

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

Submitted to:

**Joint Electricity Regulatory Commission for
the State of Goa & Union Territories**

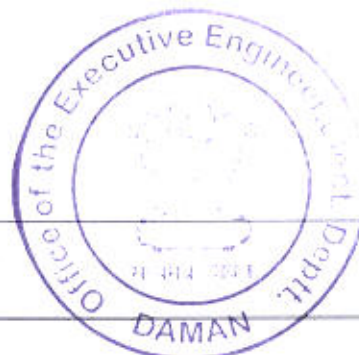
Submitted By:

Electricity Department of Daman & Diu



TABLE OF CONTENTS

LIST OF ABBREVIATIONS.....	4
CHAPTER 1: INTRODUCTION	6
1 BACKGROUND.....	6
2 OBJECTIVE OF BUSINESS PLAN.....	7
1 MISSION OF ELECTRICITY DEPARTMENT DAMAN & DIU.....	9
2 AREA SERVED	9
3 GENERATION TRANSMISSION & DISTRIBUTION.....	10
4 ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES.....	10
6 GRID DETAILS.....	15
7 FUTURE POWER ALLOCATION.....	15
8 TRANSMISSION SUB STATIONS.....	15
9 RELIABILITY INDICES.....	16
10 IT INITIATIVES.....	16
11 PHYSICAL ACHIEVEMENTS DURING THE MYT CONTROL PERIOD FY 2016-17 TO FY 2018-19	17
CHAPTER 3: SWOT ANALYSIS.....	18
CHAPTER 4: SALES	20
1 LOAD GROWTH	20
2 CONSUMER GROWTH.....	21
3 ENERGY SALES GROWTH	21
CHAPTER 5: POWER PURCHASE PLAN.....	23
1 POWER PURCHASE QUANTUM.....	23
2 POWER PURCHASE COST.....	26
3 TRANSMISSION AND OTHER CHARGES	27
CHAPTER 6: T&D LOSS TRAJECTORY AND ENERGY BALANCE	29
CHAPTER 7: CAPITAL INVESTMENT PLAN	31
1 CAPITAL INVESTMENT PLAN OF EDDD	31
3. PROPOSED TRAJECTORY OF AVAILABILITY OF WHEELING BUSINESS (WIRES AVAILABILITY) AND SUPPLY BUSINESS (SUPPLY AVAILABILITY):-.....	40



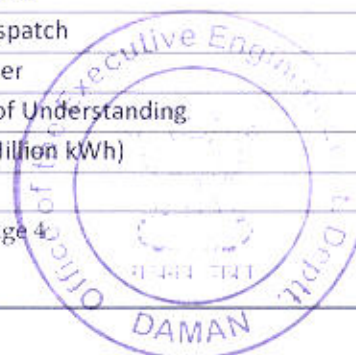
LIST OF TABLES

TABLE 1: TRANSMISSION AND DISTRIBUTION SYSTEM.....	10
TABLE 2: TRANSMISSION SUB STATIONS	16
TABLE 3: RELIABILITY INDICES FOR FY 2017-18	16
TABLE 4: PAST YEARS' LOAD GROWTH.....	20
TABLE 5: PROJECTED LOAD GROWTH DURING CONTROL PERIOD (FY 2019-20 TO FY 2021-22).....	20
TABLE 6: PAST YEARS' CONSUMER GROWTH	21
TABLE 7: PROJECTED CONSUMER GROWTH DURING CONTROL PERIOD (FY 2019-20 TO FY 21-22).....	21
TABLE 8: PAST YEARS' ENERGY SALES GROWTH	21
TABLE 9: PROJECTED ENERGY SALES DURING CONTROL PERIOD (FY 2019-20 TO FY 21-22).....	22
TABLE 10: ENERGY ALLOCATION FROM CENTRAL GENERATING STATIONS	23
TABLE 11: SUMMARY OF RENEWABLE PURCHASE OBLIGATION FOR THE MYT CONTROL PERIOD.....	24
TABLE 12: POWER PURCHASE QUANTUM	25
TABLE 13: POWER PURCHASE COST	27
TABLE 14: TOTAL POWER PURCHASE COST FOR THE CONTROL PERIOD	28
TABLE 15: PROPOSED T&D LOSS TRAJECTORY	29
TABLE 16: ENERGY BALANCE.....	29
TABLE 17: CAPITAL EXPENDITURE SCHEMES PROPOSED DURING MYT CONTROL PERIOD.....	31

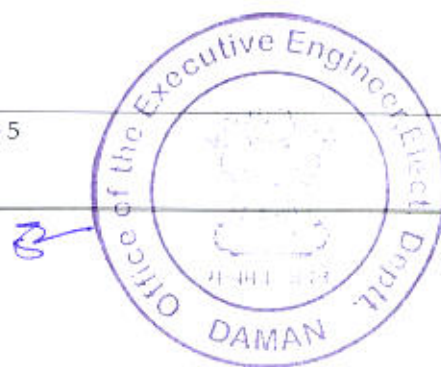


List of Abbreviations

Sr. No	Abbreviations	Descriptions
1.	A&G	Administrative and General
2.	AC	Auxiliary Consumption
3.	APR	Annual Performance Review
4.	ARR	Aggregate Revenue Requirement
5.	AS	Accounting Standard
6.	CAGR	Compound Annual Growth Rate
7.	CAPEX	Capital Expenditure
8.	CERC	Central Electricity Regulatory Commission
9.	CGS	Central Generating Station
10.	CoS	Cost of Supply/ Service
11.	CPPs	Captive Power Plants
12.	Crs	Crores
13.	CWIP	Capital Work in Progress
14.	DF	Distribution Franchisee
15.	Discom	Distribution Companies
16.	DPS	Delayed Payment Surcharge
17.	DS	Domestic Service
18.	DSM	Demand Side Management
19.	DTC	Distribution Transformer
20.	EA/The Act	The Electricity Act 2003
21.	F&A	Finance & Accounts
22.	FY	Financial Year
23.	GFA	Gross Fixed Assets
24.	G.O.	Government Order
25.	Gol	Government of India
26.	HR	Human Resource
27.	HRA	House Rent Allowance
28.	HT	High Tension
29.	KV	Kilo Volt
30.	kVA	Kilo Volt Ampere
31.	kVAh	Kilo Volt Ampere Hour
32.	kW	Kilo Watt
33.	kWh	Kilo Watt Hour
34.	LF	Load Factor
35.	LT	Low Tension
36.	MD	Maximum Demand
37.	MOD	Merit Order Despatch
38.	MoP	Ministry of Power
39.	MOU	Memorandum of Understanding
40.	MU	Million Units (Million kWh)



Sr. No	Abbreviations	Descriptions
41.	MVA	Mega Volt Ampere
42.	MW	Mega Watt
43.	MYT	Multi Year Tariff
44.	NEP	National Electricity Policy
45.	NTP	National Tariff Policy
46.	NTPC	National Thermal Power Corporation
47.	O&M	Operation & Maintenance
48.	PAF	Plant Availability Factor
49.	PF	Provident Fund
50.	PFC	Power finance Corporation
51.	PLF	Plant Load Factor
52.	PLR	Prime Lending Rate
53.	PPA	Power Purchase Agreement
54.	PSD	Power Service Division
55.	REC	Rural Electrification Corporation
56.	R&M	Repair and Maintenance
57.	ROE	Return on Equity
58.	RPO	Renewable Purchase Obligation
59.	Rs	Rupees
60.	SBI	State Bank of India
61.	SLM	Straight Line Method
62.	SHR	Station Heat Rate
63.	T&D	Transmission and Distribution
64.	w.e.f	With effect from
65.	Y-o-Y	Year on Year



Chapter 1: Introduction

1 Background

Daman and Diu is a union territory in India. Daman District comprises of an area of 72 sq. km whereas Diu District comprises of an area of 40 sq. km. The total population of Daman & Diu as per 2011 census was 242,911 with population density being 2400 persons per sq. km.

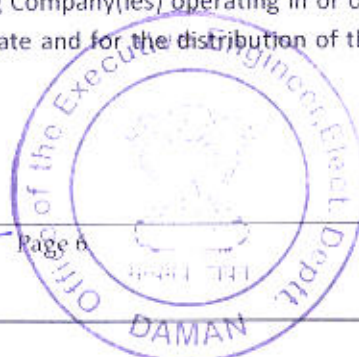
The Electricity Department of Daman & Diu (EDDD) is responsible for supply of uninterrupted & quality power to all categories of consumers in Daman & Diu at the most economical rates. The (EDDD) is engaged in the procurement, transmission and distribution of electricity to the various consumer categories in the Union Territory of Daman and Diu. It does not have its own power generation station and completely rely on the Central Sector Generating Stations (CSGS) in Western Region to meet its energy demand. EDDD also has some allocation from Eastern Region Central Generating Stations.

The total installed solar capacity in the UT of Daman and Diu is 13.59 MW out of which 10 MW is ground mounted and the remaining 3.59 MW is solar rooftop plants. The Department is in the process of procuring 80 MW of solar energy from NTPC and another 50 MW of solar energy from SECI from FY 2019-20 onwards. Further, procurement of solar power for 40 MW from open tender is also under the process.

The present transmission and distribution system of EDDD consists of 32.60 circuit kms of 220 kV Double Circuit (D/C) lines, 88.70 kms of 66kV lines, 420.62 circuit kms of 11kV lines O/H as well as U/G lines, 773.71 circuit kms of LT OH & U/G lines along with 924 transformers. Presently, there are 102 no. 11 kV feeders and 6 no. 66 kV feeders in the network of Daman & Diu.

The key duties being discharged by Daman & Diu Electricity Department are:

- Laying and operating of such electric line, sub-station and electrical plant that is primarily maintained for the purpose of distributing electricity in the area of supply of 'Daman & Diu Electricity Department', 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.
- Arranging, in-coordination with the Generating Company(ies) operating in or outside the State, for the supply of electricity required within the State 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 State.

