



भारत सरकार

GOVT. OF INDIA

लक्षद्वीप संध शासित क्षेत्र प्रशासन

ADMINISTRATION OF THE
UNION TERRITORY OF LAKSHADWEEP

(बिजली विभाग)

(DEPARTMENT OF ELECTRICITY)

कवरत्ती - ६८२ ५५५

KAVARATTI - 682 555

REGISTERED POST

F.No: 66/14/2009-Ele/Vol-II

Date : 28-08-2018

To

The Secretary,
Joint Regulatory Commission,
(For the State of Goa & Union Territories),
2nd Floor, HSIIDC Office Complex
Udyog Vihar, Gurgaon - 122016,
Haryana.

Sub:- Lakshadweep Electricity Department- Submission of Business Plan for 3 year
Multi Year Tariff Control period from FY2019-20 to FY 2021-22-reg

Sir,

Please find enclosed here with the petition for filing Business Plan for 3 year Multi
Year Tariff control period from FY2019-20 to FY2021-22 along with duly signed affidavit.

Thanking you sir

Enclose as above

Yours faithfully


M. Koya

Executive Engineer/ कार्यपालक अभियंता



**Business Plan for 3-Year
MYT Control Period from FY 2019-20 to FY 2021-22**

**Submitted by:
Lakshadweep Electricity Department
Administration of Lakshadweep
August-2018**

GENERAL HEADINGS OF PROCEEDINGS

**BEFORE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION
FOR THE STATE OF GOA & UNION TERRITORIES**

FILE No: _____

CASE No: _____

IN THE MATTER OF

**Petition for Approval of Business Plan for 3 year MYT
Control Period From FY 2019-20 to 2021-22.**

AND

**IN THE MATTER OF
THE PETITIONER**

**Lakshadweep Electricity Department,
Kavaratti – 682555**

Petitioner

Lakshadweep Electricity Department (hereinafter referred to as "LED"), files Petition for Approval of Business Plan for 3-year MYT Control Period From FY 2019-20 to 2021-22.

AFFIDAVIT

**BEFORE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION
FOR THE STATE OF GOA & UNION TERRITORIES**

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**Petition for Approval of Business Plan for 3-year
MYT Control Period From FY 2019-20 to 2021-22.**

AND

**IN THE MATTER OF THE
PETITIONER**

**Lakshadweep Electricity Department,
Kavaratti - 682555**

Petitioner


I, M. Koya S/o, Pookoya (aged 59 years), Executive Engineer, Lakshadweep Electricity Department, U.T of Lakshadweep residing at Govt. Quarter, Kavaratti, Lakshadweep, the deponent named above do hereby solemnly affirm and state on oath as under: -

1. That the deponent is the Executive Engineer of Lakshadweep Electricity Department and is acquainted with the facts deposed to below.
2. I, the deponent named above do hereby verify that the contents of the accompanying petition are based on the records of Lakshadweep Electricity Department maintained in the ordinary course of business and believed by them to be true and I believe that no part of it is false and no material has been concealed there from.



Details of enclosures:

- a) Petition for Approval of Business Plan for 3-year MYT Control Period From FY 2019-20 to 2021-22


EXECUTIVE ENGINEER (EIA)
U.T. OF LAKSHADWEEP
KAVARATTI-682 555
For Lakshadweep Electricity Department

Petitioner

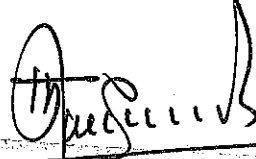
Place: Kavaratti, Lakshadweep,

Dated:

I, T. Kasim , Sub Divisional Magistrate, Kavaratti, do hereby declare that the person making this affidavit is known to me through the perusal of records and I am satisfied that he is the same person alleging to be deponent himself.

Advocate

Solemnly affirmed before me on this 28th day of August 2018 at 03:00 p.m. by the deponent who has been identified by the aforesaid Advocate. I have satisfied myself by examining the deponent that he understood the contents of the affidavit which has been read over and explained to him. He has also been explained about section 193 of Indian Penal Code that whoever intentionally gives false evidence in any of the proceedings of the Commission or fabricates evidence for purpose of being used in any of the proceedings shall be liable for punishment as per law.


28 8 18
T. KASSIM
Sub Divisional Magistrate
Kavaratti - 682 555
U. T. of Lakshadweep

**BEFORE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION
FOR THE STATE OF GOA & UNION TERRITORIES**

FILE No: _____

CASE No: _____

IN THE MATTER OF

: Petition for Approval of Business Plan for 3-year MYT
Control Period From FY 2019-20 to 2021-22.

AND

**IN THE MATTER OF THE
PETITIONER**

: Lakshadweep Electricity Department,
Kavaratti-682555, U.T. of Lakshadweep.

Petitioner

PETITIONER, UNDER JOINT ELECTRICITY REGULATORY COMMISSION FOR THE STATE OF GOA AND UNION TERRITORIES (MULTI YEAR TARIFF) REGULATIONS, 2018 READ WITH JERC (CONDUCT OF BUSINESS), REGULATIONS, 2009 FILES FOR INITIATION OF PROCEEDINGS BY THE HON'BLE COMMISSION FOR APPROVAL OF BUSINESS PLAN FOR 3 YEAR MYT CONTROL PERIOD FROM FY 2019-20 to 2021-22 OF LAKSHADWEEP ELECTRICITY DEPARTMENT (HEREIN AFTER REFERRED TO AS "LED").

LAKSHADWEEP ELECTRICITY DEPARTMENT RESPECTFULLY SUBMITS:

1. The Petitioner, Lakshadweep Electricity Department has been allowed to function as Distribution Utility for UT of Lakshadweep.
2. Pursuant to the enactment of the Electricity Act, 2003, LED is required to submit its Aggregate Revenue Requirement (ARR) and Tariff Petitions as per procedures outlined in section 61, 62 and 64, of EA 2003, and the governing regulations thereof.



3. The Joint Electricity Regulatory Commission For The State Of Goa And Union Territories (Multi Year Tariff) Regulations, 2018 requires the LED to file Business Plan, for Control Period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets.
4. Further, the regulation requires that, based on the Business Plan as approved by the Commission by order, submits the forecast of Aggregate Revenue Requirement and expected revenue from tariff, for the Control Period by a Petition.
5. LED has submitted its Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022 for approval of the Hon'ble Commission on the basis of the principles outlined in tariff regulations notified by the Joint Electricity Regulatory Commission.
6. LED prays to the Hon'ble Commission to admit the attached Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022 and would like to submit that:

PRAYERS TO THE HON'BLE COMMISSION:

1. The petition provides, inter-alia, LED's approach for formulating the present petition, the broad basis for projections used, summary of the proposals being made to the Hon'ble Commission, performance of LED in the recent past, and certain issues impacting the performance of LED in the Licensed Area.
2. Broadly, in formulating the Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022, the principles specified by the Joint Electricity Regulatory Commission For The State Of Goa And Union Territories (Multi Year Tariff) Regulations, 2018 ("Tariff Regulations") have been considered as the basis.
3. In order to align the thoughts and principles behind the Business Plan, LED respectfully seeks an opportunity to present their case prior to the finalization of the Business Plan. LED believes that such an approach would go a long way towards providing a fair treatment to all the stakeholders and may eliminate the need for a review or clarification.
4. LED may also be permitted to propose suitable changes to the Business Plan and the mechanism of meeting the revenue on further analysis, prior to the final approval by the Hon'ble Commission.



In view of the above, the petitioner respectfully prays that Hon'ble Commission may:

- Approve the Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022 for LED formulated in accordance with the guidelines outlined as per the regulation of Joint Electricity Regulatory Commission relating to Distribution Licensee and the principles contained in Tariff Regulations;
- Condone any inadvertent delay/ omissions/ errors/ rounding off differences/shortcomings and LED may please be permitted to add/ change/ modify/ alter the petition;
- Permit LED to file additional data/ information as may be necessary;
- Pass such further and other orders, as the Hon'ble Commission may deem fit and proper, keeping in view the facts and circumstances of the case.

Lakshadweep Electricity Department

Petitioner

Place: Kavaratti, Lakshadweep

Dated: 28.08.2018

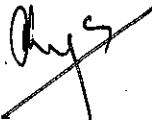

EXECUTIVE ENGINEER (LE)
U.T. OF LAKSHADWEEP
KAVARATTI-682 555

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**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22**

List of abbreviations

Abbreviation	Full Form
A&G	Administrative and General
ACoS	Average Cost of Supply
Act	The Electricity Act, 2003
APR	Annual Performance Review
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal of Electricity
BPL	Below Poverty Line
CAGR	Compound Annualized Growth rate
Capex	Capital Expenditure
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGRF	Consumer Grievance Redressal Forum
CGS	Central Generating Stations
COD	Commercial Operation Date
Cr	Crores
Discom	Distribution Company
LED	Lakshadweep Electricity Department
FY	Financial Year
GFA	Gross Fixed Assets
HT	High Tension
JERC	Joint Electricity Regulatory Commission for the state of Goa and Union Territories
LT	Low Tension
MU	Million Units
MYT	Multi Year Tariff
NFA	Net Fixed Assets
NTPC	National Thermal Power Corporation
O&M	Operation and Maintenance



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
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Abbreviation	Full Form
PLF	Plant Load Factor
PLR	Prime Lending Rate
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
REC	Renewable Energy Certificate
RoE	Return on Equity
RPO	Renewable Purchase Obligation
SBI PLR	SBI Prime Lending Rate
SOP	Standard of Performance
T&D Loss	Transmission & Distribution Loss
SECI	Solar Energy Corporation of India Ltd
UT	Union Territory



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22**

CHAPTER 1: INTRODUCTION

BACKGROUND

- 1.1. Lakshadweep Electricity Department ("LED") is responsible for power supply in the union territory. Power requirement of LED is met by own generation station only.

