

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

**Submitted by:
Electricity Department
Andaman & Nicobar Administration
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.

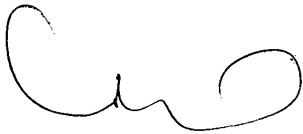
AND

IN THE MATTER OF
THE PETITIONER

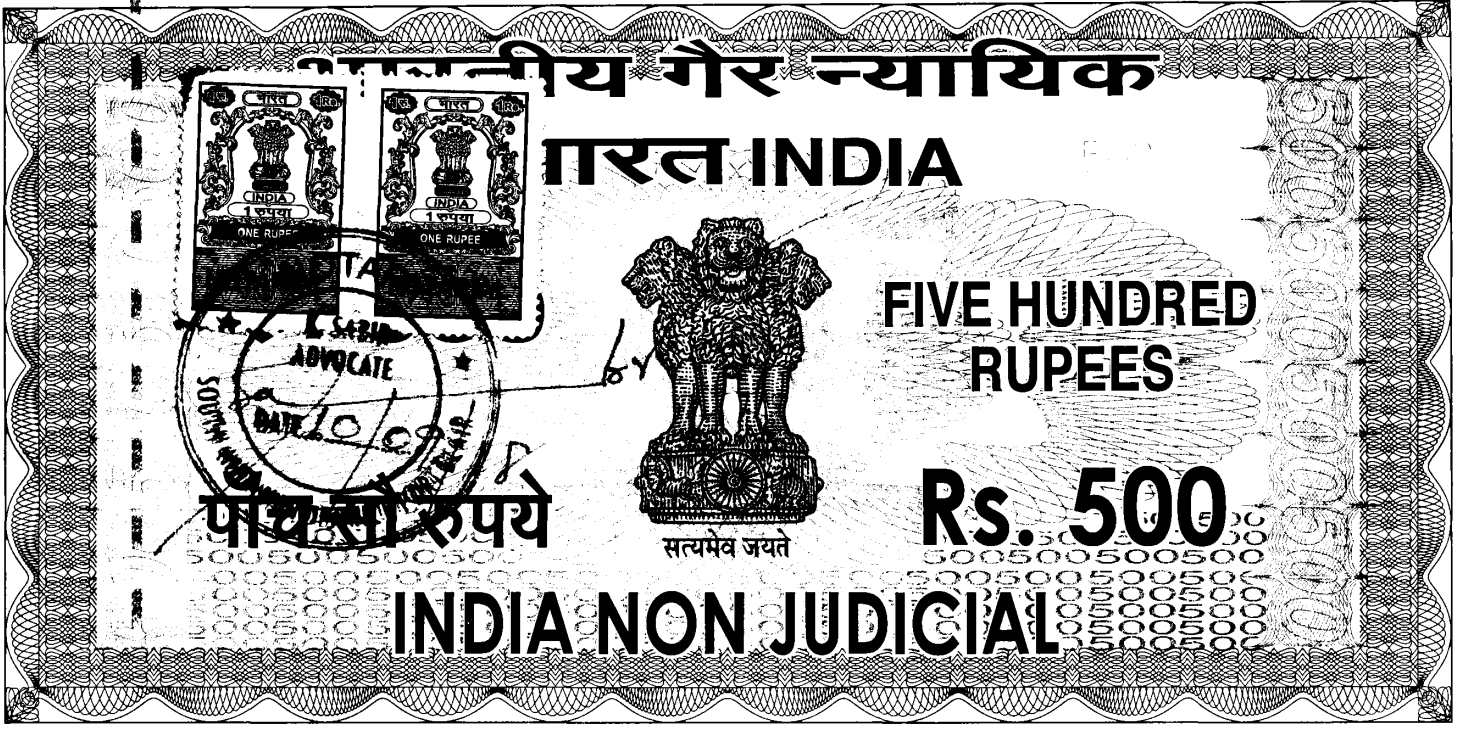
The Electricity Department, Vidyut Bhawan, Port Blair-
744101

Petitioner

Electricity Department of Union Territory of Andaman & Nicobar Administration (hereinafter referred to as "EDA&N"), files Petition for Approval of Business Plan for 3-year MYT Control Period From FY 2019-20 to 2021-22.



अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



अंडमान और निकोबार (केंद्रशासित प्रदेश)
ANDAMAN & NICOBAR (U.T.)

040740


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

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

AND

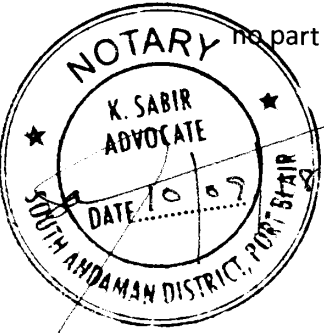
IN THE MATTER OF THE :
PETITIONER The Electricity Department, Vidyut Bhawan, Port Blair-
744101, U.T. of Andaman & Nicobar

.....Petitioner


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ. नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair

I, Uttam Kumar Paul, S/o, Late P. N. Paul, (aged 57 years), (occupation) Government Service residing at School Line, Port Blair, Andaman & Nicobar Islands, the deponent named above do hereby solemnly affirm and state on oath as under:-

1. That the deponent is the Superintending Engineer of Electricity Department of Andaman & Nicobar Administration 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 the Electricity Department, Andaman & Nicobar Administration 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.



SI. No 26
K. Sabir
Advocate & Notary Public
Port Blair

Date 10/05/2018

Affirmed before me after contents
were read over & explained in simple

[Signature]

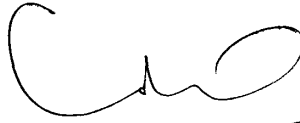
K Sabir
Advocate & Notary Public
Port Blair

[Signature]
अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ. नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair

Details of enclosures:

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

For The Electricity Department of A&N



Petitioner
अधीक्षक अभियंता / ~~Superintending Engineer~~
विद्युत विभाग / **Electricity Department**
अ.नि.प्रशासन / **A & N Administration**
पोर्ट ब्लेयर / **Port Blair**

Place: Port Blair, Andaman & Nicobar,

Dated: 10/09/2018

I, N. A. Khan Advocate, Port Blair, 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.

N. A. Khan
N. A. Khan 10/9/18
Advocate

Solemnly affirmed before me on this 10th day of September, 2018 at 4 a.m. /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.

**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 :**

The Electricity Department, Vidyut Bhawan, Port Blair-
744101, U.T. of Andaman & Nicobar.

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 ELECTRICITY DEPARTMENT OF ANDAMAN & NICOBAR ADMINISTRATION (HEREIN AFTER REFERRED TO AS "EDA&N").

THE ELECTRICITY DEPARTMENT OF ANDAMAN & NICOBAR ADMINISTRATION RESPECTFULLY SUBMITS:

1. The Petitioner, The Electricity Department of Andaman & Nicobar Administration has been allowed to function as Distribution Utility for UT of Andaman & Nicobar.
2. Pursuant to the enactment of the Electricity Act, 2003, EDA&N 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 EDA&N 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. EDA&N 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. EDA&N 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, EDA&N'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 EDA&N in the recent past, and certain issues impacting the performance of EDA&N 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, EDA&N respectfully seeks an opportunity to present their case prior to the finalization of the Business Plan. EDA&N 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. EDA&N 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 EDA&N 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 EDA&N may please be permitted to add/ change/ modify/ alter the petition;
- Permit EDA&N 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.