The present power allocation of Daman & Diu is approximately 372 MW from various generating stations including 70 MW from NTPC-SAIL plant located at Bhilai and 38 MW from Ratnagiri Gas and Power Private Limited (RGPPL). At present, Daman gets power at 220/66 KV Magarwada substation and 220/66 KV Ringanwada substation. The 220/66 KV Magarwada substation is getting power from 220 KV (D/C) Ambethi-Magarwada line and from 220 KV (D/C) Magarwada (PGCIL) Magarawada, Daman. The 220/66 KV Ringanwada substation is getting power from 220 KV (D/C) Magarwada (PGCIL) Magarawada, Daman. Diu gets power from 66 kV Una substation through 66 kV double circuit line emanating from 220 /66 kV Kansari substation of GETCO.

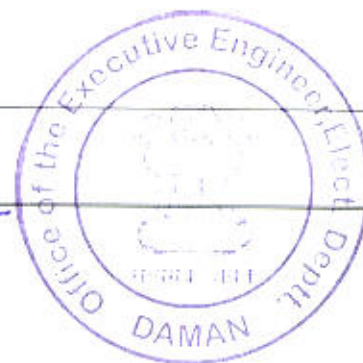
The current demand is primarily dependent on the HT and LT Industrial consumers contributing approx. 91% of the total sales in FY 17-18. The demand from the industrial consumers is primarily due to tax holiday benefit extended by the Govt of India in UT of Daman & Diu which has attracted a large number of industries to set up base in this area.

Considering the increase in demand from the large industries, the demand is likely to reach to 360-380 MW by FY 2019-20. In view of the huge power demand in future, EDDD had proposed a number of schemes to be implemented during the coming years for strengthening and augmentation of the transmission and distribution system in the territory. EDDD is also undertaking efforts to get higher allocation from the Central Generating Stations. The EDDD is undertaking all necessary actions to tie-up for long-term power purchase for meeting the deficit in the UT of Daman and Diu.

2 Objective of Business Plan

The Joint Electricity Regulatory Commission for the State of Goa and Union Territories, in exercise of the powers conferred on it by sub-Section (2) of Section 181 read with Section 36, Section 39, Section 40, Section 41, Section 51, Section 61, Section 62, Section 63, Section 64, Section 65 and Section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling it in this behalf, has issued the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Generation, Transmission and Distribution Multi Year Tariff) Regulations, 2018, hereinafter referred to as "MYT Regulations".

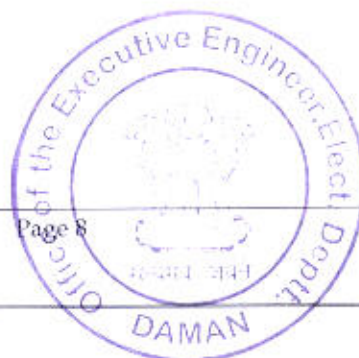
As per the Regulations, the Distribution Licensee shall file Business Plan, for Control Period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan,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



Accordingly, the EDDD 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 data of previous 5 years.

EDDD has prepared the Business Plan taking cognizance of the existing internal factors and external business environment affecting the business. EDDD 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.

[Handwritten signature]



Chapter 2: About the Electricity Department Daman & Diu

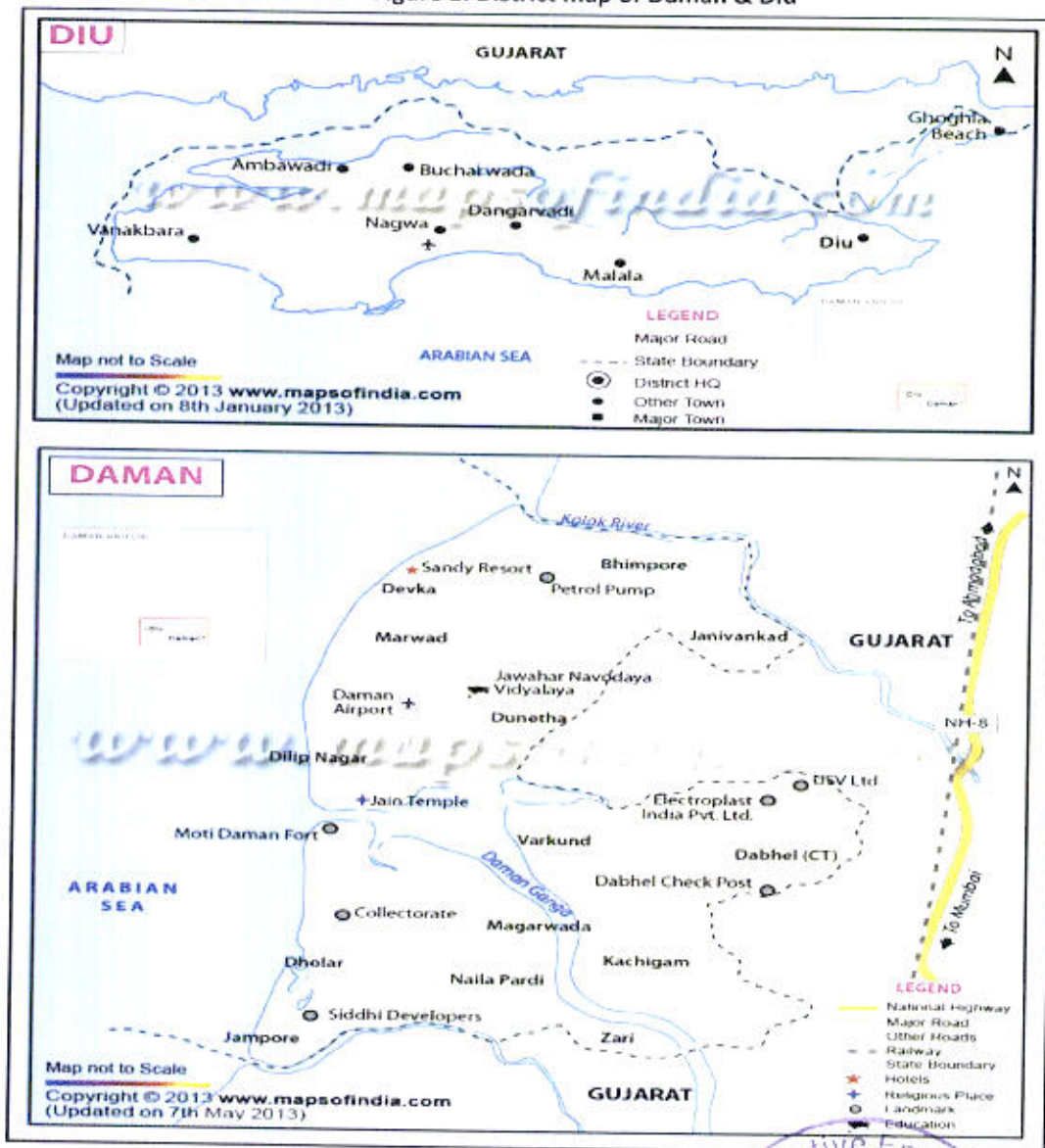
1 Mission of Electricity Department Daman & Diu

Uninterrupted, Reliable and Quality Power Supply to all our Consumers on competitive rates

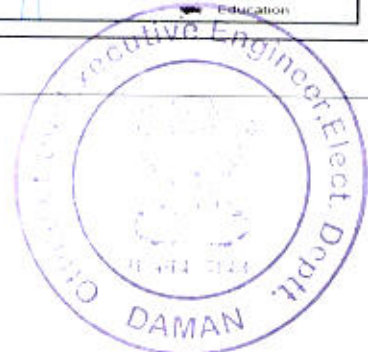
2 Area Served

Daman District comprises of an area of 72 sq. km whereas Diu District comprises of an area of 40 sq. km.

Figure 1: District map of Daman & Diu



8



3 Generation Transmission & Distribution

Electricity Department of Daman & Diu is mainly engaged in the procurement, transmission and distribution of electricity to the various categories of consumers. The bulk power supply is drawn from the Central Sector Power Stations in Western Region through PGCIL Grid. At present, Daman gets power at 220/66 KV Magarwada substation and 220/66 KV Ringanwada substation. The 220/66 KV Magarwada substation is getting power from 220 KV (D/C) Ambethi-Magarwada line and from 220 KV (D/C) Magarwada (PGCIL) Magarawada, Daman. The 220/66 KV Ringanwada substation is getting power from 220 KV (D/C) Magarwada (PGCIL) Magarawada, Daman. Diu gets power from 66 kV Una substation through 66 kV double circuit line emanating from 220 /66 kV Kansari substation of GETCO.

The present power allocation of Daman & Diu is 382.35 MWs (off peak hrs) and 274.47 MW (peak hours). Against this allocation, the U.T is getting only an average of 270-300 MW (off peak hrs) as a daily power schedule. The power allocation of 38 MW from RGGPL is not being supplied to the EDDD at present.

The Department is mainly engaged in the work of construction, operation and maintenance of power distribution system which caters to power demand of various categories of consumers.

Table 1: Transmission and Distribution System

Sr.No.	Details	Daman	Diu	Total
01.	220 KV D/C line	32.60 C.Kms.	--	32.60 C Kms.
02.	66 KV D/C line	66.70 C.Kms.	22.00 C. Kms.	88.70 C. Kms.
03.	11KV line O/H	195.32 C. Kms.	4.00 C. Kms.	199.32 C. Kms.
04.	11KV line U/G	135.90 C. Kms.	85.38 C. Kms.	221.28 C. Kms.
05.	L.T. Line	442.00 C. Kms.	80.30 C. Kms.	522.30 C. Kms.
06.	L.T line U/G	144.20 C. Kms.	107.21 C. Kms.	251.41 C. Kms.
07.	Transformer Centre	778 Nos.	117 Nos.	895 Nos.

