

**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:

DNH Power Distribution Corporation LTD.

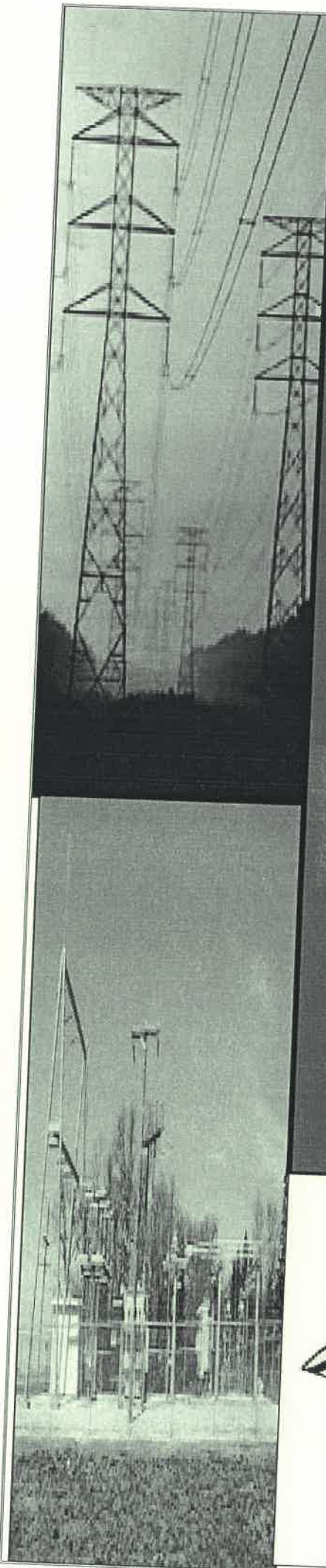


TABLE OF CONTENTS

LIST OF ABBREVIATIONS.....	4
CHAPTER 1: INTRODUCTION.....	6
1 BACKGROUND	6
2 OBJECTIVE OF BUSINESS PLAN.....	7
CHAPTER 2: ABOUT THE DNH POWER DISTRIBUTION CORPORATION LIMITED.....	9
1 MISSION OF DNH POWER DISTRIBUTION CORPORATION LIMITED	9
2 AREA SERVED	9
3 GENERATION TRANSMISSION & DISTRIBUTION.....	10
4 RELIABILITY INDICES.....	11
5 ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES.....	11
6 POWER SECTOR OF DNH.....	12
6 FUTURE POWER ALLOCATION.....	15
7 IT INITIATIVES	15
8 PHYSICAL ACHIEVEMENTS DURING MYT CONTROL PERIOD FY 2016-17 TO FY 2018-19	16
CHAPTER 3: SWOT ANALYSIS.....	17
CHAPTER 4: SALES	20
1 LOAD GROWTH	20
2 CONSUMER GROWTH.....	21
3 ENERGY SALES GROWTH.....	21
CHAPTER 5: POWER PURCHASE PLAN.....	24
1 POWER PURCHASE QUANTUM.....	24
2 POWER PURCHASE COST.....	27
3 TRANSMISSION AND OTHER CHARGES.....	29
CHAPTER 6: T&D LOSS TRAJECTORY AND ENERGY BALANCE	30
CHAPTER 7: CAPITAL INVESTMENT PLAN	32
1 CAPITAL INVESTMENT PLAN OF DNHPDCL.....	32
2 FUNDING PLAN	43
3 PROJECTIONS FOR NUMBER OF EMPLOYEES DURING THE MYT CONTROL PERIOD FY 2019-20 TO FY 2021-22	44
4 PROPOSED TRAJECTORY OF AVAILABILITY OF WHEELING BUSINESS (WIRES AVAILABILITY) AND SUPPLY BUSINESS (SUPPLY AVAILABILITY):-.....	44



LIST OF TABLES

TABLE 1: TRANSMISSION AND DISTRIBUTION SYSTEM	10
TABLE 2: EXISTING 66 KV SUB - STATIONS	10
TABLE 3: RELIABILITY INDICES FOR FY 2017-18	11
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 2021-22)	21
TABLE 8: PAST YEARS' ENERGY SALES GROWTH	21
TABLE 9: PROJECTED ENERGY SALES DURING CONTROL PERIOD (FY 2019-20 TO FY 2021-22).....	23
TABLE 10: ENERGY ALLOCATION FROM CENTRAL GENERATING STATIONS	24
TABLE 11: SUMMARY OF RPO FOR THE MYT CONTROL PERIOD	25
TABLE 12: POWER PURCHASE QUANTUM.....	26
TABLE 13: POWER PURCHASE COST	27
TABLE 14: TOTAL POWER PURCHASE COST FOR THE CONTROL PERIOD	29
TABLE 15: PROPOSED T&D LOSS TRAJECTORY	30
TABLE 16: ENERGY BALANCE.....	30
TABLE 17: ONGOING SCHEMES	32
TABLE 18: NEW SCHEMES.....	33
TABLE 19: PROJECTIONS OF NO. OF EMPLOYEES FOR THE MYT CONTROL PERIOD FY 2019-20 TO FY 2021-22	44

List of Abbreviations

Sr. No	Abbreviations	Descriptions
1.	A&G	Administrative and General/Others
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

The Union Territory of Dadra and Nagar Haveli is situated in the western part of the country and is surrounded by the states of Maharashtra in the south and Gujarat in the north. The total area of territory is 491 sq. kms. There are 72 villages and the capital of territory is Silvassa. The total population as per 2011 census is 3,42,853.

This territory is having 62% tribal population and has wide range of untapped natural resources. The climate of this territory is medium and temperature range is between 25° to 40° C. The monsoon season ranges from June to October, winter season ranges from November to February and summer season from March to May.

There are many tourists' places in this territory. At the same time this is a highly developed industrial area. The liberalized policies of central government has benefited very much in all round development of territory.

The power demand of this territory is met from the central sector Generating Stations of Western Region as there is no power generation in this territory. After liberation the power was fed to this territory through 11 KV feeder of GEB and the demand was up to 500 KVA. Now due to rapid development of the territory the demand of power increased tremendously. The present average demand of this territory is 740 MW to 760 MW and peak demand is 801 MW. Due to rapid industrialization, the power demand is increasing day by day. The U.T. Dadra and Nagar Haveli has already achieved the goal of 100 % electrification by providing electricity to all villages of the territory and also provided 100 % metering to all the categories of the consumers . The electronic tri-vector meters have been provided to all the H.T. and E.H.T. consumers of the territory.

The key duties being discharged by DNHPDCL 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 DNHPDCL, 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.
- 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 distribution system of DNHPDCL consists of 36.88 circuit km of 220 kV double circuit (D/C) lines, 279.90 km of 66 kV D/C lines, 833.70 circuit km of 11 kV lines along with 1102 distribution transformers.

At present, the UT of Dadra & Nagar Haveli gets power from 400/220 kV Substation of PGCIL Vapi, 400/200 kV Kala Substation of PGCIL (DNH).

The power demand is primarily dependent on the HT and LT industrial consumers contributing approximately 97% of the total sales. The high demand from industrial consumers is primarily due to tax holiday benefit extended by the Govt of India in UT of Dadra & Nagar Haveli which has attracted a large number of industries to set up their industry in this region.

Considering the increase in demand from large industries, the demand is likely to increase around 6100 MUs by the end of FY 2018-19. In view of the huge power requirements, DNHPDCL 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.

DNHPDCL has already signed power purchase agreements (PPAs) with NTPC for allocation of power from Barh Super Thermal Power Project (BSTPP). DNHPDCL has also shown its interest for allocation of 50 MW power from the Ultra Mega Power Projects from Ministry of Power.

DNHPDCL has total sub-transmission capacity of 1000 MVA, including 520 MVA in Kharadpada and 420 MVA Khadoli sub-stations. Total installed capacity at 66/11 kV sub-stations are 782 MVA. DNHPDCL is continuously striving for increasing its distribution capacity on account of increasing electricity demand from the HT/EHT consumers.

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) 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 DNHPDCL 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 years.

