

**DELHI ELECTRICITY REGULATORY COMMISSION**  
**BUSINESS PLAN REGULATIONS, 2019**



**DELHI ELECTRICITY REGULATORY COMMISSION**

# DELHI ELECTRICITY REGULATORY COMMISSION

## NEW DELHI

### DELHI ELECTRICITY REGULATORY COMMISSION (BUSINESS PLAN) REGULATIONS, 2019

F.3(596)/Tariff/DERC/2019-20/6641 : In exercise of powers conferred under Section 181 read with Section 61 and Section 86(1)(b) of the Electricity Act, 2003 (Act 36 of 2003) and all other powers enabling it in this behalf and after previous publication, the Delhi Electricity Regulatory Commission hereby notifies the following Regulations namely:

#### **PART 1** **PRELIMINARY**

##### **1. SHORT TITLE, COMMENCEMENT AND EXTENT**

- (1) These Regulations shall be called the Delhi Electricity Regulatory Commission (Business Plan) Regulations, 2019.
- (2) These Regulations shall remain in force for a period of 3 (three) years i.e., for FY 2020-21, FY 2021-22 and FY 2022-23, unless reviewed earlier.
- (3) The period of validity of these Regulations may be extended by the Commission, as deemed fit and the operational norms may also be extended as per the principles laid down in these Regulations:  
Provided that the target for reduction in Distribution Loss for extended period shall be determined by the Commission based on the approved values by the Commission in the past, latest audited accounts, estimate of the actual for the relevant years, prudence check and other factors considered appropriate by the Commission.
- (4) These Regulations shall extend to the whole of National Capital Territory of Delhi.

##### **2. DEFINITIONS AND INTERPRETATION**

In these Regulations, unless the context otherwise requires, words and expressions used in these Regulations shall have the same meaning as defined in *Delhi Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2017*; Words and expressions used but not defined in these Regulations, shall have the same meaning as assigned to it in the Electricity Act 2003 or any other law framed under the Act by the Commission.

**PART 2**  
**BUSINESS PLAN FOR GENERATING ENTITY**

**3. RATE OF RETURN ON EQUITY**

Return on Equity in terms of Regulation 4(1) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for Generating Entity shall be computed at the Base Rate of 14.00% on post tax basis:

Provided that the Equity for the purpose of Return on Equity shall be lower of the Normative Equity determined as per Regulation 63 of the *DERC (Terms And Conditions For Determination of Tariff) Regulations, 2017* or Equity available as per Audited Financial Statement of the relevant year.

**4. TAX ON RETURN ON EQUITY**

The base rate of Return on Equity as allowed by the Commission under Regulation 3 of these Regulations, shall be grossed up with the Minimum Alternate Tax or Effective Tax Rate of the respective financial year in terms of Regulation 72 and 73 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*, as per the following formula:

$$\text{Rate of Return on Equity} = 14 / [(100 - \text{Tax Rate}) / 100]$$

where, Tax Rate is Minimum Alternate Tax (MAT) or Effective Tax Rate, as the case may be.

**Illustration-**

- (i) In case of the Generating Entity paying Minimum Alternate Tax (MAT), say @ 20.96% including surcharge and cess, then,

$$\text{Rate of Return on Equity shall be} = 14 / [(100 - 20.96) / 100] = 17.71\%$$

- (ii) In case of Generating Entity paying normal Corporate Tax including surcharge and cess:

- (a) Estimated Gross Income from generation for the year is, say Rs. 1000 Cr. And

- (b) If estimated Advance Tax for the year on above is Rs. 240 Cr., then, Effective Tax Rate for the year =  $240 / 1000 = 0.24$  or 24%, and Rate of Return on Equity shall be =  $14 / [(100 - 24) / 100] = 18.42\%$

**5. MARGIN FOR RATE OF INTEREST ON LOAN**

The rate of interest on loan for a financial year shall be Marginal Cost of Fund based Lending Rate (MCLR) of SBI as on 1<sup>st</sup> April of that financial year plus the Margin. The Margin, in terms of Regulation 4(2) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Generating Entity, is allowed as the difference between the weighted average rate of interest on actual loan portfolio and the MCLR as on 1<sup>st</sup> April of that financial year:

Provided that the Margin shall not exceed 5.00%, 4.25% and 3.50% for the first, second and third year of the control period, respectively:

Provided further that the rate of interest on loan (MCLR plus Margin) in any case shall not exceed approved base rate of return on equity i.e. 14.00%.

**6. OPERATION AND MAINTENANCE EXPENSES**

- (1) Normative Operation and Maintenance expenses in terms of Regulation 4(3) and Regulation 92 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Generating Entity shall be as follows:

**Table 1: O&M Expenses (Rs. Lakh/ MW)**

Station	2020-21	2021-22	2022-23
Gas Turbine Power Station (GTPS)	29.45	30.58	31.75
Pragati Power Station (PPS-I)	23.02	23.90	24.82

- (2) Additional Repair & Maintenance expenses on account of Dry Low NOx (DLN) burners and Sewage Treatment Plant (STP), if any, shall be allowed on actual basis during the Control Period after prudence check at the time of True Up on submission of documentary evidence.
- (3) The impact of difference of amount on account of actual implementation of Seventh Pay Revision and Interim Relief already considered for determination of norms for O&M Expenses, if any, shall be allowed separately in line with the methodology adopted for computation of norms for O&M Expenses, at the time of True up of ARR for relevant Financial year subject to prudence check.

**7. CAPITAL INVESTMENT PLAN**

- (1) The tentative Capital Investment plan for the Generation Entity for FY 2020-21 to FY 2022-23 is as follows:

**Table 2: Capital Investment plan (in Rs. Cr.)**

Sr. No.	Description	2020-21	2021-22	2022-23
1.	Gas Turbine Power Station (GTPS)	17.33	16.10	-
2.	Pragati Power Station (PPS-I)	2.82	51.81	-

- (2) The Capital investment and the respective scheduled date of commissioning, submitted by the Generating Entity in the Annual Tariff Petition, shall form the basis for computation of Annual Fixed Cost in terms of Regulation 99 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*:

Provided that any improvement in operational parameters resulting from commissioning of the scheme due to any Additional Capital Investment in existing generating stations shall form the basis for computing the Energy Charge Rate, from the scheduled date of commissioning of the respective schemes, in terms of Regulation 103 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.

- (3) Capital cost shall be trued up annually and financial impact on account of variation in projected capital cost in the tariff order vis-a-vis actual capital cost and scheduled date of commissioning vis-a-vis actual date of commissioning shall be dealt as per the provisions of Regulations 61, 62 and 150 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.