Lakshadweep Islands is a group of islands in the Laccadive Sea, 200 to 440 km (120 to 270 mi) off the southwestern coast of India. The Union Territory (UT) of Lakshadweep is an archipelago consisting of 12 atolls, three reefs and five submerged banks, with a total of about thirty-nine islands and islets. It is a uni-district Union Territory with an area of 32 Sq. Kms and is comprised of ten inhabited islands, 17 uninhabited islands attached islets, four newly formed islets and 5 submerged reefs. The inhabited islands are Kavaratti, Agatti, Amini, Kadmat, Kiltan, Chetlat, Bitra, Andrott, Kalpeni, and Minicoy. At the 2011 Indian census, the population of the Union Territory was 64,473. The main occupation of the people is fishing and coconut cultivation, with tuna being the main item of export.

Electrification of Lakshadweep Islands was initiated during the second Five Year Plan. Minicoy was the first Island electrified in 1962 followed by Kavaratti Island in 1964, then Amini and Andrott in 1965 and 1966 respectively. Bitra was the last Island electrified in 1982. Initially, power supply was limited to 6 - 12 hours till 1982-83 except in Kavaratti where 24 hours power supply was provided from 1964 itself. Round the clock power supply is provided in all the Islands since 1983.

- 1.2. The table below gives an overview of present transmission and distribution infrastructure of LED as of 31.03.18

Table 1: Present Infrastructure

Particulars	Length (Kms)
11 KV Feeders	31
LT Lines	321.869
HT Lines	111.953
Distribution Transformers (Nos)	106
Street Light Points (Nos)	8,989
11 KV S/S	10



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22**

1.3. The key duties being discharged by LED are:

- ❖ Laying and operating of such electric line, sub-station and electrical plant that is primarily maintained for the purpose of distributing electricity in the area of Lakshadweep Islands, notwithstanding that such line, sub-station or electrical plant 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 there under.
- ❖ Operating and maintaining sub-stations and dedicated transmission lines connected there with as per the provisions of the Act and the Rules framed there under.
- ❖ 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;
- ❖ Preparing and carrying out schemes for distribution and generally for promoting the use of electricity within the UT.

1.4. The present power availability of Lakshadweep Administration is approximately 23.39 MW from various generating stations. The current demand is primarily dependent on the domestic and commercial which contributed approx. 80% to the total sales of LED in FY 17-18.

OBJECTIVE OF BUSINESS PLAN

1.5. The Joint Electricity Regulatory Commission (JERC) for the State of Goa and Union Territories, in exercise of powers conferred by sub section (1) of section 181 and clauses (zd), (ze) and (zf) of sub section (2) of section 181, read with sections 61, 62,83 and 86, of the Electricity Act 2003 (36 of 2003) and all other powers enabling it in this behalf, has issued the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Multi Year Tariff) Regulations, 2018, hereinafter referred to as "MYT Regulations".

1.6. As per the Regulations, the Distribution Licensee were required to file a Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets before the Hon'ble Commission as part of the Tariff Filing before the beginning of the Control Period.



***Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22***

- 1.7. Accordingly, the LED is hereby filing the Business Plan for the Control Period (FY 2019-20 to FY 2021-22) based on the available data for the FY 2017-18 and previous financial years.
- 1.8. The LED has prepared the Business Plan taking into the consideration the various existing internal factors and external business environment affecting the business.
- 1.9. The key objectives of this business plan are:
- ❖ Providing a tool for strategic planning and management - The primary objective of the Business Plan is to analyse and anticipate the future requirements and strategically plan for the requisite capital investments, means of financing the schemes and various associated costs and document them which would serve as an effective tool for monitoring and execution of future works. It is important to project the growth in transmission and distribution network infrastructure commensurate with the energy demand required for fuelling the economic growth targets of the UT.
 - ❖ Meeting the regulatory compliance of submission of a business plan as mandated by the Joint Electricity Regulatory Commission, MYT Regulations, 2018
 - ❖ Support in decision making leading to better Operational Efficiency: The Business Plan is prepared so as to be useful for the Management, associated stakeholders, the Hon'ble Commission and various government bodies. The future projections in the Plan would help the department in decision making and taking proactive actions, and thus improving the overall operational efficiency of the transmission and distribution network infrastructure.
- 1.10. The LED submits that the Business plan being a dynamic document may need to be updated at periodic intervals taking into account the changes in the internal and external environment and these changes would be intimated to the Hon'ble Commission from time to time.



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22**

REVIEW OF PREVIOUS CONTROL PERIOD

- 1.11. Lakshadweep Electricity Department submitted the petition for approval of Business Plan for the MYT control period FY 2016-17 to FY 2018-19 vide petition no. 194/2010 dated 22th January, 2016. The Hon'ble Commission after considering the petition and views of all the stake holders issued the Business Plan Order on 31st March, 2016. The Hon'ble Commission in its order had approved various parameters as required by the MYT Regulations, 2014. Lakshadweep Electricity Department has made efforts to achieve the targets/trajectories as set out by the Hon'ble Commission. The yearly performances have been submitted for approval of the Commission vide APRs for the FY 2016-17 & FY 2017-18. The Hon'ble Commission has already passed order in respect of the above petitions. LED shall be submitting the APR for the FY 2018-19 & True-up petition for the FY 2015-16 to FY 2017-18 along with the MYT petition for the next control period FY 2019-20 to FY 2021-22.
- 1.12. The subsequent sections provide the highlights of the targets & achievements on various parameters as approved in the Business Plan & MYT petition for the control period FY 2016-17 to FY 2018-19.
- 1.13. **Capital Investment Plan** - The Hon'ble Commission in the Business Plan for the MYT control period of the FY 2016-17 to FY 2018-19 had approved the Capital Investment Plan for each of the years of the control period. The year wise capital expenditure approved and actual expenditure is provided in the table below:

Table 2: Comparison of Capital Investment Plan for Previous Business Plan

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Capital Expenditure (Rs. in Crores)	17.70	6.00	18.95	6.51	14.60	16.00



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
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- 1.14. **Capitalisation** - The year wise capitalization for the FY 2016-17 & 2017-18 & estimated capitalization for the FY 2018-19 vis-à-vis capitalization schedule approved is provided in the table below:

Table 3: Comparison of Capitalization for Previous Business Plan

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Capitalisation (Rs. in Crores)	17.70	6.00	18.95	6.51	14.60	16.00

- 1.15. **T&D Loss Trajectory** - The year wise distribution loss for the FY 2016-17 & 2017-18 & estimated distribution loss for the FY 2018-19 vis-à-vis approved distribution loss trajectory is provided in the table below:

Table 4: Comparison of T&D Loss for Previous Business Plan

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
T& D Loss	13.25%	13.40%	12.75%	13.10%	12.25%	13.00%



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22**

- 1.16. **Sales Forecast** - The year wise sales for various categories of consumers for the FY 2016-17 & 2017-18 & estimated sales for the FY 2018-19 vis-à-vis approved sales is provided in the table below:

Table 5: Comparison of Energy Sales for Previous Business Plan (In MUs)

Category	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Domestic	42.28	35.02	47.45	35.90	53.25	37.30
Commercial	11.03	13.47	11.98	10.88	13.02	11.05
Industrial	0.42	0.42	0.42	0.43	0.42	0.43
HT Consumers	-	0.41	-	0.53	-	0.67
Public Lighting	0.81	0.61	0.81	0.64	0.81	0.64
Temporary Connection	-	0.14	-	0.09	-	0.11
Total	54.54	50.08	60.66	48.46	67.50	50.20

- 1.17. **No. of Consumers** - The year wise no. of consumers for various categories of consumers for the FY 2016-17 & 2017-18 & estimated no. of consumers for the FY 2018-19 vis-à-vis approved no. of consumers is provided in the table below:

Table 6: Comparison of No. of Consumer for Previous Business Plan (In No.)

Category	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Domestic	19,351	19,316	20,198	19,729	21,082	20,285
Commercial	3,402	3,510	3,514	3,620	3,630	3,725
Industrial	321	345	321	356	321	364
HT Consumers	-	5	-	6	-	7
Public Lighting	73	75	73	76	73	77
Temp. Connection	-	274	-	160	-	160
Total	23,147	23,525	24,106	23,947	25,106	24,618



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
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Table 7: Comparison of R&M Expenses Norms for Previous Business Plan

Particulars	FY 2016-17 Actual	FY 2017-18 Actual Unaudited	FY 2018-19 Estimated
GFA (Rs. in Crores)	162.30	168.74	175.44
R&M Expenses (Rs. in Crores)	14.35	10.08	10.47
R&M Expenses (In %)	8.84%	5.97%	5.97%

Lakshadweep Electricity Department

7



***Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22***

CHAPTER 2: ABOUT LAKSHADWEEP ELECTRICITY DEPARTMENT

- 2.1 Starting with modest capacity of 51.6 kilo Watts in 1962 from two Diesel Generating Sets, the generating capacity of Lakshadweep Electricity Department has grown up over the years with increase in demand. The power generated has been steadily increasing over the years to meet the demand of the people in the Islands. Since, the Diesel Generating sets were the only source of power, diesel has to be transported from Calicut (Kerala) in barrels. These barrels are transported in cargo barges to the Islands and stored for use. To alleviate this problem of transportation, oil storage facilities initially at Kavaratti and Minicoy Islands are under installation.
- 2.2 Due to the geographical & topographical peculiarities of these islands including separation by sea over great distances there is no single power grid for the entire electrified island and instead a power house caters independently to the power requirements of area/islands.
- 2.3 The Electricity Department is operating and maintain power generation, transmission & distribution system network in these islands for providing electric power supply to general public and implements various schemes under Plan & Non Plan for augmentation of DG Generating Capacity and establishment of new power houses and T&D Systems. This department is also functioning as a Nodal Agency for implementing renewable energy program of the Ministry of New & Renewable Energy in these islands. Presently, the department is headed by an Executive Engineer, associated with one Assistant Executive Engineer, ten Assistant Engineers & around Thirty-three JEs for carrying out the task of power generation, transmission & distribution to the general public including schemes under non-conventional energy sources.