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



Chapter 2: About the DNH Power Distribution Corporation Limited

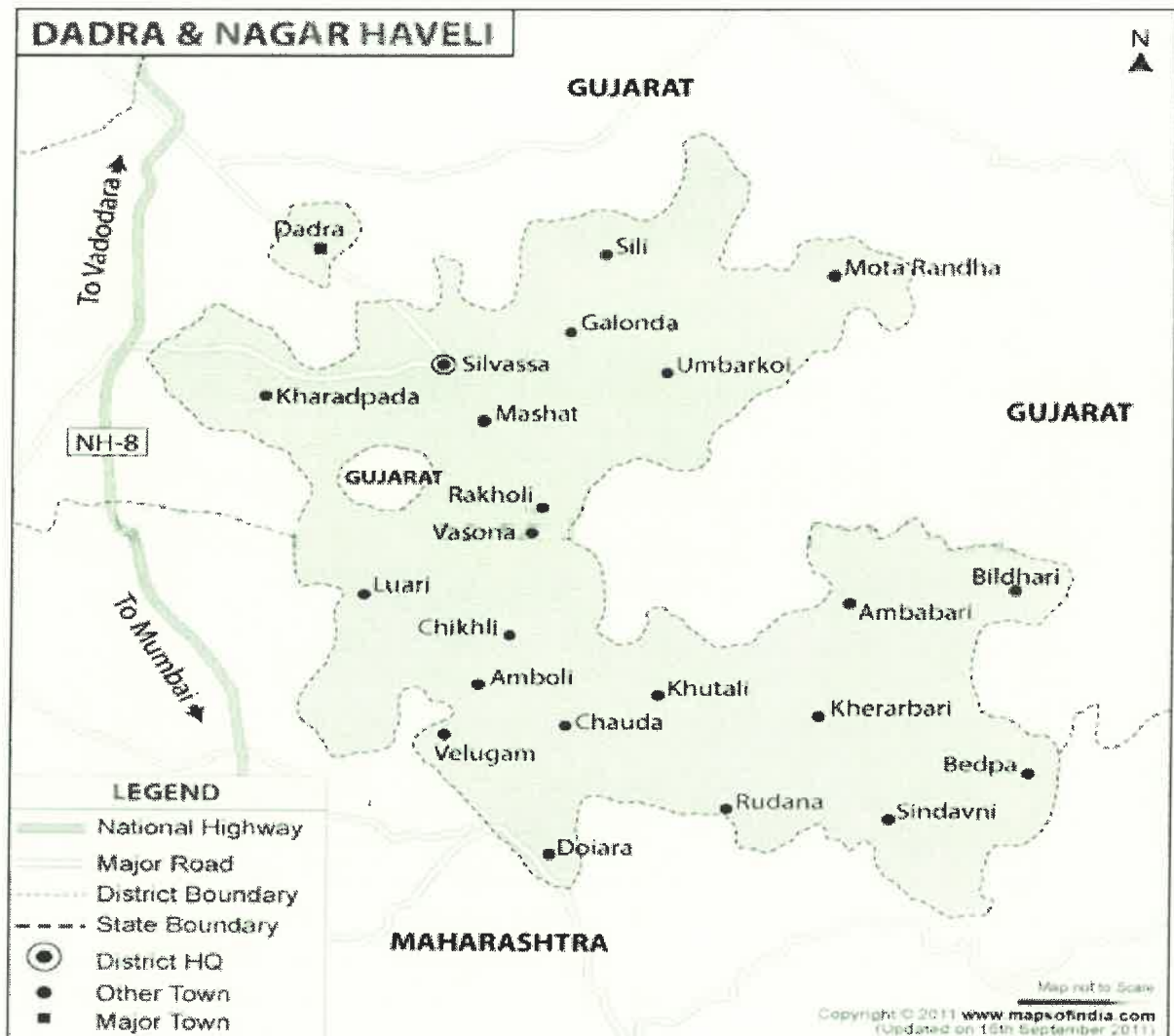
1 Mission of DNH Power Distribution Corporation Limited

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

2 Area Served

Dadra & Nagar Haveli District comprises of an area of 491 sq. Kms.

Figure 1: District map of Dadra & Nagar Haveli



3 Generation Transmission & Distribution

DNHPDCL is mainly engaged in the procurement 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, the UT of Dadra & Nagar Haveli gets power from 400/220 kV PGCIL Vapi, 400/200 kV Kala of PGCIL(DNH).

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.	Description of Line	Length in Circuit (in Kms)
01.	220 KV Line (D/C)	36.88
02.	66 KV Line	279.90
03.	11 KV Line	833.70
04.	L.T Line	1778.50
05.	Distribution Transformer Center	1102 Nos.

Table 2: Existing 66 kV Sub - Stations

Sr.No.	Sub – Station	Capacity
01.	66/11KV Amlu Sub-Station	: 3 x 15 + 2 X 20= 85 MVA
02.	66/11KV Masat Sub-Station	: 3 x 15 + 2 x 20 = 85 MVA
03.	66/11KV Rakholi Sub-Station	: 4 x 20 = 80 MVA
04.	66/11 KV Khadoli Sub-Station	: 2X20 + 10 + 3 x 15 = 95 MVA
05.	66/11KV Dadra Sub-Station	: 5 x 20 = 100 MVA
06.	66/11KV Kharadpada Sub-Station	: 2 x 16 + 15 = 47 MVA
07.	66/11 KV Silli Sub-Station	: 2 x 15 + 1 x 20 = 50 MVA
08.	66/11KV Khanvel Sub-Station	: 2 x15 = 30 MVA
09.	66/11KV Athal Sub-station	: 3 x 20 = 60 MVA
10.	66/11KV Waghdhara Sub-station	: 1 x 15 + 1 x 20 = 35 MVA
11.	66/11KV Piparia Sub-station	: 2 x 20= 40 MVA
12.	66/11KV Velugam Sub-station	: 1x 15 + 1X20 = 35 MVA
13.	66/11KV Kala Sub-station	: 2x 20 = 40 MVA
	Total	782 MVA

4 Reliability Indices

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

Table 3: Reliability Indices for FY 2017-18

Particulars	SAIFI	SAIDI	RI for feeder	CAIDI	RI for Consumer
April-17 to June-17	11.14	862.35	99.34	1390.95	98.94
July-17 to September-17	13.39	715.13	99.46	1317.08	99.01
October-17 to December-17	16.21	828.35	99.37	1121.04	99.15
January-18 to March-18	13.73	685.26	99.47	1244.71	99.04

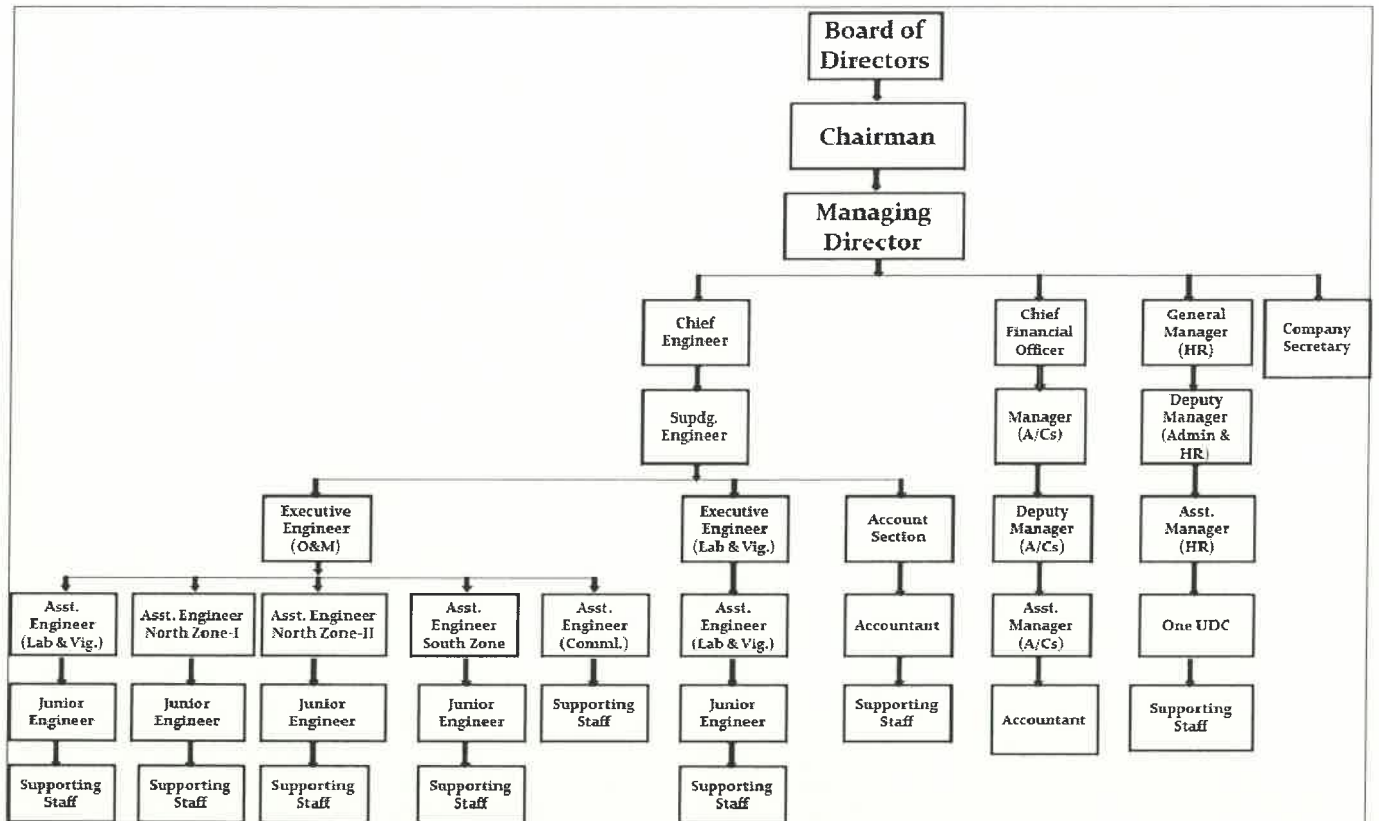
5 Organization Structure: Roles and Responsibilities

DNH Power Distribution Corporation Ltd is part of the Administration of Union Territory of Dadra & Nagar Haveli & headed by the Managing Director/Secretary (Power). Day to day work related to functioning of the Department is looked by the Executive Engineer (Elect.)/ Superintending Engineer/Chief Engineer at Division level.

Under Division there are two Division headed by the Executive Engineers, i.e. 1) Distribution Division and 2) Laboratory And Vigilance. Executive Engineer at Division Office is also helped by Technical Section headed by The Assistant Engineers. Human Resource Section is headed by GM (HRM) and Finance and Accounts Section is headed by Chief Financial 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.

Figure 2: Organisation structure of Dadra & Nagar Haveli Electricity Dept.



6 Power Sector of DNH

The UT of DNH does not have its own power stations and relies on power from Central Generating Stations (NTPC, NPCIL, NSPCL) and other IPPs to meet its demand.

