. of employees added during the year	222	197	217	223
Total number of employees	2494	2575	2672	2790
Number of employees retired/retiring during the year	116	120	105	126
Number of employees at the end of the year	2378	2455	2567	2664

### Commission's Analysis

The Commission had sought the level-wise number of employees the Petitioner plans to recruit during the Control Period. However, the Petitioner failed to provide the information for the same.

Further, the Commission also sought the manpower assessment plan for determining the proposed additional manpower. In response the Petitioner submitted that understanding the crucial need of manpower assessment and no participation in tender floated by the Petitioner for appointment of consultant to carry out study on

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organisation re-structuring and manpower study, it requested National Productivity Council, Kolkata to submit their proposal, which is currently pending for approval by the Petitioner. In the absence of these details, the Commission is not in a position to approve the proposed recruitments at this stage. The Commission directs the Petitioner to submit the following details in the MYT Petition:

- Break-up of proposed employee addition at various levels during the Control Period.
- Manpower assessment plan for determining the proposed additional manpower.
- Steps taken for the proposed employees' recruitment during the Control Period.
- Actual manpower addition during FY 2016-17, FY 2017-19 and FY 2018-19 (Till October 2018) vis-à-vis approved figures in the Order on Business Plan.
- Concrete action plan for the manpower addition during the upcoming Control Period.

Based on the above submissions, the Commission shall take an appropriate view on the approval of Manpower Plan in its MYT Order.