EXPLANATION TO
THE NOTIFICATION DATED 16.04.2026
ON
ESCALATION RATES AND OTHER PARAMETERS

In pursuance of paragraph 5.1 and paragraph 6.4 of the Resolution on "Guidelines for Tariff Based Competitive Bidding Process for Procurement of Round-The-Clock Power from Grid Connected Renewable Energy Power Projects, complemented with Power from Coal Based Thermal Power Projects" dated 22.07.2020 read with amendment dated 03.11.2020 issued by the Ministry of Power (MOP), the Central Electricity Regulatory Commission (CERC) is required to notify various escalation rates/factors and other parameters, for the purpose of bid evaluation. The escalation rates and other parameters are as under:

(1) Escalation Rate for Domestic Coal
(2) Escalation Rate for Domestic Gas
(3) Escalation Rate for Inland Transportation Charges of Coal
(4) Escalation Rate for Inland Transportation Charges of Gas
(5) Escalation Rate for Imported Coal
(6) Escalation Rate for Imported Gas
(7) Escalation Rate for Transportation of Imported Coal
(8) Escalation Rate for Transportation of Imported Gas
(9) Discount rate

2. The escalation factors and other parameters have been computed based on the methodology defined in the CERC Order dated 29.5.2021 in Petition No.7/SM/2021 and its Addendum dated 6.4.2022 (see CERC website www.cercind.gov.in).

3. **Escalation Factors for Bid Evaluation**

The method of Minimum Mean Square Error has been used for determining the escalation rates for the purpose of evaluation of bids. Using the Minimum Mean Square Error method on the time series data for the latest twelve calendar years, the annual escalation rates for bid evaluation have been computed with the formula given as under:

*e: annual escalation rate in percent =g*100, where:*

g: *escalation factor* $= [\exp\{\{(6 \times \Sigma n_{t=2} (t-1) \times \log_e(R_t)\}/\{(n-1) \times n \times (2n-1)\}\}]-1$

$R_t = (Y_t/Y_1)$

Y_t = *"t" th observation*

Y_1 = *initial observation*

n = number of observations

3.1 Escalation Rate for Domestic Coal (for Evaluation): The escalation rate for domestic coal has been computed based on the time series data on WPI for non-coking coal (G7 to G14) for the period from 2014 to 2025. The data on WPI for non-coking coal has been taken from the website of the Ministry of Commerce & Industry. The escalation rate for domestic coal has been computed as under:

Table-1: ESCALATION RATE FOR DOMESTIC COAL (FOR EVALUATION)

Year No. (t)	Year	WPI for Non-Coking Coal	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	2014	113.30				
2	2015	113.30	1.00	0.00	1	0.00
3	2016	118.80	1.05	0.05	2	0.09
4	2017	122.80	1.08	0.08	3	0.24
5	2018	136.40	1.20	0.19	4	0.74
6	2019	136.70	1.21	0.19	5	0.94
7	2020	136.80	1.21	0.19	6	1.13
8	2021	137.80	1.22	0.20	7	1.37
9	2022	137.80	1.22	0.20	8	1.57
10	2023	141.00	1.24	0.22	9	1.97
11	2024	143.30	1.26	0.23	10	2.35
12	2025	144.08	1.27	0.24	11	2.64
A = Sum of "product" column						13.05
B= 6 times (6 x A)						78.27
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.03
g (Exponential Factor) = Exponential (D) -1						0.03
e = Annual Escalation Rate (%) = g x 100						2.61

The annual escalation rate computed in the above table (2.61%) is notified as the escalation rate for domestic coal for evaluation.

