

**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, Transmission Division,
UT of Dadra and Nagar Haveli**

AFFIDAVIT

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

File No. _____

Case No. _____

IN THE MATTER OF: Filing of Business plan for the MYT Control Period FY 19-22
for Electricity Department, Transmission Division under
Section 61, 62 and 64 of the Electricity Act, 2003

AND

IN THE MATTER OF Electricity Department, Transmission Division (hereinafter
referred to as "ED-DNH" or "The Petitioner" or "The
Department")

..... Petitioner

I, Shri Harshadbhai Mohanbhai Patel, son of Shri Mohanbhai Premabhai Patel (aged 55 years), (occupation) Government Service residing at Samarvarni, Silvassa the deponent named above do hereby solemnly affirm and state on oath as under:

1. That the deponent is the Executive Engineer, Electricity Department, Transmission Division, who is authorized by the Administration of Dadra & Nagar Haveli and is acquainted with the facts deposed as below.
2. I, the deponent name above do hereby verify that the contents of the accompanying petition are based on the records of the Electricity Department, Transmission Division maintained in the ordinary course of business and believed them to be true and I believe that no part of it is false and no material facts have been concealed there from.

Details of enclosures:

Proposal for Business Plan for the Control Period FY 19-22.

Petition fee - Rs. 1,00,000/- vide DD no. _____ dated.06.09.2018

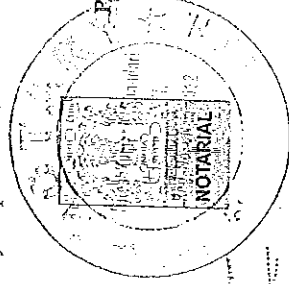
Solemnly Affirmed before me by
Shri. ~~Harshadbhai Mohanbhai Patel~~
of ~~Silvassa~~ who is identified
by Shri. ~~Harshadbhai Mohanbhai Patel~~
Silvassa whom I Personally Know.

Harshadbhai Mohanbhai Patel
HARSHADKUMAR K. BHANDARI
B.A., LL.B.
LAWYER & NOTARY
Office at: 289, 2nd Floor, Land Mark,
Tehsilbheda, Silvassa-296 200.
(Off. of Dadra & Nagar Haveli)

For the Electricity Department, Transmission Division

Petitioner

Place: Silvassa



dated this 14/9/18
2018 06/09/18

TABLE OF CONTENTS

LIST OF ABBREVIATIONS.....4

CHAPTER 1: INTRODUCTION 6

1 BACKGROUND6

2 OBJECTIVE OF BUSINESS PLAN6

CHAPTER 2: ABOUT THE ELECTRICITY DEPARTMENT, TRANSMISSION DIVISION..8

1 MISSION OF ELECTRICITY DEPARTMENT, TRANSMISSION DIVISION8

2 AREA SERVED8

**3 EXISTING TRANSMISSION SYSTEM OF ELECTRICITY DEPARTMENT,
TRANSMISSION DIVISION9**

4 ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES10

5 IT INITIATIVES11

6 PHYSICAL ACHIEVEMENTS DURING THE PAST YEARS11

CHAPTER 3: SWOT ANALYSIS.....12

CHAPTER 4: DEMAND – SUPPLY PROJECTIONS15

1 DEMAND FORECAST15

2 POWER PURCHASE QUANTUM.....15

CHAPTER 5: TRANSMISSION LOSS TRAJECTORY19

CHAPTER 6: CAPITAL INVESTMENT PLAN21

1 CAPITAL INVESTMENT PLAN OF ED-DNH.....21

LIST OF TABLES

| | |
|--|----|
| TABLE 1: STATUS OF TRANSMISSION ASSETS – DC KMS | 9 |
| TABLE 2: DETAILS OF EXISTING SUBSTATIONS | 9 |
| TABLE 3: PROJECTED ENERGY SALES DURING CONTROL PERIOD (FY 2019-20 TO FY 2021-22) | 15 |
| TABLE 4: ENERGY ALLOCATION FROM CENTRAL GENERATING STATIONS | 15 |
| TABLE 5: POWER PURCHASE QUANTUM | 17 |
| TABLE 6: PROPOSED T&D LOSS TRAJECTORY | 19 |
| TABLE 7: PROPOSED RELIABILITY OF 220 KV LINES | 19 |
| TABLE 8: ONGOING SCHEMES | 21 |
| TABLE 9: NEW SCHEMES..... | 22 |

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. | GoI | 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 Oct., 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 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 the villages of the territory.