The Electricity Department of

Andaman & Nicobar administration



Petitioner

अधीक्षक अभियंता / **Superintending Engineer**

विद्युत विभाग / **Electricity Department**

अ.नि.प्रशासन / **A & N Administration**

पोर्ट ब्लेयर / **Port Blair**

Place: Port Blair, Andaman & Nicobar Islands

Dated: 10-09-2018

Table of Contents

CHAPTER 1: INTRODUCTION.....	15
BACKGROUND	15
OBJECTIVE OF BUSINESS PLAN	17
REVIEW OF PREVIOUS CONTROL PERIOD	18
CHAPTER 2: ABOUT ELECTRICITY DEPARTMENT A & N ADMINISTRATION.....	22
ORGANIZATIONAL STRUCTURE	25
POWER DEMAND AND SUPPLY	25
GRID DETAILS	25
ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES.....	26
CHAPTER 3: SALES AND LOAD GROWTH PROJECTIONS.....	27
LOAD GROWTH	27
CONSUMER GROWTH.....	28
ENERGY SALES GROWTH	29
CHAPTER 4: POWER AVAILABILITY.....	31
ENERGY REQUIREMENT & SOURCES OF POWER PURCHASE	31
DETAILS OF OWN GENERATION	32
RENEWABLE PURCHASE OBLIGATION	33
CHAPTER 5: T&D LOSS TRAJECTORY AND ENERGY BALANCE	35
T&D LOSS TRAJECTORY FOR THE CONTROL PERIOD	35
CHAPTER 6: MANPOWER PLANNING.....	36
MANPOWER TRAINING AND RE-SKILLING	37
SAFETY MEASURES.....	38
CHAPTER 7 IT INITIATIVES AND TECHNOLOGICAL INITIATIVES.....	39
CHAPTER 8 CUSTOMER SERVICE RELATED ACTIVITIES.....	40
CHAPTER 9: CAPITAL INVESTMENT PLAN	41
NEW SCHEMES:.....	42
ONGOING SCHEMES	43
SCHEME WISE PROPOSED CAPITAL EXPENDITURE FOR THE CONTROL PERIOD.....	44

CAPITALIZATION SCHEDULE	45
PHYSICAL TARGET ACHIEVEMENT FOR THE CONTROL PERIOD.....	46
CHAPTER 10: FINANCING OF THE CAPITAL SCHEMES.....	47
CHAPTER 11: OTHER INITIATIVES.....	48
ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT	48
UPCOMING PROJECTS.....	49
CGRF EXPENSE DETAILS	53



अधीक्षक अभियंता / SuperIntending Engineer
विद्युत विभाग / Electricity Department
अ.नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair

List of Tables

Table 1: Present Infrastructure	15
Table 2: Comparison of Capital Investment Plan for Previous Business Plan	18
Table 3: Comparison of Capitalization for Previous Business Plan	19
Table 4: Comparison of T&D Loss for Previous Business Plan	19
Table 5: Comparison of Energy Sales for Previous Business Plan	20
Table 6: Comparison of No. of Consumer for Previous Business Plan	20
Table 7: Comparison of actual Connected Load with approved load	21
Table 8: Power Availability for the FY 2017-18	25
Table 9: Past Load Growth	27
Table 10: Projected Load Growth	28
Table 11: Past Consumer Growth	28
Table 12: Projected Consumer Growth	29
Table 13: Past Sales Growth	29
Table 14: Projected Sales Growth	30
Table 15: Energy Requirement – FY 2019-20, 2020-21 and 2021-22	31
Table 16: Details of Power Procurement Sources – FY 2019-20, 2020-21 and 2021-22	32
Table 17: Projected Power Generation– FY 2019-20, 2020-21 and 2021-22	32
Table 18: RPO Obligation	33
Table 19: Units to be Purchase under RPO	34
Table 20: T&D Loss Trajectory for the Control Period	35
Table 21: Manpower Strength	36
Table 22: Present Employee Strength	36
Table 23: Recruitment Planned for the Year FY18-19	37
Table 24: Manpower Training Cost	37
Table 25: Proposed Expenditure on Safety Measures	38
Table 26: New Schemes proposed for the Control Period	42
Table 27: Ongoing Capital Expenditure Works for the Control Period	43
Table 28: Proposed Capital Expenditure New Schemes	44
Table 29: Ongoing Scheme's Original Cost and Incurred Expenditure	45

Table 30: Capitalization Schedule.....	45
Table 31: Year Wise Overall Capital Expenditure and Capitalization	46
Table 32: Expected Physical Target Achievement for the control period	46
Table 33: Proposed Funding Details	47
Table 34: Estimated Savings and Expenditure for Energy Efficiency Program	48
Table 35: Upcoming Power projects.....	49
Table 36: Upcoming Solar Plant Projects	50
Table 37: Upcoming Biomass Projects	51
Table 38: Upcoming Solar Projects for small Island in Nicobar District.....	52
Table 39: Existing Power sources – Scheduled expiry of PPA.....	52
Table 40: CGRF Expense Details	53



सुधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair

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
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
EDA&N	Electricity Department Andaman & Nicobar
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

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
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 The Department of Electricity of Andaman & Nicobar Administration (“EDA&N”) is responsible for power supply in the union territory. Power requirement of EDA&N is met by own generation station as well as power purchase.

Andaman & Nicobar Islands is cluster of islands scattered in the Bay of Bengal. These islands are truncated from rest of India by more than 1000 kms. The total area of the territory is 8249 sq. kms having population of 3,79,944 as per 2011 Census provisional records & average growth rate is 6.68%. 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 Centre’s etc. Thus, these islands have reached at the take-off stage of total economic transformation. All these economic and infrastructure developments require power as a vital input & to play a key role for achieving overall transformations.

1.2 The table below gives an overview of present transmission and distribution infrastructure of EDA&N as of 31.03.18

Table 1: Present Infrastructure

Particulars	Length (Kms)
33KV Lines	496.64Km.
11KV Lines	893.84Km.
LT Lines (415 V)	3474Km.
Distribution Transformers	980 Nos.
Capacity of Distribution Transformers 33 KV S/S	163.23 MVA
Total Number of Power House (in Nos)	49 Nos.
Peak Demand	60 MW
Present Installed Capacity	113.86 MW
Diesel Capacity (including 19.83 MW Hiring)	102.26 MW
Hydro Capacity	5.25 MW
Solar Capacity	6.15 MW
Departmental Power House	29 Nos
Private Power House	9 Nos
Community Power House	11 Nos
Consumers	132308 Nos



**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 EDA&N 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 Andaman & Nicobar 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 Andaman & Nicobar Administration is approximately 113.86 MW from various generating stations. The current demand is primarily dependent on the domestic and commercial which contributed approx. 76.% to the total sales of EDA&N in FY 17-18.



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

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.
- 1.7 Accordingly, the EDA&N 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 EDA&N 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 EDA&N 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. Electricity Department A&N 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. Electricity Department A&N 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. EDA&N 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 (Unaudited)	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Capital Expenditure (Rs. in Crores)	21.38	10.21	21.58	11.16	18.70	9.95



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

- 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 (Unaudited)	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
	Capitalisation (Rs. in Crores)	21.38	10.21	21.58	11.16	18.70

- 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 Unaudited	Approved in Business Plan Order	Actual Unaudited	Approved in Business Plan Order	Estimated
T& D Loss	16.50%	17.11%	16.00%	15.34%	15.50%	14.84%



**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)

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Estimated
Domestic	131.90	129.90	140.92	127.38	150.56	
Commercial	63.69	59.68	65.31	56.86	66.99	
Industry	15.91	17.98	17.35	17.49	18.93	
Bulk	30.86	35.63	31.34	32.05	31.82	
Public Lighting	9.37	8.65	9.53	7.61	9.70	
Irrigation, Pumps & Agriculture	0.87	1.04	0.87	0.98	0.87	
Total	252.60	252.88	265.32	242.39	278.87	

- 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.)

