



UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION

LUCKNOW

Petition No. 1526 of 2019

BUSINESS PLAN ORDER FOR CONTROL PERIOD FY 2020-21 TO FY 2024-25

FOR

Noida Power Company Ltd. (NPCL)

ORDER UNDER SECTION 62 & 64 OF

THE ELECTRICITY ACT, 2003

November 26, 2020

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Before

**UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION,
LUCKNOW**

IN THE MATTER OF:

BUSINESS PLAN FOR MYT CONTROL PERIOD FY 2020-21 TO FY 2024-25

And

IN THE MATTER OF:

NOIDA POWER COMPANY LTD., GR. NOIDA (NPCL) – (Petition No. 1526 / 2019)

ORDER

The Commission, having deliberated upon the above Petition and also the subsequent filings by the Petitioner, and the Petition thereafter being admitted, in exercise of powers vested under Sections 86 of the Electricity Act, 2003 (herein referred to as 'the Act'), hereby passes this Order signed, dated and issued on 26th November, 2020. The Commission may issue clarification / corrigendum / addendum to this Order as it deems fit from time to time with the reasons to be recorded in writing.



1 BACKGROUND AND PROCEDURAL HISTORY

1.1 BACKGROUND

- 1.1.1 M/s Noida Power Company Limited (hereinafter referred to as 'Petitioner', 'Licensee' or 'NPCL') was granted a 30-year supply license on August 31, 1993 by the State Government under Section 3(1) of the Indian Electricity Act, 1910, which authorized it to supply electricity in the licensed area.
- 1.1.2 It is noted that the NPCL License is upto August 30, 2023 and the License of NPCL will expire within the Control period. Considering the importance of all the elements in the business of distribution licensee and to ensure business continuity, the Business Plan is approved subject to the following:
- A. Business plan upto the period of license of NPCL is approved in respect to billing determinants, loss trajectory and other directions in respect to various matters.
 - B. Business plan for remaining period is taken on record for business continuity and subject to the decision taken by the Commission on the renewal/ grant of license from August 30, 2023 onwards.

1.2 DISTRIBUTION TARIFF REGULATIONS

- 1.2.1 The Commission notified Uttar Pradesh Electricity Regulatory Commission (Multi Year Distribution Tariff) Regulations, 2014 (herein after referred to as Distribution MYT Regulations, 2014) were notified on May 12, 2014. These Regulations were applicable for determination of ARR and Tariff from FY 2017-18 to FY 2019-20. Embarking upon the MYT framework, the Commission had divided the period of five years (i.e., April 1, 2015 to March 31, 2020) into two periods namely (a) Transition Period (April 1, 2015 to March 31, 2017) and (b) Control Period (April 1, 2017 to March 31, 2020).



1.2.2 The transition period of two years ended in FY 2016-17. The Distribution Tariff Regulations, 2006 were made applicable for the Truing Up of ARR for the transition period (FY 2015-16 to FY 2016-17), whereas the first Control Period of the MYT Period (FY 2017-18 to FY 2019-20), was governed in accordance with the Distribution MYT Regulations, 2014.

1.2.3 Subsequently, the Commission notified the Uttar Pradesh Electricity Regulatory Commission (Multi Year Tariff for Distribution and Transmission) Regulations, 2019 (hereinafter referred to as “MYT Regulations 2019”) applicable for determination of tariff from April 1, 2020 onwards up to FY 2024-25 [i.e. till March 31, 2025] unless extended by the Commission. These Regulations were finalized by the Commission on 23rd September 2019 and were finally uploaded on the Commission’s website on 22nd November 2019, after gazette notification. These Regulations are applicable for the purpose of submission of Multi Year Tariff Petition for Business Plan, True-up, Annual Performance Review (APR), determination of Annual Revenue Requirement (ARR) and Tariff of all the distribution and transmission licensees within the State of Uttar Pradesh for the Control Period FY 2020-21 to FY 2024-25.

1.3 FILING OF BUSINESS PLAN FOR THE MYT CONTROL PERIOD FY 2020-21 TO FY 2024-25

1.3.1 The Regulation 4 of MYT Regulations, 2019 stipulates the timelines for filing of Business Plan, ARR / Tariff, APR & True-Up Petitions under these Regulations. The relevant extract of the same is reproduced below:

Quote

4. Petitions to be filed in the Control Period

4.1 The Petitions to be filed in the Control Period under these Regulations will comprise of the following:

<i>Filing date</i>	<i>True- Up</i>	<i>APR</i>	<i>ARR / Tariff</i>
<i>15.10.2019</i>	<i>Business Plan for FY 2020-21 to FY 2024-25</i>		



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

<i>Filing date</i>	<i>True- Up</i>	<i>APR</i>	<i>ARR / Tariff</i>
30.11.2019	<i>FY 2018-19 (as per MYT Regulations, 2014)*</i>	<i>FY 2019-20 (as per MYT Regulations, 2014)*</i>	<i>FY 2020-21</i>
30.11.2020	<i>FY 2019-20 (as per MYT Regulations, 2014)*</i>	<i>FY 2020-21</i>	<i>FY 2021-22</i>
30.11.2021	<i>FY 2020-21</i>	<i>FY 2021-22</i>	<i>FY 2022-23</i>
30.11.2022	<i>FY 2021-22</i>	<i>FY 2022-23</i>	<i>FY 2023-24</i>
30.11.2023	<i>FY 2022-23</i>	<i>FY 2023-24</i>	<i>FY 2024-25</i>

**The filings shall be as per Multi-Year Distribution Tariff Regulations, 2014 and Multi-Year Transmission Tariff Regulations, 2014, however, filings have to be made on 30th November of the respective year as per these Regulations.*

4.2 The Licensee shall submit the data regarding the above as per Guidelines and Format prescribed and added/ amended from time to time by the Commission.

Unquote

- 1.3.2 The Regulation 5.1 of MYT Regulations, 2019, provides that the Distribution Licensee shall file a Petition for Business Plan for the MYT Control Period i.e. FY 2020-21 to FY 2024-25 on or before October 15, 2019 before the Commission.
- 1.3.3 The Commission, vide its Letter UPERC/Secy/D (Tariff)/19-1238 dated September 24, 2019, provides that the Licensee shall file a Petition for Business Plan for the MYT Control Period i.e. FY 2020-21 to FY 2024-25 complete in all respect on or before October 15, 2019 in the Commission.
- 1.3.4 The Petitioner vide its Letter P-77A/2020/036 dated October 15, 2019 requested the Commission to provide the relaxation for filing the Business Plan for the Control Period as per the timelines stipulated in the MYT Regulations, 2019 and requested that the same will be submitted by October 31, 2019.
- 1.3.5 The Petitioner did not submit its Business Plan Petition by October 31, 2019 and filed it on November 6th, 2019.



1.3.6 The Hon'ble APTEL in its judgment in OP No. 1 of 2011 dated November 11, 2011 has directed the State Commissions to ensure the timely determination of Tariff for the utilities. The relevant extracts from the mentioned Judgement are reproduced below:

Quote

“65 In view of the analysis and discussion made above, we deem fit to issue the following directions to the State Commissions:

... (ii) it should be the endeavor of every State Commission to ensure that the tariff for the financial year is decided before 1st April of the tariff year. For example, the ARR & tariff for the financial year 2011-12 should be decided before 1st April, 2011. The State Commission could consider making the tariff applicable only till the end of the financial year so that the licensees remain vigilant to follow the time schedule for filing of the application for determination of ARR/tariff. (iii) In the event of delay in filing of the ARR, truing-up and Annual Performance Review, one month beyond the scheduled date of submission of the petition, the State Commission must initiate suo-moto proceedings for tariff determination in accordance with Section 64 of the Act read with clause 8.1 (7) of the Tariff Policy.

...”

Unquote

1.3.7 In view of the above Judgment, and to ensure the timely Tariff determination, the Commission considers it appropriate to process the Business Plan Petition, in line with MYT Regulations 2019. However, the Commission would like to caution the Petitioner for such delays in future in filing of ARR, APR and Truing Up Petitions during this control period and would be dealt in accordance with the directions contained under Hon'ble APTEL's Judgement dated 11.11.2011 in OP No. 1/2011 referred above. Additionally, this would be treated as non-compliance of relevant provisions of various Regulations and may entail appropriate punitive action against the Petitioner.



1.4 PRELIMINARY SCRUTINY OF THE PETITIONS

- 1.4.1 The Petitioner, in its Business Plan Petition, has submitted the Category / Sub-category wise number of consumers, connected load, Load factor, sales projections, Power Procurement Plan (Renewable Energy and Non- Renewable Energy) and Forecasting, Renewable Purchase Obligation (RPO) Planning and Forecasting, Distribution Loss trajectory, Capital Investment Plan, Financing Plan and Physical targets, Equity, Grants, etc.
- 1.4.2 The Commission vide e-mail dated November 07th, 2019 directed the Petitioner to make a detailed presentation on the Business Plan for FY 2020-21 to FY 2024-25 on November 14, 2019. The Petitioner presented the Business Plan for FY 2020-21 to 2024-25 as per the directions of the Commission.
- 1.4.3 During the presentation, the Commission discussed various issues and the deficiencies that were found in the Petitioner's submission as per the preliminary analysis conducted by the Commission. The Commission raised various queries on the Business Plan based on the submission made by the Petitioner. The Petitioner was directed to make the changes as per the MYT Regulations, 2019. The Petitioner submitted the revised presentation on November 22, 2019.
- 1.4.4 Further, the Commission vide its mail dated February 5, 2020 informed the Petitioner to make a detailed presentation of Business Plan on February 10, 2020 before the Commission covering the following:
- Daily, weekly & seasonal Load profile / curves to demonstrate the power purchase requirements filed for approval of the Commission.
 - Reasons as to why each of the proposed power purchase (3 options) are most viable options.
 - Purchase of power in long-term - Critical Analysis - Will it benefit the consumers & viability of the distribution licensee.



1.4.5 Based on the presentation made by the Petitioner, the Commission gave certain directions. As per the directions given by the Commission, the Petitioner again revised the Presentation and submitted different scenario of power purchase on February 24, 2020.

1.4.6 Subsequently, the detailed scrutiny of the Business Plan Petition for the Control period was carried and 1st deficiency note was issued to the Petitioner vide letter dated February 27, 2020 directing the Petitioner to provide the required information within 10 days from the date of issuance of the deficiency note. In the deficiency note queries were sought regarding:

- Demand Estimates (Billing Determinants)
- Power Purchase
- Capital Expenditure

1.4.7 The Petitioner submitted its replies vide e-mail dated September 11th, 2020, to the abovementioned deficiency note as under;

In compliance to the directions of the Hon'ble Commission vide letter no. P-77A/2020/040 dated 31st October, 2019, the Company had filed the Business Plan for FY 2020-21 to FY 2024-25 on 6th November 2019. Due to non-availability of prescribed formats at that time, the Company had submitted the Business Plan as per its own formats. Since, the Hon'ble Commission has now prescribed the formats for submission of Business Plan, accordingly. the Company has prepared all the formats as prescribed by the Hon'ble Commission for Business Plan for Control Period FY 2020-21 to FY 2024-25 and incorporated the same in the MYT Tariff Formats for FY 2020-21

1.4.8 The replies to most of the queries are discussed in detail in the respective sections of this Order.



1.4.9 The Commission issued a 2nd set of deficiency note vide its letter dated May 13th, 2020 along with data gaps of the ARR / Tariff Petition for FY 2020-21. In the 2nd set of data gap the Commission the enquired about the following:

- Billing Determinants
- Distribution Loss
- Power Purchase
- Capital Expenditure

1.4.10 In response to the 2nd set of deficiency note of the Commission, the Petitioner vide its letter dated May 27th, 2020 submitted that

Further, as mentioned above, the current lockdown situation due to the outbreak of the pandemic COVID 19 virus has brought drastic changes in the Business Environment of the Company which has made the earlier entire submission on the Business Plan invalid and obsolete especially for FY 2020-21. The Company requests the Hon'ble Commission to allow it to submit a fresh Business Plan after the situation stabilizes post the current outbreak of the pandemic COVID 19 virus. Therefore, the Company crave leave to submit replies to the queries 1-17 with regard to the Business Plan after perusing the revised business plan which shall be submitted by the Company in due course.

1.4.11 The Petitioner again replied to the 2nd data gaps along with the reply to 1st data gaps vide e-mail dated September 10th, 2020. Replies to most of the queries are discussed in detail in the respective sections of this Order.

1.4.12 While approving various parameters of the Business Plan for the Control Period FY 2021-25, the Commission has taken into consideration the Post Covid projections submitted by the Petitioner.



2 BUSINESS PLAN FOR MYT CONTROL PERIOD FY 2020-21 TO FY 2024-25

2.1 INTRODUCTION

2.1.1 In this section, the Commission has scrutinized the Business Plan for the Multi-Year Tariff (MYT) Period (i.e. FY 2020-21 to FY 2024-25) of the Petitioners in line with the provisions of the UPERC (MYT for Transmission and Distribution Tariff) Regulations, 2019.

2.1.2 The Commission in exercise of power vested with it under Section 181 read with Sections 61, 62 & 86 of the Electricity Act, 2003 issued the Uttar Pradesh Electricity Regulatory Commission (Multi Year Tariff on Transmission and Distribution) Regulations, 2019, on September 23, 2019. These Regulations lay down Multi Year Tariff framework for Business Plan, determination of True Up, APR, ARR and Tariff for the respective year during the Control Period and stipulates that the distribution licensee shall submit the Business Plan for the entire Control Period for the consideration of the Commission prior to the beginning of the Control Period.

2.1.3 The relevant extract of Regulation 5 of the UPERC (MYT for Transmission and Distribution Tariff) Regulations, 2019 stipulates that:

Quote

5. Business Plan and ARR Petition

.....

5.1 The Distribution Licensee shall file a Business Plan by 15.10.2019, duly authorized by the Board of Directors or by any Committee / person authorized by the Board in this regard, for the Control Period of five Financial Years, i.e., from April 01, 2020 to March 31, 2025, which shall comprise but not be limited to Category/ Sub-category wise number of consumers, connected load, load factor and sales projections, Power Procurement Plan (Renewable Energy and Non-Renewable Energy) and Forecasting, Renewable Purchase Obligation (RPO) Planning and Forecasting, Distribution Loss trajectory (taking into consideration the distribution loss trajectory committed in UDAY), Capital Investment Plan, Financing Plan and physical targets, Equity, Grants, etc., in accordance with Guidelines and Formats as may be prescribed by the Commission accompanied



with applicable fees. Above requirement of the Commission does not exclude its right to seek any other information in this regard, as deemed necessary.

5.3 The Capital Investment Plan shall show separately, on-going projects that will spill over into the Control Period, and new projects (with justification) that will commence in the Control Period but may be completed within or beyond it, for which relevant technical and commercial details shall be provided.

5.4 The Distribution Licensee shall project the realistic power purchase requirement optimised on cost from all Generating Stations and other sources considered for power purchase based on the Merit Order Despatch (MOD)/ Security Constrained Economic Despatch (SCED) principles, Must Run plants and Renewable Energy plants subject to the Renewable Purchase Obligation (RPO) stipulated by the Commission under the relevant Regulations and their subsequent amendments, and the target set, if any, for Energy Efficiency (EE) and Demand Side Management (DSM) schemes, etc.:

Provided that MOD/ SCED principles shall not apply to purchase of power from Renewable Energy sources up to the RPO stipulated by the Commission.

5.5 The forecast of expected revenue from Tariff shall be based on the following:

(a) In the case of a Transmission Licensee, estimate of ARR or estimates of Transmission Capacity allocated to Transmission System Users, as appropriate;

(b) In the case of a Distribution Licensee, estimate of quantum of electricity to be supplied to consumers and wheeled on behalf of Distribution System Users;

Provided that the Distribution Licensee shall submit relevant details of category/ sub-category wise Number of Consumers, Connected load and Energy Sales projections, status of metering, feeder level/ distribution transformer metering, diversity factor for various category of consumers taking seasonality into consideration, etc., for each Distribution Licensee area;

(c) Existing and proposed Tariff as on the date of filing of the Petition.

Unquote

- 2.1.4 In the Business Plan petition, NPCL has submitted Category / Sub-category wise number of consumers, connected load, Load factor, sales projections, Power Procurement Plan (Renewable Energy and Non- Renewable Energy) and Forecasting, Renewable Purchase Obligation (RPO) Planning and Forecasting, Distribution Loss trajectory, Capital



Investment Plan, Financing Plan and Physical targets, Equity, Grants, etc.

2.1.5 It is noted that the License of NPCL will expire within the Control period. Considering the importance of all these elements in the business of distribution licensee and to ensure business continuity, the Business Plan is approved subject to the following:

- A. Business plan upto the period of license of NPCL is approved in respect to billing determinants, loss trajectory and other directions in respect to various matters.
- B. Business plan for remaining period is taken on record for business continuity and subject to the decision taken by the Commission on the renewal/ grant of license from August 30, 2023 onwards.

2.1.6 The Commission has dealt with each parameter of the Business Plan in the sections below.

2.2 BILLING DETERMINANTS: CONSUMER NUMBERS, CONNECTED LOAD, SALES

Petitioner submission

2.2.1 The Petitioner has submitted that Greater Noida is shaping up as India's smartest city, the National Capital Region's most modern urban development center and the fastest-developing center of attraction for people from Delhi, Noida, Ghaziabad, Gurgaon and Faridabad. Some of the major load growth drivers in Greater Noida are as follows:

- **Greater Noida (West):** Greater Noida (West) is fast emerging as a complete township comprising of lakhs of residential flats, commercial malls, offices, schools, hospitals etc.
- **Delhi Mumbai Industrial Corridor (DMIC):** DMIC is an ambitious project of national importance which is passing through Greater Noida. Under the DMIC, following has been proposed in the licensed area of the Company:
 - **Multi Modal Transport Hub (MMTH)** at Boraki in Greater Noida. Under MMTH, a railway station is proposed at Boraki that shall be developed as a transport hub with a state-of-art railway terminus further supplemented by an



Interstate Bus Terminus (ISBT) and a Mass Rapid Transit System (MRTS) station alongside commercial activity to optimally capture the strategic location where various transport modes congregate. The integrated railway hub is planned to be of world-class standards, encompassing passenger facilities commercial and institutional facilities (including office complex, shopping complex and hotels). The project is foreseen as the development of a modern and user-friendly regional railway terminal that will seamlessly integrate with an MRTS (interlinked with a large local habitation), ISBT and a Business Centre (equipped, among other things, with offices and business hotel accommodation).

- **Multi Modal Logistics Hub (MMLH):** MMLH at Dadri is envisaged to function as a dry port supplementing not just the storage, aggregation and export/import of the industrial freight in the region but also value addition services that shall allow for finishing of goods within the facility alongside commercial space to host the freight companies within the campus. An integrated facility with all logistics infrastructure under one roof is seen to boost the economic environment of the DMIC region to enable it to compete successfully in the world marketplace.
- **IITGNL:** The Integrated Industrial Township at Greater Noida, being a flagship project for Delhi Mumbai Industrial Corridor being designed with world class standards, Signature buildings and smart infrastructure components to ensure a futuristic township. A comprehensive built environment to enable the setting up of Electronics, Automobile, Food Processing, Bio-tech, IT/ITeS and R&D businesses.
- The State Government is envisaging to make Greater Noida as Detroit of India with the large foreign direct investment in the above stated facilities.
- **Jewar Airport:** Jewar Airport is proposed in the close vicinity of the licensed area of the Company. Jewar Airport will be a passenger hub as well as cargo hub. The first



phase of the Jewar Airport is expected to be operational by FY 2022-23. The development of Jewar Airport in the close vicinity will boost the industrialisation and urbanisation in the licensed area of the Company.

- **Medical University:** Medical University is proposed to be developed with state-of-the-art facilities near Gautam Budh University.
- **Convention Center:** Convention center is proposed with facilities including Iconic Tower, Exhibition space, Auditorium, Hotel & Fitness Center, Restaurants, Shopping area etc.
- **Night Safari:** Night Safari is proposed in the Greater Noida area. Night Safari will be the fourth such project of its kind in the world, after Thailand, China and Singapore.
- **Other Growth Drivers:** There are many other growth drivers which will lead to demand growth such as:
 - ✓ State-of-the-art residential, commercial, institutional and recreational amenities.
 - ✓ Transportation facilities within the DNGIR and to outside.
 - ✓ Excellent potable water through linkage with the Upper Ganga Canal Project.
 - ✓ Energy efficient design and Waste treatment to ensure Environmental standards.

2.2.2 Greater Noida has emerged as a modern model of far-sighted town planning. Greater Noida city is located at the intersection of the Western and Eastern Dedicated Freight Corridors. The connectivity of Greater Noida with other parts of National Capital Region/Country may be seen from the following:

- Metro Rail Link from Noida to Greater Noida is already operational from last one year which has really improved the connectivity from rest of the Delhi NCR and reduced the commutation woes and time as well. It has really given a good economical option to peoples even working in Noida / Delhi to shift their residence to Greater Noida thereby giving boost to its occupancy ratio.
- Noida Authority has also sanctioned extension of metro line from Noida City Center to Greater Noida West. With the completion of extension line, more than 200,000



- flats lined up for offering possession in next 2-3 years will be connected with approx. 400 Kms long Delhi Metro Network.
- Upcoming Jewar Airport will provide international connectivity.
 - Greater Noida is the gateway to the Delhi-Mumbai Industrial Corridor (DMIC).
 - Important expressways originate from this city, namely the Yamuna Expressway from Greater Noida to Agra.
 - An eight-lane, 25 km-long expressway connects Greater Noida directly to Delhi.
 - Eastern Peripheral Expressway take off at Kundli will join NH2 at Faridabad via Ghaziabad and Greater Noida.
 - The Howrah-Delhi main railway line passes through the area.
- 2.2.3 The Petitioner has submitted that as per data available on the website of GNIDA, a large number of automobile and automobile component manufacturers are located in Greater Noida and it is increasingly being referred to as “the Detroit of North India”. Industrial majors such as Asian Paints, Bharat Petroleum, Delphi Automotive Systems, Yamaha Motors, Honda Sael, LG Electronics, New Holland Tractors, Pepsi, Hindustan Times have all chosen Greater Noida as their preferred operational base.
- 2.2.4 Based on various efforts made by the State Government to attract new investments in the region and plans made by the Development Authority concerning new Industries, Commercial and Domestic projects, the Petitioner is expecting a huge growth in demand of electricity in the licensed area of the Petitioner in coming years.
- 2.2.5 The Petitioner submitted that presently it reaches out to a population of more than 7 lakhs which spreads across hamlets, villages and the new township spanning over an area of 335 sq. km. The Company had 91,234 consumers including Single point multi-rise housing societies as on 31st March 2019.
- 2.2.6 Keeping in view the aforementioned developments taking place in Greater Noida area, for the purpose of estimating sales for the Control Period, the Petitioner has considered CAGR of sales over 7 years i.e. FY 2011-12 to FY 2018-19. However, sales forecast based



on past data and reasonable assumptions regarding the future, the Company has considered CAGR of 1, 2 or 3 years in case of some of the consumer categories in order to rationalize the demand projections and forecasting the future growth in those particular consumer categories.

2.2.7 The Commission vide its data gap queries dated May 13th, 2020 mentioned that the Petitioner's projections of the billing determinants sales and connected load are not consistent with the growth in no. of consumers for certain categories. Accordingly, the Commission analyzed the category-wise projections of FY 2020-21 by the petitioner, in reference to % growth in Load & Sales projected vis-a vis growth in no. of consumers and has recomputed the same wherever it has felt that the projections need to be adjusted rather than rise considered by the Petitioners.

2.2.8 The Commission further directed the Petitioner that considering the impact due to the pandemic of COVID-19 and recent lockdowns, the demand scenario of not only the State, but whole Country is very uncertain and unstable. Lots of industries are not working and Discoms are majorly catering to domestic / household demand (MUs) and load. In view of these latest developments and uncertain situations, the Petitioner may need to reconsider and re-evaluate the projections of demand and supply, and shall consider the demand (Mus) of FY 2019-20 for the purpose of projecting the demand (MUs) for FY 2020-21.

2.2.9 The Petitioner in its reply stated the following:

The Company has already submitted the revised MYT Tariff Formats for FY 2020-21 as Appendix-3 reply to 2nd Deficiency Note dated 13th May, 2020 in petition no. 1541 of 2019 vide Company's email dated 27th May 2020 after considering the impact of COVID-19 pandemic. Further, as directed MYT Tariff Formats for FY 2020-21 including the relevant Forms of Business Plan for Control Period FY 2020-21 to FY 2024-25 is also enclosed as Annexure-1 to the Appendix-1.

With respect to projections for FY 2021-22 to FY 2024-25, as mentioned by the



Hon'ble Commission, we have considered the original submission made in November 2019 on the basis of "Business as usual". In any case, the ARR for FY 2021-22 is required to be submitted by November 2020 and by then, it is also expected to have somewhat better clarity about the business scenario. Therefore, revision, if any required, in the business plan for FY 2021-22 to FY 2024-25 would be done while submitting the ARR petition for FY 2021-22 in November 2020.

2.2.10 The Pre-Covid submissions of the Petitioner are attached as **Annexure A** and the details of actual No. of Consumers, connected load and Sales, and past 7-year CAGR (%) growth as submitted by Petitioners is attached as **Annexure B**.

Petitioner's submissions Post-Covid

2.2.11 The Petitioner for the purpose of preparation of demand estimate for the Control Period of 5 years, has made a number of key assumptions some of which are listed below, however, the Petitioner submitted that it is pertinent to mention that any change in the following variables will have a significant impact on the demand estimates. Further, category wise assumptions considered for forecasting are as under:

- **LMV-1:** For the purpose of forecasting demand estimates for LMV-1 category, it has been divided into following sub-categories:
- **LMV-1 (Rural) Unmetered:** In compliance to the directions of the Commission, the Company has assumed conversion of all unmetered consumers into metered consumers by the end of FY 2020-21. Hence, the sales projection post FY 20120-21 is Nil.
- **LMV- 1 (Rural) Metered:** During December 2016, in compliance to the Orders of the Commission, the Petitioner segregate consumers between rural metered consumers and urban metered consumers based on the feeder they are connected with. Thus, the sales trend prior to FY 2016-17 was not appropriately reflecting the future trajectory and accordingly, the sales of Rural metered consumers has been projected based on one-year CAGR.



- **LMV-1 Urban Metered:** Considering the rapid growth in Greater Noida Area and land being available in limit, it is expected that GNIDA will not come up with any more plotted sectors and more development will take place in the form of Group Housing Societies. Thus, in LMV-1 urban metered, growth has been assumed at 10.05% CAGR based on increased occupancy in the existing Sectors.
- **LMV-1 Urban Single Point Bulk Consumer** – As per Electricity Supply Code, 13th Amendment 2018, the Petitioner has been given a mandate for not issuing any fresh single point connection to high rise societies except in some of the cases. Further, it has also been directed to convert existing single point connection into Multi-point connection aggressively. Accordingly, for the purpose of demand estimates, suitable assumption has been considered while projecting sales for the control period.
- **LMV-1 Urban Multi-point Connections** - As stated above, all new connections in high rise societies are assumed to be energized on multi-point basis from FY 2019-20 onwards. Accordingly, for the purpose of projecting demand estimates for the Control Period, every year approx. 10-15 new connections with approx. 600 residents each connection is assumed for the purpose of projecting sales volume from such societies.
- From the Table no. 6 above showing rise in consumer numbers over the Control Period, it can be observed that there is an increase of 17% in No. of Consumers in FY 2020-21 as compared to 12%-13% in rest of FYs of the Control Period. In this regard, it is submitted that as per directions of the Commission, no new connection is assumed to be released by the Petitioner under Single Point Regime. Therefore, all new connection applications from multi story societies have been considered under Multi Point Connections structure only.
- **HV-2 Consumers:** The Petitioner has recently received an application from one of its industrial consumers for grant of EHV connections (at 132 kV level) considering its demand for more than 50 MW in time to come. Accordingly, the Petitioner has considered to provide EHV power supply to the consumer from the last quarter of FY



2020-21 which can be seen from the rise in connected load sharply in FY 2020-21. and rise in sales volume in FY 2021-22.

