

BEFORE  
THE  
RAJASTHAN ELECTRICITY REGULATORY COMMISSION,  
JAIPUR

**PETITION**  
FOR  
APPROVAL OF  
**AGGREGATE REVENUE REQUIREMENT,  
TARIFF  
AND INVESTMENT PLAN**  
FOR  
**FY 2022-23**

Filed By

JAIPUR VIDYUT VITRAN NIGAM LIMITED  
(A Government of Rajasthan Undertaking)

**March 2022**

## **Notes**

In this Application:

- Control Period is defined as Financial Year FY 2019-20 to FY 2023-24
- All currency figures used in this Application, unless specifically stated otherwise, are in Rs. Cr.
- All energy unit figures used in this Application, unless specifically stated otherwise, are in Million Units.
- For the purpose of representation, figures given in the tables are shown as rounded off. However, for calculation purpose, actual figures have been considered.

**List of Abbreviations**

Application	The application for approval of ARR for FY-23
Jaipur Discom, JVVNL	Jaipur Vidyut Vitran Nigam Ltd.
ARR	Aggregate Revenue Requirement
MYT	Multi Year Tariff
BAU	Business as Usual
CC&SL	Cosumers' Contribution for Service Connections and Lines
CPP	Captive Power Producers
DS	Domestic Service
EHT	Extra High Tension
EA 2003	Electricity Act, 2003
FRP	Financial Restructuring Plan
FY	Financial Year
FY 21	Financial Year 2020-2021
FY 22	Financial Year 2021-2022
FY 23	Financial Year 2022-2023
GFA	Gross Fixed Assets
GoI	Government of India
GoR	Government of Rajasthan
GSS	Grid Sub Station
HT	High Tension
kVA	Kilo Volt Ampere
kW	Kilo Watt
kWh	Kilo Watt Hour or Unit
LT	Low Tension
MDI	Maximum Demand Indicator
MIP	Medium Industrial Power
MU	Million Units
NDS	Non-Domestic Service
NFA	Net Fixed Assets
NPCIL	Nuclear Power Corporation India Limited
NHPC	NHPC Limited
NRLDC	Northern Region Load Despatch Centre
NTPC	National Thermal Power Corporation
PGCIL	Power Grid Corporation India Limited
Proj.	Projected
PWW	Public Water Works
RERC, Commission	Rajasthan Electricity Regulatory Commission
RVPN	Rajasthan Rajya Vidyut Prasaran Nigam Limited
RVUN	Rajasthan Vidyut Utpadan Nigam Limited
RUVN	Rajasthan Urja Vikas Nigam Limited
REC	Rural Electrification Corporation
Rs.	Indian Rupees
RSEB/Board	Rajasthan State Electricity Board
SIP	Small Industrial Power
SMD	Simultaneous Maximum Demand

SLDC	State Load Despatch Centre
STU	State Transmission Utility
UI	Unscheduled Interchange
The Petitioner/utility	Jaipur Vidyut Vitaran Nigam Ltd.

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**A1: BASIS FOR PROJECTIONS**

- 1.1 Section 61 of the Electricity Act, 2003 empowers the State Regulatory Commissions (RERC in this case) to specify the terms and conditions for the determination of tariff and specifies that in doing so, the Commission shall inter alia be guided by multi-year tariff principles (Section 61 (f)). As per the provisions of the Act, while prescribing regulations for the Petitioners in the state, the State Commission would also be guided by the regulations prescribed by Central Electricity Regulatory Commission (CERC).
- 1.2 The Rajasthan Electricity Regulatory Commission (RERC) notified the Rajasthan Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulation, 2019 for the fourth control period from FY 2019-20 to FY 2023-24 on May 27, 2019. The fourth Multi Year Control Period from FY 2019-20 to FY 2023-24 began from 1<sup>st</sup> April 2019 after end of the third control period.
- 1.3 The RERC notified the Tariff Order for FY 2019-20 on 06.02.2020.
- 1.4 As per amendment to sub-regulation 4 of regulation 5 of RERC (Terms and Conditions for Determination of Tariff) Regulation 2019, the Discoms have an option for filing Multi Year Tariff determination for the remaining period of the Control Period at the time of filing ARR/Tariff Petition for any year of the Control Period.
- 1.5 On the basis of the said amendment, the petitioner filed Petition for determination of Multi-Year ARR for the remaining period of the Control Period from FY 2020-21 to FY 2023-24 and tariff for FY 2020-21 in November, 2020. The Hon'ble Commission in its Tariff order issued on 24.11.2021, opined that due to impact of COVID-19, determining ARR for a period of four years would not be fruitful. Accordingly, in its Order, Commission approved the Investment plan, ARR and Tariff for FY 2020-21 and FY 2021-22 only.
- 1.6 Regulation 11(1) of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019 specify that the Petitioner shall submit the forecast of Aggregate Revenue Requirement, expected revenue from existing tariff and proposed tariff for the ensuing year of the Control Period, accompanied by fees applicable.
- 1.7 The Petitioner is hereby filing Petition for approval of Investment Plan, ARR & Tariff for FY 2022-23 including revised estimates for FY 2021-22.
- 1.8 The Petitioner has strived to conform to the norms and provisions of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019 as far as possible for projections of ARR for FY 2022-23. The Petitioner has utilised audited information of FY 2020-21, latest available commercial information on sales, power procurement and audited accounts to prepare the revised projections for FY 2021-22 and accordingly made projections for FY 2022-23. The details of parameters considered is described in the subsequent sections.



## **A2: ENERGY BALANCE FOR FY 2021-22 and 2022-23**

### **Projection of sold energy**

- 2.1 The first stage of projections of energy balance entails revised sales projections for FY 2021-22 and projections for FY 2022-23.
- 2.2 For the revised sales projections for FY 2021-22, the Petitioner has considered the actual sales available till October'21. For projections of sales for FY 2022-23, the Petitioner has considered past trend of number of consumers, connected load and energy sales to forecast the category-wise energy sales, in accordance with Clause 74 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019.
- 2.3 Projections are based on the methodology followed by the Hon'ble Commission in the past tariff orders. Other factors affecting the energy sales for various consumer classes have also been considered while projecting the sales.
- 2.4 The Petitioner has computed category wise sales CAGR for 3 years, 5 years, 7 years and so on based on the historical data.
- 2.5 The Petitioner would further like to submit that this growth trend of increase in sales has been considered as it signifies the best possible projections as per the experience of the Petitioner and latest available data. Also, wherever the trend has seemed unreasonable or unsustainable, the growth factors have been appropriately modified to arrive at more realistic projections.
- 2.6 However, due to various events being beyond the control of the Petitioner, as mentioned hereunder, sales forecast may need to be reviewed in the future. In such cases, the revenue requirement may also be adjusted accordingly.
  - (a) The impact of any variance in the industrial sales forecasted due to shifting of consumers from open access and subsequent growth after considering all impact of shift from open access
  - (b) Change in hours of supply to rural areas and agricultural consumers from the levels taken in the forecast by the Petitioner, resulting in increased actual input to rural areas;
  - (c) Impact of Energy efficiency initiatives on Public street lightning (PSL) consumers' consumption;
  - (d) Increase in agriculture connections as per the commitment of the State Government as per Budget announcements;
  - (e) Any other Government of India or State Government scheme
- 2.7 The variation in energy sales would change power procurement cost and aggregate revenue requirement, and affect the profitability of the Discoms. Hence, the Petitioner requests to present its case for the revised energy sales at the time of annual review of performance / true up with suitable measures to adjust such variations

## Previous years energy sales

2.8 The following table summarises the actual energy sold (at consumer level) during previous years to different consumer categories:

**Table 1: Past trend in energy sales\* (MU)**

Category	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19	FY-20	FY-21
Domestic	3,761	4,068	4,418	4,803	5,172	5,404	5,776	5,964
Non-Domestic	1,573	1,805	1,966	2,130	2,262	2,397	2,519	1,936
Public St. Lights	143	168	175	188	175	172	181	178
Agri (Metered)	4,258	4,715	5,238	5,664	6,667	6,741	7,787	8,970
Agri (Flat-rate)	581	530	517	468	364	330	293	296
Small Industry	274	335	301	315	289	321	292	299
Medium Industry	722	770	735	727	767	811	821	729
Large Industry	3,482	4,294	3,775	3,939	5,369	6,657	6,039	5,477
PWW (Small)	195	218	229	241	302	304	409	405
PWW (Medium)	32	37	41	41	37	30	30	35
PWW (Large)	200	218	259	304	331	324	313	390
Mixed Load	565	337	197	425	243	189	200	162
<b>Total</b>	<b>15,784</b>	<b>17,494</b>	<b>17,852</b>	<b>19,244</b>	<b>21,978</b>	<b>23,679</b>	<b>24,660</b>	<b>24,841</b>

\*At consumer level

2.9 Overall, the energy sales of Discom has been on an increasing trend, with a CAGR of ~7% from FY 2013-14 to FY 2020-21. Industrial categories have witnessed a decreasing trend in last couple of years. This may be attributed to slowdown in economic activities and consumers opting for open access/captive generation. Rising penetration of solar PV systems could also be a contributing factor for such reduction. A decreasing trend has also been observed in FY 21 for Non-Domestic consumer sales. COVID has also been a major impact in this scenario.

## Sales projections for categories other than agriculture

- 2.10 In Domestic category, the sales grew at CAGR of 7% from FY 2012-13 to FY 2019-20. However, in FY 21, the growth increased further owing to people working from home due to COVID pandemic apart from the organic growth.
- 2.11 For Non-domestic category last five years except FY-21 have shown an increasing trend in the energy sales. For FY 2020-21, the sales for Industrial and Non-Domestic categories were negatively impacted as compared to FY 2019-20 due to disruption in industrial and commercial activity owing to COVID pandemic, going forward from FY 2021-22 onwards, the sales are expected to recover with an adequate pace.
- 2.12 The energy sales for Public Street Lights, Public Water Works and Mixed Load categories are projected on the basis of historical data, using category wise CAGR, as per the methodology approved by the Hon'ble Commission in the previous year tariff orders.
- 2.13 In the tariff order for FY 2019-20 dated 06.02.2020, two new categories were introduced, namely Traction Load and EV charging stations. Till date there have been no consumers in the Traction category. However, the Electric Vehicle Charging Stations category has started to observe addition of consumers. Accordingly, the sales have been projected for EV category considering the marginal entry of consumers in this category.

## **Sales Projections for agriculture category**

### *Agriculture metered category*

2.14 For FY 2021-22 and FY 2022-23, the energy sales for agriculture metered category has been estimated on the basis of the following factors:

- (a) Existing Consumers at the start of the Financial Year
- (b) Proposed addition in the consumers during the Financial Year based
- (c) Consumers converted from ‘Agriculture Flat’ to ‘Agriculture Metered’ category
- (d) Connected load per consumer
- (e) Estimated specific energy consumption

$$\text{Agriculture Consumption} = \text{No. of consumers} \times \text{Connected load per consumer} \times \text{Specific Consumption}$$

2.15 The connected load per consumer has been forecasted on the basis of the trend of connected load per consumer observed during the past years.

2.16 The connected load per consumer, actual for FY 2020-21 and estimated for FY 22 and FY 23, has been provided in the following table.

**Table 2: Projected Connected Load (kW) per consumer for agriculture metered**

Particular	Connected Load/ Consumer
FY 2020-21	8.05
FY 2021-22	8.13
FY 2022-23	8.21

2.17 The specific consumption of agriculture metered consumers has been assumed as per the trend of specific consumption observed in the previous years. Actual specific consumption for FY 2020-21 and estimated specific consumption for FY 22 and FY 23 is provided below.

**Table 3: Projected specific consumption (kWh/kW/year) for agriculture metered**

Year	Specific Consumption
FY 2021-22	2,056
FY 2022-23	2,077

2.18 The following table summarises the number of consumers considered for the projections of energy sales for agriculture metered category for FY 22 and FY 23:

**Table 4: Projected no. of consumers in Agriculture Metered Category**

Year	Opening Consumers	Addition during the year	Flat to metered category conversion	Closing consumers
FY 2021-22	541,944	24,577	4,000	570,521
FY 2022-23	570,521	71,207	4,000	645,728

- 2.19 Based on the above calculations, the sales for agriculture metered category for FY 22 and FY 23 is as follows:

**Table 5: Agriculture(M) Sales computation\***

Year	Existing Sales	Addition	Conversion from unmetered to metered	Effective sales for Agriculture Consumers
FY 2021-22	8,970	498	69	9,537
FY 2022-23	9,633	1,309	69	11,011

\*At consumer level (including DF)

**Agriculture flat (un-metered) category:**

- 2.20 For FY 2021-22 and FY 2022-23, the energy sales for agriculture flat-rate category has been estimated on the basis of the following factors:

- (a) Existing Consumers at the start of the Financial Year
- (b) Consumers converted from ‘Agriculture Flat’ to ‘Agriculture Metered’ category
- (c) Connected load per consumer
- (d) Approved specific energy consumption

$$\text{Agriculture Consumption} = \text{No. of consumers} \times \text{Connected load per consumer} \times \text{Specific Consumption}$$

- 2.21 The connected load per consumer has been forecasted on the basis of the actual for FY 2020-21, i.e., 8.91 kW. No growth in the same is projected for FY 2021-22 and FY 2022-23.
- 2.22 The Petitioner submits that the Hon’ble Commission in its previous Tariff Orders has approved the specific energy consumption of 1945 kWh/kW/year for flat rate agriculture consumers. Thus, the same specific consumption of 1945 kWh/kW/year is proposed by the petitioner.
- 2.23 The following table summarises the addition of consumers and specific consumption considered for the projections of energy sales for agriculture flat-rate category for FY 2021-22 and FY 2022-23.

**Table 6: Projected no. of consumers in Agriculture Flat Rate Category**

Year	Opening Consumers	Flat to metered category conversion	Closing consumers
FY 2021-22	16,804	4,000	12,804
FY 2022-23	12,804	4,000	8,804

- 2.24 The connected load (in kW) for the FY 2020-21 (actual) and for FY 2021-22 and FY 2022-23 (projected) is as follows:

**Table 7: Connected Load for Flat (kW)**

Year	Opening Connected Load	Flat to metered category conversion	Closing connected Load
FY 2020-21	158,287	8,487	149,800
FY 2021-22	149,800	35,658	114,142
FY 2022-23	114,142	35,658	78,484

- 2.25 Based on the above details, the sales (in MU) for agriculture flat category for the FY 2020-21 to FY 2023-24 is as follows:

**Table 8: Sales (in MU) for flat consumers**

Year	As per opening consumers	Flat to metered category conversion	As per closing consumers
FY 2021-22	296	74	222
FY 2022-23	222	69	153

- 2.26 It is important to note that conversion of consumers from flat to metered category is an ongoing process and the Discom is very much committed to convert the existing flat rate consumers to the metered category. Thus, to consider this impact, sales for such converted consumers has been considered as balancing figure from closing sales and opening sales from flat rate consumers while computing sales of consumers.

***Impact of Kusum-scheme on agriculture sales***

- 2.27 On 08 Mar 2019, Ministry of New and Renewable Energy (hereby referred to as “MNRE”) launched Pradhan Mantri Kishan Urja Suraksha evam Uthan Mahabhiyan Scheme (PM-KUSUM) scheme with overall objective of providing financial & water security to farmers through following three components:

**Component A:** Installation of Decentralized Ground Mounted Grid Connected Renewable Power Plants of individual plant size of 0.5 to 2 MW

**Component B:** Installation of standalone Solar Powered Agriculture Pumps of individual pump capacity up to 7.5 HP in off-grid areas

**Component C (pump solarization):** Solarization of existing grid-connected agriculture pumps using Solar Photovoltaic (SPV) systems of capacity twice of pump capacity in kW.

- 2.28 MNRE issued guidelines for implementation of all three components of PM-KUSUM scheme on 22 July 2019.

- 2.29 Subsequently, on 04.12.2020, MNRE introduced and issued guidelines for implementation of Feeder Level Solarization under Component C of PM-KUSUM scheme wherein grid connected solar PV power plant of capacity that can cater to the annual power requirement of one or more segregated agriculture feeders can be installed either through CAPEX mode or RESCO mode to supply power to that feeder(s).

- 2.30 The petitioner submits the following:

- (a) **Component A** and **Component C (feeder level solarization)** emphasizes on installation of solar PV power plants injecting bulk power at 11kV or higher level of Discoms’ distribution system, therefore, impact of the same has been considered in the power purchase projections section of this petition.
- (b) **Component B** offers off-grid solution, hence, no impact of the same is considered in this petition.

(c) Under **Component C (pump level solarization)**, solarization of existing grid connected agriculture consumers is emphasized and thus impact of the same has been considered in the Agriculture sales projections in this petition.

2.31 Under Component C (pump level solarization) of KUSUM scheme, the power generated from the solar PV systems installed for solarization of pumps will be used for consumption by the farmer. The excess energy generated shall be injected into Discom's grid and the farmer shall be compensated by Discoms on the basis of tariff determined by Hon'ble Commission. Hence, it becomes imperative to include the impact of the same in Agriculture sales projections.

2.32 On 13 Aug'19, a total target of 12,500 pumps was allocated by MNRE to Rajasthan Discoms for FY 2019-20, out of which 6000 pumps are allocated to JVVNL, 6000 to AVVNL and 500 to JdVVNL.

2.33 As of 30 Nov'21, following is the Discom wise progress:

**Table 9: Kusum Component – C progress (pump level solarisation)**

DISCOM	Final Awarded Quantity	Installed Quantity
Jaipur	4,346 nos. (83 feeders)	24 nos.
Ajmer	5,893 nos. (93 feeders)	981 nos.
Jodhpur	525 nos. (18 feeders)	21 nos.
<b>Total</b>	<b>10,764 nos. (194 feeders)</b>	<b>1,026 nos.</b>

2.34 It is estimated that the balance quantity of 9,738 will be solarized in FY 2022-23. Thus, the corresponding projections of total units generation (MU) from these solar PV systems for FY 22 and FY 23 is provided below.

**Table 10: Projection of excess solar generation & cost of injected power under Component C (Pump level solarization)**

Particulars	FY 2021-22				FY 2022-23			
	Jaipur	Ajmer	Jodhpur	Total	Jaipur	Ajmer	Jodhpur	Total
No of pumps	24	981	21	<b>1,026</b>	4,346	5,893	525	<b>10,764</b>
Capacity Addition (MW)	0.29	5.21	0.23	<b>5.73</b>	39.12	30.98	4.83	<b>74.93</b>
CUF (%)	20%				20%			
<b>Units Generated (MU)</b>	<b>0.50</b>	<b>9.12</b>	<b>0.41</b>	<b>10.03</b>	<b>68.55</b>	<b>54.28</b>	<b>8.45</b>	<b>131.28</b>

2.35 The petitioner submits that total units generated (MU) from solar PV systems under Component C (pump level solarization) of KUSUM scheme have been adjusted in the agriculture sales projections.