Particulars	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	106553	106707	110103	110547	113813	114250
Commercial	18881	18970	19416	20056	19972	20660
Industry	560	547	575	579	590	596
Bulk	64	64	66	64	69	66
Public Lighting	669	681	697	688	726	696
Irrigation, Pumps & Agriculture	263	319	270	374	276	417
Total	126990	127288	131127	132308	135446	136684



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

- 1.18. **Connected Load** - The year wise connected load for various categories of consumers for the FY 2016-17 & 2017-18 & estimated connected load for the FY 2018-19 vis-à-vis approved connected load in MYT order is provided in the table below:

Table 7: Comparison of actual Connected Load with approved load

Particulars	2016-17		2017-18		2018-19	
	Approved	Actual Unaudited	Approved	Actual Unaudited	Approved	Estimated
Domestic	127783	124671	138672	145189	150669	158874
Commercial	48466	49807	49503	57670	50637	58928
Industry	16625	15790	18098	21602	19704	24919
Bulk	10785	11605	11273	12388	11783	13116
Public Lighting	2648	2706	2699	2832	2752	2807
Irrigation, Pumps & Agriculture	764	891	800	1016	838	1089
Total	207071	205470	221045	240697	236383	259734



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

CHAPTER 2: ABOUT ELECTRICITY DEPARTMENT A & N ADMINISTRATION

- 2.1 Prior to independence a small steam driven reciprocating DG Generator of 100 KW Capacity was installed by the British at Ross Island in 1926. Direct current DG Set of 100 KW Capacity was installed at Port Blair during 1929. After independence two steam turbine generating sets of 550 KW each were established during 1951 in the power house at Chatham Island. The boilers were operated on wood fuel and saw dust, which were the waste product of Chatham Saw Mill and later switched over to Mangrove wood as fuel. This was the start of alternating current power supply at Port Blair.
- 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 a Superintending Engineer, associated with seven EEs & around Thirty-eight AEs for carrying out the task of power generation, transmission & distribution to the general public including schemes under non-conventional energy sources.

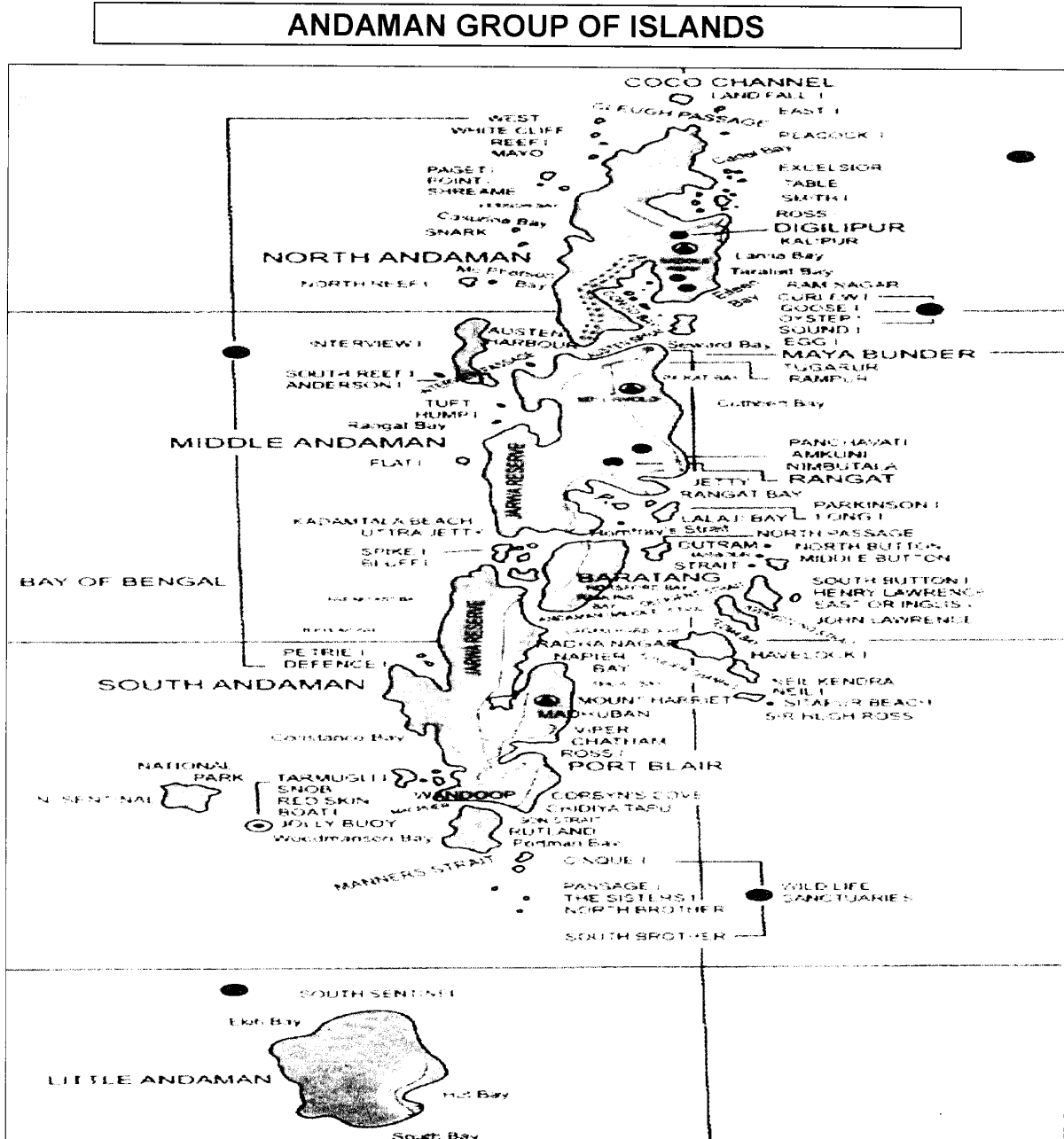


**Petition for Approval of Business Plan for the for 3-year MYT
Control Period from FY 2019-20 to 2021-22**

AREA SERVED

2.4 Andaman & Nicobar Island comprises of an area of 8,249 sq. kms. For operational purpose the area has been divided into 7 divisions and 26 sub-divisions.

