EXPLANATION FOR THE NOTIFICATION ON ESCALATION FACTORS AND OTHER PARAMETERS, DATED 31.3. 2011

In pursuance of Clause 5.6 (vi) of Ministry of Power (MOP) Notification dated 19.1.2005 (as amended from time to time) on *"Guidelines for Determination of Tariff by Bidding Process for procurement of Power by Distribution Licensees",* the CERC notifies various escalation factors and other parameters, every six months, for the purpose of bid evaluation and payment. The Clause 5.6 (vi) of the guidelines updated as on 21.7.2010, is as under:

Following shall be notified and updated by the CERC every six months:

1. *Escalation rate for domestic coal. (Separately for evaluation and payment)*
2. *Escalation rate for domestic gas. (Separately for evaluation and payment)*
3. *Escalation rates for different escalable sub-components of energy charge for plants based on imported coal. (Separately for evaluation and payment)*
4. *Escalation rates for inland transportation charges for coal (Separately for evaluation and payment)*
5. *Escalation rates for inland transportation charges for gas (Separately for evaluation and payment)*
6. *Escalation rate for different escalable sub-components of energy charge for plants based on imported gas. (Separately for evaluation and payment)*
7. *Inflation rate to be applied to indexed capacity charge component.*
8. *Inflation rate to be applied to indexed energy charge component in cases of captive fuel source.*
9. *Discount rate to be used for bid evaluation.*
10. *Dollar-Rupee exchange variation rate. (For the purpose of evaluation)*
11. *Escalation for normative transmission charges (For the purpose of evaluation)"*

2. In addition to the above mentioned escalation factors and other parameters, the CERC notifies the matrix of transmission charges and losses as per Format 5.10 & 5.11 of the RFP of Standard Bidding Document of Case-1.

3. The explanation for the present notification applicable for the period from 1.4.2011 to 30.9.2011 is provided in the following paras.

4. The methodology that was used for computing the escalation factors and other parameters published in the previous Notification dated 28.12.2010 has been used for computing the escalation factors and other parameters published in the present notification. Basis for selection of prices/price indices, weights applied to various prices/ price indices, source of the data used for computing the escalation factors and other parameters for bid evaluation and payment for the current notification may be seen from *old methodology that was used for computing the escalation factors and other parameters published in the earlier notifications (Notification dated 24.11.2006 and Notification dated 3.7.2009)* available on the CERC website (www.cercind.gov.in).

5. Escalation Factors and other parameters for Evaluation

The annual escalation factors and other parameters for bid evaluation have been computed based on the time series data for latest twelve calendar years i.e. for the period from 1999 to 2010. The basic formulation used is:

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

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

$R_t = (Y_t/Y_1)$
Y_t = *'"t" th observation*
Y_1 = *initial observation*
n = *number of observations*

The annual escalation rate for parameters that require combining of two or more series in pre-determined proportion has been determined by combining each data point of two or more series in the pre-determined proportion to arrive at a composite new single series and then the annual escalation rate has been determined based on this composite new single series.

Computation of the escalation factors and other parameters for evaluation is as under:

(1) Escalation Rate for domestic coal (for Evaluation)

The escalation rate for domestic coal has been computed based on the time series data on Wholesale Price Index **(**WPI) for non-coking coal for the period from 1999 to 2010. The data on WPI for non-coking coal for the period 2005-09 has been taken from

the website of Ministry of Commerce & Industry and the data for the period prior to that has been arrived at by using conversion factor. 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	1999	64.77				
2	2000	67.07	1.04	0.03	1	0.03
3	2001	80.19	1.24	0.21	2	0.43
4	2002	81.38	1.26	0.23	3	0.69
5	2003	85.31	1.32	0.28	4	1.10
6	2004	96.50	1.49	0.40	5	1.99
7	2005	102.60	1.58	0.46	6	2.76
8	2006	102.50	1.58	0.46	7	3.21
9	2007	104.01	1.61	0.47	8	3.79
10	2008	112.70	1.74	0.55	9	4.99
11	2009	116.53	1.80	0.59	10	5.87
12	2010	131.20	2.03	0.71	11	7.77
A = Sum of "product" column						32.63
B= 6 times (6 x A)						195.77
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.06
g (Exponential Factor) = Exponential (D) -1						0.07
e = Annual Escalation Rate (%) = g x 100						6.66

The annual escalation rate computed in the above table (6.66%) is notified as escalation rate for domestic coal for evaluation.

(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 1999 to 2010. The data has been collected from Ministry of Petroleum & Natural Gas 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) (Rs./'ooo' cubic metre)**	**Consumer Price (North-Eastern States) (Rs./'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 (Rs./'000 cubic metre) (Yi)**
1999	2850	1700	90%	10%	2735
2000	2850	1700	90%	10%	2735
2001	2850	1700	90%	10%	2735
2002	2850	1700	90%	10%	2735
2003	2850	1700	90%	10%	2735
2004	2850	1700	90%	10%	2735
2005	3025	1810	90%	10%	2904
2006	3200	1920	90%	10%	3072
2007	3200	1920	90%	10%	3072
2008	3200	1920	90%	10%	3072
2009	3200	1920	90%	10%	3072
2010	5786	3472	90%	10%	5555

Table-2: ESCALATION RATE FOR DOMESTIC GAS (FOR EVALUATION)						
Year No. (t)	**Year**	**Average Consumer Price of Gas (Rs./'000 cubic metre) (Yi)**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	2735				
2	2000	2735	1.00	0.00	1.00	0.00
3	2001	2735	1.00	0.00	2.00	0.00
4	2002	2735	1.00	0.00	3.00	0.00
5	2003	2735	1.00	0.00	4.00	0.00
6	2004	2735	1.00	0.00	5.00	0.00
7	2005	2904	1.06	0.06	6.00	0.36
8	2006	3072	1.12	0.12	7.00	0.81
9	2007	3072	1.12	0.12	8.00	0.93
10	2008	3072	1.12	0.12	9.00	1.05
11	2009	3072	1.12	0.12	10.00	1.16
12	2010	5555	2.03	0.71	11.00	7.79
A = Sum of "product" column						12.10
B= 6 times (6 x A)						72.62
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.02
g (Exponential Factor) = Exponential (D) -1						0.02
e = Annual Escalation Rate (%) = g x 100						2.42

The annual escalation rate computed in the above table (2.42%) is notified as escalation rate for domestic gas for evaluation.