## Impact of Grid Connected Rooftop Solar Programme - Phase II on energy sales of the Discoms

- 2.36 On 19 Feb'19, Govt. of India approved Phase-II of the "Grid Connected Rooftop and Small Solar Power Plants Programme" for installation of grid connected rooftop solar projects in residential sector with Central Financial Assistance (CFA) of upto 40% of benchmark cost or cost discovered through competitive process, whichever is lower.
- 2.37 Detailed operational guidelines for implementation of Phase II of the programme was issued by MNRE on 20 Aug'19.
- 2.38 In Rajasthan, the implementation of the programme is being carried out by RRECL with support of Discoms.
- 2.39 Given below is the Discom wise status of implementation as of 31 Mar'21:

Consumer Category	No. of installations (nos.)				Cumulative Capacity installed (kW)			
	Jaipur	Ajmer	Jodhpur	Total	Jaipur	Ajmer	Jodhpur	Total
Domestic	6,235	2,913	2,963	<b>12,111</b>	49,193	41,283	24,596	<b>1,15,072</b>
Non - Domestic	1,507	884	839	<b>3,230</b>	48,481	30,298	27,213	<b>1,05,992</b>
Agriculture (M)	21	1	-	<b>22</b>	247	10	-	<b>257</b>
S.I.P.	39	175	29	<b>243</b>	384	8,687	381	<b>9,452</b>
M.I.P.	254	1	252	<b>507</b>	11,667	960	30,612	<b>43,238</b>
H.T.	334	404	-	<b>738</b>	82,634	93,862	-	<b>1,76,497</b>
Bulk Supply	60	29	27	<b>116</b>	8,272	3,729	3,089	<b>15,090</b>
<b>Total</b>	<b>8,450</b>	<b>4,407</b>	<b>4,110</b>	<b>16,967</b>	<b>2,00,878</b>	<b>1,78,829</b>	<b>85,891</b>	<b>4,65,598</b>

- 2.40 The above-mentioned rooftop solar cumulative capacity installed under JVVNL has increased to 2,57,286 kW by 31 Aug'21, under AVVNL it increased to 2,15,960 kW by 31 Oct'21 and under JdVVNL it increased to 1,57,496 kW by 31 Dec'21.
- 2.41 In addition to above, on 10 Nov'21 JVVNL was sanctioned additional capacity of 25 MW while AVVNL and JdVVNL has requested to MNRE for sanction of 15 MW additional capacity each and the sanction is yet to be issued by the Ministry.
- 2.42 Based on above, the projections for solar energy generation from the rooftop solar systems for FY 2021-22 and FY 2022-23 is provided below:

**Table 11: Projection of solar energy generation (MUs) from the Rooftop Solar Systems**

Consumer Category	FY 2021-22				FY 2022-23			
	Jaipur	Ajmer	Jodhpur	Total	Jaipur	Ajmer	Jodhpur	Total
Domestic	49.73	42.35	31.70	<b>123.78</b>	58.67	50.11	43.84	<b>152.62</b>
Non - Domestic	48.46	29.19	29.07	<b>106.72</b>	56.67	32.86	35.94	<b>125.47</b>
Agriculture (M)	0.26	0.01	-	<b>0.27</b>	0.32	0.00	-	<b>0.32</b>
S.I.P.	0.42	0.62	0.59	<b>1.63</b>	0.53	0.66	0.88	<b>2.07</b>
M.I.P.	12.76	8.23	42.54	<b>63.53</b>	15.92	9.49	61.04	<b>86.45</b>

Consumer Category	FY 2021-22				FY 2022-23			
	Jaipur	Ajmer	Jodhpur	Total	Jaipur	Ajmer	Jodhpur	Total
H.T.	103.01	47.76	-	<b>150.78</b>	139.08	56.17	-	<b>195.26</b>
Bulk Supply	7.73	1.68	2.71	<b>12.11</b>	8.55	1.78	2.84	<b>13.16</b>
<b>Total</b>	<b>222.38</b>	<b>129.83</b>	<b>106.60</b>	<b>458.81</b>	<b>279.74</b>	<b>151.07</b>	<b>144.54</b>	<b>575.35</b>

- 2.43 The petitioner submits that the solar energy generation (MU) from rooftop solar systems under MNRE’s “Grid Connected Rooftop Solar Programme” has been adjusted in the consumer category wise sales projections.

### Summary of energy sales for FY 2021-22 and FY 2022-23

- 2.44 Based on the methodology provided in the afore-mentioned sections, the projected energy sales for FY 2021-22 and FY 2022-23 along with the actual sales for FY 2020-21 (at end consumer level) for various consumer categories is as shown under:

**Table 12: Total sales (MU)**

Category	FY 21	FY-22	FY-23
Domestic	5,964	6,081	6,451
Non-Domestic	1,936	2,124	2,181
Public Street Light	178	174	180
Agriculture (Metered)	8,970	9,536	10,942
Agriculture (Flat)	296	222	153
Small Industry	299	387	392
Medium Industry	729	851	904
Large Industry	5,477	6,473	6,945
Public Water Works (S)	405	394	437
Public Water Works (M)	35	44	46
Public Water Works (L)	390	403	426
Mixed Load / Bulk Supply	162	185	186
EV Charging Stations	-	1	3
<b>Total</b>	<b>24,841</b>	<b>26,876</b>	<b>29,245</b>

- 2.45 It is pertinent to mention that the sales have been projected for the entire area under the Discom, including areas for which distribution franchisee has been awarded.

### Distribution Loss

- 2.46 In the tariff order for FY 2020-21 and FY 2021-22 dated 24.11.2021, the Hon’ble Commission approved a distribution loss of 15%. However, the actual Distribution loss of the Petitioner for FY 2020-21 stood at 19.44%.
- 2.47 The Discom is focused on reducing its distribution losses. A multi-pronged strategy has been chalked out by the Discom to reduce its losses. The key facets of its strategy are summarized below:



**A. Initiatives for Technical Loss Reduction:**

*a) Network enhancement*

Technical losses are mostly due to losses at LT level. To reduce the technical losses, Discom plans to:

- Improve HT:LT ratio from current 1:0.46 (Deteriorated post DDUGJY & Saubhagya)
- For consumer service line, non-armored cable replacement with armored cable
- Replacement of old/frayed conductors
- DTR Load balancing: Post DT metering, Discoms shall correct balance load of Distribution Transformers by augmenting / adding their capacity in required areas
- Provision of Aerial bunched Cables (ABC) & High Voltage Distribution System (HVDS) in high loss areas

*b) Feeder Segregation*

- Agriculture consumers consume about 40% of total energy, which is amongst highest in the country
- Segregation of agriculture feeders from mixed feeders will ensure:
  - Uninterrupted block hour power supply to Agriculture Consumers
  - Uninterrupted 24 hours supply to rural domestic consumers
  - Avoid misuse/theft of single-phase supply by Agriculture consumers
  - Better system planning and load management leading to reduction in T&D Loss
- The Discom is also solarizing grid connected Pumpssets under Kusum-C scheme thereby reducing the agriculture consumption and corresponding losses. Also, use of distributed generation under Kusum-A and Kusum-C (feeder level solarization), wherein the generating source is close to the load center, reduces the line losses. Discom plans to install solar plants by utilizing the land available in existing 33 kV substations.

**B. Initiatives for Commercial loss reduction**

*a) Metering and energy accounting*

- 100% consumer metering done (except for few flat rate agriculture consumers)
- 100% feeder metering and consumer indexing done
- About 70% DT metering has been done. Discom plans to complete 100% DT metering under the Revamped Distribution Sector scheme (RDSS).
- Discom is already undertaking feeder wise AT&C loss analysis
- Capturing actual meter reading
- Verification of correct multiplying factor

*b) Vigilance*

- Massive drives by vigilance dept. (Vigilance officers, O&M officers, M&P officers) to increase checking, assessment and arrests
- Checking and removal of illegal DTs of the consumers; Checking single phase DT/ supply for agriculture purpose

- Connected load checking of Agriculture connections
- Checking of PDC consumers
- Checking of connections having less than 50 units consumption/ month
- Detection of cases of parallel service lines
- Feeder wise report of defective meter, low consumption, parallel service line, service line – AB cable cut, PDC connections service line, meter and DT not removed
- To rule out manipulation and discretionary power of checking officers and for increased transparency, vigilance-mobile app has been developed

*c) Smart metering*

- Installation of smart meters will help in improving billing efficiency and assist in undertaking data analytics
- Jaipur Discom is installing smart meters in 28 nos. urban sub-division and all Govt. office falling under these sub-divisions will be covered as part of IPDS and NSGM schemes of GoI. About 3 lakh smart meters have been installed under this scheme.
- For the remaining consumers, the Discoms plans to install smart meters under the RDSS scheme as per phases stipulated in the scheme.

*d) Focus on monthly collection efficiency*

- Collection efficiency ranges between 80% - 90% during first 8 months and increases beyond 100% during last two months
- Discom has been focusing on monthly collection efficiency (95% in rural and 98% in urban) rather than yearly efficiency for better realization

*e) Use of IT*

The Discom plans to continuously leverage IT in order to address the gaps and improve upon the operational and financial efficiency of the organization while improving the customer satisfaction levels. The vision of the Discom is in-line with the Central and State Government's vision to provide affordable and reliable 24x7 Power for All while focusing on the reduction in AT&C losses, improvement in electrical safety and reliability of the network infrastructure and to enhance customer services.

JVVNL has been on forefront to adopt and implement IT/OT technologies in order to provide sustainable power supply to its 45 lacs consumers across 12 District of Rajasthan State.

**Following OT Projects have been implemented in JVVNL:**

**(i) SCADA-DMS**

- Jaipur & Kota Towns covered under SCADA-DMS project as part of RAPDRP.
- Total 97 RTUs and 840 FRTUs installed and operational.
- Real Time Power flow monitoring and Outage management
- Unmanned operation of Substation at selected locations.
- Integrated with RMS & CCC/FRT for reporting and seamless workflow for fault reporting, rectification and restoration.

**(ii) Feeder Monitoring System (FDRMS)**

- Monitoring of 11kV Feeders at Substation
- GPRS Modem based Data Acquisition from Feeder Meters
- A total of 7500 + Feeders are being monitored in real-time basis.
- MIS & Integration to existing RMS system for energy accounting, Outrage management SAIFISAIDI and Power Quality Reporting.
- 5500+ Feeders under implementation for FDRMS.

**(iii) FRT (Part of Customer Care Center)**

- 235 nos. FRT vehicle in field for fault rectification with real time GPS location tracking.
- Call/Mobile based complaint closing and customer feedback.
- Integration with SCADA, GIS, Revenue Management System, Feeder monitoring system for seamless workflow.

**(iv) Revenue Management System (RMS)**

- Web & Mobile based Application SAAS Basis:
- Metering,
- Billing,
- Collection
- New Service Connection
- Energy Management
- Vigilance
- Asset mapping & Consumer Indexing.
- Comprehensive MIS and Work flow management.
- Spot Billing
- Digital Payment gateway integration
- SMS Service for CRM, Integration with ERP, CCC and FDRMS.

**(v) CRM: Bijli Mitra Web/App**

- Dedicated Web & Mobile Application for Consumers.
- Customer Services – New Connection, Load Change, Tariff Change, Name Change, Demand Payment, Application Tracking & Disconnection.
- Features : Bill History, Payment History, Duplicate Bills, Customer profile & Meter details, Complaints etc..

**(vi) Enterprise Resource Planning (ERP)**

- Web based ERP under implementation
- Human Resource Management
- Finance Accounting
- Material Management
- Works/Projects Management

**(vii) Smart Customer Care Centre (CCC)**

- 24 x 7 Customer care with 12 distinct way to report complaints.
- 250 nos. average agents with system generated call forwarding and escalation.
- Automated MIS with SLA & Penalty tool for operational excellence.

**Loss trajectory submitted under RDSS scheme**

- 2.48 Revamped Distribution Sector Scheme (RDSS) was notified by MoP on 20.07.2021 followed by the detailed guidelines dated 29.07.2021 and amendments from time to time.
- 2.49 The objective of the scheme is to bring down pan-India AT&C losses to 12 – 15% level, reduce ACS-ARR gap to Zero by 2024-25 and improve reliability and quality of power to consumers.
- 2.50 The Scheme provides for annual appraisal of the DISCOM performance against predefined and agreed upon performance trajectories on certain parameters which includes AT&C losses, ACS-ARR gaps, infrastructure upgrade performance, consumer services, hours of supply, corporate governance, etc.
- 2.51 DISCOMs have to score a minimum of 60% marks in the Result Evaluation Framework along with meeting the pre-qualification criteria as required under the RDSS scheme, to be eligible for receiving funding against the Scheme in that year.
- 2.52 Under the scheme, the Petitioner has prepared a detailed Action plan for achieving the scheme’s objective of bringing down the AT&C losses to 15% by FY 2024-25. The DPR of various activities to be carried out under the scheme has also been prepared in order to achieve the targeted loss reduction.
- 2.53 The distribution loss trajectory for FY 2021-22 and FY 2022-23, as proposed under the RDSS scheme, along with the actual distribution loss for FY 2020-21, is provided below:

**Table 13: Distribution loss reduction plan (%)**

Year	Distribution loss (%)
FY 2020-21	19.44%
FY 2021-22	18.50%
FY 2022-23	17.25%

- 2.54 The petitioner prays to the Hon’ble Commission to kindly consider petitioner’s plea of approving the Distribution losses trajectory as submitted in the table above in accordance with the trajectory adopted in RDSS scheme.

### **Energy requirement for FY 2021-22 and FY 2022-23**

- 2.55 Based on the projected sales and distribution loss trajectory, the Petitioner has estimated the energy requirement for the Discom. The details of energy requirement is provided below:

**Table 14: Distribution Losses and Energy Requirement at Discom Periphery**

Description	FY-21	FY-22	FY-23
Energy Sales (MU)	25,116	26,876	29,245
Distribution Loss %	19.44%	18.50%	17.25%
Distribution Loss (MU)	6,060	6,101	6,096
<b>Energy Required (MU) at Discom Periphery</b>	<b>31,176</b>	<b>32,977</b>	<b>35,342</b>

### **A3: POWER PURCHASE PROJECTIONS FOR FY 2021-22 and FY 2022-23**

#### **Transmission Losses**

3.1 For FY 2021-22 and FY 2022-23, the intra-state and intra-state transmission losses have been considered as approved by the Hon'ble Commission in its order dated 24<sup>th</sup> November 2021. The details of transmission losses as considered is provided below.

**Table 15: Transmission losses**

Particulars	FY-21	FY-22	FY-23
Intra-state transmission loss (%)	5.74%	3.31%	3.31%
Inter-state transmission loss (%)		2.79%	2.79%

3.2 Hence, the petitioner requests the Hon'ble Commission to consider the transmission losses as per the trajectory provided for the FY 2021-22 and FY 2022-23.

#### **Energy Availability**

3.3 The energy availability for FY 2021-22 and FY 2022-23 is projected on the basis of estimated generation from existing stations and projected generation from new stations. For FY 2021-22, for existing stations, the Petitioner submits that the power purchase quantum has been estimated based on the actual energy received during FY 2021-22 till the month of November and accordingly projecting it for the remaining part of year. The Petitioner has analysed the existing power scenario and the power purchase has been accordingly projected considering the energy requirement and has backed down certain plants based on the merit order principles as well as previous trends.

3.4 It is to be noted that, the total power purchase for FY 2021-22 and FY 2022-23 also includes power from short term sources/ energy exchanges which has been considered based on the actuals till November'21 for FY 22 and estimated deficit during FY 23.

3.5 This is because most of the states across the country were facing an acute power crisis situation due to a gap between the demand of power from consumers and the supply available from generators with whom the respective state Discoms have long term power purchase agreements.

3.6 It is pertinent to mention that the Ministry of Power, GoI had also acknowledged the crisis and published a press note regarding the same on 09.10.2021. As per MoP, the major reasons for the crisis are:

- Increase in demand of electricity due to revival of economy post Covid
- Heavy rains in coal mine areas during September 2021 thereby adversely affecting the coal production as well as despatch of coal from mines
- Increase in prices of imported coal to unprecedented high level leading to substantial reduction in power generation from imported coal-based power plants leading to more dependence on domestic coal

- Non-building of adequate coal stocks before the onset of Monsoon.
- 3.7 The Energy Assessment Committee (EAC) of the Discoms has also estimated shortfall in power availability during FY 2022-23 looking at the ongoing coal crisis besides and estimated demand and availability of power in various time blocks during the year.
- 3.8 Thus, looking at the above-mentioned facts, the Petitioner requests the Hon'ble Commission to kindly approve the submitted power purchase from short term sources for FY 2021-22 and FY 2022-23.
- 3.9 For the estimation of quantum of power procurement, the availability of each station and the corresponding energy (in MU) purchased from that station for FY 2022-23 has been considered same as that projected for FY 2021-22. In case the energy requirement is more, the Petitioner has considered energy procurement based on Merit Order Dispatch (MoD) duly keeping in mind the PLF of that particular station does not exceed a normative level of 85%. In case the energy requirement is less in any particular year vis-à-vis FY 2020-21, the Petitioner has reduced the energy procurement from the costliest plant as per the MoD principal duly keeping in mind the PLF of that particular station does not fall below a technical minimum level of 55%.
- 3.10 Also, while projecting the power purchase quantum for FY 2022-23, the Petitioner has not considered power from five NTPC stations namely Anta GTPS, Auriya GTPS, Dadri GTPS, FGUTTPS Unit 1&2 and FSTPS aggregating to 252 MW. The same has not been considered as per the Hon'ble Commission's Order dated 28.10.2021 in which the Commission has allowed the Discoms to exit the PPAs due to the expiry of term of these PPAs.
- 3.11 The petitioner has considered the power availability from the new capacity of STPS super-critical generating plant (Unit 8) which has achieved COD in October, 2021. Energy procurement from Dholpur power plant has not been considered for FY 21 and FY 22 in the absence of any approved tariff for the plant.
- 3.12 While there are various Central Sector plants expected to come up, as per the data available from CEA and analysed by RUVN, energy availability from these Central Sector plants are in 'Unsure Category' owing to issues such as land acquisition, pending clearances, non-achievement of financial closure, bidding not started etc. Accordingly, the Petitioner has not considered any projections from such Central Sector plants.

### **Impact of Kusum scheme on power purchase projections**

- 3.13 Impact of solar PV plant capacities being added or to be added under Component A and Component C (feeder level solarization) of KUSUM scheme have been while projecting power availability of the Discoms.

#### *Component-A:*

- 3.14 Against total target of 1,200 MW (i.e. 700 MW for FY2019-20 + 500 MW for FY2020-21) allocated by MNRE to Rajasthan, following is the Discom wise progress as of 30 Nov'21:

Discom	PPA executed		SPV Plants commissioned	
	Count	Capacity	Count	Capacity
JVVNL	37 nos.	39 MW	3 nos.	3.5 MW
AVVNL	47 nos.	43.75 MW	-	-
JdVVNL	100 nos.	120.35 MW	5 nos.	6 MW
<b>TOTAL</b>	<b>184 nos.</b>	<b>203 MW</b>	<b>8 nos.</b>	<b>9.5 MW</b>

- 3.15 Based on above, the year wise proposed addition in capacity under Component A and corresponding projections of power generation from these solar PV plants for FY 2021-22 and FY 2022-23 is provided below:

**Table 16: Projection of power generation under Component A**

Particulars	FY 2021-22				FY 2022-23			
	Jaipur	Ajmer	Jodhpur	Total	Jaipur	Ajmer	Jodhpur	Total
Capacity (MW)	3.5		9	<b>13</b>	39	43.75	120.35	<b>203</b>
CUF	15%				20%			
<b>Generation (MU)</b>	<b>4.00</b>	-	<b>7.56</b>	<b>12</b>	<b>68.33</b>	<b>76.65</b>	<b>210.85</b>	<b>356</b>
Levelized tariff (Rs. per unit)	3.14				3.14			
<b>Cost of power injected (Rs. Cr)</b>	<b>1.26</b>	-	<b>2.38</b>	<b>4</b>	<b>21.45</b>	<b>24.07</b>	<b>66.21</b>	<b>112</b>

- 3.16 The petitioner submits that the Generation and corresponding cost of injected power from solar PV plants under Component A of KUSUM scheme have been considered for the power purchase projections.

*Component – C (Feeder level solarization)*

- 3.17 On 21 Jun'21, a total target of 25,000 pumps was allocated by MNRE to Rajasthan Discoms for FY 2020-21, out of which 8000 pumps are allocated to JVVNL, 8000 to AVVNL and 9000 to JdVVNL.
- 3.18 As a pilot project under feeder level solarization, JVVNL floated Request for Selection (RfS) for RESCO developer selection for solarization of 656 agriculture pumps on 4 nos. 11kV feeders in Tonk circle through 4.24 MW solar PV plant vide NIT dated 09 July 2021. Through competitive bidding, a levelized tariff of Rs. 2.890 per unit was discovered for the pilot project and approval from the Hon'ble Commission is under process. Hence, the same tariff is being considered for evaluating the impact of capacities to be installed under Component C (Feeder level solarization) on the power purchase projections for FY 2022-23.
- 3.19 Since, no solar PV plant is installed / commissioned under feeder level solarization by Discoms till date and also for the work scope mentioned in the scheme guidelines, the estimated project commissioning timeline is 9 to 12 months, therefore, it is projected that around 50% of the allocated target will be solarized in FY 2022-23 under Feeder level solarization. Thus, the corresponding projections of power generation from these solar PV systems for FY 2022-23 is provided below.