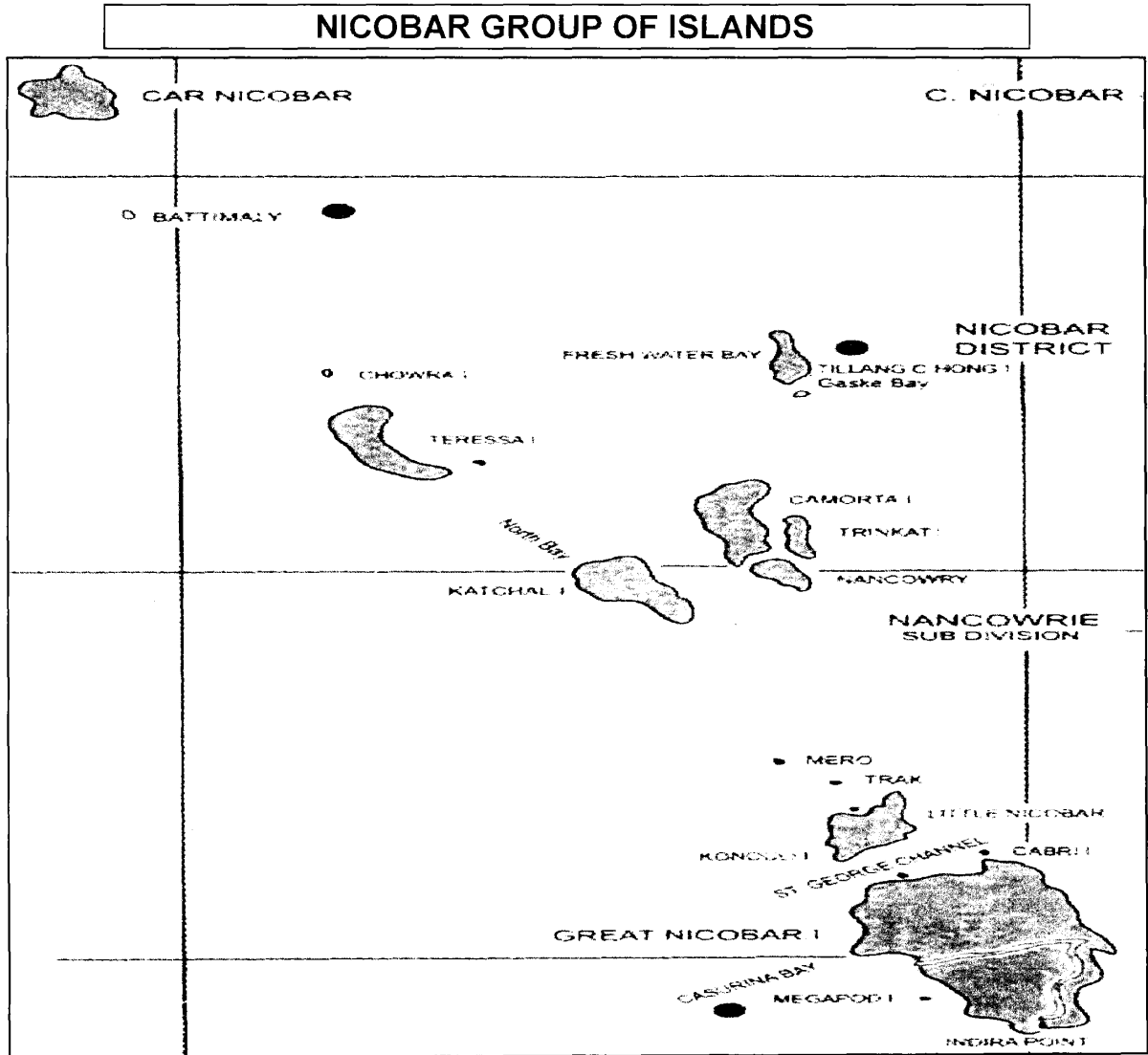
Map Area Served



अधीक्षक अभियंता / Superintending Engineer
 विद्युत विभाग / Electricity Department
 अ.नि.प्रशासन / A & N Administration
 पोर्ट ब्लेयर / Port Blair



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





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

ORGANIZATIONAL STRUCTURE

2.4 The Electricity Department is headed by Superintending Engineer along with seven Executive Engineers with the employee strength of 2,272 (As of 31.03.18).

POWER DEMAND AND SUPPLY

2.5 Electricity Department is responsible for arranging power from various sources and distribution and transmission thereof to all type of consumers. EDA&N procures electricity from 53 generating stations and meets around 40%-45% of its total energy requirement from own generation. Balance requirement of power is met from purchase from HPPs & NTPC (SPV). The present power availability of EDA&N is as listed below:

Table 8: Power Availability for the FY 2017-18

Generating Station	Purchase of Power (MW)	Own generation (MW)	Total Availability (MW)
Purchase			
IPP (SPCL)	20		20
HPP- I	5		5
HPP-II	10		10
NTPC (SPV)	5		5
Rooftop	1.006		1.006
HPP - Others	4.56		4.56
Own Generation			0
Diesel		63.04	63.043
Hydro		5.25	5.25
Total	45.57	68.29	113.86

2.6 The present power available to EDA&N is 113.86 MW. The peak demand for last year touched 60 MW (FY 17-18) and it is anticipated to reach 61 MW in FY 2018-19. The peak demand is projected to be 84 MW, 91 MW and 97 MW for FY 2019-20, FY 2020-21 and FY 2021-22 respectively (As per 19th EPS).

GRID DETAILS

2.7 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.

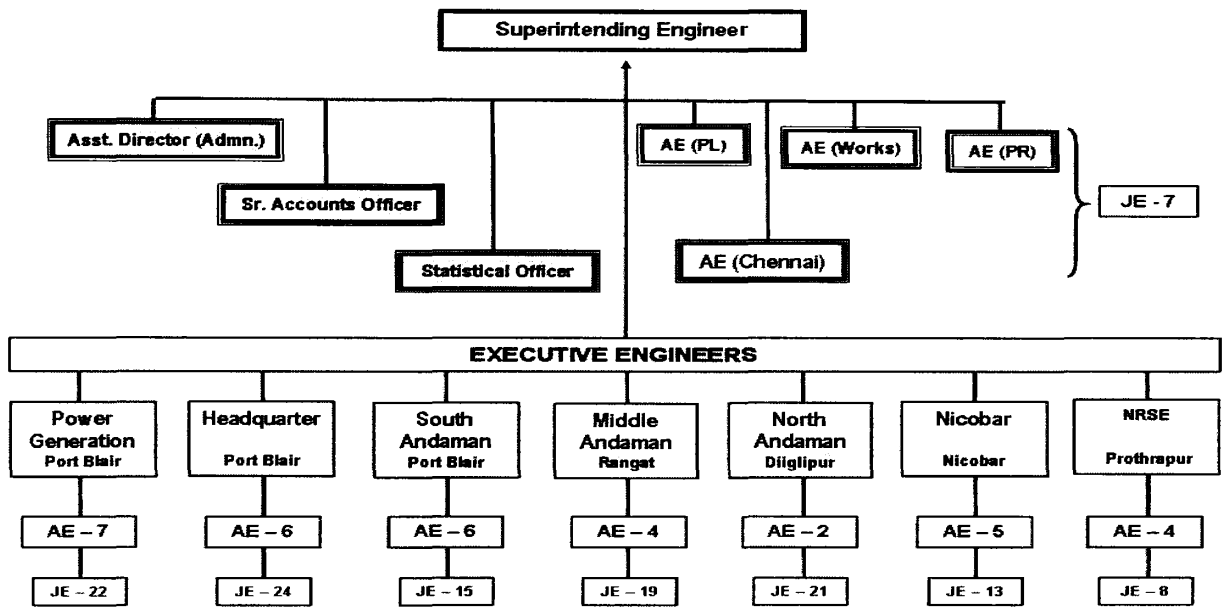


**Petition for Approval of Business Plan for the for 3-year MYT
Control Period from FY 2019-20 to 2021-22**

ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES

2.8 Electricity Department is part of the Administration of Union Territory of Andaman & Nicobar Islands & headed by the Superintending Engineer. Day to day work related to functioning of the Department is conducted by the Executive Engineers at Division level and Sub Divisions headed by the Assistant Engineer. Executive Engineer at Division Office is also helped by Technical Section, Establishment Section and Account Section headed by the Accounts Officer. 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 Engineer.

Organisation Chart





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

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 9: Past Load Growth

All Figures are in KW

Category	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Actual	Actual	Actual	Actual	Actual (Unaudited)	Actual (Unaudited)
Domestic	92541	97,672	1,08,899	1,21,988	1,24,671	1,45,189
Commercial	51773	59,771	46,667	48,646	49,807	57,670
Industry	10577	10,801	14,038	15,227	15,790	21,602
Bulk	9312	10,081	9,874	10,844	11,605	12,388
Public Lighting	2957	3,560	2,556	2,715	2,706	2,832
Irrigation, Pumps & Agriculture	718	805	699	802	891	1,016
Total	1,67,877	1,82,690	1,82,733	2,00,222	2,05,470	2,40,697



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

3.2. To project the load growth for the different consumer categories 5 year CAGR has been considered for the domestic, commercial, Industry, bulk & Agriculture. However, for the public lighting projection for the control period has been kept same as that of FY 2017-18. The CAGR along with projected load for the control period has been given in the table below:

Table 10: Projected Load Growth

All Figures are in KW

Category	CAGR	2018-19	2019-20	2020-21	2021-22
	Used	Estimated	Projected	Projected	Projected
Domestic	1.09%	1,58,874.03	1,73,849.26	1,90,236.04	2,08,167.41
Commercial	1.02%	58,928.47	60,213.59	61,526.75	62,868.54
Industry	1.15%	24,918.51	28,744.25	33,157.35	38,248.00
Bulk	1.06%	13,115.69	13,886.25	14,702.09	15,565.87
Public Lighting	-	2832.00	2832.00	2832.00	2832.00
Irrigation, Pumps & Agriculture	1.07%	1,089.44	1,167.80	1,251.79	1,341.83
Total		2,59,733.50	2,80,644.28	3,03,633.12	3,28,926.91

CONSUMER GROWTH

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

Table 11: Past Consumer Growth

Category	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Actual	Actual	Actual	Actual	Actual (Unaudited)	Actual (Unaudited)
Domestic	93757	97,738	99,888	1,04,111	1,07,598	1,10,547
Commercial	17291	17,885	18,304	18,958	18,974	20,056
Industry	501	514	533	534	550	579
Bulk	56	57	61	63	64	64
Public Lighting	649	626	624	668	676	688
Irrigation, Pumps & Agriculture	218	226	251	288	321	374
Total	1,12,472	1,17,046	1,19,661	1,24,622	1,28,183	1,32,308



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

3.4. The CAGR along with the projected consumer growth for the control period has been given in the table below. The growth projection for the control period for various categories of consumers has been considered based on the CAGR growth over past five years i.e FY 2012-13 to FY 2017-18

Table 12: Projected Consumer Growth

Category	CAGR	2018-19	2019-20	2020-21	2021-22
	Used	Estimated	Projected	Projected	Projected
Domestic	3.35%	1,14,250	1,18,077	1,22,032	1,26,119
Commercial	3.01%	20,660	21,282	21,923	22,583
Industry	2.94%	596	614	632	650
Bulk	2.71%	66	68	69	71
Public Lighting	1.17%	696	704	713	721
Irrigation, Pumps & Agriculture	11.40%	417	464	517	576
Total		1,36,684	1,41,208	1,45,885	1,50,721

ENERGY SALES GROWTH

3.5. The Table below presents the category-wise energy sales for the past five years. The overall growth in sales has been mainly contributed by increase in the domestic and commercial categories.

Table 13: 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	Actual (Unaudited)	Actual (Unaudited)
Domestic	101.36	107.38	115.54	121.17	129.90	127.38
Commercial	55.22	56.93	60.69	59.16	59.68	56.86
Industry	11.17	11.97	13.38	15.42	17.98	17.49
Bulk	28.98	29.32	29.93	33.47	35.63	32.05
Public Lighting	8.72	9.24	9.05	8.93	8.65	7.61
Irrigation, Pumps & Agriculture	0.91	0.87	0.87	0.94	1.04	0.98
Total	206.35	215.71	229.46	239.09	252.88	242.39



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

3.6. The sales for different categories of consumers have been projected based on the actual sales in the respective categories form the FY 2016-17 to FY 2017-18. The 5 year CAGR has been calculated for each category and applied on the actual sales for the FY 2017-18 to project the category wise sales for the control period FY 2019-20 to FY 2021-22. 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.

Table 14: Projected Sales Growth

All Figures are in MUs

Category	CAGR	2018-19	2019-20	2020-21	2021-22
	Used	Estimated	Projected	Projected	Projected
Domestic	4.68%	133.34	139.58	146.10	152.94
Commercial	0.59%	57.19	57.53	57.86	58.20
Industry	9.39%	19.14	20.94	22.90	25.05
Bulk	1.80%	32.63	33.22	33.82	34.43
Public Lighting	-	7.61	7.61	7.61	7.61
Irrigation, Pumps & Agriculture	2.39%	1.01	1.03	1.05	1.08
Total		250.92	259.90	269.35	279.30



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

CHAPTER 4: POWER AVAILABILITY

ENERGY REQUIREMENT & SOURCES OF POWER PURCHASE

4.1 The energy requirement for EDA&N 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 15: 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	242.39	250.92	259.90	269.35	279.31
HT Supply	-	-	-	-	-
Total Energy Sales	242.39	250.92	259.90	269.35	279.31
Overall T & D Losses %	15.34	14.84	14.34	13.84	13.34
Overall T & D Losses (MUs)	43.92	43.73	43.51	43.27	43.00
Total Energy Requirement	286.31	294.65	303.41	312.62	322.31
ENERGY AVAILABILITY AT PERIPHERY					
Power Purchase	143.37	184.59	221.61	221.61	221.61
Own Generation	142.94	110.05	81.80	91.01	100.69
Total Energy Availability	286.31	294.65	303.41	312.62	322.31
ENERGY SURPLUS/(GAP)	-	-	-	-	-



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

4.2 The energy requirement of EDA&N is mainly met from own generation and power purchase from HPPs & 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 is estimated that approximately 37.35% & 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 is projected that energy requirement for FY 2019-20, 2020-21 and 2021-22 and mix of own generation and power purchase shall be in approximately in the ratio of 25-35 : 75 - 65.

The expected power generation/procurement sources for FY 2016-17, 2017-18 and 2018-19 are provided in the table below.

Table 16: 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	143.37	184.59	221.61	221.61	221.61
Own Generation	142.94	110.05	81.80	91.01	100.69
Total	286.31	294.65	303.41	312.62	322.31

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

	Units Generated & Sent Out (MUs)								
	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019- 20	FY 2020- 21	FY 2021-22
Units Generated	102.19	118.62	145.96	146.08	166.87	118.03	90.50	99.98	109.94
Auxiliary Consumption	4.04	4.17	4.54	5.05	6.64	7.97	8.71	8.97	9.25
Sent Out	98.15	114.45	141.42	144.22	142.94	110.05	81.80	91.01	100.69



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

RENEWABLE PURCHASE OBLIGATION

- 4.4 EDA&N shall also procure power from roof-top solar power plants as covered under the power procurement from renewable energy segment. 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 EDA&N during the Control Period as specified in the Regulations is as follows:

Table 18: 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 Andaman & Nicobar Electricity Department submits that it intends to meet the RPO as per the directions of the Hon'ble Commission in the MYT Control period as well. EDA&N has planned to meet the Solar RPO partially from the purchase of solar power from roof-top projects & 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's).
- 4.7 Further, EDA&N submits that RPO towards non-solar power shall be met through EDA&N's own hydro power plant. While EDA&N is exploring the possibilities of other sources of non-solar renewable power, the shortfall in the RPO requirement is proposed to be met by purchase of non-solar REC's.



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

4.8 The summary of projected Solar and Non-Solar RPO for EDA&N during the Control Period is provided in the table below:

Table 19: Units to be Purchase under RPO

Solar Obligation	2019-20	2020-21	2021-22
Solar RPO (In %)	4.70%	6.10%	8.00%
Projected Sales	259.90	269.35	279.31
Less: Hydro sources	12.81	12.81	12.81
Sales excluding Hydro sources	247.09	256.54	266.49
Total Power to be Procured to meet Solar Obligation (In MU)	11.61	15.65	21.32
Non-Solar Obligation	2019-20	2020-21	2021-22
Non-Solar RPO (In %)	6.80%	8.00%	9.00%
Total Power to be Procured to meet Non-Solar Obligation (In MU's)	16.80	20.52	23.98

अधीक्षक अभियंता / SuperIntending Engineer
विद्युत विभाग / Electricity Department
अ.नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