**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
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2.4 The salient features about development of electric power supply in these islands are provided below:

ELECTRICITY DEPARTMENT AT A GLANCE (2017-18)

Total installed capacity	:	23.39 MW (21.24 MW Diesel, 2.15 MW solar)
No. of Power Houses	:	20 Nos { (11 nos. Diesel Power Plant and 09 nos. solar power plants) }
Total Staff strength (filled)	:	340 Nos
HT line	:	111.953 Kms
LT line	:	321.869 Kms
Distribution Transformers	:	106 Nos.
No. of consumers	:	23,947 Nos.
Annual unit generation	:	56.35 MU
Total unit sent out	:	55.77 MU
Total unit sold	:	48.46 MU
T&D loss	:	13.10%
No. of site offices	:	11 Nos.

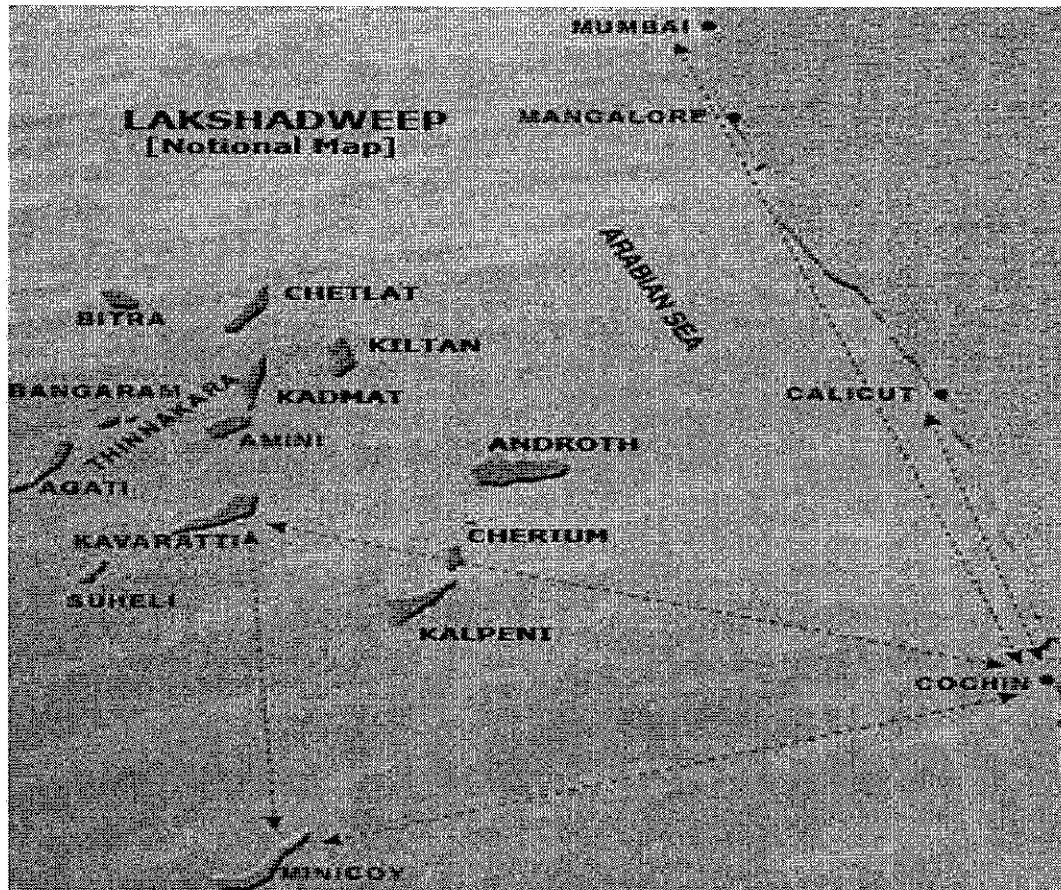


**Petition for Approval of Business Plan for the for 3-year MYT Control Period from
FY 2019-20 to 2021-22**

AREA SERVED

2.5 Lakshadweep Islands comprises of an area of 32 sq. kms. For operational purpose the area has been divided into 1 division and 10 sub-divisions.

Figure 1: Map of Area Served



ORGANIZATIONAL STRUCTURE

2.6 The Electricity Operation Circle is headed by Executive Engineer along with one Assistant Executive Engineer and ten Assistant Engineers with the employee strength of 340 (As of 31.03.18).

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POWER DEMAND AND SUPPLY

- 2.7 Electricity Department is responsible for arranging power is mainly from own generation and distribution and transmission thereof to all type of consumers. LED has 20(11 nos. Diesel Power Plant and 09 nos. solar power plants) own generating stations for the generation of power. There is no availability of power from Central Generating Stations or from other sources/ open market/ power exchanges etc.
- 2.8 The present power available to LED is 23.39 MW. The peak demand for last year touched 10 MW (FY 17-18) and it is anticipated to reach 12 MW in FY 18-19. The peak demand is projected to be 15 MW, 16 MW and 18 MW for FY 2019-20, FY 20-21 and FY 21-22 respectively (As per 18th EPS).

GRID DETAILS

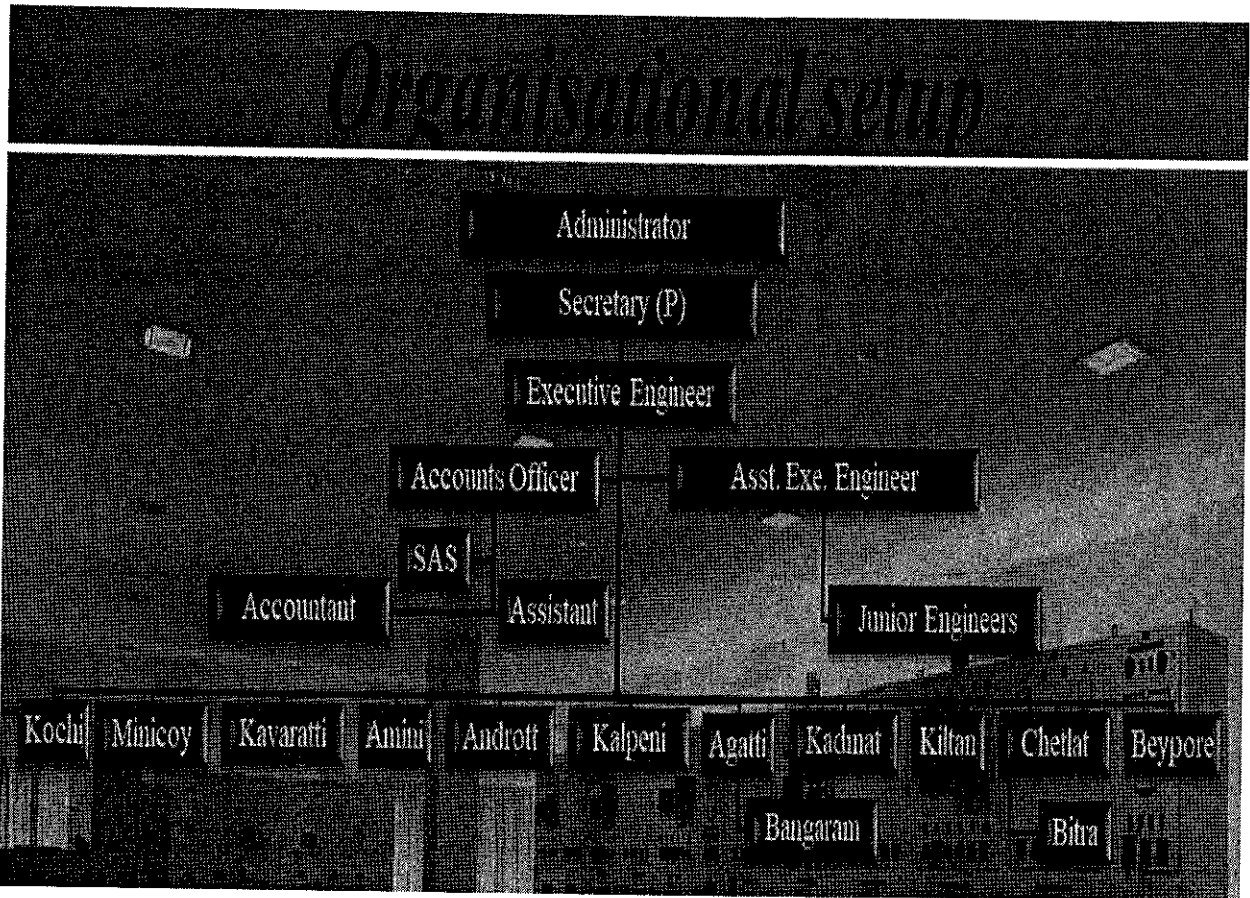
- 2.9 Due to the geographical & topographical peculiarities of these islands including separation by sea over great distances there is no single power grid for the entire electrified island and instead a power house caters independently to the power requirements of area/islands.

ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES

- 2.10 Electricity Department is part of the Administration of Union Territory of Lakshadweep Islands & headed by the Executive Engineer. Day to day work related to functioning of the Department is looked by the Assistant Executive Engineer at Division level. Under Division there are 10 Sub Division headed by the Assistant Engineers. Executive Engineer at Division Office is also helped by Technical Section, Establishment Section and Account Section headed by the Accountant. At lower level there are Junior Engineers who look after the Operation & Maintenance work of their respected assigned areas and report to their respected Assistant Executive Engineer.



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CHAPTER 3: SALES AND LOAD GROWTH PROJECTIONS

LOAD GROWTH

3.1. The Table given below summarizes the growth in sanctioned load over the past 5 years.

Table 8: Past Load Growth

All Figures are in KVA

Category	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Actual	Actual	Actual	Actual Unaudited	Actual Unaudited	Actual Unaudited
Domestic	76,039.01	77,981.23	79,596.62	81,501.65	83,646.62	85,600.88
Commercial	2,906.93	13,732.67	14,302.34	14,481.55	15,158.44	15,817.46
Govt. Connection	11,722.53	7,446.40	7,272.95	7,768.98	7,844.64	8,020.68
Industrial	3,022.07	3,167.73	3,273.28	3,451.53	3,581.21	3,707.60
HT Consumers	351.16	351.16	351.16	451.53	451.53	519.79
Public Lighting	264.16	264.16	265.91	285.25	285.25	296.31
Temporary	-	-	0.25	0.25	36.88	66.28
Total	94,305.86	1,02,943.35	1,05,062.52	1,07,940.73	1,11,004.56	1,14,028.99

3.2. The load growth of different categories of consumers was analysed by calculating 5-years, 3 years and 1-year CAGR. Domestic category has been projected on the basis of 5-year CAGR. The 5-years CAGR of commercial category is showing abnormal growth rate due to very high yearly growth in FY 2013-14. Hence, 3-years CAGR has been considered to project the load for the control period. Similarly, 3-years CAGR has been considered for projecting government connection. The industrial, HT & public lighting has been projected at 5-years CAGR. However, for the Temporary Connection nominal growth rate of 105% has been considered. The CAGR along with projected load for the control period has been given in the table below:

Table 9: Projected Load Growth

All Figures are in KVA

Category	CAGR			2018-19	2019-20	2020-21	2021-22
	5 Years	3 Years	1 Year	Estimated	Projected	Projected	Projected
Domestic	102.40%	102.45%	102.34%	87,652.96	89,754.24	91,905.89	94,109.12
Commercial	140.33%	103.41%	104.35%	16,357.36	16,915.70	17,493.09	18,090.19
Govt. Connection	92.69%	103.32%	102.24%	8,286.63	8,561.40	8,845.28	9,138.57
Industrial	104.17%	104.24%	103.53%	3,862.34	4,023.54	4,191.46	4,366.40
HT Consumers	108.16%	113.97%	115.12%	562.20	608.07	657.68	711.34
Public Lighting	102.32%	103.67%	103.88%	303.19	310.23	317.44	324.81
Temporary	-	102.45%	102.34%	69.59	73.07	76.73	80.56
Total				1,17,094.28	1,20,246.24	1,23,487.56	1,26,820.99

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CONSUMER GROWTH

3.3. The Table below summarizes the category wise growth in consumers over the past 5 years.

Table 10: Past Consumer Growth

Category	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Actual	Actual	Actual	Actual (Unaudited)	Actual (Unaudited)	Actual (Unaudited)
Domestic	16,302	17,169	17,761	18,670	19,316	19,729
Commercial	1,922	2,036	2,114	2,207	2,313	2,402
Govt. Connection	1,067	1,104	1,075	1,184	1,197	1,218
Industrial	321	317	321	334	345	356
HT Consumers	-	-	-	4	5	6
Public Lighting	73	73	73	75	75	76
Temporary Connection	-	-	-	234	274	160
Total	19,685	20,699	21,344	22,708	23,525	23,947

3.4. The 5-years, 3-years & 1-year CAGR was calculated to analyse the growth over different periods of time. CAGRs along with the projected consumer growth for the control period has been given in the table. There is consistent growth in number of consumers over the period of 5-years Hence, 5-years CAGR has been considered to project the consumer growth for the control period except HT consumers which has been projected at CAGR of 3-years. Further, the number of consumers in the temporary category for the control period has been kept same as that of FY 2017-18.



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Table 11: Projected Consumer Growth

Category	CAGR			2018-19 Estimated	2019-20 Projected	2020-21 Projected	2021-22 Projected
	5 Years	3 Years	1 Year				
Domestic	103.89%	103.56%	102.14%	20,496	21,294	22,122	22,982
Commercial	104.56%	104.35%	103.85%	2,512	2,626	2,746	2,871
Govt. Connection	102.68%	104.25%	101.75%	1,251	1,284	1,319	1,354
Industrial	102.09%	103.51%	103.19%	363	371	379	387
HT Consumers	-	122.47%	120.00%	7	9	11	14
Public Lighting	100.81%	101.35%	101.33%	77	77	78	78
Temporary	-	82.69%	58.39%	160	160	160	160
Total				24,866	25,821	26,814	27,846

ENERGY SALES GROWTH

3.5. The Table below presents the category-wise energy sales for the past six years. It may be seen that there has been consistent growth in sales for different categories of consumers.

Table 12: Past Sales Growth *All Figures are in MUs*

Category	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Actual	Actual	Actual	Actual Unaudited	Actual Unaudited	Actual Unaudited
Domestic	27.23	29.65	33.57	34.09	35.02	35.90
Commercial	1.84	2.25	2.45	2.54	2.73	2.87
Govt.	7.42	7.83	6.89	12.59	10.74	8.01
Industrial	0.39	0.42	0.42	0.40	0.42	0.43
HT Consumers	0	-	-	0.26	0.41	0.53
Public Lighting	1.07	1.17	0.81	0.61	0.61	0.64
Temporary Connection	0.05	0.05	0.12	0.13	0.14	0.09
Total	38.00	41.37	44.26	50.62	50.08	48.46

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3.6. The table given below summarizes the projections of category wise energy sales for the Control Period (FY 2019-20 to FY 2021-22) along with the CAGR used for projections.

Domestic Category Consumers: As can be witnessed that from the data presented in the table above, the 5-years, 3-years and 1-year CAGR for the domestic category sales has been decreasing rate which is due to replacement of incandescent/CFL bulb to LED bulbs, but as the most of the bulbs has been replaced in all the Island we have considered the growth rate based on the average CAGR growth over past 5-years.

Commercial category consumer: As can be witnessed that from the data presented in the table above, the 5-years, 3-years and 1-year CAGR for the commercial category sales has been in the range of 9% to 5%. However, sales in commercial category is to be considered on the basis of consistent growth over a period of time. Accordingly, for projection of sales in the commercial category has been done considering 3-years CAGR year over year on the actual figures for the FY 2017-18

Government Connection: Sales in government categories is showing decreasing trend over past 3-years due to replacement of incandescent/CFL bulb to LED bulbs, but as the most of the bulbs has been replaced in all the Island we have considered the growth rate based on the average CAGR growth over past 5-years.

Industrial: The growth in the industrial category is not showing any specific trend. However, for projecting sales in this category CAGR of 5-years has been considered year over year on the actual figures for the FY 2017-18.

HT Consumers: The consumption in the HT Consumers category is very less and accounts for around 1% of the total consumption. However, there has been a growth trend in this category in last three years. Hence, CAGR of 3-years has been considered for projecting the Growth in the category during the control period.

Public Lighting Category: The consumption in this category has been declining over last few years due to introduction of energy conservation measures including use of energy efficient LED bulbs etc. In-spite of addition of new public lights, the per unit consumption is expected to continue to decline due to the above initiatives during next 2-3 years. Therefore, constant sale equal to the sales of the FY 2017-18 has been considered for the control period.



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Temporary Connections: No specific trend is observed in past four to five years in this category. The projected energy consumption during the control period in the category has been kept at same level as that of FY 2017-18.

Based on the assumptions and methodology detailed above, the projected sales for FY2018-19 and for the Control Period FY 2019-20 to FY 2021-22 is summarized in table below:

Table 13: Projected Sales Growth All Figures are in MUs

Category	CAGR			2018-19 Estimated	2019-20 Projected	2020-21 Projected	2021-22 Projected
	5 Years	3 Years	1 Year				
Domestic	105.68%	102.26%	102.50%	37.94	40.09	42.37	44.78
Commercial	109.28%	105.35%	105.06%	3.02	3.18	3.35	3.53
Govt. Connection	101.54%	105.15%	74.57%	8.13	8.26	8.38	8.51
Industrial	101.80%	100.50%	102.18%	0.43	0.44	0.45	0.46
HT Consumers	-	127.33%	128.31%	0.67	0.86	1.09	1.39
Public Lighting	90.33%	92.61%	104.69%	0.64	0.64	0.64	0.64
Temporary	113.20%	91.84%	64.83%	0.09	0.09	0.09	0.09
Total				50.93	53.57	56.39	59.41

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CHAPTER 4: POWER AVAILABILITY

ENERGY REQUIREMENT & SOURCES OF POWER PURCHASE

4.1 Accordingly, the energy requirement for LED is estimated based on the retail sales projections, grossed up by estimated loss levels. The energy balance expected for the FY 2019-20, 2020-21 and 2021-22 is as given below:

Table 14: Energy Requirement – FY 2019-20, 2020-21 and 2021-22

Energy Balance	FY 2017-2018 (Actuals) MU's	FY 2018-2019 (Estimated) MU's	FY 2019-2020 (Projected) MU's	FY 2020-2021 (Projected) MU's	FY 2021-2022 (Projected) MU's
ENERGY REQUIREMENT					
Energy Sales					
LT Supply	47.94	50.26	52.71	55.29	58.02
HT Supply	0.53	0.67	0.86	1.09	1.39
Total Energy Sales	48.46	50.93	53.57	56.39	59.41
Overall T & D Losses %	13.10	13.00	12.75	12.50	12.25
Overall T & D Losses (MUs)	7.31	7.61	7.83	8.05	8.29
Total Energy Requirement	55.77	58.54	61.40	64.44	67.70
ENERGY AVAILABILITY AT PERIPHERY					
Power Purchase	-	-	-	-	-
Own Generation	55.77	58.54	61.40	64.44	67.70
Total Energy Availability	55.77	58.54	61.40	64.44	67.70
ENERGY SURPLUS/(GAP)	NIL	NIL	NIL	NIL	NIL

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- 4.2 The energy requirement of LED is met from own generation. There is no availability of power from Central Generating Stations or from other sources/ open market/ power exchanges etc. The present scenario is likely to continue and is projected that energy requirement for FY 2019-20, 2020-21 and 2021-22 shall be met by own generation.