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

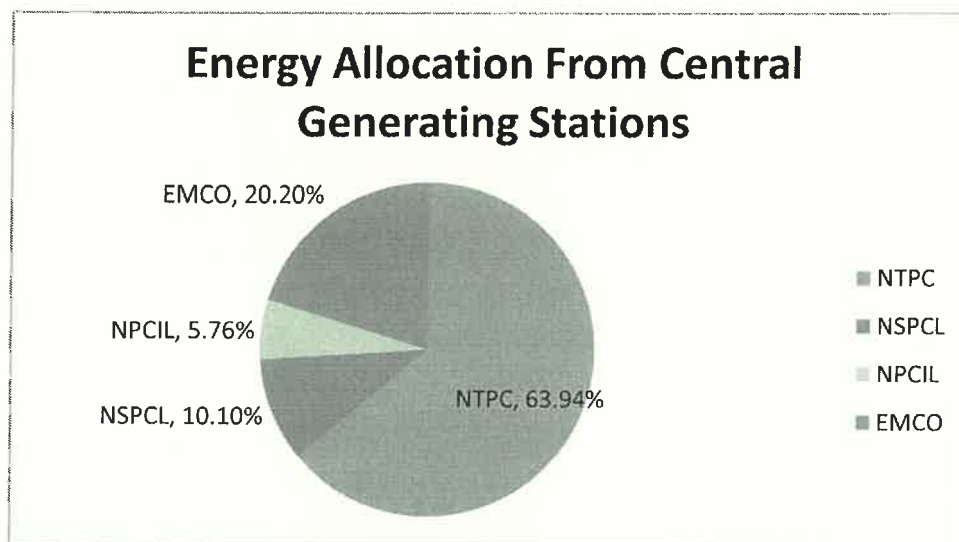


Chart 2: Depicting Increase in Growth of Consumer Numbers

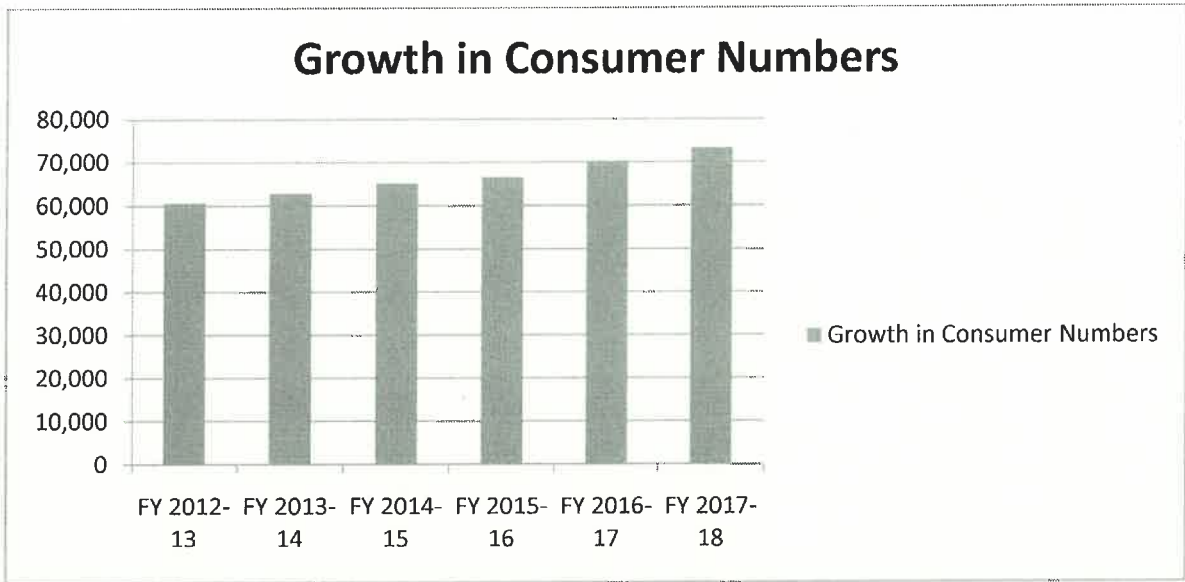


Chart 3: Depicting Consumer Mix Percentage for FY (2017-18)

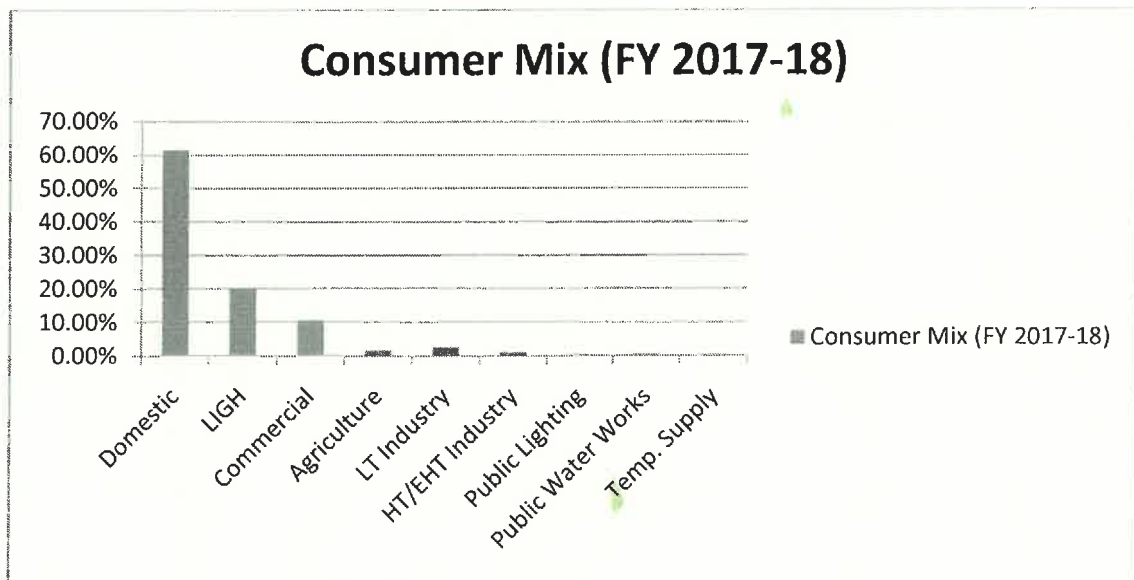


Chart 4: Depicting Consumer Growth Category Wise

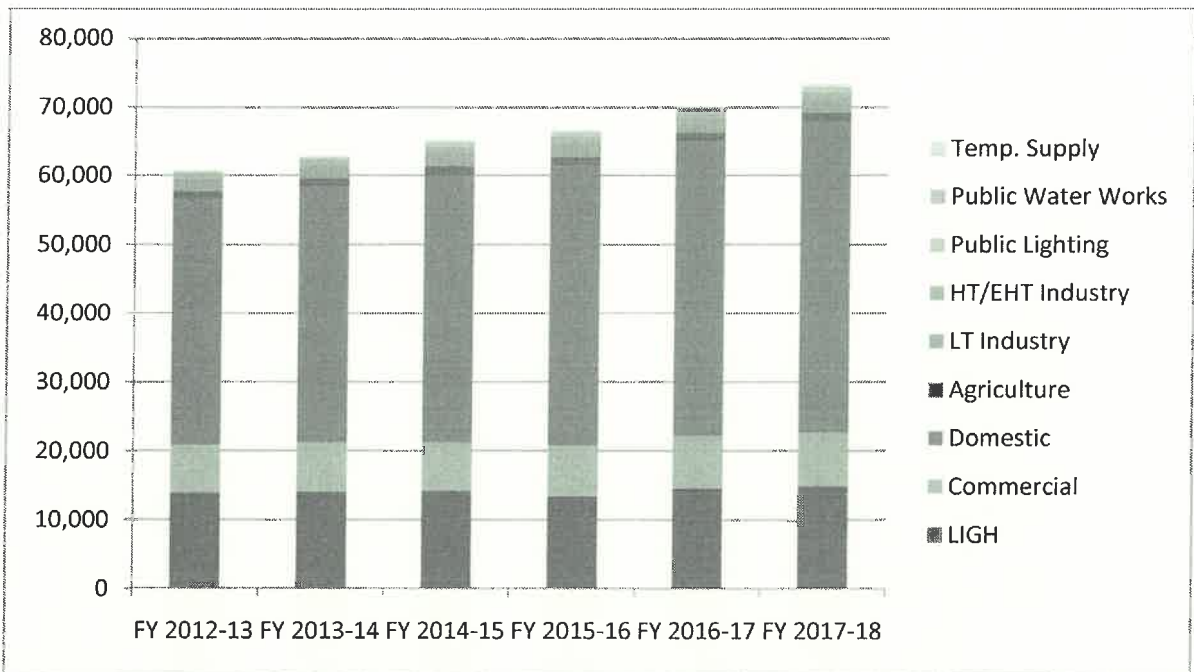


Chart 5: Depicting Year Wise Growth of Energy Sales in (MU)