(3) Escalation Rate for different escalable sub-components of energy charge for plants based on imported coal (for Evaluation)

(3.1) Escalation Rate for Imported Coal sub-component (For Evaluation)

The escalation rate for imported coal sub-component has been computed based on the time series data on Barlow Jonker Index/Coalfax for the period from 1999 to 2010 as under:

Table-3.1: ESCALATION RATE FOR IMPORTED COAL COMPONENT (FOR EVALUATION)		
Component Index	**Data Series**	**Annual Escalation Escalation Rate**
Barlow Jonker Index/Coalfax	12 years (Jan 1999 to Dec 2010)	14.02%

(3.2) Escalation Rate for Transportation of Coal sub-component (For Evaluation)

The escalation rate for transportation of Coal sub-component has been computed based on the time series data on Singapore 380 CST Bunker Fuel Index for the period from 1999 to 2010 as under:

Table-3.2: ESCALATION RATE FOR TRANSPORTATION OF COAL COMPONENT (FOR EVALUATION)		
Component Index	**Data Series**	**Annual Escalation Escalation Rate**
Singapore Bunker Price Index	12 years (Jan 1999 to Dec 2010)	15.99%

(3.3) Escalation Rate for Inland Handling of Coal sub-component (For Evaluation)

The escalation rate for Inland Handling of coal sub-component has been computed based on the time series data on WPI and CPI for the period from 1999 to 2010. In case of WPI, the data for the period 2005-09 has been taken from the website of Ministry of Commerce & Industry and the data for the period prior to that has been arrived at by using conversion factor. Composite series (Average index for Inland Coal Handling Cost), using 60% weight to WPI and 40% weight to CPI-IW has first been developed, which then has been used for computing the escalation rate as under:

Composite Series: Average Index for Inland Coal Handling Cost					
Year	**WPI for All Commodities**	**CPI for Industrial Workers**	**Proportion of WPI Component in Total Cost**	**Proportion of CPI Component in Total Cost**	**Average Index for Inland Coal Handling Cost**
1999	76.79	92	60%	40%	82.71
2000	81.59	95	60%	40%	87.05

2001	85.80	99	60%	40%	91.02
2002	87.92	103	60%	40%	93.99
2003	92.60	107	60%	40%	98.37
2004	98.72	111	60%	40%	103.65
2005	104.04	116	60%	40%	108.73
2006	109.40	123	60%	40%	114.81
2007	114.86	131	60%	40%	121.22
2008	124.82	142	60%	40%	131.56
2009	127.47	157	60%	40%	139.32
2010	139.63	175.92	60%	40%	154.15

Table-3.3: ESCALATION RATE FOR INLAND HANDLING OF COAL COMPONENT (FOR EVALUATION)

Year No. (t)	Year	Average Index for Inland Coal Handling Cost	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	1999	82.71				
2	2000	87.05	1.05	0.05	1	0.05
3	2001	91.02	1.10	0.10	2	0.19
4	2002	93.99	1.14	0.13	3	0.38
5	2003	98.37	1.19	0.17	4	0.69
6	2004	103.65	1.25	0.23	5	1.13
7	2005	108.73	1.31	0.27	6	1.64
8	2006	114.81	1.39	0.33	7	2.30
9	2007	121.22	1.47	0.38	8	3.06
10	2008	131.56	1.59	0.46	9	4.18
11	2009	139.32	1.68	0.52	10	5.21
12	2010	154.15	1.86	0.62	11	6.85
A = Sum of "product" column						25.68
B= 6 times (6 x A)						154.11
C= (n-1) x n x (2n-1); n = No. 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						5.21

(4) Escalation rate for inland transportation charges for 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 1999 to 2010. The data has been collected from Ministry of Railways. The data on coal freight rate for 100 km, 500 km, 1000 km, 2000 km and 3000 km has been used for computing the escalation rate for inland transportation of coal for distance upto 100 km, upto 500 km, upto 1000 km, upto 2000 km and beyond 2000 km respectively. The escalation rate for inland transportation charges for coal has been computed as under:

Table-4.1: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 100 KM) (FOR EVALUATION)						
Year No. (t)	**Year**	**Coal Freight Rate (Rs/Tonne) for 100 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	98.85				
2	2000	101.30	1.02	0.02	1	0.02
3	2001	103.30	1.05	0.04	2	0.09
4	2002	107.25	1.08	0.08	3	0.24
5	2003	108.40	1.10	0.09	4	0.37
6	2004	114.70	1.16	0.15	5	0.74
7	2005	116.80	1.18	0.17	6	1.00
8	2006	116.80	1.18	0.17	7	1.17
9	2007	116.80	1.18	0.17	8	1.33
10	2008	123.03	1.24	0.22	9	1.97
11	2009	125.10	1.27	0.24	10	2.36
12	2010	125.10	1.27	0.24	11	2.59
A = Sum of "product" column						11.89
B= 6 times (6 x A)						71.33
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.02
g (Exponential Factor) = Exponential (D) -1						0.02
e = Annual Escalation Rate (%) = g x 100						2.38

Table-4.2: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 500 KM) (FOR EVALUATION)						
Year No. (t)	**Year**	**Coal Freight Rate (Rs/Tonne) for 500 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	373.08				
2	2000	382.33	1.02	0.02	1	0.02
3	2001	389.98	1.05	0.04	2	0.09
4	2002	393.78	1.06	0.05	3	0.16
5	2003	394.40	1.06	0.06	4	0.22
6	2004	417.20	1.12	0.11	5	0.56
7	2005	424.80	1.14	0.13	6	0.78
8	2006	429.83	1.15	0.14	7	0.99
9	2007	431.50	1.16	0.15	8	1.16
10	2008	454.60	1.22	0.20	9	1.78
11	2009	462.30	1.24	0.21	10	2.14
12	2010	462.55	1.24	0.21	11	2.36
A = Sum of "product" column						10.28
B= 6 times (6 x A)						61.67
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.02
g (Exponential Factor) = Exponential (D) -1						0.02
e = Annual Escalation Rate (%) = g x 100						2.05

Table-4.3: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 1000 KM) (FOR EVALUATION)						
Year No. (t)	**Year**	**Coal Freight Rate (Rs/Tonne) for 1000 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	724.58				
2	2000	742.55	1.02	0.02	1	0.02
3	2001	757.38	1.05	0.04	2	0.09
4	2002	754.20	1.04	0.04	3	0.12
5	2003	751.90	1.04	0.04	4	0.15
6	2004	795.33	1.10	0.09	5	0.47
7	2005	809.80	1.12	0.11	6	0.67
8	2006	823.98	1.14	0.13	7	0.90
9	2007	828.70	1.14	0.13	8	1.07
10	2008	873.10	1.20	0.19	9	1.68
11	2009	887.90	1.23	0.20	10	2.03
12	2010	888.38	1.23	0.20	11	2.24
A = Sum of "product" column						9.44
B= 6 times (6 x A)						56.65
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.02
g (Exponential Factor) = Exponential (D) -1						0.02
e = Annual Escalation Rate (%) = g x 100						1.88