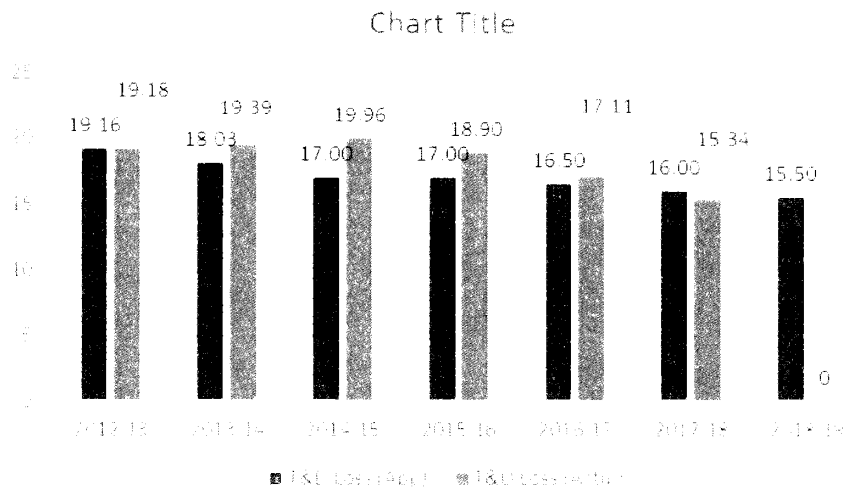
CHAPTER 5: T&D LOSS TRAJECTORY AND ENERGY BALANCE

T&D LOSS TRAJECTORY FOR THE CONTROL PERIOD

5.1. It is submitted that EDA&N has been constantly endeavouring to reduce its T&D losses. As per the actual information for past years, EDA&N has been able to reduce its losses from 19.18% in FY 2012-13 to 15.34% in FY 2017-18. Further, EDA&N submits that the system improvement and augmentation work executed each year under the planned schemes have resulted in the reduction of T&D losses in its distribution area.

5.2. EDA&N over the years has constantly been able to reduce the T & D losses barring 2012-13.

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



5.3. While in future EDA&N 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, EDA&N proposes 0.50% reduction each year in T&D loss target for the Control Period in view of the difficulty in loss reduction below 14.00% as approved as detailed in paras above. The T&D loss target proposed by EDA&N is as below and the Hon'ble Commission is requested to approve the same:

Table 20: T&D Loss Trajectory for the Control Period

Loss %	FY 19-20	FY 20-21	FY 21-22
T&D Losses	14.34%	13.84%	13.34%



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

CHAPTER 6: MANPOWER PLANNING

6.1 Currently there are 3,153 sanctioned posts of different categories in the EDA&N. The details of the current manpower status & proposed recruitment is provided in the table below.

Table 21: Manpower Strength

Manpower Requirement for EDA&N	Sanctioned	As-Is Manpower at EDA&N	Total Proposed	Proposed In-house	Proposed Outsourced
Executives (AEE/AE & above)	51	29	22	22	-
Non-Executives (JE & below)	674	509	165	165	-
Non-Executives – Group D	969	661	308	308	-
Mazdoor (Dying Post)	1,459	1,073	-	-	-
Total	3,153	2,272	495	495	-

6.2 The EDA&N has planned to carry out recruitment for 495 posts in the ensuing year. The table below presents the current status of the employee strength (01.04.18) and position for each year of the control period FY 2019-20 to FY 2021-22.

Table 22: 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	2,272	2,378	2,455	2,567
2	No. of employees added during the year	222	197	217	223
3	Total number of employees (1+2)	2,494	2,575	2,672	2,790
4	Number of employees retired/retiring during the year	116	120	105	126
5	Number of employees at the end of the year (3-4)	2,378	2,455	2,567	2,664

**** Recruitment planned by EDA&N in subsequent year of the control period to fill the gap between actual and approved strength.**



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

6.3 The details recruitment planned for the FY 2018-19 is as follows:

Table 23: Recruitment Planned for the Year FY18-19

Sr. No.	Category	No of Posts
1	Junior Engineer	33
2	Majdoor	189
	Total	222

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 EDA&N 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. EDA&N plans to conduct/arrange training programs every year of the control period for different categories of employees. As per the proposal, a national training program has been done for ALM's (Assistant Line Man) & Junior Engineer's and will be conducted by Rural Electricity Corporation, Hyderabad. The table below presents the estimated cost of the training program:

Table 24: Manpower Training Cost

Sr. No.	Program	2019-20 (Rs. In Lakh)	2020-21 (Rs. In Lakh)	2021-22 (Rs. In Lakh)
1	Residential	Nil	1.04	1.04
2	Non-Residential	28.50	0.85	0.85

6.5 In view of the additional cost involved in providing the trainings to the employees, EDA&N requests the Hon'ble Commission to approve the associated cost and allow the same to be recovered in the tariff.

अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair




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

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 EDA&N intends to examine all the Rules and Regulations in the force and suggest way forward. The EDA&N shall analyze existing safety standards, tool kits and practices being followed by the department. To comply with the safety regulation in place, EDA&N 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 25: Proposed Expenditure on Safety Measures

Particulars	2019-20	2020-21	2021-22
Proposed Expenditure (In Rs Lakh)	2.00	4.00	2.00



अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

CHAPTER 7 IT INITIATIVES AND TECHNOLOGICAL INITIATIVES

- 7.1 EDA&N has taken various IT & Technological initiatives for improvement of system working & efficiency. Now the entire subordinate offices of the Department have been provided with sufficient computers, dedicated internet connection and thus virtually interconnected each other.
- 7.2 Department has switched over to web-based applications for extending various online facilities to its consumers and to have a real time monitoring of the activities of the Department.
- 7.3 **Outage Management System** – EDA&N is implemented outage management system vide scheme of Urja Mitra wherein there shall be online monitoring & information for schedule/unscheduled outages.
- 7.4 The department has initiated the process for developing an online system for the citizens for obtaining new meter connections. This software platform has been developed by NIC Port Blair and will be implemented shortly.



अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

CHAPTER 8 CUSTOMER SERVICE RELATED ACTIVITIES

- 8.1. EDA&N has taken several initiatives for improvement of customer service. The steps already taken and those proposed to be taken are provided below.
- 8.2. **Consumer Helpline Centre:** EDA&N plans to establish 24X7 centralized complaint centre where consumers can lodge complaints and remedial action to their queries can be taken accordingly.
- 8.3. EDA&N has introduced the facility of online energy bill payment whereby consumers can pay their bill by debit card/ credit card/ internet banking.
- 8.4. EDA&N has introduced the facility of online billing in South Andaman and has planned to introduce the same in other areas in phased manner.


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair




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

CHAPTER 9: CAPITAL INVESTMENT PLAN

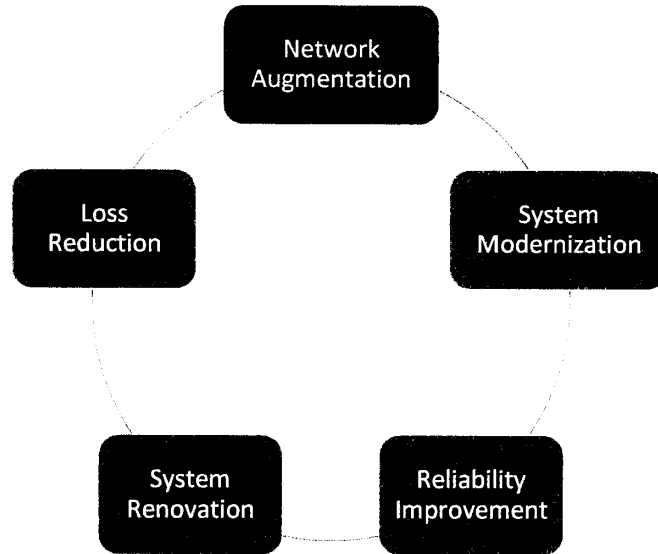
- 9.1. As per the MYT Regulations 2018, the Distribution Licensee is required to file the Business Plan for Control Period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, 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 for FY 19-20 to FY 21-22 under the MYT Control Period FY 2019-22 have been formulated by the Electricity Department of Andaman & Nicobar Administration in order to enable better planning, budgeting and monitoring at macro & micro levels.
- 9.3. The Electricity Department of Andaman & Nicobar Administration has prepared the cap-ex plan taking into consideration all the factors which would affect the operations of the company. The cap-ex 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 Department of Electricity of Andaman & Nicobar Administration 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 Electricity Department of Andaman & Nicobar Administration.