**Table 17: Projection of power generation under Component C (Feeder level solarization)**

Particulars	FY 2022-23			
	Jaipur	Ajmer	Jodhpur	Total
No of pumps	4,000	4,500	4,500	13,000
Estimated Capacity Addition (MW)	18	11	21	51
CUF (%)	20%	20%	20%	20%

Particulars	FY 2022-23			
	Jaipur	Ajmer	Jodhpur	Total
<b>Units Generated (MU)</b>	<b>31.63</b>	<b>20.77</b>	<b>36.09</b>	<b>88.49</b>
Levelized tariff (Rs. per unit)	2.89			
<b>Cost of power injected (Rs. Cr)</b>	<b>9.49</b>	<b>6.23</b>	<b>10.83</b>	<b>26.55</b>

- 3.20 The petitioner submits that the Generation and corresponding cost of injected power from solar PV plants under Component C (feeder level solarization) of KUSUM scheme have been considered for the power purchase projections.
- 3.21 The Petitioner has been making sincere efforts to fulfil its Renewable Purchase Obligation and has continuously increased the purchase from renewable sources.
- 3.22 There are a lot of challenges faced in fulfilling the Renewable Purchase Obligation due to infirm nature of such power, lack of sufficient hydel sources which can be operated in integration with renewable sources to absorb the variations in generation from such renewable sources, inverse relation between generation from renewable sources and demand in the state of Rajasthan, financial burden on the Discoms, etc. It is very much important to note that the state already has sufficient tied up capacity. Many such stations are likely to be commissioned in near future. This will lead to increasing stranded capacity. The situation will only be worsened if more capacity is to be tied up in order to meet the increasing RPO obligations.
- 3.23 The total energy availability from all sources for FY 2021-22 and FY 2022-23 along with the actuals for FY 2020-21 has been summarised in the following table:

**Table 18: Source wise energy available (MU)**

Source	FY-21	FY-22	FY-23
NTPC (Total)	4,104	4,237	4,348
NHPC	660	808	808
RVUN (Total)	11,054	11,646	12,533
Rajwest	2,568	2,648	2,648
SJVN (Naptha-Jhakri, Rampur)	270	348	348
Neyvelli Lignite	507	552	579
Aravali Power	-	-	-
NVVNL Bundled	941	930	930
Coastal Gujarat	829	234	1,122
ADANI POWER	3,300	2,939	2,939
Sasan Power	1,095	1,169	1,169
PTC (KW, DB, Maruti, Teesta)	1,820	1,874	1,874
PTC Tala (Bhutan)	20	24	24
NPCIL NAPP	119	124	124
RAPS	791	1,089	1,089
THDC (Tehri, Koteshwar)	132	134	134
Shared Projects (BBMB, Chambal/Satpura)	1,180	980	980
RFF and Others	908	834	834
NCES (including CPP and Kusum scheme)	3,220	4,239	5,451
SKS	133	254	254
Purchase from Exchange	(21)	1,730	1,211
<b>Total</b>	<b>33,630</b>	<b>36,792</b>	<b>39,399</b>

## Energy Balance



- 3.24 Based on the projected energy sales, transmission loss, distribution loss and energy availability, the energy balance for FY 2021-22 and FY 2022-23 has been summarised in the following table. The actuals for FY 2020-21 are also presented.

**Table 19: Energy Balance FY 22 and FY 23**

Particulars	FY-21	FY-22	FY-23
Estimated Sales (MU)	25,116	26,876	29,245
Distribution Loss (%)	19.44%	18.50%	17.25%
Distribution Loss (MU)	6,060	6,101	6,096
<b>Energy Required at Discom Periphery (MU)</b>	<b>31,176</b>	<b>32,977</b>	<b>35,342</b>
Intra-State Transmission Loss (%)	5.74%	3.31%	3.31%
<b>Energy Required at State Periphery (MU)</b>	<b>33,074</b>	<b>34,106</b>	<b>36,552</b>
Energy available from state sources (MU)	21,299	23,472	25,594
Energy procured from outside state (MU)	11,034	10,939	11,272
Energy procured from exchange (MU)	1,297	1,730	1,211
Inter-State Transmission Loss on power procured from outside state sources and exchange (%)	-*	2.79%	2.79%
<b>Net Energy Availability at state periphery (MU)</b>	<b>33,630</b>	<b>36,421</b>	<b>39,014</b>

\* included in intra-state transmission loss of 5.74%

- 3.25 In pursuance to the decision of the Government of Rajasthan, Rajasthan Urja Vikas Nigam was incorporated on 4th December 2015 under the Companies Act, 2013. The company become functional w.e.f 01.04.2016 vide order No.F.15(22) Energy/2014 dated 22.03.2016 and acquired the functions of erstwhile 'Rajasthan Discoms Power Procurement Center (RDPPC)'.
- 3.26 The objectives of the company are to undertake wholesale procurement, sale and wholesale supply related works, rights, financial efficiency and to ensure availability on short, medium and long-term basis, the power requirement of the Government electricity distribution companies of Rajasthan under the related agreements.
- 3.27 Now that Rajasthan Urja Vikas Nigam Limited has become fully operational, power purchase requirement, scheduling of power and trading of surplus power is being done by RUVNL.
- 3.28 As such, power purchase is assumed to be carried out in a consolidated manner for most of the stations and hence, energy requirement of all three distribution companies has been aggregated to arrive at consolidated energy requirement for all for three distribution companies which is summarised below:

**Table 20: Energy balance for Rajasthan**

Particulars	FY-22	FY-23
Estimated Sales (MU)	70,463	77,787
Distribution Loss (%)	17.77%	16.87%
Energy Required at Discom Periphery (MU)	<b>85,690</b>	<b>93,572</b>
Intra-State Transmission Loss (%)	3.31%	3.31%
<b>Energy Required at State Periphery (MU)</b>	<b>88,624</b>	<b>96,775</b>
Energy available from state sources (MU)	58,314	63,792
Energy procured from outside state (MU)	28,926	31,429
Energy procured from exchange (MU)	4,318	3,023
Inter-State Transmission Loss (%)	2.79%	2.79%
<b>Net Energy Requirement (MU)</b>	<b>87,630</b>	<b>94,063</b>
<b>Surplus/ (deficit) after accounting for short-term purchase (MU)</b>	<b>2,006</b>	<b>507</b>

## **Power purchase cost**

### **Fixed and Variable Charges**

- 3.29 The Petitioner has considered the actual purchase cost for FY 2020-21 & projected the cost for FY 2021-22 and FY 2022-23 from various sources based on the following assumptions:
- (a) The estimation of power quantum to be purchased is detailed out in the aforementioned paras.
  - (b) For the estimation of cost, a nominal hike of 2% in the fixed charges as well as energy charges per unit has been considered considering the actual increase in the past few years.
  - (c) The Petitioner has not considered prior period charges in forecasting power purchase cost for FY 2022-22 and FY 2022-23 assuming normal business scenario and considering these cost as extraordinary expenses.
- 3.30 Further, as stated earlier, the Commission vide order dated 28.10.2021 has allowed Discoms to exit from PPA for the Anta Gas, Auriya Gas, Dadri Gas, FUGTPS (I), Farraka TPS power Plants aggregating to 252 MW. Accordingly, no cost has been projected for these stations in FY 23.
- 3.31 With renewable sources of energy providing power below Rs 2.50/unit, RUVNL is trying to shed as much high-cost thermal capacity as it can bring down costs and provide cheaper power to consumers.
- 3.32 The Petitioner has considered the impact of Kusum Component-A and Component-C on the power purchase cost of the Petitioner, as detailed earlier.

### **Refund of Return on Equity by RVUNL**

- 3.33 In accordance with the direction of Energy Department, GoR to RVUNL, the RoE charged by RVUNL to Discoms shall have to be refunded to the Discoms for FY 2019-20, FY 2020-21 and no RoE shall be charged during FY 2021-22. Accordingly, while projecting the power purchase cost for FY 22, the Petitioner has projected gross power purchase cost from RVUNL stations based on FY 21 actual costs incurred and has considered refund of RoE to the tune of Rs 385 Cr during FY 22.
- 3.34 However, in the absence of any direction to RVUNL for not charging RoE during FY 2022-23, the Petitioner has not considered any such refund during FY 23.

### **Transmission & SLDC Charges**

- 3.35 The Petitioner has considered a nominal annual escalation of 2% over that as incurred in FY 2020-21, while projecting the transmission charges for FY 2021-22 and FY 2022-23. The same has been shown as under:

Table 21: Transmission charges (Rs Cr)

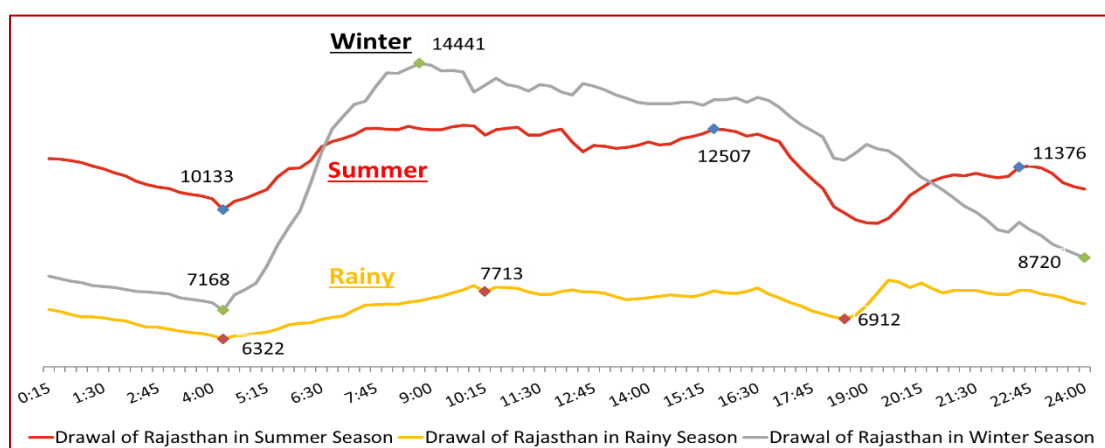
Source	FY-21	FY-22	FY-23
PGCIL	799	802	818
MARU	14	14	15
ARAVALI TRANSMISSION	9	9	9
R V PNL	1,073	1,131	1,154
SLDC CHARGES	9	13	14
HADOTI POWER	20	20	20
THAR POWER	14	14	15
BARMER POWER	16	16	16
NRLDC-PSEB	-	-	-
NRLDC POSCO	1	1	1
<b>POC CHARGES</b>			
PTC (KARCHAM WANGTOO)	15	16	16
PTC (DB)	46	45	45
PTC (MARUTI)	51	33	33
UPPTCL (TANDA)	5	4	4
<b>TOTAL</b>	<b>2,071</b>	<b>2,118</b>	<b>2,161</b>

### Purchase and sale through exchange

3.36 The Petitioner needs to resort to power exchange when:

- (i) In certain time blocks when there is energy shortage due to non-availability of power from long term tied up sources. This could be due to planned or unplanned shutdown of generating station, unavailability of transmission network, coal related issues etc.
- (ii) When the cost of power from exchange is cheaper than the variable cost of some of the tied-up long term sources. In such cases in order to optimize the overall power purchase cost, the Discom backs-down the costlier power plant and purchases power from exchange.

3.37 The Petitioner estimates the while the Rajasthan state is expected to be in deficit in various time blocks especially during the day-time depending on the season, in certain blocks, it is expected to have surplus power. This is due to unique characteristic of the state of significant intra-day and intra-season variation in demand (for FY 21) as shown in the graph below:



- 3.38 As shown above, during the day hours, the state experiences peak demand during which it resorts to short-term power while during the night hours, the state experiences power surplus position.
- 3.39 The Petitioner submits that sale and purchase of power through exchange is a dynamic process. The market clearing prices in exchange are dependent on the bids submitted by buyers and other sellers and the power available in the entire market. It is important to note that the Petitioner has no control over the mentioned factors. With the increasing surplus energy across the nation, the market prices are further expected to reduce. It is important to note that the rates discovered in the exchange for selling of surplus power are lower than the variable cost payable to generators by the Petitioner.
- 3.40 The rate of purchase of energy from exchange has been considered as Rs 4.50/kWh for FY 22 based on the actual rate of purchase till November, 2021. The recent coal crisis in the country had resulted in significant increase in short term prices due to demand outstripping the supply. For FY 23, the Petitioner has projected short term rate of Rs 3.50/kWh based on previous years' trend.
- 3.41 The rate of sale of surplus energy on exchange has been considered as Rs 3.34/kWh for FY 22 based on the actual rate of sale till November, 2021 and a 5% increase in FY 23 i.e. Rs 3.50/ kWh.

**Total Power Purchase Cost**

- 3.42 The projected cost for FY 2021-22 and FY 2022-23 along with the actual cost for FY 2020-21 for the Petitioner has been summarised in following table:

**Table 22 : Power Purchase Cost of Discom (Rs Cr)**

Source	FY-21	FY-22	FY-23
NTPC (Total)	1,427	1,471	1,479
NHPC	237	256	261
RVUN (Total)	5,467	5,867	6,447
Rajwest	1,121	1,157	1,181
SJVN (Naptha-Jhakri, Rampur)	81	89	91
Neyvelli Lignite	170	178	184
Aravali Power	0	-	-
NVVNL Bundled	410	423	431
Coastal Gujarat	242	134	312
ADANI POWER	2,302	1,270	1,295
Sasan Power	160	168	172
PTC (KW, DB, Maruti, Teesta)	787	816	832
PTC Tala (Bhutan)	4	5	5
NPCIL NAPP	36	38	39
RAPS	282	386	394
THDC (Tehri, Koteshwar)	53	55	56
Shared Projects (BBMB, Chambal/Satpura)	74	47	48
RFF	261	1,221	256
NCES (including CPP)	1,580	1,965	2,433
SKS	38	75	76
Transmission charges	2,071	2,118	2,161
Purchase from Exchange/Banking/UI	(97)	779	424
RoE Refund (RVUN)	(385)	(385)	-
<b>Total</b>	<b>16,322</b>	<b>17,165</b>	<b>18,578</b>

3.43 The break-up of the power purchase cost from different sources has been shown in Form 3.1 also.

**Methodology to adjust the cost of disallowed power purchase due to distribution losses**

3.44 In the past true up and ARR orders, the Hon'ble Commission approved the power purchase costs as per normative distribution losses for the year wherein the actual losses were higher than the normative losses. The Hon'ble Commission approved the power purchase cost by adjusting the disallowed quantum of power purchase attributable to increased distribution losses with the average power purchase cost (APPC) after disallowing the short term power purchased.

3.45 It pertinent to mention here that the Discoms are bound to meet their energy demand from long term tied up sources. Based on demand (Round The Clock and Peak), sufficient number of sources has been tied up on a long-term basis to ensure 24x7 supply to consumers. The Discoms also follow the principle of Merit Order Dispatch (MOD) to ensure economic dispatch of power to meet the actual demand on a real time basis. Therefore, it worthwhile to mention that the petitioner is bound to bear the fixed or capacity charges of the long-term generating sources tied up to meet the peak demand. This is a fixed cost in nature and is to be paid (based on the contracted capacity) irrespective of the fact that any energy is scheduled/procured from the station or not.

3.46 Disallowing the power purchase cost of the Petitioner by multiplying the quantum of disallowed energy by the APPC, as per the prevailing methodology followed by the Hon'ble Commission, results in disallowance of Fixed Costs payable to the generators by the Petitioner, which the Petitioner is ought to pay to the generators as per the PPA.

3.47 Hon'ble APTEL, vide its Judgment dated 23.03.2016, in Appeal No. 255 of 2014, in case of Damodar Valley Corporation vs Jharkhand State Electricity Commission has also noted that fixed costs ought not be disallowed.

3.48 Accordingly, the Petitioner proposes that any disallowance in power purchase cost be done at the average variable cost of power purchase instead of APPC. The same approach is being followed by other SERCs as well. A reference to HERC's order dated 01/06/2020 in the matter of trueing up for FY 2018-19 for Discoms is reproduced below.

*"3.1.11 True-up of Power Purchase Cost*

*The Commission observes that the difference in power purchase cost could arise either on account of variation in actual source wise generation or rate of power vis-à-vis those allowed by the Commission on a projected basis ....*

<b>Particulars</b>	<b>Unit</b>	<b>UHBVN</b>	<b>DHBVN</b>	<b>Total</b>
.....				
<i>Actual Power Purchase Volume</i>	<i>MU</i>	<i>23,248.82</i>	<i>33,745.11</i>	<i>56,993.93</i>
<i>Disallowed Units</i>	<i>MU</i>	<i>485.75</i>	<i>1,575.73</i>	<i>2,061.47</i>
<b>Cost of disallowed units at actual variable cost submitted by the Discoms i.e. @Rs. 2.61 per unit</b>	<b>Rs Cr</b>	<b>127.02</b>	<b>412.05</b>	<b>539.07</b>

.....”

- 3.49 Thus, the petitioner prays that the Hon’ble Commission should consider average variable cost of power purchase instead of APPC if such an adjustment is required to be passed on into the ARR due to increased distribution losses.

**A4: CAPITAL INVESTMENT PLAN PETITION, CWIP AND CAPITALISATION**

- 4.1 The Capital Investment Plan for FY 2021-22 and FY 2022-23 has been prepared, keeping intact the principle of the least cost plan, required to undertake the strengthening and augmentation of distribution system to meet the requirement of load growth, reduction in distribution losses, improvement of quality of supply, system reliability etc.
- 4.2 The proposed Capital Investment Plan is based on the philosophy focused on the following areas:
- (a) Creation of new sub-transmission and distribution network to meet the increasing demand within the area of supply of Discoms.
  - (b) Strengthening of the existing sub-transmission and distribution network to cope up with the growing demand and connectivity to the new areas under development.
  - (c) Rural electrification to create distribution infrastructure in villages and release electricity connections in villages
  - (d) Scaling up of IT infrastructure and strengthening of IT backbone to improve the efficiency, capacity and reliability of distribution network.
  - (e) Demand side management for efficient and optimum utilisation of distribution network capacity.
- 4.3 The proposed Capital Investment Plan incorporates the basis and details pertaining to the budget allocation under various schemes, associated targets and sources of funding.
- 4.4 The capital investment planning plays a pivotal role in efficiency improvement of the Discoms. The growing number of consumers, load and per capita consumption, burdened the existing networks resulting to frequent outage and energy spillages. Therefore, the Capital Investment Plan requires to be planned appropriately. The rationale to arrive at the proposed capital investment plan is elaborated in subsequent parts of this submission.
- 4.5 The Petitioner is making concerted efforts for strengthening of distribution network. This will curb down the system spillages, improve efficiency and ensure sustainability against the revenue gap of the previous years. It is requested that the Hon'ble Commission allows the proposed Capital Investment Plan for FY 2021-22 and FY 2022-23.
- 4.6 The Capital Investment Plan is allocated under the various schemes. The resource allocation along with the physical targets are given in the following tables.