#### **8. NORMS OF OPERATION FOR GENERATING STATIONS:**

- (1) Normative Annual Plant Availability Factor and Normative Annual Plant Load Factor for existing generating stations of Delhi shall be as follows:

- I. Normative Annual Plant Availability Factor (NAPAF): 85%
- II. Normative Annual Plant Load Factor (NAPLF) : 85%

- (2) **GROSS STATION HEAT RATE (GHR)**

Gross Station Heat Rate for existing generating stations of Delhi shall be as follows:

**Table 3: Gross Station Heat Rate (GHR)**

S. No	Generating Station	Combined Cycle	Open Cycle
		(kCal/ kWh)	
1	Gas Turbine Power Station (GTPS)	2450	3125
2	Pragati Power Station (PPS-I)	2000	2900

**(3) AUXILIARY ENERGY CONSUMPTION**

Auxiliary Energy Consumption for existing Gas based Generating Stations of Delhi shall be as follows:

**Table 4: Auxiliary Energy Consumption (%)**

S.No	Mode of operation	Percentage
1	Combined Cycle	2.75%
2	Open Cycle	1.00%

**9. INCENTIVE**

- (1) Incentive to a Generating Entity or unit thereof shall be payable at the rate of 65 paise/ kWh for ex-bus scheduled energy during Peak Hours and at the rate of 50 paise/ kWh for ex-bus scheduled energy during other hours corresponding to scheduled generation in excess of ex-bus energy corresponding to Normative Annual Plant Load Factor (NAPLF) achieved on a cumulative basis in accordance with Regulation 8(1) of these Regulations: Provided that such incentive shall not be applicable on energy generated due to forced scheduling as certified by Delhi SLDC.
- (2) Peak hours and other hours shall be as per the slots defined in Order for Time of Day (ToD) Tariff issued in terms of the Regulation 133 & 153 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*: Provided that in the absence of a separate Order, the Peak hours shall be taken as specified in the Tariff Order of the Distribution Licensees.

**10. INCENTIVE SHARING MECHANISM WITH RESPECT TO OPERATIONAL PARAMETERS**

- (1) The incentive sharing mechanism with respect to operational parameters in terms of Regulation 149 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* shall be applicable on controllable parameters viz. Gross Station Heat Rate (GHR) and Auxiliary Energy Consumption.
- (2) The Net Gain shall be calculated as under -

$$\text{Net Gain} = (\text{Normative ECR} - \text{Actual ECR}) \times \text{Actual Generation}$$

Where,

Normative Energy Charge rate shall be computed on the basis of norms specified for Station Heat rate and Auxiliary Energy Consumption,

Actual Energy Charge rate shall be computed on the basis of actual Station Heat rate and Auxiliary Energy Consumption.

- (3) The Net Gain shall be computed as above on annual basis and shall be shared in 50:50 ratio between the Generating Entity and the beneficiaries.

**11. INCENTIVE SHARING MECHANISM FOR RE-FINANCING OF LOAN**

- (1) The incentive due to lower rate of interest on account of re-financing of loan in terms of Regulation 71 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* from FY 2020-21 to FY 2022-23 of the Generation Entity shall be computed as the product of total quantum of loan availed and difference of weighted average rate of interest on actual loans versus margin of 2.00%plus (+) SBI MCLR as on the first day of every financial year.
- (2) The incentive on account of re-financing of loan computed as per sub clause (1) above shall be shared equally between the Consumers and the Generation Entity.

**PART 3****BUSINESS PLAN FOR TRANSMISSION LICENSEE****12. RATE OF RETURN ON EQUITY**

Return on Equity in terms of Regulation 4(1) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for Transmission Licensee shall be computed at the Base Rate of 14.00% on post tax basis:

Provided that the Equity for the purpose of Return on Equity shall be lower of the Normative Equity determined as per Regulation 63 of the *DERC (Terms And Conditions For Determination of Tariff) Regulations, 2017* or Equity available as per Audited Financial Statement of the relevant year.

**13. TAX ON RETURN ON EQUITY**

The base rate of Return on Equity as allowed by the Commission under Regulation 12 of these Regulations shall be grossed up with the Minimum Alternate Tax or Effective Tax Rate of the respective financial year in terms of Regulation 72 and 73 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*, as per the following formula:

$$\text{Rate of Return on Equity} = 14 / [(100 - \text{Tax Rate}) / 100]$$

where, Tax Rate is Minimum Alternate Tax (MAT) or Effective Tax Rate, as the case may be.

Illustration-

- (i) In case of the Transmission Licensee paying Minimum Alternate Tax (MAT), say @ 20.96% including surcharge and cess, then, Rate of Return on Equity shall be =  $14 / [(100 - 20.96) / 100] = 17.71\%$
- (ii) In case of Transmission Licensee paying normal Corporate Tax including surcharge and cess:
  - (a) Estimated Gross Income from Transmission Business for the year is, say Rs. 1000 Cr. and,
  - (b) If estimated Advance Tax for the year on above is Rs. 240 Cr., then, Effective Tax Rate for the year =  $240 / 1000 = 0.24$  or 24% and Rate of Return on Equity shall be =  $14 / [(100 - 24) / 100] = 18.42\%$



**14. MARGIN FOR RATE OF INTEREST ON LOAN**

The rate of interest on loan for a financial year shall be Marginal Cost of Fund based Lending Rate (MCLR) of SBI as on 1<sup>st</sup> April of that financial year plus the Margin. The Margin, in terms of Regulation 4(2) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Transmission Licensee, is allowed as the difference between the weighted average rate of interest on actual loan portfolio and the MCLR as on 1<sup>st</sup> April of that financial year:

Provided that the Margin shall not exceed 5.00%, 4.25% and 3.50% for the first, second and third year of the control period, respectively:

Provided further that the rate of interest on loan (MCLR plus Margin) in any case shall not exceed approved base rate of return on equity i.e. 14.00%.

**15. OPERATION AND MAINTENANCE EXPENSES**

- (1) The Normative, Bay wise and Circuit kilometres wise, Operation and Maintenance Expenses of a Transmission Licensee, including own consumption of energy for Transmission Licensee's installations and offices, shall be as follows:

**Table 5: Bay wise Norms for HVAC (Rs. Lakh/bay)**

Voltage Levels	2020-21	2021-22	2022-23
400kV	55.493	57.621	59.830
220kV & below	17.207	17.867	18.552

**Table 6: Circuit km wise Norms for HVAC lines (Rs. Lakh/ckm.)**

Voltage Levels	2020-21	2021-22	2022-23
400kV	2.372	2.463	2.557
220kV & below	4.405	4.573	4.749

- (2) The O&M expenses for a particular financial year of the control period shall be allowed by multiplying the norms for O&M expenses with the respective average network capacity during the financial year (i.e. average of network capacity at the start of Financial year and network capacity at the end of Financial year) excluding spare bays and bus section bays.
- (3) The impact of difference of amount on account of actual implementation of Seventh Pay Revision and Interim Relief already considered for determination of norms for O&M Expenses, if any, shall be allowed separately in line with the methodology adopted for

computation of norms for O&M Expenses, at the time of True up of ARR for relevant Financial year subject to prudence check.