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि. प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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




9.5. Since capital investment is an ongoing activity for any transmission and distribution licensee, EDA&N has categorized the schemes under the followings two categories i.e. On-going schemes and new schemes. The year wise details of proposed capital expenditure under the two categories has been furnished a below.

NEW SCHEMES:

EDA&N has planned for the system upgradation requirement and improvement of reliability. The details of the new capital schemes along with the investment rationale and their approval status is provided in table below:

Table 26: New Schemes proposed for the Control Period

Sr. No.	New Scheme	Total Exp. (In lakhs)
1	Erection & Commissioning of New 4 MW DG power plant	2,000
Scheme Details	<p>Erection & Commissioning of New 4 MW DG power plant at PBPH Complex, Andaman for high-efficient and reliability supply of electricity and expected to complete before November 2020.</p> <p><i>Rationale:</i> The scheme will help to meet the future load demand due to growth of consumers and for less Operation and maintenance costs.</p>	


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

Sr. No.	New Scheme	Total Exp.
2	Step up and Step down of Distribution Transformer at 33KV/11 KV existing sub-station	592
Scheme Details	New Installation and Repairment & augmentation on the existing distribution transformers (Total 60 no's of Distribution Transformer) at 33KV/11 KV existing sub-station including HT/LT Panels. <i>Rationale:</i> 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.	
3	New Commissioning and Improvement & augmentation of existing 33/11 KV sub-station including HT/LT Panels, HT/ LT Shunt Capacitors etc.	3,872
Scheme Details	The scheme will provide commissioning of new sub-stations and the replacement of existing 33/11 KV sub-station including HT/LT Panels, HT/ LT Shunt Capacitors etc, replacement of old and obsolete panels and other allied equipment etc. <i>Rationale:</i> The scheme will help in continuous and reliable distribution of electricity.	
4	Laying of HT/LT Cable Line	2,025
Scheme Details	Laying of HT/LT new cable line and also replacement of old and defective cables in all the Island. <i>Rationale:</i> The scheme will help for fulfilling an increased load demand and to decrease the repair and maintenance cost for the existing defective cable line.	

ONGOING SCHEMES

9.6. The table below provides the information about ongoing works. The table provides details about each individual scheme as well as original cost of the project.

Table 27: Ongoing Capital Expenditure Works for the Control Period

Sr. No.	Ongoing Schemes	Total Exp. (In lakhs)
1	Augmentation of 3 MW DG Capacity at Havelock Island.	561.74
Scheme Details	Installation/Augmentation/Replacement of 3 MW DG generating Capacity at Havelock Island which is expected to complete at the end of the current financial year. <i>Rationale:</i> 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.	




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

SCHEME WISE PROPOSED CAPITAL EXPENDITURE FOR THE CONTROL PERIOD

9.7. Since the above schemes shall be implemented during the Control period, the year wise break-up of the various schemes during the Control period is provided in the table below:

Table 28: Proposed Capital Expenditure New Schemes

Sr. No.	New Schemes	Original Project Cost (Rs Lacs)	Proposed Expenditure (Rs Lakh)		
			2019-20	2020-21	2021-22
1	Erection & Commissioning of New 4 MW DG power plant at PBPH Complex, Andaman for high-efficient and reliability supply of electricity and expected to complete before November 2020.	2,000	1,000	1,000	
2	New Installation and Repairment & augmentation on the existing distribution transformers (Total 60 no's of Distribution Transformer) at 33KV/11 KV existing sub-station including HT/LT Panels.	592	145	202	245
3	The scheme will provide commissioning of new sub-stations and the replacement of existing 33/11 KV sub-station including HT/LT Panels, HT/ LT Shunt Capacitors etc, replacement of old and obsolete panels and other allied equipment etc.	3,872			3,872
4	Laying of HT/LT new cable line and also replacement of old and defective cables in all the Island.	2,025	487	828	710
	Total	8,489	1,632	2,030	4,827


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.शासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

9.8. With respect to the ongoing schemes, it is submitted that the Department of Electricity of Andaman & Nicobar Administration is in process of implementing these schemes for system improvement. The following table provides details of the project cost of such schemes and expenditure which has already being incurred on these schemes up to FY 2017-18.

Table 29: Ongoing Scheme's Original Cost and Incurred Expenditure

Sr. No.	Ongoing Works	Original Project Cost (Rs Lacs)	Expenditure Up to 17-18
1	Installation/Augmentation/Replacement of 3 MW DG generating Capacity at Havelock Island which is expected to complete at the end of the current financial year.	1,807.19	1,245.45
	Total	1,807.19	1,245.45

CAPITALIZATION SCHEDULE

9.9. For new and ongoing schemes, EDA&N has proposed the capitalization considering the estimated date of commissioning of these schemes.

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

Table 30: Capitalization Schedule

Sr. No.	Name of Scheme	Capitalization		
		2019-20	2020-21	2021-22
1	Erection & Commissioning of New 4 MW DG power plant at PBPH Complex, Andaman for high-efficient and reliability supply of electricity and expected to complete before November 2020.		2,000	
2	New Installation and repairment & augmentation on the existing distribution transformers (Total 60 no's of Distribution Transformer) at 33KV/11 KV existing sub-station including HT/LT Panels.	145	202	245
3	The scheme will provide commissioning of new sub-stations and the replacement of existing 33/11 KV sub-station including HT/LT Panels, HT/ LT Shunt Capacitors etc, replacement of old and obsolete panels and other allied equipment etc.			3,872
4	Laying of HT/LT new cable line and also replacement of old and defective cables in all the Island.	487	828	710
	Total	632	3,030	4,827



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

9.11. 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	1,632	2,030	4,827
Capitalization	632	3,030	4,827

PHYSICAL TARGET ACHIEVEMENT FOR THE CONTROL PERIOD

9.12. In accordance with the proposed capitalization schedule, EDA&N 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		Lines (In KM's)	
	Nos.	kVA	Nos.	LT	11KV	
2019-20	15	3,200	0	18	20	
2020-21	20	4,500	0	22	40	
2021-22	25	5,500	6	25	30	


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ. नि. पशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair




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

CHAPTER 10: FINANCING OF THE CAPITAL SCHEMES

- 10.1. The entire capital expenditure incurred by EDA&N had been funded through equity infusion by GOI through budgetary support without any external borrowings. There are no loan borrowings by the Electricity Department of Andaman & Nicobar Administration for the capital expenditure.
- 10.2. As per the Regulation 24 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, EDA&N requests the Hon'ble Commission to consider the funding of the various schemes in line with the Regulation 24 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	1,632	2,030	4,827
Actual Funding			
100% Equity from Gol	1,632	2,030	4,827
Proposed Funding in line with Regulation 24 (b) fof JERC MYT Regulations			
Equity (30%)	489.60	609.00	1448.10
Debt (Normative Debt in excess of 30% equity)	1142.40	1421	3378.90
Total Funding	1,632	2,030	4,827


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

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 large and growing domestic consumption within the distribution area, EDA&N proposes to implement Efficient Lighting Program by distribution of LED bulbs in the UT of Andaman & Nicobar as a part of Demand Side Management Activity, through an Energy Service Company (ESCO), M/s. Energy Efficiency Services Limited, New Delhi.
- 11.3. An estimation of the savings and expenditure is provided in the table below:

Table 34: Estimated Savings and Expenditure for Energy Efficiency Program

No of LED's to be replaced	0.04228 Lakhs
Expected annual energy savings	22.36 MU's
Expected reduction of installed load	7-8%
Estimated Capital Expenditure	Rs 259.65 Lakhs
Estimated cost savings to EDA&N per year	Rs 32.083 Lakhs

- 11.4. EDA&N also plans to emulate this DSM measure in the Control Period and request an in principal approval from the Hon'ble Commission for going ahead with the proposal.