**Table 23: Plan Outlay (in Rs Cr.)**

S. No	Name of Scheme	FY 2020-21	FY 2021-22	FY 2022-23
1	Sub- Transmission & Distribution	595.68	518.83	491.32
2	Rural Electrification Works	457.65	496.95	1,439.81
3	R-APDRP-A	4.49	147.14	1.03

**ARR AND INVESTMENT PLAN FOR FY 2021-22 AND FY 2022-23**

S. No.	Name of Scheme	FY 2020-21	FY 2021-22	FY 2022-23
4	R-APDRP-B	0	0.52	-
5	Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) New	75.11	79.28	20.00
6	Integrated Power Development Scheme (IPDS)	22.04	1.84	1.08
7	Feeder Segregation	0	75.81	50.00
8	AP Supply (2 Block Regime)	8.04	133.75	265.00
9	Smart metering	47.25	234.05	15.63
10	RDSS	0	50.00	995.00*
11	FIP	8.9	-	-
12	Sobhagya	1.04	-	-
	<b>TOTAL</b>	<b>1,220.20</b>	<b>1,738.17</b>	<b>3,278.87</b>

\* Total expenditure under RDSS for FY23 is INR 1,100 Cr. However, for the purpose of capital investment, expenditure attributed towards the Smart Metering component (INR 105 Cr) has not been included, as it is to be implemented on Total Expenditure (TOTEX) mode. The same has been detailed out in the relevant section under O&M expenses.

**Table 24: Physical targets**

S. No.	Name of scheme	Units	FY 2020-21	FY 2021-22	FY 2022-23
<b>1</b>					
a	33 KV Lines	KM.	525	660	650
b	33 KV Sub stations	Nos.	40	45	58
		MVA	200	225	506
c	Domestic Connections Rural	Nos.	100,000	140,000	1,20,000
d	Domestic Connections Urban	Nos.	50,000	60,000	80,000
e	GiS	Nos.	2	4	4
<b>2</b>					
a	Ag. Pump Set RE	Nos.	10,708	24,577	71,207

**Source of Funding for FY 2021-22 and FY 2022-23**

4.7 The source wise detail of funding for the proposed Capital Investment Plan for FY 2021-22 and FY 2022-23 is tabulated as under:

**Table 25: Mobilization of Plan Resources for FY 2021-22 and FY 2022-23 (Rs Cr.)**

S. No.	Particulars	FY 2021-22	FY 2022-23
<b>1</b>	<b>Direct</b>		
	REC (Normal RE works including release of new connections)	248.47	719.90
	DDUGJY New (Loan)	20.16	5.60
	DDUGJY New (Grant)	43.20	12.00
	R-APDRP A&B (Loan)	32.63	-
	R-APDRP A&B (Grant)	101.04	1.03
	Household Electrification (Loan)	2.04	-
	Household Electrification (Grant)	4.37	-
	IPDS (Loan)	0.52	0.30
	IPDS (Grant)	1.10	0.65
	ST&DD	363.18	343.92
	AMI Smart Metering (Loan)	83.20	5.82
	AMI Smart Metering (Grant)	115.20	7.32
	Feeder Segregation (Loan)	21.22	14.00
	Feeder Segregation (Grant)	45.49	30.00



S. No.	Particulars	FY 2021-22	FY 2022-23
	2 Block Supply (Loan)	93.62	185.50
	2 Block Supply (Grant)	-	-
	RDSS (Loan)	14.00	266.00*
	RDSS (Grant)	30.00	597.00*
	<b>Total (1)</b>	<b>1,219.44</b>	<b>2,189.04</b>
<b>2</b>	<b>Through State Govt.</b>		
	State Govt. Equity	518.73	1,089.82
	<b>Total (2)</b>	<b>518.73</b>	<b>1,089.82</b>
	<b>Total (1+2)</b>	<b>1,738.17</b>	<b>3,278.87</b>

\* Without considering the amount attributed to metering component of RDSS

**Head Wise overall Plan for FY 2021-22 and FY 2022-23**

**Head A: - Sub-Transmission & Distribution works: -**

- 4.8 Various schemes were launched and completed in XII plan to strengthen the existing network. Accordingly, the system requires further improvement and strengthening so that the system becomes robust and improved and thereby is able to provide a quality and reliable supply to the consumer with less number of interruptions. The proposed schemes are also aimed to intensify electrification in the Discom area. The proposed works/schemes will ensure expansion of the distribution network.
- 4.9 Sub-transmission and Distribution System Improvement scheme is meant for construction of 33 KV Sub- Stations and associated lines with inter connection of 11 KV line and release of service connections, etc. Strengthening of Sub-Transmission & Distribution network reduces the T&D losses & improve the quality & reliability of electric supply within jurisdiction of Discom.
- 4.10 The physical targets of works under the Scheme for Strengthen of Sub Transmission and Distribution networks is given in table below: -

**Table 26: Physical Targets for Sub-transmission and Distribution**

Particulars	Unit	FY 2021-22	FY 2022-23
33/11KV Sub Stations.	MVA	225	206
33/11KV Sub Stations.	Nos.	45	40
33 KV Lines	Kms	660	650

- 4.11 The physical and financial progress of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

*Procedure for identification, selection and implementation: -*

- 4.12 The schemes are identified on a need basis, with the objective to increase reliability of the network, to strengthen the network, and for improvement of the system to meet the demand growth; the circle planning department initiate the proposals along with the detailed technical due-diligence & after cost-benefit analysis of the proposed investment to be undertaken in the field. The proposals are forwarded to the headquarters for the approval. Accordingly, the planning division at the headquarters selects the schemes based on the priority and sanctions allowed by the government. All the projects under Sub-Transmission and Distribution works, RE works are under Rs. 10 Crores and are implemented after the administrative, technical and financial sanctions of the competent authority and delegation of powers (DOP) given to the field offices.

**Head B - Normal Rural Electrification (RE) work including release of new connection: -**

- 4.13 Works under the RE Scheme are aimed for rural electrification, providing electricity connections in villages and improvement of sub transmission and distribution system and reduction of T&D losses in rural areas.
- 4.14 The Scheme entrusted the works related to the release of new Agriculture in rural areas.
- 4.15 The benefits envisaged from the execution of schemes under RE works include:
- Expansion of distribution network to release agriculture connections. This helps the Discom to clear the pendency of agriculture connection rural areas.
  - Reduction in system losses and improvement reliability parameters.
  - Providing domestic connections in rural areas
  - Energisation of wells with a view to increase water supply.
- 4.16 The physical and financial progress of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

**Head C: - R-APDRP**

**R-APDRP works – Part – A for IT Implementation & SCADA**

*Brief Description of Proposal*

- 4.17 Under the scheme works for developing IT enable activities such as SCADA etc. and strengthening of existing network have been taken up. As per the phasing the scheme for IT enable activities under Part-A of R-APDRP has been sanctioned by MOP, GOI. The work has started, and it is expected that execution of scheme under R-APDRP Part-A shall be completed shortly.
- 4.18 R-APDRP- part A is further divided into two parts:
- Establish IT system in towns having population of more than 30,000.
  - Install SCADA in selected towns having population of more than 4 Lakhs &

Annual input energy of 350 MU's

4.19 Benefits arising after execution:

- Strengthening of existing network with sustained loss reduction.
- Enable accurate baseline data.
- Process automation will be achieved.
- Enable IT implementation

4.20 The major works that are being undertaken are Installation of hardware and software for data center, installation of hardware and software for Disaster recovery centre, establishment of customer care center at Discoms HQ's, installation of Modems for Meter Data Acquisition System etc.

4.21 The physical and financial progress report of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

#### **R-APDRP- Part B**

*Brief description about proposal:*

4.22 This Scheme is an initiative of the Government of India with focus on establishment of base line data; maintain reliability of supply and reduction of AT&C losses through strengthening & up gradation of sub transmission and distribution network. This scheme covers cities and towns of urban areas with population of more than 30,000.

4.23 Initially 25% funds will be provided as loan from GOI and balance is to be raised from financial institutions. Based on the criteria for reduction of AT&C losses below 15% and maintaining the same below that level, 10% of the total project cost of the town will be converted into grant every year & that is maximum of 50% of the total project cost of a town can be converted into grant if the losses of that town are brought below the 15% and are maintained for 5 years. The AT&C losses will be verified by a TPIEA-EA M/s. Voyant Solution Pvt. Ltd., Gurgaon who has been appointed as TPIEA-EA by PFC. Base line losses of 30 towns are already verified by TPIEA-EA

4.24 The work under the scheme is under progress and shall be completed shortly. The physical and financial progress report of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

#### **Head D: - Deendayal Upadhyaya Gram Jyoti Yojan (DDUGJY)**

*Brief description about proposal:*

4.25 Government of India has approved the "Deendayal Upadhyaya Gram Jyoti Yojna" (DDUGJY) on 3<sup>rd</sup> December 2014 for:

- i. Separation of agriculture and non-agriculture feeders facilitating 24 hours 3 phase supply to villages having population more than 3,000;
  - ii. Strengthening and augmentation of sub-transmission & distribution infrastructure in rural areas, including metering of distribution transformers/feeders/consumers.
  - iii. Rural electrification, as per CCEA approval dated 01.08.2013 for completion of the targets laid down under RGGVY for 12th and 13th Plans by carrying forward the approved outlay for RGGVY to DDUGJY.
- 4.26 The existing Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) has been subsumed in the new scheme and the unspent amount of RGGVY will be carried forward to DDUGJY. All Discoms are eligible for financial assistance under the scheme. Rural Electrification Corporation Limited (REC) will be the nodal agency for implementation of the scheme.
- 4.27 The physical and financial progress report of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

#### **Head E: - Integrated Power Development Scheme (IPDS)**

##### *Brief description about proposal:*

- 4.28 Government of India launched the Integrated Power Development Scheme (IPDS) to extend financial assistance against capital expenditure to address the gaps in sub transmission & distribution network and metering in urban areas to supplement the resources of DISCOMs/Power Dept.
- 4.29 The scheme for urban areas comprises of the following components:
- a) Strengthening of Sub-transmission and Distribution network in urban areas including provisioning of solar panels on Govt. buildings including Net-Metering.
  - b) Metering of feeders / distribution transformers / consumers in urban areas and,
  - c) IT enablement of distribution sector and strengthening of distribution network, as per CCEA approval dated 21.06.2013 for completion of the targets laid down under R-APDRP for 12th and 13th Plans by subsuming R-APDRP in IPDS and carrying forward the approved outlay for RAPDRP to IPDS.
- 4.30 The projects under the scheme shall be formulated for urban areas (Statutory Towns) only and will cover works relating to strengthening of sub-transmission & distribution network, including provisioning of solar panels on Govt. buildings including Net-metering, metering of feeders /distribution transformers / consumers and IT enablement of distribution sector. Scope of IT enablement extended to the statutory towns having population more 5000 as per Census 2011.

- 4.31 The physical and financial progress report of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

### **Head F: - Feeders Segregation**

#### ***Brief description about proposal:***

- 4.32 Segregation of agriculture feeders from mixed feeders is a vital step to ensure efficient rural power supply with minimal losses. The activity was undertaken by the Discom since 2004. From 2004 to 2010, segregation of agricultural load from non-agricultural load (virtual feeder segregation) was done. Since the rural consumers are scatter over a large area, a significant number of single-phase transformers were installed at rural areas to provide domestic connections at minimum expense. Further, 11 KV HVDS systems were installed to cater to the electricity demand of agriculture consumers.
- 4.33 Feeder Segregation works were also proposed in the DDUGJY Scheme of Government of India. However, during the implementation of this scheme, the shift of complete focus by Government of India on providing connections to the un-electrified households led to the most utilization of funds in release of connections and associated infrastructure. Discoms had to cut short the works proposed under DDUGJY scheme for Feeder Segregation.
- 4.34 By segregation of Agriculture feeder, an uninterrupted power supply may be given even in day hours utilizing the solar power. So the farmer will get the advantage to get supply in day hours and need not to go in to field in winter time when temperature in state touches to zero degree centigrade.
- 4.35 This project aims at -
- a) To manage uninterrupted block hour power supply to Agriculture Consumers
  - b) To enable uninterrupted 24 hrs supply to rural domestic consumers
  - c) 3-Ph supply to all revenue villages having population >500
  - d) To avoid misuse/theft of single-phase supply by Agriculture consumers
  - e) Better system planning and load management leading to reduction in T&D Loss
- 4.36 Following works are proposed to be carried out under the Segregation of agriculture feeders.
- a) Laying new 11 KV lines Three Phase
  - b) Shifting of 11 KV Single phase tapping to one feeder to other.
  - c) LT lines (three phase) works relating to shifting of Consumers
  - d) Shifting of 11 KV Single phase tapping to one feeder to other.
  - e) Providing additional Three Phase Distribution Transformers for providing three phase connections
  - f) Creation of New 11 kV Bays & Feeder Metering

4.37 The physical and financial progress report of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

### **Head G: - 2-Block Supply to Agriculture Feeders**

#### ***Brief description about proposal:***

4.38 The State of Rajasthan, with ~1.6 Cr consumers, has about 14 lakh agriculture consumers. Being a desert state, the annual rainfall is insufficient to meet the water demand for agricultural activities. Thus, there is lack of free-flowing surface water to meet the irrigation needs of the agriculture lands. As a result, ~70% of irrigation is dependent on ground water. To pump ground water electric pump-sets are required, thereby making electricity supply a key input for agriculture.

4.39 At present, the Discom manages power supply to such agriculture consumers by providing power in four blocks. Weekly rotation of the four blocks is done to efficiently manage the demand of agriculture consumers and at the same time to ensure grid stability.

4.40 As a result, majority of agriculture consumers get power at inconvenient night hours, making it difficult for them to irrigate their lands. Often such agriculture consumers leave their pump-sets on throughout the night, leading to wastage of electricity as well as ground water. In order to relieve the agriculture consumers of such inconvenience, Discoms had planned to provide day-time supply to agriculture consumers in 2 blocks.

4.41 Following works are to be undertaken the Segregation of agriculture feeders.

- a) Strengthening of 33 kV Feeder Conductor
- b) Capacity Augmentation of 33/11 kV Power Transformer
- c) Providing of additional Power Transformer
- d) Providing of 33 KV Kiosk on Incomer
- e) New 33/11 KV substations

4.42 The physical and financial progress of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon'ble Commission.

### **Head H: - Smart Metering**

#### ***Brief description about proposal:***

4.43 Advanced Metering Infrastructure, also referred as "Smart Metering" is the combination of the electronic meters with two-way communications technology for information, monitor, and control. AMI initiative is targeted to achieve:

- a) Operational Efficiencies: improved reliability and lower operating costs in areas such as meter reading, distribution system maintenance, and outage management

- b) Protection of Revenue: Reduced revenue loss due to the theft of power directly from the distribution grid and tampering with the meters, as well as revenue “leakage” in some customer processes
  - c) Increased Cash Flow: rolling out monthly billing cycle
  - d) Improvement in Customer Service: provide real-time and detailed information on consumption and cost and enable better customer communication around outages.
  - e) Conservation and Energy Efficiency: energy and capacity savings achieved through time-based rates, effective communication and incentives to customers, customer direct control of energy use, and grid operational improvements
- 4.44 The physical and financial progress of the works under this head for the previous and current year has been submitted in attached prescribed Form-2 and 4 as prescribed by the Hon’ble Commission.

**Head H: - Reform-based and Result linked Revamped Distribution Sector Scheme (RDSS)**

***Brief description about proposal:***

- 4.45 There has been major increase in Capital expenditure in FY 23 on account of inclusion of implementation of Revamped Distribution Sector Scheme which was notified by MoP on 20.07.2021 followed by a detailed guideline dated 29.07.2021 and amendments from time to time. The objective of the scheme is to bring down pan-India AT&C losses to 12 – 15% level, reduce ACS-ARR gap to Zero by 2024-25 and improve reliability and quality of power to consumers.
- 4.46 The Scheme provides for annual appraisal of the DISCOM performance against predefined and agreed upon performance trajectories on certain parameters which includes AT&C losses, ACS-ARR gaps, infrastructure upgrade performance, consumer services, hours of supply, corporate governance, etc. DISCOMs have to score a minimum of 60% marks in the Result Evaluation Framework along with meeting the pre-qualification criteria as required under the RDSS scheme, to be eligible for receiving funding against the Scheme in that year.
- 4.47 Scheme has been divided into 2 parts viz. Part A - Metering & Distribution Infrastructure Works and Part B - Training & Capacity Building and other Enabling & Supporting Activities.
- **Part A (Metering & Distribution Infrastructure Works):**

- ✓ This activity includes installation of Prepaid smart meters for all consumers (excluding Agriculture consumers) along with associated AML, communicable meters for DTs & Feeders, ICT including Artificial Intelligence (AI), Machine Learning (ML), etc. based solutions for power Sector and a unified billing and collection system.
  - ✓ Distribution infrastructure works as required for strengthening and modernizing the system as well as measures for loss reduction. The infrastructure strengthening works will include separation of Agriculture feeders to enable implementation of the KUSUM scheme, Aerial Bunch cables and HVDS for loss reduction, replacement of HT/LT lines as required, construction of new/ upgradation of substations, SCADA and DMS system etc.
  - **Part B (Training & Capacity Building and other Enabling & Supporting Activities):** The activities covered under this part are up-gradation of Smart Grid Knowledge Centre, training and capacity building, awards and recognitions. It also includes other supporting and enabling components such as Nodal Agency fee, activities to be undertaken by MoP viz. communication plan, publicity, consumer awareness, consumer survey and other associated measures.
- 4.48 Jaipur Vidyut Vitran Nigam Limited (**JVVNL**) has prepared the Action Plan for strengthening its Distribution system and improving its performance by way of various reform measures. This would result in improvement of the operational efficiency and financial viability of JVVNL as well as improvement in the quality and reliability of power supplied to the consumers. JVVNL has prepared the Action plan, with several subcomponents for strengthening its Distribution system, and to improve its performance. Works that are required for AT&C loss reduction has been given priority.
- 4.49 **Metering and Energy Accounting:** Implementation of the Scheme would lead to improvement in the quality & reliability of power supplied to the consumers by making the Distribution system more robust. The scheme envisages to strengthen the energy accounting system installation of Smart Pre-paid meters/System meters and adoption of Artificial Intelligence to analyze data generated through IT/OT devices. Such a robust energy accounting system shall enable DISCOMs to take informed decisions on loss reduction initiatives, demand forecasting, Time of Day (ToD) tariff, Renewable Energy (RE) Integration and for other predictive analysis.
- 4.50 Metering activities are to be undertaken under two phases. Phase I shall be completed by December 2023 and shall cover following areas:
- **Prepaid Smart meters:**
    - All Electricity Divisions of 29 AMRUT cities in Rajasthan, with AT&C Losses > 15% in base year.
    - Industrial and Commercial Consumers.
    - All Government offices/Autonomous Bodies/Boards/Corporations at Block level and above.



- Other areas with high losses, which shall mandatorily include Electricity Divisions having more than 50% consumers in urban areas and with AT&C losses more than 15% and other Electricity Divisions with AT&C losses more than 25%, in the base year.
- All DTs (above 25 kVA) in areas where Prepaid Smart metering is being carried out in first phase to be metered.
- All feeders to be metered by December 2022.

**Phase II shall** be completed by Mar 2025 and shall cover all other consumers (Except agriculture) and DTs (above 25 kVA) to be metered.