2.2.12 In response to the 2nd deficiency / query dated May 13th, 2020, the Petitioner submitted the revised billing determinants considering the impact of Covid 19 pandemic on September 11th, 2020 which are as follows:

Table 1: Revised No. of consumers as projected by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (Post Covid)

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
LMV-1: Domestic Light, Fan & Power	102185	118901	133344	151342	170678
LMV-2: Non Domestic Light, Fan & Power	3584	4070	4474	5001	5536
LMV-3: Public Lamps	262	278	290	302	314
LMV-4: Institution	521	552	576	600	624
LMV-5: Private Tube Wells	1190	1193	1205	1217	1229
LMV 6: Small and Medium Power	3465	4001	4470	4995	5581
LMV-7: Public Water Works	217	231	242	253	264
LMV-8: STW and Pumped Canals	10	10	10	10	10
LMV-9: Temporary Supply	804	835	859	883	907
LMV-11: Electric Vehicle Charging	89	120	152	184	214
HV-1: Non-Industrial Bulk Power	221	263	299	344	393
HV-2: Large and Heavy Power	842	932	1009	1093	1187
Total	113390	131386	146930	166224	186937



Table 2: Revised Connected Load (in MW) projected by the Petitioner for FY 2020-21 to FY 2024-25 (Post Covid)

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
LMV-1: Domestic Light, Fan & Power	439.62	497.08	548.55	609.61	680.60
LMV-2: Non-Domestic Light, Fan & Power	29.24	33.00	36.14	39.94	43.87
LMV-3: Public Lamps	10.27	10.29	10.30	10.31	10.33
LMV-4: Institution	7.05	7.58	8.02	8.49	9.00
LMV-5: Private Tube Wells	5.95	6.29	6.65	7.06	7.54
LMV 6: Small and Medium Power	80.07	93.16	104.68	117.64	132.21
LMV-7: Public Water Works	8.02	8.58	9.05	9.54	10.06
LMV-8: STW and Pumped Canals	0.12	0.12	0.12	0.12	0.12
LMV-9: Temporary Supply	22.97	24.45	25.65	26.90	28.22
LMV-11: Electric Vehicle Charging	8.23	10.43	12.79	15.34	17.47
HV-1: Non-Industrial Bulk Power	119.58	136.27	151.42	168.39	187.43
HV-2: Large and Heavy Power	466.50	512.56	541.98	573.81	608.26
Total	1197.62	1339.81	1455.35	1587.17	1735.11

Table 3: Revised Summary of Demand/Sales as projected by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (MU) (Post Covid)

S. No	Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
<u>Metered Sales</u>						
1	Domestic Light, Fan & Power (LMV-1- Metered)	594.08	645.31	702.79	763.37	825.76
2	Non - Domestic Light, Fan & Power (LMV-2- Metered)	30.33	50.67	58.11	66.77	76.82
3	Public Lamps (LMV-3-Metered)	32.94	39.31	41.64	44.1	46.71
4	Light, Fan & Power for Institutions (LMV-4)	12.34	19.62	20.79	22.03	23.41
5	Small Power for Private Tubewell (LMV-5- Metered)	19.13	27.74	28.64	29.58	30.55



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

S. No	Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
<u>Metered Sales</u>						
6	Small and Medium Power (LMV-6)	69.29	121.67	140.66	162.61	187.98
7	Public Water Works (LMV-7)	22.23	24.39	26.70	29.23	32
8	State Tube Wells (LMV-8)	0.18	0.38	0.40	0.42	0.45
9	Temporary Supply (LMV-9)	37.65	63.54	72.39	82.48	93.98
10	Electric Vehicle Charging (LMV-11)	6.15	12.74	15.97	20.25	23.56
11	Non-Industrial Bulk Load (HV-1)	178.34	338.41	395.28	461.74	539.41
12	Large & Heavy Power (HV-2)	688.85	1366.45	1,485.71	1,612.64	1,747.98
Sub-total (Metered)		1691.50	2710.24	2,989.08	3,295.23	3,628.62
<u>Unmetered Sales</u>						
1	Domestic Light, Fan & Power (LMV-1- Unmetered)	3.17	-	-	-	-
2	Small Power for Private Tubewell (LMV-5- Unmetered)	3.82	-	-	-	-
3	State Tube Wells (LMV-8)	-	-	-	-	-
Sub-total (Unmetered)		6.99	-	-	-	-
Total Sales		1698.49	2710.24	2,989.08	3,295.23	3,628.62

2.2.13 The Petitioner has projected that after FY 2020-21, no unmetered consumers will be there in any other consumer category/ sub category. In this regard, taking seasonality into consideration for past five years the Commission sought details of category / sub-category wise status of consumer metering, Feeder level / distribution transformer metering and consumer category / sub-category wise diversity factor. The Petitioner in its reply submitted the following:

5. Details of Metering

It is kindly submitted that unmetered consumers in the licensed area of the Company is coming down constantly as evident from various submissions made by the Company in this regard from time to time. Further by restraining to give unmetered connections and simultaneously pushing unmetered consumers to metered ones, the Company has substantially achieved the objective of metering as per the Electricity Act, 2003.



Since 2003, the Company has not released even a single connection in unmetered category in its efforts to convert the unmetered consumers, all requisite material such as cable, meters, meter box and network is always available and had there been no resistance / protests from consumers, the Company would have converted the entire unmetered connections into the metered ones long-back.

The Company with its continuing efforts expects to convert all unmetered consumers (except LMV-5) to metered category very soon.

Further, the details of metering of Feeders and Transformers for the last five years is given in the Table-1 herein below: -

Table-1 : Feeder Transformer metering				
Fin. Year	No. of Feeder	Feeder Metered	No. of Transformer	Metered Transformer
<i>FY 2018-19</i>	<i>228</i>	<i>228</i>	<i>6526</i>	<i>4327</i>
<i>FY 2017-18</i>	<i>215</i>	<i>215</i>	<i>6211</i>	<i>4112</i>
<i>FY 2016-17</i>	<i>206</i>	<i>206</i>	<i>6035</i>	<i>3955</i>
<i>FY 2015-16</i>	<i>186</i>	<i>186</i>	<i>5660</i>	<i>3705</i>
<i>FY 2014-15</i>	<i>163</i>	<i>163</i>	<i>5516</i>	<i>3491</i>

The details of seasonal and month-wise variation in demand of various categories of consumer have already been provided in the Demand Estimates enclosed as Annexure 2.3 with the Business Plan petition no. 1526 of 2019.

2.2.14 The Petitioner has also submitted that there will be major urbanization which will increase the demand of electricity. In this regard the Commission asked the Petitioner to clarify whether in projecting the sales of consumers with respect to the CAGR for each category, has it taken into consideration the following:

- (i) Land Bank Available;
- (ii) Future projects coming up in its area;
- (iii) Economic scenario in respect to demand of homes etc.
- (iv) Future coming up of Industries sectoral wise;
- (v) Big consumers availing Open Access.



The Commission also asked the Petitioner to reconcile the sales projected w.r.t the upcoming projects on year on year basis for the Control period.

2.2.15 The Petitioner in its reply stated that

6. Projection as per GNIDA plan

The major projects mentioned in Business Plan and quoted by the Hon'ble Commission in its Deficiency Note have been taken on the basis of the data available on the official website of GNIDA & discussion with them. Based on the data of sales, no. of consumers and revenue of previous 7 years, the Company has forecasted sales volume for the Control Period FY 2020-21 to FY 2024-25 in accordance with Regulation 5 and 42 of the MYT Regulations, 2019. It has been assumed that the enumerated upcoming projects in Greater Noida will continue to fuel the growth of the Company witnessed so far.

It is not possible at this stage to reconcile the sales projected with respect to upcoming projects on year on year basis, therefore, as mandated by Regulation 42 of the MYT Regulations, 2019, for the purpose of estimating sales for the Control Period, the Company has considered CAGR of sales over 7 years i.e. FY 2011-12 to FY 2018-19. However, sales forecast based on past data and reasonable assumptions regarding the future, the Company has considered CAGR of 1, 2 or 3 years in case of some of the consumer categories in order to rationalize the demand projections and forecasting the future growth in those particular consumer categories. The details of CAGR used in each of the category / sub-category has already been provided in Annexure-2.2 of the Business Plan.

Commission's Analysis:

2.2.16 Preparation of Business Plan is very crucial in the business of distribution of electricity.

Hence it is important to take into consideration the attributes that are critical for the Electricity Distribution business such billing determinants, distribution losses, power



procurement and capital expenditure. These attributes have been covered in the Business plan and are essential in setting out priorities to enhance reliability and plan for the future to ensure improved quality of power and achieving & maintaining low level of distribution loss.

2.2.17 There are several aspects that can have an influence on the billing determinants. Tremendous improvement has been made in terms of the energy efficiency of the electric products. The evolving standards of living resulting in increased usage of air conditioners and other heavy load equipment and increased hours of supply has also led to higher energy consumption and load. Various government policies have also played very important role. State as well as Central Government has continuously focused on developing Electric Vehicle market. Licensee in its submission has not provided any details for billing determinants in regard to electric vehicle. However, considering the efforts of the State and Central government, it will certainly boost the demand for electric vehicle. The Tariff has also been approved by the Commission for addressing the hindrances and to be in synchronization with the initiatives that have been taken. The licensees will have to plan to cater demand of Electric Vehicles. The State government has come up with policies focusing on the Agriculture sector in the State. The Kusum Yojana is one of the examples which will have significant influence on the billing determinants if it will be successfully implemented. This policy will lead to reduction in subsidized category i.e. LMV-5 consumption and at the same time reduce the number of unmetered consumers in this category. The Commission has also been pushing for implementing technological solutions such as blockchain, battery storage etc. Apart from this, the impact of net metering cannot be neglected. Currently, the number of consumers having net metering is very low considering the potential as domestic and agricultural consumers have huge share in numbers, load (KW) and sales (MUs). Government may come up with policies to promote renewable sources of energy which will completely transform the current situation with respect to billing determinants. Apart from this, certain situation may also arise which will completely

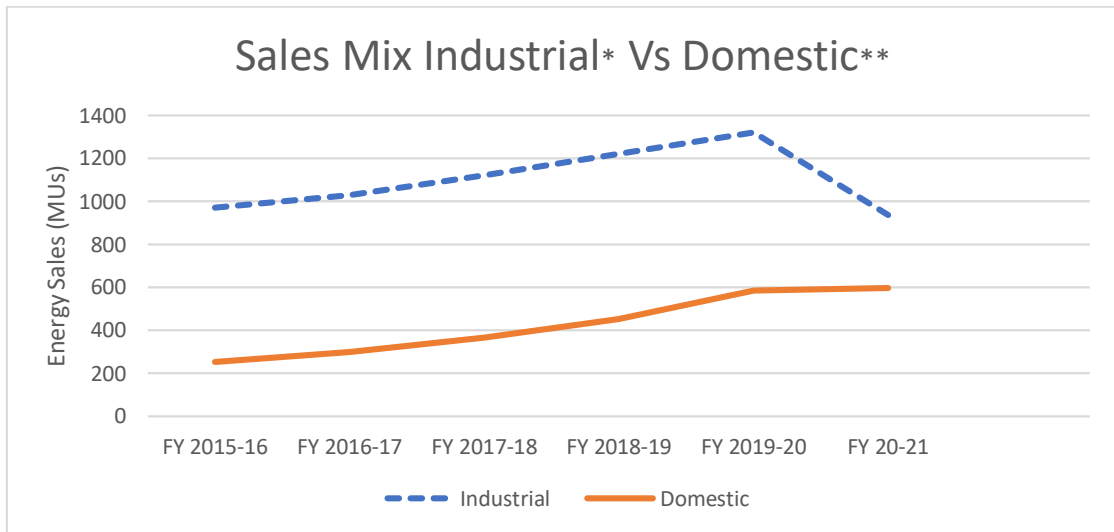


alter the consumption pattern of different category of consumers. The Licensee will have to continuously monitor how the power sector is evolving and accordingly plan for the billing determinants on annual basis to make the submission in the ARR for each year of the control period.

2.2.18 The impact of Covid-19 has been taken into consideration while approving the Billing determinants for second MYT Control Period i.e., FY 2020-21 to FY 2024-25. The Commission has observed that during lockdown period consumer categories LMV-2, LMV-4, LMV-6, HV-1, HV-2 & HV-3 remained closed or un-operational, due to this there was decrease demand estimates for FY 2020-21 whereas for domestic categories the demand estimates has increased for FY 2020-21.

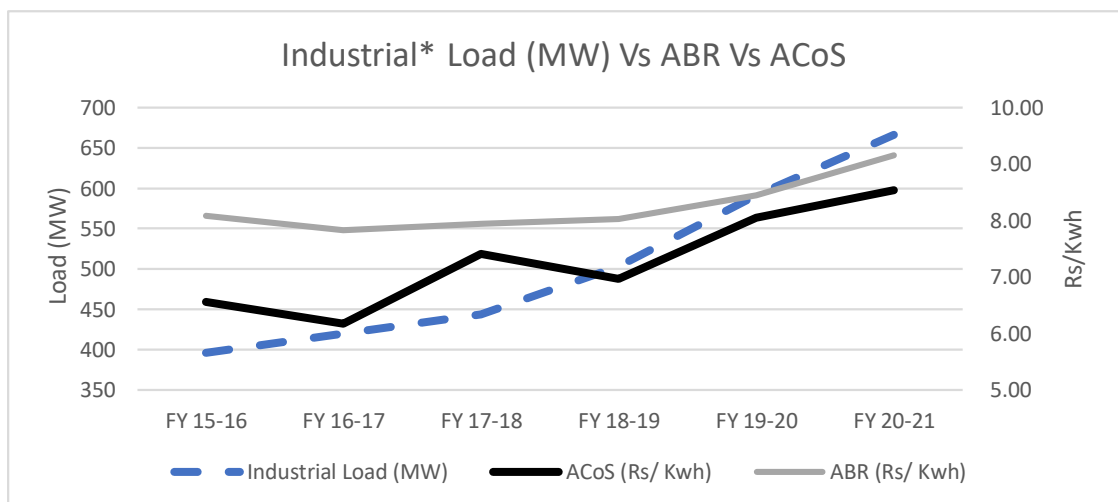
2.2.19 Recently GoI has launched 'Atmanirbhar Bharat Abhiyaan' to boost domestic manufacturing. Many efforts have been made by Government of Uttar Pradesh which has resulted in elevating the UP from 16th rank to 2nd rank in ease of doing business. It is evident that from FY 2021-22 onwards there will be increase in Billing Determinants i.e, no. of Consumers, Connected Load and Energy Sales.

2.2.20 Further, the Commission analyzed past trends of load variation and sales of different categories with respect to Average Billing Rate (ABR) and Average Cost of Supply (ACoS). The Commission has taken Trued-Up data from FY 2015-16 to FY 2017-18 and from 2018-19 onwards submission made by the Petitioner has been considered. It is demonstrated below:

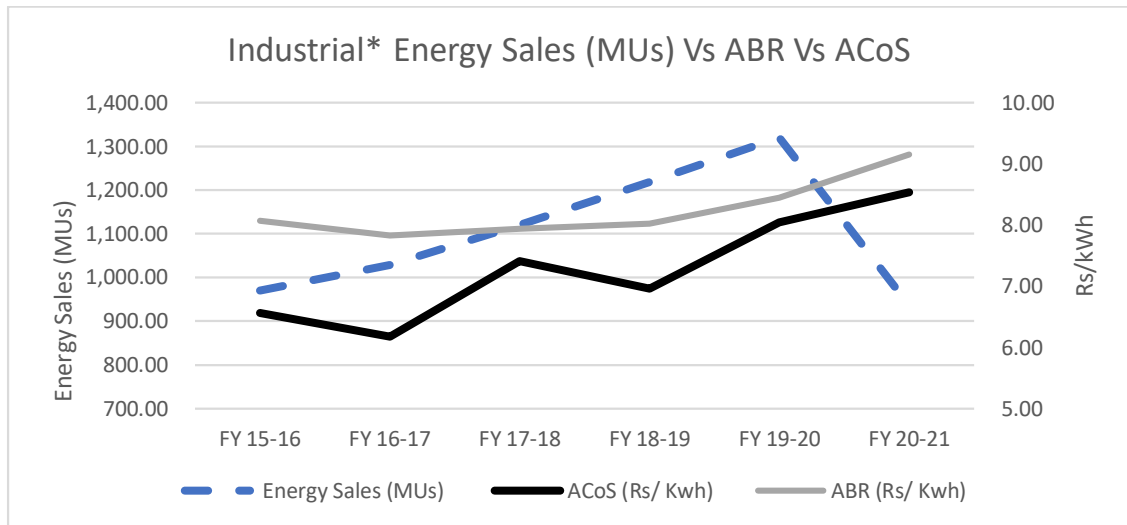


***Industrial (LMV-6 + HV-1 + HV-2) **Domestic (LMV-1)**

2.2.21 It has been observed that the domestic consumption has increased in FY 2020-21 while the industrial consumption has reduced. This is primarily due to lockdown imposed due to Covid-19 pandemic. Further, there isn't much change in the industrial as well as domestic consumption in the last two years.

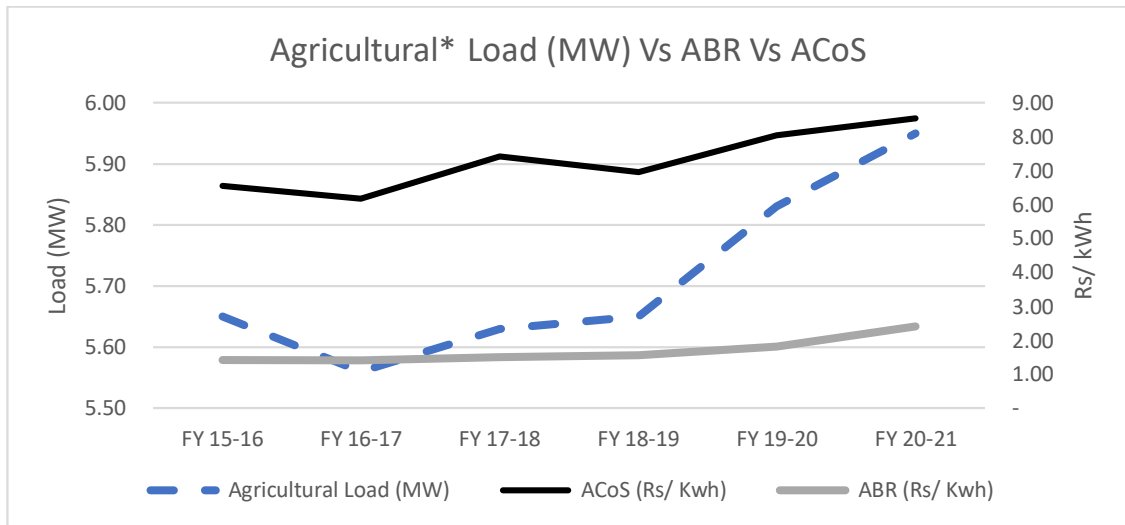


***Industrial (LMV-6 + HV-1 + HV-2)**

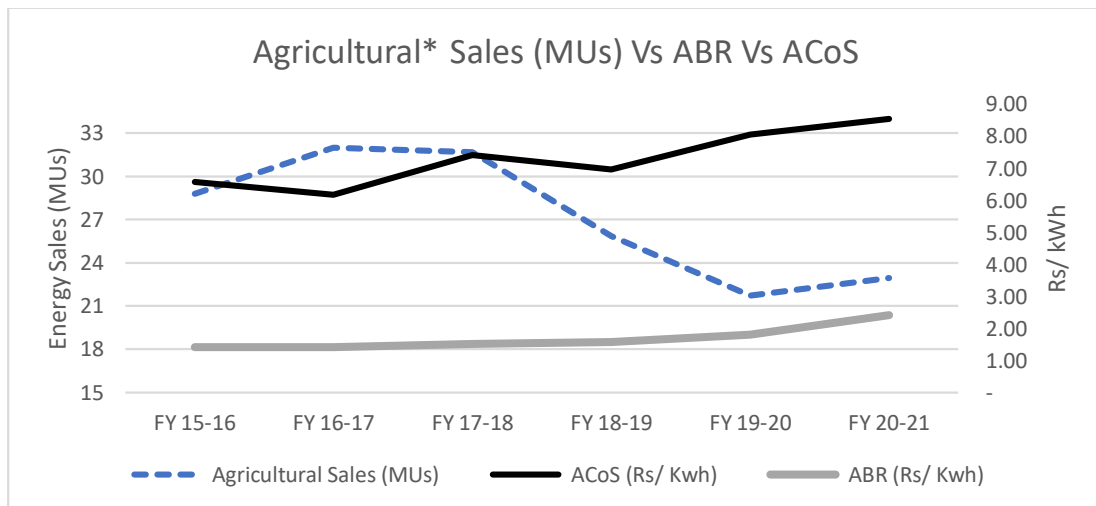


*Industrial (LMV-6 + HV-1 + HV-2)

2.2.22 As can be seen from the above, the consumption and load in industrial category has been increasing steadily till FY 2019-20, however the consumption /sales have reduced in FY 2020-21 in comparison to increase in load has been witnessed, this may be due to Covid-19 impact. The higher ACoS has higher impact on the subsidizing category as tariff increase would be required to meet the expenditure. The ABR of industrial category is already higher than ACoS, since it is a subsidizing category. Hence, more efforts have to be made on maintaining the ACoS and impetus should be given to increasing industrial consumption as reduction in industrial consumption may act as deterrent for overall revenue realization.

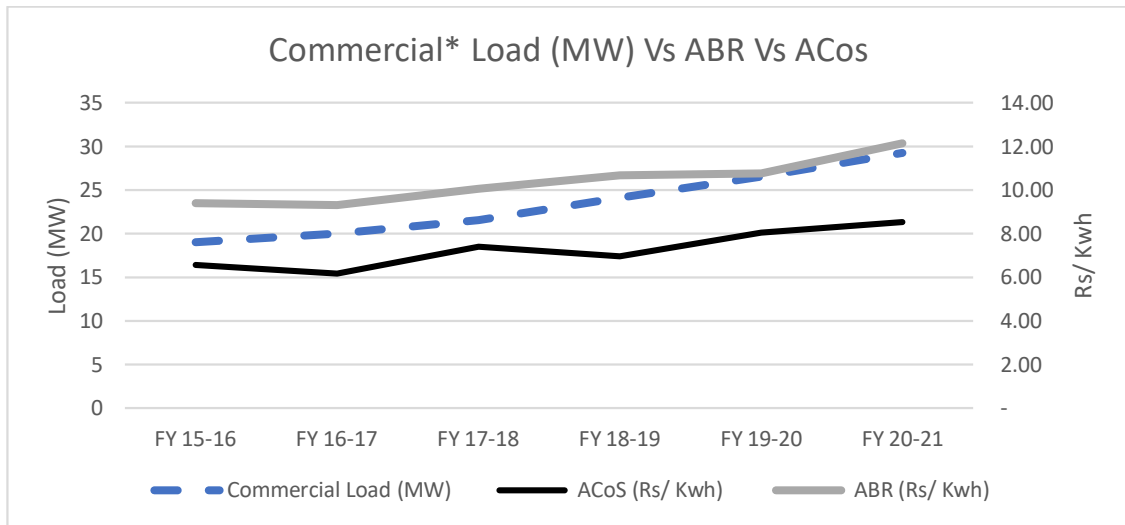


**Agricultural (LMV-5)*

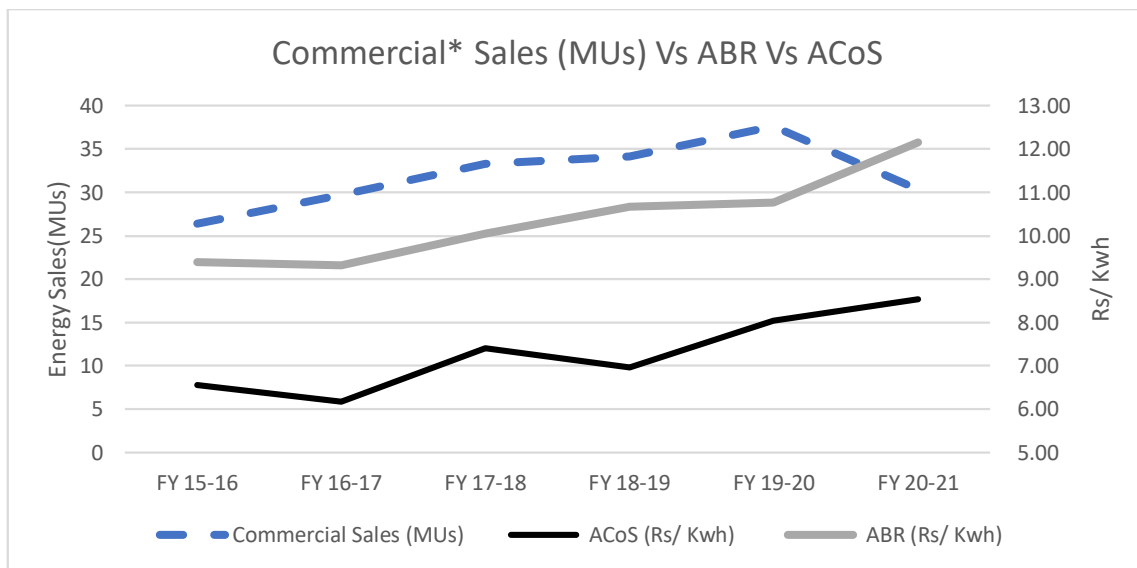


**Agricultural (LMV-5)*

2.2.23 The Commission observes that the load is increasing however, sales is decreasing in this category. Further, the ABR of agricultural consumers is much lower than ACoS as this is a cross-subsidized category.



*Commercial (LMV-2)

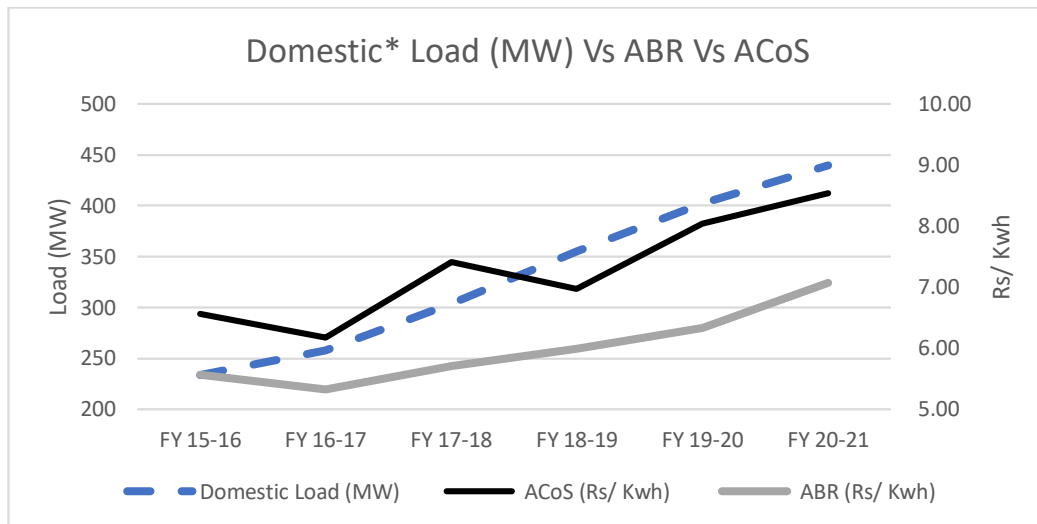


*Commercial (LMV-2)

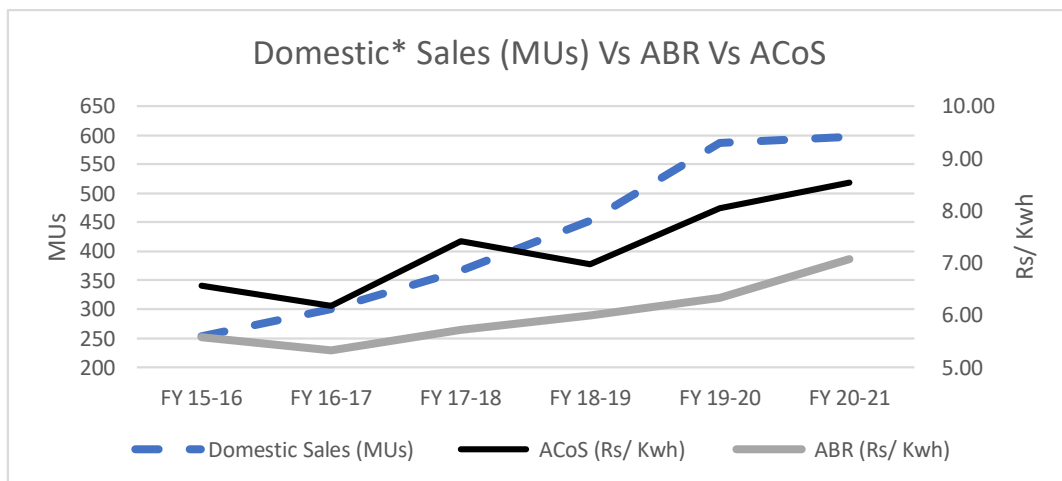
2.2.24 The trend in commercial sector is similar to industrial, the consumption and load in commercial category has been steady till FY 2019-20, however the consumption /sales has reduced in FY 2020-21 in comparison to increase in load. This may be due to Covid-19 impact. The ABR of commercial category is already higher than ACoS, since it is a cross-subsidizing category. Hence, more efforts have to be made on maintaining the



ACoS and impetus should be given to increasing consumption as reduction in commercial consumption is acting as deterrent for overall revenue realization. Also, the Petitioners should focus on improving billing and collection efficiency of this category, to improve their cash flows.



*Domestic (LMV-1)



*Domestic (LMV-1)

2.2.25 The domestic consumption and load have been increasing over the years. It is expected that the Petitioner would maintain the quality & standards of supply.

2.2.26 The Commission in its Tariff Order for State Owned Discoms dated 03rd September 2020



had considered sales for LMV-5 consumer category taking 120 days and 14 hours of supply. Since PVVNL supplies power to the adjacent region of NPCL and the energy sales for PVVNL has been determined considering 120 days and 14 hours of supply, this has also been employed for determining sales for unmetered consumers in LMV-5 consumer category for NPCL as well.

2.2.27 100% metering is a necessary condition for an efficient distribution network and financial viability of the distribution companies. As per the submission made by the Petitioner, the metering of all the consumers (except LMV-5) shall be completed by end of FY 2020-21. The Petitioner must ensure metering of consumers in LMV-5 category as well because 100% metering of consumers is essential.

2.2.28 The Commission directs that only either pre-paid meter or smart meters be installed for all new connections or replacement of faulty meters. The Petitioner is directed to ensure 100% feeder metering and DT metering within next one year.