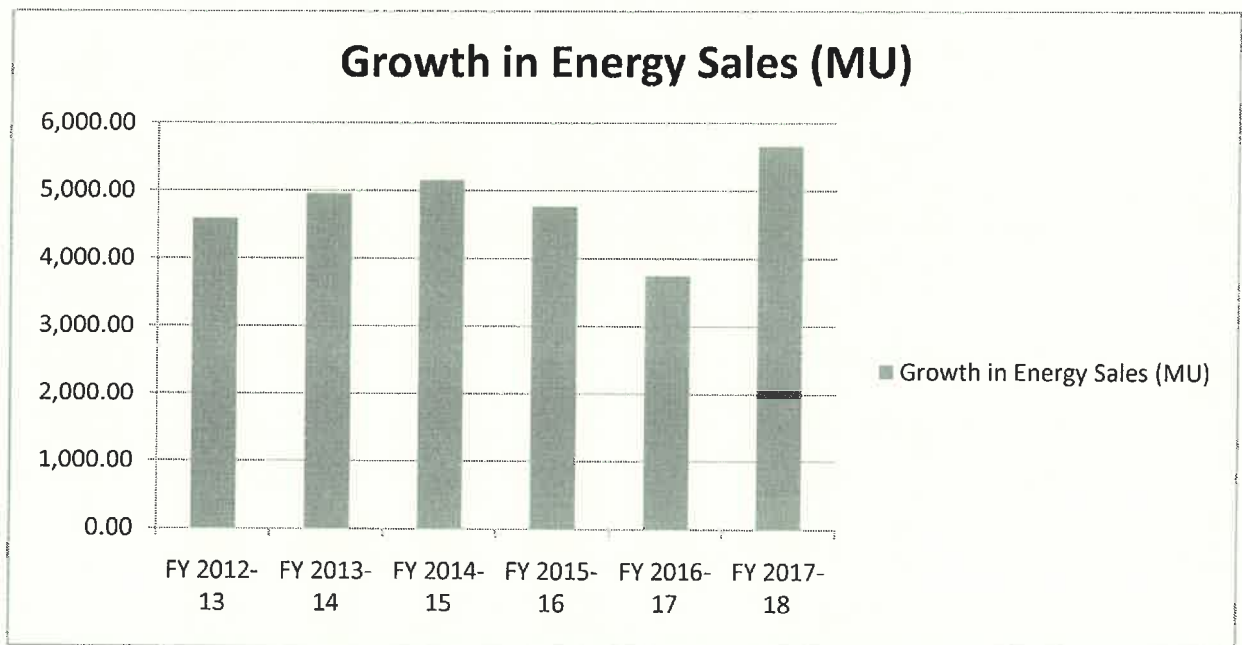
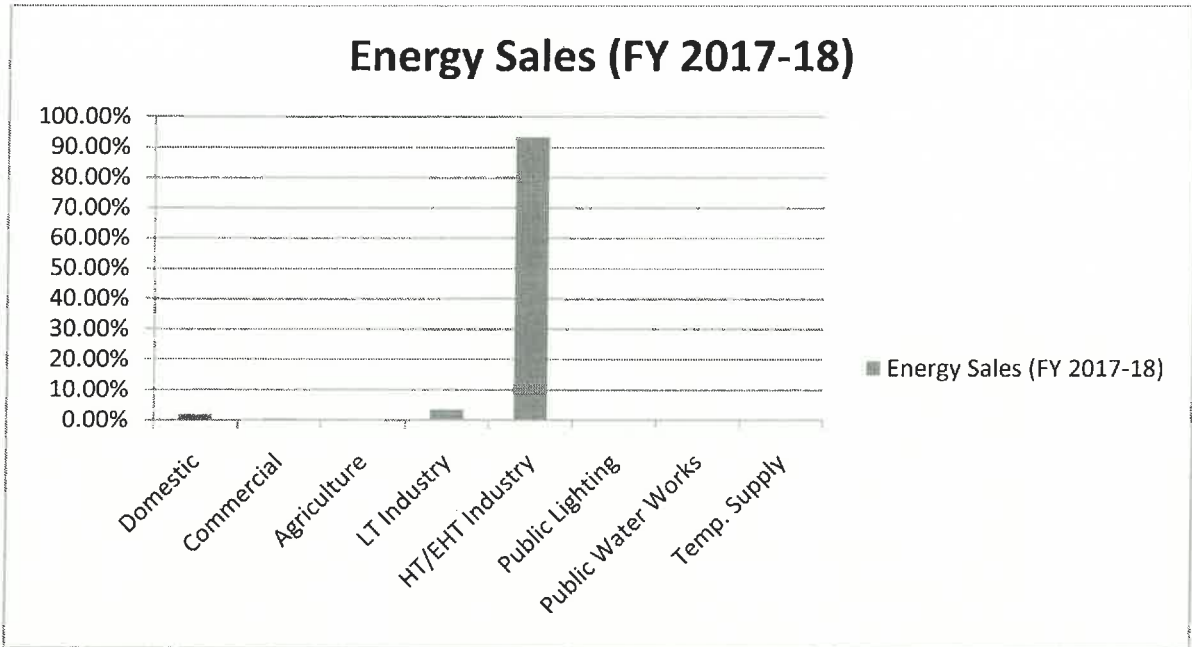


Chart 6: Depicting Percentage of Sales Category Wise



6 Future Power Allocation

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

- a. LARA (2x800 + 3x800 MW) – 25 MW from 2018-19
- b. GADARWARA STPP – Stage – I & II (2x660 + 2x660 MW) – 25 MW from FY 2018-19

7 IT Initiatives

- Implementation of RACE (Revenue Administration through Computerized Energy Billing system) Software.
- Three computerized Collection Counters at Silvassa office.
- One collectioncounter at Khanvel Sub-division office.
- Four nos. ATP (Any Time Payment Machine) KIOSK at Silvassa office.
- Implementation of Online Bill Payment using payment gateway of Billdesk.
- Android App of DNHPDCL for bill payment
- The DNHPDCL is onboard on Bharat Bill Payment System
- Consumer can pay bills by Net-banking, Credit Card, Debit Card, Vodafone m-paisa, Airtel Money, IMPS, RTGS (E-Challan), NEFT etc.
- Another two service ECS and EBPPhave been launched.
- UT Administration has launched CSC (Common Service Centre) in D&NH as identified 'SaralSeva Kendra' at 11Panchayat-Ghars in the UT of D&NH to facilitate electricity bill payment.
- Consumer portal for viewing and payment of bills and other information like bill view, paid history etc.

- SMS Gateway for alert message like bill generation, payment reminder and payment acknowledgement receipt.
- 100% Computerized billing for all category.
- 100% Monthly HT Billing through Remote Metering / Manual Data Collection
- 100 % Monthly LT Industrial Billing through manual Meter reading
- Online software for new applications for release of connection, change of name, reduction of load etc.
- ERP system to be launched

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

- Augmentation of 66/11 Athal sub-station from 2X20 MVA to 3x20 MVA.
- Up gradation and modernization of existing 66/11 KV sub-station at village Khadoli and Masat
- Procurement of fully automatic meter test bench
- Augmentation of transformer 1x15 MVA to 1X 15 + 3x20 MVA at Velugam sub-station

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 DNHPDCL 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 DNHPDCL. 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 ✓ Quality Power Supply ✓ Lower Losses ✓ Efficient Customer Service	WEAKNESS ✓ Ageing Distribution Network ✓ Very Less Own generation ✓ Inadequate Manpower ✓ Less manpower hence no training
External Attributes of the Environment	OPPORTUNITIES ✓ Business Growth due to setting up of new industries	THREATS ✓ Increase in Coal Prices/POC ✓ Unavailability of natural gas ✓ Increasing Avg. CoS – ARR Gap

Strengths:

- **Quality Power Supply:** DNHPDCL has been providing quality and reliable power supply to its consumers with low voltage fluctuations and power supplied at a stable frequency.
- **Lower Losses:** DNHPDCL has been very proficient in reducing the Distribution losses to 4.42% up to 2017-18 over the last few years. DNHPDCL 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. The distribution losses of DNHPDCL are one of the lowest among the power distribution utilities in India.
- **Efficient Customer Service:** DNHPDCL 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:** DNHPDCL 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 DNHPDCL, if adequate and timely steps are not taken.
- **Very Less Own Generation:** The own generation of DNHPDCL is limited to the upcoming solar plants. The DNHPDCL 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 DNHPDCL, the department has to resort to costly short term power purchase to supply uninterrupted power supply to the industries.
- **Inadequate Manpower:** The manpower of DNHPDCL serving the UT of Dadra & Nagar Haveli is inadequate. The ratio of the no. of consumers per employee is much higher as compared to the Distribution companies in other states.

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 Silvassa due to the tax free policy of the Government of India in previous years and presently due to low tariff rate of electricity. As such, DNHPDCL 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. DNHPDCL feels that this shall cause hardship on its consumers.

- **Unavailability of natural gas:** DNHPDCL has share allocation from gas run generation stations like Kawas, Gandhar etc. Due to non-availability of gas to run these stations the DNHPDCL is getting very less energy from these plants and DNHPDCL has to resort to short term purchase of power to meet its demand.
- **Increasing ACS-ARR Gap:** Average Cost of Supply (CoS) of energy at consumer doorstep has been increasing over the years owing to impact of inflation on various cost heads, however corresponding increase in Average Rate of Realisation (ARR) from all category of consumers is not commensurate.

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	75,277.00	85,016.98	106,147.80	93,886.64	96,077.52	101,282.64
LIG/ KutirJyoti	1,110.00	1,150.00	1,422.00	1,343.30	1,477.10	1,486.25
Commercial	21,897.00	28,234.26	35,543.17	24,488.24	25,751.93	26,690.54
Agriculture	3,750.00	4,330.84	5,217.49	5,479.20	5,590.32	5,778.89
LT Industry	74,409.00	87,090.53	106,349.80	109,910.05	113,066.56	115,920.90
HT/EHT Industry	903,736.00	1,081,678.00	1,126,669.00	1,146,822.00	1,143,066.00	1,157,756.00
Public Lighting	1,177.00	1,593.69	2,232.64	2,346.00	2,536.05	2,706.48
Public Water Works	0.00	0.00	1,979.55	2,257.12	2,443.62	2,885.62
Temp. Supply	889.00	2,523.81	3,661.54	2,358.59	2,358.78	2,536.66
Total	1,082,245.00	1,291,618.11	1,389,222.99	1,388,891.14	1,392,367.88	1,417,043.98

To project the load growth for the different consumer categories, CAGR obtained from the actual load growth during the past years has been used. To project the load growth in the domestic, commercial, agriculture and HT category a CAGR of 5 years has been used. For the LT industry and public lighting a CAGR of 3 years has been used. For the public water works category a normalized CAGR of 5% has been used. 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	107475.52	114047.06	121020.42	128420.15	6.11%
LIG/ KutirJyoti	1575.60	1670.32	1770.73	1877.18	6.01%
Commercial	27768.47	28889.93	30056.68	31270.55	4.04%
Agriculture	6300.96	6870.20	7490.87	8167.61	9.03%
LT Industry	119298.99	122775.52	126353.36	130035.47	2.91%
HT/EHT Industry	1216556.08	1278342.49	1343266.91	1411488.70	5.08%
Public Lighting	2885.80	3077.01	3280.88	3498.27	6.63%
Public Water Works	3029.90	3181.40	3340.47	3507.49	5.00%
Total	1484891.32	1558853.93	1636580.32	1718265.43	

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	35,656	37,294	38,970	40773	42835	45205
LIGH	13,870	14,097	14,223	13443	14603	14879
Commercial	7,007	7,070	6,986	7306	7586	7809
Agriculture	1,077	1,125	1,179	1211	1263	1313
LT Industry	1,866	1,912	2,001	2038	2063	2064
HT/EHT Industry	859	872	887	889	895	918
Public Lighting	237	274	310	324	350	374
Public Water Works	0	0	307	340	358	398
Temp. Supply	168	251.0	319.0	334	347	379
Total	60,740	62,895	65,182	66,658	70,300	73,339

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 2021-22)

Consumer Category	FY 18-19	FY 19-20	FY 20-21	FY 21-22	CAGR
	RE	Projected	Projected	Projected	
Domestic	47402	49706	52122	54655	4.86%
LIGH	15089	15303	15519	15739	1.41%
Commercial	7980	8155	8334	8516	2.19%
Agriculture	1366	1421	1479	1539	4.04%
LT Industry	2106	2149	2193	2237	2.04%
HT/EHT Industry	930	943	955	968	1.34%
Public Lighting	410	449	492	539	9.55%
Public Water Works	434	473	516	563	9.04%
Total	75,718	78,599	81,609	84,755	

3 Energy Sales Growth

Table 7 below presents the category-wise energy sales for the past 6 years.