#### 4.51 **Measures for technical loss reduction:**

- In order to reduce the T&D losses, overloaded 33 KV and 11 KV feeders shall be bifurcated to make less lengthy and less loaded feeders, which shall not only reduce losses but simultaneously shall enhance reliability and quality of power supply and thus consumer satisfaction as well. Similarly, to make the system LT less, the work of extending HT line, installation of new DTs shall improve further HT/LT ratio as more supply shall be transmitted on higher voltage, which shall eventually reduce losses.
- Under capacity of conductor as well damaged /frayed conductor, substantial line losses are occurring in power system, therefore, work of conductor replacement/augmentation of 33 KV as well of 11 KV feeders is taken up.
- Cabling work, particularly laying of LT cable and AB cable in theft prone areas has been proposed to curb over the theft. To provide uninterrupted 24 hours supply to non -Ag consumers and block supply in day hours, work of segregation of 11 KV mix load rural feeders is covered in the DPR.
- Substantial energy is consumed by Ag. consumers, wherein poor power factor is the main reason of losses, therefore, to improve power factor, the work of installation of capacitors at Ag. consumers shall play a major role in loss reduction.
- Segregation of Agriculture and Non-Agriculture feeders and further their solarization under Kusum ‘C’ component shall be taken, which shall apart to give regulated block supply to Ag. Consumers shall provide financial support as well.
- To rule out any possibility of tempering the service cable, multi meter boxes shall be mounted on electric pole supports in which 3 to 4 pre-paid smart meters shall be housed and load line shall be emanated from there. Many DTs are not having Distribution kiosks (LT pillar boxes) due to which theft of electricity is being done by laying service cable directly from the open-ended LT busbars, therefore, at such specific locations, these shall be installed.
- **IT/OT works:** JVVNL envisages undertaking following activities under IT/OT works:
  - ✓ **BI Software Applications:** -Advanced ICT like Artificial Intelligence, Machine Learning and Block chain Technology would be leveraged to analyse data generated through IT/OT devices including System Meters, prepaid Smart meters to prepare actionable MIS from system generated energy accounting reports every month so as to enable the DISCOMs to take informed decisions on loss reduction, demand forecasting, asset management, Time of Day (ToD) tariff, Renewable Energy (RE) Integration and for other predictive analysis. This would contribute a great deal

towards enhancing operational efficiency and financial sustainability of the DISCOMs.

- ✓ **ERP:** Current ERP system meets limited system requirement and does not fulfil comprehensive enterprise resource planning requirements of Discoms. Accordingly, following modules shall be developed under the RDSS scheme:

- a) Financial Accounting and Controlling
- b) Human Resources and Payroll
- c) Materials Management
- d) Asset Management
- e) Customer Relationship Management (CRM)
- f) Project Management
- g) Production Planning
- h) Quality Management
- i) Business Intelligence Reporting

- Summarizing above works, following are the major activities covered in the DPR of loss reduction, causing substantial T&D losses: -
  - Bifurcation of overloaded 33 KV and 11 KV feeders.
  - Replacement of frayed/damaged conductor (including augmentation by higher capacity) of 33 KV and 11 KV lines.
  - Construction of HVDS system.
  - Cabling work
  - Segregation of Agriculture and Non-Agriculture feeders and Solarization.
  - Installation of LT Distribution Kiosk.
  - Installation of Capacitors at Ag. consumers.
  - Replacement of 11 KV UG PILCA/frayed XLPE cable
  - IT/OT works

#### 4.52 **Measures for Modernisation & System augmentation:**

- The work of construction of conventional as well GIS substations shall be executed under this part along with associated 33 KV and 11 KV line works in load centres, anticipating present load and future load growth. Similarly, work of Augmentation and additional Power Transformers at existing 33/11 KV Sub Stations shall also be carried out under Modernization.
- **SCADA Implementation:** i) Implementation of SCADA / DMS in Big cities including OPEX /FMS for 7 years ii) Basic SCADA (Real Time Supervision & Controllability of Sub- station) including OPEX/ FMS for 7 years with Zone-wise common control centers.
- Summarizing above works, following are the major activities covered in the DPR of Modernisation & System augmentation:
  - New 33/11 KV Substation
  - New 33 KV line
  - New 11 KV line
  - Additional Power transformer
  - Augmentation of Power Transformer
  - SCADA/DMS

#### **Funding under the RDSS scheme:**

- Part-A -Metering: Prepaid Smart and System Meters
  - Grant @ 15% of the Meter Cost (subject to ceiling of Rs 900/ Meter in case of Smart Meters)
  - Installation of meters shall be through PPP under TOTEX (Total Expenditure) Mode
- Part-A -Distribution Infrastructure works:
  - Grant @60% shall be provided;
  - Discoms need to arrange balance funding from Banks and Financial Institutions.
- III. Part-B –Fully funded by Grant

4.53 Summary of metering works proposed to be undertaken by the Rajasthan Discoms under the RDSS scheme are as shown below:

**Table 27: Summary of metering works to be undertaken under the scheme (Phase I & II)**

Metering (in Nos)	Jaipur Discom	Ajmer Discom	Jodhpur Discom	Total
Consumer (Other than Agri.)	4762643	5432231	4080848	<b>14275722</b>
Distr. Transformers (DT)	111346	155453	167809	<b>434608</b>
Feeder & Boundary	5799	11007	10322	<b>26593</b>
<b>Total</b>	<b>4879788</b>	<b>5598691</b>	<b>4258979</b>	<b>14736923</b>

4.54 Estimated outlay (in Rs Cr) proposed by the Rajasthan Discoms under RDSS is as shown below:

Discom	Metering			Loss Reduction	Modernization & System augmentation	PMA	Total Outlay
	Phase -I	Phase -II	Total				
JVVNL	1466.74	1815.36	3282.10	3662.00	2473.80	104.34	9522.24
AVVNL	827.29	2835.81	3663.11	2770.06	2628.52	94.72	9156.40
JdVVNL	1103.98	1773.40	2877.37	3835.55	2874.90	111.44	9699.26
<b>Total</b>	<b>3398.01</b>	<b>6424.56</b>	<b>9822.58</b>	<b>10267.61</b>	<b>7977.22</b>	<b>310.50</b>	<b>28377.90</b>

4.55 The component wise budget provision under RDSS for FY 2021-22 and FY 2022-23 is shown below:

**Table 28: RDSS Component wise expenditure plan (in Rs Cr)**

S.No	Particulars	FY 2021-22	FY 2022-23
A	Distribution Infrastructure Works	50.00	975.00
A1	System Strengthening & Feeder Separation Work		
A2	Loss Reduction Activities		
	a. RMS	-	-
	b. Other IT/OT works	-	20
A3	Modernization Works		
	a. SCADA+Basic SCADA (40 towns)	-	
	b. RT-DAS (19 towns)	-	
	c. SCADA for Additional 30 Nos S/S in Jodhpur City	-	

S.No	Particulars	FY 2021-22	FY 2022-23
	d. Network augmentation work for SCADA compatibility in existing SCADA	-	
B	RDSS Metering		
	a. Consumer metering	-	103.21
	b. DT metering	-	0.70
	c. Feeder metering	-	1.09
	<b>Total</b>	<b>50.00</b>	<b>1,100.00</b>

- 4.56 As mentioned in the table above, a budget provision of Rs 105 Cr has been planned for installation of smart metering and DT and feeder metering works under the RDSS.
- 4.57 Regarding the metering component under RDSS, the Rajasthan Discoms need to install prepaid smart meters for all consumers (other than agriculture) in phases. Also, the MoP has mandated installation of Prepaid Smart Meters in phases (as per timelines stipulated under RDSS scheme) for all Discoms irrespective of the participation of the Discoms in the RDSS scheme.
- 4.58 The MoP has recommended implementation of Smart Metering in TOTEX (Total Expenditure) mode through PPP. Under this mode, a single agency will be contracted for supplying, maintaining and operating the metering infrastructure for the purpose of meter related data and services to the DISCOM. It will make both capital and operational expenditure under DBFOOT (Design Build Fund Own Operate & Transfer) or similar modes and will be paid for a portion of its capital expenditure initially and the remaining payment over the O&M period.
- 4.59 Accordingly, Rs 105 Cr has not been considered as a part of the total Capital Investment Plan summarized in the above sections. The Petitioner shall submit the details of such operational expenditure on Smart Meters at the time of Truing up of relevant year once the actual rates are discovered in accordance with the SBD for appointment of Advanced Metering Infrastructure (AMI) Service Provider to be floated by the Petitioner in due course of time.
- 4.60 Para E of the Investment Guidelines attached with the RERC (Investment Approval) Regulations, 2006 provide that the size of the annual investment plan (including deposit works of the other agency and consumer/user's contribution) shall not exceed the ceiling limit determined based on growth of load/sales and annual inflation rate. The deposit works shall be committed only to the extent such work do not affect annual works planned by the licensees. The annual size of investment plan will be based on criterion that with the addition of assets cost of generation, transmission and distribution shall not exceed the respective current cost by the inflation rate. For distribution licensees, it shall not exceed the following ceiling limits:

$$\text{Annual plan} = k * \text{GFA} * [(1 + \text{inflation rate}) * (1 + \text{growth rate}) - 1]$$

Where k = constant to convert GFA at the end of previous year to current Cost of assets.

Till same is worked out it shall be taken as 1.30

Inflation rate = ratio of WPI as on 1st April of previous year and current year

Growth rate = growth of sales envisaged for current year over that of previous year.

- 4.61 Based on the above-mentioned formula, the ceiling limit for capital investment works out as under:

Particulars	FY 2021-22	FY 2022-23
Closing GFA of previous year (Rs Cr)	22,628	24,267
K	1.3	1.3
Inflation rate (%)	10.49%	10.49%
Sales Growth (%)	8%	6%
<b>Ceiling Limit (Rs Cr)</b>	<b>5,756</b>	<b>5,359</b>

- 4.62 As can be observed, the Capital Investment Plan for the Petitioner for FY 22 and FY 23 is within the ceiling limit worked out as per the Investment Approval Regulations, 2006.
- 4.63 The following table provides the summary of projected Capital Expenditure Plan, the CWIP and capitalization during FY 2021-22 and FY 2022-23.

**Table 29: Capital Investments, CWIP & Capitalisation (Rs Cr)**

Particulars (Rs Cr.)	FY -21	FY -22	FY-23
Opening CWIP	436	311	410
Add: Capital investment during the year	1,220	1,738	3,279
<b>Sub-total</b>	<b>1,656</b>	<b>2,049</b>	<b>3,689</b>
Less: Assets capitalised during the year (Assets transferred to GFA)	1,346	1,639	2,951
<b>Closing CWIP</b>	<b>311</b>	<b>410</b>	<b>738</b>

**A5: AGGREGATE REVENUE REQUIREMENT FOR FY 2021-22 and FY 2022-23****Operation and Maintenance Expenses**

- 5.1 The Operation and Maintenance (O&M) expenses comprise of Employee expenses, Repair and Maintenance (R&M) expenses and Administration and General (A&G) expenses.
- 5.2 The norms for each component of O&M expenses for the distribution business are based on per unit of energy sold and are specified under Regulation 82 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019.
- 5.3 The Normative O&M expenses allowed at the commencement of the Control Period (i.e. FY 2019-20) under the aforesaid Tariff Regulations are to be escalated at the rate of 3.63% per annum for each year of the Control Period.
- 5.4 The employee and A&G expenses are determined by multiplying the norms specified in Regulation 82 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019 and the projected energy sales for the year. The R&M expense is computed based on the projected Gross Fixed Assets and the 'k' factor.
- 5.5 As per regulations, O&M expenses are allowed on per unit of sales. Further, Distribution Franchisee (DF) is only an internal arrangement between the Discom and the Franchisee and in no way impacts how ARR for the Discom is to be computed. Hence, the Discom prays to the Hon'ble Commission to kindly include the sales in the distribution franchisee area, while approving the O&M expenses.
- 5.6 The O&M expenses for FY 2021-22 and FY 2022-23 based on norms, along with the actuals for FY 2020-21 are summarised in the following table:

**Table 30: Operation and Maintenance Expenses**

Particulars	FY-21	FY-22	FY-23
<b>Employee Expenses</b>			
Per unit norm	0.50	0.52	0.53
Projected energy sales (MU)	-	26,883	29,245
<b>Gross employee expenses (Rs Cr)</b>	<b>831</b>	<b>1,386</b>	<b>1,562</b>
<i>Less: Capitalization (Rs Cr)</i>	<i>156</i>	<i>244</i>	<i>275</i>
<b>Net employee expenses (Rs Cr)</b>	<b>675</b>	<b>1,142</b>	<b>1,287</b>
<b>A&amp;G Expenses</b>			
Per unit norm	0.067	0.070	0.072
Projected energy sales (MU)	-	26,883	29,245
<b>Gross A&amp;G expenses (Rs Cr)</b>	<b>203</b>	<b>188</b>	<b>212</b>
<i>Less: Capitalization (Rs Cr)</i>	<i>54</i>	<i>47</i>	<i>54</i>
<b>Net A&amp;G expenses (Rs Cr)</b>	<b>149</b>	<b>140</b>	<b>158</b>
<b>R&amp;M Expenses</b>			
Average GFA	-	22,041	23,447
k-factor	1.20%	1.20%	1.20%
Escalation rate as per Regulation 24	3.63%	3.63%	3.63%
<b>R&amp;M expenses (Rs Cr)</b>	<b>242</b>	<b>274</b>	<b>292</b>
<b>Gross O&amp;M Expenses (Rs Cr)</b>	<b>1,276</b>	<b>1,848</b>	<b>2,065</b>
<i>Less: Expenses Capitalized (Rs Cr)</i>	<i>210</i>	<i>291</i>	<i>328</i>
<b>Net O&amp;M Expenses (Rs Cr)</b>	<b>1,066</b>	<b>1,556</b>	<b>1,737</b>

***Installation of Smart Meters under TOTEX mode and its impact on O&M expenses***

5.7 As discussed earlier, the Rajasthan Discoms need to install prepaid smart meters for all consumers (other than agriculture) in phases under the RDSS scheme. Further, vide a Gazette notification dated 17.08.2021 also, the MoP has mandated installation of Prepaid Smart Meters in phases (as per timelines stipulated under RDSS scheme) for all Discoms irrespective of the participation of the Discoms in the RDSS scheme.

***Mode of implementation of Smart Metering and funding***

5.8 The MoP has recommended implementation of Smart Metering in TOTEX (Total Expenditure) mode through PPP. Under this mode, a single agency will be contracted for supplying, maintaining and operating the metering infrastructure for the purpose of meter related data and services to the DISCOM. It will make both capital and operational expenditure under DBFOOT (Design Build Fund Own Operate & Transfer) or similar modes and will be paid for a portion of its capital expenditure initially and the remaining payment over the O&M period.

5.9 As per the Scheme, the DISCOM shall receive Government Budgetary Support from Central Government of 15%/ 22.5% of the approved cost of the metering works including the operational cost, subject to a maximum of Rs. 900 per meter. The remaining amount shall be paid by the Discoms over the O&M period.

5.10 As part of the main features and guidance notes of SBD for appointment of Advanced Metering Infrastructure (AMI) Service Provider for Smart Prepaid Metering in India, issued by GoI on 22.10.2021 under the RDSS scheme, the accounting process of AMISP payment shall be as follows:

- *Transaction Nature:* Payment to the AMISP by the DISCOM will be considered as an Operational Expenditure on DISCOM's account
- *Regulatory Treatment:* DISCOM to consider AMISP payments as operation expenditure while filing ARR and tariff review petition to the state ERC

5.11 The Jaipur Discom plans to install 48,79,788 smart meters under the RDSS scheme with an estimated total outlay of Rs 3,282.10 Cr. Out of this outlay, 15% shall be provided as grant by the Central Government and the remaining payment shall be made by Petitioner as part of annual operational expenditure.

5.12 The Petitioner submits that the norms of the O&M expenses as determined by the Commission does not include such expenditure on account of TOTEX mode of implementation of Smart meters. It is therefore, requested to the Hon'ble Commission to allow such operational expenditure on Smart Meters over and above the normative O&M expenditure.

5.13 The Petitioner shall submit the details of such operational expenditure on Smart Meters at the time of Truing up of relevant year once the actual rates are discovered in accordance with the SBD for appointment of Advanced Metering Infrastructure (AMI) Service Provider to be floated by the Petitioner in due course of time.

## Insurance Expenses

- 5.14 For the FY 2021-22 and FY 2022-23, insurance expenses have been projected in accordance with Regulation 25 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019 i.e. 0.2% of the Net Fixed Assets for the year. The same have been shown under along with the actual insurance expense for FY 2020-21.

**Table 31: Insurance expenses (Rs Cr)**

Particulars	FY-21 Actual	FY-22 Proj.	FY-23 Proj.
Average Net Fixed assets	-	15,495	16,488
<b>Insurance Expenses</b>	<b>1.89</b>	<b>30.99</b>	<b>32.98</b>

## Terminal benefits

- 5.15 For determination of terminal benefits liability, the Petitioner has adopted the guidelines specified under AS-15 (Employee benefit). The guidance of implementing AS-15 states that the benefit involving employer established provident funds, which require interest shortfall to be provided, are to be considered as defined benefit plans. In accordance with the provisions of the AS-15, the company has provided for the shortfall in the terminal benefits in respect to pension and gratuity each year.
- 5.16 The Petitioner has estimated the contributions based on the average of the last 4 years i.e. FY18 to FY21 assuming a nominal hike of 3% that will be made towards terminal benefits for FY 2021-22 and FY 2022-23. It is prayed to the Commission to allow the expenses as shown in the following table:

**Table 32: Terminal Benefits**

Year	Terminal Benefits (Rs Cr)
FY-21 (Actuals)	169.70
FY-22	498.13
FY-23	513.08

## Interest on long term loans, security deposits & other finance charges

- 5.17 Closing balance of the normative loan for FY 2020-21 has been considered as the opening loan balance for FY 2021-22. Based on the projected capital investments and capitalisations, the total additions to Gross Fixed Assets (GFA) has been considered. The total capitalisation during the year (or additions to GFA) has been reduced by the grant amount, arrived at by proportioning it on the basis of grants against the proposed capital investment plan as elaborated in the attached Investment Plan Formats also. The remaining capitalisation has been considered to be funded through equity and loans, which are again proportioned on the basis of equity and loans proposed against the Investment Plan for the year. The loan portion has been considered as addition to long term loans during the year.



- 5.18 The loan repayment has been considered in accordance with Regulation 21 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019, as per which repayment for each year shall be deemed equal to the depreciation charged for the year. The closing normative loan is considered after deducting repayment for the year.
- 5.19 The interest on long term loans is estimated on the basis of actual weighted average interest rate for long term loans of the Petitioner for FY 21 and applied on the average of normative loans (average of opening and closing normative loan).
- 5.20 The security deposit for FY 2021-22 and FY 2022-23 has been considered on the basis of average of actual security deposit per consumer in the previous two years as per the audited accounts and the projected growth in number of consumers. The interest rate has been considered equivalent to RBI Bank Rate as on 1<sup>st</sup> April 2021, which is in accordance with the RERC norms.
- 5.21 The finance charges or other borrowing cost for FY 2021-22 and FY 2022-23 have been estimated to increase by 5% per annum.
- 5.22 The estimated interest charges on long term loans, security and finance charges, for FY 2021-22 and FY 2022-23 are summarised in the table below:

**Table 33: Interest on long term loans, security deposits and finance charges**

Particulars (Rs Cr.)	FY-21 (Actual)	FY-22 (Projected)	FY-23 (Projected)
Opening Balance of Normative Loan	5,073	4,137	3,745
Deemed Addition during the year	115	829	1,387
Deemed Repayments	1,051	1,221	1,341
Closing Balance of Deemed Loan	4,137	3,745	3,790
<b>Average balance during the Year</b>	<b>4,605</b>	<b>3,941</b>	<b>3,768</b>
<i>Interest Rate (%)</i>	<i>10.97%</i>	<i>10.97%</i>	<i>10.97%</i>
<b>Normative interest cost</b>	<b>576</b>	<b>432</b>	<b>413</b>
Interest on Security Deposit	79	63	67
Finance charges & lease rental	171	180	189
<b>Gross Interest and finance charges</b>	<b>827</b>	<b>675</b>	<b>669</b>

***Interest on unfunded revenue gap for past years***

- 5.23 The revenue gap for FY 2020-21 stands at Rs 1,230 Cr which has been detailed out in the True Up Petition for FY 2020-21.
- 5.24 The average unfunded gap for FY 2021-22 is arrived at by considering the opening balance for FY 21, additions during the year (as provided in the previous para) and closing balance. The same approach has been considered for FY 2022-23.
- 5.25 In order to calculate the interest on unfunded revenue gap, the Petitioner has considered the weighted average rate of interest as per the audited accounts for FY 2020-21.
- 5.26 The interest liability determined on the unfunded gap is detailed in the following table:

**Table 34: Interest liability on unfunded revenue gap**

Particulars (Rs Cr.)	FY-22	FY-23
Average Unfunded Gap	18,478	19,935
Average rate of interest	10.97%	10.97%
<b>Interest liability</b>	<b>2,027</b>	<b>2,186</b>

***Interest on Loans take-over by GoR under UDAY***

- 5.27 The petitioner had claimed interest charged by GoR under UDAY scheme in the ARR and tariff petition for FY-20. It was proposed that the total interest charged by GoR shall be claimed through ARR petitions in a staggered manner over a period of 5 years from FY-20 to FY-24 in order to not burden the consumers with a tariff shock.
- 5.28 The Hon'ble Commission, in the Tariff Order for FY 20 dated 6<sup>th</sup> February 2020, had approved the total interest on UDAY for the petitioner as Rs 2599 Cr to be recovered over a period of 5 years in equal instalments viz. Rs 520 Cr to be recovered each year from FY 20 to FY 24.
- 5.29 The total interest and finance charges for FY 2021-22 and FY 2022-23 is summarized in the following table:

**Table 35: Total interest and finance expenses (Rs Cr.)**

Particulars (Rs Cr.)	FY-21 (Actual)	FY-22 (Projected)	FY-23 (Projected)
Interest Payment on LTL	576	432	413
Interest on Security Deposit	79	63	67
Finance Charges & Lease Rental	171	180	189
Interest liability for unfunded gap	2,402*	2,027	2,186
UDAY Loan Interest Liability		520	520
Gross Interest Charges	3,229	3,222	3,376
<i>Interest Expenses Capitalized</i>	19	37	69
<b>Net Interest &amp; Finance charges</b>	<b>3,210</b>	<b>3,185</b>	<b>3,306</b>

\* includes the interest on short term borrowings (including LPS paid to generators, interest on working capital and Interest on Liquidity Infusion Package under Aatmanirbhar Bharat as well).