4 Organization Structure: Roles and Responsibilities

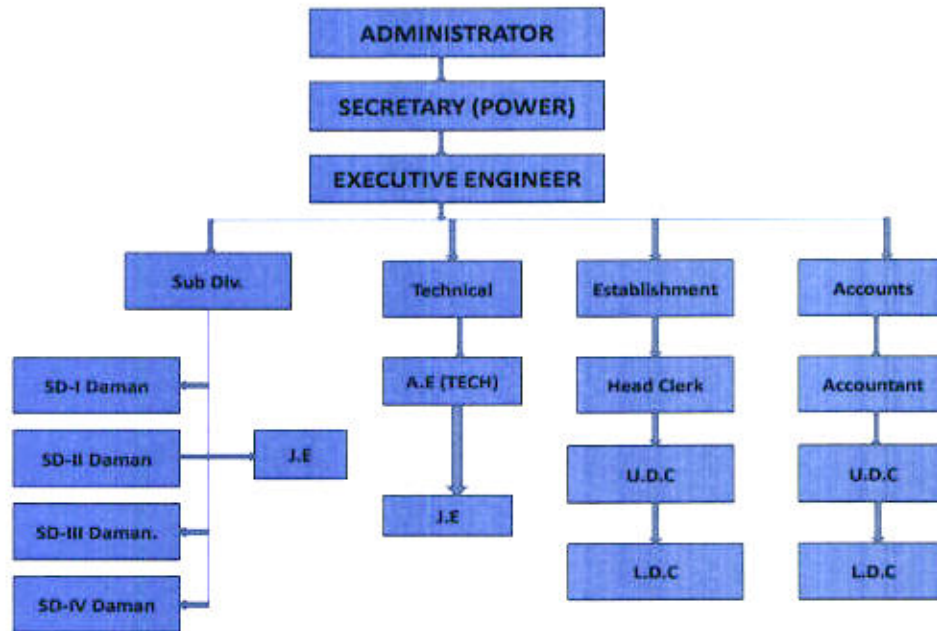
Electricity Department is part of the Administration of Union Territory of Daman & Diu & headed by the Secretary (Power). Day to day work related to functioning of the Department is looked by the Executive Engineer (Elect.) at Division level.

Under Division there are four Sub Division headed by the Assistant Engineer. Executive Engineer at Division Office is also help by Technical Section headed by The Assistant Engineer, Establishment Section headed by Head Clerk and Account Section headed by the Accountant.

At lower level there are Junior Engineer who look after the Operation & Maintenance work of their respected assigned areas and report to their respected Assistant Engineer.



Figure 2: Organisation structure of Daman and Diu Electricity Dept.



5 Power Sector of Daman & Diu

The UT of Daman & Diu does not have its own power stations and relies on power from Central Generating Stations (NTPC, NPCIL) to meet its demand.

Chart 1: Depicting Percentage of Energy Allocation from Central Generating Stations

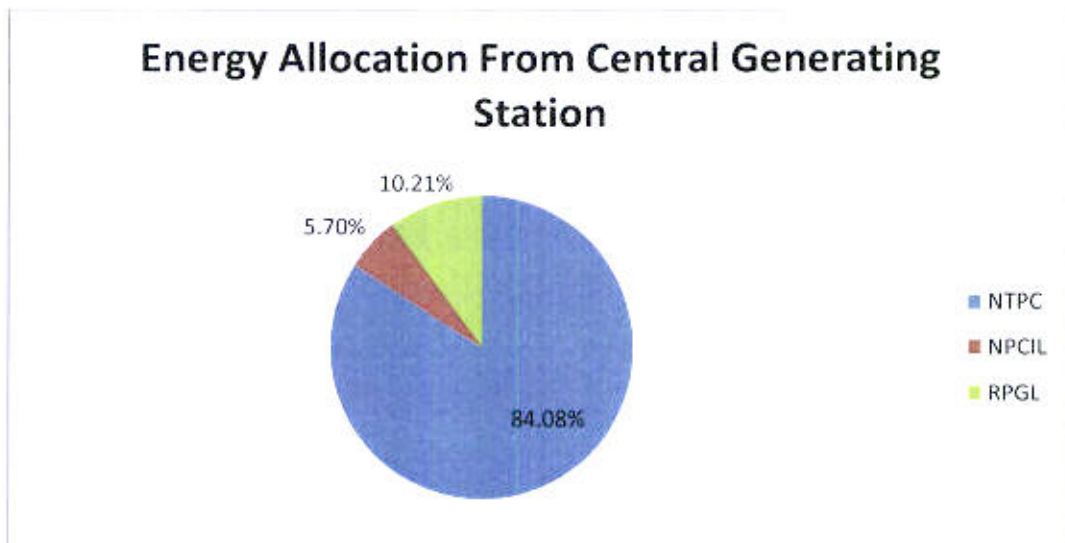


Chart 2: Depicting Increase in Growth of Consumer Numbers

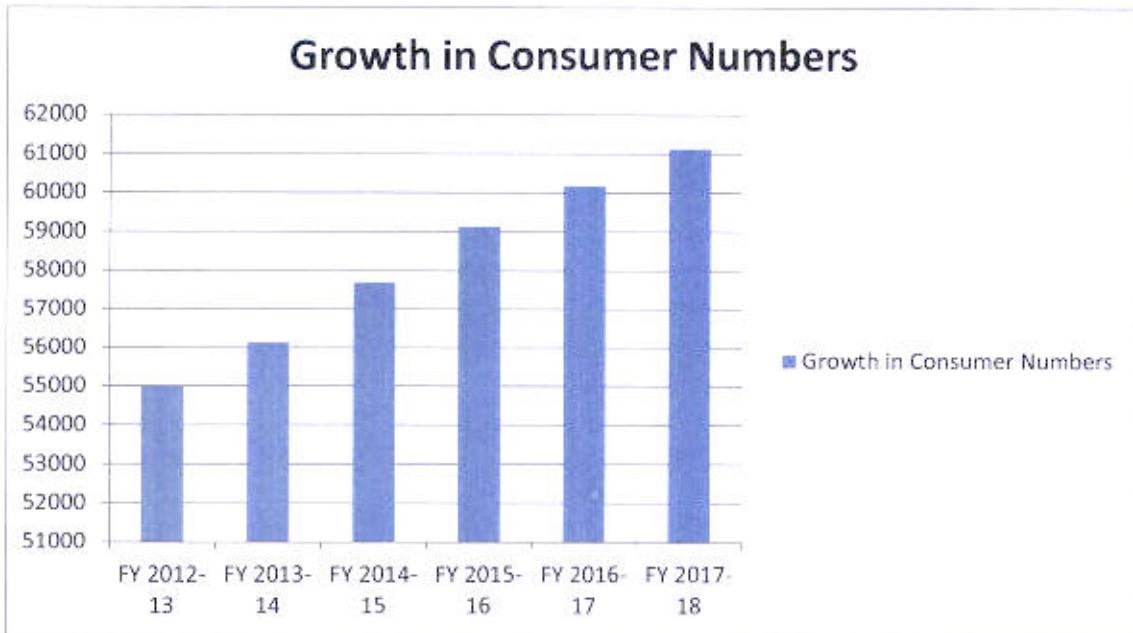


Chart 3: Depicting Consumer Mix Percentage for FY (2017-18)

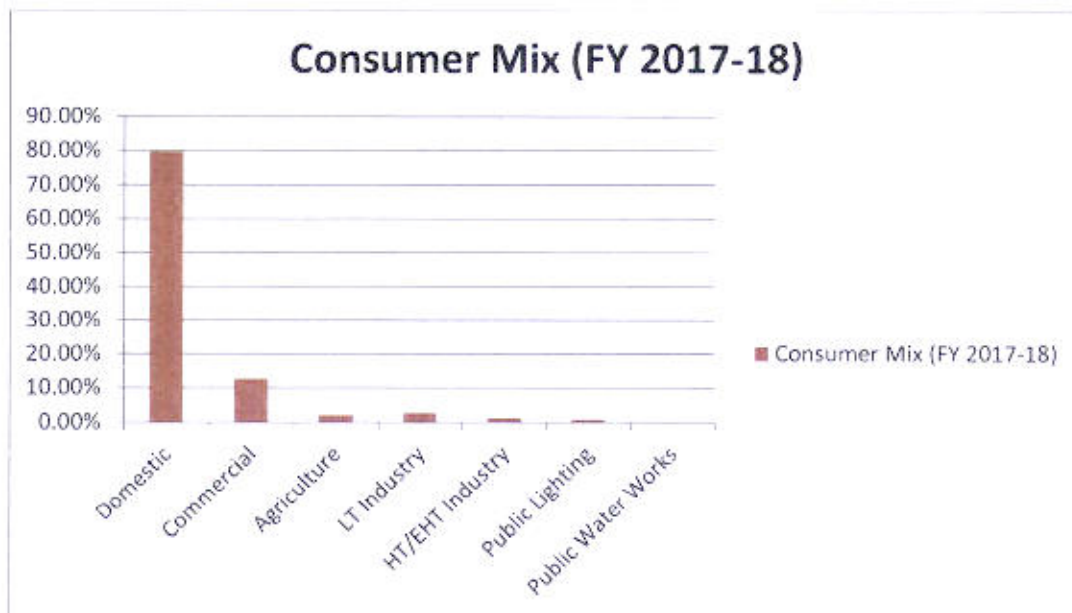


Chart 4: Depicting Consumer Growth Category Wise

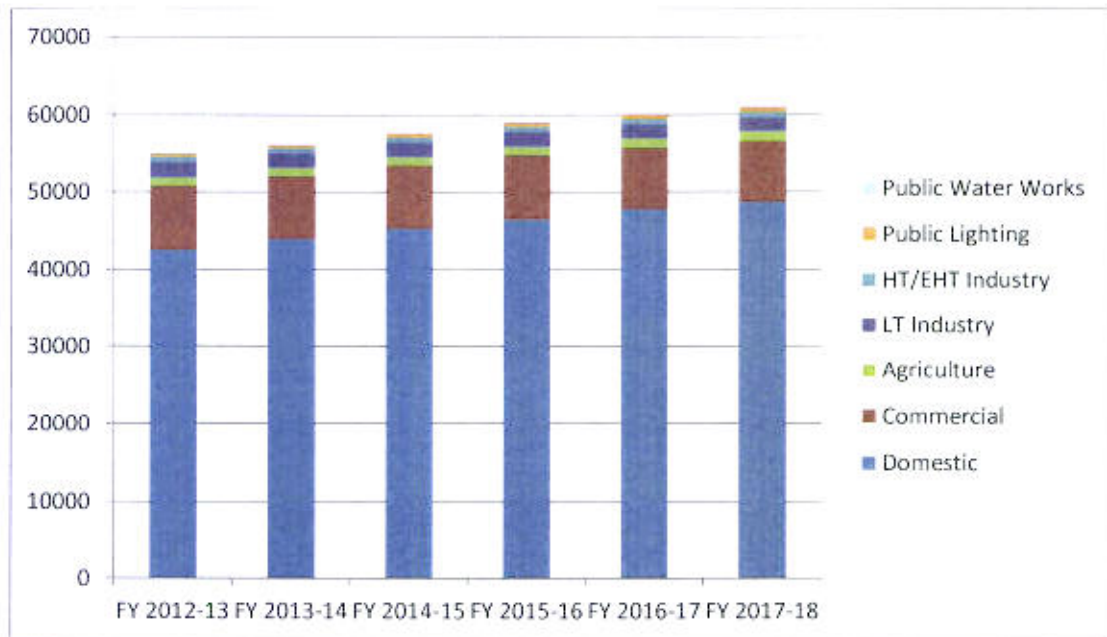


Chart 5: Depicting Year Wise Growth of Energy Sales in (MU)