- (4) The Transmission Licensee shall claim Land Licene Fee and Security Expenses separately on actual basis at the time of true up of ARR for the relevant financial year subject to prudence check.

**16. CAPITAL INVESTMENT PLAN**

- (1) The tentative Capital Investment Plan for the Transmission Licensee for FY 2020-21 to FY 2022-23 is as follows:

**Table 7: Capital Investment Plan (Rs. Cr.)**

Sr. No.	Details of scheme	2020-21	2021-22	2022-23
1	<u>New Works</u>			
	400 kV			
a	Substations	-	-	623
b	Lines	-	-	80
	220 kV			
c	Substations	93	632	690
d	Lines	90	605	635
e=a+b+c+d	Sub Total	183	1,237	2,028
2	<u>Automation Works</u>			
a	400 kV	-	20	
b	220 kV	61	48	41
c=a+b	Sub Total	61	68	41
3	<u>Augmentation Works</u>			
a	400 kV	57	-	-
b	220 kV	266	215	40
c	66kV and below	68	89	45
d=a+b+c	Sub Total	391	304	85
4	<u>Land Cost including Civil</u>	27	27	-
5=1+2+3+4	Grand Total	662	1,636	2,154

- (2) Employee expenses and A&G expenses shall be allowed to be capitalized equivalent to lower of 30% of (total Employee Expenses and A&G Expenses) or actuals in a particular financial year.
- (3) The Capital investment and the respective scheduled date of commissioning, submitted by the Transmission Licensee in the Annual Tariff Petition, shall form the basis for computation of Annual Fixed Cost in terms of Regulation 111 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.

- (4) Capital cost shall be trued up annually and financial impact on account of variation in projected capital cost in the tariff order vis-a-vis actual capital cost and scheduled date of commissioning vis-a-vis actual date of commissioning shall be dealt as per the provisions of Regulations 61, 62 and 150 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.

**17. NORMS OF OPERATION FOR TRANSMISSION BUSINESS**

- (1) Normative Annual Transmission System Availability Factor (NATAF) for recovery of Annual Fixed Charges for AC System shall be considered at 98%.
- (2) Transmission System Availability shall be computed as per the formulae and methodology specified in Appendices-I, II and III of these Regulations.

**18. TRANSMISSION CHARGES FOR TRANSMISSION LICENSEE**

The Transmission Charges (inclusive of incentive) for AC system to be billed, in terms of Regulation 112 to 115 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*, for a calendar month for transmission system or part thereof shall be computed as follows:

- |    |  |  |
|----|--|--|
| a) | For TAFM $\leq$ 98%                    | $AFC \times (NDM/NDY) \times (TAFM/98\%)$    |
| b) | For TAFM: $98\% < TAFM \leq 99\%$ ,    | $AFC \times (NDM/NDY) \times (1)$            |
| c) | For TAFM: $99\% < TAFM \leq 99.75\%$ , | $AFC \times (NDM/NDY) \times (TAFM/99\%)$    |
| d) | For TAFM $\geq 99.75\%$ ,              | $AFC \times (NDM/NDY) \times (99.75\%/99\%)$ |

Where,

- AFC = Annual Fixed Cost specified for the year in Rupees  
 NATAF = Normative Annual Transmission availability factor, in per cent  
 NDM = Number of days in the month  
 NDY = Number of days in the year  
 TAFM = Transmission System availability factor for the month

**19. INCENTIVE SHARING MECHANISM FOR RE-FINANCING OF LOAN**

- (1) The incentive due to lower rate of interest on account of re-financing of loan in terms of Regulation 71 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* from FY 2020-21 to FY 2022-23 of the Transmission Licensee shall be computed as the product of total quantum of loan availed and difference of weighted average rate of interest on actual loans versus margin of 2.00%plus (+) SBI MCLR.
- (2) The incentive on account of re-financing of loan computed as per sub clause (1) above shall be shared equally between the Consumers and the Transmission Licensee.

**PART 4****BUSINESS PLAN FOR DISTRIBUTION LICENSEE****20. RATE OF RETURN ON EQUITY**

- (1) **Wheeling Business:** Return on Equity in terms of Regulation 4(1) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* shall be computed at the Base Rate of 14.00% on post tax basis.
- (2) **Retail Business:** Return on Equity in terms of Regulation 4(1) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* shall be computed at an additional Base Rate of 2.00% on post tax basis.
- (3) **Carrying Cost:** Return on Equity in terms of Regulation 2(16) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for computation of weighted average rate of interest for funding of Regulatory Asset/accumulated Revenue Gap through debt and equity shall be considered at 14.00% on pre-tax basis.
- (4) The Equity for the purpose of Return on Equity for Wheeling and Retail Business shall be lower of the Normative Equity determined as per Regulation 63 of the *DERC (Terms And Conditions For Determination of Tariff) Regulations, 2017* or Equity available as per Audited Financial Statement of the relevant year:  
Provided that balance Equity after funding requirement of capitalisation as per Audited Financial Statement shall be first utilised towards funding of accumulated Revenue Gap and thereafter investments, if any.

**21. TAX ON RETURN ON EQUITY**

The base rate of return on equity as allowed by the Commission under Regulation 20(1) and Regulation 20(2) of these Regulations shall be grossed up with the Minimum Alternate Tax or Effective Tax Rate of the respective financial year in terms of Regulation 72 and 73 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*, as per the following formula:

$$\text{Rate of Return on Equity} = 16 / [(100 - \text{Tax Rate}) / 100]$$

where, Tax Rate is Minimum Alternate Tax (MAT) or Effective Tax Rate, as the case may be.

**Illustration-**

- (i) In case of the Distribution Licensee paying Minimum Alternate Tax (MAT) say @ 20.96%

including surcharge and cess, then, Rate of Return on Equity shall be =  $16/[(100-20.96)/100]$   
= 20.24%

- (ii) In case of Distribution Licensee paying normal Corporate Tax including surcharge and cess:
- (a) Estimated Gross Income from Distribution business for the year, say is Rs. 1000 Cr. And
- (b) If estimated Advance Tax for the year on above is Rs. 240 Cr., then, Effective Tax Rate for the year =  $240/1000 = 0.24$  or 24%, and Rate of Return on Equity shall be =  $16/[(100-24)/100] = 21.05\%$ .