3.2. Escalation Rate for Domestic Gas (For Evaluation): The escalation rate for domestic gas has been computed based on the time series data on consumer price of gas for the period from 2014 to 2025. The data has been collected from the Ministry of Petroleum & Natural Gas (MoPNG) and GAIL (India) Ltd. Composite series (Average consumer price of Gas), based on 90% weight to Consumer Price-Off-shore (Landfall point and On-

shore) and 10% weight to Consumer Price (North-Eastern States) has first been developed, which then has been used for computing the escalation rate as under:

Composite series: Average Consumer Price of Gas					
Year	Consumer Price-Off-shore (Landfall point and On-shore) (`/'ooo' cubic metre)	Consumer Price (North-Eastern States) (`/'ooo' cubic metre)	Proportion of off-shore Gas in total Gas Production	Proportion of North-East gas in Total Gas Production	Average Consumer Price of Gas (`/'000 cubic metre) (Yi)
2014	9754	5854	90%	10%	9364
2015	10482	6293	90%	10%	10063
2016	8359	5014	90%	10%	8024
2017	6396	3834	90%	10%	6140
2018	7630	4583	90%	10%	7325
2019	8851	5310	90%	10%	8497
2020	6524	3908	90%	10%	6263
2021	5512	3299	90%	10%	5291
2022	16922	10152	90%	10%	16245
2023	21009	12604	90%	10%	20169
2024	19579	11747	90%	10%	18795
2025	20771	12464	90%	10%	19940

Table-2: ESCALATION RATE FOR DOMESTIC GAS (FOR EVALUATION)						
Year No. (t)	**Year**	**Average Consumer Price of Gas (`/'000 cubic metre) (Yi)**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	2014	9364				
2	2015	10063	1.07	0.07	1	0.07
3	2016	8024	0.86	-0.15	2	-0.31
4	2017	6140	0.66	-0.42	3	-1.27
5	2018	7325	0.78	-0.25	4	-0.98
6	2019	8497	0.91	-0.10	5	-0.49
7	2020	6263	0.67	-0.40	6	-2.41
8	2021	5291	0.56	-0.57	7	-4.00
9	2022	16245	1.73	0.55	8	4.41
10	2023	20169	2.15	0.77	9	6.91
11	2024	18795	2.01	0.70	10	6.97
12	2025	19940	2.13	0.76	11	8.31
A = Sum of "product" column						17.21
B= 6 times (6 x A)						103.28
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.03
g (Exponential Factor) = Exponential (D) -1						0.035
e = Annual Escalation Rate (%) = g x 100						3.46

The annual escalation rate computed in the above table (3.46%) is notified as escalation rate for domestic gas for evaluation.

3.3 Escalation Rate for Inland Transportation Charges of Coal (For Evaluation):

The escalation rate for inland transportation charges for coal has been computed based on the time series data on coal freight rates for the period from 2014 to 2025. The data has been collected from the Ministry of Railways. Based on the data on coal freight rates applicable for 125 km, 500 km, 1000 km, 2000 km, and 3000 km has been used for computing the escalation rate for inland transportation of coal for distances up to 125 km, up to 500 km, up to 1000 km, up to 2000 km and beyond 2000 km respectively. While considering the data, the Circulars dated 30.06.2020 and 29.06.2021 issued by the Ministry of Railways regarding the long-lead concession @ 20% for coal transportation of distance more than 1400 kms w.e.f. 01.07.2020 till 31.12.2021 has been taken into account. The escalation rate for inland transportation charges for coal has been computed as under:

Table-3.1: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 125 KM) (FOR EVALUATION)

Year Number (t)	Year	Coal Freight Rate (`/Tonne) for 125 km	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	2014	192.10				
2	2015	202.55	1.054	0.053	1	0.053
3	2016	205.60	1.070	0.068	2	0.136
4	2017	247.68	1.289	0.254	3	0.762
5	2018	361.20	1.880	0.631	4	2.526
6	2019	389.60	2.028	0.707	5	3.536
7	2020	389.60	2.028	0.707	6	4.243
8	2021	389.60	2.028	0.707	7	4.950
9	2022	389.60	2.028	0.707	8	5.657
10	2023	389.60	2.028	0.707	9	6.364
11	2024	389.60	2.028	0.707	10	7.071
12	2025	389.60	2.028	0.707	11	7.778
A = Sum of "product" column						43.08
B= 6 times (6 x A)						258.46
C= (n-1) x n x (2n-1); n = Number of Years of data = 12						3036.00
D = B/C						0.09
g (Exponential Factor) = Exponential (D) -1						0.09
e = Annual Escalation Rate (%) = g x 100						8.89