**Interest on Working Capital**

- 5.30 The Petitioner has estimated its working capital requirement as per the Regulation 27 (3) of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019. The working capital requirement has been computed considering the following parameters:
- Operation and Maintenance expenses for one month;
  - Maintenance spares @ 15% of O&M expenses as per Regulation 82 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019;
  - Receivables equivalent to one and a half-months billing of consumers;
  - The security deposits of distribution system users (Open Access consumers) and retail supply consumers except the security deposits held as bank guarantees have been deducted from the above to arrive at the total working capital requirement for the year

- 5.31 The rate of interest for FY 2021-22 is considered as per the average Base Rate (1-year MCLR) for first six months of the year previous to the relevant year plus 300 basis points. The following table summarises the normative interest on working capital:

**Table 36: Interest on Working Capital**

Particulars (Rs Cr.)	FY-21 (Normative)	FY-22 (Projected)	FY-23 (Projected)
O&M expenses (normative)	89	130	145
Maintenance Spare	160	233	261
Receivables	3,089	2,612	2,820
<i>Less: Security deposit</i>	<i>1,436</i>	<i>1,491</i>	<i>1,579</i>
<b>Total Working Capital</b>	<b>1,901</b>	<b>1,484</b>	<b>1,646</b>
Interest Rate (%)	12.05%	10.15%	10.00%
<b>Interest on Working Capital</b>	<b>2,402*</b>	<b>151</b>	<b>165</b>

\*Actuals

## Depreciation

- 5.32 The depreciation has been calculated as per Straight Line Method (SLM) at rates specified in Annexure-1 of the RERC (Terms and Conditions for Determination of Tariff) Regulations 2019 in accordance with Regulation 22 of the said Regulations.
- 5.33 The depreciation has been determined by applying applicable depreciation rates on the average balance of opening and closing Gross Fixed Assets.

**Table 37: Depreciation (Rs Cr)**

Year	Depreciation (Rs Cr)
FY-21	1,047
FY-22	1,221
FY-23	1,341

## Return on Equity

- 5.34 As per Regulation 20 of Rajasthan Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2019”

*“(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with Regulation 19.*

*(2) Return on equity shall be computed at the rate of 14% for Transmission Licensees and SLDC, 15% for Generating Companies and 16% for Distribution Licensees”.*

- 5.35 Considering the additional burden on the consumers, it is in the interest of stakeholders that return on equity should not be claimed and therefore, the Discom is not claiming Return on Equity.

## Rebates allowed to consumers

- 5.36 The Petitioner has been providing a variety of rebates to its consumers like prompt payment incentive, rebate for supply on specific voltage, power factor incentive, load factor incentive etc.

- 5.37 Also, considering the interest of its Industrial consumers and to utilize the available surplus power of the Petitioner, a couple of more rebates in the form of Time-of-Day rebate and rebate on incremental consumption were proposed by the Petitioner, which were also approved by the Hon'ble Commission in its tariff order for FY 2019-20.
- 5.38 However, considering the substantial impact of such rebates provided to the consumers, the same have also been projected for FY 2021-22 and FY 2022-23. To project the rebates allowed to consumers, the Petitioner has considered the actual rebates given to consumers for FY 2020-21 and has nominally escalated the same to arrive at the numbers for FY 2021-22 and FY 2022-23.
- 5.39 The projected rebates allowed to consumers for FY 2021-22 and FY 2022-23 along with the actual rebates provided or FY 2020-21 has been shown as under:

Year	Amount in Rs Cr
FY 2020-21	376
FY 2021-22	406
FY 2022-23	426

### **Non-Tariff Income and Other Income**

- 5.40 The non-tariff income (excluding Delayed Payment Surcharge) has been projected as per the norms in RERC (Terms and Conditions for Determination of Tariff) Regulations 2019.
- 5.41 The income from wheeling charges, cross subsidy surcharge and additional surcharge been considered based on actuals for FY 2020-21, the same cost parameters have been projected for FY 2021-22 and FY 2022-23.
- 5.42 The following table summarises the non-tariff income and income from wheeling, cross subsidy and additional surcharge charges.

**Table 38: Non-Tariff Income & income from open access charges**

Particulars (Rs Cr.)	FY-21	FY-22	FY-23
Non-Tariff Income and other income	1,316	387	392
Income from wheeling charges	5	5	6
Income from Cross Subsidy Surcharge	5	5	5
Income from Additional Surcharge	2	2	3
<b>TOTAL</b>	<b>1,328</b>	<b>399</b>	<b>405</b>

### **Aggregate Revenue Requirement for FY 2021-22 and FY 2022-23**

- 5.43 Based on the afore-mentioned element-wise details, the revised ARR for FY 2021-22 and projected ARR for FY 2022-23 along with the actuals for FY 2020-21 is summarised in the following table:

**Table 39: Aggregate Revenue Requirement (Rs Cr)**

S. No.	Particulars	FY-21	FY-22	FY-23
1	Power Purchase Expenses	14,250 <sup>^</sup>	15,047	16,417
2	Transmission Charges	2,071	2,118	2,161
<b>3</b>	<b>Operation &amp; Maintenance Expenses</b>	<b>1,066</b>	<b>1,556</b>	<b>1,737</b>

**ARR AND INVESTMENT PLAN FOR FY 2021-22 AND FY 2022-23**

S. No.	Particulars	FY-21	FY-22	FY-23
3.1	Employee Expenses (net)	675	1,142	1,287
3.2	A&G Expenses (net)	149	140	158
3.3	Repair & Maintenance Expenses	242	274	292
4	Terminal Benefits	170	498	513
5	Insurance Expenses	2	31	33
6	Depreciation	1,047	1,221	1,341
<b>7</b>	<b>Interest and Finance Charges</b>	<b>3,210</b>	<b>3,335</b>	<b>3,469</b>
7.1	Interest on Loan Capital	808	1,159	1,120
7.3	Interest on Working Capital	2,402	151	165
7.3	Interest on Regulatory Assets		2,026	2,184
8	Rebates allowed to consumers	430*	406	426
<b>9</b>	<b>Total Expenditure</b>	<b>22,630</b>	<b>24,213</b>	<b>26,097</b>
10	Less: Non Tariff Income	1,316	387	392
11	Less: Income from wheeling charges, CSS and AS	12	12	13
<b>12</b>	<b>Aggregate Revenue Requirement from Retail Tariff</b>	<b>21,101</b>	<b>23,814</b>	<b>25,692</b>

^ including refund of RoE from RVUN

\* includes other debits, rebates allowed to consumers and prior period expenses

**A6: REVENUE FROM EXISTING TARIFF**

- 6.1 For the FY 2021-22 and FY 2022-23, revenue has been estimated based on energy sales forecasts for the period explained in earlier sections and the applicable retail tariff as per the RERC's Tariff Orders.
- 6.2 The following table summarises the category-wise expected revenue from existing tariff for FY 2021-22 and FY 2022-23 along with the actuals for FY 2020-21.

**Table 40: Revenue from sale of power at existing tariff (Rs Cr)**

Category of Consumers	FY-21	FY-22	FY-23
Domestic Service	4,495	4,829	5,109
Non-Domestic Service	2,027	2,480	2,566
Public Street Light	143	146	151
Agriculture Metered Supply	5,796	5,573	6,385
Agriculture Flat Rate Supply	209	165	120
Small Industrial Service	234	309	315
Medium Industrial Service	688	773	819
Large Industrial Service	4,671	5,801	6,222
P.W.W. & S. Pumping –Small	282	273	302
P.W.W. –Medium	32	35	37
P.W.W. & S. Pumping –Large	270	332	354
Mixed Load / Bulk Supply	133	177	179
EV Charging Stations	-	1	2
DF	1,001		
<b>Total</b>	<b>19,983*</b>	<b>20,896</b>	<b>22,562</b>

\* at consumer level

**Subvention from State Government**

- 6.3 The State Government provides subvention against ED and subsidy against compounding charges. Subvention against ED has been estimated based on the sales projected for the year and the category wise per unit ED subvention receivable. The following table summarises the subsidy expected to be received in FY 2021-22 and FY 2022-23 along with the actuals for FY 2020-21.

**Table 41: Subsidy support from State Government (Rs Cr)**

Particulars (Rs Cr.)	FY-21	FY-22	FY-23
Subvention from State Govt. against ED	500	724	770
Subsidy against compounding charges	31	19	20
<b>Total Subsidy Amount</b>	<b>531</b>	<b>743</b>	<b>791</b>

**Revenue Deficit/Surplus at existing tariff**

- 6.4 The revised revenue deficit for FY 2021-22 and projected deficit for FY 2022-23 at the existing tariff has been summarised in the following table. The actuals for FY 2020-21 have also been shown.

**Table 42: Revenue deficit at existing tariff (Rs Cr)**

Particulars	FY-21	FY-22	FY-23
<b>Aggregate Revenue Requirement from Retail Tariff</b>	<b>21,101</b>	<b>23,814</b>	<b>25,692</b>

**ARR AND INVESTMENT PLAN FOR FY 2021-22 AND FY 2022-23**

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<b>Particulars</b>	<b>FY-21</b>	<b>FY-22</b>	<b>FY-23</b>
Revenue from Sale of Power within the State	19,767	20,896	22,562
Revenue from SOP outside the State (Trading)	155	772	862
Subvention from State Govt. Against ED and other subsidies	<b>518</b>	<b>743</b>	<b>791</b>
<b>Total Receipts</b>	<b>20,440</b>	<b>22,411</b>	<b>24,215</b>
<b>Revenue Gap for the year</b>	<b>(661)</b>	<b>(1,403)</b>	<b>(1,477)</b>

6.5 As can be seen from table above, the Petitioner would be in revenue deficit in FY 2021-22 and FY 2022-23 at the existing tariffs.

## **A7: TARIFF RATIONALIZATION**

- 7.1 The Petitioner submits that, based on the norms specified in the RERC Tariff Regulations, 2019, the methodology adopted by the RERC in previous orders and other Discom specific parameters, its projected Revenue Deficit for FY 2021-22 and FY 2022-23 is Rs. 1,403 Cr and Rs. 1,477 Cr respectively, adding up to a cumulative revenue gap of Rs 2,880 Cr.
- 7.2 The cumulative revenue gap, as projected for the state of Rajasthan, for FY 2021-22 and FY 2022-23 stands at Rs. 4,374 Cr and Rs. 4,684 Cr, respectively. Accordingly, the cumulative revenue gap for the state of Rajasthan as whole stands at Rs. 9,058 Cr.
- 7.3 Measures to reduce the revenue gap that have been considered by the Petitioners are detailed out in the forthcoming sections.

### **A. Funding of revenue gap by GoR**

- i) The Fifteenth Finance Commission (XV-FC) has recommended performance based additional borrowing space of 0.50 per cent of Gross State Domestic Product (GSDP) to States, in the power sector. The objectives of the additional borrowing space are to improve the operational and economic efficiency of the sector, and promote a sustained increase in paid electricity consumption
- ii) This special dispensation has been recommended for each year for a four-year period from 2021-22 to 2024-25. For 2021-22, this borrowing space will be in addition to the regular borrowing limit of 4 percent of GSDP (including 0.50 percent linked to incremental capital expenditure) communicated to the States by a letter dated 31.03.2021.
- iii) It is submitted that, GoR, as part of the above-mentioned scheme for enhancement of FRBM limit by 0.50% of GSDP, has provided an undertaking to the GoI for take-over of future losses of the Discoms as per the following trajectory.

2022-2023	2023-2024	2024-2025	2025-2026 onwards
60% of the loss for the year 2021-22	75% of the loss for the year 2022-23	90% of the loss for the year 2023-24	100% of the loss for the year 2024-25 & onwards

As per above, GoR shall take-over 60% and 75% of the actual losses of Discoms for FY 2021-22 and FY 2022-23 respectively. A copy of the mentioned undertaking is attached as **Annexure-A**.

Accordingly, 40% of the expected loss/ revenue gap in FY 2021-22 (i.e. Rs 1,750 Cr) and 25% of the expected loss in FY 2022-23 (i.e. Rs 1,171 Cr) shall have to be borne by the Discoms. The cumulative revenue gap/loss to be borne by the Discoms stands at Rs. 2,921 Cr.



**B. Reduction of Time of Day (ToD) rebate**

- i) The Petitioners in their petition for ARR and Tariff for FY 2019-20, had proposed for the introduction of Time of Day (ToD) rebate/surcharge for the Large Industrial consumers of the State in order to flatten out the load curve and providing the consumers with an option of availing rebates in the process. The Hon’ble Commission had accordingly introduced ToD rebate for such consumers in their ARR and Tariff Order for FY 2019-20.
- ii) The same was further revised in the the ARR Order for FY 2020-21 and FY 2021-22. The prevailing ToD rebate and surcharge structure applicable for Large Industrial consumers and Electric Vehicle Charging Stations is as follows:

<b>Off-peak hours</b>	<b>Rebate on Energy Charges (EC)</b>
12 am to 6 am (6 hours)	15%
<b>Peak hours</b>	<b>Surcharge on Energy Charges (EC)</b>
6am to 10 am (4 hours)	5%

- iii) ToD tariff is generally a revenue neutral proposal for Discom and is implemented just to manage the load in a scientific manner. However, in case of Rajasthan Discoms, the same does not hold true as the surcharge is on a much lower side compared to the rebate being offered. The Discoms have been facing this negative impact, further impacting their financial health, due to the substantial amount of rebates being offered to the consumers of the State.
- iv) The Discoms considering the non-revenue neutral scenario in the existing ToD scheme, are submitting a proposal to reduce the ToD rebate to 10% from the existing 15% for the consumers of the State. As there still a substantial rebate on offer for consumption by these consumers during the peak hours, the proposal would not severely impact the consumers. Reducing the ToD tariff with rebate during consumption of electricity in peak hours a rebate of 10% on Energy Charges is likely to reduce the existing amount of rebates by about ~Rs 40 Cr annually and reduce the revenue gap to that extent.
- v) Accordingly, the following ToD structure is proposed before the Hon’ble Commission for FY 2022-23:

<b>Off-peak hours</b>	<b>Rebate on Energy Charges (EC)</b>
12 am to 6 am (6 hours)	10%
<b>Peak hours</b>	<b>Surcharge on Energy Charges (EC)</b>
6 am to 10 am (4 hours)	5%

7.4 It is submitted that even after considering the impact of loss takeover by GoR under the FRBM Scheme and revision of ToD rebate, the Discoms will still be left with balance cumulative revenue gap of Rs. 2,881 Cr, as shown under:

<b>Particulars</b>	<b>In Rs Cr</b>
Gross Revenue Gap	9,058
Less: Funding by GoR under FRBM scheme	6,138

<b>Particulars</b>	<b>In Rs Cr</b>
Less: Incremental revenue due to revision in Time of Day Rebate	40
<b>Net Revenue Gap</b>	<b>2,881</b>

- 7.5 The Petitioners acknowledge that the Discoms in the country have been directed to ensure that there is no further creation of Regulatory Assets vide various orders released by the GoI. The Petitioners also resonate with the view of the Ministry/Regulatory bodies regarding no further creation of regulatory assets and is a step in the right direction.
- 7.6 However, the Petitioners would like to lay emphasis on the fact that the effective implementation of any such step that too in a sector which stands in a poor financial health not just in the State of Rajasthan but also on a national level needs much needed strategic planning with due consideration to other state specific parameters also.
- 7.7 The sudden impact of such non-consideration/ non-creation of Regulatory Assets would be on the Government of Rajasthan in the form of increased subsidy levels or loss takeover. To further burden the GoR, which is already committed towards taking up the financial losses of the Discom in a planned manner as stated under the FRBM enhancement scheme, is not a favourable option. Besides, the State Government has also agreed to liquidate the outstanding tariff subsidy of the Discoms to the tune of Rs 17,459 Cr (as on 31.03.21) over the next 5 years under the RDSS scheme. In view of the increasing annual subsidy burden on the GoR, financial loss takeover, liquidation of outstanding subsidy and equity support for RDSS and other capital works, the burden on the GoR for FY 23 already stands at Rs 30,000 Cr.
- 7.8 On the other hand, the Discoms shall have to undertake tariff revision to meet the revenue gap in FY 2022-23. However, the Petitioner does not wish to burden its consumers with another tariff hike after the hike approved by the Hon'ble Commission in FY 2019-20 vide Tariff Order dated 06.02.2020, especially considering the aftermath of the COVID pandemic
- 7.9 As a sector that holds consumer interest at its paramount, sudden non-creation of Regulatory Assets would imply that the same are met either via tariff hikes to the consumers or via GoR support, which may not be practically feasible at the moment. The Petitioners also are fully intent and committed towards eradication of regulatory assets and shall be putting in its sincere efforts to reach such ideal scenarios.
- 7.10 **Accordingly, the Petitioner pray to the Hon'ble Commission to consider the projected cumulative revenue gap of Rs. 2,881 Cr and consider the same as Regulatory Assets and allow carrying cost attributed to the same**

***Other tariff rationalisation measures***

**(a) Modification in base year for computation of incremental consumption rebate**

- i) With a vision to boost the consumption of the Industrial consumers of the state, the Petitioners had proposed a rebate on their incremental consumption in their ARR and Tariff Petition for FY 2019-20.

- ii) The Hon'ble Commission, looking at power surplus scenario and back down position of State power plants, found it appropriate to introduce the rebate on incremental consumption which would not only ensure that the load curve for the state is flattened, but also improve the PLF of State power station and reduce the Discoms' deficit on account of paying fixed charges for back-down of State power stations. Accordingly, the Hon'ble Commission in its Tariff Order for FY 2019-20 dated 06.02.2020 had approved rebate to Medium Industry (HT) and Large Industrial consumers of the state on their incremental consumption. The relevant clause of the tariff order is produced as under:

*“ 4.14.12 A rebate of Rs. 0.55/unit and Rs. 0.85/unit in energy charges is applicable for incremental monthly consumption w.r.t. corresponding month of FY 2018-19 (base year) for MIP (HT) and LIP consumers respectively. The incremental consumption for any month shall be worked out considering the consumption of the corresponding base month, i.e., an increase in the units consumed from the Licensee in any month of the current year (FY 2019-20) onwards compared to the same month in base year.”*

- iii) From the above-produced extract, it can be observed that the base year for incremental consumption rebate is fixed as FY 2018-19. However, it is submitted that the incremental consumption should be calculated on the basis of the immediately preceding year and not on one set base year.
- iv) The Petitioners, accordingly, propose to modify the base year (FY 2018-19) as defined in the order and to ***consider the preceding year as the base year*** for the computation of rebate on incremental consumption of MIP (HT) and LIP consumers for any year.