Table-4.4: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (UP TO 2000 KM) (FOR EVALUATION)						
Year No. (t)	**Year**	**Coal Freight Rate (Rs/Tonne) for 2000 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	1279.08				
2	2000	1310.85	1.02	0.02	1	0.02
3	2001	1337.03	1.05	0.04	2	0.09
4	2002	1367.83	1.07	0.07	3	0.20
5	2003	1375.90	1.08	0.07	4	0.29
6	2004	1455.33	1.14	0.13	5	0.65
7	2005	1481.80	1.16	0.15	6	0.88
8	2006	1521.70	1.19	0.17	7	1.22
9	2007	1535.00	1.20	0.18	8	1.46
10	2008	1617.20	1.26	0.23	9	2.11
11	2009	1644.60	1.29	0.25	10	2.51
12	2010	1645.49	1.29	0.25	11	2.77
A = Sum of "product" column						12.20
B= 6 times (6 x A)						73.23
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.02
g (Exponential Factor) = Exponential (D) -1						0.02
e = Annual Escalation Rate (%) = g x 100						2.44

Table-4.5: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR COAL (BEYOND 2000 KM) (FOR EVALUATION)						
Year No. (t)	**Year**	**Coal Freight Rate (Rs/Tonne) for 3000 km**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	1624.33				
2	2000	1664.70	1.02	0.02	1	0.02
3	2001	1698.03	1.05	0.04	2	0.09
4	2002	1751.03	1.08	0.08	3	0.23
5	2003	1765.90	1.09	0.08	4	0.33
6	2004	1867.83	1.15	0.14	5	0.70
7	2005	1901.80	1.17	0.16	6	0.95
8	2006	1948.15	1.20	0.18	7	1.27
9	2007	1963.60	1.21	0.19	8	1.52
10	2008	2068.83	1.27	0.24	9	2.18
11	2009	2103.90	1.30	0.26	10	2.59
12	2010	2105.03	1.30	0.26	11	2.85
A = Sum of "product" column						12.72
B= 6 times (6 x A)						76.34
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						2.55

The annual escalation rates computed in the above tables (2.38%, 2.05%, 1.88%, 2.44% and 2.55% respectively applicable for transportation of coal upto 100 km, upto 500 km, upto 1000 km, upto 2000 km and beyond 2000 km) are notified as annual escalation rates for inland transportation charges of coal for evaluation.

(5) Escalation rate for inland transportation charges for gas (For Evaluation)

The Escalation Rate for Inland Transportation Charges for Gas has been computed based on the time series data on transportation charges of gas along HVJ pipeline charged by GAIL for the period from 1999 to 2010. The data has been collected from Ministry of Petroleum & Natural Gas and GAIL (India) Ltd. The escalation rate for transportation of natural gas for evaluation has been computed as under:

Table-5: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES FOR GAS (FOR EVALUATION)						
Year No. (t)	**Year**	**Transportation charges along HVJ pipeline (Rs./'ooo' cubic metre)**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	850				
2	2000	850	1.00	0.00	1	0.00
3	2001	850	1.00	0.00	2	0.00

4	2002	1075	1.26	0.23	3	0.70
5	2003	1150	1.35	0.30	4	1.21
6	2004	1150	1.35	0.30	5	1.51
7	2005	1150	1.35	0.30	6	1.81
8	2006	1150	1.35	0.30	7	2.12
9	2007	1150	1.35	0.30	8	2.42
10	2008	1031	1.21	0.19	9	1.73
11	2009	1010	1.19	0.17	10	1.72
12	2010	982	1.16	0.14	11	1.59
A = Sum of "product" column						14.82
B= 6 times (6 x A)						88.89
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						2.97

The annual escalation rate computed in the above table (2.97%) is notified as escalation rate for inland transportation charges of natural gas for evaluation.

(6) Escalation rate for different escalable sub-components of energy charge for plants based on imported gas

(6.1) Escalation rate for Imported Gas sub-component

The escalation rate for imported gas sub-component for evaluation has been computed based on the time series data on Japan JCC LNG prices for the period from 1999 to 2010. The data has been subscribed from Platts. The escalation rate for imported gas sub-component has been computed as under:

Table-6.1: ESCALATION RATE FOR IMPORTED GAS COMPONENT (FOR EVALUATION)

Component Index	Data Series	Annual Escalation Rate
Japan JCC LNG Price Index	12 years (Jan 1999 to Dec 2010)	12.55%

The annual escalation rate computed in the above table (12.55%) is notified as escalation rate for imported gas sub-component.

(6.2) Escalation rate for transportation of Gas sub-component

The escalation rate for transportation of Gas sub-component has been computed based on the time series data on FOB prices of 380cst bunker fuel for the period from 1999-2010. The data has been subscribed from Clarkson Research. The escalation rate for transportation of gas sub-component has been computed as under:

Table-6.2: ESCALATION RATE FOR TRANSPORTATION OF GAS COMPONENT (FOR EVALUATION)		
Component Index	**Data Series**	**Annual Escalation Rate**
Singapore Bunker Price Index	12 years (Jan 1999 to Dec 2010)	15.99%

The annual escalation rate computed in the above table (15.99%) is notified as escalation rate for transportation of imported gas for evaluation.

(6.3) Escalation Rate for inland handling of Gas sub-component

The escalation rate for inland handling of gas sub-component has been computed based on the time series data on Wholesale Price Index (WPI) and Consumer Price Index for industrial workers (CPI-IW) for the period from 1999 to 2010. In case of WPI, the data for the period 2005-09 has been taken from the website of Ministry of Commerce & Industry and the data for the period prior to that has been arrived at by using conversion factor. Composite series (Average index for Inland Gas Handling Cost), using 60% weight to WPI and 40% weight to CPI-IW has first been developed, which then has been used for computing the escalation rate as under:

Composite Series: Average Index for Inland Gas Handling Cost					
Year	**WPI for All Commodities**	**CPI for Industrial Workers**	**Proportion of WPI Component in Total Cost**	**Proportion of CPI Component in Total Cost**	**Average Index for Inland Gas Handling Cost**
1999	76.79	92	60%	40%	82.71
2000	81.59	95	60%	40%	87.05
2001	85.80	99	60%	40%	91.02
2002	87.92	103	60%	40%	93.99
2003	92.60	107	60%	40%	98.37
2004	98.72	111	60%	40%	103.65
2005	104.04	116	60%	40%	108.73
2006	109.40	123	60%	40%	114.81
2007	114.86	131	60%	40%	121.22
2008	124.82	142	60%	40%	131.56
2009	127.47	157	60%	40%	139.32
2010	139.63	176	60%	40%	154.15

Table-6.3: ESCALATION RATE FOR INLAND HANDLING OF GAS COMPONENT (FOR EVALUATION)						
Year No. (t)	**Year**	**Average Index for Inland Gas Handling Cost**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	82.71				
2	2000	87.05	1.05	0.05	1	0.05
3	2001	91.02	1.10	0.10	2	0.19
4	2002	93.99	1.14	0.13	3	0.38
5	2003	98.37	1.19	0.17	4	0.69
6	2004	103.65	1.25	0.23	5	1.13
7	2005	108.73	1.31	0.27	6	1.64
8	2006	114.81	1.39	0.33	7	2.30
9	2007	121.22	1.47	0.38	8	3.06
10	2008	131.56	1.59	0.46	9	4.18
11	2009	139.32	1.68	0.52	10	5.21
12	2010	154.15	1.86	0.62	11	6.85
A = Sum of "product" column						25.68
B= 6 times (6 x A)						154.11
C= (n-1) x n x (2n-1); n = No. 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						5.21

The annual escalation rate computed in the above table (5.21%) has been notified as escalation rate for inland handling of gas sub-component.