## 22. MARGIN FOR RATE OF INTEREST ON LOAN

- (1) The rate of interest on loan for a financial year shall be Marginal Cost of Fund based Lending Rate (MCLR) of SBI as on 1<sup>st</sup> April of that financial year plus the Margin. The Margin, in terms of Regulation 4(2) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* towards capitalisation of Assets, Working Capital and Regulatory Assets for Distribution Licensee, is allowed as the difference between the weighted average rate of interest on actual loan portfolio and the MCLR as on 1<sup>st</sup> April of that financial year:

Provided that the Margin shall not exceed 5.00%, 4.25% and 3.50% for the first, second and third year of the control period, respectively:

Provided further that the rate of interest on loan (MCLR plus Margin) in any case shall not exceed approved base rate of return on equity i.e. 14.00%.

- (2) The Distribution Licensee shall follow transparent mechanism to avail Loans and, to the extent possible, shall endeavour to invite open tender for availing Loans.

## 23. OPERATION AND MAINTENANCE EXPENSES

- (1) Normative Operation and Maintenance expenses in terms of Regulation 4(3) and Regulation 92 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Distribution Licensees shall be as follows:

**Table 8: Norms for O&M Expenses for BRPL for the Control Period**

Particulars	Unit	2020-21	2021-22	2022-23
66 kV Line	Rs. Lakh/ckt. km	3.855	4.002	4.156
33 kV Line	Rs. Lakh/ckt. km	3.855	4.002	4.156
11kV Line	Rs. Lakh/ckt. km	1.150	1.194	1.239
LT Line system	Rs. Lakh/ckt. km	6.148	6.384	6.629
66/11 kV Grid S/s	Rs. Lakh/MVA	1.033	1.073	1.114
33/11 kV Grid S/s	Rs. Lakh/MVA	1.033	1.073	1.114
11/0.415 kV DT	Rs. Lakh/MVA	2.563	2.661	2.763

**Table 9: Norms for O&M Expenses for BYPL for the Control Period**

Particulars	Unit	2020-21	2021-22	2022-23
66 kV Line	Rs. Lakh/ckt. km	4.857	5.043	5.236
33 kV Line	Rs. Lakh/ckt. km	4.857	5.043	5.236
11kV Line	Rs. Lakh/ckt. km	2.036	2.114	2.195
LT Line system	Rs. Lakh/Ckt. km	9.173	9.524	9.890
66/11 kV Grid S/s	Rs. Lakh/MVA	1.157	1.201	1.247
33/11 kV Grid S/s	Rs. Lakh/MVA	1.157	1.201	1.247
11/0.415 kV DT	Rs. Lakh/MVA	2.534	2.631	2.732

**Table 10: Norms for O&M Expenses for TPDDL for the Control Period**

Particulars	Unit	2020-21	2021-22	2022-23
66 kV Line	Rs. Lakh/ckt. km	3.079	3.197	3.320
33 kV Line	Rs. Lakh/ckt. km	3.079	3.197	3.320
11kV Line	Rs. Lakh/ckt. km	0.935	0.971	1.008
LT Line system	Rs. Lakh/ckt. km	7.338	7.620	7.912
66/11 kV Grid S/s	Rs. Lakh/MVA	0.954	0.991	1.029
33/11 kV Grid S/s	Rs. Lakh/MVA	0.954	0.991	1.029
11/0.415 kV DT	Rs. Lakh/MVA	1.489	1.546	1.605

**Table 11: Norms for O&M Expenses for NDMC for the Control Period**

Particulars	Unit	2020-21	2021-22	2022-23
66 kV Line	Rs. Lakh/ckt. km	3.079	3.197	3.320
33 kV Line	Rs. Lakh/ckt. km	3.079	3.197	3.320
11kV Line	Rs. Lakh/ckt. km	0.935	0.971	1.008
LT Line system	Rs. Lakh/ckt. km	7.338	7.620	7.912
66/11 kV Grid S/s	Rs. Lakh/MVA	0.954	0.991	1.029
33/11 kV Grid S/s	Rs. Lakh/MVA	0.954	0.991	1.029
11/0.415 kV DT	Rs. Lakh/MVA	1.489	1.546	1.605

- (2) The Distribution Licensee shall be allowed own (Auxiliary) consumption including e-vehicle charging stations installed at Distribution Licensee offices and sub-stations, at Zero Tariff for actual recorded consumption subject to a maximum of 0.25% of total sales excluding own consumption to its retail consumers for the relevant financial year as part of O&M expenses for the relevant year:
- (3) Actual recorded own (Auxiliary) consumption in excess of 0.25% of total sales excluding own consumption to its retail consumers for the relevant financial year, shall be billed at Non Domestic Tariff of respective year's Tariff Schedule and shall form part of revenue billed and collected for the same year.
- (4) The Distribution Licensee shall be allowed O&M expenses for a particular financial year of the control period by multiplying the norms for O&M expenses of that particular year with the respective average network capacity during the financial year i.e. (average of network

capacity at start of Financial year and network capacity at the end of Financial year).

- (5) The impact of difference of amount on account of actual implementation of Seventh Pay Revision and Interim Relief already considered for determination of norms for O&M Expenses, if any, shall be allowed separately in line with the methodology adopted for computation of norms for O&M Expenses, at the time of True up of ARR for relevant Financial year subject to prudence check.
- (6) The Distribution Licensee may claim the expenses for raising loan for working capital and regulatory assets under O&M expenses separately, subject to prudence check at the time of true up on submission of documentary evidence:  
Provided that if this amount has been included in the interest on working capital and/or Regulatory assets, the same shall not be allowed.
- (7) The Distribution Licensee may claim the legal expenses separately, subject to prudence check at the time of true up on submission of documentary evidence:  
Provided that the legal expenses on account of cases filed against the Orders or Regulations of the Commission before any Court and the legal claims (compensation/penalty) paid to the consumer, if any, shall not be allowed.
- (8) The Distribution Licensee shall allocate the O&M expenses on actual basis under the heads of lines and grid substation voltage wise as specified for determination of norms for O&M expenses:  
Provided that the Distribution Licensee shall submit the above details of O&M expenses within thirty (30) days from the end of finalization of audited accounts of the relevant year.