**(b) Change in definition/ particularisation of LIP consumers**

- i) The existing categorization of the LIP (HT-5) category of consumers, as per the latest applicable ARR and Tariff order for FY 2020-21 and FY 2021-22 dated 24.11.2021 is produced as under:

*“ SCL above 150 HP &/or having Contract/Maximum Demand above 125 kVA (HT-5)”*

- ii) The Petitioners, for the purpose of clarity and ease of understanding, hereby propose to remove “&” from the categorization defined for such consumers and modify the same as under:

*“SCL above 150 HP or having Contract/Maximum Demand above 125 kVA (HT-5)”*

**(c) Change in categorization of Tourism and Hospitality consumers**

- i) As a part of the recently announced budget of the State for FY 2022-23, the Hon'ble Chief Minister of Rajasthan, has made various announcements in order to provide benefits to the consumers of the State.

- ii) One such announcement is to consider the Tourism and Hospitality Sector as Industry Sector and to charge such consumers as per the approved tariff applicable for Industrial consumers as per applicable supply voltage instead of the presently applicable rates of Non-Domestic Category as approved by the Hon'ble Commission of the State.
- iii) The Petitioners accordingly request the Hon'ble Commission to categorize the Tourism and Hospitality Sector consumers, presently classified as Non-Domestic consumers to be classified in the Industrial Category of consumers.

**A8: WHEELING CHARGES**

8.1 This section describes the determination of wheeling charges as per the Regulation 86 of RERC (Terms and Conditions for Determination of Tariff) Regulations 2019, estimated voltage- wise losses in line with the RERC regulations and the projected ARR for FY-23.

8.2 The extract of Regulation 86 of the RERC (Terms and Conditions for Determination of Tariff) Regulations, 2019 has been summarized below:

*“For determination of Wheeling charges of a Distribution Licensee, shall be computed by deducting the following amounts from its aggregate revenue requirement worked out under Regulation 76 (1):*

- (a) Cost of power purchase as per Regulation 78,
- (b) Interest payable on security deposits of consumers,
- (c) Transmission & SLDC charges and
- (d) 10% of O&M expenses”

8.3 The projections of FY 23 as submitted in this petition have been considered for further calculation of wheeling charges in line with the Regulation 86 of RERC Terms and Conditions for Determination of Tariff, Regulation 2019. The projections for the Aggregate Revenue Requirement for Rajasthan Discoms for FY 23 have been shown in the following table:

**Table 43: ARR for FY 2022-23 (Rs Cr)**

S. No	Particulars	JVVNL	AVVNL	JdVVNL	Total
1	Power Purchase Expenses (net of ST PP) including transmission charges	17,715	12,475	15,953	46,143
2	Operation & Maintenance Expenses	2,283	1,828	2,243	6,354
3	Depreciation, including advance against depreciation	1,341	1,114	1,153	3,609
4	Interest on Loan Capital (Includes security deposit & interest on UDAY loan of GoR)	1,120	1,023	1,391	3,534
5	Interest on Working Capital	165	115	199	479
6	Interest on Regulatory Assets	2,184	1,440	2,446	6,070
7	Other debits	426	361	91	878
<b>8</b>	<b>Total Expenditure</b>	<b>25,235</b>	<b>18,356</b>	<b>23,477</b>	<b>67,067</b>
9	Return on Equity Capital	-			-
<b>10</b>	<b>Aggregate Revenue Requirement</b>	<b>25,235</b>	<b>18,356</b>	<b>23,477</b>	<b>67,067</b>
11	Less: Non-Tariff Income	392	467	544	1,403
12	Less: Income from wheeling charges	13	79	9	101
<b>13</b>	<b>Net Aggregate Revenue Requirement from Retail Tariff</b>	<b>24,830</b>	<b>17,810</b>	<b>22,924</b>	<b>65,564</b>

8.4 The components as specified under Regulation 86 of RERC (Terms and Conditions for Determination of Tariff) Regulation 2019 have been shown below for deduction from the ARR:

**Table 44: Components deducted from ARR for FY 2022-23 (Rs Cr)**

S. No.	Particulars	JVVNL	AVVNL	JdVVNL	Total
1	Cost of Power Purchase	15,555	11,011	14,185	40,751

S. No.	Particulars	JVVNL	AVVNL	JdVVNL	Total
2	Interest Payable on security Deposit of consumers	67	53	36	156
3	Transmission Charges	2,161	1,463	1,768	5,392
4	10% of O&M Expenses	228	183	224	635
<b>5</b>	<b>Total</b>	<b>18,011</b>	<b>12,711</b>	<b>16,214</b>	<b>46,935</b>

- 8.5 Considering the provisions mentioned in Regulation 86 of RERC (Terms and Conditions for Determination of Tariff) Regulation 2019, cost of wheeling for all three Discoms has been estimated and summarized in following table.

**Table 45: Cost of Wheeling for FY 2022-23 (Rs Cr)**

S. No.	Particulars	JVVNL	AVVNL	JdVVNL	Total
1	<b>Net Aggregate Revenue Requirement</b>	24,830	17,810	22,924	65,564
2	Cost of Power Purchase	15,555	11,011	14,185	40,751
3	Interest Payable on security deposit of consumers	67	53	36	156
4	Transmission Charges	2,161	1,463	1,768	5,392
5	10% of O&M Expenses	228	183	224	635
6	<b>Subtotal</b>	<b>18,011</b>	<b>12,711</b>	<b>16,214</b>	<b>46,935</b>
7	<b>Wheeling Charges</b>	<b>6,819</b>	<b>5,099</b>	<b>6,710</b>	<b>18,629</b>

- 8.6 Regulation 86 (2) mentions that cost of wheeling so worked out shall be apportioned supply voltage wise on the basis of fixed asset at each voltage level as per Regulation 86 (3) & (4):

*“(3) Payment of wheeling charges: Wheeling charges may consist of the following or any one or combination thereof:*

- a. *Fixed charge in Rs. per month per KW of contracted power.*
- b. *A charge in Rs. per KWh of energy wheeled separately for*
  - i. *Wire business*
  - ii. *Installation, operation and maintenance of meters, metering system and any other equipment at consumer’s premises.*
  - iii. *Billing & collection of payment*
  - iv. *Consumer services.*
- c. *Connectivity fee.*
- d. *Reactive energy charge / incentive*

*(4) While determining wheeling charges for open access customers, the total electricity wheeled on the licensees’ distribution system including his own shall be taken into account.”*

- 8.7 The Discoms also submit that, presently they do not have audited accounts for voltage wise assets. However, based on the engineering study of its network and study of methodology approved by other SERCs, the Petitioners have devised a basis of segregation of assets.

- 8.8 As per the present accounting practices of Rajasthan Discoms, it is difficult to segregate the GFA among the voltage levels directly. Moreover, voltage wise gross fixed asset register would also require the original cost of each asset to be determined, present cost after applying depreciation and allocation to voltage level. Thus, as mentioned earlier, the study is a time intensive exercise considering the quantum of work and data limitation.
- 8.9 The Petitioner requests the Hon'ble Commission to consider the apportionment of present value of fixed assets and losses based on the network cost, transformation capacity at 33 KV, 11 KV and LT level and system losses to determine the voltage wise wheeling charges and losses.
- 8.10 Considering the relevant provisions as mentioned above, the wheeling charges for open access consumers have been determined as per the following assumptions.

**Basis for Apportionment of network costs & losses at each voltage**

- i. Apportionment at 132 KV Level:** As per the provisions under Regulation 86 (2), the wheeling charges so worked out shall be apportioned supply voltage wise on the basis of fixed asset at each voltage level. The Discoms submit that at present they do not have any fixed assets at 132 KV Voltage level, however the Discoms help the open access consumers in installation of lines & poles and claim fee on account of customer service cost (mainly costs associated with metering, billing and collection at this voltage). Further, the Commission vide its order date 19<sup>th</sup> September 2006 has allowed the Discoms to charge wheeling charge @ 1 paise/kWh from EHT consumers to recover these costs.

The Discoms also submit that although the cost associated with metering, billing and collection at 132 KV level has increased but the Discoms do not propose any change in the wheeling charges at 132 kV level and request the Hon'ble Commission to consider Rs. 0.01/kWh at 132 KV level as the cost of providing customer service to 132 KV level consumers.

It is submitted that practically there is no apportionment of gross fixed assets at 132 KV level as the assets attributable to supply at 132 KV level include transformers (220/132 KV) and lines (132 KV). The transformers belong to RVPN and are considered in transmission charges. The Discoms submit that there are minor system losses at 132 KV level. The procurement of power happens at the periphery of Discom (i.e. GSSs of RVPN). Therefore, transmission charges & losses - whether inter-state or intra-state, have already been considered in determining cost of power purchase in the ARR and tariff petition for FY-21 and accordingly, distribution losses at 132 KV are considered as nil.

- ii. Apportionment at 33 KV, 11 KV and LT Level:** The cost of wheeling has been apportioned voltage wise on the basis of the length of network lines and transformation capacity for voltage wise segregation of GFA. Similar methodology is followed by other SERCs like MPERC, PSERC, etc.

Further, the RERC in its Order dated 19 September 2006 has also considered the voltage-wise length of lines and transformation assets as basis for apportionment of wheeling cost at all voltages. The relevant extract of the above-mentioned Order has been summarized below:

*“As current cost was to form only the basis of interse allocation of operating cost of distribution system among 33 KV, 11 KV & LT distribution systems, current cost of lines and substations, based on that of AVVNL, have been considered for the voltage wise line length plus substation of each Discom. Accordingly, percentile allocation of 33 KV, 11 KV & LT system, worked out as 11.81%, 53.14% and 35.04% has been considered.”*

It is also pertinent to mention here that to even out any difference due to geography and pace of development, the operational cost and sales for all Discoms has been considered together for apportionment at each voltage. This is in line with the methodology adopted by the Commission in Order dated 19 September 2006. The relevant extract of the above-mentioned Order has been summarized below:

*“Distribution system of three Vitran Nigam differs due to geographical conditions and pace of development. The present proportion may get altered in later years. Further, as apportionment is based on assumptions that may reflect the realistic values, so considering them separately for each Vitran Nigam may not be appropriate. Considering operational cost and sales for three Discoms together in determining wheeling charges, will even out differences.”*

8.11 The Discoms have used the following assumptions to segregate the assets into voltage levels as shown below:

- a. Network Statistics as on 31st March 2021 has been considered as the basis for segregation of assets and losses. 33 KV lines have been considered to constitute the assets at 33 KV level, both 11 KV lines and transformation capacity at 33/11 KV have been considered to constitute the assets at 11 KV level and both LT lines and transformation capacity at 11/0.4 KV have been considered to constitute the assets at LT level. These voltage-wise network statistics as on 31 March 2020 have been summarized in following tables.

**Table 46: Network Length in KM**

S. No.	Lines at Voltage Level (KV)	JVVNL	AVVNL	JdVVNL	Total
1	132	-	-	-	-
2	33	16,240	16,391	25,047	<b>57,678</b>
3	11	178,431	151,414	251,337	<b>581,182</b>
4	LT	159,819	194,249	163,996	<b>518,064</b>
	<b>Total</b>	<b>354,490</b>	<b>362,053</b>	<b>440,380</b>	<b>1,156,923</b>



**Table 47: Network Transformation Capacity in MVA**

S. No	Transformation Capacity at Voltage Level (KV)	JVVNL	AVVNL	JdVVNL	Total
1	33/11	12,492	10,078	11,683	<b>34,253</b>
2	11/0.4	17,853	16,953	17,669	<b>52,475</b>

- b. The existing distribution network of Rajasthan is a mixture of old and new assets. Also, the Discoms do not have the fixed asset register for these assets owing to which the present cost of these assets cannot be ascertained. Therefore, the Discoms have apportioned the Gross Fixed Asset as on 31 March 2021 in proportion to the cost of voltage wise distribution lines and transformation capacity as determined through cost estimates from Store Rates issued on the 1<sup>st</sup> April, 2021.
- c. Estimated cost of single circuit dog conductor having span of 66 meters with 9 meter PCC pole line and single circuit weasel conductor having span of 66 meters with 8 meter PCC pole line has been considered for reckoning the average line cost of 33 KV lines and 11 KV lines respectively.
- d. Similarly, the estimated cost of three phase aerial bunch conductor line, for the supply of industrial connection, having span of 40 meter with 8 meter PCC pole line, has been considered for computation of average cost of LT lines.

**Table 48: Average cost of lines**

S.No.	Voltage Level	Per Unit Cost (Lakh Rs/Km)
1	33	7.94
2	11	2.94
3	LT	2.01

- e. Transformation cost of 33/11 KV substation has been determined by averaging the estimated cost of 3.15 MVA substation of all the three Discoms, calculated based on the Store Rates issued on the 1<sup>st</sup> April, 2021.  
For determination of transformation cost of 11/0.4 asset, forty percent of average cost of 33/11 KV substation has been considered.

**Table 49: Average transformation cost on substation**

S.No.	Transformation Capacity	Per Unit Cost (Lakh Rs/MVA)
1	33/11 KV	10.01
2	11/0.4	31.36

- f. On the basis of network statistics and average cost as mentioned above, the estimated voltage-wise network cost for Rajasthan Discoms is shown below:

**Table 50: Voltage-wise Infrastructure network cost (in Rs lakh)**

S No	Line at voltage Level (KV)	JVVNL	AVVNL	JdVVNL	Total
1	132	-	-	-	-
2	33	128,866	130,061	198,751	<b>457,678</b>
3	11	524,404	445,002	738,673	<b>1,708,079</b>
4	LT	320,858	389,980	329,244	<b>1,040,081</b>

- g. The cost of transformation capacity for three Discoms is summarized as under.

**Table 51: Infrastructure transformation capacity cost (in Rs lakh)**

S. No.	Transformation Capacity at Voltage Level (KV)	JVVNL	AVVNL	JdVVNL	Total
1	33/11	125,045	100,881	116,947	<b>342,873</b>
2	11/0.4	559,870	531,646	554,100	<b>1,645,616</b>

- h. The Discom-wise total infrastructure cost derived on the basis of the above data is as under

**Table 52: Total infrastructure cost derived (in Rs lakh)**

S. No.	Network at Voltage Level	JVVNL	AVVNL	JdVVNL	Total
1	132 KV Line Only	-	-	-	-
2	33 KV Lines Only	128,866	130,061	198,751	<b>457,678</b>
3	11 KV Lines and 33/11 KVS/S	649,449	545,882	855,620	<b>2,050,951</b>
4	LT Lines and 11/0.4 KV S/S	880,728	921,626	883,344	<b>2,685,697</b>
<b>Total (As per GFA)</b>		<b>1,659,043</b>	<b>1,597,569</b>	<b>1,937,715</b>	<b>5,194,327</b>

- i. The above apportionment of estimated cost at each voltage level is being determined to apportion the approved value of depreciable gross fixed assets (as on 31<sup>st</sup> March 2020) as submitted in the ARR and Tariff petition for FY 2022-23. This voltage wise break-up of fixed assets along with the network usage is worked out to calculate the wheeling charges at 33 KV, 11 KV and LT level.

**Table 53: Apportionment of original cost of Fixed Assets (in Rs lakh)**

S.No.	Network at Voltage Level	JVVNL	AVVNL	JdVVNL	Total
1	132 kV	-	-	-	-
2	33 kV	1,758	1,368	1,891	5,016
3	11 kV	8,858	5,741	8,140	22,739
4	LT	12,012	9,692	8,404	30,108
<b>Gross fixed Asset</b>		<b>22,628</b>	<b>16,801</b>	<b>18,435</b>	<b>57,863</b>

- j. Sales Projections for FY 2022-23 for Jaipur, Ajmer and Jodhpur Discoms have been apportioned to the voltage levels based on the approved character of service. The wire costs at higher voltage levels has been further apportioned to lower voltage levels, since the HT system is also being used for supply to the LT consumers. The apportioned sales as per above estimates and losses for EHT and HT consumers has been considered as per the Commission's order dated 19.09.2006 (in absence of voltage wise losses at EHT and HT level), to calculate the input energy at various voltage levels. The balance losses have been allocated to the LT level. The calculations are provided below for Jaipur, Ajmer and Jodhpur:

- k. Apportionment of sales of Rajasthan Discoms for FY 2022-23 are as under.

**Table 54: Apportionment of voltage-wise sales- JVVNL**

Voltage Level	Wheeling Cost	Input (MU)	Sale (MU)	Loss %	Assets (Rs Cr.)
220/132 KV	6,819	2,047	2,047	0.00%	-
33 KV		2,432	2,340	3.80%	1,758
11 KV		4,810	4,387	8.80%	8,858
LT		26,052	20,472	21.42%	12,012
<b>Total</b>			<b>34,295</b>	<b>35,342</b>	<b>17.25%</b>

**Table 55: Apportionment of voltage-wise sales- AVVNL**

Voltage Level	Wheeling Cost	Input (MU)	Sale (MU)	Loss %	Assets (Rs)
220/132 KV	5,099	1,510	1,510	0.00%	-
33 KV		1,794	1,726	3.80%	1,368
11 KV		3,548	3,236	8.80%	5,741
LT		18,410	15,102	17.97%	9,692
<b>Total</b>			<b>25,262</b>	<b>21,574</b>	<b>14.60%</b>

**Table 56: Apportionment of voltage-wise sales- JdVVNL**

Voltage Level	Wheeling Cost	Input (MU)	Sale (MU)	Loss %	Assets (Rs)
220/132 KV	6,710	1,888	1,888	0.00%	-
33 KV		2,243	2,157	3.80%	1,891
11 KV		4,436	4,045	8.80%	8,140
LT		24,402	18,878	22.64%	8,404
<b>Total</b>			<b>32,968</b>	<b>26,968</b>	<b>18.20%</b>

- l. It is pertinent to mention here that, Discoms have considered overall distribution losses at LT level which includes commercial losses which is line with methodology followed by PSERC and other SERCs also. Moreover, as open access can be availed by consumers having contract demand of 1 MVA and above, such consumers can be connected at voltages of 11 kV and above only. The Commission is requested to allow the segregation of losses at LT level as per the methodology proposed by the Discoms and followed by other SERCs.
- m. Based on the voltage wise asset segregation, the Discoms have allocated the wheeling cost to the asset at respective voltage levels which is depicted in the table below:

**Table 57: Wheeling cost allocation into assets at different voltage levels**

Wheeling Cost Allocation into Assets at different Voltage Levels (Rs Cr)	JVVNL	AVVNL	JdVVNL
33KV	530	415	688
11KV	2,669	1,742	2,963
LT	3,620	2,942	3,059
<b>Total</b>	<b>6,819</b>	<b>5,099</b>	<b>6,710</b>

- n. The assessed wheeling cost (as derived above) at each voltage level have been reallocated to the different voltage levels in the proportion of their contribution to energy input at each voltage levels:

**Table 58: Wheeling cost apportioned on the basis of network usage**

Derived wheeling cost, apportioned on the basis of usage of network (Rs Cr)	JVVNL	AVVNL	JdVVNL
33KV	39	31	50
11KV	416	282	456
LT	6,364	4,786	6,205
<b>Total</b>	<b>6,819</b>	<b>5,099</b>	<b>6,710</b>

- o. The apportioned wheeling cost as estimated above is used to calculate the wheeling charge applicable at each voltage level on the basis of estimated sales at each voltage level for Rajasthan.

8.12 The Discoms hereby submit that since uniform tariff is prevailing in the State of Rajasthan, therefore the proposal of average wheeling charges is to be made applicable as the wheeling charges for the open access users in the Rajasthan. Thus, the Discoms propose following charges at each voltage to maintain uniform wheeling tariff across the State.