(7) Inflation Rate To Be Applied To Indexed Capacity Charge Component (For Evaluation)

The inflation rate to be applied to indexed capacity charge component has been computed based on the time series data on Wholesale Price Index (WPI) and the Consumer Price Index for industrial workers (CPI-IW) for the period from1999 to 2010. In case of WPI, the data for the period 2005-09 has been taken from the website of Ministry of Commerce & Industry and the data for the period prior to that has been arrived at by using conversion factor. Composite series (Average index for indexed capacity change), using 60% weight to WPI and 40% weight to CPI-IW has first been developed, which then has been used for computing the escalation rate as under:

Composite Series: Average Index for Indexed Capacity Charge					
Year	**WPI for All Commodities**	**CPI for Industrial Workers**	**Proportion of WPI Component in Total Cost**	**Proportion of CPI Component in Total Cost**	**Average Index for Indexed Capacity Charge**
1999	76.79	92	60%	40%	82.71
2000	81.59	95	60%	40%	87.05
2001	85.80	99	60%	40%	91.02
2002	87.92	103	60%	40%	93.99
2003	92.60	107	60%	40%	98.37
2004	98.72	111	60%	40%	103.65
2005	104.04	116	60%	40%	108.73
2006	109.40	123	60%	40%	114.81
2007	114.86	131	60%	40%	121.22
2008	124.82	142	60%	40%	131.56
2009	127.47	157	60%	40%	139.32
2010	139.63	176	60%	40%	154.15

Table-7: INFLATION RATE TO BE APPLIED TO INDEXED CAPACITY CHARGE COMPONENT (FOR EVALUATION)						
Year No. (t)	**Year**	**Average Index for Indexed Capacity Charge**	**Yt/Y1 =Rt**	**Ln Rt**	**Year -1 (t-1)**	**Product [(t-1) x (Ln Rt)]**
1	1999	82.71				
2	2000	87.05	1.05	0.05	1	0.05
3	2001	91.02	1.10	0.10	2	0.19
4	2002	93.99	1.14	0.13	3	0.38
5	2003	98.37	1.19	0.17	4	0.69
6	2004	103.65	1.25	0.23	5	1.13
7	2005	108.73	1.31	0.27	6	1.64
8	2006	114.81	1.39	0.33	7	2.30
9	2007	121.22	1.47	0.38	8	3.06
10	2008	131.56	1.59	0.46	9	4.18
11	2009	139.32	1.68	0.52	10	5.21
12	2010	154.15	1.86	0.62	11	6.85
A = Sum of "product" column						25.68
B= 6 times (6 x A)						154.11
C= (n-1) x n x (2n-1); n = No. 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						5.21

The annual inflation rate computed in the above table (5.21%) has been notified as inflation rate to be applied to indexed capacity charge component.

(8) Escalation Rate for Captive Mine Coal (For Evaluation)

Using the data for the period from 1999 to 2010 on CPI for industrial workers (with weight of 20%), WPI for all commodities (with weight of 10%) and disaggregated WPI series for various commodities used in the captive mining, the escalation rate for captive mine coal has been computed. In case of WPI and its disaggregated series, the data for the period 2005-09 has been taken from the website of Ministry of Commerce & Industry and the data for the period prior to that has been arrived at by using conversion factor. Before computing the escalation rate, composite series has been arrived at by giving weight of 10% to WPI; 20% to CPI; 10% to Tyres; 10% to Matches, Explosives & Other Chemicals; 25% to Machinery & Machine Tools; and 25% to HSD Oil and the same has been used for computing the escalation rate.

Composite Series: Average Index for Captive Mine Coal							
Period	WPI	CPI	Wholesale Price Index				Composite Series
			Tyres	Matches, Explosive & Other Chemicals	Machinery & Machine Tools	High Speed Diesel Oil	
1999	76.79	91.58	107.59	95.59	82.85	44.29	78.10
2000	81.59	95.25	107.14	95.48	85.70	60.49	84.02
2001	85.80	98.85	103.54	98.62	91.63	69.88	88.94
2002	87.92	103.10	106.09	99.61	92.70	72.65	91.32
2003	92.60	107.02	101.31	100.45	94.12	81.71	94.80
2004	98.72	111.05	100.83	100.54	98.19	95.34	100.60
2005	104.04	115.77	102.66	102.46	103.21	117.83	109.33
2006	109.40	122.92	110.41	105.85	108.48	129.68	116.69
2007	114.86	130.75	117.99	112.31	113.31	125.62	120.40
2008	124.82	141.66	124.48	120.55	116.63	135.66	128.39
2009	127.47	157.08	127.33	122.41	117.75	130.33	131.16
2010	139.63	175.92	140.31	127.88	120.33	147.91	143.03

Based on the composite series annual inflation rate to be applied to indexed energy charge component in case of captive mine coal source for evaluation has been computed as under:

Table-8: INFLATION RATE TO BE APPLIED TO INDEXED ENERGY CHARGE COMPONENT IN CASE OF CAPTIVE MINE COAL SOURCE (FOR EVALUATION)						
Year No. (t)	Year	Composite Series	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	1999	78.10				
2	2000	84.02	1.08	0.07	1	0.07
3	2001	88.94	1.14	0.13	2	0.26

4	2002	91.32	1.17	0.16	3	0.47
5	2003	94.80	1.21	0.19	4	0.78
6	2004	100.60	1.29	0.25	5	1.27
7	2005	109.33	1.40	0.34	6	2.02
8	2006	116.69	1.49	0.40	7	2.81
9	2007	120.40	1.54	0.43	8	3.46
10	2008	128.39	1.64	0.50	9	4.47
11	2009	131.16	1.68	0.52	10	5.18
12	2010	143.03	1.83	0.61	11	6.66
A = Sum of "product" column						27.45
B= 6 times (6 x A)						164.70
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.05
g (Exponential Factor) = Exponential (D) -1						0.06
e = Annual Escalation Rate (%) = g x 100						5.57

Annual inflation rate computed in the above table (5.57%) has been notified as inflation rate to be applied to indexed energy charge component in case of captive mine coal source for evaluation

(9) Discount Rate to be used for bid evaluation

Weighted Average Cost of Capital (WACC) has been considered as discount rate. The WACC has been 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.