**24. CAPITAL INVESTMENT PLAN**

- (1) The tentative Capital Investment plan in terms of Regulation 4(4) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Distribution licensee shall be as follows:

**Table 12: Capitalisation for BRPL for the Control Period (in Rs. Cr.)**

Particulars	2020-21	2021-22	2022-23	Total
Capitalization	641	634	802	2077
Smart Meter	50	52	55	157
Less: Deposit Work	67	81	67	215
Total	624	605	790	2,019

**Table 13: Capitalisation for BYPL for the Control Period (in Rs. Cr.)**

Particulars	2020-21	2021-22	2022-23	Total
Capitalization	375	397	428	1,200
Smart Meter	33	33	35	101
Less: Deposit Work	36	48	69	153
Total	372	382	394	1,148

**Table 14: Capitalisation for TPDDL for the Control Period (in Rs. Cr.)**

Particulars	2020-21	2021-22	2022-23	Total
Capitalization	413	406	432	1,251
Smart Meter	102	87	74	263
Less: Deposit Work	50	50	50	150
Total	465	443	456	1,364

- (2) The distribution licensee shall take approval for capital investment schemes as per the provisions of Capital Investment Guidelines issued by the Commission from time to time.
- (3) Employee expenses and A&G expenses shall be allowed to be capitalized equivalent to lower of 10% of (total Employee Expenses and A&G Expenses) or actuals in a particular financial year.
- (4) The Licensee shall submit the quarterly Capital investment plan along with scheduled date of Commissioning in the Annual Tariff Petition for the relevant year, which shall form the basis for computing the Fixed Cost in terms of Regulation 130 (c) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.
- (5) The Distribution Licensee shall submit an application including details of actual Capitalisation on quarterly basis for physical verification and true up of capital cost within 1 (one) month of the completion of the relevant quarter.
- (6) The quarterly Capital Cost submitted by the Distribution Licensee as per aforesaid sub-Regulation (3) shall be trued up by the Commission and financial impact on account of variation in projected capital cost in the tariff order vis-a-vis actual capital cost & scheduled date of commissioning vis-a-vis actual date of commissioning shall be dealt under the Annual true up of relevant financial year as follows:
  - (a) Any excess tariff recovered on account of variation in projected capitalization in the tariff order vis-a-vis trued up capitalization by more than 10% during the year, shall be adjusted in the Revenue Gap/Surplus of the relevant year along with interest rate at 1.20 times of applicable Weighted Average Cost of Capital (WACC) of respective year:



Provided that any excess tariff recovered on account of variation in projected capitalization in the tariff order vis-a-vis trued up capitalization due to reasons beyond the control of the Distribution Licensee i.e., delay in 'In-principle' approval of the schemes, road cutting permission from the concerned agencies etc., shall be adjusted in the Revenue Gap/Surplus of the relevant year along with interest rate equal to applicable Weighted Average Cost of Capital (WACC) of respective year.

- (b) Any shortfall in tariff recovered on account of variation in projected capitalization in the tariff order vis-a-vis trued up capitalization by more than 10% during the year, shall be adjusted in the Revenue Gap/Surplus of the relevant year along with interest rate at 0.80 times of applicable Weighted Average Cost of Capital (WACC) of respective year.

## 25. TARGET FOR DISTRIBUTION LOSS

- (1) The Distribution Loss target in terms of Regulation 4(9)(a) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Distribution licensees shall be as follows:

**Table 15: Target for Distribution Loss for the Control Period**

Sr. No.	Distribution Licensee	2020-21	2021-22	2022-23
1	BSES Rajdhani Power Ltd.	8.10%	8.00%	7.90%
2	BSES Yamuna Power Ltd.	9.00%	8.75%	8.50%
3	Tata Power Delhi Distribution Ltd.	7.90%	7.80%	7.70%
4	New Delhi Municipal Council	9.00%	8.75%	8.50%

- (2) The amount for Overachievement/Underachievement on account of Distribution Loss target shall be computed as per the formula specified in the Regulation 159 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Distribution Licensee.
- (3) Any financial impact due to Underachievement on account of Distribution Loss target by the distribution licensee for the relevant year, (i.e. Actual Loss > Loss target), shall be to the account of distribution licensee as specified in Regulation 161 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.
- (4) Any financial impact due to Overachievement on account of Distribution Loss target by the distribution licensee for the relevant year shall be shared between the Distribution Licensee and Consumers as follows:

- i. in case actual Distribution Loss is between the loss target and loss target minus  $[50\% * (\text{Previous Year Target} - \text{Current Year Target})]$  for the relevant year shall be shared in the ratio of  $2/3^{\text{rd}}$  to Consumers and  $1/3^{\text{rd}}$  to the Distribution Licensee;
- ii. in case actual Distribution Loss is less than loss target minus  $[50\% * (\text{Previous Year Target} - \text{Current Year Target})]$  for the relevant year shall be shared in the ratio of  $1/3^{\text{rd}}$  to Consumers and  $2/3^{\text{rd}}$  to the Distribution Licensee.

*Explanation -*

Previous Year Distribution Loss Target - PYT

Current Year Distribution Loss Target - CYT

*CASE 1:* If Actual Loss > CYT, 100% of the distribution loss is to Distribution Licensee

*CASE 2:* If  $\text{CYT} > \text{Actual} > [\text{CYT} - 50\% * (\text{PYT} - \text{CYT})]$ ,  $1/3^{\text{rd}}$  of the incentive is to Distribution Licensee and  $2/3^{\text{rd}}$  of the incentive is to Consumers.

*CASE 3:* If  $\text{Actual} < [\text{CYT} - 50\% * (\text{PYT} - \text{CYT})]$ , incentive upto  $[\text{CYT} - 50\% * (\text{PYT} - \text{CYT})]$  is to be shared as  $1/3^{\text{rd}}$  to the Distribution Licensee and  $2/3^{\text{rd}}$  to the Consumers.

Remaining incentive is to be shared as  $2/3^{\text{rd}}$  to the Distribution Licensee and  $1/3^{\text{rd}}$  to the Consumers.

## **26. TARGET FOR COLLECTION EFFICIENCY**

- (1) The targets for Collection Efficiency for FY 2020-21 to FY 2022-23 of the Distribution Licensee shall be 99.50%.
- (2) The financial impact on account of Collection Efficiency target shall be computed as per the formula specified in Regulation 163 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Distribution Licensee.
- (3) The financial impact on account of over-achievement in terms of Regulation 164 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* for the Distribution Licensee, from 99.50% to 100% shall be shared equally between Consumers and the Distribution Licensees.

## **27. TARGET FOR RENEWABLE PURCHASE OBLIGATION**

- (1) The targets for Renewable Purchase Obligation (RPO) in terms of Regulation 124 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* of a Distribution Licensee from FY 2020-21 to FY 2022-23, shall be computed as a percentage of total sale

of power, to its retail consumers in its area of supply, excluding procurement of hydro power. The target for RPO shall be met through purchase of power from various Renewable Energy sources or purchase of Renewable Energy Certificates (*'REC'*) or combination of both, and shall be as follows:

**Table 16: Targets for Renewable Purchase Obligation**

Sr. No.	Distribution Licensee	2020-21	2021-22	2022-23
1	Non Solar target	10.25%	10.25%	10.50%
2	Solar target	7.25%	8.75%	10.50%
3	Total	17.50%	19.00%	21.00%

- (2) The Distribution Licensee shall comply with its RPO through procurement of Solar energy and Non-Solar energy:

Provided that on achievement of Solar RPO compliance as specified in aforesaid sub-Regulation (1) to the extent of 85% and above, remaining shortfall if any, can be met by excess Non-Solar energy/ Non-Solar REC purchased beyond non-Solar RPO for that particular year:

Provided further that on achievement of Non-Solar RPO compliance as specified in aforesaid sub-Regulation (1) to the extent of 85% and above, remaining shortfall if any, can be met by excess Solar energy/Solar REC purchased beyond Solar RPO for that particular year:

Provided also that the Distribution Licensee may purchase power from various Renewable Energy sources or RECs or combination of both for any shortfall in meeting their total RPO targets for any financial year within three months from the date of completion of the relevant financial year.