Table 8: Past Years' Energy Sales Growth

Sales	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	70.13	80.64	93.13	101.52	104.46	116.91
Commercial	26.87	29.79	27.05	28.78	30.36	32.72
Agriculture	3.36	4.40	4.31	5.77	6.20	6.50

Sales	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
	Actual	Actual	Actual	Actual	Actual	Actual
LT Industry	161.66	176.52	187.51	200.86	211.70	208.24
HT/EHT Industry	4,322.68	4,661.27	4,865.56	5,172.24	5,368.25	5,515.97
Public Lighting	4.45	5.89	7.76	7.46	8.27	7.97
Public Water Works	0.00	0.00	3.23	3.56	4.55	5.45
Temp. Supply	1.97	2.01	2.60	2.95	3.20	3.39
Total Sales	4,591.12	4,960.53	5,191.15	5,523.14	5,736.99	5,897.14

The DNHPDCL is of the view that the factors affecting the actual consumption of electricity are numerous and often beyond the control of the utility including factors such as Government Policy, economic climate, weather conditions and force majeure events like natural disasters, etc. DNHPDCL, therefore for projecting the category-wise consumption for the MYT Control Period has considered the past growth trends in each of the consumer category including growth trend in number of consumers and connected load.

The energy sales for the Control period have been determined based on CAGR for past years and actual energy sales in various consumer categories. Since the energy sales in each category depends upon a number of factors like growth in economy, climate, Government policies, etc, normalization in sales has been undertaken in order to remove any wide fluctuations.

A CAGR of 6.00% has been considered for estimation of sales in the HT/EHT industry category.

For the domestic consumers, the DNHPDCL has projected the energy sales for MYT control period by applying a 5 year Compounded Annual Growth Rate (CAGR) of 9.94% on the estimated sales for FY 18-19. A 5 year CAGR of 4.02% has been considered for estimation of sales in commercial category.

For the agriculture and LT industry, the DNHPDCL has projected the energy sales for the MYT control period by applying a CAGR of 5.00% and 5.36% on the estimated sales for FY 18-19.

The following Table summarizes category wise projected energy sales for the MYT Control Period for DNHPDCL. As can be observed, the overall energy sales in UT of Dadra & Nagar Haveli are significantly dependent upon LT and HT/EHT industrial consumption.

The DHPDCL submits to the Hon'ble Commission to approve the energy sales forecasted herein.

Table 9: Projected energy sales during Control Period (FY 2019-20 to FY 2021-22)

Sales	FY 18-19	FY 19-20	FY 20-21	FY 21-22	CAGR
	RE	Projected	Projected	Projected	
Domestic	139.62	154.65	171.29	189.72	10.76%
Commercial	36.62	38.09	39.62	41.21	4.02%
Agriculture	7.03	7.38	7.75	8.13	5.00%
LT Industry	212.53	223.93	235.94	248.60	5.36%
HT/EHT Industry	5686.00	6,027.16	6,388.79	6,772.11	6.00%
Public Lighting	5.77	6.21	6.68	7.19	7.65%
Public Water Works	4.86	5.10	5.35	5.62	5.00%
Total Sales	6,092.41	6,462.50	6,855.42	7,272.59	



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

Dadra & Nagar Haveli has firm and infirm allocated share in Central Sector Generating Stations (CSGS) of NTPC, Nuclear Power Corporation of India Ltd (NPCIL), and NTPC Sail Power Company Ltd (NSPCL).

The power availability for FY 18-19 has been estimated based on the revised allocation issued by the Western Region Power Committee (WRPC) vide No.WRPC/Comml-I/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

(MW)

Name of the plant	Weighted average Infirm allocation	Weighted Average Firm allocation	Weighted average total allocation
KSTPP	48.60	0.00	48.60
KSTPS -3	18.80	2.20	21.00
VSTPP-I	35.13	5.00	40.13
VSTPP-II	26.50	4.00	30.50
VSTPP- III	26.50	6.00	32.50
VSTPP- IV	37.59	5.55	43.14
KAWAS	56.22	25.00	81.22
GGPP	56.73	2.00	58.73
Sipat – I	74.44	9.00	83.44
Sipat – II	25.13	4.00	29.13
KHSTPP – II	3.50	0.00	3.50
Mauda I (MSTPS)	37.59	5.55	43.14
VSTPP-V	18.80	5.55	24.35
Mauda II	49.62	8.60	58.22
Solapur	24.82	10.79	35.61
NPCIL – KAPS	13.93	2.00	15.93
NPCIL - TAPP 3&4	34.13	7.00	41.13
Total	588.01	102.24	690.25
NSPCL Bhilai		100	100.00
EMCO Energy Ltd. (GMR Group)		200.00	200.00

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

Power purchase quantum from the NTPC stations for the MYT Control Period has been calculated based on the installed capacity of each plant and by applying the average of previous two years PLF to calculate the plant-wise gross generation. For NSPCL, an average PLF of 90% has been considered.

For gas based generating stations i.e. Kawas (KGPP) and Gandhar (GGPP) weighted average PLF of the last two years have been taken into account.

Auxiliary consumption of 9% and 3% has been considered for coal and gas based generating stations, respectively.

Additionally, the DNHPDCL is procuring power from EMCO Energy Limited (GMR) power plant in Maharashtra. DNHPDCL had signed a seven year PPA with EMCO Energy Limited (GMR) and the same will come to an end by FY 2019-20. Hence, DNHPDCL will receive 200 MW power from EMCO in during the FY 2018-19 and FY 2019-20. For projection of power purchase from EMCO, DNHPDCL has considered 90% PLF and 9% auxiliary consumption.

The DNHPDCL is in the process to sign long term PPA with the Solar Energy Corporation of India (SECI) for receiving Round The Clock (RTC) power from the FY 2020-21. The DNHPDCL will be signing the PPA for procuring 200 MW power from SECI which shall comprise of solar and wind energy. This will also help the DNHPDCL in meeting its RPO obligation during FY 2020-21 and FY 2021-22. Additionally, DNHPDCL will be getting 50 MW of wind energy from SECI from FY 2019-20 for which the agreement has already been signed. Further, the DNHPDCL has already installed 4.585 MW of solar plants in its territory for generation of solar energy out of which 4.1 MW is ground mounted and 485 KW is solar rooftop. A summary of the RPO obligation to be met by the DNHPDCL during the MYT Control Period has been given in the table below:

Table 11: Summary of RPO for the MYT Control Period

Description	FY 2019-20	FY 2020-21	FY 2021-22
Sales within State (MU)	6,462.50	6,855.42	7,272.59
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)	743.19	966.61	1236.34
Solar	303.74	418.18	581.81
Non-Solar	439.45	548.43	654.53
RPO Compliance (Procurement and own generation)	180.43	1932.43	1932.43
Solar	5.23	881.23	881.23
Non-Solar	175.20	1051.20	1051.20
RPO Compliance (REC certificate purchase)	562.75	0.00	0.00
Solar	298.50	0.00	0.00
Non-Solar	264.25	0.00	0.00

For computing the power availability at the periphery, 3.66% external transmission losses have been applied on the gross power purchase for the MYT Control Period.

Table 12 below depicts the station wise power purchase for FY 18-19 and FY 2019-20 to FY 2021-22.

Table 12: Power Purchase Quantum

(MU)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
NTPC Stations				
KSTPS	342.86	337.99	337.99	337.99
KSTPS 3	149.43	146.06	146.06	146.06
VSTPP-I	279.49	282.20	282.20	282.20
VSTPP-II	216.79	214.47	214.47	214.47
VSTPP- III	235.03	228.53	228.53	228.53
VSTPP- IV	314.96	303.35	303.35	303.35
KGPP	387.01	417.77	417.77	417.77
GGPP	301.49	332.70	332.70	332.70
Sipat-I	523.18	491.69	491.69	491.69
Sipat-II	187.46	171.66	171.66	171.66
Mauda	181.63	183.28	183.28	183.28
VSTPS-V	171.80	164.99	164.99	164.99
Mauda 2	372.70	394.50	394.50	394.50
Solapur	219.95	241.25	241.25	241.25
LARA	83.54	169.40	169.40	169.40
Gadarwara	83.54	169.40	169.40	169.40
KHSTPP-II	19.51	19.52	19.52	19.52
Subtotal - NTPC	4070.37	4268.77	4268.77	4268.77
NSPCL - Bhilai	726.22	758.93	758.93	758.93
NPCIL				
KAPS	85.30	116.09	116.09	116.09
TAPS	256.76	249.86	249.86	249.86
Subtotal	342.06	365.95	365.95	365.95
Others				
EMCO Energy Ltd. (GMR Group)	1475.60	1529.50	0.00	0.00
Subtotal	1475.60	1529.50	0.00	0.00
Power purchase from Other Sources				
Indian E. Exchange/Bilateral	38.58	0.00	104.00	546.00
UI	55.16	0.00	0.00	0.00
Solar	5.23	5.23	5.23	5.23
Non Solar	0.00	175.20	175.20	175.20
Solar REC	0.00	0.00	0.00	0.00
Non Solar REC	0.00	0.00	0.00	0.00
Solar (SECI)	0.00	0.00	876.00	876.00
Wind (SECI)	0.00	0.00	876.00	876.00
Subtotal	98.97	180.43	2036.43	2478.43

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
Total Power Purchase	6713.22	7103.58	7430.08	7872.08

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 MYT Control Period has been projected considering a 10% escalation over the estimated fixed cost for various stations for FY 18-19.
- Variable cost for each NTPC generating stations for the Control Period has been projected based on the increase in the actual average variable cost per unit of FY 18-19.
- 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 NTPC-SAIL Bhilai unit 1 & 2, fixed an escalation of 10% has been taken to project the fixed cost for the Control Period and for projecting the variable cost the increase in the actual average variable cost per unit has been taken into consideration.
- For power purchase from renewable energy sources, for the Control Period, the DNHPDCL has outsourced the maintenance cost of the solar plants to BHEL. For the purchase of RTC power from SECI a rate of Rs. 4.70 per unit has been considered with a 5% escalation every year for projecting the cost during the Control Period. For the purchase of 50 MW wind power a rate of Rs. 2.59 per unit has been considered for the Control Period.