The share of power generated by Central Sector Stations is transmitted to load centers in the UT of Dadra and Nagar Haveli through an extensive network of 400KV and 220KV transmission lines and substations. The major functions of ED-DNH are:

1. Ensure reliable supply energy to DNHPDCL which in turn supplies power to the end consumers across the state.
2. Development of transmission network to meet the growing needs of the DNHPDCL.
3. Provide short term open access depending upon the margins in the existing facilities.
4. Functioning of SLDC

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 Transmission 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 projections for load growth in the transmission network, capital investment plan, capital structure and performance targets before the Hon'ble Commission as part of the Tariff Filing before the beginning of the Control Period.

Accordingly, the ED-DNH 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 4 years.

ED-DNH has prepared the Business Plan taking cognizance of the existing internal factors and external business environment affecting the business. ED-DNH 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 Electricity Department, Transmission Division

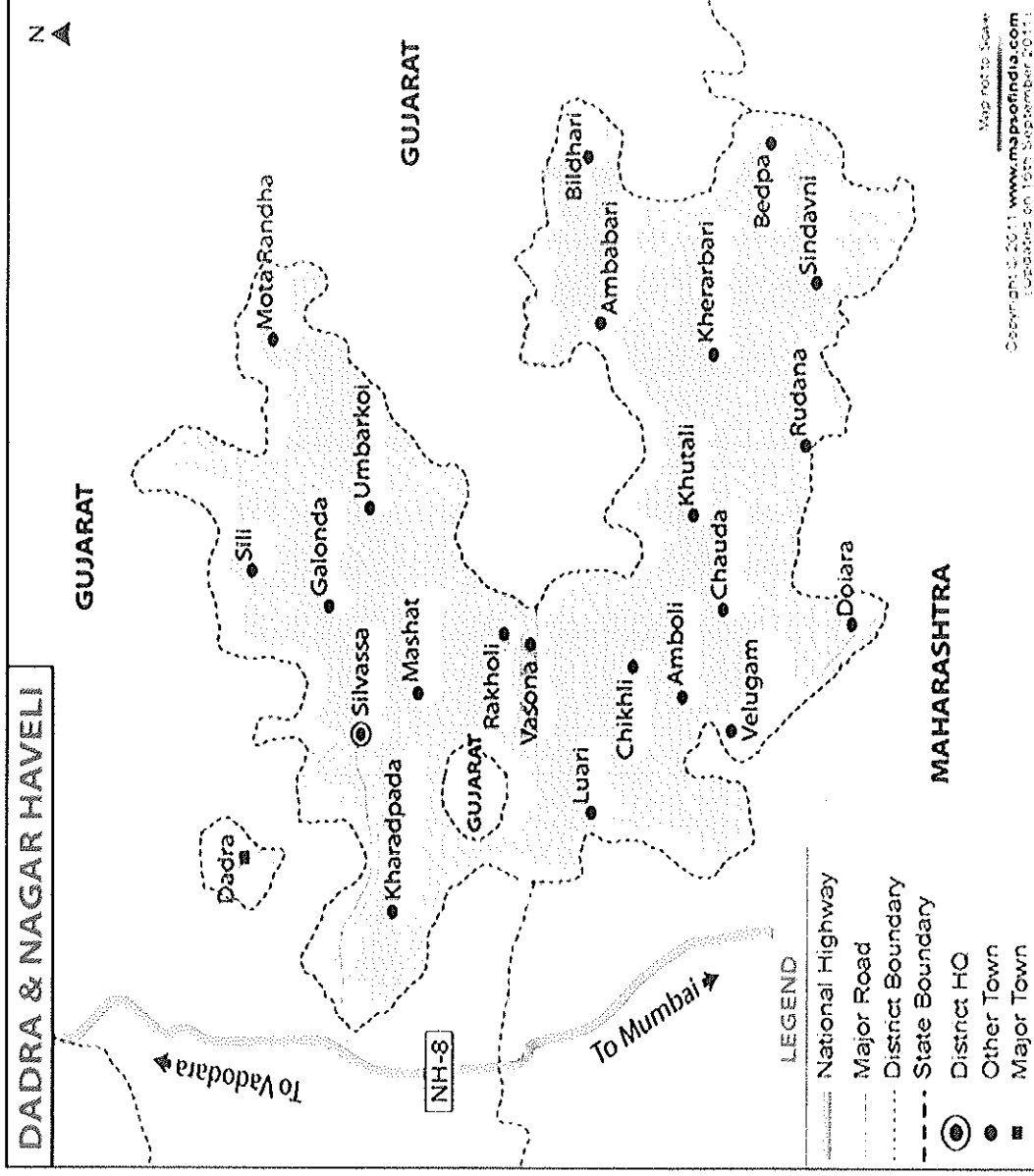
1 Mission of Electricity Department, Transmission Division