- (3) Renewable Energy generation recorded through Renewable Energy meters installed in the premises of net metering Consumers shall be deemed to be part of RPO of the Distribution Licensee as specified in *DERC (Net Metering for Renewable Energy) Regulations, 2014*, for the relevant year:

Provided that in case the annual generation from solar generation system recorded through Renewable Energy meters exceeds the Capacity Utilisation Factor (CUF) of 19%, the Distribution Licensee shall get the Renewable Energy meters tested by Independent third party, National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited meter testing lab.

- (4) The cost of Renewable Energy purchased by the Distribution Licensee through Power

Purchase Agreement approved by the Commission and the total power injected into the grid through net metering arrangement, in excess of RPO target shall be part of power purchase cost of the Distribution Licensee for the relevant year.

- (5) Non-compliance of the RPO targets by the Distribution Licensee shall attract penalty at the rate of 10% of the weighted average Floor Price of Solar and Non- Solar Renewable Energy Certificate, as specified by Central Electricity Regulatory Commission for the relevant year, for quantum of shortfall in RPO.
- (6) The amount of penalty imposed on the Distribution Licensee due to non-compliance of the RPO targets shall be reduced from the ARR during True up of the relevant Financial Year in terms of the Regulation 124 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.

**28. CONTINGENCY LIMIT FOR SALE OF POWER THROUGH DEVIATION SETTLEMENT MECHANISM (UNSCHEDULED INTERCHANGE CHARGES)**

- (1) The Contingency Limit for disposing off of Power through Deviation Settlement Mechanism in terms of the Regulation 152 (c) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* from FY 2020-21 to FY 2022-23 of the Distribution Licensees shall be 5% of Net Power Procured by the Distribution Licensee for the relevant month.
- (2) In case the Distribution Licensee disposes off more than 5% of the Net Power procured by the Licensee for the relevant month through Deviation Settlement Mechanism (Unscheduled Interchange Charges) than the rate of realisation through UI shall be considered at the average rate of power purchase/sale through exchange during same month for Delhi region.

**29. INCENTIVE SHARING MECHANISM FOR SALE RATE OF SURPLUS POWER**

- (1) The computation of incentive for Sale Rate of Surplus Power in terms of the Regulation 165 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* from FY 2020-21 to FY 2022-23 of the Distribution Licensees shall be as follows:
  - i. The variable cost of the generating station for which power is surplus and required to be sold through Power Exchanges shall be considered as the previous month's billed variable cost of such generating station.

- ii. The variable cost of the generating station for which power is surplus and required to be sold through Banking and Bilateral arrangements shall be considered as the previous month's billed variable cost of such generating station prevalent at the date of entering into such contracts:
- Provided that the normative cost of banking transactions shall be weighted average rate of variable cost of all long term sources.
- iii. The incentive shall be the product of rate difference (Actual Sale Rate- Variable Cost) and Quantum of Power actually sold during the month.
- (2) The incentive computed under sub-clause (1) above shall be shared between the Consumers and the Distribution Licensee in the following prescribed manner: -
- i. The incentive realisation upto 100% recovery of Average Fixed Cost per unit of all Generating sources of relevant year, projected by the Commission in the relevant Tariff Order, prorated to actual sale of Surplus Power shall be shared in the ratio of 2/3<sup>rd</sup> to the Consumers and 1/3<sup>rd</sup> to the Distribution Licensee.
- ii. The incentive realisation above 100% recovery of Average Fixed Cost per unit of all Generating sources of relevant year, projected by the Commission in the relevant Tariff Order, prorated to actual sale of Surplus Power shall be shared in the ratio of 1/3<sup>rd</sup> to the Consumers and 2/3<sup>rd</sup> to the Distribution Licensee.

**Illustration:-**

- a) Quantum of Sale of Surplus Power (A) = 1000 MU
- b) Applicable Variable Cost per Unit (B) = Rs. 2.00/kWh
- c) Actual Sale rate of Surplus Power (C) = Rs. 3.50/kWh
- d) Incentive  $[D=A*(C-B)] = Rs. 150 Cr.$
- e) Approved Average Fixed Cost per unit in the Tariff Order (E)= Rs.1.00/kWh

Incentive realisation upto 100% recovery of Average Fixed Cost per unit =  $(E*A) = Rs. 100 Cr.$  shall be shared in the ratio of 2/3<sup>rd</sup> (Rs. 67 Cr. ) to the Consumers and 1/3<sup>rd</sup> (Rs. 33 Cr. ) to the Distribution Licensees.

Incentive realisation above 100% recovery of Average Fixed Cost per unit =  $[D-(E*A)] = Rs. 50 Cr.$  shall be shared in the ratio of 1/3<sup>rd</sup> (Rs. 16.67 Cr. ) to the Consumers and 2/3<sup>rd</sup> (Rs. 33.33 Cr. ) to the Distribution Licensees.

Therefore,

- i. Total incentive to the Distribution Licensees = Rs. 66.33 Cr. (33+33.33)
- ii. Total incentive to the Consumers = Rs. 83.67 Cr. (67+16.67)

### 30. MECHANISM FOR RECOVERY OF POWER PURCHASE COST ADJUSTMENT CHARGES

The mechanism for recovery of Power Purchase Cost Adjustment Charges (PPAC) in terms of the Regulation 134 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* from FY 2020-21 to FY 2022-23 of the Distribution Licensee shall be as follows:

- (1) The Commission shall specify the detailed formula for computation of PPAC in the Tariff Order for the relevant year.
- (2) The Distribution Licensee shall compute the PPAC for any quarter as per the specified formula for that relevant year:  
Provided that a quarter refers to one-fourth of a year i.e., April, May and June (Q1); July, August and September (Q2); and October, November and December (Q3); January, February and March (Q4);
- (3) The PPAC computation of any quarter shall be equally spread and adjusted over subsequent quarter only:  
Provided that the Commission may allow to carry forward PPAC to more than one quarter in order to avoid any tariff shock to consumers in terms of Regulation 136 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.
- (4) The treatment of PPAC computation as per the specified formula shall be as follows:
  - a. in case PPAC does not exceed 5% for any quarter, the Distribution Licensee may levy PPAC at 90% of computed PPAC with prior intimation to the Commission without going through the regulatory proceedings.
  - b. in case PPAC exceeds 5% but does not exceed 10% for any quarter, the Distribution Licensee may levy PPAC of 5% and 75% of balance PPAC (Actual PPAC% - 5%) with prior intimation to the Commission without going through the regulatory proceedings.
  - c. in case PPAC exceeds 10% for any quarter, the Distribution Licensee may levy PPAC as per sub-regulation (a) and (b) as above without going through the regulatory proceedings and shall file an application for prior approval of the Commission for the differential PPAC claim (Actual PPAC% – 8.75%).