The existing installed capacity of DG sets is provided below:

Table 15 Existing Installed Capacity of DG Sets

Sl. No.	Name of Island	Existing Installed Capacity			
		New		Old	Total
1	Minicoy	1X1,000	1,000	800	3,400
		1X1,600	1,600		
2	Kavaratti	2X1,000	2,000		3,200
		2X600	1,200		
3	Amini	3X750	2,250	400	2,650
4	Androth	1X750	750	1,150	2,900
		2X500	1,000		
5	Kalpeni	1X750	750	500	1,750
		2X250	500		
6	Agatti	3X400	1,200	400	2,350
		1X750	750		
7	Kadmat	1X400	400	750	1,900
		1X750	750		
8	Kiltan	2X400	800	200	1,480
		1X480	480		
9	Chetlat	2X250	500	-	1,000
		1X500	500		
10	Bitra	1X100	100	330	430
11	Bangram	1X60	60	120	180
Total			16,590	4,650	21,240

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The existing installed capacity of SPV plants is provided below:

Table 16 Existing Installed Capacity of SPV Plants

Sl. No.	Name of Island	Existing Installed Capacity (KWp)
1	Minicoy	210
2	Kavaratti	760
3	Amini	100
4	Androth	320
5	Kalpeni	100
6	Agatti	100
7	Kadmat	260
8	Kiltan	100
9	Chetlat	100
10	Bitra	50
11	Bangram	50
Total		2,150

Apart from the above, LED has planned augmentation of generation capacity. The planned additions/replacement are provided below:

Table 17 Augmentation of Installed Capacity

Sl.No.	New source of power	Location	Installed Capacity (MW)		
			FY 19-20 (Projected)	FY 20-21 (Projected)	FY 21-22 (Projected)
1	DG set	MINICOY	0.75		
2	DG set	KAVARATTI		0.75	0.75
3	DG set	AMINI	0.75		
4	DG set	ANDROTH			
5	DG set	KALPENI	0.75		
6	DG set	AGATHI		0.75	0.75
Total			2.25	1.50	1.50



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The expected power generation/procurement sources for FY 2019-20, 2020-21 and 2021-22 are provided in the table below.

Table 18: Details of Power Procurement Sources – FY 2019-20, 2020-21 and 2021-22

Energy Balance	FY 2017-18 (Actual) MU's	FY 2018-19 (Estimated) MU's	FY 2019-20 (Projected) MU's	FY 2020-21 (Projected) MU's	FY 2021-22 (Projected) MU's
Power Purchase	Nil	Nil	Nil	Nil	Nil
Own Generation	55.77	58.54	61.40	64.44	67.70
Total					

DETAILS OF OWN GENERATION

4.3 The Generation forecast is based on the plant availability and energy demand for the period. Accordingly, generation for FY 2018-19, FY 2019-20, 2020-21 and 2021-22 is estimated.

Table 19: Projected Power Generation – FY 2019-20, 2020-21 and 2021-22

	Units Generated & Sent Out (MUs)								
	FY	FY	FY	FY	FY	FY	FY	FY	FY
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Units Generated	50.02	51.98	59.29	58.47	56.35	59.20	62.08	65.16	68.45
Auxiliary Consumption	0.80	0.66	0.71	0.65	0.58	0.65	0.68	0.72	0.75
Sent Out	49.22	51.32	58.58	57.83	55.77	58.54	61.40	64.44	67.70



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RENEWABLE PURCHASE OBLIGATION

- 4.4 Apart from the above allocations from central generating stations, LED shall also procure power from roof-top solar power plants as covered under the power procurement from renewable energy segment and balance power shall be required to be procured from bilateral agreements. Renewable power obligation for the utilities has been prescribed by the Hon'ble Commission vide JERC for State of Goa and UTs (Procurement of Renewable Energy) Regulations, 2010, First Amendment Regulations, 2014, Second Amendment Regulations, 2015 and Third Amendment Regulations, 2016. The Hon'ble Commission has revised/specified Renewable Purchase Obligation (RPOs) targets for all Distribution Licensees/obligated entities for FY 2010-11 to FY 2021-22.
- 4.5 The RPO targets for the control period to be achieved by the LED during the Control Period as specified in the Regulations is as follows:

Table 20: RPO Obligation

FY	Solar RPO (%)	Non-Solar RPO (%)
2019-20	4.70	6.80
2020-21	6.10	8.00
2021-22	8.00	9.00

- 4.6 The LED submits that it intends to meet the RPO as per the directions of the Hon'ble Commission in the MYT Control period as well. LED has planned to meet the Solar RPO from the generation of solar power from own power plants. Further, it is submitted that in absence of any non-solar power plants, LED shall not be able meet the RPO towards non-solar. However, the Hon'ble Commission in the tariff order for the FY 2018-19 had approved clubbing of RPO of solar & non-solar energy to meet the targets set by the Commission. Accordingly, projected RPO compliance by LED during the Control Period is summarized in the table below:



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Table 21: Renewable Purchase Obligation Compliance

RPO Compliance			
Solar Obligation	2019-20	2020-21	2021-22
Solar RPO (In %)	4.70	6.10	8.00
Projected Sales	53.57	56.39	59.41
Total Power to be Procured to meet Solar Obligation (In MUs)	2.52	3.44	4.75
Non-Solar Obligation			
Non-Solar RPO (In %)	6.8	8	9
Projected Sales (In MU's)	53.57	56.39	59.41
Total Power to be Procured to meet Non-Solar Obligation (In MU's)	3.64	4.51	5.35
Total Power for clubbed RPO compliance	6.16	7.95	10.10
Breakup of Sources for RPO Compliance			
Total Power to be procured to meet RPO (In MUs)	6.16	7.95	10.10

To meet the RPO as projected above, LED has initiated the following actions,

4.7 To promote the use of renewable power in Lakshadweep, LED plans to purchase of solar power from SECI. LEDA has initiated a study to make a road map for sourcing 100% energy requirement of LED through Renewable Energy sources for all the Islands to mitigate the diesel consumption. As per the discussion with SECI, they will take all the existing projects and then will start work. Based on the preliminary inputs, the solution would comprise of the following:

- Development of Floating Solar Power Projects
- Repowering of existing ground mounted solar projects
- Development of roof top solar power projects
- Development of small scale wind turbines
- Employing Battery energy storage to manage the renewable power generated in tandem with load requirements and DG sets.



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- 4.8 Apart from the above, LEDA has also a proposal to purchase power from NTPC where they will design, development and commissioning of concentrated solar thermal agro-waste biomass system for power and portable water production in Androth Island. There they will install a gasifier genset which generate 100 KWe power.

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CHAPTER 5: T&D LOSS TRAJECTORY AND ENERGY BALANCE

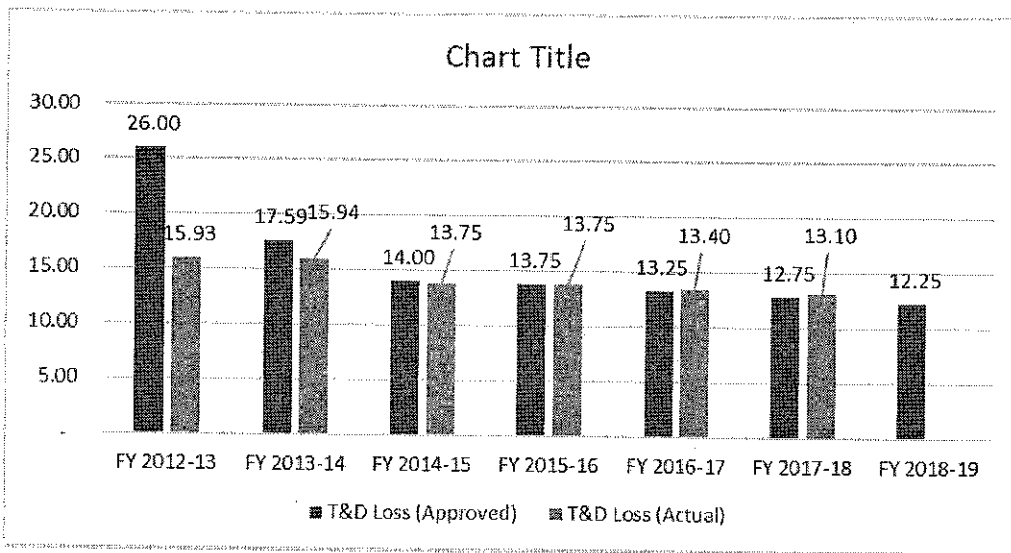
T&D LOSS TRAJECTORY FOR THE CONTROL PERIOD

5.1. LED has been trying to reduce the distribution losses during recent years. LED submits that the system improvement works executed every year under the plan schemes have also contributed to the reduction of distribution losses. However, it may also be noted that reduction of distribution losses may not be possible beyond a certain level due to topographical conditions and technical limitations.