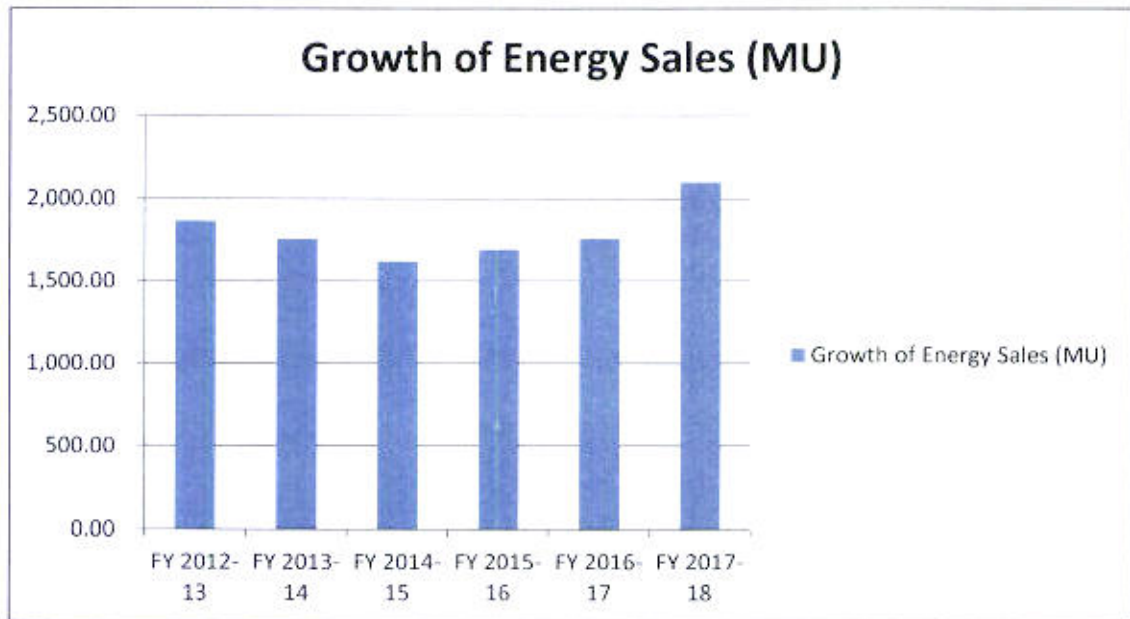


Chart 6: Depicting Percentage of Sales Category Wise

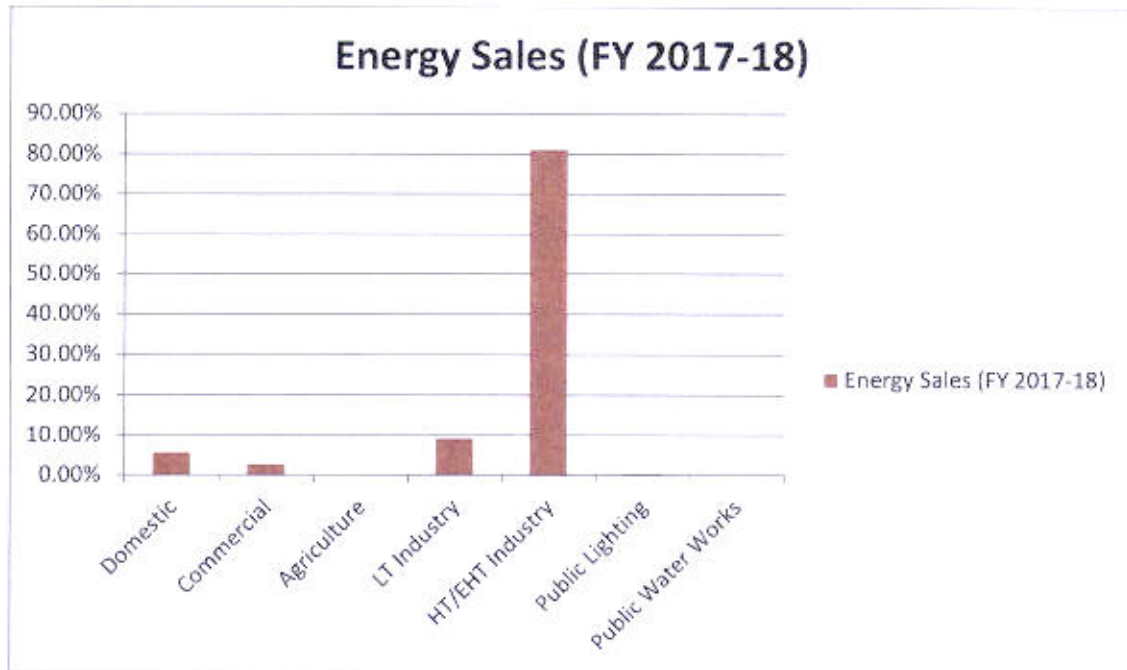
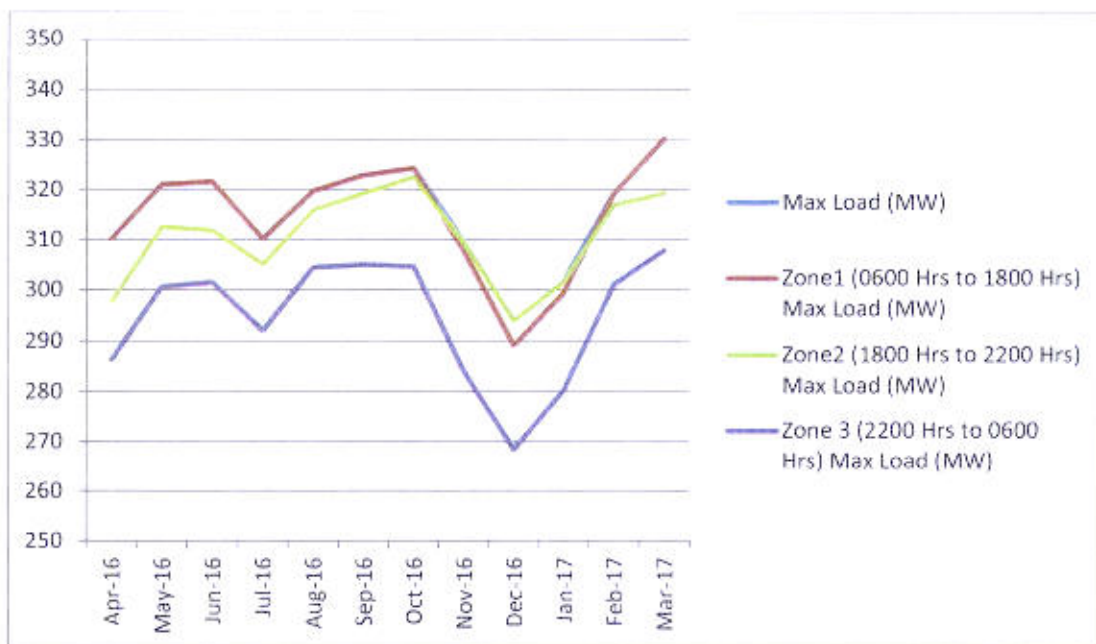


Chart 7: Load Curve for the FY 2016-17



[Handwritten Signature]



Chart 8: Load Curve for the FY 2017-18



6 Grid details

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

There are 9 nos 66/11 kv, Sub-station at Dabhel, Kachigam, Kachigam-II, Dalwada, Bhimpore, Varkund, Ringanwada & Magarwada in Daman & Malala at Diu. Consumers received power supply through Distribution network. Power supply to Diu District is received through GETCO network through 66 kV Transmission lines.