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 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
NTPC Stations				
KSTPS	70.49	73.48	76.85	80.48
KSTPS 3	41.33	43.72	46.59	49.70
VSTPP-I	66.81	67.91	69.08	70.57
VSTPP-II	47.68	47.20	47.88	48.76
VSTPP- III	59.84	60.19	62.00	64.10

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
VSTPP- IV	101.58	100.10	105.87	112.18
KGPP	144.43	156.75	162.24	168.28
GGPP	110.35	136.89	149.62	163.54
Sipat-I	149.88	154.62	165.36	177.02
Sipat-II	52.58	54.28	58.44	62.95
Mauda	97.16	103.80	112.60	122.17
VSTPS-V	55.53	57.09	59.99	63.21
Mauda 2	152.17	172.16	187.38	203.96
Solapur	126.28	143.50	155.83	169.23
LARA	26.82	48.79	48.79	48.79
Gadarwara	30.74	56.75	56.75	56.75
BARH	0.00	0.00	0.00	0.00
Dhuwaran	0.00	0.00	0.00	0.00
Kharagaon	0.00	0.00	0.00	0.00
FSTPS	0.00	0.00	0.00	0.00
KhSTPS I	0.00	0.00	0.00	0.00
RSTPS	0.00	0.00	0.00	0.00
TSTPS	0.00	0.00	0.00	0.00
KHSTPP-II	6.34	6.12	5.97	5.89
Subtotal - NTPC	1338.72	1483.37	1571.23	1667.58
NSPCL - Bhilai	287.75	299.23	323.38	349.56
NSPCL - Rourkela	0.00	0.00	0.00	0.00
NPCIL				
KAPS	26.88	33.67	33.67	33.67
TAPS	79.37	72.49	70.47	68.52
Subtotal	106.25	106.15	104.14	102.18
Others				
RGPPL	0.00	0.00	0.00	0.00
Tata Power - Haldia		0.00	0.00	0.00
EMCO Energy Ltd. (GMR Group)	734.76	769.58	0.00	0.00
Subtotal	734.76	769.58	0.00	0.00
Power purchase from Other Sources				
Indian E. Exchange/Bilateral	13.08	0.00	46.80	245.70
UI	12.70	0.00	0.00	0.00
Solar	0.00	0.00	0.00	0.00
Non Solar	0.00	45.38	45.38	45.38
Solar REC	0.00	44.78	0.00	0.00
Non Solar REC	0.00	39.64	0.00	0.00
Solar (SECI)	0.00	0.00	432.31	453.92

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
Wind (SECI)	0.00	0.00	432.31	453.92
Subtotal	25.78	129.79	956.79	1198.92
Total Power Purchase	2493.26	2788.12	2955.53	3318.24

3 Transmission and Other Charges

Transmission charges payable to PGCIL are based on the total capacity allocation in the transmission network. DNHPDCL has a mix of firm and infirm capacity allocation from various Central Generating Stations which is revised by the Ministry of Power at regular intervals. Therefore, considering the changing capacity allocation, DNHPDCL has estimated the transmission charges. For the MYT Control Period the transmission charges payable to the ED-DNH (Transmission Division) have also been considered by the DNHPDCL.

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, DNHPDCL 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

(Rs. Cr.)

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
	RE	Projected	Projected	Projected
Power Purchase Cost	2493.26	2788.12	2955.53	3318.24
PGCIL CHARGES	292.40	307.03	322.38	338.50
POSOCO	0.65	0.68	0.72	0.75
WRPC	0.00	0.00	0.00	0.00
Reactive charges	0.19	0.20	0.21	0.22
MSTCL	0.00	0.00	0.00	0.00
Intra-state transmission charges	42.84	44.98	47.23	49.59
Total Power Purchase Cost	2829.35	3141.01	3326.07	3707.31

Chapter 6: T&D Loss Trajectory and Energy Balance

The DNHPDCL has achieved a significant reduction in transmission & distribution losses. The DNHPDCL would like to submit that the system improvement works executed every year under the plan schemes as well as increase in energy sales quantum at higher voltages has resulted in the reduction of T & D losses.

DNHPDCL has achieved T&D loss level of 4.42% for the FY 2017-18 as against the target of 4.70% given by the Hon'ble Commission in the Tariff Order for the FY 2017-18. Reduction of T&D below 4.42% will involve significant amount of capital expenditure and it is DNHPDCL's endeavour 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

Particulars	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	Actual	RE	Projected	Projected	Projected
T&D Losses	4.42%	4.40%	4.30%	4.20%	4.10%

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	Proj.	Proj.	Proj.
Sales	5676.30	6092.41	6462.50	6855.42	7272.59
Open Access Sales	220.84	0.00	0.00	0.00	0.00
Less: Energy Savings	0.00	0.00	0.00	0.00	0.00
Total Sales	5897.14	6092.41	6462.50	6855.42	7272.59
Add: Losses	272.93	280.40	290.37	300.55	310.92
T&D Losses	4.42%	4.40%	4.30%	4.20%	4.10%
Energy Required at Periphery	6170.07	6372.81	6752.88	7155.97	7583.52
Add: Sales to common pool consumer	43.60	96.91	90.90	2.37	0.64
Less: Own Generation	5.23	5.23	5.23	5.23	5.23
Total energy requirement at state periphery	6208.44	6464.49	6838.55	7153.10	7578.92
Less: Energy Purchased through UI at Periphery	215.38	55.16	0.00	0.00	0.00
Less: Purchase from Traders	0.00	0.00	0.00	0.00	0.00
Less: Open Access Purchase	227.95	0.00	0.00	0.00	0.00
Total Energy Required at Periphery	5765.10	6409.33	6838.55	7153.10	7578.92
Transmission loss	300.80	243.49	259.80	271.75	287.93
Transmission loss(%)	4.96%	3.66%	3.66%	3.66%	3.66%
Total Energy to be purchased	6065.90	6652.82	7098.35	7424.85	7866.85
Total Energy requirement from tied up sources & UI at generator end	6281.28	6707.98	7098.35	7424.85	7866.85

Particulars	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	Actual	RE	Proj.	Proj.	Proj.
Total Energy requirement in UT including Open Access	6509.23	6707.98	7098.35	7424.85	7866.85

Chapter 7: Capital Investment Plan

1 Capital Investment plan of DNHPDCL

As has been discussed above, the DNHPDCL is engaged in the procurement, transmission and distribution of electricity to the various consumer categories in the Union Territory of Dadra and Nagar Haveli. Apart from the 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 DNHPDCL in order to effect better planning, budgeting and monitoring at macro & micro levels. The schemes are divided under the following two categories:

- A. Ongoing Schemes
- B. New Schemes

A. Ongoing Schemes

The ongoing scheme has been given in the table below:

Table 17: Ongoing Schemes

Sr.No.	Name of Scheme	Total estimated amount	Proposed Expenditure in Lakh.			
		(Lakh)	2018-19	2019-20	2020-21	2021-22
1	Underground cabling with establishment of 66/11 KV substation in SMC area, Silvassa town	13900.00	7500.00	6400.00	0.00	0.00

1. **Name of Scheme: Underground cabling with establishment of 66/11 KV substation in SMC area, Silvassa town.**

Cost Rs.13900.00 Lakh.

Salient Features:

The main features of the scheme are:

- 66KV, 2 x 20MVA, GIS SUB-Station.
- Underground Cabling of the Silvassa SMC Area.

On implementation of the said scheme, the Department will be able to reduce the power interruption, line losses and ensure beautification of city areas of Silvassa.