Table-3.2: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 500 KM) (FOR EVALUATION)						
Year Number (t)	**Year**	**Coal Freight Rate (`/Tonne) for 500 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	2014	641.17				
2	2015	691.95	1.08	0.08	1	0.08
3	2016	705.86	1.10	0.10	2	0.19
4	2017	754.08	1.18	0.16	3	0.49
5	2018	977.68	1.52	0.42	4	1.69
6	2019	1054.70	1.64	0.50	5	2.49
7	2020	1054.70	1.64	0.50	6	2.99
8	2021	1054.70	1.64	0.50	7	3.48
9	2022	1054.70	1.64	0.50	8	3.98
10	2023	1054.70	1.64	0.50	9	4.48
11	2024	1054.70	1.64	0.50	10	4.98
12	2025	1054.70	1.64	0.50	11	5.47
A = Sum of "product" column						30.31
B= 6 times (6 x A)						181.89
C= (n-1) x n x (2n-1); n = Number of Years of data = 12						3036.00
D = B/C						0.06
g (Exponential Factor) = Exponential (D) -1						0.06
e = Annual Escalation Rate (%) = g x 100						6.17

Table-3.3: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 1000 KM) (FOR EVALUATION)						
Year Number (t)	**Year**	**Coal Freight Rate (`/Tonne) for 1000 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	2014	1231.94				
2	2015	1329.43	1.08	0.08	1	0.08
3	2016	1349.50	1.10	0.09	2	0.18
4	2017	1391.58	1.13	0.12	3	0.37
5	2018	1753.71	1.42	0.35	4	1.41
6	2019	1891.80	1.54	0.43	5	2.14
7	2020	1891.80	1.54	0.43	6	2.57
8	2021	1891.80	1.54	0.43	7	3.00
9	2022	1891.80	1.54	0.43	8	3.43
10	2023	1891.80	1.54	0.43	9	3.86
11	2024	1891.80	1.54	0.43	10	4.29
12	2025	1891.80	1.54	0.43	11	4.72
A = Sum of "product" column						26.06
B= 6 times (6 x A)						156.34
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						0.05
e = Annual Escalation Rate (%) = g x 100						5.28

Table-3.4: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 2000 KM) (FOR EVALUATION)						
Year Number (t)	**Year**	**Coal Freight Rate (`/Tonne) for 2000 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	2014	2281.78				
2	2015	2462.48	1.08	0.08	1	0.08
3	2016	2407.42	1.06	0.05	2	0.11
4	2017	2285.48	1.00	0.00	3	0.00
5	2018	2841.88	1.25	0.22	4	0.88
6	2019	3065.70	1.34	0.30	5	1.48
7	2020	2816.65	1.23	0.21	6	1.26
8	2021	2567.60	1.13	0.12	7	0.83
9	2022	3065.70	1.34	0.30	8	2.36
10	2023	3065.70	1.34	0.30	9	2.66
11	2024	3065.70	1.34	0.30	10	2.95
12	2025	3065.70	1.34	0.30	11	3.25
A = Sum of "product" column						15.85
B= 6 times (6 x A)						95.13
C= (n-1) x n x (2n-1); n = Number of Years of data = 12						3036.00
D = B/C						0.03
g (Exponential Factor) = Exponential (D) -1						0.03
e = Annual Escalation Rate (%) = g x 100						3.18

Table-3.5: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (BEYOND 2000 KM) (FOR EVALUATION)						
Year Number (t)	**Year**	**Coal Freight Rate (`/Tonne) for 3000 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	2014	2918.80				
2	2015	3149.90	1.08	0.08	1	0.08
3	2016	3051.93	1.05	0.04	2	0.09
4	2017	2835.48	0.97	-0.03	3	-0.09
5	2018	3511.37	1.20	0.18	4	0.74
6	2019	3787.90	1.30	0.26	5	1.30
7	2020	3409.11	1.17	0.16	6	0.93
8	2021	3030.32	1.04	0.04	7	0.26
9	2022	3787.90	1.30	0.26	8	2.09
10	2023	3787.90	1.30	0.26	9	2.35
11	2024	3787.90	1.30	0.26	10	2.61
12	2025	3787.90	1.30	0.26	11	2.87
A = Sum of "product" column						13.22
B= 6 times (6 x A)						79.32
C= (n-1) x n x (2n-1); n = Number of Years of data = 12						3036.00
D = B/C						0.03
g (Exponential Factor) = Exponential (D) -1						0.03
e = Annual Escalation Rate (%) = g x 100						2.65

The annual escalation rates computed in the above tables (8.89%, 6.17%, 5.28%, 3.18%, and 2.65%, respectively, are applicable for transportation of coal up to 125 km, up to 500 km, up to 1000 km, up to 2000 km and beyond 2000 km) are notified as annual escalation rates for inland transportation charges of coal for evaluation.