Table-9: DISCOUNT RATE TO BE USED FOR BID EVALUATION		
	Cost of Debt/Equity	**WACC**
1. Cost of Debt		
0.70(MR)x(1-CTR)	**5.64**	
2. Cost of Equity		
0.30((RF+b(RP))	**5.10**	
Discount Rate (1+2)		**10.74**
Discount Rate has been computed based on the following assumptions		
Components of Debt/Equity		**Assumptions (%)**
Debt		70
Equity		30
Corporate Tax Rate (CTR)		30

Risk Free rate (RF)	7.36
Beta (b)	0.78
Equity Market Risk Premium (RP)	12.35
Market Rate of Interest (MR)	11.50

The Debt and Equity of 70:30 has been assumed based on CERC norms on Debt and Equity in its Tariff Regulations 2009-14. The basic corporate tax rate proposed in the GOI Budget for the year 2011-12 (i.e. excluding surcharge and cess) has been assumed while computing the discount rate.

Hitherto, while calculating the cost of debt, the market rate of interest was being linked to the prime lending rate. With switch over to "base rate" regime from July 1, 2010, however, in this Notification, the market rate of interest shall be taken as the base rate (average of base rates of five major public sector banks) + 350 basis points. Accordingly, the market rate of interest in this Notification has been taken as 11.5%

As regards risk free rate, the 10 year GOI securities rate for the "current year" was being considered as the risk free rate (the "current year" being year immediately preceding the year of the Notification, i.e. for Notifications in the year 2010, the year 2009 was being taken as the "current year" and the data for that was being taken as the risk free rate). In this Notification, however, an average of the risk free rate earned over the past ten years is being taken as the risk free rate. Thus the risk free rate of 7.36% taken in the calculation of cost of equity is the average of the 10 year GOI securities rate over the past 10 years, i.e. from 2001 to 2010.

In the calculation of cost of equity, the market risk premium was being derived by subtracting the risk free rate for the "current" year from the CERC norm for ROE (i.e. 16% post tax) in its tariff regulations 2009-14. Since market risk premium is the difference between the expected market return and the risk free rate, it was thought more appropriate to arrive at the market risk premium by subtracting the risk free rate from the market rate of return and not from the CERC norm for ROE, which is the "power sector" rate of return. Accordingly, the market risk premium in this Notification has been arrived at by subtracting the average risk free rate of 7.36% from the average rate of return on market portfolio over the past ten years (19.71%), i.e. from 2001 to 2010. Sensex values for the past eleven years have been used to arrive at average rate of return on the market portfolio for the past ten years. The historical approach adopted here for arriving at the expected market return assumes the expected future return as an average to be the same as

past returns. The market risk premium in this Notification thus has been taken as 12.35% (19.71 % - 7.36%).

The beta value has been computed based on the data on Bombay Stock Exchange (BSE) Indices for power sector and Sensex for the year 2010.

The WACC computed in the above table (10.74%) has been notified as discount rate for bid evaluation.

(10) Dollar-Rupee Exchange Variation Rate (For Evaluation)

The exchange rate of the Indian Rupee vis-à-vis the US Dollar has been taken from the website of the Reserve Bank of India. The data has been taken for the period from the Calendar Year 1999 to 2010 (both inclusive). The computation of exchange variation rate can be seen in the following table.

Table-10 : DOLLAR-RUPEE EXCHANGE VARIATION RATE (FOR EVALUATION)

Year No. (t)	Year	Rupees per unit of US Dollar	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	1999	43.05				
2	2000	44.94	1.04	0.04	1	0.04
3	2001	47.19	1.10	0.09	2	0.18
4	2002	48.60	1.13	0.12	3	0.36
5	2003	46.58	1.08	0.08	4	0.32
6	2004	45.32	1.05	0.05	5	0.26
7	2005	44.10	1.02	0.02	6	0.14
8	2006	45.33	1.05	0.05	7	0.36
9	2007	41.29	0.96	-0.04	8	-0.33
10	2008	43.42	1.01	0.01	9	0.08
11	2009	48.35	1.12	0.12	10	1.16
12	2010	45.74	1.06	0.06	11	0.67
A = Sum of "product" column						3.24
B= 6 times (6 x A)						19.43
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.01
g (Exponential Factor) = Exponential (D) -1						0.01
e = Annual Escalation Rate (%) = g x 100						0.64

The annual escalation rate computed in the above table (0.64%) has been notified as dollar-rupee exchange variation rate for bid evaluation.

(11) Escalation for normative transmission charges (For Evaluation)

The escalation for normative transmission charges for evaluation has been computed based on the time series data on Rupees per kW connected load (central sector

connected load on CTU lines) for the period from 1999 to 2010. The data on Short Term Open Access consumption has been collected from National Load Despatch Centre (NLDC), the data on transmission charges excluding ULDC Charges has been derived from the financial year data provided by Powergrid Corporation of India Ltd (PGCIL) and the data on connected load has been derived from data on central sector connected load (excluding DVC) as of end of calendar years (1998 to 2010) collected from Central Electricity Authority (CEA). Before computing the escalation for normative transmission charges, cost per kW connected has been computed as under:

Calculation of Transmission Charges in Rupees per kW Connected Load									
Year	Transmission Charges without ULDc in Rs. Million	Installed Capacity MW*	Connected Load assuming Auxiliary of 8%	Net generation assuming 85% PLF Million kWh	STOA Million kWh	STOA as % of net generation (K)	Factor ((1/(1+K))	Transmission Charges without ULDC adjusted for STOA	Cost per KW connected Load (Rs)
	(a)	(b)	(c)=0.92*(b)	(d)=(c*8760*.85)/(10^6)	(e)	(f) = (e)/(d)	(g)= (1/(1+f))	(h)= (a)*(g)	(i) = (h*1000)/(c)
1999	18232	25430	23395	174201	0	0.00	1.00	18232	716.95
2000	21585	27181	25006	186195	0	0.00	1.00	21585	794.13
2001	22292	28102	25853	192504	0	0.00	1.00	22292	793.25
2002	24183	29089	26762	199269	0	0.00	1.00	24183	831.33
2003	26985	30662	28209	210041	0	0.00	1.00	26985	880.08
2004	26021	32901	30268	225379	0	0.00	1.00	26021	790.90
2005	28901	35362	32533	242241	17000	0.07	0.93	27005	763.68
2006	34841	38230	35171	261884	26269	0.10	0.91	31665	828.28
2007	41871	42087	38720	288309	30996	0.11	0.90	37807	898.30
2008	49995	44897	41305	307559	31286	0.10	0.91	45379	1010.74
2009	60177	45872	42202	314235	38909	0.12	0.89	53547	1167.32
2010	68564	47200	43424	323338	50544	0.16	0.86	59295	1256.23
* Average of beginning and end of year.									

