

**EXPLANATION FOR THE NOTIFICATION
ON
ESCALATION FACTORS AND OTHER PARAMETERS
FOR
TARIFF BASED COMPETITIVE BIDDING FOR TRANSMISSION SERVICE,
DATED 30.3.2022**

In pursuance of the "Tariff based Competitive-bidding Guidelines for Transmission Service" (as amended up to 10th October, 2008) issued by Ministry of Power, Government of India, Clause 3.3.1.3 (a) of the Standard Request for Proposal (RFP), and Schedule 7 of the Standard Transmission Service Agreement (TSA) documents, the Central Electricity Regulatory Commission (CERC) notifies various escalation factors and other parameters, every six months, for the purpose of bid evaluation and payment. The relevant clauses of the above mentioned documents are as under:

(i) Clause 3.3.1.3 (a) in the Standard RFP document states the following:

"For the purpose of comparison of the Financial Bids, the Quoted Escalable Transmission Charges of each bidder shall be uniformly escalated as per the escalation rate mentioned below. However, for the purpose of actual payment of Transmission Charges, such escalation rate shall be applied as per the provisions of the TSA.

Sr. No.	Head	Value
1	<i>Annual Escalation rate applicable to Quoted Escalable Transmission Charges</i>	<i>This shall be as per the rate notified by the CERC, applicable on the seventh day prior to the Bid Deadline</i>
2	<i>Discount rate for computation of Levelized Transmission Charges</i>	<i>This shall be as per the rate notified by the CERC as applicable for generation projects, applicable on the seventh day prior to the Bid Deadline"</i>

(ii) Schedule 7 of the Standard TSA states the following:

".....the value of the Escalation Index shall be computed by applying the per annum inflation rate specified by CERC for payment of Escalable Transmission Charges,"

2. In line with the above provisions, CERC is required to notify:

- (i) annual escalation rate for escalable transmission charges for the purpose of evaluation;
- (ii) discount rate for computation of levelized transmission charges for evaluation; and
- (iii) annual inflation rate for escalable transmission charges for the purpose of payment.

3. While determining the rates mentioned in paragraph 2(i) and paragraph 2(iii) for the present notification, i.e., applicable for the period from 1.4.2022 to 30.9.2022, the methodology that was used by the Commission for the notification dated 1.2.2012 [*in the context of "Tariff based Competitive-bidding Guidelines for Transmission Service" (as amended up to 10th October, 2008) issued by Ministry of Power, Government of India, Clause 3.3.1.3 (a) of the Standard Request for Proposal (RFP), and Schedule 7 of the Standard Transmission Service Agreement (TSA) documents*] has been used. For determining the rate mentioned in paragraph 2(ii), the methodology that was used for the notification dated 31.05.2021 [*in the context of Escalation Rates for the purpose of Evaluation as per the Competitive-bidding Guidelines dated 22.7.2020 read with amendment dated 3.11.2020*] has been used. The computation of the escalation factors and other parameters for evaluation and payment is provided in the following paras.

3. Escalation Factors and other parameters for the purpose of evaluation

3.1 Escalation rate for escalable transmission charges for evaluation

The escalation rate to be applied to the quoted escalable transmission charges has been computed based on the time series data on Wholesale Price Index (WPI) and Consumer Price Index- Industrial Workers (CPI-IW) for the past 12 years i.e. for the period from 2010 to 2021. The data on WPI and CPI has been used as published by the Ministry of Commerce & Industry and Labour Bureau, respectively. Composite series has been developed assigning 45% weight to WPI and 55% weight to CPI, which then has been used for computing the escalation rate. Formula used for computing the escalation rate and computation of the escalation rate is as under:

e: annual escalation rate in percentage = $g \times 100$, where:

g: escalation factor = $[\exp\{\{(6 \times \sum_{t=2}^n (t-1) \times \ln R_t\} / \{(n-1) \times n \times (2n-1)\}\}] - 1$

$R_t = (Y_t / Y_1)$

$Y_t =$ "t"th observation

$Y_1 =$ initial observation

$n =$ number of observations

Composite Series: Average Index for Escalable Transmission Charges					
Year	WPI for All Commodities (Base 2011-12=100)	CPI for Industrial Workers (Base 2016=100)	Proportion of WPI Component in Total Cost	Proportion of CPI Component in Total Cost	Composite Series
2010	89.7	61.1	45%	55%	73.98
2011	98.2	66.5	45%	55%	80.78
2012	105.7	72.7	45%	55%	87.52
2013	111.1	80.6	45%	55%	94.33
2014	114.8	85.7	45%	55%	98.81
2015	110.3	90.8	45%	55%	99.56
2016	110.3	95.3	45%	55%	102.03
2017	114.1	97.6	45%	55%	105.03
2018	118.9	102.4	45%	55%	109.83
2019	121.2	110.2	45%	55%	115.15
2020	121.8	116.3	45%	55%	118.81
2021	135.0	122.0	45%	55%	127.84

ANNUAL ESCALATION RATE FOR ESCALABLE TRANSMISSION CHARGES FOR EVALUATION						
Year No. (t)	Year	Composite Series	Rt = Yt/Y1	Ln Rt	Year-1 (t-1)	Product [(t-1) x (Ln Rt)]
1	2010	73.98				
2	2011	80.78	1.09	0.09	1	0.09
3	2012	87.52	1.18	0.17	2	0.34
4	2013	94.33	1.28	0.24	3	0.73
5	2014	98.81	1.34	0.29	4	1.16
6	2015	99.56	1.35	0.30	5	1.48
7	2016	102.03	1.38	0.32	6	1.93
8	2017	105.03	1.42	0.35	7	2.45
9	2018	109.83	1.48	0.40	8	3.16
10	2019	115.15	1.56	0.44	9	3.98
11	2020	118.81	1.61	0.47	10	4.74
12	2021	127.84	1.73	0.55	11	6.02
A = Sum of "product" column						26.08
B = 6 times (6 x A)						156.46
C = [(n-1) x n x (2n-1)]; n = Number of Years of data = 12						3036.00
D = [B/C]						0.05
g (Exponential Factor) = Exponential (D) -1						0.0529
e = Annual Escalation Rate (%) = (g x 100)						5.29

The annual escalation rate computed in the above table (5.29%) is notified as escalation rate for escalable transmission charges for evaluation.