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 Existing Transmission System of Electricity Department, Transmission Division

Key assets of Electricity Department, Transmission Division include the transmission lines and sub-stations. The total length of the transmission assets as on March 31, 2018 was 36.88 DC Kilo meters (DC Kms). The EHV lines in DC km existing at end of FY 2017-18 and their growth are shown in the table below:

Table 1: Status of Transmission Assets – DC kms

| ASSETS | UNITS | FY 2017-18 |
|--------------|--------|------------|
| EHT | | |
| 220 KV lines | DC kms | 36.88 |

The details of existing substations of the Electricity Department, Transmission Division are as given below:

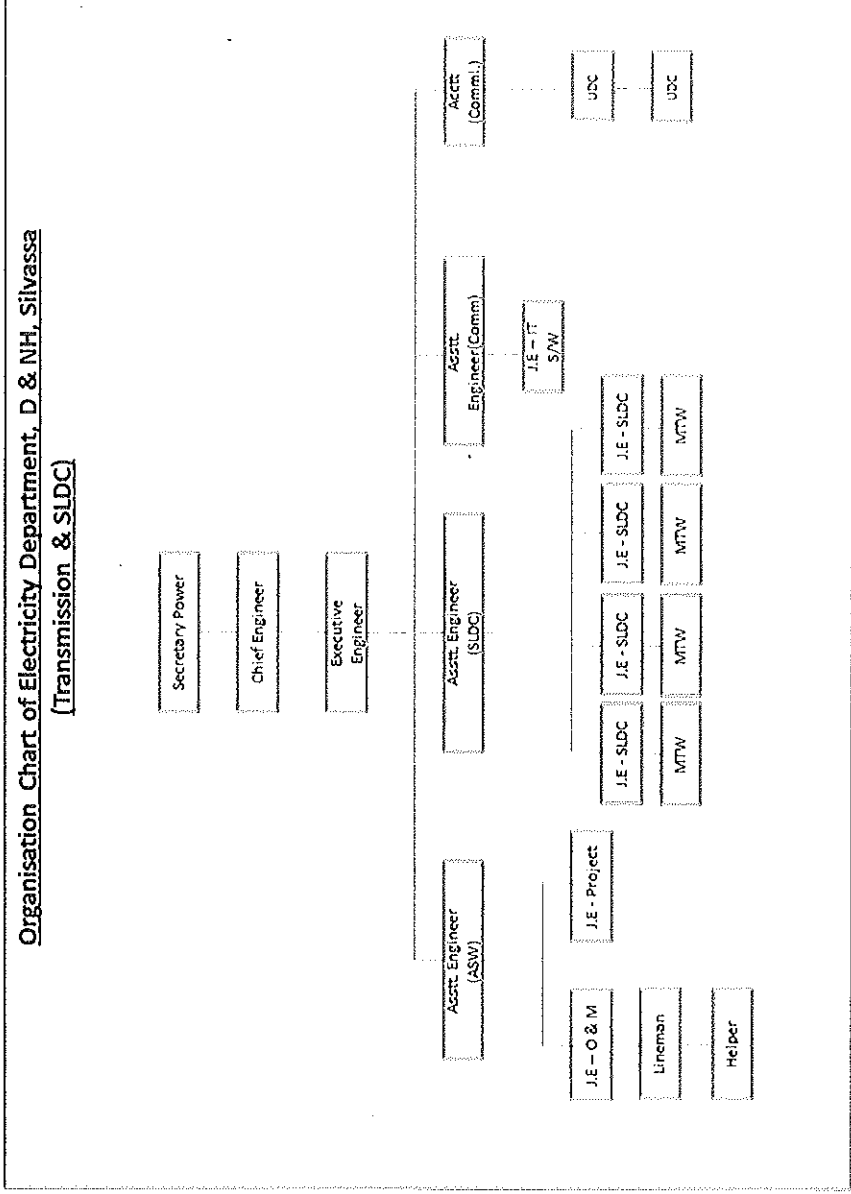
Table 2: Details of Existing Substations