7 Future Power Allocation

During the control period, it is expected that capacity from the following plants will also be allocated to EDDD. The details of the plants and the capacity to be allocated to EDDD are as given below:

- LARA (2x800 + 3x800 MW) – 7.34 MW from 2018-19
- GADARWARA STPP – Stage – I & II (2x660 + 2x660 MW) – 9 MW from FY 2018-19

8 Transmission Sub Stations



There are two 220/66 KV sub-station and nine 66/11 KV sub-stations in Daman & Diu. The details of the same have been shown in the table given below:

Table 2: Transmission Sub Stations

Sr.No.	Sub-Station	Voltage Level (KV)	Installed capacity	% loading
01.	Magarwada	220/66	560 MVA	37.86%
02.	Ringanwada	220/66	260 MVA	50.00%
03.	Magarwada	66/11	30 MVA	45.33%
04.	Kachigam S/S	66/11	90 MVA	67.00%
05.	Dabhel S/S	66/11	90 MVA	68.89%
06.	Dalwada S/S	66/11	80 MVA	73.13%
07.	Varkund S/S	66/11	42 MVA	43.81%
08.	Ringanwada	66/11	50 MVA	72.00%
09.	Malala S/S, Diu	66/11	20 MVA	50.00%
10.	Bhimpore	66/11	30 MVA	64.67%
11.	Kachigam II S/S	66/11	30MVA	80.00%

9 Reliability Indices

The reliability indices for the EDDD for the FY 2017-18 have been given in the table below:

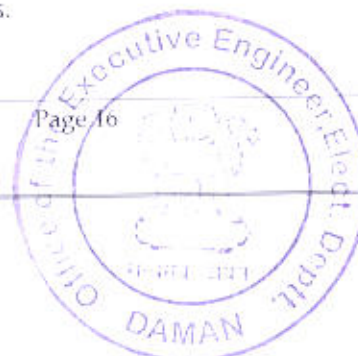
Table 3: Reliability Indices for FY 2017-18

Particulars	SAIFI	SAIDI for 11 KV Feeder	RI of 11 KV feeder	CAIDI for Consumers	RI for Consumers
April-17 to June-17	13.98	1894.72	98.55	2388.33	98.18
July-17 to September-17	14.34	986.27	97.72	507.11	98.83
October-17 to December-17	9.94	665.57	98.46	423.1	99.02
January-18 to March-18	9.73	823.78	98.09	372.36	99.14

10 IT Initiatives

- Revenue Administration through Computerized Energy billing system (RACE).
- Customization of Tally software to maintain the record of accounts of every payment made by the department to various agencies.





- Online system for preparation of estimates.
- e-Indent for store management.
- Online Application for power connection.
- Complaint Management System (CMS).
- Power outage software (Vidyuth Pravah).

Payment Modes available:

- Cash collection counters at various places.
- Anytime payment kiosk.
- Common Service Center.
- Online – through Net Banking, Debit/Credit Cards, e-wallet / Cash Cards, IMPS (Immediate Payment Service) & UPI (Unified Payment Interface), Bharat QR code.
- Mobile app (Department).
- Banks mobile app.

11 Physical achievements during the MYT Control Period FY 2016-17 to FY 2018-19

01. Normal Development works and Release of connections.
Connection released: 1993 Nos.
02. Establishment of 220/66 KV (1X160+2X50) MVA Ringanwada Substation along with associated 220 KV D/c line from 400 KV new PGCIL S/s to Ringanwada, Daman.
03. Establishment of 6 MW on grid solar power plant at Diu.
04. Providing Under-ground cable power Distribution system in Daman & Diu City / Rural areas and extension of the schemes To the Industrial Estate.
 - a. Conversion of 11 KV High Tension overhead lines in to U/G system: 80 Kms.
 - b. Conversion of Low Tension Overhead lines in to U/G system: 55 Kms.
 - c. Installation of New Transformers – 256 Nos.
05. Installation of 3.59 MW rooftop solar power plants at Daman and Diu.





Chapter 3: SWOT Analysis

As part of the development of a strategic plan for any organization, it is necessary to understand the inherent competitive advantage of the electricity department as well as the risk surrounding its business environment. Like any other businesses, it is very important for EDDD to evaluate the environment – both internal and external while charting out its growth path. The aim of a SWOT analysis is to identify the key internal and external factors that are important for achieving the objectives of the company.

The SWOT analysis is a strategic planning technique used to assess the internal and external environment in which the electricity department operates and competes. These come from within the company's unique value chain. The information being used for the SWOT analysis is grouped into two main categories:

- Internal factors – The strengths and weaknesses internal to the organization;
- External factors – The opportunities and threats presented by the external environment to the organization;

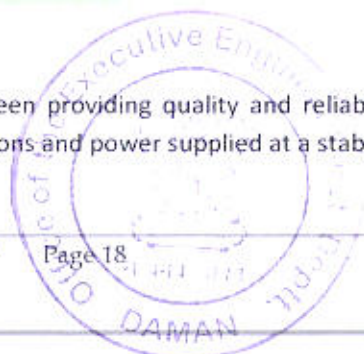
This section provides the analysis of the strengths, weaknesses, opportunities and threats as perceived by EDDD. These are summarized in the following table:

		Helpful <i>In achieving the objective</i>	Harmful <i>In achieving the objective</i>
Internal Attributes of the Organisation	STRENGTHS	<ul style="list-style-type: none"> ✓ Quality Power Supply ✓ Lower Losses ✓ Efficient Customer Service ✓ Online services for customer 	WEAKNESS <ul style="list-style-type: none"> ✓ Ageing Distribution Network ✓ Very Less Own generation ✓ Inadequate Manpower ✓ Less allocation during peak hours
	EXTERNAL Attributes of the Environment	OPPORTUNITIES <ul style="list-style-type: none"> ✓ Business Growth due to setting up of new industries 	THREATS <ul style="list-style-type: none"> ✓ Increase in Coal Prices

Strengths:

- **Quality Power Supply:** EDDD has been providing quality and reliable power supply to its consumers with low voltage fluctuations and power supplied at a stable frequency.

[Handwritten signature]



- **Lower Losses:** EDDD has been very proficient in reducing the Distribution losses to 6.85% up to 2017-18 over the last few years. EDDD has been and shall always be committed towards taking the best possible measures to minimise distribution losses by adopting pro-active approach and adopting best practices prevalent in the distribution sector in India.
- **Efficient Customer Service:** EDDD has been providing efficient services to its consumers and has also initiated Consumer Management System ensuring better services to its consumers round the clock.

Weakness:

- **Ageing Distribution Network:** EDDD has been supplying electricity for a very long time and has also been maintaining its network. However, with passage of time the Distribution Network has started showing signs of ageing and this shall lead to deterioration in performance of EDDD, if adequate and timely steps are not taken.
- **Very Less Own Generation:** The own generation of EDDD is limited to the solar plants in Daman and Diu. The EDDD has to depend upon the power generation from the Central Generating Stations like NTPC, NPCIL etc. At times when there is a grid outage or a shutdown of the plants allocated to EDDD, the department has to resort to costly short term power purchase to supply uninterrupted power supply to the industries.
- **Inadequate Manpower:** The manpower of EDDD serving the UT of Daman and Diu is inadequate. The ratio of the no. of consumers per employee is much higher as compared to the Distribution companies in other states.
- **Less Allocation During Peak Hours:** The allocation of power during the peak hours is not adequate to meet the demand of the consumers of EDDD. Hence, the Department has to resort to short term power to meet the demand of the consumers.

Opportunity:

- **Business growth due to setting up of new industries:** Over the past ten to fifteen years, the UT has seen a tremendous growth in the no. of industries setting up base in Daman due to the tax free policy of the Government of India. As such, EDDD foresees an expansion of Customer base and load growth in its license area.

Threats

- **Increase in Coal Prices:** It is a well known fact that the recent increase in imported Coal prices is causing some serious strains to the power utilities. As a result of this, generators at the central level are seeking increase in tariffs. If such increase in tariff is allowed in the near future, this increase will have to be borne by the consumers. EDDD feels that this shall cause hardship on its consumers.

Chapter 4: Sales**1 Load Growth**

The Table given below summarizes the growth in sanctioned load over the past 6 years.

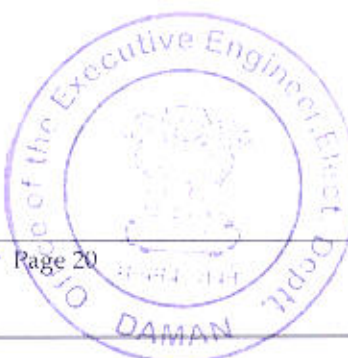
Table 4: Past Years' Load Growth

Consumer Category	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
kVA	Actual	Actual	Actual	Actual	Actual	Actual
Domestic	55,080	55,991	117161	119557	121827	131652
Commercial	18,180	17,654	19322	19761	20781	23722
Agriculture	2,252	2,512	3617	3672	3812	4003
LT Industry	96,818	97,780	100284	107471	104148	108683
HT/EHT Industry	483,024	488,495	486708	505321	536544	551163
Public Lighting	1,919	1,649	1657	1690	880	1405
Public Water Works	654	664	795	795	795	794
Temp. Supply	-	-	-	28	673	1986
Total	657,927	664,745	729,544	758,295	789,460	823,408

To project the load growth for the different consumer categories CAGR based on the past years load growth has been considered for different consumer categories. A five year CAGR has been for the commercial, LT industry, HT industry, and public water works. A three year CAGR has been considered for the agriculture category. However, for the domestic and public lighting category a normalized CAGR has been considered to project the load growth for the control period. The CAGR along with the projected load for the control period has been given in the table below:

Table 5: Projected load growth during Control Period (FY 2019-20 to FY 2021-22)

Consumer Category	FY 18-19	FY 19-20	FY 20-21	FY 21-22	CAGR
kVA	RE	Projected	Projected	Projected	
Domestic	142184	153559	165844	179111	8.00%
Commercial	25019	26386	27828	29349	5.47%
Agriculture	4141	4283	4430	4582	3.44%
LT Industry	111225	113827	116489	119214	2.34%
HT/EHT Industry	565903	581038	596577	612532	2.67%
Public Lighting	1433	1462	1491	1521	2.00%
Public Water Works	825	858	892	927	3.96%
Total	850,730	881,412	913,552	947,237	



2 Consumer Growth

The Table 5 below summarizes the category wise growth in consumers over the past 6 years.