The losses has reduced from 26.85% in the FY 2010-11 to 13.10% in FY 2017-18. The Hon'ble Commission has approved T&D loss of 12.25% for the FY 2018-19. However, it is expected that the losses for the FY 2018-19 would be in the range of 13.00%.

5.2. As can be seen from the above, LED has been successfully reducing the T&D loss y-o-y in spite of having consumer profile where majority of the consumers are LT category consumers.

T&D Loss Target Achieved vis-a-vis Targets



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5.3. While in future LED shall make all efforts to achieve the loss targets set up by the Hon'ble Commission, it is requested that Commission may set realistic targets in view of the fact that the current loss level is very low and reduction of loss below the current levels shall be difficult.

Accordingly, for the purpose of FY 2019-20, 2020-21 and 2021-22, LED proposes 0.25% reduction each year in T&D loss target for the Control Period in view of the difficulty in loss reduction below 13.00% as approved as detailed in paras above. The T&D loss target proposed by LED is as below and the Hon'ble Commission is requested to approve the same:

Table 22: T&D Loss Trajectory for the Control Period

Loss %	FY 19-20	FY 20-21	FY 21-22
T&D Losses	12.75%	12.50%	12.25%



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CHAPTER 6: MANPOWER PLANNING

- 6.1 Currently there are 405 sanctioned posts of different categories in the LED. However, being a financial matter, the approval of Lakshadweep Administration was sought by the LED. JERC directed the LED to carry out detailed manpower study according to future load growth in LED. Accordingly, LED has initiated the process for the appointment of Consultant to conduct the Manpower Study and delegation of power.

Table 23: Manpower Strength

Manpower Requirement for LED	Sanctioned	As-Is Manpower At LED	Total Proposed	Proposed In-House	Proposed Outsourced
Executives (AEE/AE & above)	12	11	1	1	Nil
Non-Executives (JE & below)	301	248	53	53	Nil
Ministerial	92	81	11	11	Nil
Total	405	340	65	65	Nil

- 6.2 The LED has planned to carry out recruitment for 64 posts in the current and next year. The table below presents the current status of the employee strength (01.04.18) and future manpower planning for the Control Period:



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Table 24: Present Employee Strength

Sr. No.	Particulars	Ensuing Projections 2018-19	Ensuing Year Projection 2019-20	Ensuing Year Projection 2020-21	Ensuing Year Projection 2021-22
1	No. of employees as on 1 st April	322	328	348	357
2	No. of employees added during the year	29	36	28	48
3	Total number of employees (1+2)	351	364	376	405
4	Number of employees retired/retiring during the year	23	16	19	13
5	Number of employees at the end of the year (3-4)	328	348	357	392

*** Recruitment planned by LED in subsequent year of the control period to fill the gap between actual and sanctioned strength.*

6.3 The details of the 64 posts to be filled in the ensuing year is as follows:

Table 25: Recruitment Planned for the Year FY18-19

Sr. No.	Category	No of Posts.
1	Executive Engineer	1
2	Junior Engineer (Ele)	5
3	Chargeman/ Electrician/ Mechanic/ Meter Mechanic/ Cable Jointer & similar grade	14
4	Operator/Meter Reader/ Senior Lineman	5
5	Tracer	2
6	Engine Driver/Oilman & Similar grades	26
7	Ministerial Staff	11
	Total	64



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MANPOWER TRAINING AND RE-SKILLING

6.4 With the rapidly expanding system and advent of new technology, it becomes all the important to develop the skill set of the employees of the transmission and distribution utility. The LED acknowledges the fact that improving knowledge base is an ever-evolving process and thus has initiated the process to impart refresher training to its employees. As per the proposal, a national training program had been done from 22nd January 2018 to 28th January 2018 for ALM's (Assistant Line Man) & Junior Engineer's at Administrative Training Institute, Kavaratti conducted by Rural Electricity Corporation, Hyderabad.

Table 26: Manpower Training Cost

Sr. No.	Program	Cost (In Rs Lakhs)				
		2017-18	2018-19	2019-20	2020-21	2021-22
1	Residential	-	-	-	-	-
2	Non-Residential	0.38	9.00	15.00	16.00	18.00
	Total	0.38	9.00	15.00	16.00	18.00

6.5 In view of the additional cost involved in providing the trainings to the employees, LED requests the Hon'ble Commission to approve the associated cost and allow recovery of the same in the tariff.



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SAFETY MEASURES

- 6.6 In order to ensure safety of its manpower, the safety measures prescribed under Indian Electricity rules, Safety, Electricity Supply Regulations 2010 notified by CEA and Joint Electricity Regulatory Commission (Distribution Code Regulation 2010) needs to be adhered to by the utility. Accordingly, to comply with the safety measures directed by the commission the LED intends to examine all the Rules and Regulations in the force and suggest way forward. The LED shall analyze existing safety standards, tool kits and practices being followed by the department. To comply with the safety regulation in place, LED shall come out with suitable safety tool kits/ equipment required to carry out operation and maintenance of distribution network.
- 6.7 The proposed expenditure to be incurred on safety measures and procurement of safety materials such as firefighting equipment's and cap shoes gloom etc for its manpower is as below:

Table 27: Proposed Expenditure on Safety Measures

Particulars	2019-20	2020-21	2021-22
Proposed Expenditure (In Rs Lakh)	10.00	8.00	8.00



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CHAPTER 7 IT INITIATIVES AND TECHNOLOGICAL INITIATIVES

- 7.1 LED has taken various IT & Technological initiatives for improvement of system working & efficiency. The Lakshadweep Electricity Department is the first Department in the U.T. to have a working Local Area Network and a Mail Server. Now the entire subordinate offices of the Department have been provided with sufficient computers, Local Area Network, dedicated internet connection and thus virtually interconnected each other.
- 7.2 The Ministry of Non-Conventional Energy Sources has identified Lakshadweep Electricity Department as one of the beneficiaries to their scheme "TIFAD" (Technology Information Forecasting Assessment and Databank) during 1998-99. Under the scheme, the Department received financial assistance from the Ministry to set up Renewable Energy NET (RENET) by installing a VSAT (FTDMA), Server and a Client Computer along with one 2 KVA UPS. The VSAT system has installed in the Electricity Division Office, Kavaratti during 04/2000. Later, VSAT connection has been extended to all the offices in the Lakshadweep Islands by Lakshadweep Administration.
- 7.3 Department has switched over to web-based applications from the year 2007 for extending various online facilities to its consumers and to have a real time monitoring of the activities of the Department.
- 7.4 The CSI-Nihilent e-Governance award 2006-07 for the best e-Governed Department category was jointly awarded to Department of Electricity, Lakshadweep and Department of Health and family welfare, Government of Gujarat for the achievements they had in implementing e-Governance applications in their respective Departments.
- 7.5 The Grid Interactive SPV Power Plants installed in the Islands are equipped with latest hardware's and software's to make it possible to monitor, control and download the data remotely from anywhere in the world. Department also proposes to introduce SCADA for monitoring and controlling of generation & distribution of power supply in these Islands.



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CHAPTER 8 CUSTOMER SERVICE RELATED ACTIVITIES

- 8.1. LED has taken several initiatives for improvement of customer service. The steps already taken and those proposed to be taken are provided below.
- 8.2. **Centralized Complaint Centre:** LED plans to establish 24X7 centralized complaint centre where consumers can lodge complaints and remedial action can be taken accordingly.
- 8.3. LED has introduced the facility of online payment whereby consumers can pay by internet banking system.

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CHAPTER 9: CAPITAL INVESTMENT PLAN

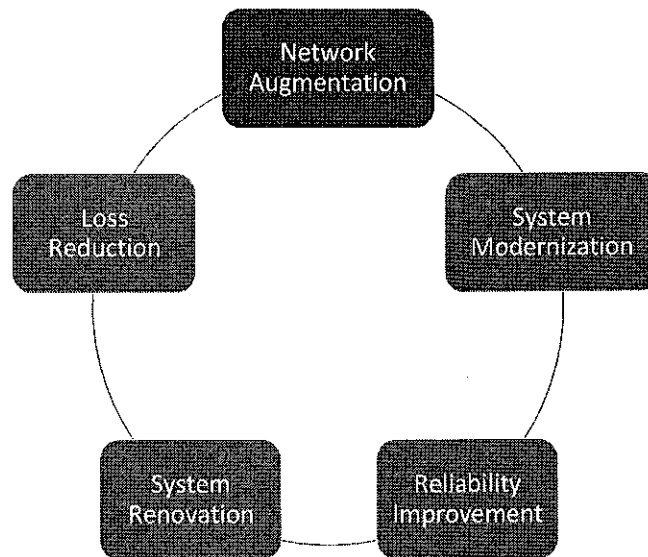
- 9.1. As per the MYT Regulations 2018, the Distribution Licensee is required to file the Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets before the Hon'ble Commission as part of the Tariff Filing before the beginning of the Control Period.
- 9.2. Based upon the above mandate the CAPEX Plan proposals (scheme wise) for FY 19-20 to FY 21-22 under the MYT Control Period FY 2019-22 have been formulated by Lakshadweep Electricity Department in order to enable better planning, budgeting and monitoring at macro & micro levels. The capital expenditure plan has been prepared for 11 KV and below works.
- 9.3. Lakshadweep Electricity Department has prepared the CAPEX plan taking into consideration all the factors which would affect the operations of the company. The CAPEX 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 FY19-20 to FY21-22.
- 9.4. The capital investments of the Lakshadweep Electricity Department can largely be categorized in following areas:
- ▣ Investments in New Transmission Infrastructure to support the demand requirements or power evacuation from generation projects.