Based on cost per kW connected load, escalation for normative transmission charges has been computed as under:

Table-11: ESCALATION FOR NORMATIVE TRANSMISSION CHARGES (FOR EVALUATION)

Year No. (t)	Year	Cost per KW connected Load	Yt/Y1 =Rt	Ln Rt	Year -1 (t-1)	Product [(t-1) x (Ln Rt)]
1	1999	716.95				
2	2000	794.13	1.11	0.10	1	0.10
3	2001	793.25	1.11	0.10	2	0.20
4	2002	831.33	1.16	0.15	3	0.44
5	2003	880.08	1.23	0.21	4	0.82
6	2004	790.90	1.10	0.10	5	0.49
7	2005	763.68	1.07	0.06	6	0.38
8	2006	828.28	1.16	0.14	7	1.01
9	2007	898.30	1.25	0.23	8	1.80
10	2008	1010.74	1.41	0.34	9	3.09
11	2009	1167.32	1.63	0.49	10	4.87
12	2010	1256.23	1.75	0.56	11	6.17
A = Sum of "product" column						19.39
B= 6 times (6 x A)						116.33
C= (n-1) x n x (2n-1); n = No. of Years of data = 12						3036.00
D = B/C						0.04
g (Exponential Factor) = Exponential (D) -1						0.04
e = Annual Escalation Rate (%) = g x 100						3.91

The annual escalation rate computed in the above table (3.91%) has been notified as escalation for normative transmission charges for bid evaluation.

(12) Matrix for Transmission Charges and Losses

The Transmission Charges Matrix and Transmission Loss Matrix has been prepared as per Format 5.10 & 5.11 of the RFP of Standard Bidding Document of Case-1 as follows.

(12.1) Transmission charges matrix

Transmission charges matrix has been computed based on the data on region-wise per unit transmission charges (i.e. excluding ULDC charges) and central sector energy collected from PGCIL. Using the calendar year data for the latest 5 years i.e. for the period from 2006 to 2010, average transmission charges has been computed as under:

Table-12.1: TRANSMISSION CHARGES MATRIX					
Year	Region-wise Transmission Charges (Rs/Unit)				
	NR	WR	ER	NER	SR
2006	0.14	0.11	0.14	0.33	0.21
2007	0.16	0.13	0.20	0.33	0.22
2008	0.19	0.17	0.20	0.34	0.24
2009	0.20	0.24	0.21	0.43	0.27
2010	0.22	0.21	0.18	0.38	0.26
Average	**0.18**	**0.17**	**0.19**	**0.36**	**0.24**

The computed average region-wise transmission charges has been notified as transmission charges matrix.

(12.2) Transmission Loss matrix

Transmission loss matrix has been computed based on the data on region-wise transmission loss collected from NLDC. Using the calendar year data for the latest 5 years i.e. for the period from 2006 to 2010, average transmission loss has been computed as under:

Table-12.2: TRANSMISSION LOSS MATRIX					
YEAR	Region-wise Transmission Losses (%)				
	NR	WR	ER	NER	SR
2006	3.98	4.38	2.99	3.88	4.02
2007	3.89	4.19	3.40	3.63	3.85
2008	3.99	5.05	3.70	3.68	4.13
2009	3.90	5.61	3.17	3.57	4.24
2010	3.66	5.22	2.42	3.23	5.42
Average	**3.88**	**4.89**	**3.14**	**3.60**	**4.33**

The computed average region-wise transmission losses has been notified as transmission loss matrix.

6. Escalation Factors and other parameters for Payment

The annual escalation rates for payment have been computed based on latest twelve months data (weekly/monthly). The steps followed while computing the escalation rates are as under.

Step 1: Average index values for the appropriate six months period computed.

Step 2: A half-yearly escalation rate computed based on the average six months index.

Step 3: Annual escalation rate computed by multiplying half-yearly escalation rate by two.

Step 4: The annual escalation rate for parameters that require combining of two or more series in pre-determined proportion has been determined by combining each data point of two or more series in the pre-determined proportion to arrive at a composite new single series and then the annual escalation rate has been determined based on this composite new single series.

Computation of the escalation factors and other parameters for payment is as under:

(1) Escalation rate for Domestic coal component (for Payment)

The escalation rate for domestic coal for payment has been computed based on the data on WPI for Non-Coking coal for the period from Jan 2010 to Dec 2010. The escalation rate for domestic coal has been computed as under.

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

Period	WPI (Non-Coking Coal)
Jan-10	131.2
Feb-10	131.2
Mar-10	131.2
Apr-10	131.2
May-10	131.2
Jun-10	131.2
Jul-10	131.2
Aug-10	131.2
Sep-10	131.2
Oct-10	131.2
Nov-10	131.2
Dec-10	131.2
Average Index (Jan 10-Jun 10)	131.20
Average Index (July 10-Dec 10)	131.20
Half-Yearly Inflation	0.00%
Annual Inflation Rate	0.00%

The above computed escalation rate (00.00%) is notified as escalation rate for domestic coal for payment.

(2) Escalation rate for domestic gas (For Payment)

The escalation rate for domestic gas has been computed based on the data on consumer price of gas for the period from Jan 2010 to Dec 2010. Composite series (Average consumer price of Gas), based on Consumer Price off-shore with 90% weight and Consumer Price for North-Eastern States with 10% weight has first been developed, which then has been used for computing the escalation rate as under:

Table-2: ESCALATION RATE FOR DOMESTIC GAS (FOR PAYMENT)

Period	Consumer Prices Off-shore (Landfall point and On-shore) (Rs./'ooo' cubic metre)	Consumer Prices For North-Eastern States (Rs./'ooo' cubic metre)	Composite Series*
Jan-10	3200	1920	3072
Feb-10	3200	1920	3072
Mar-10	3200	1920	3072
Apr-10	3200	1920	3072
May-10	3200	1920	3072
Jun-10	7633	4580	7328
Jul-10	7633	4580	7328
Aug-10	7633	4580	7328
Sep-10	7633	4580	7328
Oct-10	7633	4580	7328
Nov-10	7633	4580	7328
Dec-10	7633	4580	7328
Average Index (Jan 10-June 10)			3781
Average Index (July 10-Dec 10)			7328
Half-Yearly Escalation			93.79%
Annual Escalation			187.59%
* Combined series using weight of 90% to Consumer Price Off-shore and 10% to consumer price North-Eastern States.			

The annual escalation rate computed in the above table (187.59%) is notified as escalation rate for domestic gas for payment.