2.2.29 Taking the above into consideration, the Commission approves the Billing Determinants for the control period as under:

Table 4: No. of Consumers approved by Commission for the Control Period

NPCL: No. of Consumers (FY 2020-21 to FY 2024-25)							
Sl. No.	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	LMV-1: Domestic Light, Fan & Power						
	Life Line Consumers (both Rural and Urban)						
	(up to 100 kWh/month)						
	Dom: Rural Schedule (unmetered)	1915					
	Dom: Rural Schedule (metered) other than BPL	15635	22,854	24,225	24,952	25,650	26,369
	Dom: Supply at Single Point for Bulk Load	172	154	149	145	137	133
	Other Metered Domestic Consumers other than BPL	64944	73,878	75,356	77,616	79,945	82,343
	Sub total	82666	96,886	99,730	102,714	105,733	108,845



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NPCL: No. of Consumers (FY 2020-21 to FY 2024-25)							
Sl. No.	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
2	LMV-2: Non Domestic Light, Fan & Power						
	Sub total	3457	3,373	3,575	3,789	4,015	4,254
3	LMV-3: Public Lamps						
	Sub total	214	295	295	295	295	295
4	LMV-4: Institutions						
	Inst: Public	186	204	213	223	234	247
	Inst: Private	643	317	331	347	364	383
	Sub total	829	521	544	570	598	630
5	LMV-5: Private Tube Wells						
	Unmetered	522	6				
	PTW: Rural Schedule (unmetered)	522	6				
	Metered	591	1,233	1,300	1,371	1,446	1,525
	PTW: Rural Schedule (metered)	507	1,185	1,250	1,318	1,390	1,466
	PTW: Urban Schedule (metered)	84	48	51	53	56	60
	Sub total	1113	1,239	1,300	1,371	1,446	1,525
6	LMV 6: Small and Medium Power						
	Consumers getting supply as per "Rural Schedule"	19	20	22	22	23	23
	Consumers getting supply other than "Rural Schedule"	3139	3,445	3,596	3,755	3,922	4,097
	Sub total	3158	3,465	3,617	3,778	3,945	4,120
7	LMV-7: Public Water Works						
	Sub total	256	226	237	250	263	278
8	LMV-8: STW and Pumped Canals						
	Sub total	1	10	10	11	11	12
9	LMV-9: Temporary Supply						
	Sub total	1026	804	842	882	924	970
10	LMV-11: Electric Vehicle Charging Station						
	Multi Story Buildings		21	36	51	65	81
	LMV-1b		10	22	33	42	53
	HV-1b		11	14	18	23	28
	Public Charging Station		68	84	101	119	133
	LT		30	38	46	53	59
	HT		38	46	55	66	83
	Sub total		89	120	152	184	214
11	HV-1: Non Industrial Bulk Power						



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NPCL: No. of Consumers (FY 2020-21 to FY 2024-25)							
Sl. No.	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	Sub total	232	221	245	272	303	340
12	HV-2: Large and Heavy Power						
	HV2 Urban Schedule: Supply at 11 kV	583	734	789	848	912	981
	HV2 Urban Schedule: Supply above 11 kV & upto 66 kV	130	128	138	148	159	171
	HV2 Urban Schedule: Supply above 66 kV & upto 132 kV		-	-	-	-	-
	HV2 Urban Schedule: Supply above 132 kV		1	1	1	1	1
	Sub total	713	863	928	997	1,072	1,152
13	Total	93664	107,992	111,444	115,080	118,790	122,634

Table 5: Connected Load (KW) approved by Commission for the Control Period

NPCL: Connected Load (kW) (FY 2020-21 to FY 2024-25)							
Sl. No	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		(in KW)	(in KW)	(in KW)	(in KW)	(in KW)	(in KW)
1	LMV-1: Domestic Light, Fan & Power						
	Life Line Consumers (both Rural and Urban)						
	(up to 100 kWh/month)						
	Dom: Rural Schedule (unmetered)	4553					
	Dom: Rural Schedule (metered) other than BPL	25247	54,449.61	57,553.24	59,279.84	60,939.67	62,645.98
	Dom: Supply at Single Point for Bulk Load	123404	154,664.22	160,077.47	158,476.69	156,891.93	155,323.01
	Other Metered Domestic Consumers other than BPL	193024	236,976.60	242,664.04	249,943.96	257,442.28	265,165.54
	Sub total	385960	446,090.43	460,294.74	467,700.49	475,273.87	483,134.53
2	LMV-2: Non Domestic Light, Fan & Power						
	Sub total	27510	29,241.97	30,873.67	32,713.75	34,666.76	36,739.83
3	LMV-3: Public Lamps						
	Sub total	8540	10,591.00	10,591.00	10,591.00	10,591.00	10,591.00
4	LMV-4: Institutions						
	Inst: Public	1864	1,673.33	1,798.83	1,933.74	2,078.78	2,234.68
	Inst: Private	4596	4,273.19	4,653.51	5,002.52	5,377.71	5,781.04



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NPCL: Connected Load (kW) (FY 2020-21 to FY 2024-25)							
Sl. No	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		(in KW)	(in KW)	(in KW)	(in KW)	(in KW)	(in KW)
	Sub total	6460	5,946.53	6,452.34	6,936.27	7,456.49	8,015.72
5	LMV-5: Private Tube Wells						
	Unmetered		27.78				
	PTW: Rural Schedule (unmetered)	3173	27.78				
	Metered	0	5,921.22	6,255.43	6,609.06	6,983.27	7,379.94
	PTW: Rural Schedule (metered)	1848	5,671.22	5,992.78	6,332.57	6,691.62	7,071.71
	PTW: Urban Schedule (metered)	209	250.00	262.65	276.49	291.64	308.24
	Sub total	5230	5,949.00	6,255.43	6,609.06	6,983.27	7,379.94
6	LMV 6: Small and Medium Power						
	Consumers getting supply as per "Rural Schedule"	139	94.44	96.28	98.39	100.79	103.50
	Consumers getting supply other than "Rural Schedule"	106091	79,975.54	84,078.28	88,425.13	93,005.55	97,823.24
	Sub total	106230	80,069.98	84,174.56	88,523.51	93,106.33	97,926.73
7	LMV-7: Public Water Works						
	Sub total	12480	8,623.35	8,960.53	9,332.39	9,742.08	10,193.14
8	LMV-8: STW and Pumped Canals						
	Sub total	140	125.46	129.73	134.19	138.86	143.75
9	LMV-9: Temporary Supply						
	Sub total	33480	23,163.00	24,066.36	25,024.20	26,030.17	27,084.39
10	LMV-11: Electric Vehicle Charging Station						
	Multi Story Buildings		822.22	1,355.54	1,899.97	2,422.18	3,011.06
	LMV-1b		333.33	733.33	1,100.00	1,399.97	1,766.62
	HV-1b		488.89	622.21	799.97	1,022.21	1,244.43
	Public Charging Station		7,404.44	9,075.48	10,889.05	12,920.27	14,457.94
	LT		2,000.00	2,533.40	3,066.68	3,533.43	3,933.41
	HT		5,404.44	6,542.08	7,822.37	9,386.84	10,524.52
	Sub total		8,226.67	10,431.02	12,789.02	15,342.44	17,468.99
11	HV-1: Non Industrial Bulk Power						
	Sub total	136560	130,634.90	147,160.21	163,524.43	181,855.52	202,423.38
12	HV-2: Large and Heavy Power						
	HV2 Urban Schedule: Supply at 11 kV	141103	160,823.25	172,884.99	185,851.37	199,790.22	214,774.49
	HV2 Urban Schedule: Supply above 11 kV & upto 66 kV	188874	209,198.05	224,887.91	241,754.50	259,886.09	279,377.54
	HV2 Urban Schedule: Supply above 66 kV & upto 132 kV						
	HV2 Urban Schedule: Supply above 132 kV		61,728.40	74,074.07	74,074.07	74,074.07	74,074.07
	Sub total	329977	431,749.70	471,846.97	501,679.94	533,750.38	568,226.10



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

NPCL: Connected Load (kW) (FY 2020-21 to FY 2024-25)							
Sl. No	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		(in KW)	(in KW)	(in KW)	(in KW)	(in KW)	(in KW)
13	Total	1052580	1,180,411.98	1,261,236.56	1,325,558.23	1,394,937.17	1,469,327.51

Table 6: Energy Sales (MUs) approved by Commission for the Control Period

NPCL: Sales (MU) (FY 2020-21 to FY 2024-25)							
Sl. No	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		(in MU)	(in MU)	(in MU)	(in MU)	(in MU)	(in MU)
1	LMV-1: Domestic Light, Fan & Power						
	Life Line Consumers (both Rural and Urban)						
	(up to 100 kWh/month)						
	Dom: Rural Schedule (unmetered)	15.66	3.17				
	Dom: Rural Schedule (metered) other than BPL	35.41	70.15	81.94	84.40	86.76	89.19
	Dom: Supply at Single Point for Bulk Load	197.91	317.27	316.19	316.19	316.19	316.19
	Other Metered Domestic Consumers other than BPL	261.46	245.92	253.34	260.94	268.77	276.84
	Sub total	510.44	636.51	651.47	661.53	671.72	682.22
2	LMV-2: Non Domestic Light, Fan & Power						
	Non Dom: Rural Schedule (unmetered)						
	Non Dom: Rural Schedule (metered)						
	Multi Point						
	Non Dom: Private Advertising /Sign Post/Sign Board/GlowSign						
	Non Dom: Other Metered Non-Domestic Supply						
	Sub total	42.86	33.57	43.88	46.47	49.22	52.13
3	LMV-3: Public Lamps						
	Sub total	37.38	33.13	41.45	41.45	41.45	41.45
4	LMV-4: Institutions						
	Inst: Public	9.14	5.70	8.65	9.30	10.00	10.75
	Inst: Private	15.03	8.21	12.51	13.45	14.46	15.54
	Sub total	24.17	13.91	21.16	22.75	24.46	26.29



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

NPCL: Sales (MU) (FY 2020-21 to FY 2024-25)							
Sl. No	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20 (in MU)	FY 2020-21 (in MU)	FY 2021-22 (in MU)	FY 2022-23 (in MU)	FY 2023-24 (in MU)	FY 2024-25 (in MU)
5	LMV-5: Private Tube Wells						
	Unmetered	14.13	0.05				
	PTW: Rural Schedule (unmetered)	14.13	0.05				
	Metered	12.54	22.90	23.23	24.54	25.92	27.38
	PTW: Rural Schedule (metered)	10.43	22.63	22.94	24.23	25.60	27.04
	PTW: Urban Schedule (metered)	2.11	0.27	0.29	0.30	0.32	0.34
	Sub total	26.67	22.95	23.23	24.54	25.92	27.38
6	LMV 6: Small and Medium Power						
	Consumers getting supply as per "Rural Schedule"	0.13	0.03	0.04	0.04	0.04	0.04
	Consumers getting supply other than "Rural Schedule"	87.91	78.64	94.42	99.37	104.59	110.08
	Sub total	88.04	78.67	94.45	99.41	104.63	110.12
7	LMV-7: Public Water Works						
	Sub total	22.23	22.23	23.92	24.90	26.00	27.20
8	LMV-8: STW and Pumped Canals						
	Sub total	0.60	0.18	0.21	0.21	0.22	0.23
9	LMV-9: Temporary Supply						
	Metered			63.54	65.85	68.27	71.04
	Metered TS: Individual residential consumers			18.88	19.37	19.86	20.67
	Metered TS: Others			44.66	46.49	48.41	50.37
	Unmetered						
	Unmetered TS: Ceremonies						
	Unmetered TS: Temp shops						
	Sub total	60.44	37.65	63.54	65.85	68.27	71.04
10	LMV-11: Electric Vehicle Charging Station						
	Multi Story Buildings		0.52	1.45	2.09	2.83	3.62
	LMV-1b		0.21	0.79	1.21	1.63	2.12
	HV-1b		0.31	0.66	0.88	1.20	1.50
	Public Charging Station		5.63	11.29	13.88	18.43	21.14
	LT		1.34	2.97	3.69	5.48	6.25
	HT		4.29	8.33	10.20	12.95	14.89
	Sub total		6.15	12.74	15.97	21.26	24.76
11	HV-1: Non Industrial Bulk Power						
	Commercial / Private Institutions		186.83	255.50	287.28	324.14	366.96
	Public Institutions/Registered Societies/Residential		31.69	43.33	48.72	54.97	62.23



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

NPCL: Sales (MU) (FY 2020-21 to FY 2024-25)							
Sl. No	Category	Approved in TO dated 03.09.2019	Control Period 1st Year	Control Period 2nd Year	Control Period 3rd Year	Control Period 4th Year	Control Period 5th Year
		FY 2019-20 (in MU)	FY 2020-21 (in MU)	FY 2021-22 (in MU)	FY 2022-23 (in MU)	FY 2023-24 (in MU)	FY 2024-25 (in MU)
	Colonies/Multi-Storied Buildings)						
	Sub total	259.79	218.52	298.83	336.00	379.11	429.19
12	HV-2: Large and Heavy Power						
	HV2 Urban Schedule: Supply at 11 kV	310.58	330.04	457.04	491.31	528.16	567.78
	HV2 Urban Schedule: Supply above 11 kV & upto 66 kV	724.74	561.25	539.02	579.45	622.91	669.63
	HV2 Urban Schedule: Supply above 66 kV & upto 132 kV				-	-	-
	HV2 Urban Schedule: Supply above 132 kV		8.20	204.41	233.62	262.82	292.02
	Sub total	1035.32	899.49	1,200.47	1,304.38	1,413.89	1,529.42
13	Total	2108.87	2,002.96	2,475.36	2,643.47	2,826.15	3,021.43

2.3 DISTRIBUTION LOSS

Petitioner's submission

- 2.3.1 The Petitioner has submitted that it is facing challenges in various forms to contain T&D Losses such as (i) Illegal tapping from underground network in the urban sectors, (ii) Theft of electricity by illegal occupants in many vacant houses in the urban sectors, (iii) Damage of pillar boxes by miscreants (despite frequent repairs/locking and even welding of panels) in the urban sectors culminating into unauthorized & illegal tapping of the electricity, (iv) By pass the meter to purposely reduce consumption, (v) Theft of electricity by puncturing ABC cable, illegal tapping from the nearby LT network directly coupled with rapid growth in the demand of electricity in rural areas, (vi) Meter tampering with remote (vii) Lowering of the HT:LT ratio, (viii) Strong resistance by the villagers against LCC drives conducted by the Company from time to time, (ix) Continuous interference and pressures from political outfits and at times from other authorities say police etc. (x) non-availability of Special Police Station for the Company for registering power theft cases as set-up for all other Discoms in the State of UP (xi)



Non availability of full-time Special Court exclusively for trial of electricity theft cases, is also a major impediment resulting in high pendency of electricity theft cases which leads to accumulation of cases without realization of dues.

2.3.2 The Petitioner has submitted that it follows zero-tolerance policy against theft of electricity and takes all necessary action within the prevailing framework of legislation to contain T & D Losses, however, such actions are not completely translating into desired results due to lack of severe deterrent against such persons and also inaction in disposal of theft cases by the Police / Special Court and non-cooperation by the Society. In-fact, due to lack of prompt action against electricity theft by the law enforcing agencies, of late, the errant consumers are increasingly becoming fearless to continue to indulge in power theft, rather on a bigger scale.

2.3.3 The Petitioner, further submitted that the following paragraphs analyse in detail the cause effect and mitigating factors for perils of theft and distribution losses: -

a) Headwinds: Medusa heads

The Pre engaged Administration: Electricity theft, finds itself last in the priority list of the district administration, which is always engaged to manage/control the media hyped agitations or high-profile crimes. In many occasions, vigilance team are beaten up by miscreants and villagers, but local police only tries to lodge complaint u/s 135 and ignores the manhandling part stating the Company's employees are not government employees, hence, the miscreants and assailants cannot be prosecuted under grievous sections of the Indian Penal Code like section 353 etc. Although, the State Govt. has promulgated the UP Engineers Protection Act, yet the Engineers of the Company are not covered under this Act, as it has been notified for UPPCL only. This motivates the villagers/miscreants to repeat their action. The Company, though serves notices, disconnects electricity supply and lodges FIRs after persistent follow-ups (most of the times the power theft complaints made by the Company are not registered as FIRs), but lack of stringent action by the law enforcement agencies, gives a negative message among the masses and makes the whole action futile.



Further, on one hand the administration fails to provide requisite support to the Petitioner for controlling electricity theft and on the other hand it forces the Petitioner to increase hours of supply in theft prone rural areas i.e. from 12-16 hours to at-least 18-22 hrs in accordance with the State Government directions. In this regard, we would like to bring to the kind attention of the Commission, a letter no. 1686/24-P-3-2018 dated 3rd Aug'18 written by the Principal Secretary (Energy), Govt. of UP wherein the Company has been directed to provide 18 hours power supply in villages failing which action will be taken against the Petitioner in accordance with the conditions of license of the Petitioner. Therefore, the Petitioner had to further increase power supply in villages. However, it results into higher T&D losses and bad debts due to non-payment of bills.

Threat of Harassment complaint: In couple of occasions, pilfering consumer simultaneously approaches the local police station levelling false allegation of misbehaviour with ladies or harassment of persons, creating psychological pressure to withdraw pilferage case. These events not only demotivate the team but also creates mental pressure, pushes good resources to find alternate avenues including request to change department or join some other organization.

Illicit demand: Villagers gathered and staged Dharna Pardarshan in front of the Customer Care Centre of the Company and demanded fixed billing instead of billing based on metered consumption. As the protestors grew in number and the situation get heated up and the Company has to seek intervention of the Police Department to disperse the mob to maintain law and order in the Area. In spite of adding up of many electrical/electronic items such as air conditioners, fridge, large TVs, washing machines, mobile phone, Laptops etc. in villages, consumers are not ready to use metered supply but insist on flat rate billing. Miscreants, even discourage people willing to put up meters in their premises and oppose Company's employees and local leaders appeals villagers to remove and throw all the meters away. There have been several instances, where,



people have removed meters from their premises, where they were installed after a lot of deliberation and effort.

Squatters menace: In Urban Sectors, most of the houses are lying vacant as the plot owners are not residing there, but have constructed small houses to comply with the provisions of GNIDA in order to escape penalty. These vacant houses are often occupied by Migrants/ labourers who have gushed into the city in search of work. These houses are not having any legal electricity connection and unauthorised occupant indulge in pilferage of electricity. Vigilance team conducts regular raids and disconnects the supply, but these migrants or labourers move to the next vacant house and repeat the theft. More than 3700 such premises in the urban areas have been identified pilfering electricity. Since, the details of owners of these premises are not available; notices served on these premises on account of theft do not yield any results. Yet Company continues its efforts to obtain details of ownership of these premises from GNIDA to take appropriate action against them.

Illegal colonies and Doob Area: In the Hindon river bank, many colonies have been established and houses are increasing day by day. On one side GNIDA is accepting registration of plots while on the other side the NGT is not allowing the Company to lay its network and provide legal connection against the rapidly growing dwelling. The menace has been quite high in Doob area of Greater Noida which is witnessing rapid build-up of colonies with growing urbanization and all round development. Since, these colonies have no legal status, NGT is restraining the Company from providing electricity connection in unplanned despite the fact that many people residing there have been approaching the Company for connection. This is leading to unauthorized tapping of energy by illegal means from nearby the Company's network. Although, Vigilance drives are conducted in these areas for de-hooking of the illegal cables, but people resort to repetitive theft as legal connection is not granted and employees of the Company engaged in vigilance activity in these areas are manhandled many times during de-hooking drive by the occupants resulting into huge T&D losses.



Further, in villages and unauthorized colonies, due to lack of planned development and no authority for approving “Naksha”, at many places, the electrical network is being exploited to such a level where even the electrical poles / transformers are being covered within the boundary / four wall of the houses leading to theft/ pilferage. Due to widespread land acquisition in Greater Noida, allocation of certain percentage of land to farmers and development of private colonies and allocation, the above practice is quite frequent and wide spread in Greater Noida Area.

Sins of devote: Greater Noida has been witnessing a number of religious programs and their number is growing day by day. Many affluent people who organize religious, spiritual and social events like Janmashtmi, Dusshera Mela, Ramlila, Durga Puja, Diwali Milan, Christmas, Eid and religious discourse, marriages etc. spend lavishly on the decorations and other items, but are not in the habit of taking authorized temporary electricity connections for the same. When caught they unfortunately gather public sympathy in the name of religion etc. and in such situation, local administration also tries to avoid any action against them. The Company becomes helpless in arresting such menace and at times is forced to recall its vigilance drives for the safety of its employees.

Agriculture in acquired land: Land were acquired by the Authority for development purpose and out of this acquired land a major portion of land, is still not transferred/ developed, which are being used by farmers for agriculture. In these cases, the Company is not in a position to issue connections, whereas the farmers are drawing electricity from the nearby mains, leading to huge losses. In FY 2018-19 the Company identified more than 265 such cases. Due to various issues the Company is not able to challenge “beyond the right” hegemony of farmers. Moreover, the theft of electricity has been fuelled by an increasing demand for electric power as ground water table has receded drastically.

Economic de growth of youth: In most of the villages of Greater Noida, agricultural lands has been acquired by GNIDA and Local youths do not have a regular source of income. Many of the villagers have not even received the cost of acquired land from Authority.



The Govt. or concerned Authorities have not created any Industries or avenues of Jobs for the local youth in the area. As a result, the paying capacity of the people is very low. Presently as advised by Government, supply hours in the villages has been increased to 18 hours per day, which in turn increases the per month consumption of the consumers leading to higher electricity bills and accumulated dues. The consumers whose paying capacity is already low fail to pay these high bills which leads to disconnection of supply of the consumers on account of non-payment. As a result, the consumers resort to draw free electricity through illegal restoration of the supply or direct theft of power.

b) Distribution Network: The Achilles heel

Electricity in the urban sectors is primarily distributed through underground LT network. However, during vigilance drives several cases of illegal tapping have been identified in the underground LT line, which were either cemented or tiled. This is not only time consuming but also includes risk factor, as, in this case theft couldn't be traced after breaking the floor, consumer not only demands damage but also threatens for lodging police complaint and in some cases start showing violent and aggressive behaviour. Damaging and pilfering from pillar boxes pose another big challenge before the Company to control thefts. On several occasions it has been noticed that people having authorized connections are also resorting to tapping through the pillar boxes during late night. In the villages where metered connections have been provided with AB cables in place of bare conductors, it has been observed that after a few month unauthorized wires have been connected by puncturing the AB cables.

Keeping pace with the Company's adaptation of new technology in tracking and preventing power theft, few cases were caught by the vigilance team, after data analysis that, recalcitrant consumers attempt theft of electricity by tampering the meters by way of using ingenious technology illegally. Among other, Company had identified and booked few industrial cases of meter tampering where consumer has cut open the seals of the meter and installed a remote operated device inside the meter through which the



consumer could stop/start the energy registration in the meter as per wish. The consumer would usually switch off the meter during night hours thereby reducing his chances of getting caught.

2.3.4 Petitioner further submitted the Initiatives taken to contain Losses as under:

Despite severe pressure from external forces, Company has been initiating customized strategic techno-social solutions to torpedo the “herd culture”. Demand analysis, market scanning for available befitting technology, customer communication for smooth implementation and create social backbone for sustainable results are key areas, where Company tries for “symmetry breaking” solutions.

A. Technical solutions

- a) Drone based surveillance:** The Company on pilot basis has introduced surveillance through drone based technology to identify illegal tapping from LT mains, to check the hot spots, vegetation management on the electrical network etc. In many houses in villages the illegal cables are laid through roof tops and the Company employees are denied access for capturing even the photographs/doing videography in order to collect the evidence of theft. As a result, these cases are not booked & the consumers take advantage of the same and continue to indulge in electricity theft. However, with the help of this technology, rooftop images are captured and mapped in the Company’s GIS network. Further these photographs are analysed to detect unauthorised cable laid through rooftop by consumer and book electricity theft case u/s 135 of EA’ 2003.
- b) Metering:** Company might not be the first but certainly one of the frontrunners in implementing latest metering technologies. Electronic meters with digital display, AMR meters then LPR meters, group metering, pre-paid meters and SMART meters are Company’s latest offering. Nodal point meters are installed to capture cluster wise consumption for micro audits.



- c) Rural Area Meter Reading:** In rural areas meter reading and collection are being done through Android based “Photo meter readings” application with Smart Phone to get real time reading status, to ensure monthly visit by the meter readers. Meter readers are tracked through GPS coordinates mapped with GIS for accurate and reliable meter reading on monthly basis.
- d) Data Analysis Centre:** The Company has set up data analysis centre to analyse meter’s downloaded data, drop in consumption, exception reports, and consumption pattern factoring seasonal variation on monthly basis to prepare suspect list including the theft complaints received in various Company portals. Attempts are being made to take intensive actions in such areas in accordance with law.
- e) Meter tampered data is also analysed from the Company’s portal of MDAS (Meter Data Analysis Software).** It helps to detect cases of tampered meter with remote circuit and resistance.
- f) Creation of new load centers and reinvigorate distribution network:** Periodic load survey and analysis is carried out to contain technical losses due to overload of transformers and to reduce transformer burnt cases. Based on load survey report, new sources are created and load is shared thereby reducing the load from overloading transformers. HVDS, Aerial Bunched cables and junction boxes are placed in the network, to restrict pilferage of electricity due to consumer’s easy access. Also, on pilot basis, underground feeder pillar box has been introduced, to eliminate unauthorized tapings. Group metering and clustered electrification has been introduced for “Jhuggi Jhopdis”.
- g) Connections:** Camps have been organized in rural areas to provide new connection at the same day to the consumer through Spot Connection Drives. The Address in villages are not clear and it becomes difficult to follow up with the consumer indulging in electricity theft, as not being registered consumer. By this drive, meter has been provided to them and supply energized on the same day.



2.3.5 Petitioner further submitted the Social Initiatives taken to as under:

- a) **Energy Efficient LED bulb distribution:** The Company distributed 02 Nos of free LED bulbs per premise in rural domestic consumers in replacement of the normal incandescent bulbs as a social economic measure to reduce the carbon foot print & monthly energy consumption of the premise.
- b) **VCP:** The Company has been envisaging different set of strategies for Customers and Consumers. With village level representatives (Village Contact Person), unemployed educated youths, were empowered through trainings, assigned to carry out work related to revenue aspect of a village or set of villages, who are available to the consumers all the time.
- c) **Consumer Meets:** Periodic consumer meets, RWA meetings, federation meetings are organized to communicate and discuss latest developments, issues e.g. theft during Pujas and other religious festivals, ceremonies etc. are also put forth to the RWAs and federation. In FY 2018-19 partial recovery was made from Ramleela with the intervention of Federations and RWAs. Meetings are also organized with Industrial Connection Holders for power supply schedule, maintenance and other issues.
- d) **Community Awareness:** The Company, partnering with international reputed NGO, periodically launches community awareness program. Women empowerment and involving them in message dissemination, leaflets, organizing community level quiz competitions, promotional vans, leaflets distribution and spreading news through media, are key instruments, the Company uses to sensitise people for better, effective and “pay as per use” use of electricity.
- e) **LCC Drive with Police:** The Company has initiated LCC drives along with police in the urban and village area. Around 250 FIRs in FY 18-19 have been registered in the raids with police. Also, LCC raids have been conducted in the late evening and early morning hours in sector areas. However, such drives may be conducted in limited number, as the Police Force is pre-occupied in maintaining law & order situation.



- 2.3.6 The Petitioner has submitted that in-spite of several path-breaking initiatives, due to socio-economic environment prevailing in the State and more particularly in villages in Greater Noida where load has grown much faster as compared to increase in overall demand in Greater Noida Area., it has become arduous and daunting task for the Company to contain T&D losses at 8%.
- 2.3.7 In reference to the distribution loss trajectory, the Commission in its deficiency had mentioned that capex of Rs. 683.91 Crs was approved by the Commission that in last MYT control period i.e, FY 2017-18 to FY 2019-20. However, the licensee could not lower its losses to the approved level. The Petitioner has proposed capex of Rs. 1273.83 Cr in the second control period from FY 2020-21 to FY 2024-25. Thus, there should be reduction in distribution losses. The licensee was directed to submit the revised loss trajectory for the MYT period ensuring the reduction in trajectory.
- 2.3.8 The Petitioner has submitted the reply as under:

The Company's licensed area is Greater Noida which is spread over 335 Sq Km and is being showcased by the State Government as an Investment Hub to all the potential investors in all its Road Shows, domestic and even overseas.

The growing industrialization and urbanization in Greater Noida has led to substantial increase in demand of electricity. The growing industrialization and urbanization can be seen from the proposed major projects under construction/pipeline such as Greater Noida West, Delhi Mumbai Industrial Corridor (DMIC) project, Multi Modal Transport Hub, Multi Modal Logistics Hub, Integrated Industrial Township at Greater Noida, Jewar Airport in vicinity to Gr. Noida, Medical University, Convention Center, Night Safari, Amusement Parks of the international scale and sizes, Sports Cities, large scale malls, supermarkets, gigantic residential townships etc.

The load of the Company is growing @ CAGR of more than 10%, therefore, the Company has to incur capex to develop and maintain the distribution network to



provide electricity connections in accordance with the provisions of the Electricity Act 2003.

The above Distribution Losses projections is mainly due to the higher T&D losses in the area of villages and other reasons explained in detail in Chapter-4 of the Business Plan. Despite the same, the Company has been able to contain its T&D losses around 8% to 9% which is the lowest in the State of UP and one of the lowest in the country.

Further, with regard to the reduction in T&D Losses, it is submitted that the Hon'ble Commission from time to time has appointed independent professional agencies for carrying out study for determination of Technical Loss in the distribution network of the Company and also the requisite Capital Expenditure for reducing the T & D losses further. The finding of PricewaterhouseCoopers Pvt. Ltd in this regard is given below:

“The proposed investments and energy savings on account of proposed capital expenditure has discussed in details in the above sections. It has been observed that the investment in the loss reduction schemes is to the tune of Rs 193 Cr and this will results in to saving of merely Rs 13.21 Cr per year. The payback period for the proposed investments is coming out to be more than 14 years.