 - ▣ System augmentation and strengthening including renovation and modernization to maintain the performance of the existing system and to deter investments.

The figure below provides a wider overview of the capital investment avenues planned by the Lakshadweep Electricity Department.



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9.5. Since capital investment is an ongoing activity for any transmission and distribution licensee, LED has categorized the schemes under the followings two categories i.e. On-going schemes and new schemes. But in case of LED mainly all the capital expenditures are been completed within a year, hence there will be no ongoing scheme. The year wise details of proposed capital expenditure under the two categories has been furnished below.

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NEW SCHEMES:

LED has planned for 17 new 11kV schemes in view of the system upgradation requirement and improvement of reliability. The Cap-ex Plan proposal (Scheme wise) for FY 2019-20 to 2021-22 under the MYT control period FY-2019-22 have been formulated by Lakshadweep Electricity Department keeping in view various parameters that come into play to ensure better supply of power to end consumers. The details of the new 11kV capital schemes along with the investment rationale and their approval status is provided in table below:

Table 28: 11 KV New Schemes proposed for the Control Period

Sr. No.	11KV New Scheme	Total Exp. (In lakhs)
1	Installation/Augmentation/Replacement of 750 KW DG generating Capacity	700
Scheme Details	Installation of 4 no's of 750 KW New DG generating Capacity at Minicoy(1), Agatti(1) & Kavaratti(2) Island and augmentation/replacement of 3 no's of 750 KW DG generating capacity at Kalpeni(1), Amini(1) and Agatti(1). Rationale: The scheme will help to meet the future load demand due to growth of consumers and also due to derating of DG sets due to ageing and for cost effective.	
2	Replacement of old Panel Board In Kadmat Substation	50
Scheme Details	Replacement of old and obsolete panel board and other allied equipment's in Kadmat Substation. Rationale: The scheme will help in continuous and reliable distribution of electricity.	
3	Step up 1000 KVA Transformer at 11 KV existing sub-station	50
Scheme Details	Improvement and augmentation of 3 no's of 1000 KVA Transformer at 11 KV existing sub-station including HT/LT Panels, on the existing distribution transformers at Chetlat and Agatti. Rationale: The scheme will help to meet the increasing load demand due to growth of consumers and also for replacement of defective transformer so as to reduce T&D loss.	



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Sr. No.	11KV New Scheme	Total Exp. (In lakhs).
4	Step down 250 KVA Transformer at 11KV existing system	50
Scheme Details	<p>Improvement and augmentation of 9 no's of 250 KVA Transformer at 11 KV existing sub-station including HT/LT Panels, on the existing distribution transformers at Amini, Androth, Kavaratti, Minicoy, Agatti, Kalpeni, Kadmath and Kiltan.</p> <p>Rationale: The scheme will help to meet the increasing load demand due to growth of consumers and also for replacement of defective transformer so as to reduce T&D loss.</p>	
5	Ring main Unit in distribution transformer	150
Scheme Details	<p>Installation of 19 no's of Ring main Unit in distribution transformer at Amini, Kavaratti, Minicoy, Agatti, Chetlat, Kalpeni, Kadmath and Kiltan.</p> <p>Rationale: The scheme will help to provide redundancy of electricity supply, so that availability of supply will be increased to meet JERC recommendation.</p>	
6	HT Cable line	175
Scheme Details	<p>Providing HT cable line in the phased manner in all the island, 10km each year.</p> <p>Rationale: The scheme will help to provide transmission of power from power house (Step up Transformer) to distribution transformers (Step down Transformer) installed in new places.</p>	
7	Cable laying work	50
Scheme Details	<p>Laying of new cable line and also replacement of old and defective cables in all the Island</p> <p>Rationale: The scheme will help for fulfilling an increased load demand and to decrease the repair and maintenance cost for the existing defective cable line.</p>	
8	LT line/Domestic and Commercial connection	22
Scheme Details	<p>New service connection to 600 no's of LT line/Domestic and commercial consumers</p> <p>Rationale: The scheme will help to provide new service connections to domestic and commercial consumers and also for replacement of defective lines.</p>	
9	LT Line/Industrial Connection	13
Scheme Details	<p>New service connection to 15 no's of LT line/Industrial consumers</p> <p>Rationale: The scheme will help to provide new service connections to Industrial consumers and also for replacement of defective lines.</p>	



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Sr. No.	11KV New Scheme	Total Exp. (In lakhs)
10	Supply of 11KV/LT cable	200
Scheme Details	Supply of 45 Kmts 11KV/LT cables in the phased manner in all the island. Rationale: The scheme will help to provide new service connections and also for replacement of defective cables.	
11	Requirement of RCC slab for cable laying work	170
Scheme Details	Requirement of 60,000 no's RCC slab for cable laying work for all the Island. Rationale: The scheme will help to smoothen the installation and repairing of cables to minimise the cable fault due to improper digging by water authorities and telephone authorities	
12	Supply of Street light Pole and street light sets	190
Scheme Details	Supply of 1600 no's of Street light Pole and street light sets. Rationale: The scheme will help in saving of energy by replacing with LED type street lights.	
13	Installation and replacement of Distribution boxes	235
Scheme Details	Installation and replacement of 2,500 no's of Distribution boxes. Rationale: The scheme will help to reduce the distribution losses and to provide easy electricity service connections.	
14	Installation of Smart Meters/Energy meters	200
Scheme Details	Installation of 4,500 no's of Smart Meters/Energy meters in Kavaratti and 4,000 no's for Minicoy. Rationale: The scheme will help to improve the collection and billing efficiency.	
15	Conversion of Existing Overhead HT/ LT Lines into underground cables	150
Scheme Details	Conversion of Overhead HT/LT lines into underground cables will help to reduce the losses & faults thereby improving the reliability of power supply in all the Island, 10kms in each year. Rationale: The scheme will help to give the supply to new and existing consumers so that interruption in supply is minimised and T&D loss will be reduced.	



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Sr. No.	11KV New Scheme	Total Exp. (In lakhs).
16	Improvement and Augmentation of Power House/Line Tools	55
Scheme Details	Improvement and Augmentation of Power House/Line Tools in all the Island. Rationale: The scheme will help in minimising the running and maintenance of power system which improve the efficiency.	
17	Construction and Installation of Oil Storage facility	350
Scheme Details	Installation of Oil Storage facility which is already completed in Kavaratti and Minicoy but not installed due to some legal issue and new construction of Oil Storage facility in Amini Island. Rationale: Present mode of transport of oil is through 200 lit HSD oil barrel hence transportation cost is high. Oil storage facility shall facilitate to store bulk oil in the oil tanker. Hence saving in transportation cost.	

11KV ONGOING SCHEMES

9.6. There is no spill over of the Capital expenditure as all the Capital expenditure works is being completed in the same financial year hence there is no ongoing schemes.



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SCHEME WISE PROPOSED CAPITAL EXPENDITURE FOR THE CONTROL PERIOD

9.7. With respect to the 11kV schemes, 100% capitalization of the amount proposed in the concerned year for schemes such as General Service connections and industrial service connections, augmentation distribution transformers and LT OH conductors, installation of shunt capacitors and replacement of electro-mechanical meters has been considered.

9.8. Scheme-wise and year-wise proposed capitalization for the Control Period is summarized in Table below:

Table 29: Proposed Capital Expenditure for 11 KV New Schemes

Sr. No.	11 KV New Schemes	Proposed Expenditure (Rs Lakh)		
		2019-20	2020-21	2021-22
1	Installation of 3 no's of 750 KW New DG generating Capacity at Minicoy(1) & Kavaratti(2) Island and augmentation/replacement of 4 no's of 750 KW DG generating capacity at Kalpeni(1), Amini(1) and Agatti(2).	300	200	200
2	Replacement of old and obsolete panel board and other allied equipment's in Kadmat Substation.	50		
3	Improvement and augmentation of 3 no's of 1000 KVA Transformer at 11 KV existing sub-station including HT/LT Panels, on the existing distribution transformers at Chetlat, Kiltan and Agatti,.	50		
4	Improvement and augmentation of 9 no's of 250 KVA Transformer at 11 KV existing sub-station including HT/LT Panels, on the existing distribution transformers at Amini, Androth, Kavaratti, Minicoy, Agatti, Kalpeni, Kadmath and Kiltan.	50		
5	Installation of 19 no's of Ring main Unit in distribution transformer at Amini, Kavaratti, Minicoy, Agatti, Chetlat, Kalpeni, Kadmath and Kiltan.	50	50	50
6	Providing HT cable line in the phased manner in all the island, 10km each year.	50	75	50
7	Laying of new cable line and also replacement of old and defective cables in all the Island.	15	20	15



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Sr. No.	11 kV New Schemes	Proposed Expenditure (Rs Lakh)		
		2019-20	2020-21	2021-22
8	New service connection to 600 no's of LT line/Domestic and commercial consumers	6	10	6
9	New service connection to 15 no's of LT line/Industrial consumers	4	5	4
10	Supply of 45 Kmts 11KV/LT cables in the phased manner in all the island.	50	100	50
11	Requirement of 60,000 no's RCC slab for cable laying work for all the Island.	50	50	70
12	Supply of 1600 no's of Street light Pole and street light sets.	50	100	40
13	Installation and replacement of 2,500 no's of Distribution boxes.	60	100	75
14	Installation of 4,500 no's of Smart Meters/Energy meters in Kavaratti and 4,000 no's for Minicoy.	100	50	50
15	Conversion of Overhead HT/LT lines into underground cables will help to reduce the losses & faults thereby improving the reliability of power supply in all the Island, 10kms in each year.	50	50	50
16	Improvement and Augmentation of Power House/Line Tools in all the Island.	15	25	15
17	Installation of Oil Storage facility which is already completed in Kavaratti and Minicoy but not installed due to some legal issue and new construction of Oil Storage facility in Amini Island.	50	200	100
	Total	1,000	1,085	825



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9.9. With respect to the FY 2017-18, it is submitted that the Lakshadweep Electricity Department has incurred the capital expenditure for system improvement. The following table provides details of the target cost of such schemes and expenditure which has already being incurred on these schemes for the FY 2017-18.