(3) Escalation Rate for different escalable sub-components of energy charge for plants based on imported coal (for Payment)

(3.1) Escalation Rate for Imported Coal (For Payment)

Table-3.1: ESCALATION RATE FOR IMPORTED COAL (FOR PAYMENT)		
Component Index	**Data Series**	**Annual Escalation Rate**
Composite series using weight of 50% to API4 (Price of South African Coal), 25% to BJI/Coalfax (Price of Australian Coal) and 25% to Global Coal (Price of Australian Coal).	Weekly data from March 2010 to February 2011	34.43%

(3.2) Escalation Rate for Transportation of Imported Coal (For Payment)

Table-3.2: ESCALATION RATE FOR TRANSPORTATION OF IMPORTED COAL (FOR PAYMENT)		
Component Index	**Data Series**	**Annual Escalation Rate**
Singapore Bunker Price Index	Monthly data from Mar 2010 to Feb 2011	24.30%

(3.3) Escalation Rate for Inland Handling of Imported Coal (For Payment)

The escalation rate for inland handling of imported coal has been computed based on the data on WPI and CPI-IW for the period from Jan 2010 to Dec 2010. Composite series, based on WPI with 60% weight and CPI-IW with 40% weight has first been developed, which then has been used for computing the escalation rate. The data on WPI and CPI-IW has been taken from the website of Ministry of Commerce & Industry and Labour Bureau, respectively. The escalation rate for inland handling of imported coal has been computed as under:

Table-3.3: ESCALATION RATE FOR INLAND HANDLING OF IMPORTED COAL (FOR PAYMENT)			
Period	**WPI**	**CPI**	**Composite Series***
Jan-10	134.8	172.0	149.68
Feb-10	134.8	170.0	148.88
Mar-10	135.8	170.0	149.48
Apr-10	138.3	170.0	150.98
May-10	138.8	172.0	152.08
Jun-10	139.4	174.0	153.24
Jul-10	140.6	178.0	155.56
Aug-10	140.7	178.0	155.62
Sep-10	141.5	179.0	156.50
Oct-10	142.4	181.0	157.84
Nov-10	143.1	182.0	158.66
Dec-10	145.4	185.0	161.24
Average Index (Jan 10-Jun 10)			150.72

Average Index (July 10-Dec 10)	157.57
Half-Yearly Inflation	4.54%
Annual Inflation	9.09%
*Composite series using weight of 60% to Wholesale Price Index (WPI) and 40% to Consumer Price Index (CPI).	

The annual inflation computed in the above table (9.09%) is notified as escalation rate for inland handling charges of imported coal for payment.

(4) Escalation rates for inland transportation charges for coal (For Payment)

The escalation for inland transportation charges for coal has been computed based on the data on coal freight rates for the period from Jan 2010 to Dec 2010. The data has been collected from Ministry of Railways. The data on coal freight rate for 100 km, 500 km, 1000 km, 2000 km and 3000 km has been used for computing the escalation rate for inland transportation charges for coal for distance upto 100 km, upto 500 km, upto 1000 km, upto 2000 km and beyond 2000 km respectively. The escalation rate for inland transportation charges of coal for payment has been computed as under:

Table-4: ESCALATION RATE FOR INLAND TRANSPORTATION OF DOMESTIC COAL (FOR PAYMENT)

Period	Coal Freight Index for 100 km	Coal Freight Index for 500 km	Coal Freight Index for 1000 km	Coal Freight Index for 2000 km	Coal Freight Index for 3000 km
Jan-10	125.1	462.3	887.9	1644.6	2103.9
Feb-10	125.1	462.3	887.9	1644.6	2103.9
Mar-10	125.1	462.3	887.9	1644.6	2103.9
Apr-10	125.1	462.3	887.9	1644.6	2103.9
May-10	125.1	462.3	887.9	1644.6	2103.9
Jun-10	125.1	462.3	887.9	1644.6	2103.9
Jul-10	125.1	462.3	887.9	1644.6	2103.9
Aug-10	125.1	462.3	887.9	1644.6	2103.9
Sep-10	125.1	462.3	887.9	1644.6	2103.9
Oct-10	125.1	462.3	887.9	1644.6	2103.9
Nov-10	125.1	462.3	887.9	1644.6	2103.9
Dec-10	125.1	465.3	893.6	1655.2	2117.5
Average Index (Jan 10-June 10)	125.10	462.30	887.90	1644.60	2103.90
Average Index (Jul 10-Dec 10)	125.10	462.79	888.85	1646.37	2106.16
Half-Yearly Escalation Rate	0.00%	0.11%	0.11%	0.11%	0.11%
Annual Escalation Rate	0.00%	0.21%	0.21%	0.22%	0.22%

The annual escalation rates computed in the above table (0.00%, 0.21%, 0.21%, 0.22% and 0.22% respectively applicable upto 100 km, upto 500 km, upto 1000 kms, upto 2000 kms and beyond 2000 kms) are notified as annual escalation rates for inland transportation charges of coal for payment.

(5) Escalation rate for inland transportation charges for gas (For Payment)

The Escalation Rate for Inland Transportation Charges for Gas has been computed based on the data on transportation charges of gas along HVJ pipeline charged by GAIL for the period from Jan 2010 to Dec 2010. The data has been collected from Ministry of Petroleum & Natural Gas. The escalation rate for transportation of natural gas has been computed as under:

Table-5: ESCALATION RATE FOR INLAND TRANSPORTATION CHARGES OF GAS (FOR PAYMENT)

Period	Transportation charges along HVJ pipeline (Rs./'ooo' cubic metre)
Jan-10	954
Feb-10	954
Mar-10	954
Apr-10	954
May-10	954
Jun-10	954
Jul-10	1010
Aug-10	1010
Sep-10	1010
Oct-10	1010
Nov-10	1010
Dec-10	1010
Average Index (Jan 10-June 10)	954
Average Index (Jul 10-Dec 10)	1010
Half-Yearly Inflation	5.90%
Annual Inflation Rate	11.81%

The annual escalation rate computed in the above table (11.81%) is notified as escalation rate for transportation charges of gas.

(6) Escalation rate for different escalable sub-components of energy charge for plants based on imported gas

(6.1) Escalation rate for imported gas (for Payment)

The escalation rate for imported gas for payment has been computed based on Japan JCC LNG price for the period from Mar 2010 to Feb 2011. The data has been subscribed from Platts. The computation of escalation rate for imported gas can be seen from the following table.

Table-6.1: ESCALATION RATE FOR IMPORTED GAS (FOR PAYMENT)		
Component Index	**Data Series**	**Annual Escalation Rate**
Japan JCC LNG Price Index	Monthly data from March 2010 to February 2011	6.12%

The annual escalation rate computed in the above table (6.12%) is notified as escalation rate for imported gas for payment.