3.2 Discount rate for computation of levelized transmission charges for evaluation

Weighted Average Cost of Capital (WACC) has been considered as discount rate and computed as under:

$$\text{WACC} = [\text{Cost of Debt} + \text{Cost of Equity}]$$

Where,

$$\text{Cost of Debt} = [0.70 (\text{Market Rate of Interest}) \times (1 - \text{Corporate Tax Rate})]$$

$$\text{Cost of Equity} = [0.30 \{ \text{Risk Free Rate} + b (\text{Equity Market Risk Premium}) \}]$$

The computation of WACC can be seen in the following table.

DISCOUNT RATE TO BE USED FOR BID EVALUATION		
Weighted Values	Cost of Debt/Equity	WACC (%)
1. Cost of Debt		
[0.70(Cost of Debt)x(1-CTR)]	5.28	
2. Cost of Equity		
[0.30{(RF+b(ERP))}]	2.82	
Discount Rate (1+2)		8.09
Assumptions used for computing the Discount Rate		
Components of Debt/Equity		Assumptions (%)
Debt		70.00
Equity		30.00
Corporate tax rate for the assessment year 2022-23 (Effective tax rate, i.e., inclusive of cess and surcharge)		25.17
Risk Free Rate (RF)		6.26
Beta Value (b)		0.76
Equity Market Risk Premium (ERP)		4.15
Cost of Debt		10.07
Cost of Equity		9.39

The Debt and Equity of 70:30 has been assumed based on CERC norms on Debt and Equity in its Tariff Regulations 2019-24. The effective corporate tax rate (i.e. inclusive of surcharge and cess) proposed in the GOI Budget for the year 2022-23 has been used as corporate tax rate while computing the cost of debt.

While calculating the cost of debt, the market rate of interest is being linked to the marginal cost of funds-based lending rate (MCLR) that refers to the minimum interest rate of a bank below which it cannot lend, except in some cases allowed by the RBI. The

market rate of interest for the year 2021 is taken as the MCLR (8.07%, i.e., average of MCLR of five major banks) + 200 basis points. The 200 basis points have been considered as per the methodology used for the notification dated 31.05.2021 (*in the context of Escalation Rates for the purpose of Evaluation as per the competitive bidding guidelines dated 22.7.2020 read with amendment dated 3.11.2020*). Accordingly, the market rate of interest has been taken as 10.07%.

10-year GOI securities rate for 2021 is being considered as the risk-free rate.

For the calculation of cost of equity, the market risk premium is assumed as the difference between the expected market return and the risk-free rate. Accordingly, the market risk premium in this Notification has been arrived at by subtracting the average risk-free rate for the last 12 years from the average rate of return on market portfolio over the past 12 years. Sensex values for the past thirteen years have been used to arrive at the rate of return on the market portfolio for the past 12 years. Historical approach has been adopted for arriving at the expected market return assuming the expected future return to be the same as past returns.

The beta value has been computed based on the data on Bombay Stock Exchange (BSE) Indices for Power Sector and Sensex for the year 2021.

The WACC computed in the above table (8.09%) is notified as discount rate for bid evaluation.

4. Inflation rate for escalable transmission charges for payment

Annual inflation rate for Escalable Transmission Charges for Payment has been computed based on the data on WPI and CPI for the period from January, 2021 to December, 2021. The data on WPI and CPI has been used as published by the Ministry of Commerce & Industry and Labour Bureau, respectively. Composite series has been developed based on WPI with 45% weight and CPI with 55% weight, which has been used for computing the inflation rate. The inflation rate has been computed as under:

ANNUAL INFLATION RATE FOR ESCALABLE TRANSMISSION CHARGES FOR PAYMENT			
Period	WPI for All Commodities (Base 2011-12=100)	CPI for Industrial Workers (Base 2016=100)	Composite Series*
Jan-21	126.5	118.2	121.9
Feb-21	128.1	119.0	123.1
Mar-21	129.9	119.6	124.2
Apr-21	132.0	120.1	125.5
May-21	132.9	120.6	126.1
Jun-21	133.7	121.7	127.1
Jul-21	135.0	122.8	128.3
Aug-21	136.2	123.0	128.9
Sep-21	137.4	123.3	129.6
Oct-21	140.7	124.9	132.0
Nov-21	143.7	125.7	133.8
Dec-21	143.3	125.4	133.5
Average Index (Jan 21-Jun 21)			124.66
Average Index (Jul-21 -Dec-21)			131.02
Half-Yearly Inflation			5.11%
Annual Inflation			10.21%
*Composite series using weight of 45% to WPI and 55% to CPI-IW.			

The annual inflation rate computed in the above Table (10.21%) is notified as annual inflation rate for Escalable Transmission Charges for Payment.

5. Explanation for the notifications dated 1.2.2012 and 31.05.2021 (see CERC website www.cercind.gov.in) provides further details like date of announcement of the notification, sources of the data used for computing the escalation factors, application of inflation rate for the purpose of payment, etc.