**Table 59: Proposed Wheeling Charges for FY 2022-23 (Rs/kWh)**

Wheeling Charges at 132 KV Voltage Level	0.01
Wheeling Charges at 33 KV Voltage Level	0.19
Wheeling Charges at 11 KV Voltage Level	0.90

**A9: CROSS SUBSIDY SURCHARGE**

9.1 Cross-subsidy surcharge is payable by Open Access consumers as per section 42 of the Electricity Act 2003.

9.2 The petitioner has determined the cross-subsidy surcharge for FY-23 as per the formula provided by the Hon’ble Commission in RERC (Terms and Conditions for Determination of Tariff) Regulations, 2019. The relevant clause of the said regulations for cross-subsidy surcharge is as under.

**“90. Cross-subsidy Surcharge**

*The surcharge payable by consumers opting for open access on the network of the Distribution Licensee or transmission Licensee will be determined by the Commission as per the following Formula:*

$$S = T - [C / (1 - L / 100) + D + R]$$

*Where,*

*S is the surcharge;*

*T is the Tariff payable i.e., Average Billing Rate of the relevant category of consumers;*

*C is the per unit weighted average cost of power purchase by the Licensee;*

*D is the aggregate of transmission, distribution and wheeling charges applicable to the relevant voltage level;*

*L is the aggregate transmission, distribution and commercial losses, expressed as percentage applicable to the relevant voltage level;*

*R is the per unit cost of carrying regulatory assets or unfunded gap recognised by the Commission:*

*Provided that if S is computed to be negative as per above Formula, S shall be considered as zero.”*

9.3 The categories of consumers for whom cross-subsidy surcharge is applicable are Large Industries, Mixed Load-HT and Non-Domestic-HT. The details of the existing and proposed tariff for said categories of consumers at different voltage levels is provided below.

**Table 60: Tariff at different voltage levels for FY 2022-23**

Category	Tariff (Rs./kWh) (T)		
	11 kV	33 kV	132 kV
LIP	9.24	8.96	8.87
Mixed Load	9.48	9.20	9.10
NDS (HT)	12.86	12.47	12.34

- 9.4 The distribution losses at different voltage levels considered for calculation of cross-subsidy surcharge is as per the Commission’s Order No. **RERC 817/2016** dated **01.12.2016**. The transmission losses have been considered as per the losses for FY-23. The details of the same are provided below.

**Table 61: Transmission and Distribution losses considered for cross-subsidy surcharge**

Losses	11kV	33kV	132kV
Distribution	12.60%	3.80%	0%
Transmission	4.24%	4.24%	4.24%
<b>Total</b>	<b>16.84%</b>	<b>8.04%</b>	<b>4.24%</b>

- 9.5 The Open access consumers are only in the HT category. For these categories, the collection efficiency is 100% and as such there is no commercial loss. So, in calculation of ‘L’, commercial losses are taken as 0%.
- 9.6 Transmission cost per unit has been considered as per the projected transmission cost and sales in ARR for FY 2022-23. The aggregate transmission and wheeling cost at different voltage levels has been summarized below.

**Table 62: Wheeling and transmission costs for FY 2022-23**

Discom	Cost per unit (Rs/kWh)	11kV	33kV	132kV
<b>JVVNL</b>	Wheeling cost	0.90	0.19	0.01
	Transmission cost	0.74	0.74	0.74
	<b>Total</b>	<b>1.64</b>	<b>0.92</b>	<b>0.75</b>
<b>AVVNL</b>	Wheeling cost	0.90	0.19	0.01
	Transmission cost	0.68	0.68	0.68
	<b>Total</b>	<b>1.58</b>	<b>0.86</b>	<b>0.69</b>
<b>JdVVNL</b>	Wheeling cost	0.90	0.19	0.01
	Transmission cost	0.66	0.66	0.66
	<b>Total</b>	<b>1.56</b>	<b>0.84</b>	<b>0.67</b>
<b>Rajasthan</b>	Wheeling cost	0.90	0.19	0.01
	Transmission cost	0.69	0.69	0.69
	<b>Total</b>	<b>1.59</b>	<b>0.88</b>	<b>0.70</b>

- 9.7 The per unit carrying cost of regulatory assets (element ‘R’) for FY 2022-23 has been determined on the basis of approved interest on unfunded gap by the Commission. The summary of carrying cost is summarized below.

**Table 63: Carrying cost of regulatory assets for FY 2022-23**

Discom	Interest on unfunded gap (Rs Cr)	Total Sales (MU)	Carrying Cost (Rs./unit)
JVVNL	2,184	29,245	0.75
AVVNL	1,440	21,574	0.67
JdVVNL	2,446	26,968	0.91
<b>Rajasthan</b>	<b>6,070</b>	<b>77,787</b>	<b>0.78</b>

- 9.8 Based on the above cost parameters, the cross-subsidy surcharge for FY 2022-23 is summarized below.

**Table 64: Cross Subsidy Surcharge proposed for FY 2022-23**

Category	Voltage (kV)	Tariff (Rs./kWh)	Weighted average power purchase cost (Rs./kWh)	Aggregate T&D and commercial losses (%)	Aggregate transmission, distribution and wheeling charges (Rs./kWh)	Carrying cost of regulatory assets (Rs./kWh)	CSS (Rs./kWh)
<b>LIP</b>	132	8.87	4.17	4.22%	0.70	0.78	3.04
	33	8.96	4.17	8.02%	0.88	0.78	2.78
	11	9.24	4.17	16.82%	1.59	0.78	1.86
<b>Mixed Load-HT</b>	132	9.10	4.17	4.22%	0.70	0.78	3.27
	33	9.20	4.17	8.02%	0.88	0.78	3.01
	11	9.48	4.17	16.82%	1.59	0.78	2.10
<b>NDS-HT</b>	132	12.34	4.17	4.22%	0.70	0.78	6.51
	33	12.47	4.17	8.02%	0.88	0.78	6.28
	11	12.86	4.17	16.82%	1.59	0.78	5.47

## **A10: ADDITIONAL SURCHARGE**

10.1 The Petitioner submits the proposal for Additional Surcharge for FY 2022-23, based on the relevant data for FY 2020-21.

10.2 Section 43 of the Electricity Act, 2003 provides for a duty on the distribution licensees of the area of supply to develop and maintain an efficient, coordinated and economical distribution system and to supply electricity to all in the area in accordance with the provisions of the Act. Section 43 (1) of the Electricity Act reads as under:

*“Section 43. (Duty to supply on request): --- (1) I[Save as otherwise provided in this Act, every distribution] licensee, shall, on an application by the owner or occupier of any premises, give supply of electricity to such premises, within one month after receipt of the application requiring such supply:*

*Provided that where such supply requires extension of distribution mains, or commissioning of new sub-stations, the distribution licensee shall supply the electricity to such premises immediately after such extension or commissioning or within such period as may be specified by the Appropriate Commission: Provided further that in case of a village or hamlet or area wherein no provision for supply of electricity exists, the Appropriate Commission may extend the said period as it may consider necessary for electrification of such village or hamlet or area.*

*I[Explanation.- For the purposes of this sub-section, “application” means the application complete in all respects in the appropriate form, as required by the distribution licensee, along with documents showing payment of necessary charges and other compliances.]”*

10.3 To meet the universal supply obligation, Discoms have entered into long term PPAs with Generating Companies which inter-alia provide for payment of the guaranteed fixed charges payable irrespective of the fact whether Discoms are able to off take the entire power made available over the plant load factor.

10.4 In exercise of the powers under Section 181 of the Electricity Act, 2003, the State Commission has notified the Open Access Regulations, 2016, inter alia, providing for a person with contract demand of one MVA and above to draw electricity from sources other than the distribution licensees of the area through the Open Access.

10.5 Whenever any consumer opts for open access, the Petitioner continues to pay fixed charges to its contracted generation stations as per the PPAs. However, the Petitioner is not able to sufficiently recover such fixed cost obligation from the open access consumers. The cost recovered from fixed tariff schedule is less than the fixed costs incurred by the Petitioner which leads to the situation where the Petitioner is saddled with the stranded cost on account of its universal supply obligation.

10.6 To ensure that the burden of fixed cost of stranded power due to open access does not adversely impact the Discoms and is also not passed onto the general consumers at large, the Discoms are entitled to collect Additional Surcharge as per Section 42 (4) of the Electricity Act, 2003.



*“Section 42 (4): Where the State Commission permits a consumer or class of consumers to receive supply of electricity from a person other than the distribution licensee of his area of supply, such consumer shall be liable to pay an additional surcharge on the charges of wheeling, as may be specified by the State Commission, to meet the fixed cost of such distribution licensee arising out of his obligation to supply.”*

- 10.7 Regulation 17 of the RERC Open Access Regulations, 2016 also entitle the Petitioners to collect additional surcharge from consumers opting for open access.

*“17. Additional Surcharge*

*(1) A consumer availing open access and receiving supply of electricity from a person other than the Distribution Licensee of his area of supply shall pay to the Distribution Licensee an additional surcharge, in addition to wheeling charges and cross subsidysurcharge, to meet the fixed cost of such Distribution Licensee arising out of his obligation to supply as provided under sub-section (4) of section 42 of the Act.”*

- 10.8 The Hon’ble Commission in its order dated 24th August 2016 has determined the additional surcharge payable by open access consumers using the following methodology.

*“114. The lower of the back-down quantum and open access quantum has been considered as power surrendered due to open access for each of the 96 time blocks in a day, i.e., if the back down quantum is more than the open access quantum, the open access quantum has been considered, and if the back down quantum is less than the open access quantum, then the back down quantum has been considered as the quantum stranded due to Open Access Consumers not sourcing power from Discoms. This ensures that only the power stranded because of Open Access Consumers is taken.*

*115. Since the quantum of power surrendered every day is not from a specific power plant, and fixed cost associated with every power plant is different, the Commission has calculated an effective per unit fixed cost for every month by calculating weighted average fixed cost per unit based on the relevant tariff order of generating station against fixed charges and the quantum of energy drawn from each station for FY 2015-16 (up to Jan 2016).*

*116. To work out a total effective per unit fixed cost of generation backed down, the fixed costs for the individual power plant units as per tariff order have been taken in the same proportion as the proportion in which individual power plant units have contributed to the surrendering of power. As compared to the consideration of actual payments made to generators, taking the fixed costs as per tariff orders eliminates all apprehensions about the period for which payments pertain. Thus, the rates of fixed costs are consistent.*

*117. This fixed cost has been considered for calculating the amount of total fixed charges that the Petitioner has paid because of the total stranded power owing to corresponding open access for FY 2015-16 (up to Jan. 16).*

*118. To compute the Additional Surcharge recoverable, the effective per unit fixed cost obtained as explained above is multiplied to the quantum of stranded*

*power (in MUs) which has been considered to be surrendered because of consumers opting for open access.*

*119. To compute per unit Additional Surcharge to be levied on Open Access Consumers, it has been assumed that the Open Access scenario will remain the same in FY 2016-17. Therefore, the total Additional Surcharge recoverable for the FY 2015-16 (up to Jan.16) computed above has been spread over the total open access quantum for the FY 2015-16 (up to Jan.16) to arrive at Additional Surcharge of Rs. 0.80 per unit.”*

- 10.9 Accordingly, the computation of additional surcharge for FY 2022-23 is based on the following methodology.
- 10.10 The lower of the stranded power (backdown quantum + boxup quantum) and open access quantum has been considered as power surrendered due to open access for each of the 96 time blocks in a day, i.e., if the quantum of stranded power is more than the open access quantum, the open access quantum has been considered, and if the stranded power quantum is less than the open access quantum, then the stranded power quantum has been considered as the quantum stranded due to Open Access Consumers not sourcing power from Discoms. This ensures that only the power stranded because of Open Access Consumers is taken.
- 10.11 Since the quantum of power surrendered every day is not from a specific power plant, and fixed cost associated with every power plant is different, the Discoms have calculated an effective per unit fixed cost by calculating weighted average fixed cost per unit based on the relevant tariff order of generating station for FY 2020-21.
- 10.12 To work out a total effective per unit fixed cost of generation stranded, the fixed costs for the individual power plant units as per tariff order have been taken in the same proportion as the proportion in which individual power plant units have contributed to the surrendering of power. As compared to the consideration of actual payments made to generators, taking the fixed costs as per tariff orders eliminates all apprehensions about the period for which payments pertain. Thus, the rates of fixed costs are consistent.
- 10.13 This fixed cost has been considered for calculating the amount of total fixed charges that the Petitioner has paid because of the total stranded power owing to corresponding open access for FY 2020-21.
- 10.14 To compute the Additional Surcharge recoverable, the effective per unit fixed cost obtained as explained above is multiplied to the quantum of stranded power (in MUs) which has been surrendered because of consumers opting for open access.
- 10.15 To compute per unit Additional Surcharge to be levied on Open Access Consumers in the FY 2022-23, it has been assumed that the Open Access scenario will remain the same in FY 2022-23 as in FY 2020-21. Therefore, the total Additional Surcharge recoverable for the FY 2022-23 computed above has been spread over the total open access quantum for the FY 2020-21 to arrive at the payable Additional Surcharge.

10.16 For the sake of brevity, the daily block wise details of station wise power backed down, power boxed up and bilateral purchases along with net open access are being provided as **Annexures** to this petition in soft copy (CD).

10.17 In view of the above, Additional Surcharge for the FY 2022-23 based on data of FY 2020-21 is worked out as below:

a. Calculation of stranded power due to Open Access (MW):

Month	Backdown Aggregated over 96 Time Blocks	Boxup Aggregated over 96 Time Block	Boxup+ Backdown aggregated over 96 time blocks	Open Access Aggregated over 96 Time Blocks	Backdown due to Open Access Aggregated over 96 Time Blocks
	MW	MW	MW	MW	MW
	(1)	(2)	(4)	(5)	(6)
April	2,374,460	3,420,385	5,794,845	466,671	456,749
May	2,119,971	1,504,250	3,624,221	538,710	434,018
June	2,017,556	533,500	2,551,056	476,054	332,670
July	1,647,555	3,733,525	5,381,080	933,208	815,504
August	2,485,568	4,516,645	7,002,213	351,395	331,001
September	2,142,853	1,775,490	3,918,343	365,107	336,306
October	1,512,219	2,054,120	3,566,339	1,509,745	1,193,956
November	2,227,167	2,108,680	4,335,847	1,927,357	1,300,402
December	2,348,524	2,589,930	4,938,454	2,218,335	1,580,186
January	2,213,387	2,446,170	4,659,557	1,983,616	1,757,864
February	1,511,330	2,148,830	3,660,160	1,680,071	1,361,419
March	1,297,770	6,481,215	7,778,985	2,486,096	2,409,278
<b>Total</b>	<b>23,898,359</b>	<b>33,312,740</b>	<b>57,211,099</b>	<b>14,936,365</b>	<b>12,309,353</b>

Column 1, 2 & 3 represent sum of back-down, boxup and bilateral respectively for each time block of each day of the month in MW. Column 4 represents sum of net stranded capacity for each time block of each day of the month in MW. Column 5 represents sum of net open access respectively for each time block of each day of the month in MW. For Column 6, lower of net stranded capacity and open access has been considered for each time block separately

It may be observed that there is continuous stranded capacity over the entire period for which data has been submitted. It has to be noted that stranded capacity may vary in a day, a month and the year depending upon the load conditions and therefore, the overall situation needs to be considered. It is clearly demonstrable through the data that there is stranded capacity occurring on account of the consumers availing open access to source power from sources other than Discoms.

b. Calculation of effective fixed cost of generation stranded (Rs./kWh):

Station	Power Stranded in FY 2020-21 (MU)	% of surrender	Fixed charges (approved Rs./kWh)	Component of fixed cost
ANTA-GTPS	14	0.10%	0.71	0.00
AURIYA GTPS	21	0.15%	0.63	0.00
DADRI GTPS	48	0.34%	0.58	0.00
NCPP-2 (Dadri-II Thermal)	182	1.27%	1.46	0.02
UNCHAHAR 1	71	0.50%	1.08	0.01
UNCHAHAR 2	188	1.32%	1.00	0.01
UNCHAHAR 3	117	0.82%	1.35	0.01
UNCHAHAR 4	283	1.98%	1.56	0.03

**ARR AND INVESTMENT PLAN FOR FY 2021-22 AND FY 2022-23**

Station	Power Stranded in FY 2020-21 (MU)	% of surrender	Fixed charges (approved Rs./kWh)	Component of fixed cost
MEJA	47	0.33%	1.91	0.01
FARAKKA STPS	30	0.21%	0.82	0.00
TANDA II	148	1.04%	1.60	0.02
KAHALGAON-1 STPS	29	0.20%	1.05	0.00
KAHALGAON-2 STPS	110	0.77%	1.09	0.01
PTC DB POWER	87	0.61%	2.72	0.02
PTC MCCPL	67	0.47%	1.76	0.01
CGPL	318	2.23%	0.90	0.02
SINGRAULI STPS	145	1.01%	0.66	0.01
RIHAND 1 STPS	53	0.37%	0.84	0.00
RIHAND 2 STPS	55	0.39%	0.70	0.00
RIHAND 3 STPS	35	0.24%	1.44	0.00
Sasan	38	0.27%	0.17	0.00
DCCPP	1	0.01%	1.02	0.00
Ramgarh GTP(Stage-III)	0	0.00%	1.17	0.00
STPS-(I-VI)	6,071	42.45%	0.74	0.31
STPS-VII	97	0.68%	2.04	0.01
KTPS Unit(I-VII)	2,745	19.19%	0.61	0.12
ADANI POWER	1,057	7.39%	1.31	0.10
Rajwest Power	479	3.35%	1.70	0.06
CTPP 1,2,3,4	561	3.92%	1.44	0.06
NLC Barsingsar	5	0.03%	2.31	0.00
DCCPP SPOT	22	0.15%	1.86	0.00
VSLP	38	0.26%	1.86	0.00
CTPP-V & VI	355	2.48%	1.66	0.04
Kalisindh TPP-I & II	785	5.49%	1.73	0.09
<b>Total</b>	<b>14,303</b>	<b>100.00%</b>		<b>0.98</b>

c. Calculation of additional surcharge to be levied in the FY 2022-23:

	Open Access Aggregated over each time block	Total Open Access	Back-down due to Open Access Aggregated over 96 Time Blocks	Back-down due to Open Access	Effective Fixed Cost	Additional Surcharge
	MW	MU	MW	MU	Rs. / kWh	Rs. Cr.
Total	14,936,365	3,734	12,309,353	3,077	0.98	297.15
<b>Additional Surcharge Recoverable per unit considering same open access scenario for the next year (Rs./kWh) (Total Additional Surcharge/Total Open Access*10)</b>						<b>0.80</b>

10.18 In view of above submission, additional surcharge for FY 2022-23 has been computed as **Rs. 0.80/kWh**. The Petitioner requests the Hon'ble Commission to approve the levy of computed additional surcharge.

## **A11: COMPLIANCE TO DIRECTIVES**

- 11.1 The Hon'ble Commission in its ARR and Tariff Order for FY 2020-21 and FY 2021-22, dated 24.11.2021 had issued various directives to the Discoms. The compliance status of the issued directives is hereby attached as **Annexure C**.

**A12: PRAYER TO THE HONOURABLE COMMISSION**

- a) To invoke the power conferred under section 181 of Electricity Act, 2003 read along with the provisions of the RERC (Investment Approval) Regulation 2006 as well as RERC MYT Regulation, 2019, admit the petition seeking approval for the ARR, Capital Investment Plan, Additional Surcharge, Cross-Subsidy Surcharge, and Wheeling Charges for FY 2022-23.
- b) To pass the order as the Hon'ble Commission may deem fit and appropriate under the circumstances of the case and in the interest of justice.
- c) To condone any error/omission, delay and to give opportunity to rectify the same in submission.
- d) To permit the petitioner to make further submission, addition and alteration to this petition as may be necessary from time to time.