- (5) The Distribution Licensee shall upload the computation of PPAC on its website before the same is levied in the consumers' electricity bills.
- (6) Revenue billed on account of PPAC by the Distribution Licensee, without going through the regulatory proceedings, shall be trued up along-with the Power Purchase Cost of the relevant year and no Carrying Cost shall be allowed due to under-recovery of revenue for the same year.
- (7) Revenue billed on account of PPAC by the Distribution Licensee, without going through the regulatory proceedings, shall be trued up along-with the Power Purchase Cost of the relevant year and Carrying Cost shall be at 1.20 times of carrying cost rate on the excess revenue recovered for the same year.

**31. INCENTIVE SHARING MECHANISM FOR RE-FINANCING OF LOAN**

- (1) The incentive due to lower rate of interest on account of re-financing of loan in terms of Regulation 71 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* from FY 2020-21 to FY 2022-23 of the Distribution Licensee shall be computed as the product of total quantum of loan availed and difference of weighted average rate of interest on actual loans versus margin of 2.00% plus (+) SBI MCLR.
- (2) The incentive on account of re-financing of loan computed as per sub clause (1) above shall be shared equally between the Consumers and the Distribution Licensee.

**32. RATIO OF ALLOCATION OF ARR INTO WHEELING & RETAIL SUPPLY**

The ratio of allocation of ARR into Wheeling & Retail Supply Business in terms of the Regulation 4(9)(e) of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* shall be as follows:

**Table 17: Retail Business**

Particulars	BRPL	TPDDL	BYPL	NDMC
Cost of Power Purchase	100%	100%	100%	100%
Inter-State Transmission charges	100%	100%	100%	100%
Intra-state Transmission charges	100%	100%	100%	100%
SLDC fees and charges	100%	100%	100%	100%
Operation & Maintenance Costs	40%	38%	38%	38%
Depreciation (including AAD)	21%	23%	19%	23%
Return on Capital Employed	26%	28%	28%	28%
Income Tax	26%	28%	28%	28%
Non Tariff Income	85%	60%	85%	60%

**Table 18: Wheeling Business**

Particulars	BRPL	TPDDL	BYPL	NDMC
Operation & Maintenance Costs	60%	62%	62%	62%
Depreciation (including AAD)	79%	77%	81%	77%
Return on Capital Employed	74%	72%	72%	72%
Income Tax	74%	72%	72%	72%
Non-Tariff Income	15%	40%	15%	40%

**33. TREATMENT OF REVENUE GAP/SURPLUS**

- (1) Various components of ARR of the Distribution Licensee shall be trued up in terms of the Regulation 152 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017*.
- (2) The Revenue Gap/Surplus computed for the trued up year shall be adjusted against the closing balance of accumulated Revenue Gap for the relevant year:  
Provided that if there is no accumulated Revenue Gap or any Surplus left after adjusting against closing balance of accumulated Revenue Gap for the relevant year, same shall be adjusted in the ARR.

**34. Time Slots for Time of Day (ToD) Tariff**

The Commission may, in terms of the Regulation 133 & 153 of the *DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017* specify Time Slots for Time of Day (ToD) Tariff through separate Order.



**PART 5**  
**MISCELLANEOUS**

- 35. Issue of Regulations, Orders and Practice Directions:** Subject to the provision of the Act and these Regulations, the Commission may, from time to time, issue Orders and Practice directions with regard to the implementation of these Regulations and procedure to be followed on various matters, which the Commission has been empowered by these Regulations to direct in matters incidental or ancillary thereto.
- 36. Powers to remove difficulties:** If any difficulty arises in giving effect to any of the provisions of these Regulations, the Commission may, by a general or special order, not being inconsistent with the provisions of these Regulations or the Act, do or undertake to do things or direct the Licensee to do or undertake such things which appear to be necessary or expedient for the purpose of removing the difficulties.
- 37. Power of Relaxation:** The Commission may in public interest and for reasons to be recorded in writing, relax any of the provision of these Regulations.
- 38. Interpretation:** If a question arises relating to the interpretation of any provision of these Regulations, the decision of the Commission shall be final.
- 39. Saving of Inherent Powers of the Commission:** Nothing contained in these Regulations shall limit or otherwise affect the inherent powers of the Commission from adopting a procedure, which is at variance with any of the provisions of these Regulations, if the Commission, in view of the special circumstances of the matter or class of matters and for reasons to be recorded in writing, deems it necessary or expedient to depart from the procedure specified in these Regulations.
- 40. Enquiry and Investigation:** All enquiries, investigations and adjudications under these Regulations shall be done by the Commission through the proceedings in accordance with the provisions of the *Delhi Electricity Regulatory Commission Comprehensive (Conduct of Business) Regulations, 2001 as amended from time to time*.
- 41. Power to Amend:** The Commission, for reasons to be recorded in writing, may at any time vary, alter or modify any of the provision/(s) of these Regulations by amendment.

**Mukesh Wadhwa**  
**Secretary, DERC**

## Appendix-I

### Procedure for Calculation of Transmission System

#### Availability Factor for a Month

1. Transmission system availability factor for a calendar month (TAFM) shall be calculated by the respective transmission licensee, got verified by the concerned SLDC separately for each AC and HVDC transmission system and grouped according to sharing of transmission charges. Transmission System Availability shall be calculated separately for each Transmission System. For the purpose of calculation of TAFM:
  - a. AC transmission lines: Each circuit of AC transmission line shall be considered as one element.
  - b. Inter-Connecting Transformers (ICTs): Each ICT bank (three single phase transformer together) shall form one element.
  - c. Static VAR Compensator (SVC): SVC along with SVC transformer shall form one element. However, 50% credit to inductive and 50% to capacitive rating shall be given.
  - d. Bus Reactors/Switchable line reactors: Each Bus Reactors/Switchable line reactors shall be considered as one element.
  - e. HVDC Bi-pole links: Each pole of HVDC link along with associated equipment at both ends shall be considered as one element.
  - f. HVDC back-to-back station: Each block of HVDC back-to-back station shall be considered as one element. If associated AC line is not available, the HVDC back-to-back station block shall also be considered as unavailable.
  - g. In case of outage of a transmission element affecting evacuation of power from a generating station, outage hours shall be multiplied by a factor of 2.