Table 6: Past Years' Consumer Growth

Consumer Category	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
	Actual	Actual	Actual	Actual	Actual	Actual
Domestic	42,507.0	43,962	45,298	46,420	47,403	48,287
Commercial	8,158.0	7,972	8,037	8,209	7,875	7,815
Agriculture	1,173.0	1,191	1,195	1,243	1,283	1,344
LT Industry	1,926.0	1,799	1,755	1,817	1,755	1,706
HT/EHT Industry	801.0	798	786	784	800	807
Public Lighting	369.0	339	524	529	571	633
Public Water Works	77.0	71	109	125	127	125
Temp. Supply	-	-	-	11	366	414
Total	55,011.0	56,132	57,704	59,138	60,180	61,131

Annual Growth in the number of consumers for the MYT Control Period is projected on the basis of the y-o-y growth in the consumers across different categories. The CAGR along with the projected consumer growth for the control period has been given in the table below:

Table 7: Projected consumer growth during Control Period (FY 2019-20 to FY 21-22)

Consumer Category	FY 18-19	FY 19-20	FY 20-21	FY 21-22	CAGR
	RE	Projected	Projected	Projected	
Domestic	49,534	50,813	52,126	53,472	2.58%
Commercial	7,971	8,131	8,293	8,459	2.00%
Agriculture	1,381	1,419	1,458	1,499	2.76%
LT Industry	1,740	1,775	1,810	1,847	2.00%
HT/EHT Industry	808	809	811	812	0.15%
Public Lighting	705	786	875	975	11.40%
Public Water Works	138	152	167	184	10.18%
Total	62,278	63,885	65,541	67,247	

3 Energy Sales Growth

Table 7 below presents the category-wise energy sales for the past years.

Table 8: Past Years' Energy Sales Growth

Sales	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
MUs	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Domestic	73.85	77.79	84.16	83.06	88.20	97.89	121.32
LIG/ Kutir Jyoti	0.10	0.04	0.08	0.08	0.09	0.10	0.10



Sales	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
MUs	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Commercial	33.83	38.74	46.75	41.57	49.93	55.37	57.74
Agriculture	2.70	4.22	3.05	2.30	2.46	2.81	4.83
LT Industry	156.84	161.21	169.59	153.70	160.54	179.85	195.61
HT/EHT Industry	1,496.83	1,572.81	1,441.53	1,648.27	1,795.47	1,864.44	1,984.77
Public Lighting	5.59	6.51	7.06	8.80	7.43	7.89	9.48
Public Water Works	0.92	1.12	1.20	3.28	2.68	3.22	3.49
Temp. Supply	0.51	0.51	0.67	1.09	1.23	2.17	-
Total Sales	1,771.17	1,862.95	1,754.08	1,942.15	2,108.04	2,213.74	2,377.36

The sales for the FY 2018-19 have been projected based on three months actual sales for the period April, 2018 to June, 2018 on the basis of the past year CAGR for the different consumer categories. For projecting the sales for the MYT control period for the HT industrial category a normalized CAGR of 9% has been considered as it is anticipated that there will be a higher load growth at the 220 KV level. A six year CAGR has been considered for the domestic, commercial, LT industry, public lighting. For the public water works a three CAGR has been considered. For projecting the sales in the agriculture category a normalized CAGR of 8% has been considered. The table given below summarizes the projections of category wise increase in energy sales over the control period (FY 2019-20 to FY 2021-22).

Table 9: Projected energy sales during Control Period (FY 2019-20 to FY 21-22)

Sales	FY 18-19	FY 19-20	FY 20-21	FY 21-22	CAGR
	RE	Projected	Projected	Projected	
Domestic	144.99	157.49	171.08	185.84	8.63%
Commercial	63.07	68.95	75.37	82.40	9.32%
Agriculture	5.19	5.61	6.06	6.54	8.00%
LT Industry	194.55	201.85	209.42	217.28	3.75%
HT/EHT Industry	2,079.33	2,266.47	2,470.45	2,692.79	9.00%
Public Lighting	8.93	9.75	10.65	11.63	9.21%
Public Water Works	3.75	3.83	3.91	3.99	2.12%
Total Sales	2,499.81	2,713.94	2,946.93	3,200.46	

Chapter 5: Power Purchase Plan**1 Power Purchase Quantum**

Daman & Diu has firm and infirm allocations in Central Sector Generating Stations of NTPC, Nuclear Power Corporation of India Ltd (NPCIL), NTPC Sail Power Company Ltd (NSPCL) and Ratnagiri Gas and Power Private Limited (RGPPL).

The power availability for FY 2018-19 and the MYT Control Period has been estimated based on the revised allocation issued by the Western Region Power Committee (WRPC) vide No. WRPC/Comml-1/6/Alloc/2018/5733 dated:- 28/06/2018. The energy allocation from various generating stations is summarized in table below:

Table 10: Energy Allocation from Central Generating Stations

Particulars	Plant Capacity	EDDD Allocation	Avg. EDDD Allocation
	MW	MW	(%)
NTPC Stations			
KSTPP	2,100	48	2.30%
KSTPP-III	500	6	1.12%
VSTPP-I	1,260	12	0.99%
VSTPP-II	1,000	9	0.86%
VSTPP- III	1,000	11	1.06%
VSTPP- IV	500	12	2.38%
VSTPS-V	500	8	1.57%
KAWAS	656	31	4.73%
JGPP	657	31	4.77%
Bhilai Unit-I &II(NTPC)	500	70	14.00%
Sipat-I	1,980	24	1.20%
Sipat-II	1,000	9	0.93%
MSTPS-I	500	12	2.38%
MOUDA-II	1,000	16	1.62%
SOLAPUR	660	13	1.90%
LARA	1600	7	0.46%
GADARWARA	1600	9	0.56%
Subtotal	17,014	328	
Eastern Region			
KHSTPP-II	1000	1.30	0.13%
Subtotal	1000	1.3	
NPCIL			
KAPPS	440	8.96	2.04%
TAPP 3&4	1080	12.26	1.14%
Subtotal	1520.00	21.22	
Others			
Ratnagiri	1967	38	1.93%
Subtotal	1967	38	
Grand Total	21,500.59	388.34	



It is expected that EDDD will not be getting any power from Ratnagiri for FY 2018-19 and the MYT control period and therefore no power purchase from the plant has been considered.

During the FY 2018-19 the EDDD will start getting power from Lara and Gadarwara generating stations. A capacity of 7.34 MW has been allocated to EDDD from Lara and a capacity of 4.50 MW has been allocated from Gadarwara Unit I. Further, by June 2019 an allocation of 4.50 MW shall be made to EDDD from Gadarwara Unit II. The same has been considered for the MYT control period.

For projecting the power availability for FY 2019-20 to FY 2021-22, EDDD has considered average allocation of firm and infirm power from the western region generation stations (NTPC and NPCIL) of Western Regional Power Committee. For projecting the power purchase from eastern region NTPC generating stations, an allocation of 1.30 MW from KhSTPP has been taken into account.

Additionally, EDDD has 70 MW allocations from NSPCL Bhilai power stations. Energy availability from NSPCL Bhilai power stations for FY 2019-20 to FY 2021-22 has been considered by taking 70 MW allocation from the plant.

Power purchase quantum from the NTPC stations of the current year and FY 2019-20 to FY 2021-22 has been calculated based on the installed capacity of each plant and the average PLF to calculate the plant-wise gross generation.

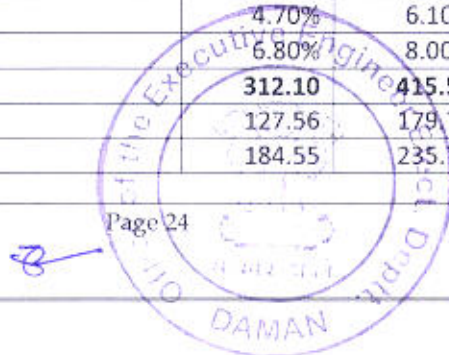
Auxiliary consumption of 9% and 3% has been considered for estimating the gross generation from coal and gas based generating stations respectively.

For the Control Period the EDDD has considered purchase of non solar energy of 70 MUs to meet its RPO target through this route.

To meet the solar obligation for the control period FY 2019-20 to FY 2021-22, the department is in the process of purchasing 80 MW power from NTPC, 50 MW from Solar Energy Corporation of India (SECI) and 40 MW from open tender on long term basis (25 years) on Power Purchase Agreement (PPA) basis. Further, the EDDD has an installed capacity of 13.59 MW of solar plants which include 10 MW ground mounted plants and remaining 3.59 MW of rooftop solar plants. It is expected that an additional 1 MW of rooftop solar plant will be added to the existing capacity during the MYT Control Period. a summary of the Renewable Purchase Obligation (RPO) to be met by the EDDD during the MYT Control Period is given in the table below:

Table 11: Summary of renewable Purchase Obligation for the MYT Control Period

Description	FY 2019-20	FY 2020-21	FY 2021-22
Sales within State (MU)	2,713.94	2,946.93	3,200.46
RPO obligation (%)	11.50%	14.10%	17.00%
Solar	4.70%	6.10%	8.00%
Non-Solar	6.80%	8.00%	9.00%
RPO obligation for the year (MU)	312.10	415.52	544.08
Solar	127.56	179.76	256.04
Non-Solar	184.55	235.75	288.04



Description	FY 2019-20	FY 2020-21	FY 2021-22
RPO Compliance (Procurement and own generation)	371.58	371.58	371.58
Solar	301.58	301.58	301.58
Non-Solar	70.00	70.00	70.00
RPO Compliance (REC certificate purchase)	114.55	165.75	218.04
Solar	0.00	0.00	0.00
Non-Solar	114.55	165.75	218.04

For computing the power availability at the periphery, 3.66% weighted average external transmission losses have been applied on the gross power purchase for FY 2018-19 and FY 2019-20 to FY 2021-22.

Table 11 below depicts the station wise power purchase for FY 2018-19 and FY 2019-20 to FY 2021-22.