| SR. NO. | SUB-STATION | CAPACITY | TOTAL |
|---------|--|-----------------------|-----------------|
| 1 | 400 KV Ambheti-Vapi Sub-Station (CTU-PowerGrid) | 3 x 315 MVA | 945 MVA |
| 2 | 400 KV Kala Sub-Station (CTU-Power Grid) | 2 x 315 MVA | 630 MVA |
| 3 | 220 KV Kharadpada Sub-Station | 2 x 100 + 2 x 160 MVA | 520 MVA |
| 4 | 220 KV Khadoli Sub-Station | 3 x 160 MVA | 480 MVA |
| 5 | 220KV Switching Stations at Sayli and New Kharadpada and Bhilosa | 03 Nos | |
| | TOTAL Capacity (220KV Level) | | 1000 MVA |

The present the transmission system of Electricity Department, Transmission Division consists of 36.88 DC km of 220 kV double circuit (D/C) lines.

At present, the UT of Dadra & Nagar Haveli gets power from 400/220 kV PGCIL Vapi and 400/220 kV Kala substation of PGCIL.

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



5 IT Initiatives

Electricity Department, D & NH is in process to upgrade the below mentioned existing 220 kV Sub-Stations in to SCADA operative sub-station.

1. Upgradation and modernization of existing 220/66 kV Kharadpada Sub-Station by replacing existing 220 & 66 kV breakers and providing SCADA system
2. Upgradation and modernization of existing 220 kV New Kharadpada switching Station by providing SCADA system.

6 Physical achievements during the past years

1. Augmentation of existing 220kV Kharadpada substation from 400 MVA to 520 MVA by replacing existing 2X100 MVA transformer with new 2X160 MVA transformer.
2. Scheme work of augmentation of 220/66 kV Khadoli substation from 2X160 MVA to 3X160 MVA capacity with associated bays at 220/66 kV Khadoli substation.
3. Scheme work of interconnectivity of 220 kV Kala-Khadoli Transmission line from 400 kV Kala substation to 220 kV Khadoli substation with associated bays.
4. Scheme work of interconnectivity of 220 kV Kala-Kharadpada Transmission line from 400 kV Kala substation to 220 kV new Kharadpada substation with associated bays.