It may be inferred from cost benefit analysis and impact 1% loss reduction that any investment on the existing network for further reduction of losses shall not be a viable option. Also, the proposed capital expenditure plan, at present, does not include the operation and maintenance of proposed network to be created under the capital expenditure plan. This will further add up in the overall capital expenditure costs. In addition, NPCL have to take specific measures to sustain the loss levels achieved by



implementation of schemes identified under capital expenditure plan. This shall also add on to the cost of this network created with an ambition of technical loss reduction from the existing levels.”

From the above, the Hon’ble Commission may please see that for 1% reduction in T&D Losses, the Company is require to incur additional capex of Rs. 193 Crore to save merely Rs. 13.21 Crore and accordingly payback period will be more than 14 years which, in the opinion of the Company, is not an economical proposition.

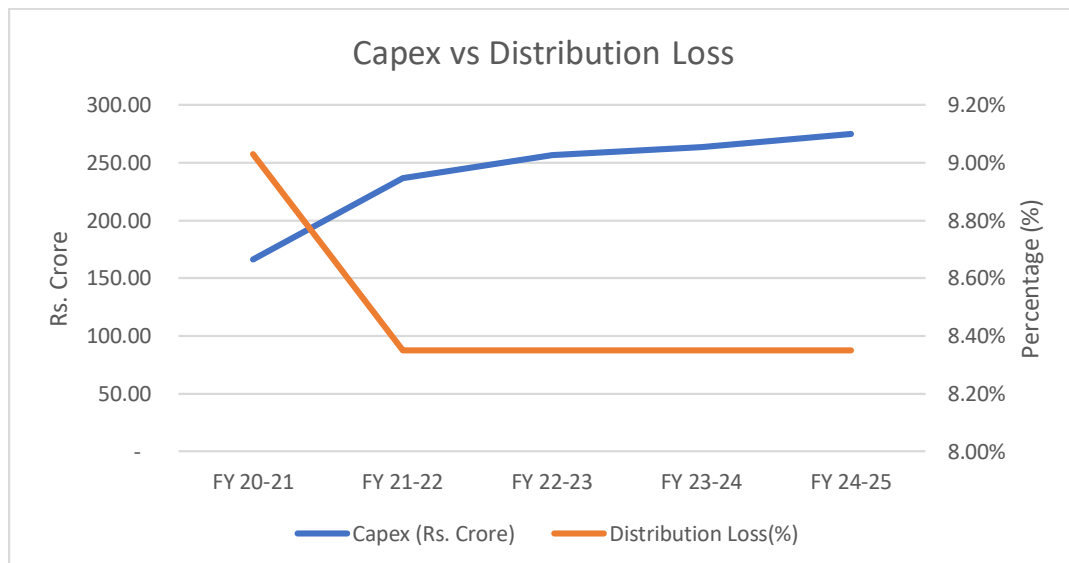
2.3.9 The Petitioner has revised the distribution loss for the control period as under:

Table 7: Revised Distribution Losses as projected by the Petitioner (Post Covid)

Distribution loss	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
NPCL	9.03%	8.35%	8.35%	8.35%	8.35%

Commission’s Analysis:

2.3.10 The Commission has analyzed the past trends of distribution loss & distribution loss trajectory projected by the Petitioner and compared it with the projected capital expenditure submitted by the Petitioner.





- 2.3.11 Even though the capex is increasing year on year however the distribution losses have remained stagnant and no improvement towards reduction in these losses is there.
- 2.3.12 Based on the submission the Commission found that the Petitioner has not been able to lower its losses to the approved level. The Petitioner has further proposed Rs. 1197.71 Crs for Capex in current control period FY 2020-21 to FY 2024-25. The Commission is of the view that considering the capex incurred by the Petitioner no significant improvement has been made in reducing the distribution losses in the first control period.
- 2.3.13 The Commission while approving Business Plan for first control period, in its Order dated November 30, 2017 decided to approve the losses of 8%. The relevant portion of the Order is reproduced below:

Quote

4.3.3 The Commission acknowledges the fact that the Greater Noida area was largely a rural area and with development on year-to-year basis, more of the area is being urbanized. Hence, it requires a huge capital expenditure to cater to the demand of existing and new consumers. However, still the Distribution losses have been constant and are around 8.00% from so many years.

4.3.4 Apart from network improvement issues, there are other issues such as social agitation, theft etc. The Commission acknowledges the fact that petitioner has been taking various steps to curb these Commercial losses. The Commission is of the view that any improvement in the metering status of the Licensee would assist the Licensee to curtail the losses at below or at least contain losses at 8.00% levels. The Commission recognizing the fact that the distribution loss of 8.00% is one of the lowest in comparison to similarly placed Discoms, the distribution losses for the control period are being approved at 8.00%, however the Licensee should make best of its efforts to reduce the losses from the exiting level.



4.3.5 In this regard the Petitioner made an appeal before the Hon'ble APTEL approval of distribution loss at 8.00% level for FY 2015-16 on the basis of ever increasing loss-prone rural load, sparsely populated, hence, low density of load per square kilometer, absence of separate Police Station and dedicated Special Court to deal with the Electricity Theft Cases, rampant political interference etc.

4.3.6 Hon'ble APTEL in its Judgement dated June 2, 2016 also agreed with Commission's contention of setting the distribution loss target at 8.00% level for FY 2015-16 and opined that there can be no going back to set the loss reduction target to such higher level of 8.41% considering the fact that the Commission is allowing the capital expenditure required to sustain/lower the losses and the fact of growing urbanization of the consumer mix, increasing HT:LT sales ratio and also considering the capability and achievement of the Petitioner in previous years. The relevant extract of the Judgement of Hon'ble APTEL is reproduced below:

g. We have observed that the Appellant is consistently maintaining Distribution losses at a very efficient level. Even during the FY 2013-14 it had over achieved the Distribution loss reduction target set by the State Commission. The target set by the State Commission for Distribution loss has not been further reduced to below 8% in the Impugned Tariff Order. There can be no going back to set the loss reduction target to such higher level of 8.41% considering the fact that the State Commission is allowing the capital expenditure required to sustain/lower the losses and the fact of growing urbanization of the consumer mix, increasing HT:LT sales ratio and also considering the capability and achievement of the Appellant in previous years.

h. The distribution losses are to be brought down and there is always scope for improvement and the fact that the Appellant has been achieving these targets, hence we are in agreement with the State Commission on the issue of T&D loss



reduction target being set at 8% for FY 2015-16. Accordingly, this issue is decided against the Appellant.”

4.3.7 Thus, in line with the approach adopted by the Commission in its previous tariff orders for NPCL and considering that NPCL during this control period will convert all unmetered consumers to metered consumers, the Commission approves distribution loss of 8.00% for FY 2017-18 to FY 2019-20.

Unquote

- 2.3.14 The distribution loss approved for FY 2019-20 is 8%, however the Petitioner has projected distribution loss of 8.23% for FY 2019-20, 9.03% for FY 2020-21 and 8.50% for rest of the Control Period. The Commission would reiterate that despite huge capital expenditure / system improvements undertaken by NPCL every year there has been no reduction in loss levels rather the Petitioner is now projecting increased losses.
- 2.3.15 It may be noted that the Commission has also been allowing year on year significant Capital investment proposed by Petitioner which also includes the capex for reduction in Distribution Losses through meter replacement, cable replacement, etc., which helps in reducing the Technical Losses as well as Commercial Losses and the same should reflect in the loss numbers projected by the Petitioner.
- 2.3.16 Further, the Distribution Licensees like Torrent Power Limited operating in cities like Surat and Ahmedabad, which have similar demographics as those of Petitioner, have been able to achieve Distribution Losses as low as around 3.43% in the past. Therefore, there is enough scope for Petitioner to put in more efforts to achieve optimum Distribution Loss levels.
- 2.3.17 For the Business Plan for the Second Control Period FY 2020-21 to FY 2024-25, the distribution losses submitted by the licensee are higher than approved earlier. This would mean adjustment in distribution loss trajectory as per the actual losses of the Distribution licensee rather than norm / trajectory that has already been approved and condoning the inefficiencies in operation of the distribution licensees which is against



the National Electricity Policy, Tariff Policy and Section 61 (c) of the Electricity Act, 2003. The inaction and continuous inefficiency of the licensees does not allow it to seek revision of the loss trajectory higher than that already approved by the Commission in the previous MYT period which if allowed would defeat the intent of the MYT framework.

2.3.18 Considering the commitments of the Licensees, the capital investment already approved in the previous MYT period and the observations made by the Commission in its earlier Tariff Orders it can be said that the concern of Licensees has been addressed and adequate consideration has been given for the achievement of distribution loss trajectory in the previous MYT period.

2.3.19 In view of this, it is appropriate that reduction in distribution losses should be targeted in furtherance to the loss trajectory approved by the Commission in the MYT Order dated November 30, 2017.

2.3.20 The Commission, however, agrees that further reduction of losses will be gradual and, therefore, has set the target of loss reduction taking the base distribution loss of 8.00% approved for FY 2019-20. Accordingly, the distribution loss trajectory approved for the entire MYT period from FY 2020-21 to 2024-25 is as below:

Table 8: Distribution Loss approved by Commission for the Control Period

Distribution loss	FY 2019-20 (approved)	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
NPCL	8.00%	7.92%	7.80%	7.70%	7.63%	7.57%



2.3.21 In view of changing economic scenario post covid-19, the Licensee is directed to review their energy and power requirements based on above distribution loss trajectory while filing their ARR.

2.3.22 The Commission also directs the Licensees to submit the voltage wise (440V, 11kV, 33kV, 66kV, 132 kV) - Energy Sales and Losses. Also, the now mandatory energy audit report and the cost audit report (prepared in accordance with Companies (Cost Records and Audit) Rules 2014) for the last two financial years may also be submitted.

2.4 ENERGY BALANCE & POWER PURCHASE PLAN

Energy Balance

Petitioner's submission

2.4.1 The gross energy requirement for the Petitioner is shown in the Table below:

Table 9: Gross energy requirement for the Control Period FY 2020-21 to 2024-25 (revised submission Post-Covid)

Sl.No.	Particulars	Unit	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	Energy Sales	MU	1,698.49	2,710.24	2,989.08	3,295.23	3,628.62
2	Distribution Losses	%	9.03%	8.35%	8.35%	8.35%	8.35%
3	Distribution Losses	MU	168.63	246.86	272.33	300.22	330.59
4	Energy Purchase at Discom Periphery	MU	1,867.12	2,957.10	3,261.41	3,595.45	3,959.21

Commission's Analysis:

2.4.2 The total power purchase, is determined based on the sales of the Licensee. The Commission has already deliberated that Covid-19 pandemic has resulted in high level of uncertainty leading to disruption in the demand and sales. Although the billing determinants have been provided for the entire control period, these will be approved annually based on the submission in ARR Petition.

2.4.3 The Commission, taking into consideration the billing determinants, distribution loss



trajectory and intra-state transmission loss trajectory approved for the Control period has prepared the energy balance for each year of the Control Period FY 2020-21 to FY 2024-25 is as follows:

Table 10: Energy Balance computed by the Commission for the Control Period FY 2020-21 to FY 2024-25

Sl.No.	Particulars	Unit	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	Energy Sales	MU	2,002.96	2,475.36	2,643.47	2,826.15	3,021.43
2	Distribution Losses	%	7.92%	7.80%	7.70%	7.63%	7.57%
3	Distribution Losses	MU	172.28	209.41	220.53	233.45	247.45
4	Energy Purchase at Discom Periphery	MU	2,175.24	2,684.77	2,864.00	3,059.60	3,268.88

2.5 DETAILS OF POWER PROCUREMENT COST FOR MYT CONTROL PERIOD (FY 2020-21 TO FY 2024-25)

Petitioner's submission:

2.5.1 The Petitioner has submitted that it has planned to procure Power through diverse sources such as Long Term, Medium Term, Short Term, Power Exchanges and Renewable Sources etc. to meet its Demand as well as RPO Obligations.

2.5.2 The Petitioner has submitted that currently it has a 555 MW BPTA with UPPTCL which needs to be increased in accordance with the peak demands.

Long Term Power Purchase

2.5.3 For meeting the base demand and also to comply with the directions of the Commission, the Petitioner submitted that it had entered into Long Term Power Purchase Agreement (LTTPA) with Dhariwal Infrastructure Limited (DIL) for supply of 187 MW (Net 170 MW at Plant Bus after 9% Auxiliary Consumption) power from its Unit-2 (300 MW Capacity) for a period of 25 years. The Commission vide Order dated 20.04.2016 approved the aforesaid PPA and power supply had started in the previous Control Period of FY 2017-18 to FY 2019-20.



- 2.5.4 The Petitioner submitted that DIL filed its MYT ARR Petition for the Control Period FY 2016-17 to FY 2018-19 in line with UPERC (Terms & Conditions of Generation Tariff) Regulations, 2014 for the purpose of determination of Tariff. On the basis of the said Petition, the Commission vide its Order dated February 5, 2019 approved the provisional tariff for the Control Period i.e. from FY 2016-17 to FY 2018-19. The Petitioner submitted that the Commission in its above-referred order, inter-alia, provided that it shall separately consider following components which have not been included in approved provisional Tariff:
- a) Fuel cost due to variation on account of GCV of FSA coal supplied- vide Clause No. 4.2.14 of order dated February 5, 2019.
 - b) Coal procured due to shortage in supply of FSA coal- vide Clause No. 4.2.13 of order dated February 5, 2019.
 - c) Change in law- vide Clause No. 4.2.13 of order dated February 5, 2019.
 - d) Variation on account of CERC's escalation norms for coal and transportation- vide Clause No. 4.2.13- of order dated 5/2/2019.
- 2.5.5 The Commission has also notified the UPERC (Terms and conditions of Generation Tariff) Regulations, 2019 (applicable for FY 2019-20 till FY 2023-24) for determining the tariffs for LT contracts for the aforesaid period.
- 2.5.6 The Petitioner submitted that in view of the above, for the purpose of estimating power purchase cost for the Control Period, the Petitioner requested M/s DIL to provide the projected tariff for the Control Period of FY 2020-21 to FY 2024-25. Accordingly, DIL vide its email dated October 1, 2019 provided the projected ex-bus Generation tariff as per UPERC Generation Tariff Regulations, 2019 (applicable for FY 2020-21 to FY 2024-25) read with Orders dated 15.01.2016, 20.04.2016 and 05.02.2019 passed by the Commission.
- 2.5.7 The Petitioner submitted that DIL vide its mail dated October 1, 2019, has provided that projected Fixed Charges Rate and Energy Charge Rate do not include the following



components which shall be claimed -in due course as per the provisions of UPERC (Terms and conditions of Generation Tariff) Regulations, 2019: -

a) Fixed Charge Rate:

- i) Impact of capitalization of Flue Gas De-sulphurization (“FGD”) Plant in compliance with MoEFCC notification dated 07.12.2015 (Change in Law event)
- ii) Cost of procurement of limestone and cost of disposal of by-products etc.
- iii) Income Tax Expense
- iv) Cost of Capital Spares
- v) Statutory Charges imposed by State and Central Government such as Electricity Duty, Water Cess
- vi) Payment to the Pollution Control Board in addition to Application Fees

b) Energy Charge Rate:

- i) Impact of implementation of FGD Plant in compliance with MoEFCC notification dated 07.12.2015 (Change in Law event)
- ii) Expenses towards third-party sampling of coal

Medium Term Power Purchase

2.5.8 For meeting part of its increasing base demand during the Control Period, the Petitioner submitted that it has issued a Letter of Intent (LoI) to Arunachal Pradesh Power Corporation Private Limited for procurement of 64.8 MW Hydro Power from Govt. of Himachal Pradesh (GoHP) out of its share in 3x180 MW Chamara-I Hydroelectric Power Station for an initial period of 13 months, extendable for another 2 years, on medium term basis subject to the approval of the Commission. The discussion on the terms and conditions of the PPA is in progress with the GoHP and once the terms are finalised and PPA is signed, the same will be submitted to the Commission for approval. As per current discussion, the supply of power is schedule to start from December 2019/ January 2020, however, considering availability of all requisite approvals i.e. from GoHP and the



Commission, the Petitioner has considered the availability of above power from March 2020 to March 2021.

2.5.9 Apart from the abovementioned Medium-term Hydro Power agreement of 64.8 MW expected to be available till FY 2020-21, the Petitioner has projected to procure 100-150 MW power on medium term basis during FY 2021-22 to FY 2024-25 with 2-part tariff structure i.e. fixed charge and variable charge on the basis of prevailing market rates.

2.5.10 With regards to Medium term power purchase, the Commission observed that the Petitioner for FY 2020-21 has considered a capacity of 65 MW with a load factor 50%, while for next four years it has projected a quantum of 100 MW with plant load factor of 85%. In this regard the Commission sought the detailed justification for consideration of such value. The Petitioner has submitted the following reply:

8. Medium Term Power Procurement

At the time of preparation of the Business Plan the Company had issued a Letter of Intent (LoI) to Arunachal Pradesh Power Corporation Private Limited for procurement of 64.8 MW Hydro Power from Govt. of Himachal Pradesh (GoHP) out of its share in 3x180 MW Chamara-I Hydroelectric Power Station for an initial period of 13 months, extendable for another 2 years, on medium term basis subject to the approval of the Hon'ble Commission. The discussion on the terms and conditions of the PPA was in progress with the GoHP at that time, therefore, pending finalisation of terms of PPA, the Company considered the availability of such power for 1 year only i.e. FY 2020-21 and being a Hydroelectric Power Station the load factor for the same was considered at 50%.

For the period FY 2021-22 to FY 2024-25, the Company had considered thermal based medium-term power with 85% load factor in accordance with competitive bidding documents for medium term procurement of power. Since, the source of Thermal Power through MTPPA was not finalized and the details of the same were not available, hence, not provided in the format. Once the same is finalized, the



Company will submit the requisite petition for approval of PPA/adoption of tariff in due course of time.

Since, the Hon'ble Commission vide its order dated 4th May, 2020 did not approve the proposed PPA with GoHP and there has been reduction in demand for FY 2020-21 due to Covid-19, therefore, the Company has considered 65 MW Medium Term Hydro Power in FY 2021-22 in the updated Business Plan now being submitted. Further, the source of Hydro Power as well as Thermal Power through MTPPA is yet to be finalized and the details of the same is not available at present, therefore, the Company will submit the requisite petition for approval of PPA/adoption of tariff in due course of time.

Short-Term Power Procurement (Excluding Renewable Power)

- 2.5.11 As mentioned in the preceding paras, the Petitioner submitted that it has been witnessing a sharp rise in demand over past 3-5 years period and the gap between Base Demand and Peak Demand is widening. Also, peculiar demand curve of a day for the recent times shows more sharp curves as compared to the same 3-5 years earlier, reflecting higher volatility in demand and demand disparity during the day.
- 2.5.12 The above peculiarity has made the task of power procurement and load management, more complex and difficult. Therefore, apart from the above long term and medium-term power, the Petitioner submitted that it will be required to procure additional power on short term/ day ahead basis to fully meet its volatile and peak demand. The strategy for such procurement will depend upon actual demand prevailing at the given times as well as availability of firm transmission capacity from Uttar Pradesh Transmission Corporation Limited (UPPTCL) and Power Grid Corporation of India Limited (PGCIL).



2.5.13 The Petitioner submitted that in order to match the daily demand curve, the additional power to meet the short-term/ day demand would be met through short-term / day-ahead tie-up of power on RTC, Peak and Day hours basis.

2.5.14 The Petitioner submitted that it is pertinent to mention here that since it is not possible to exactly estimate the day-ahead and short term demand being highly volatile and uncertain and dependent on a number of factors which are beyond the control of the Petitioner e.g. volatile weather conditions, long intermittent holidays on account of various festivals, Govt. holidays etc., the power tied-up during such time if remained unused, may need to be sold/banked through power exchange / bilateral contracts either by Petitioner directly or through power trading companies to optimize its power purchase cost. However, since it is not possible to estimate such sale / banking of power in advance, no amount or quantum of power has been considered by the Petitioner in this regard in the following power purchase cost for Control Period FY 2020-21 to FY 2024-25.

2.5.15 The Petitioner further submitted that the tariff for short term power at NPCL-Bus is derived after considering existing transmission charges and losses from the injection point till the drawl point as follows:

- PoC Withdrawal Charges for U.P. @ Rs.297.50/MWh
- PoC Withdrawal Losses for U.P. @ 2.36%
- Intra-state Transmission Charges of U.P. @ Rs. 184.8/MWh
- Intra-state Transmission Losses of U.P. @ 3.56%
- Application fee and Operating Charges

2.5.16 The Petitioner added that any change in the above parameters will also affect the landed cost of power at NPCL bus. Also, despite all precaution, depending upon the actual load and power scheduled, the Petitioner might be required to sell / bank some of the surplus power during given time span, decision for which is taken during such peculiar situation on real-time basis.



2.5.17 With regards to Short-Term Power procurement, the Commission observed that the Petitioner has projected the Short-Term quantum for the control period (FY 2020-21 to FY 2024-25) as 70 MW, 150 MW, 190 MW, 210 MW and 240 MW on RTC Basis. In this regard the Petitioner was asked to provide the envisaged source of short-term RTC power. The Petitioner was asked to provide details of short-term power procured and sold from / to the exchanges & traders y-o-y for the past 3 years and the prices discovered. Further the Petitioner was also asked to submit the monthly Average IEX rates and rates discovered in Deep Portal for the last 3 years.

2.5.18 The Petitioner has submitted the following reply to the query sought by the Commission:

9. Short Term Power Procurement

The Company had envisaged the procurement of requisite short-term power for the period FY 2020-21 to FY 2024-25 in accordance with MYT Regulations, 2019. The Company will submit the requisite petition for approval of PPA/adoption of tariff in due course of time.

With respect to the information on the volume and prices of electricity transacted through Bilateral Market, Power Exchange and DSM, it is submitted that Hon'ble CERC published "Monthly report on Short-term Transactions of Electricity" comprising detailed information on the volume, market share, participants and prices during a particular month. Hence, the Hon'ble Commission may kindly refer to the said report for market information.

2.5.19 The Commission in its deficiency dated May 13th, 2020 sought the following information from the Petitioner

- a) A quantitative forecast of the seasonal variation in unrestricted base load and peak load for electricity within its area of supply during the control period. Also submit the actuals for past 5 years.
- b) An estimate for month wise power required (MU) for base load and peak load w.r.t seasonal variations.



- c) Measures proposed for Energy Conservation, Energy Efficiency, and Demand Side Management.
- d) The details of Open Access consumers and applications if any, and the impact of Open Access on load and MUs requirement.
- e) Impact of Storage Capacities including Batteries, EV Charging Stations etc. on the Power Procurement Plan.

2.5.20 The Petitioner in its reply submitted the following:

The actual power purchase for the past five years has been enclosed as Annexure-3 of Appendix-1. Further, the Company in Chapter 3 of its Business Plan Petition no. 1526 of 2019 dated 6th November, 2019 had considered seasonal variation, Energy Conservation, Energy Efficiency and Demand Side Management, Open Access consumers and Impact of storage capacity while projecting its power requirement.

Further, the Company hereby requests the Hon'ble Commission to consider the revised Power Procurement details for FY 2020-21 submitted vide email dated 27th May 2020 as RTF formats uptill FY 2020-21.

2.5.21 In addition, the Petitioner was also asked to provide details of (i) source wise, and (ii) capacity wise (Long Term, Medium Term, Short Term) percentage mix of power procured in past 5 years (upto FY 2019-20) and the proposed mix during each year of the control period. The Petitioner has replied to the query in its e-mail dated September 10th, 2020 as under:

ADDITIONAL SUBMISSION

A) It is kindly submitted that post filing of the Petition No. 1526 of 2019 dated 6th November 2019 for Business Plan for the Control Period FY 2020-21 to FY 2024-25 of the Company, the Company has filed following petitions for approval of various PPA(s) for procurement of power during the Control Period with the Hon'ble Commission:



i. Petition No.1546 of 2019 for approval of purchase of short-term power in different time slots for the period commencing from Apr'20 to Oct'20 through DEEP portal, which has since been approved by the Hon'ble Commission vide its order dated 5th Mar'20.

ii. Petition No. 1552 of 2020 for approval of purchase of hydro power from Department of Power, Govt. of Arunachal Pradesh and Department of Power, Govt. of Nagaland on medium term basis for a period of 3 years through Deep Portal, which has been approved by the Hon'ble Commission vide its order dated 28th February 2020.

iii. Petition No. 1548 of 2020 for approval of purchase of hydro power from Govt. of Himachal Pradesh on medium term basis for an initial period of 13 months with a provision of extension for another 2 years which was not approved by the Hon'ble Commission vide order dated 4th May, 2020.

During the process of hearing for above petitions, on being asked, the Company on 24th Feb'20 made a detailed presentation before the Hon'ble Commission wherein the Company explained its power purchase plan for the Control Period based on MOD principle, with details of the power proposed to be procured through the aforesaid PPAs and remaining power to be procured in accordance with MYT Regulations, 2019.

Accordingly, the power procurement plan, submitted in the enclosed MYT Tariff Formats (Annexure -1) has been modified to consider the power purchase agreement approved by the Hon'ble Commission and residual power to be procured in accordance with MYT Regulations, 2019.

B) Apart from the above, the Hon'ble Commission vide its order dated 19th Mar'20 in Petition No. 1318 & 1319 of 20018 has approved the compensation admissible towards additional coal procured by Dhariwal Infrastructures Ltd. (M/s DIL) amounting to Rs. 22.07 Cr for FY 2017-18 and Rs. 39.20 Cr for FY 2018-19 and directed M/s DIL to raise supplementary bill for the same.

Further, M/s DIL in its similar Petition No. 1438 of 2019 has also claimed compensation of Rs. 28.29 Cr towards additional coal for FY 2019-20.

Accordingly, the Company has considered such approved compensation for additional coal as well as the compensation claimed by M/s DIL for FY 2019-20 subject to the approval of the Hon'ble Commission in its revised power purchase plan as submitted in Annexure-1.

C) Further, the power purchase mix proposed by the Company predominantly comprises of thermal and hydro sources. While the thermal sources are proposed to cater to the base load requirement of the licensed area, hydro sources are



proposed to cater seasonal load curve. Further, the Company has also signed PPA for procurement of Solar and Wind power as well to meet the RPO in accordance with regulations of Hon'ble UPERC. Accordingly, the details of Power Mix considered for Control Period is provided below:-

i) Hydro Power considered in Power Plan for FY 2020-21 to FY 2024-25:-

a) Medium term power from Department of Power, Govt. of Arunachal Pradesh (50 MW RTC: Apr-Sep, 25 MW Peak : Oct-Mar) at PLF 80-85% during FY 2020-21 to FY 2022-23

b) Medium term power from Department of Power, Govt. of Nagaland (50 MW RTC: Apr-Sep, 25 MW Peak : Oct-Mar) at PLF 80-85% during FY 2020-21 to FY 2022-23

c) Medium term Hydro Power from sources to be finalized at PLF 60% during FY 2021-22 to FY 2022-23

The hydro power given in point (a), (b) and (c) are must run plant hence the same has been kept outside the merit order.

ii) Renewable Power (Solar and Non-solar) considered in Power Plan for FY 2020-21 to FY 2024-25:-

a) Long term Wind power from PTC Ltd (10 MW from FY18 To FY 43) at PLF 36% during FY 2020-21 to FY 2024-25

b) Long term Solar power from GNIDA Ltd (1 MW from FY 15 To FY 35) at PLF 18% during FY 2020-21 to FY 2024-25

c) Long term Solar power through UPNEDA (50 MW from FY 21 To FY 46) at PLF 24% during FY 2020-21 to FY 2024-25

d) Short term Non-solar Renewable Power from sources yet to finalized at PLF 85% during FY 2024-25.

iii) Thermal Power considered in Power Plan for FY 2020-21 to FY 2024-25:-

a) Long term Thermal power from DIL (170 MW from FY 17 To FY 42) at PLF 80-85% % during FY 2020-21 to FY 2024-25

b) Medium term Thermal Power from sources yet to finalized (100-200 MW) at PLF 85% during FY 2022-23 to FY 2024-25.

iv) The residual power to be procured for the Control Period will be procured through short term sources in accordance with MYT Regulations, 2019. The short term power is being procured/propose to be procured mainly to address the daily/weekly/monthly variation on demand.