3.4 Escalation Rate for Inland Transportation Charges of Gas (For Evaluation): The escalation rate for inland transportation charges for gas has been computed based on the data on transportation charges of gas as notified by PNGRB for the period from 2014 to 2025. The data on transportation charges for gas along HVJ Integrated pipelines have been considered for the period from January 2014 to March 2023. With effect from 1.4.2023, PNGRB has started notifying (i) Unit natural gas pipeline tariff of Integrated Natural Gas Pipeline of GAIL India Ltd (GAIL integrated are - HVJ integrated, DUPL-DPPL, Mumbai UTU, Mumbai Trombay, DBNPL, DBPL, CHPL, South Gujrat Baroda NGPL and JHBDPL); and (ii) Unified Tariff for 23 connected natural gas pipelines, which are now part of National Gas Grid and is being charged from the customers. Consequent to the above developments and based on the availability of time series data, the escalation rate for inland transportation charges for gas has been computed using data on transportation charges for gas applicable for HVJ Integrated pipelines (from January 2014 to March 2023) and GAIL Integrated pipelines (April 2023 to December 2025). The escalation rate for inland transportation charges of gas for evaluation has been computed as under:

Table-4: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES OF GAS (FOR EVALUATION)

Year No. (t)	Year	Transportation charges along HVJ Integrated Pipelines/GAIL Integrated Pipelines (`/'ooo' cubic metre)	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	2014	856				
2	2015	856	1.00	0.00	1	0.00
3	2016	856	1.00	0.00	2	0.00
4	2017	856	1.00	0.00	3	0.00
5	2018	856	1.00	0.00	4	0.00
6	2019	1111	1.30	0.26	5	1.30
7	2020	1365	1.60	0.47	6	2.80
8	2021	1365	1.60	0.47	7	3.27
9	2022	1365	1.60	0.47	8	3.74
10	2023	1994	2.33	0.85	9	7.61
11	2024	2203	2.57	0.95	10	9.45
12	2025	2203	2.57	0.95	11	10.40
A = Sum of "product" column						38.57
B= 6 times (6 x A)						231.41

C= (n-1) x n x (2n-1); n = No. of Years of data = 12	3036.00
D = B/C	0.08
g (Exponential Factor) = Exponential (D) -1	0.079
e = Annual Escalation Rate (%) = g x 100	7.92

The annual escalation rate computed in the above table (7.92%) is notified as the escalation rate for inland transportation charges of gas for evaluation.

3.5 Escalation Rate for Imported Coal (For Evaluation): The escalation rate for imported coal has been computed based on the revised formula for the composite index for imported coal specified by CERC in Order dated 25th September 2023 in Petition No. 12/SM/2023. The time series data on the composite index for imported coal for the period from 2014 to 2025 have been considered for computing the escalation rate for imported coal for evaluation.

Table-5: ESCALATION RATE FOR IMPORTED COAL (FOR EVALUATION)

Component Index	Data Series	Annual Escalation Rate
Composite series using weight of 25% to API-3 (Price of South African Coal), 10% to API-5 (Price of Australian Coal), 16.25% to Argus ICI-3 (Price of Indonesian Coal), 16.25% to Argus ICI-4 (Price of Indonesian Coal), 16.25% to Platts CI 5000 GAR (Price of Indonesian Coal) and 16.25% to Platts CI 4200 GAR (Price of Indonesian Coal)	12 years (Jan 2014 to Dec 2025)	4.13%

The annual escalation rate computed in the above table (4.13%) is notified as the escalation rate for imported coal for evaluation.