Table 30: Ongoing Scheme's Original Cost and Incurred Expenditure

Sr. No.	11 KV Ongoing Works	Target 2017-18	Actual Expenditure 2017-18
1	Augmentation of DG sets	300.00	349.11
2	Pannel Board	50.00	0.89
3	Step up Transformer	50.00	0.89
4	Step Down Transformer	50.00	0.96
5	Ring Main Unit	100.00	21.77
6	HT Cable	63.00	63.00
7	Cable Laying Work	12.00	12.00
8	LT Line/Domestic and Commercial Connection	10.00	10.00
9	LT Line/Industrial Connection	4.00	4.00
10	Supply of LT Cable	30.00	31.07
11	RCC Slab/Lt cable laying work	53.00	51.93
12	Supply of Street light pole	50.00	1.78
13	Supply of Distribution Boxes	75.00	0.89
14	Supply of Energy Meters	50.00	50.00
15	Supply of Under Ground cable for consumers	28.00	28.00
16	Power House / Line Tools	25.00	25.00
17	Oil storage facility	50.00	0.00
	Total	1,000.00	651.29



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The table below presents overview of the planned capital expenditure and capitalization schedule over the first control period.

Table 31: Year Wise Overall Capital Expenditure and Capitalization

Particulars (In Rs Lakh)	2019-20	2020-21	2021-22
Capital Expenditure	1,000	1,085	825
Capitalization	1,000	1,085	825

PHYSICAL TARGET ACHIEVEMENT FOR THE CONTROL PERIOD

9.10. In accordance with the proposed capitalization schedule, LED expects to roll out infrastructure as presented in the table below:

Table 32: Expected Physical Target Achievement for the control period

Year	Distribution Transformer		New Sub-Stations (11KV)		Lines (In KM's)	
	Nos.	kVA	Nos.	MVA	LT	HT
2019-20	8	250	Nil	Nil	5	10
2020-21	2	250	Nil	Nil	8	10
2021-22	2	250	Nil	Nil	5	10

STATUS OF TENDER PROCESSING FOR SUPPLY/SERVICES

9.11. All activities to prepare DNIT, Tender & their execution is done by Department at their own level after getting approval from the Administrator. The normal lead time to complete the work is 12 Months after award of work.



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CHAPTER 10: FINANCING OF THE CAPITAL SCHEMES

10.1. The entire capital expenditure incurred by LED had been funded through equity infusion by Central Govt. through budgetary support without any external borrowings. There are no loan borrowings by the Lakshadweep Electricity Department for the capital expenditure.

10.2. As per the of MYT Regulations, any equity deployed in excess of 30% of the capital cost of the project is required to be treated a normative loan. Since the entire capital expenditure in the various schemes shall be infused by the Government of India, LED requests the Hon'ble Commission to consider the funding of the various schemes in line with the Regulations and provide approval for the same.

10.3. The breakup of the financing of the capital expenditure undertaken during the Control Period is provided in table below:

Table 33: Proposed Funding Details

Particulars	FY 2019-20 (In Rs Lakhs)	FY 2020-21 (In Rs Lakhs)	FY 2021-22 (In Rs Lakhs)
Proposed Capital Expenditure	1,000	1,085	825
Actual Funding			
100% Equity from Central Govt.	1,000	1,085	825
Proposed Funding in line with Regulation 24 (b) fof JERC			
Equity (30%)	300	325.50	247.50
Debt (Normative Debt in excess of 30% equity)	700	759.50	577.5
Total Funding	1,000	1,085	825



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CHAPTER 11: OTHER INITIATIVES

ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT

- 11.1. Regulation 5 of the JERC for the state of Goa and Union Territories (Multi Year Tariff) Regulations, 2018 states that
"The Distribution Licensees shall project the power purchase requirement after considering effect of target set for the Energy Efficiency (EE) and Demand Side Management (DSM) schemes."
- 11.2. In view of the growing domestic consumption within the distribution area, LED proposes to implement Efficient Lighting Program by distribution of LED bulbs in the UT of Lakshadweep as a part of Demand Side Management Activity, through an Energy Service Company (ESCO), M/s. Energy Efficiency Services Limited, New Delhi.
- 11.3. Under the scheme, M/s EESL will supply required numbers of LED bulbs to Electricity department and then department will provide the LED bulbs to 24 thousand domestic consumers as per the demand. An estimation of the savings and expenditure proposed by M/s EESL is provided in the table below:

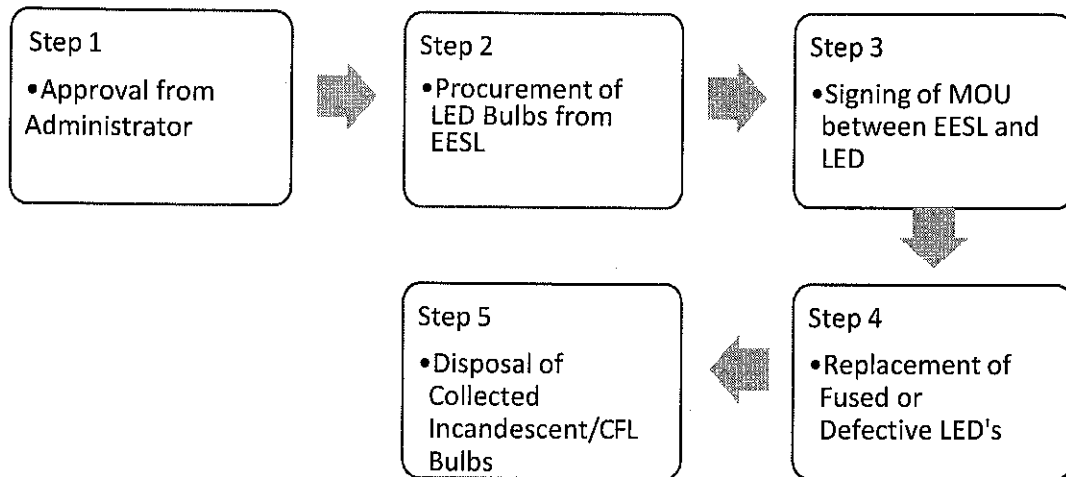
Table 34: Estimated Savings and Expenditure for Energy Efficiency Program

No of LED's to be replaced (No)	3,01,000
Estimated Capital Expenditure	3.7 Crores
Estimated cost savings to LED per year	2.38 Crores

- 11.4. LED also plans to implement this DSM measure in the Control Period and request an in principal approval from the Hon'ble Commission for going ahead with the proposal. An action plan for the aforementioned scheme is as below:



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Lakshadweep Energy Development Agency had conducted Publicity/Awareness program on energy efficiency in the state scheme of BEE-Eassy competitions for higher secondary classes in all the islands on the topic "SAVE ELECTRICITY TO SAVE ENVIRONMENT FOR A BETTER FUTURE".

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PROMOTION OF RENEWABLE POWER

11.5. To promote the use of renewable power in Lakshadweep, LED plans to purchase of solar power from SECI. LEDA has initiated a study to make a road map for sourcing 100% energy requirement of LED through Renewable Energy sources for all the Islands to mitigate the diesel consumption. As per the discussion with SECI, they will take all the existing projects and then will start work. Based on the preliminary inputs, the solution would comprise of the following:

- Development of Floating Solar Power Projects
- Repowering of existing ground mounted solar projects
- Development of roof top solar power projects
- Development of small scale wind turbines
- Employing Battery energy storage to manage the renewable power generated in tandem with load requirements and DG sets.

11.6. Apart from the above, LEDA has also a proposal to purchase power from NTPC where they will design, development and commissioning of concentrated solar thermal agro-waste biomass system for power and portable water production in Androth Island. There they will install a gasifier genset which generate 100 KWe power.

ENERGY AUDIT

11.7. LED plans to conduct energy audit of its Transmission & Distribution system to identify energy loses and implement steps to reduce the same. As per the instruction of JERC, LED has initiated the process for the appointment of a consultant for Energy audit.



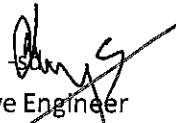
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CGRF EXPENSE DETAILS

11.8. The details of the expense incurred over CGRF for the FY17-18 is provided as below:

Table 35: CGRF Expense Details

Sr No	Item	Amount (In Rs)
1	Salary	11,34,085
2	Petty Expenditure i.e. Newspaper bill, Stationary	3,872
3	Others	1,98,997
	Total	13,36,954


Executive Engineer
Electricity Operation Circle
U.T. Lakshadweep (Ele)
EXECUTIVE ENGINEER (Ele)
U.T. OF LAKSHADWEEP
KAVARATTI-682 555

Lakshadweep Electricity Department