2.5.22 In response to the Commission's query, the Petitioner submitted the revised power purchase considering the impact of Covid 19 pandemic on September 11th, 2020 which are as follows:

Table 11: Revised Power procurement as projected by the Petitioner for FY 2020-21 (Post-Covid)

Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Long Term Power from DIL	170	1,198.23	1,110.51	241.76	353.99	595.75	70.45	20.52	90.97	686.72	6.18
Medium Term Power- RTC (50MW) Govt. of AP	50	175.80	164.75	39.01	36.74	75.75	10.03	3.04	13.07	88.83	5.39
Medium Term Power- Non RTC (25MW) Govt. of AP	25	5.19	4.86	1.08	1.08	2.17	1.67	0.09	1.76	3.93	8.08
Medium Term Power- Non RTC (25MW) Govt. of AP	25	5.14	4.82	1.07	1.07	2.15	3.34	0.09	3.43	5.58	11.58
Medium Term Power- RTC (25MW) Govt. of Nagaland	25	78.50	73.23	19.46	16.37	35.83	3.89	1.35	5.25	41.07	5.61
Medium Term Power- Non RTC (25MW) Govt. of Nagaland	25	5.19	4.84	1.08	1.08	2.16	1.30	0.09	1.39	3.55	7.34
Medium Term Power- Non RTC (25MW) Govt. of Nagaland	25	5.14	4.80	1.07	1.07	2.14	2.60	0.09	2.68	4.83	10.06
Medium Term Power		274.96	257.30	62.78	57.42	120.20	22.83	4.75	27.58	147.79	5.74
Power Procurement from Short Term Open Access											
APPCPL (19-24 Hrs)	100	46.00	43.32	-	18.92	18.92	1.40	0.86	2.26	21.18	4.89
Adani Enterprise (00-02 Hrs)	50	5.19	4.88	-	1.92	1.92	0.17	0.10	0.28	2.20	4.50
Inter State Power - from Trader / Generator/Banking	57	466.51	439.29	-	180.30	180.30	13.98	8.66	22.64	202.94	4.62
Total-Power Procured from		517.70	487.48	-	201.14	201.14	15.56	9.62	25.18	226.32	4.64



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Short Term Open Access											
Power Procured from Renewable Sources											
Renewable Power (Wind Power)	10	31.54	30.41	-	11.13	11.13	-	0.58	0.58	11.71	3.85
Renewable Power (GNIDA LT Solar Power)	1	1.58	1.58	-	1.11	1.11	-	-	-	1.11	7.06
Total-Power Procured from Renewable Sources		33.11	31.99	-	12.25	12.25	-	0.58	0.58	12.83	4.01
Sub Total-Import to NPCL		2,024.00	1,887.28	304.54	624.80	929.34	108.83	35.48	144.32	1,073.66	5.69
Unscheduled Interchange	-	-20.16	-20.16	-	-2.02	-2.02	-	-	-	-2.02	1.00
Grand Total		2,003.83	1,867.12	304.54	622.78	927.32	108.83	35.48	144.32	1,071.64	5.74

Table 12: Revised Power procurement as projected by the Petitioner for FY 2021-22 (Post-Covid)

Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Long Term Power from DIL	170	1267.09	1173.84	237.33	357.83	595.15	75.35	21.69	97.04	692.19	5.90
Medium Term Power											
Medium Term Power- RTC (50MW) Govt. of AP	50	186.66	174.93	39.01	39.01	78.02	10.03	3.23	13.26	91.29	5.22
Medium Term Power- Non RTC (25MW) Govt. of AP	25	5.19	4.86	1.08	1.08	2.17	1.67	0.09	1.76	3.93	8.08
Medium Term Power- Non RTC (25MW) Govt. of AP	25	5.14	4.82	1.07	1.07	2.15	3.34	0.09	3.43	5.58	11.58



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Subtotal	75	196.99	184.61	41.17	41.17	82.34	15.04	3.41	18.45	100.80	5.46
Medium Term Power- RTC (25MW) Govt. of Nagaland	25	93.33	87.07	19.46	19.46	38.92	3.89	1.61	5.50	44.42	5.10
Medium Term Power- Non RTC (25MW) Govt. of Nagaland	25	5.19	4.84	1.08	1.08	2.16	1.30	0.09	1.39	3.55	7.34
Medium Term Power- Non RTC (25MW) Govt. of Nagaland	25	5.14	4.80	1.07	1.07	2.14	2.60	0.09	2.68	4.83	10.06
Subtotal	75	103.66	96.70	21.61	21.61	43.23	7.79	1.79	9.57	52.80	5.46
Medium Term Power- RTC (65MW) Hydro	65	340.59	315.98	-	136.92	136.92	28.69	5.84	34.53	171.45	5.43
Power Procurement from Short Term Open Access											
Inter State Power - from Trader / Generator	80	175.20	164.94	0.00	78.84	78.84	5.29	3.28	8.57	87.41	5.30
Inter State Power - from Trader / Generator	60	306.60	288.64	0.00	130.31	130.31	9.20	5.71	14.91	145.21	5.03
Inter State Power - from Trader / Generator	85	666.91	627.84	0.00	272.26	272.26	19.92	12.37	32.29	304.55	4.85
Subtotal		1148.71	1,081.41	0.0	481.41	481.41	34.41	21.36	55.77	537.17	4.97
Power Procured from Renewable Sources											
Renewable Power (Wind Power)	10	31.54	30.41	-	11.13	11.13	-	0.58	0.58	11.71	3.85



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Renewable Power (Solar Power)	50	106.22	102.43	0.00	32.71	32.71	-	0.98	0.98	33.70	3.29
Renewable Power (GNIDA LT Solar Power)	1	1.58	1.58	0.00	1.11	1.11	-	-	-	1.11	7.06
Subtotal		139.33	134.42	0.0	44.96	44.96	0.00	1.56	1.56	46.52	3.46
Sub Total-Import to NPCL		3196.36	2986.96	300.11	1083.89	1384.00	161.28	55.65	216.93	1600.93	5.36
Unscheduled Interchange	-	-29.87	-29.87	0.00	-10.45	-10.45	-	-	-	-10.45	3.50
Grand Total		3166.49	2957.09	300.11	1073.44	1373.54	161.28	55.65	216.93	1590.47	5.38

Table 13: Revised Power procurement as projected by the Petitioner for FY 2022-23 (Post-Covid)

Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Long Term Power from DIL	170	1,267.09	1172.40	232.89	373.92	606.81	75.35	21.67	97.01	703.82	6.00
Medium Term Power											
Medium Term Power-RTC (50MW) Govt. of AP	50	186.66	174.93	39.01	39.01	78.02	10.03	3.23	13.26	91.29	5.22
Medium Term Power-Non RTC (25MW) Govt. of AP	25	5.19	4.86	1.08	1.08	2.17	1.67	0.09	1.76	3.93	8.08
Medium Term Power-Non RTC (25MW) Govt. of AP	25	5.14	4.82	1.07	1.07	2.15	3.34	0.09	3.43	5.58	11.58
Subtotal	75	196.99	184.61	41.17	41.17	82.34	15.04	3.41	18.45	100.80	5.46



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Medium Term Power-RTC (25MW) Govt. of Nagaland	25	93.33	87.07	19.46	19.46	38.92	3.89	1.61	5.50	44.42	5.10
Medium Term Power-Non RTC (25MW) Govt. of Nagaland	25	5.19	4.84	1.08	1.08	2.16	1.30	0.09	1.39	3.55	7.34
Medium Term Power-Non RTC (25MW) Govt. of Nagaland	25	5.14	4.80	1.07	1.07	2.14	2.60	0.09	2.68	4.83	10.06
Subtotal	75	103.66	96.70	21.61	21.61	43.23	7.79	1.79	9.57	52.80	5.46
Medium Term Power-RTC (65MW) Hydro	65	340.59	316.05	-	136.92	136.92	28.69	5.84	34.53	171.45	5.42
Medium Term Power-RTC Thermal	100	744.60	694.62	145.20	145.20	290.39	44.28	12.84	57.11	347.51	5.00
Power Procurement from Short Term Open Access											
Inter State Power - from Trader / Generator	90	197.10	185.42	0.00	90.67	90.67	5.94	3.68	9.63	100.29	5.41
Inter State Power - from Trader / Generator	60	306.60	288.43	0.00	133.37	133.37	9.20	5.71	14.91	148.28	5.14
Inter State Power - from Trader / Generator	30	235.68	221.71	0.00	97.81	97.81	7.09	4.40	11.49	109.30	4.93
Subtotal		739.38	695.55	0.00	321.84	321.84	22.23	13.79	36.02	357.87	5.15



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Power Procured from Renewable Sources											
Renewable Power (Wind Power)	10	31.54	30.41	-	11.13	11.13	-	0.58	0.58	11.71	3.85
Renewable Power (Solar Power)	50	106.22	102.43	0.00	32.71	32.71	-	0.98	0.98	33.70	3.29
Renewable Power (GNIDA LT Solar Power)	1	1.58	1.58	0.00	1.11	1.11	-	-	-	1.11	7.06
Subtotal		139.33	134.42	0.00	44.96	44.96	0.00	1.56	1.56	46.52	3.46
Sub Total-Import to NPCL		3531.63	3294.35	440.87	1085.62	1526.49	193.38	60.90	254.28	1780.76	5.41
Unscheduled Interchange	-	-32.94	-32.94	0.00	-12.35	-12.35	-	-	-	-2.35	3.75
Grand Total		3498.68	3261.41	440.87	1073.26	1514.13	193.38	60.90	254.28	1768.41	5.42

Table 14: Revised Power procurement as projected by the Petitioner for FY 2023-24 (Post-Covid)

Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Long Term Power from DIL	170	1,270.56	1174.87	228.45	391.97	620.41	75.35	21.71	97.06	717.47	6.11
Medium Term Power-RTC Thermal	200	1493.28	1393.05	306.12	306.12	612.24	88.56	25.74	114.30	726.54	5.22
Power Procurement from Short Term											



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Open Access											
Inter State Power - from Trader / Generator	120	263.52	247.81	0.00	125.17	125.17	7.92	4.91	12.83	138.00	5.57
Inter State Power - from Trader / Generator	80	409.92	385.48	0.00	184.46	184.46	12.27	7.62	19.89	204.36	5.30
Inter State Power - from Trader / Generator	40	314.54	295.78	0.00	133.68	133.68	9.44	5.86	15.29	148.97	5.04
Subtotal		987.98	929.06	0.00	443.31	443.31	29.63	18.39	48.02	491.33	5.29
Power Procured from Renewable Sources											
Renewable Power (Wind Power)	10	31.62	30.50	-	11.16	11.16	-	0.58	0.58	11.75	3.85
Renewable Power (Solar Power)	50	106.51	102.71	0.00	32.80	32.80	-	0.98	0.98	33.79	3.29
Renewable Power (GNIDA LT Solar Power)	1	1.58	1.58	0.00	1.12	1.12	-	-	-	1.12	7.06
Subtotal		139.71	134.79	0.00	45.08	45.08	0.00	1.57	1.57	46.65	3.46
Sub Total- Import to NPCL		3891.52	3631.77	534.57	1186.49	1721.05	193.53	67.41	260.94	1982.00	5.46
Unscheduled Interchange	-	-36.32	-36.32	0.00	-14.53	-14.53	-	-	-	-14.53	4.00



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Grand Total		3855.20	3595.45	534.57	1171.96	1706.53	193.53	67.41	260.94	1967.47	5.47

Table 15: Revised Power procurement as projected by the Petitioner for FY 2024-25 (Post-Covid)

Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTCL Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Long Term Power from DIL	170	1,267.09	1172.66	227.82	390.90	618.72	75.35	21.67	97.02	715.74	6.10
Medium Term Power- RTC Thermal	200	1489.20	1389.25	315.71	317.20	632.91	88.56	25.67	114.23	747.14	5.38
Power Procurement from Short Term Open Access											
Inter State Power - from Trader / Generator	140	306.60	288.46	0.00	148.70	148.70	9.20	5.71	14.91	163.61	5.67
Inter State Power - from Trader / Generator	120	613.20	576.93	0.00	282.07	282.07	18.32	11.37	29.70	311.77	5.40
Inter State Power - from Trader / Generator	35	278.83	262.34	0.00	121.29	121.29	8.37	5.20	13.57	134.86	5.14
Subtotal		1,198.63	1,127.73	0.00	552.06	552.06	35.90	22.28	58.17	610.24	5.41
Power Procured from Renewable Sources											
Renewable Power (Wind Power)	10	31.54	30.41	-	11.13	11.13	-	0.58	0.58	11.71	3.85
Renewable Power (Solar Power)	50	106.22	102.43	0.00	32.71	32.71	-	0.98	0.98	33.70	3.29



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Supplier's Name	Capacity (MW)	Exported (MU)	MU Imported at NPCL bus	Fixed Charges (Rs. Crs)	Energy Charges (Rs. Crs)	Amount (Rs. Crs)	PGCIL Chgs (Rs. Crs)	UPPTC L Chgs (Rs. Crs)	Total Trans. Chgs (Rs. Crs)	Total (Rs. Crs)	Per Unit Cost
Renewable Power (GNIDA LT Solar Power)	1	1.58	1.58	0.00	1.11	1.11	-	-	-	1.11	7.06
Renewable Power (Non-Solar Power)	25	186.15	175.14	-	89.35	89.35	5.62	3.48	9.10	98.45	5.62
Subtotal	41.0	325.48	309.56	0.00	134.31	134.31	5.62	5.05	10.66	144.98	4.68
Sub Total-Import to NPCL		4280.40	3999.20	543.53	1394.47	1938.00	205.42	74.67	280.08	2218.09	5.55
Unscheduled Interchange	-	-39.99	-39.99	0.00	-16.00	-16.00	-	-	-	-16.00	4.00
Grand Total		4240.40	3959.21	543.53	1378.48	1922.01	205.42	74.67	280.08	2202.09	5.56

Renewable Purchase Obligations

2.5.23 The First Amendment to the RPO Regulations, 2010 stipulates the long-term trajectory of minimum quantum of purchase of Renewable power from various renewable sources as under:

Table 16:RPO Trajectory as per UPERC Regulations (%)

Minimum quantum of purchase from renewable energy sources as % age of total energy consumed (in kWh)				
Financial Year	Non-Solar		Solar	Total
	Other Non-Solar	HPO		
	A	b	c	d = a+b+c
2019-20	5	1	2	8
2020-21	6	2	3	11
2021-22	6	3	4	13
2022-23	6	3	5	14
2023-24	7	3	5	15

2.5.24 Further, the Commission in its Order dated 19.08.2019 passed in Petition No. 12 SM of 2018 directed the Petitioner as under:

Quote



“Further, the Commission directs the licensees to submit the following within two-week:-

- 1. The information desired by the Commission vide letter no.674 dated 9.7.2019.*
- 2. The Road Map to achieve RPO targets, taking into account the draft RPO trajectory.*
- 3. The Road Map to fulfil the backlog of RPOs as indicated above.*
- 4. The amount of renewable power that will be tied up (from FY 2019-20) for each subsequent year to fulfill these RPO targets and the backlog in terms of MW and MUs.”*

Unquote

2.5.25 The Petitioner has submitted that based on power procurement plan for the Control Period, it will be able to meet its RPO obligations in full as stipulated in 1st Amendment to UPERC Promotion of Green Energy Through RPO Regulations, 2010 during the Control Period from FY 2020-21 to FY 2024-25.

2.5.26 The Petitioner submitted that apart from the procurement of hydro power under Medium Term Agreement for 64.8 MW Hydro Power (as above), the Petitioner has also considered following contracts / sources of power to meet its RPO Obligations:

a) Wind Power (10 MW)

The Petitioner submitted that it has signed Long Term PPA for a period of 25 years with PTC India Limited on 27.06.2017 for supply of 10MW wind power at a tariff of Rs. 3.53 per kWh at ex-generation bus from Adani Green Energy (MP) Limited. The above PPA was signed under the MNRE Scheme for Setting up of 1000MW ISTS connected Wind Power Projects for which the Solar Energy Corporation of India Ltd. was identified as the “Nodal Agency” for selection of bidder.

The power supply under the above PPA was to be commenced from 04.10.2018, however, the same is delayed due to delay in grant of connectivity by PGCIL. Now,



the project has secured connectivity as well as Long Term Access from PGCIL and it is in the final stages of commissioning. The power supply is expected to commence in Nov'19 but considering the past delays in the project, the Petitioner has considered the availability of such power from April-2020 in the Business Plan.

b) Solar Power through Net Metering / Gross Metering (27.57 MW – 31.57 MW)

The Petitioner submitted that the total installed capacity of the Rooftop Solar in its licensed area as at 31st March, 2019 is 22.57 MW. It is expected that by the end of FY 2019-20, the likely installed capacity will be 26.57 MW under net metering arrangements. It is expected that the above capacity of 26.57 MW will increased to 31.57 MW (approx.) by the end of FY 2024-25 gradually under net metering / gross metering arrangements.

c) Other Solar Power Procurement-

The Petitioner submitted that it had authorized UPNEDA to initiate competitive bidding for procurement of 50 MW Solar Power. Subsequent to the bidding process, the following bidders were declared as L1 for supply of 50 MW solar power to the Petitioner:

Table 17: Bidders declared for supply of 50 MW

S. No.	Bidder	Quantum (MW)	Period of Supply	Tariff at Ex-Generation bus (Rs./kWh)
1	M/s Tata Power Renewal Energy Ltd., Mumbai	25	25 years from the date of CoD	3.08
2	M/s Adani Wind Energy (TN) Limited, Ahmedabad	25	25 years from the date of CoD	3.08

Thereafter, the Petitioner has signed Long Term PPA as per standard document of UPNEDA with above bidders on 13th February, 2019 & 14th February, 2019, respectively. The plants are scheduled to be commissioned within 21 months from the date of signing of PPA. UPNEDA filed a petition no. 1462 of 2019 before the UPERC for adoption of tariff, the Commission vide its Order dated 18.09.2019



approved the tariff discovered through competitive bidding and power is schedule to start from FY 2021-22.

d) Small Hydro Power

The Petitioner submitted that it is also attempting to procure 25 MW (Approx.) Small Hydro Power for a period of 35 years on long term basis subject to the approval of the Commission. Upon signing of the PPA, the Petitioner shall submit the same for the approval of the Commission. It is assumed that supply of power will start during FY 2020-21.

Based on the above arrangements, the RPO trajectory as per UPERC (Promotion of Green Energy through Renewable Purchase Obligation) (First Amendment) Regulations, 2019 from FY 2020-21 to 2024-25.

2.5.27 The Commission observed that the Petitioner has projected 10 MW wind power for the Control Period. In this regard the Commission sought the justification for consideration of efficiency of 38-39%. The Petitioner in its reply to the query submitted as under:

The Company in the revised power purchase plan, as submitted in Annexure-1, has revised the CUF of wind power from 38-39% to 36% in accordance with our PPA dated 27.06.2017 with PTC India Limited (Source: Adani Green Energy (MP) Limited, Gujarat).

2.5.28 The Petitioner has submitted the revised RPO (Post Covid) details as under:

Table 18: Revised RPO Trajectory projected by the Petitioner for the Control Period FY 2020-21 to FY 2024-25 (Post Covid)

Type	Parameter	Nomenclature	Units	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Solar	Gross energy consumption	A	MU	1,698.49	2,710.24	2,989.08	3,295.23	3,628.62
	Hydro and Renewable Power Consumption after FY 2016-17	B	MU	289.29	731.71	731.78	134.79	309.56



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Type		Parameter	Nomenclature	Units	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		Net Energy Consumption	C=A-B	MU	1,409.20	1,978.53	2,257.30	3,160.44	3,319.05
		RPO Target (Solar)	D	%	3%	4%	5%	5%	5%
		RPO Target (Solar)	E=C*D	MU	42.28	79.14	112.87	158.02	165.95
		Solar Energy Purchased	F	MU	38.17	141.42	142.97	144.79	146.05
		Total RPO achieved	G=F/E	%	102%	335%	181%	128%	92%
		Excess RPO Met Carried Forward	H	MU	0.71	99.15	63.82	31.93	-
		Shortfall RPO Carried forward	I	MU	-	-	-	-	11.97
		REC Purchased	J	MU	-	-	-	-	-
		Net Status	K=H-I+J	MU	10.49	109.64	173.47	205.39	193.42
		Penalties, if any	L	Rs. Crore					
Non-Solar	Other Non-Solar	Gross energy consumption	A	MU	1,698.49	2,710.24	2,989.08	3,295.23	3,628.62
		Hydro and Renewable Power Consumption after FY 2016-17	B	MU	289.29	731.71	731.78	134.79	309.56
		Net Energy Consumption	C=A-B	MU	1,409.20	1,978.53	2,257.30	3,160.44	3,319.05
		RPO Target (Non Solar)	D	%	6%	6%	6%	7%	7%
		RPO Target (Non Solar)	E=C*D	MU	84.55	118.71	135.44	221.23	232.33
		Non Solar Energy Purchased	F	MU	30.41	30.41	30.41	30.50	205.55
		Total RPO achieved	G=F/E	%	36%	26%	22%	14%	88%
		Excess RPO Met Carried Forward	H	MU	-	-	-	-	-
		Shortfall RPO Carried forward	I	MU	63.24	54.14	88.30	104.94	15.68
		REC Purchased	J	MU	-	-	-	-	-
		Net Status	K=H-I+J	MU	39.09	(15.05)	(103.35)	(208.29)	(223.97)
		Penalties, if any	L	Rs. Crore	-	-	-	-	-



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Type	Parameter	Nomenclature	Units	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Hydro Purchase Obligation	Gross energy consumption	A	MU	1,698.49	2,710.24	2,989.08	3,295.23	3,628.62
	HPO Target (Hydro)	B	%	2%	3%	3%	3%	3%
	HPO Target (Hydro)	C=A*B	MU	28.18	59.36	67.72	94.81	99.57
	Hydro Energy Purchased	D	MU	-	157.99	158.02	-	-
	Total HPO achieved	E=D/C	%	0%	266%	233%	0%	0%
	Excess HPO Met Carried Forward	F	MU	-	129.80	98.67	-	-
	Shortfall HPO Carried forward	G	MU	18.73	-	-	67.72	94.81
	REC Purchased	H	MU	-	-	-	-	-
	Net Status	I=F-G+H	MU	(18.73)	111.07	209.74	142.02	47.21
	Penalties, if any	J	Rs. Crore	-	-	-	-	-

2.5.29 The Petitioner has submitted that in order to increase the stability of Grid, CERC, has become more stringent leaving hardly any scope for under / over-drawl as well as subjected to heavy DSM charges for load variation depending on frequency of particular time-block. Therefore, it has considered some deviation quantum also in its power procurement plan for FY 2020-21 to FY 2024-25 based on the prevalent CERC (Deviation Settlement Mechanism) Regulations, 2014.

2.5.30 The Commission with regards to projection made for Transmission charges for UPPTCL and PGCIL sought the basis of such projection. The Petitioner in its reply submitted the following information:

As mentioned in Chapter 3 “Power Purchase & RPO Plan and Forecasting” of the Business Plan, the Transmission charges have been considered as prevailing at the time of preparation of Business Plan petition with estimated escalation. It is further submitted that estimated escalation in case of PGCIL charges for Long Term and



Medium Term Open Access has been considered @ 5% and in case of UPPTCL and Short Term Open Access @ 2%.

The Company has considered the transmission charges for PGCIL and UPPTCL for long term power from M/s DIL and medium term power as per the PoC Order dated 08.08.2019 of Hon'ble CERC and Tariff Order dated 27.08.2019 of Hon'ble UPERC (copy enclosed for your ready reference as Annexure-4). The transmission charges for PGCIL for short term power has been considered as per the PoC Order dated 27.11.2019 of Hon'ble CERC.

The transmission charges for the medium term power from M/s APPCPL (Source: Department of Power, Govt. of Arunachal Pradesh and Department of Power, Govt. of Nagaland) has been considered at the rate quoted by them at the time of bidding.

2.5.31 The Commission noticed that the Petitioner has projected UI charges and quantum for the Control Period. In this regard the Commission sought the justification of consideration for the same. The Petitioner in it's reply submitted the following:

The Company has considered UI quantum at around 1% of the total import throughout the Control Period. The same is reasonable considering increasing load diversity of the Greater Noida area. In the past few years, we have seen sizeable domestic population moving to Greater Noida particularly, Greater Noida (West) where multiple high-rise apartments are coming. Such high penetration of domestic demand will impact the load curve of the Company leading to unscheduled interchange. It is pertinent to mention here that domestic demand unlike industrial/commercial demand is very susceptible to weather, therefore, difficult to forecast.

As far as cost towards UI is concerned, it is submitted that due to tightening of frequency band and linking of UI rate with IEX rate, the total cost is expected to



increase. Further, various new provisions such mandatory reversal of signs after every 6 time-blocks as notified by Hon'ble CERC will increase the overall UI charges.

2.5.32 As per the submission made by the Petitioner the total power purchase will be doubled in 2024-25 to around 4240 MUs. In 2020-21 power purchase of around 2003 MUs has been projected. The Petitioner has an existing long-term agreement from which around 1270 MUs will be purchased. The summary of the power purchase from different sources, as per the submission made by the Petitioner, is provided below:

Table 19: Power Purchase submitted by the Petitioner

Financial Year	Total Requirement (MUs)	Long Term Sources (MUs)	Medium Term Sources (MUs)	Short Term Sources (MUs)
FY 2020-21	2003.83	1198.23	274.96	517.70
FY 2021-22	3166.49	1267.09	641.23	1148.71
FY 2022-23	3498.68	1267.09	1385.83	739.38
FY 2023-24	3855.2	1270.56	1493.28	987.98
FY 2024-25	4240.40	1267.09	1489.2	1198.63

Commission's Analysis

2.5.33 The Commission has reviewed the submissions made by the Petitioners to assess the power purchase requirement from different sources. The billing determinants approved by the Commission shows how the demand and energy requirements in the State will evolve.

2.5.34 Further, the Commission has noted the RPO & HPO Trajectory as submitted by the Petitioners for the Control Period, the Commission shall review the backlog / achievement by the Petitioner in detail along in the ARR of each year, based on the sales and energy balance approved.

2.5.35 As the Petitioner's license is upto August 30, 2023 only, it should not contract any long term or medium term PPA extending beyond the license period. Once the status of license has been finalized as per law, the Petitioner may approach the Commission for approvals.



- 2.5.36 Currently, the Petitioner is having a long-term contract approved by the Commission to meet approx. 50% of its energy requirement. There is no new long-term agreement entered into by the Petitioner. All the medium-term agreements that have been taken into consideration by the Petitioner have not been approved by the Commission. For FY 2021-22 and FY 2022-23 the medium-term power of 65 MW that has been considered by the Petitioner has already been disallowed by the Commission vide its Order dated 04th May 2020 in Petition No. 1548/2020. The power purchase to this extent will also have to be done through short-term sources in the current arrangement after approval of the Commission. For the last two years the Petitioner is having no medium-term contract in place that are approved, from this it can be inferred that exposure to short term power will be around 75%.
- 2.5.37 The Petitioner itself has submitted that any change in the above parameters will also affect the landed cost of power at NPCL bus. Considering the submission of the Petitioner, a lot of parameters are dynamic and have higher probability of changing. The Petitioner itself has not prepared proper power procurement plan and needs to ensure that long/ medium term agreements are entered into so that there is optimization in power purchase and uncertainty due to exposure to short term market may be limited as there is uncertainty in regard to the availability and price of power in short-term market.
- 2.5.38 The Commission is of the view that the Petitioner may need to reconsider and re-evaluate the projections of demand and supply. Accordingly, the Commission cannot currently approve the power purchase of the Petitioner and the same will be dealt while determining the ARR for each year of Control Period. Also, based on the billing determinants and loss trajectory considered by the Commission for the control period, the Petitioner will have to re-evaluate its power procurement plan and take approvals for all types power purchases.
- 2.5.39 The Petitioners have to fulfill their RPO targets. The Petitioners shall approach the Commission for approval of such RPO procurements made on TBCB basis.



2.5.40 It is pertinent to mention that except for purchasing power through exchange to fulfil contingent / short term power requirements, for all other purchases prior approval of the Commission is required. The Petitioner is directed to strictly follow the Central Government Guidelines for Procurement of power for short term (i.e. for a period more than one day to one year) through tariff-based bidding process using National e-bidding portal.

2.6 CAPITAL EXPENDITURE

Petitioner's submission

2.6.1 The Petitioner has submitted that it considered the CAGR of 7 years' sales volume as mandated in the MYT Regulations, 2020 of various consumer categories and sub-categories for the purpose of preparing demand and consumption projections for the Control Period i.e. from FY 2020-21 to FY 2024-25. Based on the above, the estimated peak demand of the area is given below:

Table 20: Peak Demand Estimate by the Petitioner

Financial Year	Peak Demand in (MW)
2020-21	495
2021-22	550
2022-23	615
2023-24	685
2024-25	755

2.6.2 The Petitioner has submitted that it carried out a Load Forecasting & Network Planning study for Greater Noida area through Feedback Ventures Private Limited (Consultant), a renowned Consultant in the power sector. The Consultant submitted its report to the Petitioner in Jan'2017. The load as forecasted by the Consultant is provided in Table below:



Table 21: Load Forecast as submitted by the Petitioner (MW)

Year	Realistic Scenario		Optimistic Scenario		Pessimistic Scenario	
	Avg. Demand	Peak Demand	Avg. Demand	Peak Demand	Avg. Demand	Peak Demand
FY 2017-18	233.00	365.00	234.00	366.00	233.00	364.00
FY 2018-19	265.00	414.00	267.00	417.00	262.00	410.00
FY 2019-20	297.00	466.00	302.00	473.00	291.00	456.00
FY 2020-21	332.00	519.00	341.00	533.00	322.00	504.00
FY 2021-22	367.00	574.00	382.00	597.00	354.00	552.00
FY 2022-23	403.00	629.00	425.00	664.00	385.00	602.00
FY 2023-24	437.00	685.00	468.00	733.00	415.00	650.00
FY 2024-25	474.00	740.00	514.00	803.00	446.00	697.00
FY 2025-26	508.00	794.00	559.00	873.00	475.00	743.00
FY 2026-27	541.00	846.00	604.00	943.00	502.00	785.00

2.6.3 The Petitioner has submitted that from the above tables, it can be seen that the demand forecast of the Area is broadly in line with the demand projected by M/s Feedback Ventures in 2017 and is in the range of (+/-) 10% of the optimistic Trajectory. The Petitioner has observed a peak unrestricted demand of 436 MW in FY 2019-20 (Sep'2019) being in variation of 10% from the above forecast. Accordingly, for the purpose preparing Capital Expenditure Plan for the Control Period, the Petitioner has relied on its sales projections and the study report conducted by M/s Feedback Ventures in FY 17.