3.6 Escalation rate for Imported Gas (For Evaluation): The escalation rate for imported gas has been computed based on the time series data on Japan/Korea Marker (JKM) published by Platts for the period from 2014 to 2025 as under:

Table-6: ESCALATION RATE FOR IMPORTED GAS (FOR EVALUATION)

Component Index	Data Series	Annual Escalation Rate
LNG Japan/Korea DES Spot Crg ($/MMBTU)	12 years (Jan 2014 to Dec 2025)	(-)2.17%

The annual escalation rate computed in the above table (-2.17%) is notified as the escalation rate for imported gas for evaluation.

3.7 Escalation Rate for Transportation of Imported Coal (For Evaluation): The escalation rate for transportation of imported coal has been computed based on the time series data on Singapore 380 CST Bunker Fuel Price for the latest 12 years for the period from 2014 to 2025 as under:

Table-7: ESCALATION RATE FOR TRANSPORTATION OF IMPORTED COAL (FOR EVALUATION)		
Component Index	**Data Series**	**Annual Escalation Rate**
Singapore 380 CST Bunker Price Index	12 years (Jan 2014 to Dec 2025)	-3.79%

The annual escalation rate computed in the above table (-3.79%) is notified as the escalation rate for the transportation of imported coal for evaluation.

3.8 Escalation Rate for Transportation of Imported Gas (For Evaluation): The escalation rate for transportation of imported gas has been computed based on the time series data on Singapore 380 CST Bunker Fuel Price for the latest 12 years for the period from 2014 to 2025 as under:

Table-8: ESCALATION RATE FOR TRANSPORTATION OF IMPORTED GAS (FOR EVALUATION)		
Component Index	**Data Series**	**Annual Escalation Rate**
Singapore 380 CST Bunker Price Index	12 years (Jan 2014 to Dec 2025)	-3.79%

The annual escalation rate computed in the above table (-3.79%) is notified as the escalation rate for the transportation of imported gas for evaluation.

4. Discount Rate for Bid Evaluation

The discount rate has been computed as under:

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

WACC = [Cost of Debt + Cost of Equity]

Where,

Cost of Debt = [0.70 (Market Rate of Interest) X (1-Corporate Tax Rate)]

Cost of Equity = [0.30 {Risk Free Rate + b (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)	**5.29**	
2. Cost of Equity		
0.30((RF+b(ERP))	**3.88**	
Discount Rate (1+2)		**9.17**
Assumptions used for computing the Discount Rate		
Components of Debt/Equity		**Assumptions (%)**
Debt		70
Equity		30
Corporate tax rate for the assessment year 2026-27 (Effective tax rate i.e. inclusive of cess and surcharge)		25.17
Risk Free rate (RF) for 2025		6.54
Beta Value (b)		1.14
Equity Market Risk Premium (ERP)		5.60
Cost of Debt		10.09
Cost of Equity		12.93

The Debt and Equity of 70:30 has been assumed based on CERC norms on Debt and Equity in its 2024-29 Tariff Regulations. The effective corporate tax rate (i.e., inclusive of surcharge and cess) proposed in the Union Budget 2026-27 has been used as a corporate tax rate while computing the cost of debt.

While calculating the cost of debt, the market rate of interest is linked to the marginal cost of funds-based lending rate (MCLR), which 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 2025 is taken as the MCLR (8.09%, 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 an amendment dated 3.11.2020*). Accordingly, the market rate of interest has been taken as 10.09%.

The 10-year GOI securities rate for 2025 has been considered as the risk-free rate.

For the calculation of the 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 the 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. A historical approach has been adopted for arriving at the expected market return, assuming the expected future return to be the same as the past returns.

The beta value has been computed based on the data on the Bombay Stock Exchange (BSE) Indices for Power Sector and Sensex for the year 2025.

The WACC computed in the above Table (**9.17%**) is notified as the discount rate.

5. The data series for API-3, API-5, Argus ICI-3, Argus ICI-4, Platts CI, Platts JKM, and Singapore 380 CST Bunker Fuel Price Index has been analysed by CERC. The data is not made available for public dissemination since it is paid for and is sourced on a single-user subscription.

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