Table 12: Power Purchase Quantum

Particulars	FY 2018-19	FY 2019-20	FY 20-21	FY 2021-22
	RE	Projected	Projected	Projected
(MU)				
NTPC Stations				
KSTPP	339.51	336.38	336.38	336.38
KSTPP-III	39.87	39.05	39.05	39.05
VSTPP-I	86.43	87.23	87.23	87.23
VSTPP-II	61.02	60.43	60.43	60.43
VSTPP- III	76.47	74.42	74.42	74.42
VSTPP- IV	86.37	83.10	83.10	83.10
VSTPS-V	55.62	53.30	53.30	53.30
KAWAS	150.32	159.68	159.68	159.68
JGPP	163.29	177.66	177.66	177.66
Sipat-I	148.38	139.38	139.38	139.38
Sipat-II	59.69	54.66	54.66	54.66
MSTPS-I	54.00	47.36	47.36	47.36
MOUDA-II	118.77	109.49	109.49	109.49
KHSTPP-II	8.65	7.24	7.24	7.24
SOLAPUR	86.58	85.00	85.00	85.00
LARA	24.53	49.73	49.73	49.73
GADARWARA	12.53	55.92	60.98	60.98
Subtotal	1572.04	1620.05	1625.11	1625.11
NTPC Bhilai				
Bhilai Unit-I &II(NTPC)	483.98	494.41	494.41	494.41
Subtotal	483.98	494.41	494.41	494.41
NPCIL				
KAPPS	47.71	64.92	64.92	64.92
TAPP 3&4	75.16	74.97	74.97	74.97
Subtotal	122.86	139.90	139.90	139.90
Others				
Ratnagiri	0.00	0.00	0.00	0.00



Particulars	FY 2018-19	FY 2019-20	FY 20-21	FY 2021-22
	RE	Projected	Projected	Projected
Subtotal	0.00	0.00	0.00	0.00
Power purchase from Other Sources				
Power purchase from Indian E. Exchange	443.71	395.00	645.00	925.00
UI	71.21	0.00	0.00	0.00
Solar	18.63	18.63	18.63	18.63
Non Solar (Hydro)	70.00	70.00	70.00	70.00
Solar REC	0.00	0.00	0.00	0.00
Non Solar REC	0.00	0.00	0.00	0.00
Solar (SECI, NTPC)	0.00	282.95	282.95	282.95
Subtotal	603.54	766.58	1016.58	1296.58
Gross Power Purchase	2782.43	3020.94	3275.99	3555.99

2 Power Purchase Cost

The cost of purchase from the central generating stations for FY 18-19 and the MYT Control Period is estimated based on the following assumptions:

- Fixed cost for the FY 2018-19 and the MYT Control Period has been projected considering a 5% escalation over the estimated fixed cost for various stations for FY 17-18.
- Variable cost for each NTPC generating stations for the Control Period has been projected considering the increase in the actual average variable cost per unit during FY 2018-19 over FY 2017-18.
- For nuclear plants i.e. KAPP and TAPP single part tariff increase in the actual average variable cost per unit have been considered for projecting the power purchase cost for the Control Period.
- For power purchase from renewable energy sources, the EDDD has considered the purchase of solar power at Rs. 3.00 per unit. For the non-solar power, the EDDD has considered a rate of Rs. 4.48 per unit. Further, the EDDD has considered the purchase of non-solar renewable energy certificates at Rs. 1.50 per unit.

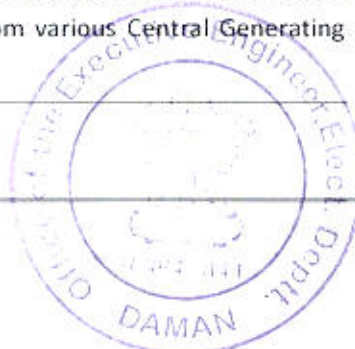
The Total Power Purchase cost from various sources for FY 18-19 and for the MYT Control Period is summarized in the Table below:

Table 13: Power Purchase Cost

Particulars	[Rs. Cr.]			
	FY 2018-19	FY 2019-20	FY 20-21	FY 2021-22
	RE	Projected	Projected	Projected
NTPC Stations				
KSTPP	69.52	71.62	73.73	75.91
KSTPP-III	10.99	11.37	11.82	12.29
VSTPP-I	20.68	20.65	20.60	20.59
VSTPP-II	13.42	13.12	13.10	13.11
VSTPP- III	19.46	19.25	19.45	19.67
VSTPP- IV	26.73	26.85	27.70	28.59
VSTPS-V	18.03	18.09	18.53	18.99
KAWAS	59.45	64.41	67.07	69.83
JGPP	64.24	81.69	92.52	105.04
Sipat-I	42.54	42.80	44.60	46.48
Sipat-II	16.76	16.89	17.77	18.68
MSTPS-I	30.92	30.10	31.69	33.37
MOUDA-II	54.83	55.78	59.41	63.28
KHSTPP-II	3.27	2.88	2.80	2.75
SOLAPUR	50.12	51.51	53.77	56.13
LARA	7.87	14.32	14.32	14.32
GADARWARA	4.61	18.73	20.43	20.43
Subtotal	513.46	560.07	589.30	619.46
NTPC Bhilai				
Bhilai Unit-I &II(NTPC)	184.17	197.42	209.43	222.19
Subtotal	184.17	197.42	209.43	222.19
NPCIL				
KAPPS	0.00	20.97	20.97	20.97
TAPP 3&4	24.27	26.53	29.07	31.86
Subtotal	24.27	47.50	50.04	52.83
Others				
Ratnagiri	0.00	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	0.00
Power purchase from Other Sources				
Power purchase from Indian E. Exchange	176.27	156.92	256.24	367.47
UI	21.17	0.00	0.00	0.00
Solar	0.00	0.00	0.00	0.00
Non Solar (Exchange)	31.36	31.36	31.36	31.36
Solar REC	0.00	0.00	0.00	0.00
Non Solar REC	0.00	17.18	24.86	32.71
Solar (SECI, NTPC)	0.00	84.88	84.88	84.88
Subtotal	228.80	290.35	397.35	516.42
Gross Power Purchase	950.71	1095.33	1246.12	1410.90

3 Transmission and Other Charges

Transmission charges payable to PGCIL are based on the total capacity allocation in the transmission network. EDDD has a mix of firm and infirm capacity allocations from various Central Generating

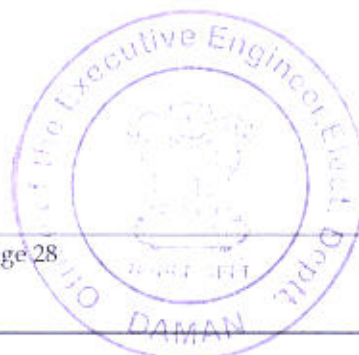


Stations which is revised by the Ministry of Power at regular intervals. Therefore, considering the changing capacity allocation, EDDD has estimated the transmission charges for FY 18-19 based on, an escalation of 5% over the actual transmission charges of FY 17-18. Further, EDDD has taken into account the additional capacity share in the new stations while estimating the Inter-State transmission charges for ensuing year.

For projecting the PGCIL transmission charges for the Control Period, an escalation of 5% over the estimated FY 18-19 transmission charges has been considered in view of the increase in transmission charges. Further, EDDD has taken into account the additional capacity share in the new stations while estimating the Inter-State transmission charges for ensuing year.

Table 14: Total Power Purchase Cost for the Control Period

Particulars	FY 2018-19	FY 2019-20	FY 20-21	FY 2021-22
	RE	Projected	Projected	Projected
Total Power Purchase	950.71	1095.33	1246.12	1410.90
PGCIL CHARGES	89.97	94.47	99.19	104.15
WRLDC	0.23	0.25	0.26	0.27
MSTCL	3.74	3.92	4.12	4.33
REC	3.42	3.59	3.77	3.96
GETCO	3.53	3.70	3.89	4.08
PGVCL	0.07	0.07	0.07	0.08
POSCO	1.93	2.03	2.13	2.23
Grand Total of Charges - Net	1053.59	1203.37	1359.55	1530.00



Chapter 6: T&D Loss Trajectory and Energy Balance

The EDDD would like to submit that the system improvement works executed every year under the planned schemes as well as increase in energy sales quantum to the HT consumers have resulted in the reduction of T & D losses in its distribution area.

EDDD has achieved T&D loss level of 6.85% for the FY 2017-18 as against the target of 8.70% given by the Hon'ble Commission in the Tariff Order for the FY 2017-18. Reduction of T&D below 10% involves significant amount of capital expenditure and it is EDDD's endeavor to bring the T&D loss level further down in the subsequent years. The loss reduction trajectory for the Control Period is as given in the table below:

Table 15: Proposed T&D Loss Trajectory

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22
	Actual	Actual	RE	Projected	Projected	Projected
T&D Losses	8.48%	6.85%	6.80%	6.70%	6.60%	6.50%

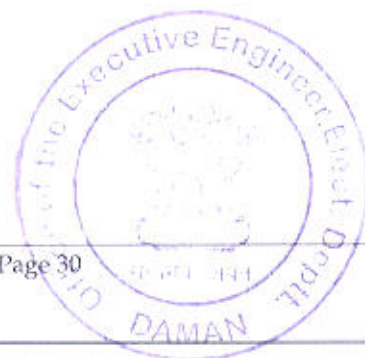
Based on the proposed loss levels and projected energy requirement and availability within the state, the Energy Balance is presented in the following table:

Table 16: Energy Balance

Particulars	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	Actual	RE	Projected	Projected	Projected
Retail Sales (a)	2,101.22	2,499.81	2,713.94	2,946.93	3,200.46
Open Access Sales (b)	276.14	0.00	0.00	0.00	0.00
Less: Energy Savings (c)	0.00	0.00	0.00	0.00	0.00
Total Sales (d=a+b-c)	2,377.36	2,499.81	2,713.94	2,946.93	3,200.46
Distribution Loss (MU) (e=g-d)	174.87	182.39	194.89	208.24	222.49
Distribution Loss (%) (f=e/g)	6.85%	6.80%	6.70%	6.60%	6.50%
Energy Required at Periphery (g)	2552.23	2682.19	2908.83	3155.17	3422.95
Sale to common pool consumer/UI Sale(h)	9.16	1.69	2.22	1.60	3.58
Own generation (i)	18.63	18.63	18.63	18.63	18.63
Total energy requirement at state periphery(j=g+h-i)	2542.77	2665.25	2892.42	3138.14	3407.90
Less: Energy Purchased through UI at Periphery (k)	227.60	71.21	0.00	0.00	0.00
Less: Open Access Purchase at Periphery (l)	284.37	0.00	0.00	0.00	0.00
Energy requirement at state periphery from tied up sources (m=j-k-l)	2030.80	2594.05	2892.42	3138.14	3407.90
Interstate loss (MU) (n=o-m)	62.85	98.55	109.88	119.22	129.47
Interstate loss (%)	3.00%	3.66%	3.66%	3.66%	3.66%
Energy requirement at state periphery from generator end (o)	2093.65	2692.60	3002.30	3257.36	3537.36



Particulars	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	Actual	RE	Projected	Projected	Projected
Total Energy requirement from tied up sources & UI at generator end (p=o+k)	2321.25	2763.80	3002.30	3257.36	3537.36
Total Energy requirement in ut including Open Access (q=p+l)	2605.62	2763.80	3002.30	3257.36	3537.36



Chapter 7: Capital Investment Plan**1 Capital Investment plan of EDDD**

As has been discussed above, the (EDDD) is engaged in the procurement, transmission and distribution of electricity to the various consumer categories in the Union Territory of Daman and Diu. Apart from the upcoming solar plants, it does not have its own power generation station and completely rely on the Central Sector Generating Stations (CSGS) in Western Region to meet its energy demand.