Existing electrical network

a) 220 kV & 132 kV Sub-stations:

- i. 220/132/33 kV R.C. Green Sub-station: Currently, the allocated Capacity is 357 MW. (The matter regarding ownership etc. of the R.C. Green Sub-station is pending before the Hon'ble APTEL)
- ii. 132/ 33 kV Surajpur Sub-station: Allocated Capacity is 98MW.
- iii. 220/33 kV Gharbara Sub-station: The construction of the 220/33 kV Substation was completed with initial capacity of 100 MVA in FY 2014-15.



(The matter regarding grant of connectivity by UPPTCL is pending before the Hon'ble APTEL)

- iv. 400/220/132/33 kV Sub-station at Sector-148, Noida – Allocated Capacity to the Petitioner is 100 MW.

2.6.4 The Petitioner is drawing up to 357 MW power through 23 nos. of 33 kV feeders emanating from 220/132/33 kV RC Green sub-station and 98 MW power through 7 nos. of 33 kV feeders emanating from 132/33 kV Surajpur sub-station. Further, the Petitioner has also signed Bulk Power Transmission Agreement for another 100 MW from 400 kV Sector-148, Noida Sub-station. The power will be evacuated from the 33 kV feeders emanating from above sub-station to the 33/11 kV Sub-stations of the Petitioner. It is expected that the evacuation system would be ready before the onset of summers of 2020.

2.6.5 The Petitioner further submitted that in FY 17, apart from the Load projection, at the directions of the Commission, M/s Feedback Ventures has also conducted a Network Planning Report for the purpose of planning EHV and distribution network to be constructed from FY 2017-18 till FY 2021-22. In the aforesaid report, apart from the distribution network, M/s Feedback Infra has also recommended construction of 2 more 220/33 kV substations at Greater Noida viz 220 kV Substation at BZP Section and KP V Sector. Accordingly, the Petitioner in its previous Business Plan for FY 2017-18 to FY 2019-20 had provided detailed trajectory for construction of the above 2 nos. 220 kV EHV Substation and associated lines for the approval of the Commission as per following details in Table below:

Table 22: Proposed 220/33 kV substation

S. No.	Location	Type	Capacity in MVA
1	BZP- Sector , Greater Noida	GIS	200
2	KP-V- Sector , Greater Noida	GIS	200
	Total		400



2.6.6 The Petitioner has submitted that the above would have helped the Petitioner to have adequate capacity for meeting the rapidly increasing load in Greater Noida Area as well redundancy for reliable power supply to the consumers of Greater Noida. However, considering the Orders of the Commission in Petition no. 987/2014 & 1020/2015 (Appeals filed by the Petitioner at Hon'ble APTEL in Appeal no. 336/2018 & 40/2019 are still pending), no capital expenditure has been proposed by the Petitioner in the Capital Expenditure for the Control Period on account of the above. The Petitioner seeks the liberty of the Commission for amending its capital expenditure plan as per the outcome of the Hon'ble APTEL in the above appeals.

2.6.7 The Petitioner has submitted that as per Regulation 14.6 of the MYT Regulations, 2019, the Petitioner has been periodically sharing its load requirement with UPPTCL. Any demand which may be raised by UPPTCL for providing requisite transmission capacity and/ or augmentation thereof for the Petitioner would be claimed by it in the relevant Financial Year.

b) 33/11 kV Sub-stations:

- i. Till FY 2019, Petitioner have 47 nos. of 33/11 kV Substations with total transformation capacity of 692.5 MVA commissioned.
- ii. Earlier the Petitioner was connecting its 33kV consumers to 33kV feeders emanating from 220 KV or 132 kV substation. However, this kind of network connections were resulting into interruptions and outages on account of shutdowns for maintenance etc. resulting into loss of revenue from 33kV bulk consumers.
- iii. In order to provide uninterrupted power supply, the existing network is being re-configured wherein many of the 33kV consumers are now connected to 33kV switching stations and 33/11kV substations having switching facilities. This would ensure limiting outages to only those consumers who are targeted for maintenance.



Proposed Capital Expenditure Plan for the Control Period

2.6.8 The Petitioner submitted that it has prepared its capital expenditure plan for the Control Period based on the forecast of maximum system demand and anticipated developments in the area of supply i.e. Greater Noida relating to new load, replacement of existing assets, strengthening and modernization in response to new load. Planning of Capital Expenditure over the Control Period comprises capital schemes centered around the following main works:

- i. Construction of new 33/11kV Sub-stations and up-gradation & augmenting capacities of existing 33/11kV Substations
- ii. Construction of Switching Stations for reliable supply, faster fault restoration and Load Management
- iii. Construction and strengthening of 11 kV & LT network
- iv. New electricity connections to potential consumers including conversion of Single Point Societies to Multi-point societies
- v. Replacement/Installation of dilapidated network, up-gradation of consumer meters and services for consumers
- vi. Acquiring new land, construction of customer care and collection centers, boundary wall, Substation building and office infrastructure
- vii. Information Technology Projects
- viii. Process/System Automation, Artificial Intelligence and Smart Grid Initiatives
- ix. Miscellaneous works (Demand Side Management, Energy Efficiency etc.)

2.6.9 The Petitioner has submitted that all fresh schemes initiated in a year of the Control Period pertaining to erection of new distribution sub-stations are planned to be completed within a period of five years, with intermediate capitalization as and when assets are put into service. Works relating to 11kV network erection and strengthening will also be completed within the Control Period, with intermediate capitalization as and when assets are put into service. Apart from that, reconfiguration of 33kV network to



evacuate power from EHV stations will be initiated / completed during the Control Period as per the requirement.

2.6.10 The Petitioner has submitted that the Capital Expenditure does not include the capitalization of expenses and interest incurred during construction. The Petitioner would estimate such amount while preparing MYT ARR Petition for Control Period FY 2020-21 to FY 2024-25 and include the same in its ARR projection for FY 2020-21 to FY 2024-25.

Details of capital expenditure proposed

2.6.11 The details of the proposed capital expenditure by the Petitioner during the Control Period FY 2020-21 to 2024-25 are given below:

a) Routine Capital Expenditure:

- i. The routine capital expenditure will be incurred in order to grant electricity connections to the intending consumers at earliest on receipt of application by them besides extension of network, replacement of network / assets and conversion of existing unmetered consumers to metered consumers etc.

b) New Services / Load Augmentation

- i. As per Section 43 of the Electricity Act, 2003, the Petitioner, being a Distribution Licensee, has the primary obligation to supply electricity to the intending consumer on receipt of application and payment of estimate by the potential consumers provided to them as per rates approved in Cost Data Book by the Commission. The expenditure is envisaged to fulfill the statutory mandate including requirement of extending the network and installation of new transformers. Further since, GNIDA, as a local area development authority, is required to create a part of electricity distribution infrastructure in the newly developing sectors as per Electricity Supply Code, 2005 and subsequent amendment, it is proposed that the assets created by it would be taken up by the Petitioner to provide new electricity connections and operation and maintenance thereof.



- ii. As per latest amendment of Electricity Supply Code 2005, all existing multi storied housing societies where power supply is being provided on a Single Point bulk power scheme are required to be converted to Multi Point connections, where all individual flats are to be provided meters by the utility. The Amendment also states that all such new projects shall be designed to comply with the Multi Point power supply system.
- iii. The Capex is proposed to be done for providing new electricity connection including the cost of material such as cables, meters & transformers required to effect electricity supply to applicants / consumers.

c) Replacement of Networks / Assets

- i. Old network in villages, urban area and industries is required to be replaced to ensure stable and reliable supply of electricity to consumers and to comply with the safety standards. Old transformers which are beyond repair will be required to be replaced with new transformers to maintain standards of service and safety.
- ii. Due to construction and evacuation activities carried out by different agencies like IGL, BSNL etc., underground cable suffers from substantive damages, alteration of route, shifting of feeders / poles etc., therefore for shifting of Cable and Poles including relevant accessories are considered in the Capex in all the Five years to ensure continuity of supply to consumers.
- iii. In some of the areas, re-conductoring is proposed for 11kV and 33kV lines with higher size of conductor to evacuate more power on the same pole supports.
- iv. It is also proposed to replace old electro-mechanical meters as well as defective meters & instrument transformers to ensure accurate energy recording.
- v. The capital expenditure is proposed towards replacement & refurbishment of existing network / assets as mentioned above.



2.6.12 As regard to proposal of 'Replacement of Networks / Assets' the Petitioner has submitted that:

"a) Old transformers which are beyond repair will be required to be replaced with new transformers to maintain standards of service and safety."

2.6.13 The Commission observed that the Petitioner for each year of the Control period has proposed the replacement of 46 Transformers. The Commission sought the area wise Transformer failure Report & inspection report for past three years, with details of age of transformers and justifying that the transformers were beyond repair. The Petitioner in it's reply has submitted that:

17. Replacement of Network / Assets

The Company has a fully functional Transformer Workshop wherein damaged transformers are tested. Based on the testing, it is decided that transformer is repairable or to be discarded. In the event the transformer is repairable it is used again after necessary repair. In the event transformer is beyond repair or uneconomical, the same is replaced. The requisite information regarding damaged / stolen transformers had already been provided in Format P-9 of Annexure-1 to Appendix-1. Further, the details of transformers replaced during previous 3 years is enclosed as Annexure-6 (Soft Copy).

d) Metering & Energy Audit

- i. The metering accuracy plays a major role in containing T&D losses. The metering at strategic locations on the feeders and distribution transformers would help in conducting energy audit and locating energy losses in the system to initiate suitable technical and administrative actions.
- ii. As the electronic meters's accuracy is highly dependent upon softwares and ICs, it becomes necessary to upgrade meters from time to time with latest versions alongwith communication facility. Accordingly, meters of existing consumers



shall be upgraded during the Control Period alongwith instrument transformers, if found necessary to maintain accurate energy account.

- iii. The pre-paid meters are proposed to be installed specially for the consumers where collection of the electricity bill towards electricity consumption is challenging including the compliance of the Commission to cover Government connections.
- iv. The capital expenditure is proposed towards metering & energy audit.
- v. The following is the summary of capex proposal which is required to be done in this head for all the years during Control Period:

2.6.14 As regard to the proposed 'Metering scheme', the Petitioner has projected an amount of Rs. 7.15 Crore for FY 2020-21 made before Pre-Covid and simultaneously escalated with the escalation factor of 3% for each year of the control period. The Commission asked the following details from the Petitioner:

- (i) Are the meters proposed to be replaced are smart meters in pre-paid mode or only prepaid meters?
- (ii) Break-up of meter manufacturer-wise population and warranty of existing meters that are proposed to be replaced, year-wise.
- (iii) How many meters are proposed for replacement, which have failed in the guarantee / warrantee period?
- (iv) Useful life of the meters, as per the Central Electricity Authority (CEA) Regulations and Original Equipment Manufacturer (OEM) recommendations, that are proposed to be replaced.
- (v) Details of Warranty period, manufacturer name, etc. of the new meters proposed to be procured.
- (vi) Why was not the Opex Model adopted?
- (vii) Add also, wrt Cost Benefit Analysis?



2.6.15 The Petitioner in its reply to the above query submitted that:

18. Metering Scheme

i) Smart meters or Pre-Paid meters

The meters which are proposed to be replaced during the process of upgradation would be Electronic Meters. Further, in case of conversion of single point connection society into multi-point individual connection in the existing Group Housing Societies where DG supply and Discom supply is provided through single rising mains, the smart prepaid meters have been considered.

The Company has considered prepaid meters which are less costly than the smart meters wherever the consumers demand for the same. As and when smart meter rollout plan is prepared for any particular area in Greater Noida, the Company would submit its plan for the same and seek prior approval of the Hon'ble Commission.

ii) Break up of meter manufacture wise

Table-5: Meter Details			
Meter Type	Manufacture	Total Meters as at 31st Mar'20	Warranty expired as at 31st Mar'20
3 Phase 4 Wire HT	SECURE	1,271	264
3 Phase 4 Wire LTCT	SECURE	2,069	549
3 Phase 4 Wire LT Whole Current	SECURE	20,174	8,839
	GENUS	768	24
1 Phase 2 Wire LT Whole Current	SECURE	53,657	3,330
	LANDIS+GYR	9,532	9,532
	EL SEWEDY	1,829	1,829



Table-5: Meter Details			
	GENUS	3,631	868
PREPAID (1-PHASE)	SECURE	506	3

Further, with respect to warranty of meters proposed to be replaced, it is humbly submitted the meters becoming faulty / defective during guarantee / warrantee period are sent back to the manufacturer who repairs/ replaces them with new meters. However, the Company need to replace the defective /damaged meters which are not covered by the warrantee/guarantee as well as due to its old age or for upgradation. The number of meters projected to be replaced are given in Business plan.

iii) No. of meters to be replaced

It is submitted that the meters becoming faulty / defective during guarantee / warrantee period are sent back to the manufacture who repairs/ replaces them with new meters. However, the Company need to replace the damaged / defective meters which are not covered by the warrantee/guarantee as well as due to its old age or for upgradation. The number of meters projected to be replaced are given in Business plan.

iv) Useful life of meter as per CEA

It is submitted that CEA has not provided any regulations specifying the Useful life of consumer meters.

v) Details of Warranty period, Manufacture name etc.

Details of warranty period of the meters procured by the Company is provided below.



1. M/s Secure Meters Ltd. : Warranty period 5 years
2. M/s Genus Infra : Warranty period 5 Years
3. M/s Allied Engineering Works : warranty 5 Years

vi) Reasoning of Capex model over Opex Model

The leasing / rental mode is more expensive since the Vendors include the interest cost within the lease rental as well which will be further cascaded due to impact of GST. Further, currently, the option of leasing / rental of meters is generally not preferred by the Vendors unless metering, billing and collection activities are carved out and given to them collectively.

e) Distribution System Schemes:

Based on the above estimated load, schemes have been prepared to cater to energy requirement and peak demand of various load centers.

a) 33/11kV Switching Substations

- i. The Petitioner submitted that it has planned to construct 33/11 kV Switching Substations at Greater Noida area to meet the demand of upcoming consumers in the area. The brief configuration is as follows:
 - 33kV: Two incomers, Four Outgoings & Two nos. Transformer Feeders with GIS Switchboards.
 - 11kV: Two incomers and Eight Outgoing feeders
 - 33/11kV Transformers: 2X12.5 MVA Transformation capacity.
- ii. This would ensure switching of supply during emergency situations along with better voltage profiles to consumers of the area. The Petitioner will be able to achieve N-2 distribution network in some of the industrial and residential sectors.

b) Conversion of Distribution Transformer House to 33/11 kV Sub-station



- i. It is proposed to convert existing 11/0.4 kV Transformer Houses in urban sectors to 33/11 kV Substation, where load density is increasing due to construction of high-rise buildings. The configuration of the Substation will be as follows:
 - 33kV: Two incomers connected from two different 33kV feeders for supply redundancy.
 - 11kV: One incomer and five outgoing feeders. It is also planned to have an 11 kV interconnection with the nearest 33/11 kV Substation for supply reliability.
 - 33/11kV Transformer: It is planned to have one transformer of capacity 12.5MVA.
- ii. The existing LT load, being catered from this 11/0.4 kV Substation, is proposed to be catered by using pole mounted 400kVA distribution transformers along with 11kV RMUs. This would ensure reliable power supply to LT consumers with improved voltage profile.

c) Load Augmentation of Sub-station

- i. Apart from the above, the Petitioner has to augment the load of various existing Sub-stations in its license area in order to cater to the increasing load of the consumers being service from that particular substations.

d) 33 kV Network Development

- i. Presently, the 33 kV feeders are emanating directly from 132 kV Surajpur sub-station (7 nos.) and 220/132/33 kV RC Green Substation (23 nos.). The Petitioner is also expected that it would also obtain the followings:
 - 5 nos. of additional 33kV bays at 400/220/132/33kV Sub-station at Sector-148, Noida.
 - 2 nos. of 33kV grid feeders as an Incomers for 33/11kV Switching/Substation as above.
 - 33kV Outgoing feeders from these substations shall be provided to 33kV consumers and nearby Substations for network re-organization to make the network more reliable and efficient.



- ii. Further, with the constraint of Right of Way on many road stretches, 33kV feeders are planned in following configurations:
 - Multi Circuit Line on Monopole
 - Double circuit over-head lines
 - Under-ground cables
- iii. The existing 33kV lines will also be strengthened to increase power transfer capacity.

e) 11kV Network Development

- i. With the construction of 33/11kV sub-stations at various load centers, it is proposed to construct new 11kV feeders to cater to load requirement of consumers. The new feeders would relieve the existing 11kV feeders and would also be available to meet load during breakdowns of adjacent 11kV network.
- ii. The existing 11kV lines will also be strengthened to increase power transfer capacity.

f) LT Network Development

- i. In course of time it has been observed that due to deficiency in planning & design, the existing distribution network of the urban area developed by GNIDA has become susceptible to breakdown as well as incapable of catering to the increasing load of the urban households.
- ii. Keeping in view the above situation, the Petitioner submitted that it has envisaged strengthening the existing network by practicing proper load balancing as well as by creating ring main arrangement between Feeder Pillars and at the same time augmenting the distribution capacity of the existing network. The Petitioner added that it also strives to cater to the increasing consumer base by putting up load centered distribution transformer sources, subsequent underground LT network to achieve optimal loading of the network, high degree of voltage regulation, improved reliability of supply in terms of reduction in system downtime during breakdown.



- iii. To facilitate the abovementioned arrangements, capex is being proposed all the years of Control Period on account of LT Network Development which involves installation of feeder pillars, LT panels, laying of LT underground cables and 11/0.4kV 400kVA transformers at load centers etc.

g) Network at Villages

- i. The Petitioner submitted that it has accelerated the metered connection program in all the villages. Increasing urbanization in existing villages due to proximity to urban/ industrial areas has also necessitated the construction of new networks to cater to load requirement and preventing deterioration of the network. The load density is increasing in these villages for which Petitioner need to extend and even bifurcate existing network through Overhead lines as well as underground network in some of the areas.
- ii. The network is also required to be built to strengthen the electricity supply delivery to household in the villages and to cover consumers to upgrade service connections for conversion of unmetered to meter supply.

h) Renovation of existing network

- i) The capital expenditure is proposed to for network renovation like fencing of isolators/transformers, Compact Substations, fault passage indicator in 33kV & 11kV feeders
- ii) With the increase in construction activities in the area, especially due to construction of basements up to 2 levels in high rise buildings, it has been observed that the water level goes down drastically and for that reason earth resistance in some of the area has increased substantially. It is, therefore, proposed to install earthing at various points of the network to improve safety of people and equipment.

2.6.16 In regard to the Commission's query, whether the Petitioner has taken any prior approval from the Commission for all the projects / schemes having capex greater Rs. 10 Crore as per MYT Regulation 2019. The Petitioner has submitted the following reply:



Clause 44.2 of the MYT Regulations 2019 prescribes as follows-

“The Capital Investment Plan shall be a least cost plan for undertaking investments. However, all capital expenditure projects of value exceeding Rs. Ten Crore and must have prior approval of the Commission on quarterly basis, and will be subject to prudence check.”

From the above, it can be seen any singly capital expenditure project for the value exceeding Rs. 10 Crore need to be pre-approved by the Hon’ble Commission before undertaking the same.

Out of the proposed capex in the Business Plan, only one project relating to Expansion of KP-IV Control Room and its Building valued at Rs. 18 Crore approximately envisaged to be completed over 3 years i.e. FY 2020-21 to FY 2022-23. Due to COVID-19 pandemic, the Company has revised the expenditure to be incurred on this project to Rs. 3.60 Crore in the last quarter of FY 2020-21. Therefore, before commencement of the aforesaid project, prior approval of the Hon’ble Commission would be taken.

2.6.17 The Commission asked the Petitioner regarding 33/11 kV Substation & switching stations scheme projected an amount of Rs. 23.68 Crore of which Rs. 16.72 Crore have been claimed for 33 kV Switching Substation with GIS for FY 2020-21. Similarly, for Civil works and Office Infrastructure Facility it has projected Rs. 36.69 Crore of which Rs. 14 Crore is projected for boundary wall of 11/0.4 kV Txr Houses in FY 2020-21. The Petitioner in its reply provided the following:

iii) Civil works of 33/ kV substation

It is submitted that for FY 2022-23 to FY 2024-25, the amount of Rs. 10.34 Cr, Rs. 10.65 Cr. and Rs. 10.97 Cr. has been projected for Civil works of total 9 separate 33/11 kV Substation .i.e. 3 each year which would be developed at different time frames and at different locations, making them totally different projects. The Cost



of a single project would be Rs. 3.45 Cr., Rs. 3.55 Cr. and Rs. 3.66 Cr. for FY 2022-23, FY 2023-24 and FY 2024-25 respectively which is lower than Rs. 10 Cr.

2.6.18 The Petitioner in its reply dated May 27, 2020 stated that the expenditure incurred on the projects /schemes such as 33/11 kV substation, 33 kV Network development, 11 kV Network Development and civil works, new connection and other infrastructure facility have been implemented at different time frames and at different locations, making them totally different projects and none of the above single projects/schemes have cost more than the threshold of Rs. 10 Cr.

i) Process / System Automation

a) Smart Substations and Enhancement of SCADA/DMS/OMS system

Smart Substation Implementation Initiative

- i) The Petitioner submitted that it has implemented SCADA, DMS system and is in process to implement new OMS Applications with MCC & BCC Configuration. The substations are employing latest technology i.e. IEC 61850 communication protocol along with IEC 104 & MODBUS protocols in line with the emerging technologies & operational requirements for Substation Automation. It is proposed to implement the new Substation Automation systems at 5 sub-stations each year of the Control Period along with up gradation/retrofitting of Control Relay Panel (CRP) at old substations for operations to enable them for remote SCADA monitoring and operations along with upgrading infrastructure for communication with SLDC as per regulatory requirement.
- ii) These substations shall be equipped with latest technologies of advanced Building Management System including access control system, fire alarm and suppression system, public address system, smart electric fencing, water leak detection system, rodent repellent system, smart UPS and air conditioning system. Thus the substations shall be made completely unmanned to save on human capital and are to be monitored and controlled from a centralized location.



- iii) With the onset of smart grid technologies for substations like installation of Transformer Monitoring Unit, Automatic-voltage regulators, Nitrogen Intrusion and Fire Prevention system, wireless CTs, communicable OLTCs, power quality measurement, condition monitoring etc. the necessity for upgrading existing substations and implementation in new substations is anticipated.
- iv) Also, capital expenditure is proposed for energy management initiatives in substations as per ISO50001 standardization requirements and for setting up remote monitoring and control facility of switching stations via SCADA at big consumer premises covering 5 consumer switching stations each year of the Control Period.

b) SCADA/DMS/OMS enhancement: Development, Scalability & Integration activities on SCADA/DMS/OMS system with new platforms

- i) The functionalities covered through DMS are Network Connectivity Analysis (NCA), Operation Monitor (OM), Load Balancing via Feeder Reconfiguration (LBFR), Loss Minimization via Feeder Reconfiguration (LMFR), Voltage VAR control (VVC), Load Shed Application (LSA), Fault Management and System Restoration (FMSR), Load Flow Application (LFA), Quality of Service Indices, Energy Balance/Energy Audit, Distributed Load Forecasting etc.
- ii) The functionalities which are going to be covered through OMS implementation shall help to restore the supply more speedily, provide better consumer services, managing breakdown resources both vehicle and manpower more scientifically etc. Broadly OMS system shall comprise of Customer Information System (CIS)/CRM, Interactive Voice Response System (IVR) integration, Call Over Flow (COF) systems, Crew reporting information etc. and it shall have the integration with SCADA-DMS system for real time data update and GIS system to provide better consumer services.
- iii) In view of expansion of SCADA/DMS/OMS coverage in the network, the growing number of users and owing to widespread location of users including division/zonal



level personnel involvement in monitoring and analysis, a division level setup for SCADA system is proposed to be deployed in phases in the Control Period.

- iv) At the onset of fourth generation data analysis technologies viz., artificial intelligence, business data analytics etc. among others are required to probe on big data repository of SCADA/DMS/OMS system for a meaningful and intellectual analysis in a minimal span of time for the user to interpret, correlate and respond faster to the events as well as for a single window monitoring and decision making across multiple such platforms by the management. To support such interface with SCADA/DMS/OMS system ensuing the security and integrity of production system, a secure replication model of the SCADA/DMS system is proposed.
- v) Utilizing the replication model, a data analytics application is proposed for examining the real-time and archived data and present a comprehensive summary of important events for entire SCADA/DMS/OMS platforms wistfully arranged for focusing on key parameters and deviations.
- vi) With more smart grid technologies evolving viz., Demand-Response system, AMI, MDMS etc. and subsequent data interface requirement with SCADA/DMS/OMS system are proposed.
- vii) The crew functions and field operations process shall be automated for tracking, role and job assignment, work completion status, equipment required, resource and tools management etc. A mobile workforce management platform is proposed for deployment in stages to facilitate such requirements.
- viii) With rising incidents on cyber-attacks on Operations Technology deployments viz., SCADA, Smart meters etc. across the globe it has become imperative to safeguard the critical SCADA and other automation installations against cyber espionage, attacks, threat vulnerabilities and existing loopholes. This involves regular vulnerability assessment and review of automation network, system strengthening, patching and updates, preparing security roadmap, performing penetration testing,



installing and upgrading firewalls, implementing intrusion detection and prevention systems for OT etc.

c) Implementation of BMS, OMS Facility and Smart Grid Lab

- i) The Petitioner has successfully setup a Master Control Center (MCC) with full-fledged SCADA and DMS system which operates on 24X7 basis and performs real time data monitoring, operation & control and decision-making facility through control room engineer. Similar control room facility is proposed for OMS system which shall independently possess Dashboard Projection, Mobile Workforce Management System with Clients and Business Analytics software which shall function as tightly coupled common interface for addressing all Outage Management activities and generating reliability reports.
- ii) Below mentioned functionalities will be available in proposed control center(s) for ergonomically effective design:

S No.	Facilities
1	Video projection system
2	Optimal work environment
3	IT security
4	Fire resistant doors
5	UPS & battery room
6	Building management system
7	Server room
8	Network and switching room
9	CCTV for monitoring

- iii) The following are proposed for the control center (s):

- Setting up video projection system for Outage Management System for FY21-22.
- With the similar kind of setup for building a common control room for security and surveillance throughout the Petitioner, a video projection system and associated IT system
- A control room setup for smart grid deployments within the Petitioner



- Dedicated response and resolution of LT network issues, a dedicated LT control room integrated with HT control room.
- iv) The Petitioner added that it will adopt the philosophy of building management system in other non-office locations viz., existing substations that will be upgraded with building management functions of fire alarm detection, public address system along with surveillance system for better remote monitoring and management of substations. It is proposed to upgrade 5 no. of such existing substations each year of the Control Period.
- v) Also, other locations like warehouses, new customer cell shall also be considered for BMS upgradation.
- vi) The Petitioner submitted that it has also setup a state of the art SCADA Laboratory with test equipment's and prototypes of different IEDs for simulation, diagnosis and training purpose of Automation personnel. It is further upgraded to a Smart grid lab with focus on advanced training and testing facility on Advanced Demand Response Program, Automated Meter Reading (AMR), Automated Metering Infrastructure (AMI), Net metering setup, Peak Load Management, Micro-grid etc. This shall serve as a platform for enhancing the smart grid capabilities of utility to implement latest technologies for improvement in system reliability.
- vii) The Smart grid lab is proposed to be equipped with more functionalities for live demonstration, testing and learning purpose and is planned to be upgraded in phases in each year of the Control Period. The purchases against spares and tools for maintenance of the lab also are proposed.

d) Communication

- i) The Petitioner submitted that it has deployed its own communication system for data and voice system between various offices and from Substations to ensure independent and secured flow of data. Optical fiber is used as main as well as ring communication network amongst all 33/11kV Substations & Petitioner's offices. NMS (Network Management Software) is used to monitor healthiness of fiber &



reports are generated and delivered via e-mail. The technological evaluation and better connectivity uptime warrant to have a hybrid technological system and therefore other mediums would also be implemented viz. RF communication.

- ii) The Petitioner submitted that it shall continuously provide the connectivity for all new requirements in commensuration with network, office space and other field automation related activities.
- iii) Capital expenditure is proposed to construct OFC network and communication equipment.
- iv) The Petitioner added that it has implemented Fiber Monitoring & Management System on its critical communication nodes to depict and trace faults arising in OFC cable with exact locations thereby savings fuel and time for fault identifications and provides a centralized updates for health monitoring of entire critical OFC network connecting data centers and offices. It has envisioned to replicate the process on remaining OFC network connecting substations through a phase wise deployment on 5 nodes in each year of Control Period.
- v) With a vision to expand the horizon of securing, automating and controlling the electrical network in the downstream network from substations for a reliable, safe, fast and centralized decision making; the pocket substations in the downstream distribution network are proposed to be connected with existing OFC communication network of the Petitioner. The Petitioner's existing OFC infrastructure are proposed to be extended to pocket substations in a phase wise manner in the Control Period.

e) Network Automation

- i) The emerging and tested technologies like communicable & non communicable Fault Passage Indicators, Automation of Ring Main Unit by making it communicable, Real time monitoring & detection of transformer faults using communicable FRTUs and planning to incorporate smart meter, auto-recloser, sectionalized & load break switch are planned to implement to ensure improvement in supply reliability & this



will also support in SCADA, DMS & OMS project. This will lead to minimum downtime & easy identification of fault & fault location this will guide to minimum restoration time.