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 ED-DNH 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 ED-DNH. 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 | <p>STRENGTHS</p> <ul style="list-style-type: none"> ✓ Small Area ✓ Low cost of Power ✓ High level of Electrification ✓ 24X7 Reliable Power Supply | <p>WEAKNESS</p> <ul style="list-style-type: none"> ✓ High cost of new infrastructure ✓ Lower growth in industrial demand |
| External Attributes of the Environment | <p>OPPORTUNITIES</p> <ul style="list-style-type: none"> ✓ Modernization of the utilities and infrastructure | <p>THREATS</p> <ul style="list-style-type: none"> ✓ Dependent on Power Sources from out side ✓ High share of unallocated quota ✓ Fate of Industries with respect to Industries Policy and Planning |

Strengths:

- **Small Area:** The area served by the ED-DNH is small hence, it is easy to manage the operations and supply quality power to the consumers of the UT of Dadra and Nagar Haveli.
- **Low cost of Power:** The cost of power purchase is low as most of the power is purchased through long term sources of power and dependency on short term sources is very less.
- **High Level of Electrification:** The level of electrification in the UT of Dadra and Nagar Haveli is very high and as a result the Electricity Department is able to serve reliable and quality power to its consumers.
- **24X7 reliable Power Supply:** The Electricity Department supplies 24X7 reliable power to all its consumers which has resulted in the economic and social development of the UT of Dadra and Nagar Haveli.

Weakness:

- **High Cost of New Infrastructure:** The Electricity Department has been supplying electricity for a very long time and has also been maintaining its network. However, with passage of time the Transmission Network has started showing signs of ageing and this shall lead to deterioration in performance of the utility. Hence, new infrastructure at a high cost has to be set up to maintain the performance of the utility.
- **Lower growth in Industrial Demand:** The industrial growth in the recent past has been quite low due to various economic factors which has also led to low growth in the demand for electricity.

Opportunity:

- **Modernization of the utilities and Infrastructure:** As the electrical network is getting modernized the quality and reliability of power will improve further in the future.

Threats

- **Dependent on power Sources from outside:** The own generation of the UT of Dadra and Nagar Haveli is limited to the upcoming solar plants. The Discom 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 the Discom, the department has to resort to costly short term power purchase to supply uninterrupted power supply to the industries.
- **High share of unallocated quota:** The UT of Dadra and Nagar Haveli has a high share of unallocated quota due to which there is a uncertainty regarding the supply of power the Central Generating Stations which are the major source of procurement of power for the utility.

- **Fate of Industries with respect to Industries Policy and Planning:** The largest consumer category of the UT of Dadra and Nagar Haveli is the industrial category and hence the growth of the electricity department is also dependent on the growth of the industrial category. The functioning of the Industrial category is dependent upon the Industries Policy and Planning and hence any change in industrial policy and planning will directly affect the growth of the electricity department in the UT of Dadra and Nagar Haveli.

Chapter 4: Demand – Supply Projections**1 Demand Forecast**

ED-DNH presently has only one long term open access consumer i.e. the DNHPDCL. The DNHPDCL distributes electricity to all the consumers of the UT of Dadra and Nagar Haveli. As per the 19th Electric Power Survey, the peak load of the UT of Dadra and Nagar Haveli shall reach 1300 MW by the end of FY 2021-22. Further, based on the actual sales made to the various consumer categories of the UT of Dadra and Nagar Haveli the projected sales during the MYT Control Period FY 2019-20 to FY 2021-22 is given below:

Table 3: Projected energy sales during Control Period (FY 2019-20 to FY 2021-22)

| Sales | (MU) | | |
|-------------|----------------|-----------------------|-----------------------|
| | FY 18-19 RE | FY 19-20 Projected | FY 20-21 Projected |
| Total Sales | 6,092.41 | 6,462.50 | 6,855.42 |
| | | | 7,272.59 |

2 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 2018-19 has been estimated based on the revised allocation issued by the Western Region Power Committee (WRPC) vide No.WRPC/Comm-I/6/Alloc/2018/5733 dated:- 28/06/2018. The energy allocation from various generating stations is summarized in table below:

Table 4: Energy Allocation from Central Generating Stations

| Name of the plant | (MW) | | |
|-------------------|------------------------------------|----------------------------------|-----------------------------------|
| | 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 |

| Name of the plant | Weighted average Infirm allocation | Weighted Average Firm allocation | Weighted average total allocation |
|------------------------------|------------------------------------|----------------------------------|-----------------------------------|
| 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.

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

Table 5: Power Purchase Quantum

| 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 |

Edy.