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.मि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

UPCOMING PROJECTS

11.5. The growth of demand in A&N Islands will be gradual and linear considering the consumption pattern which is mostly domestic/commercial therefore there is a need to replace the existing DG sets with new clean energy generation plants as well as the provision of optimal energy mix with non-conventional energy.

Based on above concept, EDA&N in consultation with Ministry of Power, Ministry of New and Renewable Energy, NTPC and CEA envisaged the following strategy to provide 24 x 7 power to the A&N Islands.

Table 35: Upcoming Power projects

Sl. No.	Name of location	Power Plant (MW)	Tentative date of completion	Remarks
Port Blair				
1.	DG Power Plant	3x5.00	Expected by end of 2021	Establishment through in Grant-in-Aid by Japan International Cooperation Agency (JICA)
2.	Solar PV Plant	21.70	Mid 2019	By PPA (NLC & REIL)
3.	Solar Rooftop (Govt. Building)	3.00	April 2019	By SECI on PPA
4.	Solar Rooftop (Pvt. Building)	2.00	Work progress in	By Department
South Andaman				
5.	LNG Power Plant	50.00	Mid 2021	By NTPC on PPA
6.	Biomass	5.50	2019-20	By Private Firm on PPA on tariff approved by JERC

DG Power Plant

ESTABLISHMENT OF 3x5 MW DG Power Plant By JICA (Japan International Cooperation Agency) :

11.6. The 3x5 MW DG based Power Plant having SCADA system has been proposed at Port Blair through Grant-in-Aid from JICA. The project is approved by MoP and is expected by 2020-21. This DG Power Plant will function for providing power to the Capital Town to avoid blackout during the transmission failure from proposed 50 MW LNG Power Plant at Hope Town.



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


Solar PV Plant

11.7. The details of upcoming solar power plant in A&N Island along with proposed BESS is as follows,

Table 36: Upcoming Solar Plant Projects

Sl. No.	Location	Ownership	Capacity of SPP	Proposed Capacity of BESS	Present status of the project
1.	Attampahad & Dollygung	NLC	2x10 MWp	8 MWhr.	Tender Finalised. Being awarded by September 2018.
2.	Niel & Have lock	REIL	1.70 MW	-	PPA to be submitted by REIL

- 100 MW solar parks has been sanctioned for various locations of A&N Islands under the scheme of MNRE, Jawahar Lal Nehru Solar Mission on 17.06.2015.
- Ministry of Power constituted a Committee on 29th February, 2016 with members from CEA, PGCIL & POSCO to study grid related issues keeping in view the new solar projects and setting up of the Energy Management Centre in Andaman and Nicobar Islands
- MRNE is Coordinating with Ministry of Power for implementation of whole project including solar plants, evacuation system, Battery Energy Storage System (BESS) as well as establishment of Energy Management Centre (EMC).
- The Energy Management Centre (EMC) will be established by A&N Admn. and for its implementation, PGCIL will provide consultancy services till commissioning and safe operation.
- The solar capacity has been revised to 45 MWp excluding NTPC SPV at Garacharma the existing Solar Power Project. Besides that, BESS of 18MWh for cloud intermittency is under consideration for Port Blair and South Andaman.


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.मि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

Solar Rooftop

- 11.8. EDA&N plans for 3 MWp solar power rooftop (Govt. Building) from SECI and the project is expected by April of 2019 under power purchase agreement.
- 11.9. EDA&N plans to establish itself 2 MWp solar power rooftop (Pvt. Building) which is under progress.

LNG Power Plant

- 11.10. By the time the PPAs with the existing suppliers expire, the 15MW DG power plant through JICA funding and 50 MW LNG based power plant of NTPC at Hopetown which is a Firm power shall be operational and will effectively cater the need of South Andaman beyond 2020-21
- 11.11. The EDA&N shall evaluate the demand supply condition and consider closing down its old DG power plants set up in the year 1991, 2005 and 2015 by 2020-21.
- 11.12. It is therefore expected that after 2020-21, 65 MW firm power (50 MW LNG & 15 MW JICA Power Plant) will be available in Port Blair and there will be considerable power mix i.e. 50MWp of ground mounted solar power during the day time.
- 11.13. Solar power plant to be established by NTPC having capacity 25 MWp (17MWp+8MWp) at Manglutan and Chidiyatapu shall be considered in the second phase after analysis of the above projects and future load requirement with BESS.

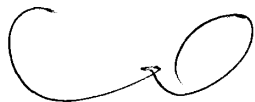
Biomass

- 11.14. Apart from the above, EDA&N also has a proposal to purchase power from private party where they will design, develop and commission concentrated solar thermal agro-waste biomass system for power and portable water production. It is planned to install a gasifier genset which shall generate 5.5MW power. The details are provided below;

Table 37: Upcoming Biomass Projects

Island	Power Plant (MW)
Port Blair	3.00
Hut Bay	1.50
Campbell Bay	1.00

Honorable JERC has already approved the Tariff rate of Rs 12.75 per unit for the above-mentioned Biomass Plants.


अधीक्षक अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.नि.प्रशासन / A & N Administration
पोर्ट ब्लेयर / Port Blair



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

11.15. Besides the above projects EDA&N has plan to establish solar power projects with adequate BESS in different Islands of Nicobar district to provide an optimal energy mix in order to reduce the consumption of Diesel and for which land has already been identified by the department. The name of the Islands and lands identified are provided below:

Table 38: Upcoming Solar Projects for small Island in Nicobar District

Sl.No.	Name of Islands	Land Identified (ha)	Remarks
1.	Kamorta	3	Capacity of the projects have not yet decided, that will be decided based on the load demand during the period of installation with sufficient battery to meet the demand of peak evening including night load and expected to complete at the end of the MYT control period i.e. before 2021-22.
2.	Katchal	3	
3.	Champion	2	
4.	Teressa	2	
5.	Chowra	2	

Note

11.16. The above detailed upcoming power projects are at different stages of process for consideration & implementation. With the commissioning of these project with comparatively lower project cost, EDA&N shall gradually reduce generation from own DG Power Plants in line with the power availability & demand to reduce the cost of power supply. The expiry of contractual obligation with the parties are provided below:

Table 39: Existing Power sources – Scheduled expiry of PPA

Name of the Parties	Contract Capacity (MW)	Power Capacity (MW)	Expiry Period
HPP-I	5.00	8.00	2020-21
HPP-II	10.00	16.00	2019-20
HPP-III	5.00	7.00	2020-21
HPP-IV	10.00	11.20	2021-22

ENERGY MANAGEMENT CENTRE (EMC):

11.17. EDA&N with approval of MOP has initiated the process for the setting up of Energy Management Centre (EMC) for the remote control of the power generation and T&D system. MoP has entrusted the work to PGCIL. EMC will connect all Power Plants & Sub-stations, to carryout remote operation and load forecasting of Solar Plant for effective generation plan.



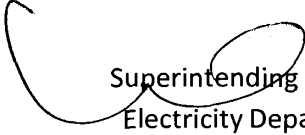
**Petition for Approval of Business Plan for the for 3-year MYT
Control Period from FY 2019-20 to 2021-22**

CGRF EXPENSE DETAILS

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

Table 40: CGRF Expense Details

Sr No	Item	Amount (In Rs)
1	Salary	46,60,917
2	Petty Expenditure i.e. Newspaper bill, Stationary	1,13,990
3	Refreshment Charges	4,82,748
4	Total	52,57,655


Superintending Engineer
Electricity Department
U.T. Andaman & Nicobar

सुपरिन्टेंडिंग अभियंता / Superintending Engineer
विद्युत विभाग / Electricity Department
अ.न.प्रशासन / A & N Administration
पोर्ट ब्लेयर - Port Blair