- ii) The electrification in all the areas is growing constantly so as the number of 11kV RMUs are increasing at distribution level. It is required that these RMUs should be controlled & monitored from the control center. RMU automation with FPI (Fault Passage Indicator) & C.B. / Load break switch status monitoring from remote station has been started using GPRS based Feeder remote terminal units (FRTUs) and the same shall continue for better network monitoring, management, supply restoration and thus enabling to serve consumers with more efficacy. Further to that now Petitioner are planning to get new motorized RMU. In addition, monitoring of load and health condition of distribution transformers installed at staggered locations over reliable communication media viz., GPRS, industrial Wi-Fi or RF mesh whichever is best suited for environment is also proposed. Also introduction to Street Light Automation as well as DG set monitoring is planned for automatic switching and monitoring which shall benefit in optimum use of resources.

f) Smart Grid Initiatives

- i) The Petitioner submitted that it has drafted a roadmap for smart grid for implementation in phase wise deployment which involves latest metering technologies such as installation or replacement of three phase whole current smart meters and single-phase smart meters, implementation of Automated Metering Infrastructure for two way communication, demand based communication and load control features. The infrastructure requires enabling of robust communication infrastructure at remote or scattered locations which shall be met using hybrid communication channels like RF mesh, GPRS or Wifi. Further introduction of demand-response system for involvement of HT consumers primarily for engagement in Peak load management using participation in load shed of identified non-critical loads during peak load hours and time of use based metering.



- ii) A demand-response platform is planned to be implemented in first year of Control Period to engage high value consumers in optimizing the demand vs actual load gap via introducing an innovative and feasible scheme for consumers to encourage them shed their non-critical loads during peak load hours abided through a viable contract. The DR coverage is planned to increase for more consumers in subsequent years of Control Period.
- iii) At the onset of deployment of smart meters Petitioner has planned to introduce peak load management program through appropriate platform to be implemented in first year of Control Period.
- iv) It is also planned to integrate real time generation data of renewable energy sources within the Petitioner licensed landscape to help in better estimation of load planning. In the first year of Control Period, 30 no. of sites will be integrated with SCADA system followed by 50 no. expected sites each subsequent year of the Control Period.
- v) On the same context, consumers with high loads i.e, in MW are planned to be monitored under SCADA to capture the real time deviations and schedule the demand accordingly. It is proposed to integrate 25 no. sites each year of the Control Period.
- vi) Also, initiative for Photo-Electric Vehicle charging and feeding back the grid is planned in the first year of the Control Period. Energy Storage at grid level to the tune of 500kwp is also planned. APFC panels are also proposed for deployment on 1 no. selected location in the first year of the Control Period to improve system power factor and thereafter subsequent large scale deployment of 5 no. APFC panels in third year of the Control Period subject to realization of benefits inculcated from previous installation.
- vii) With the onset of latest industry 4.0 technologies which have the capability for significant impact on power sector, Petitioner has planned to initiate pilots on the same. To start with is the Blockchain technology for deployment to facilitate



prosumers with renewable generation accounting. The scope and application is expected to vary for each year of the Control Period as per requirement and success outcome. Another such application with capabilities to transform as-is processes of organization is robotic process automation, wherein the application itself autonomously governs and executes the processes across various platforms and is not dependent on any specific programming/development tool, thus is versatile, evolving and prompt by design. The Petitioner submitted it has planned to adopt this technology across various functions such as Human Resources, Finance, Billing, Automation, Procurement etc. and shall be implemented in a phase-wise manner in the Control Period.

viii) The Petitioner submitted that internet of things is also the territory where it aspires to adopt the technology in creating a canopy for monitoring of large volume of elements in power distribution network like LT switchgears, distribution transformers, feeder pillars etc. The Petitioner added that it has planned to perform multiple pilots on the same and adopt the technology based on success of pilots in a phase-wise manner in the Control Period. The initiative of business data analytics proposed for SCADA system would further be extended to other functions of the organization with deployments proposed for each year of the Control Period.

ix) The Petitioner submitted that it has successfully performed pilot of FLISR (Fault Isolation and Service Restoration) technology on 11kV distribution system, wherein fault on the ring main unit-based distribution system can be traced, isolated and supply on non-faulty zones can be restored immediately via existing SCADA system without the need of field crew. A step further, it is already in process to deploy a self-healing system on a selected 11kV distribution network, which shall perform all the tasks of FLISR autonomously without any human intervention while following all the requisite safety checks. To scale up these technologies further in distribution network, it is proposed to adopt 3 no. 11kv or 33kv ring distribution networks each year of the Control Period for deployment of Self-Healing/FLISR systems.



- x) Also owing to magnitude and concentration of consumers in upcoming developing region by the land authority, Petitioner has proposed to setup a dedicated customer care zone in KP-5, Greater Noida (West) for the region for consumer convenience.
- xi) Going forward with the advancement of technology, the Petitioner submitted that it has envisioned to venture into upcoming technologies viz., micro-PLCC, Fuel Cells, Smart charging, Home Automation, demand side management, Hybrid generation etc.

g) GIS

- i) The Petitioner submitted that it has implemented full-fledged GIS system integrated with SAP. In order to update the system with latest geographic information, new satellite imagery is required. Procurement of latest satellite imagery for updating of vector map with attributes & specification will also facilitate to update land base of existing area as well as new area for providing new connections along with network planning purpose. It submitted that it is going to procure survey equipment for field data collection with respect to yearly increase of consumer base and more number of resources to be deployed in order to resumption of speedy service to consumers, the survey equipment's such as GPS hand held device for positional located assets along with device used for Mobile applications caters the needs, which will enhance the quality of existing & future data. The upgradation of GIS software as per change in technology over the period of time is also proposed.
- ii) As the network and consumer base is rapidly increasing, software / tools are required to perform different type of analysis on the data in an integrated manner and availability of latest GIS data to field teams using mobile devices. In order to enhance the user experience and reduce / monitor the existing process new tools are to be implemented and further enhancement in existing deployed mobile application is required.
- iii) With successful GIS integration with SCADA, OMS DMS, Petitioner need to know the position of assets in field as well sync of Information between GIS-SAP data base



hence to identify the asset of the Petitioner with respect to the data maintained inside GIS, some unique numbers were painted on field. As Petitioner are growing with a rapid pace this activity needs to be repeated on all the assets again over a period of time.

- iv) Drone based survey is implemented to improve upon the supply reliability through proactive approach which includes preventive maintenance and vegetation management and also to gain insight about the misuse and abuse of electrical network viz. unauthorized construction vis-à-vis safety hazards, electricity theft etc. with the output available from drone preparation of 3D Data for meeting the enhanced way of network planning, maintenance & availability of tools for better decision making. Further to enhance the functionalities and features of the drones also to improve upon the processing capabilities of the drone images.
- v) New weather station installation in increase of consumer density as well as updation of old weather station in terms of technological advancement which are used to enhance the functionality and customer experience with respect to quality of supply and reliability. Existing vehicle tracking system devices needs regular maintenance and in future new installations on the vehicles to be- purchased by the Petitioner will be required. Petitioner has implemented a state of the art GIS Lab to test the features and functionalities of the new technological advancements in the field of GIS, as the business is growing Petitioner need to enhance the GIS lab along with it needs to be bifurcated / decentralized from SCADA / Smart Grid Lab and further adding new systems like Virtual reality, Augmented reality and storage for more GIS equipment like Drone, rugged devices for Mobile enterprise suite needs to be done.
- vi) The Petitioner submitted that it is implementing Virtual reality system for showcasing its facilities to various stake holders. Various training requirement will be fulfilled after implementation of the application.



h) New Initiatives in GIS

- i) Apart from the above-mentioned facilities, to cope-up with the existing technological advancements, GIS needs to be ready to accept and enhance its capabilities. GIS shall be required to be integrated with Smart Grid initiatives, AMI / AMR, SAP Hana etc. Along with this Petitioner is implementing an Augmented reality based training module where required users shall be trained using AR module.

i) Implementation of CCTV based Surveillance System

- ii) The Petitioner submitted that it has deployed its own CCTV based surveillance system for real time asset monitoring at various offices and from Substations to ensure safety of all assets, undue infringement by any unknown external or internal personnel on restricted area where critical installations of utility are placed such as Substation yards, control panel room, IT data centers, billing and customer care etc. The Petitioner submitted that it is continuously engaged in covering entire distribution area under 24X7 surveillance. Therefore, it has considered 5 new substation locations per annum with implementation of video analytics in security system. Also, with the objective to extend the surveillance coverage till pocket substations, it is proposed to cover 25 nos. pocket substations in the first year of Control Period and 15 nos. pocket substations in each subsequent years of the Control Period.

j) Civil Works, Office Infrastructure, Customer care Center & Stores:

- i) Civil Works & Office Infrastructure Facility, which mainly comprises of civil constructions of proposed 33/11kV Substations, Customer Care Building, Stores, OMS Control Room and Boundary Walls of 33kV substations and distribution transformer houses.
- ii) The Petitioner submitted that it has observed that with the significant increase in the Petitioner's operations and expected rise in consumer nos. due to multi-point connections, existing store facilities are not adequate to the support the same. In



order to facilitate the consumer service by optimising the storage, minimising the distance and economise the cost of transportation and storage, the Petitioner has planned construction of stores facility along with office facilities at our erstwhile Kasma Substation which is located towards south Side of Greater Noida and at Sector Knowledge Park-5 which is towards the northern Greater Noida apart from one at Surajpur which is Centrally located.

- iii) As explained above, a number of housing societies are coming up in Greater Noida (W) and with the multi-point connections, the concentration of consumers at Greater Noida (W) will be much higher as compared to Knowledge Park I where the existing customer care is located. The current location is almost 15 Kms away from Greater Noida (W) and therefore, it becomes imperative to construct one more customer care center in order to provide prompt response to the Consumers of Greater Noida (West). Accordingly, Customer Care Centre is proposed at Sector Knowledge Park-5, Greater Noida (West) with dedicated CRM sections, Cash deposit sections including Kiosks for self-operation and Grievances Redressal Cell.
- iv) Other miscellaneous Office Facilities like furniture & fixtures, Electrical Fittings, Telephones, Office equipment, to prop up the assorted operational activities and instill a high degree of efficiency into the process is also proposed.

2.6.19 The Commission also noticed that Petitioner has also proposed a scheme for the conversion of Single point to Multipoint and New societies individual connection for which the capex proposed is more than Rs. 10 Crore. In this regard the Commission sought the detail of such scheme with the clarification whether approval of the Commission has been taken. The Petitioner in its reply has submitted that:

iii) Civil works of 33/ kV substation

.....

Similarly, cost of Rs. 16.93 Cr. for conversion of Single Point to Multipoint and New Societies with Individual Connection, as per revised submission, is for 11,000



connections in total. The order for procurement of material will be placed at different time. The projected cost of one unit has been considered as Rs. 15,390/-. It is also submitted that 30% of the cost of one unit has been considered as consumer contribution on estimated basis duly provided in "Capital Expenditure Funding" at Table 26 of the Business Plan.

k) IT Projects

- i) The Capital Expenditure in IT initiatives is proposed for providing better services to consumers and other stakeholders. The initiatives have been drawn up to extend application software capabilities to support critical business processes and to create hardware capacities to support such applications. Following initiatives have been identified:

l) Implementation of Software Applications

- i) Focus of software implementation will be on extending the reach of Enterprise Application through adoption of mobile technologies, real time fast response system and on Enterprise Application Integration with OT systems. Meter Data Management and analytics application will also be extended to implement Advance Metering Infrastructure. Extending analytics capabilities for Information Warehouse as well as fast real time data processing and predictive analytics systems will enable fast decision making system for business.
- ii) Migration of SAP ERP to the new future-ready technology of S/4 HANA will be carried out by the Petitioner in the first year of the Control Period. This is to be followed by implementation of a new a BI and Analytics Platform that can provide decision-makers with quick insights and allow what-if analyses to aid agile responses to business issues. Upgradation and migration of GIS application is also planned in subsequent years to take advantage of advances in technology. Implementation of such smart technologies over the Control Period of five years is planned to lay the foundations of an Intelligent Enterprise that can respond effectively to the demands of customer service and the market.



m) Upgrading of Hardware Infrastructure Capacity

- i) New Servers will be purchased for hosting of next-generation technologies during Control Period. The Servers and Storage that are going to out of Warranty/AMC that will be replaced with Hyper Converged Infrastructure during the Control Period. Disk-to-Disk backup capabilities will be enabled by procurement of new storage and backup S/W licenses so that fast backup and restoration can be carried out by the Petitioner. Hardware infrastructure additions are also planned for new offices that are expected to be commissioned in the Control Period.

n) Upgrading of Networking Infrastructure

- i) Replacement of existing firewall and purchase of Network Access Control Devices and addition of modules in core switches are planned during the Control Period. Apart from addition to the network necessitated by commissioning of new offices and Substations, upgrading of capacity of the networking infrastructure in the Data Centre is also proposed to cater to increased need for network bandwidth.

o) Purchase of Computers, Peripherals & Accessories

- i) New computers and peripherals will be procured to meet increasing computing requirements as well as requirements of printing, copying, scanning and other means of information capture including mobile devices.

p) Purchase of Software Licenses

- i) Purchase of licenses of infrastructure and application software will be necessary to efficiently manage the computing environment while maximizing utilization of resources and to cater to increasing usage of application software.

q) Tools & Testing Equipment and Vehicles:

- i) The Petitioner submitted that it understands the requirement of the modification / up-gradation of current O&M Practices / activities by introducing cutting age technologies in Testing & Maintenance equipment including new cable fault location van as well as by ensuring occupational safety of the personnel involved in the job in terms of replacing existing worn out tools, safety equipments &



instruments in use with new age tools, safety equipment & instruments, to be in line with the world's leading O&M practices so as to enable greater precision in work.

- ii) To comply with the above approach, the capital expenditure have been proposed in MYT period for procurement of testing equipment, tools & safety equipment and vehicle.

r) Demand Side Management:

- i) The Petitioner submitted that it has always taken initiatives to meet the demand of consumers by arranging additional network & power. However, at the same time the DSM techniques to conserve the precious energy & environment. The Petitioner submitted that it has taken lot of initiatives in the previous Control Period which includes Promotion of Roof-top Solar Panels, Solar Water Heater, Energy Saving / Reduction of Electricity Wastage and Distribution of Solar lanterns in rural areas, CFL etc. In the current Control Period, it has planned to take new initiatives such as Promotion of Small Solar Plants in Villages, Solar Pumps, Peak Load Management, Energy Storage, Energy Management System Implementation etc. in addition to the initiatives taken in previous Control Period.

s) Land (Registration charges, Stamp Duty etc.):

- i) During Control Period, the Petitioner has proposed to incur the following capital expenditure towards the land cost, premium, registration charges, Stamp Duty, one-time Lease Rent etc. (as per current approved rates of GNIDA) towards purchase of land for 33/11kV substations., the brief details are as follows:

2.6.20 The Commission noticed that the Petitioner while projecting the capex for the control period has considered the escalation index as 3% in y-o-y. In this regard the Petitioner was asked to provide the basis for consideration of such escalation rate, and also the unit cost for each component / item of capex for last three years. The Petitioner submitted the following reply:

14. Escalation index of 3% explanation



It is submitted that for the projections of the capital expenditure for the Control Period FY 2021-22 to FY 2024-25, the Company has taken into consideration the capital expenditure for FY 2020-21 as base year and escalated the same @ 3% on year to year basis. The component wise details of the capital expenditure for base year are given in Annexure - 5.2.15 to Annexure – 5.2.48. The escalation factor of 3% has been determined by calculating the CAGR of past 5 years of Wholesale Price Index (WPI) and Consumer Price Index (CPI) rates notified by the Central Government for those respective years. The escalation rate for above purpose has been calculated by taking the weighted average of WPI and CPI in the ratio of 60:40. The calculation of CAGR is given in Table-4 below:

Table-4: Escalation Rate			
Fin Year	WPI 60%	CPI 40%	Total
FY 2018-19	72	120	192
FY 2017-18	69	114	183
FY 2016-17	67	110	177
FY 2015-16	66	106	172
FY 2014-15	68	100	169
FY 2013-14	67	94	162
CAGR			3.46%

2.6.21 In addition to the fresh schemes initiated during the Control Period FY 2020-21 to FY 2024-25 as described in brief above, schemes already ongoing and spilling over into the aforesaid period shall also reach commissioning and capitalization during the aforesaid period. As assets pertaining to the schemes will be put to use, corresponding capitalization shall be considered during each year of the Control Period. As Regards to ongoing projects from previous control period, the Commission sought the details of such projects with detailed justification for delay vis-à-vis comparison of cost increased against the approved cost. The Petitioner submitted the following reply:

13. Projection which will spill into control period



It is submitted that there are no major projects which spill over from the previous Control Period FY 2017-18 to FY 2019-20 to the upcoming Control Period of FY 2020-21 to FY 2024-25. Nevertheless, the details of CWIP as at Mar'20 is enclosed for the kind perusal and records of the Hon'ble Commission as Annexure – 5.

2.6.22 The Petitioner submitted that it is expected that most of the works envisaged to start in the Control Period will be completed within the Control Period. However, actual execution is dependent upon few external factors such as availability of land, availability of right of way for the proposed distribution lines, availability of transmission capacity from UPPTCL along with pending legal issues etc.

2.6.23 In response to the Commission's deficiency note, the Petitioner has submitted proposed capital expenditure plan after revising capex considering the impact of Covid 19 pandemic on September 11th, 2020 in MYT 2019 formats which are as follows

Table 23: Revised Capital Expenditure proposed by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (Rs. Crores) (Post-Covid)

Particulars	FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		FY 2024-25	
	Investment	Capitalisation	Investment	Capitalisation	Investment	Capitalisation	Investment	Capitalisation	Investment	Capitalisation
New Connection	35.10	35.10	36.58	36.58	44.11	44.11	53.03	53.03	61.95	61.95
Replacement Stock	4.80	4.80	5.57	5.57	6.19	6.19	6.64	6.64	7.17	7.17
Metering	5.11	5.11	7.52	7.52	8.07	8.07	8.72	8.72	9.33	9.33
33/11 kV Substation	18.10	18.10	24.39	24.39	26.45	26.45	27.24	27.24	28.06	28.06
33 kV Network Development	13.23	13.23	17.88	17.88	18.41	18.41	18.96	18.96	19.53	19.53
11 kV Network Development	20.92	20.92	25.48	25.48	27.37	27.37	29.52	29.52	31.75	31.75
LT Network Development	14.64	14.64	16.02	16.02	17.14	17.14	18.31	18.31	19.53	19.53
Network at Villages	8.30	8.30	12.75	12.75	13.33	13.33	13.97	13.97	14.28	14.28
Network Renovation	3.70	3.70	4.28	4.28	4.52	4.52	4.47	4.47	4.75	4.75
Process System Automation	11.06	11.06	12.14	12.14	15.17	15.17	14.56	14.56	15.04	15.04
Civil Works & Office Infrastructure Facility	21.33	21.33	30.17	30.17	48.51	48.51	23.04	23.04	32.80	32.80
IT Projects	15.18	15.18	18.46	18.46	17.15	17.15	18.44	18.44	17.04	17.04
Tools & Testing Equipment and Vehicles	5.41	5.41	5.53	5.53	5.03	5.03	4.33	4.33	4.85	4.85



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

Particulars	FY 2020-21		FY 2021-22		FY 2022-23		FY 2023-24		FY 2024-25	
Scheme wise	Investment	Capitalisation	Investment	Capitalisation	Investment	Capitalisation	Investment	Capitalisation	Investment	Capitalisation
Demand Side Management	3.00	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00
Land	6.33	6.33	9.77	9.77	10.07	10.07	10.37	10.37	10.68	10.68
Misc/Contingent Works	-	-	-	-	-	-	-	-	-	-
Interest / Expense Capitalisation	-	-	-	-	-	-	-	-	-	-
Salary Capitalisation	9.00	9.00	10.08	10.08	11.44	11.44	12.96	12.96	14.64	14.64
CWIP Movement	(20.00)		6.08		(9.00)		6.80		(6.80)	
Total including Interest and Employee Cost capitalised (A)	175.20	195.20	246.68	240.60	267.96	276.96	276.37	269.57	289.61	296.41
Employee Cost Capitalised (B)	9.00	9.00	10.08	10.08	11.44	11.44	12.96	12.96	14.64	14.64
Interest Expenses Capitalised (C)	-	-	-	-	-	-	-	-	-	-
Total (D= A - B - C)	166.20	186.20	236.60	230.52	256.52	265.52	263.41	256.61	274.97	281.77
Asset not belonging to Discoms (E)		-		-		-		-		-
Total (F= D+E)	166.20	186.20	236.60	230.52	256.52	265.52	263.41	256.61	274.97	281.77

PROPOSAL OF PHYSICAL PARAMETERS FOR CONTROL PERIOD:

2.6.24 As stated above, the capital expenditure plan and physical parameters for the Control Period for distribution network has been prepared considering the demand estimates based on Load forecasting study conducted in FY 17 and the Network planning report of M/s Feedback Infra in the year FY 2017-18.

2.6.25 Further, Regulation 5.1 of the MYT Regulations, 2019 stipulates to submit physical parameters for the Control Period for the perusal and approval of the Commission. The extract of the aforesaid regulation are given below:

Quote

“5.1 The Distribution Licensee shall file a Business Plan by 15.10.2019, duly authorized by the Board of Directors or by any Committee / person authorized by the Board in this regard, for the Control Period of five Financial Years, i.e., from April 01, 2020 to March 31, 2025, which shall



comprise but not be limited to Category/ Sub-category wise number of consumers, connected load, load factor and sales projections, Power Procurement Plan (Renewable Energy and Non-Renewable Energy) and Forecasting, Renewable Purchase Obligation (RPO) Planning and Forecasting, Distribution Loss trajectory (taking into consideration the distribution loss trajectory committed in UDAY), Capital Investment Plan, Financing Plan and physical targets, Equity, Grants, etc., in accordance with Guidelines and Formats as may be prescribed by the Commission accompanied with applicable fees. Above requirement of the Commission does not exclude its right to seek any other information in this regard, as deemed necessary.

Unquote

2.6.26 The capital expenditure plan and physical parameters claimed by the Petitioner for the Control Period are as under:

Table 24: Physical Parameters as projected by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25)

Sl. No	Details	U.o.M.	Control Period				
			FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
			Projected	Projected	Projected	Projected	Projected
I	Number of Substations:-						
	220/33 kV Substation	Nos.	2	2	2	2	2
	132/33 kV Substation	Nos.	1	1	1	1	1
	33/11 kV Substation	Nos.	53	57	61	65	69
	11/0.4 kV Substation	Nos.	7,056	7,404	7,778	8,177	8,601
II	Number of Sub- Stations 11/0.4 KV						
	220/132 kV Transformers	MVA	320	320	320	320	320
	220/33 kV Transformers	MVA	220	220	220	220	220
	132/33 kV Transformers	MVA	355	355	355	355	355
	33/11 kV Transformers	MVA	868	930	1,018	1,105	1,193
	11/0.4 kV Tranformers	MVA	688	719	753	790	828
III	No of Transformers :-						



Business Plan Order of NPCL for MYT Control Period FY 2020-21 to FY 2024-25

Sl. No	Details	U.o.M.	Control Period				
			FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
			Projected	Projected	Projected	Projected	Projected
	220/132 kV	Nos.	2	2	2	2	2
	220/33 kV	Nos.	3	3	3	3	3
	132/33 kV	Nos.	6	6	6	6	6
	33/11 kV	Nos.	84	89	96	103	110
	11/0.4 kV	Nos.	7,056	7,404	7,778	8,177	8,601
IV	Number of Feeders						
	33 kV	Nos.	33	39	39	39	39
	11 kV	Nos.	269	294	319	349	379
	0.4 kV*	Nos.	NA	NA	NA	NA	NA
V	Line Length						
	33 kV	Km	909	972	1,034	1,096	1,158
	11 kV	Km	2,585	2,690	2,798	2,909	3,021
	0.4 kV	Km	3,352	3,516	3,681	3,849	4,021
VI	Capacitor Banks installed (Capacity in MVA)	MVA	NA	NA	NA	NA	NA

FINANCING PLAN

2.6.27 The funding of the proposed Capital Expenditure has been considered in the Debt Equity Ratio of 70:30. The Petitioner has submitted the revised funding of the proposed Capital Expenditure as under:

Table 25: Capital Expenditure Funding projected for the Control Period (FY 2020-21 to FY 2024-25) (Rs. Crore) (Post Covid)

Sl. No.	Particulars	Reference	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	Assets put to use during the year	A	195.20	240.60	276.96	269.57	296.41
2	Add: Closing CWIP	B	2.92	9.00	0.00	6.80	0.00
3	Less: Opening CWIP	C	22.92	2.92	9.00	0.00	6.80
4	Less: Assets Retired	D	5.90	6.65	7.75	8.60	9.10
5	Capital Expenditure	E=A+B-C-D	169.30	240.03	260.21	267.77	280.51



Sl. No.	Particulars	Reference	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
	(Capex) during the year						
6	Capital Contribution from Consumers	F	14.55	18.25	17.29	19.30	21.34
7	Net Capital Expenditure	G=E-F	154.75	221.78	242.92	248.48	259.17
8	Debt Required for Capex Funding	H=Gx70%	108.32	155.25	170.05	173.93	181.42
9	Equity Required for Capex Funding	I=Gx30%	46.42	66.54	72.88	74.54	77.75

COMMISSION'S ANALYSIS:

2.6.28 The Commission has analyzed the three aspects i.e. load, sales and the loss trajectory simultaneously. It has been observed that in the past, no particular trend or relation of capex with the three aspects can be ascertained. Further, based on the past trends, it can be said that the licensees have not made proper submission / projections. As per the submission the load will increase, the sales will increase and the distribution losses will reduce. Along with this, there is reduction in capital expenditure. In other words, the performance will improve despite reducing capital expenditure which may not be correct. Such submissions by the Licensees are making the complete process of approval/ acceptance of business plan futile and would lead to improper planning and decision making which will further deteriorate the performance of the licensee. It is not only required to make proper submission as per Regulations but also in the interest of the Licensee to have proper plan wherein adequate capex is allocated.

2.6.29 The Commission with regards to Capital Investment plan has provided in UPERC (Multi Year Tariff for Distribution and Transmission) Regulations, 2019 as:

Quote

44 Capital Investment Plan



44.1 The Distribution Licensee shall submit a detailed Capital Investment Plan, financing plan and physical targets for each year of the Control Period for meeting the requirement of growth in number of consumers, strengthening and augmentation of its distribution network, meeting the requirement of load growth, reduction in distribution losses, improvement in quality of supply, reliability, metering, reduction in congestion, etc., to the Commission for approval, as a part of the Business Plan:

Provided that in case of non-submission of the Capital Investment plan by the Distribution Licensee for a year of the Control Period, the Commission may disallow the Capital expenditure for that year.

44.2 The Capital Investment Plan shall be a least cost plan for undertaking investments. However, all capital expenditure projects of value exceeding Rs. Ten Crore and must have prior approval of the Commission on quarterly basis, and will be subject to prudence check.

44.3 The Capital Investment Plan shall be accompanied by such information, particulars and documents as may be required including but not limited to the information such as number of distribution sub-stations, consumer sub-stations, transformation capacity in MVA and details of distribution transformers of different capacities, HT:LT ratio as well as distribution line length showing the need for the proposed investments, alternatives considered, cost / benefit analysis and other aspects that may have a bearing on the Tariff for retail supply of electricity and the Wheeling Charges:

Provided that the Distribution Licensee shall submit separate details of Capital Investment Plan for each Distribution Franchisee area within its Licence area.

Unquote

2.6.30 The Petitioners have projected the capital expenditure during the Control Period on account of each of the schemes to be executed considering number of distribution sub-stations, consumer sub-stations, transformation capacity in MVA and details of distribution transformers of different capacities, HT:LT ratio as well as distribution line length. Further, projection has been made for capital investment requirement for next five years FY 2020-21 to FY 2024-25 to achieve requirements of the anticipated load growth, augmentation of existing distribution infrastructure, improvement in power supply quality, reliability and target loss reduction.



2.6.31 Taking above discussion into consideration, it is observed that the Petitioner has neither submitted any details of schemes / projects nor submitted any cost benefit analysis. The Petitioner is directed to submit detailed calculations of cost benefit analysis while making submissions for the respective ARR Petitions of the control period. The Commission again highlights that the cost benefit analysis of each project / scheme has to be conducted with respect to reduction in distribution losses or other requirements, and the viability of each project has to be demonstrated and should be strictly as per the Regulation 44, failing which disallowance such investments in the ARR will be done in order to safeguard the consumers from unjust and unfair charges.

2.6.32 The Commission is of the view that the Capital expenditure plan submitted by the Petitioner needs a detailed scrutiny under the provisions of the MYT Regulations 2019. Further, the Petitioner will need to review its projections of demand and supply, more so, in view of the distribution loss and transmission loss (intra-state) trajectories approved by the Commission for the Control Period, and accordingly re-work out Capital expenditure requirements. Hence, the capital expenditure plan for the Control Period cannot be approved at this stage. Further, the Commission directs the Petitioner to submit the Capex schemes / projects along with details and take prior approvals, strictly as per MYT Regulations 2019, failing which the Commission may not allow the capex in the ARR.

NPCL has submitted Business Plan for the second control period i.e. from FY 2020-21 to FY 2024-25 for review and approval of the Commission. The submission of NPCL includes Category / Sub-category wise number of consumers, connected load, Load factor, sales projections, Power Procurement Plan (Renewable Energy and Non- Renewable Energy) and Forecasting, Renewable Purchase Obligation (RPO) Planning and Forecasting, Distribution Loss trajectory, Capital Investment Plan, Financing Plan and Physical targets, Equity, Grants, etc. It is noted that the NPCL was granted a 30-year supply License on August 31, 1993 i.e. upto August 30, 2023 and the License of NPCL will expire within the control period unless renewed as per law.



Considering the importance of all these elements in the business of distribution licensee and to ensure business continuity the business plan is approved subject to the following:

- A. Business Plan up to the period of License of NPCL i.e. August 30, 2023 is approved in respect to billing determinants, loss trajectory and above-mentioned directions of the Commission regarding various other matters.
- B. Business plan for period beyond the license term i.e. August 30, 2023 is taken on record for business continuity purposes only and will be subject to renewal/ grant of license as per law.
- C. The Order shall not be construed as approval of the Capital Investment Plan as the same shall be done in accordance with the directions given under the sub-head “Capital Expenditure Plan”.

With above observations, the Commission has approved the Billing Determinants for the Licensee as per Table No. 4 to 6 for the Control Period FY 2020 - 21 to 2024 - 25. Further, the Distribution Loss Trajectory for the Control Period is approved as per Table No. 8.

Besides re-iterating the observations made on this Business Plan, the Commission also directs the licensee to fulfil its following obligations:

Metering

100% metering is a necessary condition for an efficient distribution network and financial viability of the distribution companies. As per the submission made by the Petitioner, the metering of all the consumers (except LMV-5) shall be completed by end of FY 2020-21. The Petitioner must ensure metering of consumers in LMV-5 category as well because 100% metering of consumers is essential.

The Commission directs that only either pre-paid meter or smart meters be installed for all new connections or replacement of faulty meters.



The Petitioner is directed to ensure 100% feeder metering and DT metering within next one year.

Power Purchase

In view of the expiration of license period in August 2023, the licensee is directed not to contract any long term or medium term PPA extending beyond the license period. However, no approval will be required for purchasing power through exchange to fulfil contingent / short term power requirements. For all other power purchases, prior approval of the Commission is necessary. The Licensee is also directed to strictly follow the Central Government Guidelines for Procurement of power for short term (i.e. for a period more than one day to one year) through tariff-based bidding process using National e-bidding portal.

Capital Expenditure Plan

The Commission is of the view that the Capital expenditure plan submitted by the Petitioner needs detailed scrutiny under the provisions of the MYT Regulations 2019. Further, the Petitioners will need to review their projections of demand and supply, more so, in view of the distribution loss and transmission loss (intra-state) trajectories approved by the Commission for the Control Period, and accordingly re-work out Capital expenditure requirements

The Capital Investment Plan has not been approved as a part of this Business Plan and this Order shall not be construed as approval of the Capital Investment Plan. The Commission directs the Licensee to submit the capex plans etc. annually along with the ARR petition according to the approved distribution loss reduction trajectory and justify as to how it will be achievable in the current control period. The Petitioners must submit the details of each investment scheme / project exceeding Rs. 10 Crore and obtain prior approval of the Commission as per Regulations for inclusion as regulatory expenditure in the ARR. Failure to do so will result in disallowance of such investment in the ARR in order to safeguard the consumers from unjust and unfair charges.



Other Directions

The Commission also directs the Licensee to submit the voltage wise (440V, 11kV, 33kV, 66kV, 132 kV) - Energy Sales and Losses. The now mandatory energy audit report and the cost audit report (prepared in accordance with Companies (Cost Records and Audit) Rules 2014) shall also be submitted every year along with the ARR Petition.

Further, all procurements made by the Petitioners should be through Competitive Bidding only. Furthermore, the Petitioners shall file ARRs of respective year of the control period in accordance with the observations / directions contained above and as per the timelines as specified under relevant Regulations.

(Vinod Kumar Srivastava)

Member (Law)

(Kaushal Kishore Sharma)

Member

(Raj Pratap Singh)

Chairman

Place: Lucknow

Dated: 26th November, 2020

Annexure A: PETITIONER'S SUBMISSIONS PRE-COVID

Overall Billing Determinants for the Control Period

1.1.1 The category wise consumers projected by the Petitioners (Pre - Covid) for the period for FY 2020-21 to FY 2024-25 is discussed in the tables below:

Table 1: No. of consumers as projected by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (Pre Covid)

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
LMV-1: Domestic Light, Fan & Power	105453	118901	133344	151342	170678
LMV-2: Non-Domestic Light, Fan & Power	3670	4070	4474	5001	5536
LMV-3: Public Lamps	266	278	290	302	314
LMV-4: Institution	528	552	576	600	624
LMV-5: Private Tube Wells	1184	1193	1205	1217	1229
LMV 6: Small and Medium Power	3582	4001	4470	4995	5581
LMV-7: Public Water Works	220	231	242	253	264
LMV-8: STW and Pumped Canals	10	10	10	10	10
LMV-9: Temporary Supply	811	835	859	883	907
LMV-11: Electric Vehicle Charging	89	120	152	184	214
HV-1: Non-Industrial Bulk Power	227	263	299	344	393
HV-2: Large and Heavy Power	860	932	1009	1093	1187
Total	116900	131386	146930	166224	186937

1.1.2 The category wise load projected for the period for FY 2020-21 to FY 2024-25 is discussed in the tables below:

Table 2: Connected Load (in MW) projected by the Petitioner for FY 2020-21 to FY 2024-25 (Pre Covid)

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
LMV-1: Domestic Light, Fan & Power	451.94	497.08	548.55	609.61	680.60
LMV-2: Non-Domestic Light, Fan & Power	29.99	33.00	36.14	39.94	43.87
LMV-3: Public Lamps	10.27	10.29	10.30	10.31	10.33
LMV-4: Institution	7.16	7.58	8.02	8.49	9.00
LMV-5: Private Tube Wells	6.00	6.29	6.65	7.06	7.54
LMV 6: Small and Medium Power	82.91	93.16	104.68	117.64	132.21

Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
LMV-7: Public Water Works	8.14	8.58	9.05	9.54	10.06
LMV-8: STW and Pumped Canals	0.12	0.12	0.12	0.12	0.12
LMV-9: Temporary Supply	23.31	24.45	25.65	26.90	28.22
LMV-11: Electric Vehicle Charging	8.23	10.43	12.79	15.34	17.47
HV-1: Non-Industrial Bulk Power	122.73	136.27	151.42	168.39	187.43
HV-2: Large and Heavy Power	472.99	512.56	541.98	573.81	608.26
Total	1223.80	1339.81	1455.35	1587.17	1735.11

1.1.3 The overall category wise sales projected for the period for FY 2020-21 to FY 2024-15 is discussed in the tables below:

Table 3: Summary of Demand/Sales as projected by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (MU) (Pre Covid)

S. No	Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	CAGR
<u>Metered Sales</u>							
1	Domestic Light, Fan & Power (LMV-1- Metered)	588.02	645.31	702.79	763.37	825.76	9%
2	Non - Domestic Light, Fan & Power (LMV-2- Metered)	43.31	50.67	58.11	66.77	76.82	15%
3	Public Lamps (LMV-3- Metered)	37.11	39.31	41.64	44.1	46.71	6%
4	Light, Fan & Power for Institutions (LMV-4)	18.54	19.62	20.79	22.03	23.41	6%
5	Small Power for Private Tubewell (LMV-5- Metered)	22.01	27.74	28.64	29.58	30.55	9%
6	Small and Medium Power (LMV-6)	105.26	121.67	140.66	162.61	187.98	16%
7	Public Water Works (LMV-7)	22.28	24.39	26.70	29.23	32	9%
8	State Tube Wells (LMV-8)	0.36	0.38	0.40	0.42	0.45	6%
9	Temporary Supply (LMV-9)	55.77	63.54	72.39	82.48	93.98	14%
10	Electric Vehicle Charging (LMV-11)	9.37	12.74	15.97	20.25	23.56	26%
11	Non-Industrial Bulk Load (HV-1)	289.74	338.41	395.28	461.74	539.41	17%
12	Large & Heavy Power (HV-2)	1,087.24	1366.45	1,485.71	1,612.64	1,747.98	13%
Sub-total (Metered)		2,278.98	2710.24	2,989.08	3,295.23	3,628.62	12%

S. No	Category	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	CAGR
Unmetered Sales							
1	Domestic Light, Fan & Power (LMV-1- Unmetered)	2.94	-	-	-	-	
2	Small Power for Private Tubewell (LMV-5- Unmetered)	4.86	-	-	-	-	
3	State Tube Wells (LMV-8)	-	-	-	-	-	
Sub-total (Unmetered)		7.81	-	-	-	-	
Total Sales		2,286.79	2710.24	2,989.08	3,295.23	3,628.62	12%

Distribution Loss and Energy Balance:

1.1.4 The Petitioner has projected the distribution loss trajectory and Energy Balance for the next control period i.e. from FY 2020-21 to FY 2024-25 as shown in the table below:

Table 4: Distribution Losses and Energy Balance as projected by the Petitioner (Pre-Covid)

Sl. No.	Particulars	U.o.M	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	Energy Import at 33 kV Voltage Level	MU	2,499	2,962	3,267	3,601	3,966
2	Energy Sales at Diff. Voltage Levels	MU	2,287	2,710	2,989	3,295	3,629
3	Distribution Loss	MU	212	252	278	306	337
		%	8.50%	8.50%	8.50%	8.50%	8.50%

Power Purchase for the Control Period (upto 31st March, 2025):

1.1.5 The summary of power procurement plan during the Control Period is given below:

Table 5: Projected Quantum and cost of power from Short-term sources for the Control Period (FY 2020-21 to FY 2024-25) (RTC) (Pre Covid)

Particulars	U.o.M.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Power Arrangement:						
Capacity contracted at NR Periphery	MW	110	90	130	130	160
Estimated Load Factor	%	96%	100%	98%	97%	97%
Supply Hour	Hrs	24	24	24	24	24
Energy Charges Rate	Rs. /kWh	4.75	4.99	5.24	5.5	5.77
Power Purchase Quantum:						

Particulars	U.o.M.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Energy Available at NR Periphery	MU	924.54	785.56	1,115.88	1,104.03	1,353.53
Energy Available at NPCL Bus	MU	870.59	739.54	1,049.73	1,038.20	1,273.47
Power Purchase Cost:						
Energy Charges	Rs. Cr.	439.16	391.8	584.37	607.08	781.48
PGCIL Charges	Rs. Cr.	27.62	23.92	34.62	34.93	43.67
UPPTCL Charges	Rs. Cr.	17.13	14.85	21.5	21.69	27.12
Total	Rs. Cr.	483.91	430.57	640.49	663.71	852.27
Note: Transmission Charges and losses are based on the figures prevailing at the time of preparation of this petition with estimated escalation.						

Table 6: Projected Quantum and cost of power from Short-term sources for the Control Period (FY 2020-21 to FY 2024-25) (Day) (Pre Covid)

Particulars	U.o.M.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Power Arrangement:						
Capacity contracted at NR Periphery	MW	25	35	35	35	45
Estimated Load Factor	%	100%	100%	100%	100%	100%
Supply Hour	Hrs	14	14	14	14	14
Energy Charges Rate	Rs./kWh	5.11	5.36	5.63	5.91	6.21
Power Purchase Quantum:						
Energy Available at NR Periphery	MU	127.75	178.85	178.85	179.34	229.95
Energy Available at NPCL Bus	MU	120.29	168.37	168.25	168.65	216.35
Power Purchase Cost:						
Energy Charges	Rs. Cr.	65.23	95.89	100.69	106.01	142.72
PGCIL Charges	Rs. Cr.	3.92	5.51	5.61	5.74	7.48
UPPTCL Charges	Rs. Cr.	2.4	3.41	3.48	3.56	4.64
Total	Rs. Cr.	71.55	104.81	109.78	115.31	154.85
Note: Transmission Charges and losses are based on the figures prevailing at the time of preparation of this petition with estimated escalation.						

Table 7: Projected Quantum and cost of power from Short-term sources for the Control Period (FY 2020-21 to FY 2024-25) (Peak) (Pre Covid)

Particulars	U.o.M.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Power Arrangement:						
Capacity contracted at NR Periphery	MW	20	25	25	25	35
Estimated Load Factor	%	100%	100%	100%	100%	100%
Supply Hour	Hrs	6	6	6	6	6

Particulars	U.o.M.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Energy Charges Rate	Rs./kWh	5.46	5.74	6.02	6.32	6.64
Power Purchase Quantum:						
Energy Available at NR Periphery	MU	43.8	54.75	54.75	54.9	76.65
Energy Available at NPCL Bus	MU	41.24	51.54	51.5	51.63	72.12
Power Purchase Cost:						
Energy Charges	Rs. Cr.	23.93	31.4	32.97	34.72	50.89
PGCIL Charges	Rs. Cr.	1.42	1.74	1.77	1.81	2.55
UPPTCL Charges	Rs. Cr.	0.85	1.07	1.1	1.12	1.58
Total	Rs. Cr.	26.2	34.22	35.84	37.65	55.02
Note: Transmission Charges and losses are based on the figures prevailing at the time of preparation of this petition with estimated escalation.						

Table 8: Overall Power Purchase submitted by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (Pre Covid)

Particulars	U.o.M.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Power Purchase Quantum:						
Energy Available at NR Periphery	MU	2,685.06	3,177.18	3,504.55	3,868.67	4,254.56
Energy Available at NPCL Bus	MU	2,499.23	2,962.01	3,266.76	3,601.35	3,965.70
Power Purchase Cost:						
Fixed Charges	Rs. Cr.	242.77	364.05	366.06	438.27	443.59
Energy Charges	Rs. Cr.	1,066.26	1,218.51	1,444.16	1,629.27	1,917.38
PGCIL Charges	Rs. Cr.	148.75	169.71	187.28	221.73	241.68
UPPTCL Charges	Rs. Cr.	48.17	56.92	64.37	72.28	81.45
Total	Rs. Cr.	1,505.96	1,809.19	2,061.87	2,361.55	2,684.09
Note: Transmission Charges and losses are based on the figures prevailing at the time of preparation of the Petition with estimated escalation.						

Table 9: Projected Plan for meeting RPO (MUs) (Pre-Covid)

Description	Ref.	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	2	3	4	5	6	7	8
Projected Sales	a	2,064.70	2,286.80	2,710.20	2,989.10	3,295.20	3,628.60
Hydro Power and Non Solar Power to be Procured							
Hydro Power	b	96.50	255.40	-	-	-	-
Non Solar Renewable Power	c	108.10	128.50	128.50	128.50	128.50	128.50
Total Hydro and Non Solar	d=b+c	204.60	384.00	128.50	128.50	128.50	128.50

Description	Ref.	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	2	3	4	5	6	7	8
Renewable Power							
Solar Power to be procured							
Renewable Power Solar	e	8.60	9.00	115.60	116.00	116.30	116.30
Total Solor (RE)	f=e	8.60	9.00	115.60	116.00	116.30	116.30
Net Power Sale for RPO computation	g=a-d-f	1,851.50	1,893.90	2,466.20	2,744.60	3,050.40	3,383.80
Total Proposed Obligation (%) for the Year							
- Solar	h	0.02	0.03	0.04	0.05	0.05	0.05
- Non Solar	i	0.05	0.06	0.06	0.06	0.07	0.07
- Hydro Power	j	0.01	0.02	0.03	0.03	0.03	0.03
Total Obligation for the Year							
- Solar	k	37.03	56.82	98.65	137.23	152.52	169.19
- Non Solar	l	92.58	113.63	147.97	164.68	213.53	236.86
- Hydro Power	m	18.52	37.88	73.98	82.34	91.51	101.51
Total Proposed Obligation for the Year	n=k+l+m	148.12	208.33	320.60	384.25	457.56	507.56
Obligations b/f from Previous Years to be fulfilled / utilised in Current Year							
- Solar*	o	28.49	22.49	34.46	-19.87	-37.55	-41.87
		Note below*	3(k)+3(x)	4(k)+4(x)	5(k)+5(x)	6(k)+6(x)	7(k)+7(x)
- Non Solar#	p	- 14.59	-30.08	-44.96	-25.50	10.67	95.68
		Note below#	3(l)+3(y)	4(l)+4(y)	5(l)+5(y)	6(l)+6(y)	7(l)+7(y)
- Hydro Power	q	-	-77.99	-295.56	-221.57	-139.23	-47.72
			3(m)+3(z)	4(m)+4(z)	5(m)+5(z)	6(m)+6(z)	7(m)+7(z)
Total RPO b/f	r=o+p+q	13.90	-85.59	-306.05	-266.95	-166.11	6.10
- Solar	S	8.61	8.97	115.57	115.95	116.34	116.34
- Solar Net Metering	T	34.42	35.87	37.41	38.96	40.5	42.04
- Non Solar	U	108.07	128.51	128.51	128.51	128.51	128.51
- Hydro Power	V	96.51	255.44	-	-	-	-
Total RPO fulfilled during the year	w=s+t+u+v	247.61	428.79	281.49	283.42	285.35	286.89
Balance Obligation to be met in subsequent years c/f							
- Solar (plus Shortfall) (minus Surplus)	x=o-s-t	-14.54	-22.35	-118.52	-174.78	-194.38	-200.24

Description	Ref.	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	2	3	4	5	6	7	8
- Non Solar (plus Shortfall) (minus Surplus)	y=p-t	-122.66	-158.59	-173.47	-154.01	-117.84	-32.83
- Hydro Power (plus Shortfall) (minus Surplus)	z=q-u	-96.51	-333.43	-295.56	-221.57	-139.23	-47.72
Total RPO c/f	za=x+y+z	-233.71	-514.38	-587.55	-550.36	-451.46	-280.79

Details of Capital Expenditure for the Control Period:

Table 10: Proposed capital Expenditure by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25) (Rs. Crores) (Pre Covid)

S. No.	New Schemes	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
1	New Connection	45.73	36.58	44.11	53.03	61.95
2	Replacement Stock	5.41	5.57	6.19	6.64	7.17
3	Metering	7.15	7.52	8.07	8.72	9.33
4	33/11 kV Substation & Switching Stations	23.68	24.39	26.45	27.24	28.06
5	33 kV Network Development	17.39	17.88	18.41	18.96	19.53
6	11 kV Network Development	22.61	25.48	27.37	29.52	31.75
7	LT Network Development	14.95	16.02	17.14	18.31	19.53
8	Network at Villages	11.69	12.75	13.33	13.97	14.28
9	Network Renovation	3.95	4.28	4.52	4.47	4.75
10	Process System Automation	16.06	12.14	15.17	14.56	15.04
11	Civil Works, Office Infrastructure Facility & Customer Care Center	36.69	41.94	37.33	33.37	29.85
12	IT Projects	19.18	18.46	17.15	18.44	17.04
13	Tools / Testing Equipment, Vehicles etc.	2.51	2.76	1.81	0.80	1
14	Demand Side Management	3.00	4.00	4.00	5.00	5.00
15	Land	9.49	9.77	10.07	10.37	10.68
16	Total	239.49	239.52	251.12	263.41	274.97
17	Asset handed over by GNIDA	1	1.03	1.06	1.09	1.13
18	Grand Total	240.49	240.55	252.18	264.51	276.10

Financing Plan

1.1.6 The Financing Plan during the Control Period is given below:

Table 11: Capital Expenditure Funding projected for the Control Period (FY 2020-21 to FY 2024-25) (Rs. Crore) (Pre Covid)

Particulars	Ref.	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Total Additions to Assets	A	234.09	230.52	265.52	256.61	281.77
Add: Closing CWIP	B	7.92	16.92	2.52	9.32	2.52
Less: Opening CWIP	C	2.52	7.92	16.92	2.52	9.32
Capital Expenditure	d=a+b-c	239.49	239.52	251.12	263.41	274.97
Less: Assets Retired	E	5.90	6.65	7.75	8.60	9.10
Net Capex	f=d-e	233.59	232.87	243.37	254.81	265.87
Consumer Contribution	G	32.29	33.54	34.07	37.86	42.78
Net Capex	h=f-g	201.3	199.33	209.3	216.95	223.09
Debt - 70%	i=h x 70%	140.91	139.53	146.51	151.87	156.16
Equity- 30%	j=h x 30%	60.39	59.8	62.79	65.09	66.93

Annexure B: PAST YEAR BILLING DETERMINANTS AND CAGR (%)**Past year`s data of the Petitioner:**

1.1.1 The Actual No. of Consumers, connected load and Sales as submitted by Petitioners is shown in below tables:

Table 1: Summary of Actual number of consumers for FY 2011-12 to FY 2018-19 (No.)

S. No.	Consumer Category	No. of consumers							
		FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
1	Domestic Light, Fan & Power (LMV-1- Metered)	48,031	50,233.00	53,157.00	57,520.00	62,793.00	67,245.00	73,017	81,390
2	Non - Domestic Light, Fan & Power (LMV-2- Metered)	1,777	1,873	2,061	2,546.00	2,792.00	2,830.00	2,798	2,922
3	Public Lamps (LMV-3- Metered)	3	2	2	3.00	20.00	20.00	20	206
4	Light, Fan & Power for Institutions (LMV-4)	365	427	456	332.00	342.00	468.00	633	675
5	Small Power for Private Tubewell (LMV-5- Metered)	1,191	1,101	1,111	1,132.00	1,175.00	1,165.00	1,182	1,191
6	Small and Medium Power (LMV-6)	1,410	1,608	1,727	1,839.00	2,113.00	2,338.00	2,602	2,933
7	Public Water Works (LMV-7)	160	165	165	167.00	185.00	207.00	220	198
8	State Tube Wells (LMV-8)	1	1	1	1.00	1.00	1.00	1	10
9	Temporary Supply (LMV-9)	1,525	1,043	1,239	838.00	913.00	940.00	971	810
10	Non-Industrial Bulk Load (HV-1)	51.00	66	71	84.00	127.00	138.00	149	178
11	Large & Heavy Power (HV-2)	425.00	462	494.00	519.00	533.00	138.00	638	721
	Total	54,939.00	56,982.00	60,485.00	64,981.00	70,994.00	75,918.00	82,231	91,234

Table 2: Summary of Actual Connected Load for FY 2011-12 to FY 2018-19 (MW)

S. No.	Consumer Category	Connected Load (MW)							
		FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
1	Domestic Light, Fan & Power (LMV-1- Metered)	182.16	192.22	202.85	212.39	233.54	257.49	303.7	355.18
2	Non - Domestic Light, Fan & Power (LMV-2- Metered)	14.02	11.70	13.44	15.48	19.03	20.01	21.59	24.12
3	Public Lamps (LMV-3-Metered)	4.78	6.35	9.08	9.74	11.45	12.07	12.68	10.41
4	Light, Fan & Power for Institutions (LMV-4)	5.96	6.26	6.59	7.19	5.19	5.40	5.93	6.61

S. No.	Consumer Category	Connected Load (MW)							
		FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
5	Small Power for Private Tubewell (LMV-5-Metered)	5.13	6.04	4.88	5.55	5.65	5.56	5.63	5.65
6	Small and Medium Power (LMV-6)	27.81	32.82	34.35	41.31	47.00	52.65	59.29	66.82
7	Public Water Works (LMV-7)	3.41	3.08	3.61	3.89	6.30	6.93	7.27	7.36
8	State Tube Wells (LMV-8)	0.17	0.15	0.15	0.13	0.13	0.13	0.11	0.12
9	Temporary Supply (LMV-9)	14.42	11.46	12.39	23.33	30.33	30.80	31.46	22.22
10	Non-Industrial Bulk Load (HV-1)	23.96	38.38	39.76	43.55	73.04	79.70	85.90	99.86
11	Large & Heavy Power (HV-2)	202.18	228.86	234.04	282.79	275.87	287.80	298.87	336.38
	Total	484.00	537.33	561.14	645.34	707.53	758.54	832.36	934.60

Table 3: Summary of Actual Sales for FY 2011-12 to FY 2018-19 (MU)

Consumer Category	Actual Sales (MU)							
	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Domestic Light, Fan & Power (LMV-1- Metered)	146.85	173.26	195.49	233.10	253.36	299.74	366.54	452.36
Non - Domestic Light, Fan & Power (LMV-2- Metered)	16.07	19.32	20.43	22.83	26.39	29.71	33.28	34.17
Public Lamps (LMV-3-Metered)	21.82	21.46	21.30	36.06	30.00	35.52	34.35	35.65
Light, Fan & Power for Institutions (LMV-4)	9.80	9.73	11.89	14.21	13.39	12.09	13.27	14.08
Small Power for Private Tubewell (LMV-5- Metered)	11.15	13.63	23.49	26.98	28.77	31.97	31.68	25.83
Small and Medium Power (LMV-6)	30.29	35.94	42.94	48.86	54.66	61.53	69.17	81.00
Public Water Works (LMV-7)	10.19	10.13	12.25	13.97	14.73	15.29	19.94	19.20
State Tube Wells (LMV-8)	0.31	0.31	0.31	0.31	0.31	0.08	0.60	0.47
Temporary Supply (LMV-9)	19.67	21.19	27.21	33.61	39.30	47.05	47.17	49.03
Non-Industrial Bulk Load (HV-1)	49.31	54.23	72.40	87.94	97.54	150.67	174.77	217.65
Large & Heavy Power (HV-2)	560.90	621.44	700.96	792.02	818.71	816.75	876.82	920.65
Total	876.36	980.64	1,128.67	1,309.89	1,377.16	1,500.40	1,667.60	1850.07

1.1.2 The Petitioner has submitted that based on the CAGR calculated for past 7 years, it has projected the billing determinants. The summary of CAGR is shown in the Table below:

Table 4: Details of CAGR used by the Petitioner for the Control Period (FY 2020-21 to FY 2024-25)

Category	3 Yrs CAGR	2 Yrs CAGR	1 Yrs CAGR	Average of 3 Yrs CAGR	7 Year CAGR	Correction Factor for Normalisation	Used CAGR	Remarks
LMV1 Unmetered	-2.78%	-9.66%	-18.30%	-10.25%	-0.36%		-0.36%	7 yrs CAGR

Category	3 Yrs CAGR	2 Yrs CAGR	1 Yrs CAGR	Average of 3 Yrs CAGR	7 Year CAGR	Correction Factor for Normalisation	Used CAGR	Remarks
LMV1 Unmetered Converted								
LMV1 Rural	161.44%	127.17%	9.81%	99.47%	86%	-76.63%	9.81%	Due to rationalization of rural feeders in Dec'16 as per the Commission Order 1st December 2016, 7 years' CAGR will not appropriately reflect future growth trends, hence, one-year CAGR used for forecasting purposes.
LMV1 Urban	6.87%	5.26%	8.38%	6.84%	9.93%		9.93%	7 yrs CAGR
LMV1 Bulk	38.33%	43.02%	45.95%	42.43%	29.64%	-20%	9.56%	As per 13th Amendment in ESC 2005, no new single point connection assumed from FY 19-20 onwards. Hence, 7 years' CAGR will not appropriately reflect future growth trends, hence, adjusted CAGR of domestic category used for forecasting purposes.
LMV1 Multipoint								
LMV2	8.99%	7.24%	2.66%	6.30%	11.38%	0%	11.38%	7 yrs CAGR
LMV2 - Multipoint								
LMV3	5.92%	0.18%	3.77%	3.29%	7.27%	-1%	5.92%	Recent trend of 3 Year CAGR considered due to energy efficiency measures being taken by various authorities.
LMV4 Public Institutions	2.10%	4.51%	37.17%	14.59%	0.44%	0%	0.44%	7 yrs CAGR
LMV4 Private Institution	1.52%	9.45%	-3.14%	2.61%	8.07%	0%	8.07%	7 yrs CAGR
LMV5 Unmetered	2.91%	-4.31%	-8.77%	-3.39%	9.81%	-7%	2.91%	3 Years' CAGR considered instead of 7 years CAGR considering no fresh unmetered connection and conversion of existing connection to metered one.
LMV5 Unmetered Converted								
LMV5 Rural	-5.89%	-8.79%	-34.52%	-16.40%	72.91%	-68%	5.21%	In view of rapid urbanisation of region the 7 Year CAGR of 73% is not reflective due to small base, instead the Adjusted CAGR considered.
LMV5 Urban	-53.41%	-66.69%	-74.68%	-64.93%	-3.25%		-3.25%	7 yrs CAGR
LMV6 Rural	-18.78%	-13.83%	-48.18%	-26.93%	- 31.84%	13.06%	- 18.78%	Due to low base in numbers the 3 Year CAGR is considered to be realistic of current trends.
LMV6 Urban	14.06%	14.77%	17.23%	15.35%	15.61%	0%	15.61%	7 yrs CAGR
LMV7	9.24%	4.32%	-3.69%	3.29%	9.47%	0%	9.47%	7 yrs CAGR
LMV8	14.72%	143.43%	-21.52%	45.54%	6.12%	0%	6.12%	7 yrs CAGR
LMV9	7.65%	2.08%	3.94%	4.56%	13.94%	0%	13.94%	7 yrs CAGR

Category	3 Yrs CAGR	2 Yrs CAGR	1 Yrs CAGR	Average of 3 Yrs CAGR	7 Year CAGR	Correction Factor for Normalisation	Used CAGR	Remarks
HV12	32.81%	16.31%	13.60%	20.91%	25.42%	-9%	16.31%	Considering the GNIDA developmental plan and recent trends, 2 Year CAGR's of commercial entity is considered to be more appropriate for forecasting purposes instead of 7 Year CAGR.
HV14	24.17%	37.52%	87.37%	49.69%	18.64%	0%	18.64%	7 yrs CAGR
HV11	11.49%	15.92%	13.70%	13.70%	11.01%	0%	11.01%	7 yrs CAGR
HV33	1.05%	2.31%	1.30%	1.55%	5.88%	0%	5.88%	7 yrs CAGR

In view of the above, similar adjustments / assumptions have also been considered while projecting connected Load and Consumer Numbers for the purpose of preparation of Business Plan for the Control Period FY 2020-21 to FY 2024-25