(6.2) Escalation rate for transportation of imported gas (for Payment)

The escalation rate for transportation of imported gas has been computed based on FOB prices of 380cst bunker fuel for the period from Mar 2010 to Feb 2011. The data has been subscribed from Clarkson Research. The escalation rate for transportation of imported gas for payment has been computed as under:

Table-6.2: ESCALATION RATE FOR TRANSPORTATION OF IMPORTED GAS (FOR PAYMENT)		
Component Index	**Data Series**	**Annual Escalation Rate**
Singapore Bunker Price Index	Monthly data from Mar 2010 to Feb 2011	24.30%

The annual escalation rate computed in the above table (24.30%) is notified as escalation rate for transportation of imported gas for payment.

(6.3) Escalation rate for inland handling of imported gas (for Payment)

The escalation rate for inland handling of imported gas has been computed based on the data on WPI and CPI-IW for the period from Jan 2010 to Dec 2010. Composite series, based on WPI with 60% weight and CPI-IW with 40% weight has first been developed, which then has been used for computing the escalation rate. The data on WPI and CPI-IW has been taken from the website of Ministry of Commerce & Industry and Labour Bureau, respectively. The escalation rate for inland handling of imported gas has been computed as under:

Table-6.3: ESCALATION RATE FOR INLAND HANDLING OF IMPORTED GAS (FOR PAYMENT)			
Period	**WPI**	**CPI**	**Composite Series***
Jan-10	134.8	172.0	149.68
Feb-10	134.8	170.0	148.88
Mar-10	135.8	170.0	149.48
Apr-10	138.3	170.0	150.98
May-10	138.8	172.0	152.08
Jun-10	139.4	174.0	153.24
Jul-10	140.6	178.0	155.56
Aug-10	140.7	178.0	155.62
Sep-10	141.5	179.0	156.50
Oct-10	142.4	181.0	157.84
Nov-10	143.1	182.0	158.66
Dec-10	145.4	185.0	161.24
Average Index (Jan 10-Jun 10)			150.72
Average Index (July 10-Dec 10)			157.57
Half-Yearly Inflation			4.54%
Annual Inflation			9.09%
*Composite series using weight of 60% to Wholesale Price Index (WPI) and 40% to Consumer Price Index (CPI).			

The annual inflation computed in the above table (9.09%) is notified as escalation rate for inland handling charges of imported gas for payment.

(7) Inflation Rate to be applied to Indexed Capacity Charge Component (For Payment)

The Inflation Rate to be applied to Indexed Capacity Charge Component has been computed based on the data on WPI and CPI-IW for the period from Jan 2010 to Dec 2010. Composite series, based on WPI with 60% weight and CPI-IW with 40% weight has first been developed, which then has been used for computing the escalation rate. The data on WPI and CPI-IW has been taken from the website of Ministry of Commerce & Industry and Labour Bureau, respectively. The inflation rate has been computed as under:

Table-7: INFLATION RATE TO BE APPLIED TO INDEXED CAPACITY CHARGE COMPONENT (FOR PAYMENT)			
Period	**WPI**	**CPI**	**Composite Series***
Jan-10	134.8	172.0	149.68
Feb-10	134.8	170.0	148.88
Mar-10	135.8	170.0	149.48
Apr-10	138.3	170.0	150.98

May-10	138.8	172.0	152.08
Jun-10	139.4	174.0	153.24
Jul-10	140.6	178.0	155.56
Aug-10	140.7	178.0	155.62
Sep-10	141.5	179.0	156.50
Oct-10	142.4	181.0	157.84
Nov-10	143.1	182.0	158.66
Dec-10	145.4	185.0	161.24
Average Index (Jan 10-Jun 10)			150.72
Average Index (July 10-Dec 10)			157.57
Half-Yearly Inflation			4.54%
Annual Inflation			9.09%
*Composite series using weight of 60% to Wholesale Price Index (WPI) and 40% to Consumer Price Index (CPI).			

The annual inflation computed in the above table (9.09%) is notified as Inflation Rate to be applied to Indexed Capacity Charge Component.

(8) Inflation Rate to be applied to indexed energy charge component in cases of captive fuel source (For Payment)

Using Consumer Price Index for industrial workers (CPI-IW), Wholesale Price Index for all commodities (WPI-All Commodities) and disaggregated WPI series for various commodities used in the captive mining for the period from January 2010 to December 2010, the inflation rate to be applied to indexed energy charge component in cases of captive fuel source has been computed. Before computing the escalation rate, composite series has been arrived at by giving weight of 10% to WPI; 20% to CPI; 10% to Tyres; 10% to Matches, Explosives & Other Chemicals; 25% to Machinery & Machine Tools; and 25% to HSD Oil and the same has been used for computing the escalation rate.

Table-8: INFLATION RATE TO BE APPLIED TO INDEXED ENERGY CHARGE COMPONENT IN CASE OF CAPTIVE MINE COAL SOURCE (FOR PAYMENT)

Period	WPI	CPI	Wholesale Price Index				Composite Series*
			Tyres	Matches, Explosive & Other Chemicals	Machinery & Machine Tools	High Speed Diesel Oil	
Jan-10	134.8	172.0	131.2	126.5	118.4	133.9	136.73
Feb-10	134.8	170.0	131.8	126.1	118.5	136.6	137.05
Mar-10	135.8	170.0	134.4	127.4	119.5	144.6	139.79
Apr-10	138.3	170.0	135.1	127.6	120.5	145.6	140.63

May-10	138.8	172.0	139.5	128.0	120.2	145.6	141.48
Jun-10	139.4	174.0	140.2	127.8	120.4	147.4	142.49
Jul-10	140.6	178.0	140.2	128.4	120.5	153.5	145.02
Aug-10	140.7	178.0	144.3	128.5	120.8	153.5	145.53
Sep-10	141.5	179.0	144.4	128.3	121.1	153.5	145.87
Oct-10	142.4	181.0	144.5	128.5	121.0	153.5	146.37
Nov-10	143.1	182.0	148.3	128.7	121.2	153.6	147.11
Dec-10	145.4	185.0	149.8	128.7	121.9	153.6	148.27
Average Index (Jan 10-Jun 10)							139.69
Average Index (July 10-Dec 10)							146.36
Half-Yearly Inflation							4.77%
Annual Inflation							**9.55%**
*Composite series using weight of 10% to Wholesale Price Index (WPI), 20% to Consumer Price Index (CPI), 10% to WPI-Tyres, 10% to WPI-Matches, Explosives & other chemicals, 25% to WPI-Machinery & Machine Tools and 25% to WPI-HSD Oil.							

The annual inflation computed in the above table (9.55%) is notified as inflation rate to be applied to indexed energy charge component in cases of captive fuel source.

7. The data series for API 4, Global Coal Index, Barlow Jonker Index/Coalfax, Platts Gas Price Index 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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