B. New Schemes

Table 18: New Schemes

Sr.No.	Name of Scheme	Total estimated amount for MYT Control Period	Proposed Expenditure in Lakh.		
		(Lakh)	2019-20	2020-21	2021-22
1	A scheme for Establishment of new 66/11 KV Sub Station at village Sayali with associated 66 KV underground line	1944.00	1000.00	944.00	0.00
2	A scheme for augmentation of 66/11 KV Kharadpada substation by adding 20 MVA Transformer	357.00	357.00	0.00	0.00
3	A scheme for Replacement of ACSR Panther conductor by High Capacity TACSR conductor of 66 KV Kharadpada – Athal substation	212.90	212.90	0.00	0.00
4	Scheme for integrated solution for various business processes such as billing finance HR and projects. (ERP SOFTWARE)	325.00	250.00	75.00	0.00
5	New 66 kV line from 220/66 kV Wagchipa Sub station	2100.00	2100.00	0.00	0.00
6	Charging station for e-vehicle	200.00	200.00	0.00	0.00
7	Smart Metering Projects	4800.00	1000.00	2000.00	1800.00
8	Upgradation of existing Dudhani 11 KV feeder on Areal Bunch Conductor (ABC) along with mono-pole tower (Approx. 50 km).	1700.00	700.00	1000.00	0.00
9	Upgradation of existing Mandoni 11 KV feeder on Areal Bunch Conductor (ABC) on mono-pole tower (Approx. 40 km).	500.00	500.00	0.00	0.00
10	Official Assets, estd. of data centre, call centre, website, zym etc.	500.00	200.00	200.00	100.00
11	Capex for Energy Efficiency measures	600.00	200.00	200.00	200.00
12	Capacitor placement at each substation	260.00	260.00	0.00	0.00
13	Normal development works.	1500.00	500.00	500.00	500.00
14	A scheme for Replacement of ACSR Panther conductor by High Capacity TACSR conductor of 66 KV line	2500.00	1000.00	1000.00	500.00

Sr.No.	Name of Scheme	Total estimated amount for MYT Control Period	Proposed Expenditure in Lakh.		
		(Lakh)	2019-20	2020-21	2021-22
15	Augmentation of Wagdhara Sub station (1X15+20) MVA to (1X15+2X20) MVA along with 66 KV bay and relay panel	357.00	357.00	0.00	0.00
16	New Sub station at Dadra 66/11(2X20) MVA GIS Sub station	1944.00	1000.00	944.00	0.00
17	Augmentation of 66/11 KV Piparia Sub station (2X20+1X20) MVA	357.00	357.00	0.00	0.00
18	Extension of 66 KV line with higher capacity conductor (TACSR) from 220 KV Khadoli S/s to 66 KV Kala - Velugam S/s common point	600.00	0.00	600.00	0.00
19	Fully automatic computerised meter test bench for 20 position (with existing available ref. standard meter)	200.00	200.00	0.00	0.00
20	Portable single phase reference standard meter for site testing of single phase meters (05 nos.)	7.50	7.50	0.00	0.00
21	Portable three phase reference standard meter for site testing of three phase meters (02 nos.)	24.00	24.00	0.00	0.00
22	Software for Meter Data Acquisition Software (MDAS).	70.00	70.00	0.00	0.00
23	Total	21058.40	10495.40	7463.00	3100.00

- Name of Scheme: A scheme for Establishment of new 66/11 KV Sub Station at village Sayali with associated 66 KV underground line.**

Cost Rs.1944.00 Lakh.

Salient Features:

In the northern part of Union Territory of Dadra & Nagar Haveli sub station at Rakholi, Masat&Silli S/s (Athola village) have capacity of 80 MVA, 85 MVA and 50 MVA respectively with 66 KV consumers. All these three sub station are now fully loaded and there is no scope for further expansion / augmentation. The load in above area and surrounding area has been increasing as there is a rush of Industries in DNH and many important medium and small-scale units are coming up in the area of Rakholi, Masat and Silli S/s and other village of Rakholi, Samarvarnipatelad. The existing Rakholi S/s is having installed capacity of 80 MVA, peak load is expected to reach 85% and 4 66 KV consumers are being fed from Rakholi S/s having total contract demand of about 85 MVA.

Further, there is about 10 MVA load of HT connection pending in the above area. By establishing Sayalisub station the pending load can be catered as well as loading on existing Rakholi S/s will also be reduced and maintained to 70% along with meeting N-1 contingency.

By establishment of 66/11 KV GIS substation at Sayali 11 KV HT line network feeding from Rakholi, Masat and Silli sub station will reduce and quality of power supply will improve and interruptions as well as T & D loss will also reduce.

2. Name of Scheme: A scheme for augmentation of 66/11 KV Kharadpada substation by adding 20 MVA Transformer.

Cost Rs.357.00 Lakh.

Salient Features:

In the northern part of Union Territory of Dadra & Nagar Haveli substation at 66/11 KV Kharadpada substation has present installed capacity is $2 \times 16 + 20 = 52$ MVA. The present peak demand has reached 45 MVA i.e. 87% and further loading on the transformer is not advisable.

A new substation at village Naroli near check post was to be established but since the Government land is not available in the surrounding area, it has been decided that proposal for establishment of new 66/11 KV substation may be dropped and decided to augment the capacity of existing 66/11 KV Kharadpada substation.

At Kharadpada substation one no. of 66 KV bay is presently available for installation of additional transformer as 66 KV consumer M/s Bhilasha Industries is now shifted to 220 KV level so their 66 KV bay is spared and same can be utilized for 66/11 KV 20 MVA transformer.

According a scheme proposal for adding of new 66/11 KV 20 MVA transformer has been prepared with provision of 11 KV incoming bus-coupler and 5 feeder VCB with associated work as per detailed estimate.

By adding this new 20 MVA transformer, the present loading on existing transformer will reduce and also be able to cater to future pending demand of the area.

3. Name of Scheme: A scheme for Replacement of ACSR Panther conductor by High Capacity TACSR conductor of 66 KV Kharadpada – Athal substation.

Cost Rs.212.90 Lakh.

Salient Features:

In the northern part of Union Territory of Dadra & Nagar Haveli 66 KV substation at Athal having capacity of 3×20 MVA. The 66 KV supply of Athal substation is fed by LILO of single circuit 66 KV Kharadpada – Masat line with ACSR Panther conductor. The current carrying capacity of ACSR

Panther conductor is 525 Amp. This 66 KV line is catering load of Athal S/s and also part load of Masat S/s. The total connected load at Athal is $3 \times 20 = 60$ MVA and Masat S/s $2 \times 15 + 20 = 50$ MVA plus 66 KV consumer load of 9.8 MVA.

During the last one-year maximum load recorded at Athal S/s incoming is 450 to 490 Amp i.e. 93 % capacity has already been reached and now some of the load is also being transferred from existing Kharadpada S/s to Athal S/s as well as about 10 MVA new load is also anticipated on Athal S/s. Since 66 KV incoming line is single circuit LILO line with ACSR Panther, current carrying capacity of ACSR Panther conductor is 525 Amp, which has already crossed 93% loading of its capacity. Hence, the scheme / proposal is prepared for replacement of ACSR Panther conductor by High Capacity TACSR conductor of 66 KV Kharadpada – Athal substation. The High capacity TACSR conductor is having capacity of 800 Amp, which will be sufficient to cater to the anticipated load of Athal substation as well as some of Masat S/s load.

4. Name of Scheme: Scheme for integrated solution for various business processes such as billing finance HR and projects. (ERP SOFTWARE).

Cost Rs.325.00 Lakh.

Salient Features:

The objective of the project is to improve the efficiency of DNHPDCL facilitating timely flow of data between different offices and elimination of the need for the physical submission.

The envisaged solutions for the DNHPDCL are listed below:

- Office management System (OMS)
 - Inward Outward Register Maintenance System (IORMS)
 - Human Resource Management System (HRMS)
 - Finance & Accounts Management System (FAMS)
 - Visitor Management System (VMS)
 - Vendor/Contractor Management System (VCMS)
 - Purchase & Store Management System (PSMS)
 - Document Management System (DMS)
 - Estimate/Tender Management System (EMS)
 - User management System (UMS)

- Consumer Services management System
 - Consumer Online Application System
 - Billing Management System
 - Consumer Complaint Management System

- Technical Services Management System
 - Operation & Maintenance management System

- Asset management System
- Grievance System

5. Name of Scheme: New 66 kV line from 220/66 kV Wagchipsub station.

Cost Rs.2100.00 Lakh.

Salient Features:

The proposal for establishment of 220/66 KV 2X160 MVA substation at Wagchipsa in UT of Dadra & Nagar Haveli by LILO of both circuit of Vapi-Khadoli 220 KV D/C line has been agreed in the 33rd Standing Committee on Power System Planning in WR.

Necessary planning has to be done for evacuation of power from the new 220/66 KV Wagchipsa substation to cater load on the existing 66 KV Substation's i.e. 66 KV Amlis, 66 KV Dadra S/s, 66 KV Sili S/s and 66 KV Masat S/s. The work of laying of 66 KV lines has to be done by the DNHPDCL so that power can be evacuated and connect to various substations of the DNHPDCL. DNHPDCL has prepared estimates for construction of 66 KV transmission line on D/C & Multi Circuit tower using high capacity TACSR conductor by connecting with single core cable from the proposed D/C & M/C towers line to the 66 KV feeder gantries of new established 220KV 2X160 MVA substation at Wagchipsa. These D/C & M/C tower line further lead to connect the existing 66 KV M/C T/L line passing near APJ Abdul Kalamcollege at village Dokmardi and existing 66 KV D/C line of Amlis-Dadra line.

6. Name of Scheme: Charging station for e-vehicle.

Cost Rs.200.00 Lakh.

Salient Features:

The UT of Dadra and Nagar Haveli is promoting the use of e-vehicle and therefore it has been decided that a charging station for the e-vehicle shall be established by the DNHPDCL. This will ensure the promotion of green power in the UT of D&NH. The Administration of UT of D&NH is also in the process to procure two vehicles (e-bus).

7. Name of Scheme: Smart Metering Projects.

Cost Rs.4800.00 Lakh.

Salient Features:

The DNHPDCL envisages to implement the scheme under the flagship program of the GoI i.e. the IPDS scheme. The Power Finance Corporation (PFC) shall be the nodal agency for operationalization and implementation of the scheme under the overall guidance of the MOP.

8. Name of Scheme: Upgradation of existing Dudhani 11 KV feeder on Areal Bunch Conductor (ABC) along with mono-pole tower (Approx. 50 km).

Cost Rs.1700.00 Lakh.

Salient Features:

Presently Dudhanipatelad is fed through old single 11 KV feeder extended with rabbit conductor. The total length of the feeder is more than 50 kms. It feeds power to eight to ten villages of Dudhani area which is 20 Kms. away from Khanvel. Looking at above facts the voltage of that particular area is not maintained properly and looking at the expansion of tourism activities in that area it is proposed to erect one more 11 KV feeder with dog conductor on Areal Bunch Conductor (ABC) along with mono-pole tower. This will also help in reduction of line losses.