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 EDDD in order to effect better planning, budgeting and monitoring at macro & micro levels.

A. Detailed Schemes**Table 17: Capital Expenditure Schemes proposed during MYT Control Period**

Sr.No.	Name of Scheme	Proposed Expenditure in Rs. Lakh.			
		Total Scheme Amount	2019-20	2020-21	2021-22
1	Scheme for establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman alongwith associated 220 KV multicircuit transmission line	4960.00	1000.00	2000.00	1960.00
2	Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station alongwith associated line at Dabhel, Daman	3152.00	1500.00	1652.00	0.00
3	Scheme for establishment of 66/11 KV GIS Sub-station at Bhimpore, Daman	3258.00	500.00	1500.00	1258.00
4	Establishment of new hybrid bays at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman	800.00	800.00	0.00	0.00
5	Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL	450.00	450.00	0.00	0.00



Sr.No.	Name of Scheme	Proposed Expenditure in Rs. Lakh.			
		Total Scheme Amount	2019-20	2020-21	2021-22
6	Installation of 2.64 MVAR capacitor bank at 66 KV sub station in Daman	3900.00	1500.00	2400.00	0.00
7	Implementation of SCADA system at 66 Sub stations alongwith necessary hardware replacement	1500.00	500.00	500.00	500.00
8	Normal Development Works and release of service connection	1350.00	450.00	450.00	450.00
9	Providing Underground power Distribution system in Daman & Diu city / rural areas and extension of the scheme to Industrial Estates	6000.00	2000.00	2000.00	2000.00
10	Implementation of Advance Metering Infrastructure (Smart Metering Solution) in Daman and Diu	5643.00	1000.00	2500.00	2143.00
11	Scheme for construction of new control room building, shifting and commissioning of existing/new equipment at 66 KV Sub station at Dalwada and Dabhel, Daman.	1400.00	700.00	700.00	0.00
12	Improvement and renovation of 220 KV and 66 KV Sub station	1000.00	200.00	400.00	400.00
13	Replacement of 4 nos. of 10 MVA old power transformers at 66/11 KV Dabhel, Ringanwada, Varkund and Malala Sub station.	512.00	200.00	200.00	112.00
14	Total	33925.00	10800.00	14302.00	8823.00



1. **Name of Scheme: Scheme for establishment of 2x100 MVA, 220/66 KV GIS Sub-station at Dabhel, Daman alongwith associated 220 KV multicircuit Magarwada-Dabhel transmission line via Kachigam.**

Cost Rs.4960.00 Lakh.

Objective of the Scheme:

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

Salient Features:

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

Hence the scheme is very essential on financial as well as technical point of view.

2. **Name of Scheme: Scheme for establishment of 66/11 KV, 2x20 MVA GIS Sub-station alongwith associated line at Dabhel, Daman.**

Cost Rs.3152.00 Lakh.

Objective of the Scheme:

The scheme provides for erection of 66 KV line and 66/11 KV, 2x20 MVA GIS S/S along with all associated equipments at Dabhel area in order to share the enhanced loading of Dabhel existing 66/11 KV S/S and to meet future load growth to improve regulation.

Salient Features:

The 66 kV Dabel S/s is presently fed from 66 kV Magarwada Dabel vis Kachigam line. Being a lengthy 66 kV feeder the losses are on a higher side. In order to lower the losses and provide a stable and reliable power to the industries and residential consumers at Dabhel it is proposed to establish the 66/11 KV 2x20 MVA GIS S/S. Also, at present in Daman all the 07 Nos. S/S's at Kachigam, Dalwada, Dabhel, Varkund Ringanwada, Magarwada and Bhimpore are loaded up to their optimum capacity. As Daman is a small UT with limited financial and technical sanction powers, it is generally

not proper to load the S/S by more than 80% capacity and also always some spare capacity has to be maintained to avoid heavy load shedding in the eventuality of outage of any power transformers.

Considering the present load growth it is expected that the Maximum demand of Daman area could be around 400 MWs at the end of 12th Five Year Plan. Keeping in view of the loading of existing S/S and future load, it is essential to establish a new 66/11 KV GIS S/S at Dabhel, Daman to cope up with the forth coming loading of this area.

At this present condition major industries are connected with existing Dabhel S/S therefore it has been loaded more than 80% and therefore it is very hard to cope up with this load and since the substation is old there is no new space for expansion. After commissioning of this S/S some loads from existing Dabhel S/S can be shifted to this new 2 X 20 MVA GIS S/S which will help in reducing load in existing substation and same will also help in increase reliability of power.

Hence it is proposed to establish new 66/11 KV, 2x20 MVA GIS S/S at Dabhel, Daman to cater the future load in the said areas during the Control Period and to earn more revenue to the Department by sale of more power to Industrial as well as other category of consumers.

3. Name of Scheme: Scheme for establishment of 66/11 KV GIS Sub-station at Panchal Industrial Area, Bhimpore, Daman.

Cost Rs.3258.00 Lakh.

Objective of the Scheme:

The scheme provides for erection of 66 KV line and 66/11 KV GIS S/S along with all associated equipments at Bhimpore area in order to share the enhanced loading of existing 66/11 KV S/S and to meet future load growth to improve regulation. The technical sanction for the scheme has been obtained from CEA.

Salient Features:

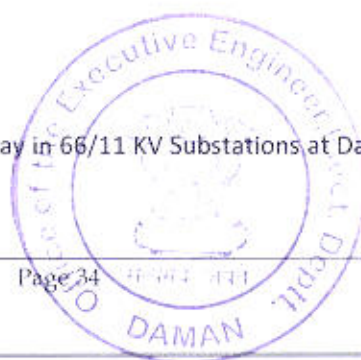
The present demand of Panchal industrial area is about 8.25 MW which is being met by existing 66/11 KV Bhimpore S/s. this maximum demand of Panchal area is expected to increase to about 27 MW by FY 2021-22. As Bhimpore S/s is about 3 km away from the industrial area and also there is no space for further augmentation of Bhimpore S/s, it is proposed to establish new 2X20 MVA, 66/11 KV S/s at load centre at Panchal to meet the expected demand in the area.

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

Cost Rs.800.00 Lakh.

Objective of the Scheme:

The scheme provides establishing new hybrid bay in 66/11 KV Substations at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman.



Salient Features:

The existing 66/11 KV substations at Dalwada Sub-station (2 Nos.) and Zari Sub-station (2 Nos.), Daman are heavily loaded (almost 70 %) then its capacity and load is increasing day by day so to cope up with existing demand new transformers as well as bays has to be installed which requires extra space which is not available in the substation therefore department is going to adopt new technology i.e. hybrid bay system, as its occupy half the space of current installed bay and provide better efficiency and less maintenance then current system.

It's costing will be 20 % higher than existing bays but keeping in mind less space consumption and low maintenance cost the overall cost is justified.

5. Name of Scheme: Scheme for inter connection of 66 KV line from Zari Sub-station to Eurocoustic and replacement of Panther conductor from Kachigam Sub-station to EPL.

Cost Rs.450.00 Lakh.

Objective of the Scheme:

Scheme for inter connection of 66 KV line from Zari SS to Eurocaustic and replacement of Panther conductor from Kachigam S/S to EPL.

Salient Features:

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

This will reduce the load of existing substation and at same time will increase the efficiency of power transfer.

6. Name of Scheme: Installation of 2.64 MVAR capacitor bank at 66 KV substation in Daman

Cost Rs.3900.00 Lakh.

Objective of the Scheme:

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



7. Name of Scheme: Implementation of SCADA system at 66 KV Sub stations

Cost Rs.1500.00 Lakh.

Objective of the Scheme:

The EDDD is planning to implement the SCADA system in five nos. of 66/11 KV S/s at Daman.

8. Name of Scheme: Normal Development Works and release of service connection

Cost Rs.1350.00 Lakh.

Objective of the Scheme:

The purpose of the same is to:

Provide additional distribution network with transformer centers & associated HT/LT service lines for arranging power supply to various categories of HT< consumers. Augment existing power distribution system by adding new transformer centers.

Sailent Features

The scheme for Normal Development Works & Release of Service connection is basically scheme for the additions made in the existing electrical network to cope with the loads on the system due to release of various type of service connections to the consumers in the UT. The Department receives several applications from LT Domestic, LTC, LT Ag., LT Industrial and HT Industrial consumers throughout the year and releases these loads from existing system. Due to above growth in the existing system, the voltage regulation and loading of the system constantly goes on increasing up to limits beyond which it cannot cater the loads without erecting transformer centre, lines and other related accessories.

Therefore, the main objective of works proposed under ND & SC scheme are to erect few transformer centers, LT/HT lines and service connection lines etc., to cope with prospective loads coming during the year. The works under this scheme are carried out on the basis of 15% revenue return per annum as per its terms & conditions.

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

Cost Rs.6000.00 Lakh.

Objective of the Scheme:



