

- f) **Introduction of Green Open Access Rules 2021:** MoP has published the Green Open access rules on 16th August 2021 for facilitating purchase and consumption of green energy including the energy from Waste-to-Energy plant.
- g) **Bringing 33 kV system under Transmission for performance improvement of sub-transmission system:** As per MoP notification dated 1st Sep 2021, the 33kV system would be managed by STU in a phase wise manner. This would help in better planning, loss reduction and increased supply reliability. This would also impact wheeling business of Discoms and other activities/ transactions linked to distribution assets at 33 kV.
- h) **Electricity (Timely Recovery of Cost due to Change in Law) Rules, 2021:** In October, 2021, the Ministry of Power released Electricity (Timely Recovery of Cost due to Change in Law) Rules, 2021 as per which the affected party may be restored to the same economic position if such change in law had not occurred by adjusting the monthly tariff.
- i) **Electricity (Promotion of Generation of Electricity from Must Run Power Plants) Rules, 2021:** The Ministry of Power on 22nd October 2021 has published the Electricity (Promotion of Generation of Electricity from Must-Run Power Plant) Rules, 2021 which provide that electricity generated from a must-run power plant may be curtailed or regulated only in the event of any technical constraint in the electricity grid or for reasons of security of the electricity grid. In the event of a curtailment of supply from a must-run power plant, compensation shall be payable by the procurer to the must-run power plant at the rates specified in the agreement for purchase or supply of electricity.

1.3.2 It is submitted these developments will have impact on power distribution business in coming period in terms of demand, consumption, open access, power purchase arrangements, short term power market, sub-transmission, metering, capital expenditure etc.

## 2 Brief Profile of UPCL

### 2.1 About UPCL

2.1.1 Uttarakhand Power Corporation Limited (UPCL), formerly Uttaranchal Power Corporation Limited was incorporated under the Companies Act, 1956 on February 12, 2001 consequent upon the formation of the State of Uttaranchal. UPCL was entrusted to cater to the Transmission & Distribution Sectors inherited after the de-merger from Uttar Pradesh Power Corporation Limited since April 01, 2001.

### 2.2 Vision & Mission Statement

2.2.1 The vision of UPCL is:

*“To be India’s best discom by providing reliable and quality power at affordable rates”*

2.2.2 The mission of UPCL is:

- a) Provide “POWER TO ALL” by implementing state-of-art enabled distribution network.
- b) Be a part of socio-economic development of state by enlightening lives and empowering progress.
- c) Earn Consumer’s Delight through excellence in delivering services at par with consumer expectations.
- d) Maximize sustainable value to all stakeholders through IT enabled solutions and smart technology.
- e) Help Creating conducive environment for attracting investment.
- f) Enable and take care of employees for unleashing their full potential, teamwork, collaboration, collective wisdom and productivity.

2.2.3 The key duties being discharged by UPCL are as follows:

- a) Laying and operating of such electric line, sub-station and electrical plant that is primarily maintained for the purpose of distributing electricity in the area of supply.

- b) Arranging in coordination with the generating companies operating in/or outside the state for the supply of electricity required within the state and for the distribution of the same in the most economical and efficient manner.
- c) Preparing and carrying out schemes for distribution and generally for prompting the use of electricity within the state.
- d) Supplying electricity as soon as practicable to any person requiring such supply, within its competency to do so under the said Act.
- e) The nodal agency under the guidelines and standards of the Government of India for charging infrastructure for electric vehicles.<sup>7</sup>

## 2.3 UPCL at a Glance

2.3.1 The distribution licensee has witnessed significant improvement in last few years in terms of consumer growth, energy demand, turnover, collection efficiency, loss reduction & infrastructure. A brief snapshot of UPCL's profile has been given below.

<b>Energy Sales</b> 11,432.59 MU	<b>No. of Consumers</b> 26.70	<b>Load Growth</b> 7460
<b>Distribution Loss</b> 13.96 %	<b>Collection Efficiency</b> 95.55%	<b>Turnover</b> 6,941 Rs. Cr.
<b>Substation (No.)</b> 357 – 33/11 kV 78579 – 11/0.4 kV	<b>Transformation Capacity (MVA)</b> 4906— 33/11 kV 5037– 11/0.4 kV	<b>Lines (ckt. Km.)</b> 5577– 33 kV 44359 – 11 kV 68032– 0.4 kV

Figure 5: Brief Snapshot of UPCL at the end of FY 2020-21

Note: Collection Efficiency does not include transaction of Rs. 201.96 Cr. as received from M/s IDPL in the month of December, 2020. Including this amount, the collection efficiency is 98.50%.

<sup>7</sup> [https://go.uk.gov.in/goentry/go\\_letters/1132019133224.pdf](https://go.uk.gov.in/goentry/go_letters/1132019133224.pdf)

2.3.2 The growth in assets in the last few years has been on account of Central sector schemes as well as other works executed using internal funding / State support whose snapshot is as follows:

Table 1: Status of Central sector schemes

S No.	Scheme	Description	Status
1	DDUGJY	- Strengthening of T&D network in rural area - Feeder segregation. - Rural electrification including hamlet electrification	- Village incl. hamlet electrification = 98% - Feeder segregation =98%
2	SAUBHAGYA	- Part-A for establishment of baseline data and IT application. - Part-B for renovation, modernization.	- Households = 100%
3	R-APDRP	- Last mile connectivity to all un-electrified household (rural and urban areas) - Off grid solution to remote, inaccessible household.	- IT Part A = 100% - SCADA Part A = 100% - Part B = 100%
4	IPDS	- Strengthening of ST&D in urban areas. - Metering of feeders/ DTs/ consumers. - IT enablement of distribution sector.	- Town = 100% - IT Phase II = 100%

2.3.3 Besides the above, the licensee is also executing works through internal funding for load growth, loss reduction, system reliability, safety improvement and creation of infrastructure facilities etc. which have been detailed in the upcoming chapters.

2.3.4 UPCL has also taken measures to ensure better service quality to its customers. Some of the measures are as follows:

<b>Quality &amp; Reliable Power</b> <ul style="list-style-type: none"> <li>SCADA system in Dehradun</li> <li>Intimation of outages using <b>URJA MITRA</b> mobile App</li> <li>24 x 7 Customer Care Services <b>1912</b></li> <li>Daily monitoring of SAIFI, SAIDI</li> <li>Online complaint/request services</li> </ul>	<b>Timely Delivery of Accurate Bills</b> <ul style="list-style-type: none"> <li><b>AMR based billing</b> for High Value Consumers</li> <li>Instant Bill using Spot Billing Machines</li> <li><b>Photo based billing</b> to remove meter reader malpractices</li> <li>SMS based alerts &amp; services on bill generation, payment reminders</li> <li>Pre-Paid Metering for Temporary Connections</li> </ul>	<b>Easy Payment Mechanism</b> <ul style="list-style-type: none"> <li>Online hassle free Payment services</li> <li><b>No convenience charges</b></li> <li>Instant bill payment</li> <li>NSC payment</li> </ul>	<b>Transparency &amp; Better Consumer Services</b> <ul style="list-style-type: none"> <li>Daily Monitoring of Pending Connections &amp; Complaints</li> <li><b>24 x 7 Customer Care Center</b> for lodging complaints using 1912</li> <li>Consumer feedback</li> <li>Tracking of Application status using unique no.</li> </ul>
--	--	---	---

Figure 6: Key Consumer centric Initiatives implemented by UPCL

## 2.4 SWOT Analysis

To develop a meaningful business plan and in order to improve the current performance, it is imperative to understand the strengths and limitations for any organization and be mindful of the opportunities and threats. SWOT framework has been utilized for this purpose:

### Strengths

- a) Low Distribution and AT&C Loss: UPCL has been able to reduce its distribution loss at an average of ~1.5% each year during the last ten years due to which the losses have reduced from 29.65% in FY 2007-08 to 13.40% in FY 2019-20 in spite of the difficult terrain in the state and dispersed consumer base. The performance is now at par with some of the better performing Discoms in the country and better as compared with some of the other states/ Discoms in Rajasthan, Uttar Pradesh, Jharkhand, Haryana, etc.
- b) High Collection Efficiency: UPCL had a collection efficiency of 91.87% for FY 2019-20 and 98.50% collection efficiency in FY 20-21 in spite of substantial proportion of domestic consumption in the COVID-19 impacted period. High collection efficiency has helped the utility in recovering large part of the annual revenue requirement thus improving the financial health.
- c) Reliable Power Supply: UPCL has been able to provide uninterrupted power supply to its consumers. The energy and peak load shortages have been curtailed to a large extent and UPCL is able to plan its power procurement to supply quality and uninterrupted power to its consumers.
- d) Strong Management and leadership: Strong corporate structure with highly skilled and efficient management has paved a way ahead for UPCL. The effective actions undertaken by the top management to upgrade the organisation in line with the changes in the power sector have placed UPCL ahead of other state owned distribution utilities in India.

### Weakness

- a) Ageing of distribution network: At the time of unbundling from the erstwhile UPSEB, the assets inherited by UPCL were ageing thus require adequate

maintenance. As, UPCL operates in a very difficult geography, which consists of supplying power within hilly areas and difficult terrain, conditions and topography, the maintenance of its distribution network is a challenging task which leads to faster ageing of the assets. UPCL has been supplying power in these areas from long time; however, with passage of time and above-mentioned issues, the distribution network has started showing signs of ageing and this shall lead to deterioration in performance of UPCL.

- b) Inadequate Manpower: The existing work force of UPCL is inadequate to cater the every growing consumer base and load enhancement. As against the current sanctioned strength of 8,579 posts, the utility is operating with an actual strength of 2,458 (as on September,2021) employees, which is very less than the total requirement of UPCL.
- c) Dependence on Hydro Power: UPCL has a large part of its power availability from hydro stations including states owned stations under UJVNL and central stations of NHPC, SJVN, THDC, etc. Though it is in surplus during the peak period of May to October, the utility has deficit during the off peak months. Currently, the surplus during summer months are banked with other utilities and the returned power during winter months is used for meeting the deficit.

### Opportunities

- a) Focus on industrialization: The Government of Uttarakhand has been putting in efforts for attracting industries and corporate houses to invest in the State as described previously. This may increase the number of HT consumers in the state
- b) Use of Technology for efficiency improvement: The availability of technology such as ERP, mobile billing, online payment system, AMR etc. may help in reduction of AT&C losses.
- c) Solar Potential: Uttarakhand has a healthy solar potential which could help in meeting the energy demands of the future besides providing clean energy.

### Threats

- a) Open Access: With Green Energy Open Access rules being introduced by MoP, there is a threat that a significant amount of high paying consumers may set up

captive RE plants which may lead to shifting of tariff burden on other consumer categories.

- b) Regulatory Risks: Since distribution is a regulated business, the utility is impacted on the norms and regulations issued by the appropriate Commission or governments. For instance, MoP has notified Electricity (Timely Recovery of Cost due to Change in Law) Rules, 2021 according to which generators may be compensated on account of occurrence of change in law. Similarly, in case of curtailment of RE, such generators are required to be compensated as per the Electricity (Promotion of Generation of Electricity from Must Run Power Plants) Rules, 2021.

The SWOT matrix is summarized as follows:

*Table 2: SWOT Matrix*

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>+ Low Distribution and AT&amp;C Loss</li> <li>+ High Collection Efficiency</li> <li>+ Strong Management and leadership</li> <li>+ Reliable Power Supply</li> <li>+ Significantly higher HT/LT consumers</li> <li>+ Lower Agricultural sales</li> </ul>	<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>– Ageing distribution network</li> <li>– Inadequate manpower</li> <li>– Dependence on hydro power</li> <li>– Low PLF of HT consumers</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>+ Government focus on increasing industrialization in the State</li> <li>+ Use of Technology for efficiency improvement</li> <li>+ Solar Generation</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>– Open Access</li> <li>– Regulatory risks</li> </ul>

### 3 Approach of the Business Plan

#### 3.1 Background

3.1.1 The Hon'ble Commission has notified the Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2021, in short, "UERC Tariff Regulations, 2021" which are to be applicable for determination of tariff from FY 2022-23 onwards and up to FY 2024-25, i.e. from April 1, 2022 to March 31, 2025 (herein referred to as the "4<sup>th</sup> Control Period").

3.1.2 As per Regulation 8(1), clause (c) of UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2021, the distribution licensee has to submit a business plan containing power procurement plan based on the sales forecast and proposed distribution loss trajectory for the entire Control Period. The relevant extract is reproduced as under:

*"c) The Business Plan for the Distribution Licenses shall be for the entire Control Period and shall, interalia, contain-*

- (i) Sales/demand forecast for each customer category and sub-categories for each year of the Control Period;*
- (ii) Distribution loss reduction trajectory for each year of the Control Period; including details of the measures proposed to be taken for achieving the target loss;*
- (iii) Power procurement plan in case of long term, medium term and short term based on the sales forecast and distribution loss trajectory for each year of the business plan period; the power procurement plan may also include energy efficiency and demand side management measures;*
- (iv) Collection efficiency improvement trajectory for each year of the Control Period;*
- (v) Capital investment plan considering the sales/demand forecast, power procurement plan, distribution loss trajectory, targets for quality of supply, etc. The capital investment plan shall be consistent with the perspective plan drawn by the State Transmission Utility (STU), and the investment plan should also include yearly phasing of capital expenditure along with the source of funding, financing plan and corresponding capitalisation schedule;*

- (vi) *The appropriate capital structure of each scheme proposed and cost of financing (interest on debt and return on equity), terms of the existing loan agreements, etc;*
- (vii) *Details related to availability of power from renewable energy sources and likelihood of complying with the RPO specified by the Commission"*

3.1.3 In accordance with the UERC (Terms and Conditions for determination of Multi Year Tariff) Regulations, 2021, the distribution licensee is now submitting a business plan for the 4<sup>th</sup> Control Period. For preparation of this business plan, the licensee has analyzed the various measures undertaken in the past three Control Period vis-à-vis its impact on the consumer and energy mix to explore ways of improving its efficiency and provide reliable power for all.

3.1.4 The key objectives of this business plan are as follows:

- a) To analyse and anticipate the future requirements & strategically plan the capital investments, means of financing & other necessary requirements, which would serve as a reference document for monitoring & execution of future works.
- b) To enhance decision-making & operational efficiency of the distribution company by inculcating proactive actions, strategy & methodology to fulfil the future projections laid within the plan.
- c) To identify the strength, weakness, opportunities and threats for the power distribution business to enable preparedness of the licensee under the rapidly evolving scenario in the country
- d) Meeting the regulatory compliance of submission of a business plan as mandated by the UERC, MYT Regulations, 2021

## 3.2 Broad outline for Turnaround of UPCL

3.2.1 The Petitioner submits the broad outline for turnaround of UPCL to ensure that in the control period, the performance is positive and hence following measures would be undertaken during the control period.

- a) Optimisation of Power Purchase cost
- b) Implementation of Smart Metering project under RDSS

- c) Implementation of Loss Reduction schemes under RDSS
- d) Pending consideration of GFA of Rs. 550 Cr (Rs.1058.18 Cr less Rs. 508.18 Cr approved) related to transfer scheme for expenses linked to depreciation, RoE, Interest on Loan and R&M Expense which the Hon'ble Commission has disallowed.
- e) Implementation of recently approved Policy on provisioning and Writing Off of Bad and Doubtful Debts to ensure regular and reasonable provisioning in financial statements
- f) Timely Capitalisation of the assets put to use and getting Electrical Inspector certificates (as per Policy approved for Capitalisation and R&M)
- g) Measures to be taken to improve Annual Integrated Rating of State Power Distribution Utilities as per the Framework approved by Ministry of Power
- h) Benchmarking with leading / competitive Discoms and adoption of Best Distribution Practices
- i) UPCL will keep thrust upon improving distribution losses in LT segment mainly in Domestic category so that overall distribution losses are in control and targets as set by Hon'ble Commission are achieved.

### 3.3 Current Initiatives of UPCL to improve performance

- 3.3.1 In the past, UPCL has been facing issue of increasing receivables, issues with respect to billing reconciliation due to which Hon'ble Commission is re-casting sales, issues of reduction of distribution loss and mechanism for better energy accounting. The Petitioner has taken few initiatives over last few months to improve its performance and the same are summarised below to demonstrate its effort towards turnaround in positive manner.
- 3.3.2 Efforts to improve energy accounting: The petitioner had conducted Meter data (MRI) check from external agency for the period from May 2019 to August 2020 and Nov 2020 to Aug 2021 for 43 Divisions and the total realized amount from such cases was Rs.6.25 Cr against assessed amount of Rs.9.48 Cr. Based on above findings of the report, UPCL is taking corrective action to recover such arrears and expected to streamline its overall energy accounting in coming period by having proper metering facilities with

communication and / proper metering and reading of the consumption. It is submitted that arrears/ receivables after such exercise will have to be written off as per the Policy for Bad debt approved by the Hon'ble Commission to reflect true picture of financial position of the petitioner.

- 3.3.3 Efforts to identify fictitious receivables / arrears: The Petitioner has also done Audit of high loss division with 2-pronged approach – i) to audit the receivables and ii) to have proper billing to such consumers for future period. This will ensure that fictitious receivables / arrears would be identified and commercial losses are brought down by proper billing. The findings of the audit for such high loss divisions for Non-Government consumers was that around 17300 consumers were reported with dues as on 31.3.2020 where no payment was received and no billing was done after 1.4.2009. The amount outstanding from such consumers was Rs.36.82 Cr. Further there were 1277 no of cases where outstanding dues were NIL as on 31.3.2020, supply was made but no billing and collection has happened since 2009 till Sep 2020.
- 3.3.4 Further UPCL had also undertaken audit of 100 consumers of Dehradun division whereby total arrears amount was Rs.1.74 Cr however recoverable amount was only Rs.0.18 Cr, the balance Rs.0.99 Cr was fictitious arrears & Rs.0.56 Cr was to be written off.
- 3.3.5 UPCL is taking concerted efforts to reconcile such accounts and ensure higher recovery of the pending arrears. Moving forward positively on such audits/ checks, UPCL has planned to undertake checks of 200 consumers on monthly basis from each of 27 divisions of plain areas.
- 3.3.6 Based on above findings of the report, UPCL is taking corrective action and expected to write-off fictitious receivables/ arrears after due process is followed/ approval is taken from management.
- 3.3.7 UPCL would also like to mention that it had inherited Rs.629.25 Cr as receivables from erstwhile UPSEB as part of restructuring in the Transfer Scheme 2001 which needs due consideration post assessment of actual recoverable arrears. It is submitted that fictitious / irrecoverable arrears need to be written off.
- 3.3.8 Recently, the Hon'ble Commission has approved Policy on provisioning and Writing Off of Bad and Doubtful Debts which would help UPCL to make regular and reasonable provisioning to reflect correct picture in financial statements. UPCL has initiated

internal exercise of computation of such bad and doubtful debts which needs approval from Hon'ble Commission for writing off and pass on the expenses under ARR/ Tariff for the past period. The same would be submitted in the subsequent tariffs petition along with audited accounts.

### 3.3.9 Efforts for Meter data management and Energy Audit system

- a) Meter Data Management & Energy Audit system has been developed under erstwhile R-APDRP Part-'A' & ongoing IPDS scheme of MoP, GoI wherein GPRS enabled Modems were installed in the Urban Feeders pertaining to identified 67 Nos. towns of the State (31 RAPDRP Town + 36 IPDS Town).
- b) GPRS modems are regularly sending the meter data to UPCL Data Center at Dehradun on daily basis and the same is being utilized for the purpose of calculating daily SAIFI/ SAIDI parameters and Load Survey Data is being utilized for Feeder Wise Energy Accounting. The system is now being replaced with Real Time-Data Acquisition System system for the purpose of feeder-wise outage determination covering 106 Nos. 33/11 kV substations pertaining to 66 Nos. towns including both Urban & Rural Feeders.
- c) Number/ Duration of outages at 11 kV Feeder level is being calculated from "Power Failure Occurrence & Restoration" event captured in the Meter Data. Data of all Urban Feeders is being regularly uploaded on National Power Portal through API interfaces from Machine to Machine to National Power Portal without human intervention. Similarly, Customer Requests/Complaints status of town area is also being reported to National Power Portal through API mechanism.
- d) It is submitted that UPCL is able to maintain the healthy communication up to 95 % from 11 kV Outgoing Feeders installed under the above programs but unable to maintain healthy communication from Distribution Transformer locations (approx 8200) facing difficulty in maintaining metered sites healthy, poor communication from remote locations as modems installed are based on 2G technology and network companies are currently focusing only on 4G technology.
- e) UPCL is working on a concrete plan to maintain these DTR locations healthy for the remaining towns so that communication % can be improved.

3.3.10 Measures to reduce AT&C Losses: With a view to recovery of arrears and increase in collection efficiency, the following steps have been / is being taken by UPCL to reduce AT&C losses.

- a) The target of AT&C Losses has been fixed @ 14% during FY 2021-22.
- b) Vigilance raids are being conducted and cases are being registered under Sections 126 and 135 of Electricity Act, 2003. Legal proceedings are being initiated against the person(s) who is found indulging in theft of electricity.
- c) Defective Meters are being replaced.
- d) LT ABC is being laid in theft prone areas.
- e) Automatic Meter Reading is being done of high value consumers.
- f) Android based billing has been introduced for improvement in Billing Efficiency.
- g) Monthly billing of domestic consumers having load above 4 kW has been started.
- h) Supply of defaulting consumers is being disconnected.
- i) Action is being taken under Section 3 & 5 of the Uttarakhand (U.P. Government Electricity undertakings (Dues Recovery) Act, 1958) Adaptation and Modification order, 2002 for recovery of arrears.
- j) Verified bills of arrears shall be submitted to GoU and the matter will be pursued for payment of such arrear amount.
- k) Policy for writing off of bad and doubtful debts is under finalization. On finalization of the same, the fictitious and irrecoverable arrears shall be written off.
- l) Establishment of separate power purchase cell is under consideration, the decision on the same shall be taken in due course of time.

3.3.11 Automated Demand response management system/ Wide Area Monitoring system

- a) Automatic Demand response Management System (ADMS) is one of the crucial peak load management tools with considerable benefits in reducing the imbalance between energy supply and demand. Demand Response (DR) help in Demand-Side Management (DSM) of energy that encourages consumers to modify their levels and patterns of electricity consumption, along with improved grid reliability. DR program can defer the need to build highly cost-intensive power plants for electricity generation that are also detrimental to the environment.

- b) DR emerged from the traditional practice of load shedding, where utilities and service providers would cut the power supply of some regions during peak demand. With the emergence of traditional rebate-based DSM programs, the analysis of load requirements in different conditions began and determination of load reduction limits came into existence. This amalgamation of innovation had led to the further evolution of DR systems embedded with features such as dynamic pricing, meter data management, analytics, and load management. With the increasing integration of Information and Communications Technology (ICT) and Internet of Things (IoT) into energy, the application of AMI meters and real-time information monitoring have led the evolution of smart DRMS solutions.
- c) AMI meters provide direct load control capabilities to the utilities as DR units can communicate directly to the AMI meter which controls residential appliances and thermostats for load reduction. Therefore, the roll-out of smart meters is the primary driver for the Demand Response Management System market. Other driving forces include energy price volatility and customer switching.
- d) UPCL is proposing capital expenditure of Rs. 10 Crore in FY 2022-23 for Software Development and expected to capitalise in FY 2023-24. Maintenance Cost after capitalisation from 2nd year onwards would be Rs.3 Cr/ year. UPCL would be in better position to manage demand and monitor its load of sub-stations etc on real-time basis and also control the same. The estimate may change further on initiation of process of EOI/ Tendering including timelines. Further the operation team and other expert services cost would be computed once tendering process is closed and covered in subsequent year tariff petition.
- e) Petitioner is also planning to procure direct membership to enable for direct trading facilities that will help UPCL to reduce the impacts of Trading margins. This would assist in taking real-time decision to reduce deviations and / optimise power purchase / sale through open market.

### 3.3.12 Other Measures to reduce Distribution cost

- a) The Forum of Regulators (FOR) has issued report based on analysis of 12 States (namely Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Uttar Pradesh and Uttarakhand. Cumulatively,