Chapter 5: Transmission Loss Trajectory

The ED-DNH has achieved a significant reduction in transmission losses. The ED-DNH 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 Transmission losses.

The transmission loss reduction trajectory for the Control Period is as given in the table below:

Table 6: Proposed T&D Loss Trajectory

| Sr. No | From Substation-To Substation | 2019-20 | 2020-21 | 2021-22 |
|--------|-----------------------------------|---------|---------|---------|
| 1 | 220 KV New K'pada-K'pada CKT-1 | 0.27 | 0.26 | 0.25 |
| 2 | 220 KV New K'pada-K'pada CKT-2 | 0.24 | 0.23 | 0.22 |
| 3 | 400 KV Kala- 220 KV Khadoli CKT-1 | 2.0 | 1.8 | 1.5 |
| 4 | 400 KV Kala- 220 KV Khadoli CKT-2 | 0.6 | 0.5 | 0.4 |
| 5 | 220 KV Sayli – Khadoli | 0.1 | 0.1 | 0.1 |
| 6 | 400 KV Kala-220 New K'pada CKT-1 | 1.0 | 0.8 | 0.7 |
| 7 | 400 KV Kala-220 New K'pada CKT-2 | 1.5 | 1.3 | 1.2 |

The Reliability of 220 kv lines of ED-DNH for the MYT Control Period FY 2019-20 to FY 2021-22 is presented in the table given below:

Table 7: Proposed Reliability of 220 kv lines

| Sr.No. | Feeder Name | FY 2019-20 | | | FY 2020-21 | | | FY 2021-22 | | |
|--------|------------------------------------|------------|-------|-------|------------|-------|-------|------------|-------|--|
| | | SAIFI | SAIDI | SAIFI | SAIDI | SAIFI | SAIDI | SAIFI | SAIDI | |
| 1 | 100 MVA Transformer No. 2 | 10 | 3000 | 10 | 2800 | 8 | 2000 | | | |
| 2 | 100 MVA Transformer No. 3 | 10 | 3000 | 10 | 2800 | 8 | 2000 | | | |
| 3 | 160 MVA Transformer No. 1 | 5 | 300 | 5 | 250 | 4 | 200 | | | |
| 4 | 220 KV Ambheti Kha'dpada - 1 (I/C) | 10 | 3000 | 8 | 2500 | 6 | 2000 | | | |
| 5 | 220 KV Ambheti Kha'dpada - 2 (I/C) | 10 | 3000 | 8 | 2500 | 6 | 2000 | | | |
| 6 | 220 KV NEW KHARADPADA CKT - 1 | 3 | 3000 | 3 | 2000 | 3 | 1500 | | | |
| 7 | 220 KV NEW KHARADPADA CKT - 2 | 5 | 2000 | 4 | 1500 | 3 | 1000 | | | |

| Sr.No. | Feeder Name | FY 2019-20 | | FY 2020-21 | | FY 2021-22 | |
|--------|---|------------|-------|------------|-------|------------|-------|
| | | SAIFI | SAIDI | SAIFI | SAIDI | SAIFI | SAIDI |
| 8 | 220KV INCOMING FROM AMBHETI CKT-I | 1 | 200 | 1 | 200 | 1 | 100 |
| 9 | 220KV INCOMING FROM KALA CKT- I | 2 | 2000 | 1 | 1500 | 1 | 1000 |
| 10 | 220KV INCOMING FROM KALA CKT- II | 2 | 1000 | 1 | 1000 | 1 | 500 |
| 11 | 220KV OUTGOING TO SAILI SUBSTATION (ALOK INDUSTRY) | 1 | 200 | 1 | 200 | 1 | 100 |

Chapter 6: Capital Investment Plan

1 Capital Investment plan of ED-DNH

The petitioner has undertaken the capital expenditure for the following purpose:

1. Laying of new transmission lines
2. Construction of new substations
3. Strengthening of the existing transmission network to cope up with the growing demand and future generation

The CAPEX Plan proposals (scheme wise) for FY 2019-20 to FY 2021-22 under the MYT Control Period FY 2019-22 have been formulated by ED-DNH 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 schemes have been given in the table below:

Table 8: Ongoing Schemes

| Sr.No. | Name of Scheme | Original Estimated cost as per CEA approval (Rs. Lakh) | Revised Cost Estimate (Approx.) (Rs. Lakh) | Expenditure to be incurred up to March 2019 | Proposed Expenditure in Lakh. | | |
|--------|---|--|--|---|-------------------------------|-------------|-------------|
| | | | | | 2019-20 | 2020-21 | 2021-22 |
| 1 | Establishment of 2x160 MVA, 220/66 kV Vagchipa Sub-Station with associated 220 kV Lines | 5507.00 | 7611.00 | 4434.00 | 3177.00 | 0.00 | 0.00 |
| | Total | 5507.00 | 7611.00 | 4434.00 | 3177.00 | 0.00 | 0.00 |

1. Name of Scheme: Establishment of 2x160 MVA, 220/66 kV Vagchipa Sub-Station with associated 220 kV Lines.

Cost Rs.7611.00 Lakh.

Salient Features:

The proposal for establishment of 220/66 KV 2X160 MVA substation at Vagchipa 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.

The substation shall to cater load on the existing 66 KV Substation's i.e. 66 KV Amlil S/s, 66 KV Dadra S/s, 66 KV Sili S/s and 66 KV Masat S/s.

The scheme has an estimated cost of Rs. 76.11 Crore. Out of the Rs. 76.11 Crore, it is estimated that RS. 44.34 Crore shall be incurred by the end of FY 2018-19 and the remaining amount shall be incurred in FY 2019-20.

New Schemes

Table 9: New Schemes

| Sr.No. | Name of Scheme | Total Estimated amount (Lakh) | Proposed Expenditure in Lakh. | | |
|--------|--|-------------------------------|-------------------------------|---------------|---------------|
| | | | 2019-20 | 2020-21 | 2021-22 |
| 1 | Upgradation and Modernization of existing 220/66 KV Kharadpada Sub-Station by replacing existing circuit breakers and providing SCADA system | 1575.00 | 500.00 | 500.00 | 575.00 |
| 2 | Upgradation and Modernization of existing 220 KV Switching Sub-Station New Kharadpada by providing SCADA system | 145.00 | 145.00 | - | - |
| | Total | 1720.00 | 645.00 | 500.00 | 575.00 |

- Name of Scheme: Upgradation and Modernization of existing 220/66 kV Kharadpada Sub-Station by replacing existing circuit breakers and providing SCADA system.**

Cost Rs.1575.00 Lakh.

Salient Features:

The 220/66 kV Kharadpada substation was commissioned in the year 2002. The breakers of BHEL make installed at Kharadpada substation is of hydraulic oil pressure mechanism. Also, the SF6 gas monitoring and re-filling arrangement is very tedious. Further, being an obsolete technology the spares and service for these breakers is not available now days and due to the same difficulties arise during day to day O & M works. Hence, these old type of 220kV & 66 kV breakers need to be replaced by new breakers for trouble free and stable operation. Moreover, Control and Relay panels



of Kharadpada substation is of old design and consists electromechanical type relays. Spares for these relay are not available in the market for O & M works. Hence, these relay panel needs to be replaced by a new microprocessor based relays & panels for 220 kV & 66 kV with integration of SCADA system for better monitoring and getting real time data for SLDC.

2. Name of Scheme: Upgradation and Modernization of existing 220 kV Switching Sub-Station New Kharadpada by providing SCADA system.

Cost Rs.145.00 Lakh.

Salient Features:

The 220 New kV Kharadpada substation was commissioned in the year 2015. The Sub-Station is having Control and Relay panels with SCADA compatible relays inbuilt. To enhance the New Kharadpada substation, a SCADA system needs to be installed. By providing the SCADA system in New Kharadpada substation, better monitoring and getting real time data for SLDC operations shall be ensured. Also, there is a possibility to reduce the O & M cost for this sub-station by remote operations from Kharadpada substation.