2. The Availability of AC and HVDC portion of Transmission system shall be calculated as under:

$$\% \text{ TAFM for AC system} = \frac{n * AV_n + p * AV_p + q * AV_q + r * AV_r}{n + p + q + r} \times 100$$

Where,

$n$  = Total number of AC lines.

$AV_n$  = Availability of  $n$  number of AC lines.

$p$  = Total number of bus reactors/switchable line reactors

$AV_p$  = Availability of  $p$  number of bus reactors/switchable line reactors  $q$  = Total number of ICTs.

$AV_q$  = Availability of  $q$  number of ICTs.  $r$  = Total number of SVCs.

$AV_r$  = Availability of  $r$  number of SVCs.

3. The weightage factor for each category of transmission elements shall be as under:

(a) For each circuit of AC line – Surge Impedance Loading for Uncompensated line (SIL) multiplied by ckt-km.

SIL rating for various voltage level and conductor configuration is given in **Appendix-II**. However, for the voltage levels and/or conductor configurations not listed in Annexure-I, appropriate SIL based on technical considerations may be used for availability calculation under intimation to long-term transmission customers/DICs.

For compensated AC line, Surge Impedance Loading (SIL) shall be as certified by the SLDC considering the compensation on the line.

For shunt compensated line the reduced value of SIL shall be taken in accordance with the location of the reactor. Similarly in case of the lines with series compensation the higher SIL shall be taken as per the percentage of compensation.

(b) For each HVDC pole- The rated MW capacity \* ckt-km

(c) For each ICT bank – The rated MVA capacity

(d) For SVC- The rated MVAR capacity (inductive and capacitive)

(e) For Bus Reactor/switchable line reactors – The rated MVAR capacity.

(f) For HVDC back-to-back station connecting two grids- Rated MW capacity of each block.

4. The availability for each category of transmission elements shall be calculated based on the weightage factor, total hours under consideration and non-available hours for each element of that category. The formulae for calculation of Availability of each category of the transmission elements are as per **Appendix-III**.
5. The transmission elements under outage due to following reasons shall be deemed to be available:
  - i. Shut down availed for maintenance of another transmission scheme or construction of new element or renovation/upgradation/additional capitalization in existing system approved by the Commission. If the other transmission scheme belongs to the transmission licensee SLDC may restrict the deemed availability period to that considered reasonable by it for the work involved.
  - ii. Switching off of a transmission line to restrict over voltage and manual tripping of switched reactors as per the directions of SLDC.
6. Outage time of transmission elements for the following contingencies shall be excluded from the total time of the element under period of consideration:
  - i. Outage of transmission elements due to force majeure events. The onus of satisfying the SLDC that outage of transmission element was due to force majeure events shall rest with the Transmission Licensee.
  - ii. Outage caused by grid incident/disturbance not attributable to the transmission licensee, e.g. faults in substation or bays owned by other agency causing outage of the transmission licensee's elements, and tripping of lines, ICTs, HVDC, etc. due to grid disturbance. However, if the element is not restored on receipt of direction from SLDC while normalizing the system following grid incident/disturbance within reasonable time, the element will be considered not available for the period of outage after issuance of SLDC's direction for restoration.

**Appendix-II**  
**SURGE IMPEDANCE LOADING (SIL) OF AC LINES**

Sr. No.	Line Voltage (kV)	Conductor Configuration	SIL (MW)
1.	765	Quad Bersimis	2250
2.	400	Quad Bersimis	691
3.	400	Twin Moose	515
4.	400	Twin AAAC	425
5.	400	Quad Zebra	647
6.	400	Quad AAAC	646
7.	400	Triple Snowbird	605
8.	400	ACKC(500/26)	556
9.	400	Twin ACAR	557
10.	220	Twin Zebra	175
11.	220	Single Zebra	132
12.	132	Single Panther	50
13.	66	Single Dog	10

Appendix-III

FORMULAE FOR CALCULATION OF AVAILABILITY OF EACH CATEGORY OF TRANSMISSION ELEMENTS

$$AV_n(\text{Availability of AC lines}) = \frac{\sum_{i=1}^n \frac{W_i(T_i - T_{NAi})}{T_i}}{\sum_{i=1}^n W_i}$$

$$AV_q(\text{Availability of ICTs}) = \frac{\sum_{k=1}^q \frac{W_k(T_k - T_{NAk})}{T_k}}{\sum_{k=1}^q W_k}$$

$$AV_p(\text{Availability of Switched Bus reactors}) = \frac{\sum_{m=1}^s \frac{W_m(T_m - T_{NA m})}{T_m}}{\sum_{m=1}^s W_m}$$

$$AV_r(\text{Availability of SVCs}) = \frac{\left[ \sum_{l=1}^r \frac{0.5 W_{il} (T_{il} - T_{NAil})}{T_{il}} + \sum_{l=1}^r \frac{0.5 W_{cl} (T_{cl} - T_{ACL})}{T_{cl}} \right]}{\left[ \sum_{l=1}^r 0.5 W_{il} + \sum_{l=1}^r 0.5 W_{cl} \right]}$$

Where:

$W_i$  = Weightage factor for  $i^{\text{th}}$  transmission line

$W_k$  = Weightage factor for  $k^{\text{th}}$  ICT

$W_{il}$  &  $W_{cl}$  = Weightage factors for inductive & capacitive operation of  $l^{\text{th}}$  SVC

$W_m$  = Weightage factor for  $m^{\text{th}}$  bus reactor

$T_i$ ,  $T_m$ ,  $T_k$ ,  $T_{il}$ ,  $T_{cl}$ , - The total hours of  $i^{\text{th}}$  AC line,  $k^{\text{th}}$  ICT,  $l^{\text{th}}$  SVC (Inductive Operation),  $l^{\text{th}}$  SVC (Capacitive Operation),  $m^{\text{th}}$  Switched Bus Reactor during the period under consideration. (excluding time period for outages not attributable to transmission licensee for reasons given in Para 6 of the procedure)

$T_{NAi}$ ,  $T_{NAk}$ ,  $T_{NAil}$ ,  $T_{NAcl}$ ,  $T_{NA m}$  - The non-availability hours (excluding the time period for outages not attributable to transmission licensee taken as deemed availability as per Para 5 of the procedure) for  $i^{\text{th}}$  AC line,  $k^{\text{th}}$  ICT,  $l^{\text{th}}$  SVC (Inductive Operation),  $l^{\text{th}}$  SVC (Capacitive Operation),  $m^{\text{th}}$  Switched Bus Reactor.