9. Name of Scheme: Upgradation of existing Mandoni 11 KV feeder on Areal Bunch Conductor (ABC) on mono-pole tower (Approx. 40 km).

Cost Rs.500.00 Lakh.

Salient Features:

Presently Mandoni and Sindonipatelad is fed through old single 11 KV feeder extended with rabbit conductor. The total length of the feeder is more than 40 kms. It feeds power to four to five villages of Mandoni and Sindoni area which is 15 to 20 Kms. away from Khanvel. Looking at above facts the voltage of that particular area is not maintained properly and looking at the expansion of tourism activities in that area it is proposed to erect one more 11 KV feeder with dog conductor on Areal Bunch Conductor (ABC) along with mono-pole tower. This will also help in reduction of line losses.

10. Name of Scheme: Official Assets, estd. of data centre, call centre, website, zym etc.

Cost Rs.500.00 Lakh.

Salient Features:

The DNHPDCL intends to establish Data Centre, Call Centre, Upgradation of Website, Cafeteria etc. All these are important for the customer welfare as well as the modernization and smooth

functioning of the DNHPDCL. Further, the call centre is mandatory as per the directive of the Hon'ble Commission.

11. Name of Scheme: Capex for Energy Efficiency measures.

Cost Rs.600.00 Lakh.

Salient Features:

The DNHPDCL intends to install LED lights and 5 star agriculture pumps under the scheme for which funding shall be provided by the Bureau of Energy Efficiency (BEE).

12. Name of Scheme: Capacitor placement at each substation.

Cost Rs.260.00 Lakh.

Salient Features:

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

13. Name of Scheme: Normal development works.

Cost Rs.1500.00 Lakh.

Salient Features:

The following works are being taken up under this Scheme:-

1. Erection /Extension of HT Line Works
2. Erection /Extension of LT Line Works
3. Erection of Distribution Transformer Centre
4. Release of Service Connections to various categories of consumers.
5. System improvement works.
 - (a) Strengthening of Electric lines.
 - (b) Augmentation of Transformer Centre.
 - (c) Providing capacitor Banks
 - (d) Feeder bifurcation and 11 KV link line at new 66 KV sub-stations.

Works are under progress in at all Sub Divisional areas.

14. Name of Scheme: A scheme for Replacement of ACSR Panther conductor by High Capacity TACSR conductor of 66 KV line.

Cost Rs.2500.00 Lakh.

Salient Features:

The capacity of the TACSR is more than the normal ACSR conductor which results in less impedance resulting into low line losses. It is therefore proposed to replace the existing ACSR conductor with the TACSR conductor in all 66 KV Substations.

15. Name of Scheme: Augmentation of Wagdhara Sub station (1X15+20) MVA to (1X15+2X20) MVA along with 66 KV bay and relay panel.

Cost Rs.357.00 Lakh.

Salient Features:

As of now the loading on the S/s is 85% of the installed capacity. So it is required to augment the S/s by enhancing the capacity of 20 MVA looking at the future load growth in the area. It is also submitted that loading upto 80% of the power transformer capacity is considered safe loading. Hence, capacity augmentation of the Sub station is proposed.

16. Name of Scheme: New Substation at Dadra 66/11(2X20) MVA GIS Sub station.

Cost Rs.1944.00 Lakh.

Salient Features:

As of now the loading on the S/s is 90% of the installed capacity. Further, the control room building at the S/s is also old. So it is required to establish a new GIS S/s in place of the existing S/s.

17. Name of Scheme: Augmentation of 66/11 KV Piparia Sub station (2X20+1X20) MVA.

Cost Rs.357.00 Lakh.

Salient Features:

As of now the loading on the S/s is 80% of the installed capacity. So it is required to augment the S/s by enhancing the capacity of 20 MVA looking at the future load growth in the area. By augmenting the sub station the pending load can be catered along with meeting N-1 contingency.

18. Name of Scheme: Extension of 66 KV line with higher capacity conductor (TACSR) from 220 KV Khadoli S/s to 66 KV Kala - Velugam S/s common point.

Cost Rs.600.00 Lakh.

Salient Features:

At present there is only one source at 66 KV Velugam and 66 KV Kala S/s from 220 KV Khadoli S/s. Therefore, to provide the second source of 66 KV line, DNHPDCL has proposed extension of 66 KV line from 220 KV Khadoli S/s to common point and extension of 66 KV line from common point to Velugam 66 KV S/s.

19. Name of Scheme: Fully automatic computerised meter test bench for 20 position (with existing available ref. standard meter).

Cost Rs.200.00 Lakh.

Salient Features:

The DNHPDCL is having a meter testing laboratory for testing of all metering equipments. The function/aim of meter testing laboratory are to test all type of metering equipments for domestic/commercial consumers to industrial low tension consumers to HT consumers of DNHPDCL.

The testing of all types of Single Phase/Three Phase meters is done through different meter Test Benches available in the Laboratory. The work load for testing of energy meters are being increased day by day due to rapid industrial/domestic development taking place in the UT of D&NH. For better revenue recovery purpose the Corporation has also initiated following steps:

- Replacement of the old type mechanical meters by new electronics meter.
- Installation of electronic meter to LIG consumers.
- Replacement of faulty meter.
- It is envisaged that smart meters shall be installed under the IPDS scheme. Hence, the meter test bench shall also help in testing the smart meters.

As given above, the DNHPDCL has purchased electronic meters and shall be purchasing smart meters. All these meters are to be tested in the Laboratory before their installation at the consumer premises. Therefore, to cope up with the meter testing work, it is essential to have a new fully computerised meter test bench.

20. Name of Scheme: Portable single phase reference standard meter for site testing of single phase meters (05 nos.).

Cost Rs.7.50 Lakh.

Salient Features:

This equipment is required for site testing of domestic, commercial and other category single phase meters. This is also required to address the consumer complaints regarding functioning of meters.

21. Name of Scheme: Portable three phase reference standard meter for site testing of three phase meters (02 nos.).

Cost Rs.24.00 Lakh.

Salient Features:

This equipment is required for site testing of LT industrial and HT industrial consumer category three phase meters. This is also required to address the consumer complaints regarding functioning of meters.

22. Name of Scheme: Software for Meter Data Acquisition Software (MDAS).

Cost Rs.70.00 Lakh.

Salient Features:

The DNHPDCL is proposing to install the Meter Data Acquisition Software (MDAS) to get real time data acquisition from the deployed "DCU"s, and organise the data in the database in a Common Data Format (CDF). MDAS will do real time monitoring, summary reports and graphs. Online alerts, dynamic formation for observation groups of suspicious meters or just area, zone, consumer indices etc. in normal circumstances.

MDAS application mainly consists of three components:

- (1). Communication server application: Communication server application will establish communication with modem associated to DCU and process the data sent by the device.
- (2). OPC Server application: OPC server will read the raw data which was received by communication server application and convert the raw data to actual meter data.
- (3). User interface using web based application: Web server provides web based user application which will access using public IP where user should be able to login and get to know the details of their meter status and data. Utility Operation/Dashboard user will have the interface for supervisory activities involved in meter data acquisition, processing and analysis. The business logic tier would service the requests made by the client tier. These requests could be automated, based on user-defined schedules or on-demand from the user. The collected data can be viewed in the form of customized reports. User can take print outs of these reports, export the data into spread sheets, or convert the data in the form of flat files.

2 Funding Plan

The funding of the capital expenditure schemes as detailed above shall be done through own funds and by availing loans. The debt equity ratio of 70:30 shall be considered for financing the capital expenditure schemes. However, the smart metering project and the energy efficiency project shall be implemented by availing grant, if any from the respective authorities.

Segregated Details for the following items:-

A) Actual and proposed expenses related to safety of man power i.e procurement of safety equipments, training etc.

The actual expenses of FY 2017-18 were not available as the figures are in lum-sum amount and were not able to be bifurcated for this scheme but DNHPDCL has proposed expenses related to safety of man power for the Control Period shown in the table below :-

Years	Value
FY 2019-20	50 lakhs
FY 2020-21	50 lakhs
FY 2021-22	50 lakhs

B) Actual and proposed expenses related to CGRFs.

The actual expenses for CGRF are Rs-17.58 Lakhs. Also the proposed figures for the CGRFs have been escalated at a rate of 10% for the Control Period that is shown below in the table:-

Years	Value
FY 2019-20	21.27 Lakhs
FY 2020-21	23.39 Lakhs
FY 2021-22	25.73 Lakhs

C) Proposed expenses for training/skilling/reskilling of the man power:-

The proposed expenses for training/skilling/reskilling of the man power for the control period have been shown below in the table:-

Years	Value
FY 2019-20	50 lakhs
FY 2020-21	50 lakhs
FY 2021-22	50 lakhs

3 Projections for number of employees during the MYT Control Period FY 2019-20 to FY 2021-22


The projections of the number of employees for the MYT Control Period FY 2019-20 to FY 2021-22 based on the proposed recruitments and retirement have been given in the table below:

Table 19: Projections of No. of Employees for the MYT Control Period FY 2019-20 to FY 2021-22

Financial Year	Manpower Strength (Regular, Deputation, Contractual, Work charge)	New Posts to be Created	Retirement
FY 2018-19	368	-	7
FY 2019-20	361	48	5
FY 2020-21	404	46	7
FY 2021-22	443	48	6

4 Proposed Trajectory of Availability of Wheeling Business (wires availability) and Supply Business (supply availability):-

The proposed trajectory of availability of Wheeling Business (wires availability) and Supply Business (supply availability) will be submitted along with the Tariff Petition for the MYT Control Period.


Chief Engineer
DNH Power Distribution Corporation Ltd.
U.T. of Dadra & Nagar Haveli, Silvassa