

Compensatory Tariff Orders...A Fine Balancing Act by CERC

CERC has finally notified the long awaited Compensatory Tariff orders on imported coal based Tata and Adani Mundra projects. The tariff orders have built a consensus among the stakeholders for providing relief to developers against a sharp rise in Indonesian coal prices (due to change in Indonesian regulations) through a mechanism of 'Compensatory Tariff'¹, which is outside the purview of PPA. 'Compensatory Tariff' has been adjusted for a) net profit earned in mines, b) excess revenue earned by third party sale (if project achieves PAF>80%), c) 100 bps haircut on RoE and d) saving in fuel cost with lower GCV coal without sacrificing operational efficiency. However, CARE Research believes that there is no meaningful impact of (b) and (d) conditions as plant has operated at ~77% PAF YTD FY14 for Tata Power UMPP and usage of lower GCV coal decreases plant efficiency (SHR) and increases auxiliary consumption.

However, with this landmark judgement, CERC has managed to do a fine balancing act of preserving project viability for developers without disturbing sanctity of PPA and creating a mechanism for optimizing DISCOM power purchase costs, thereby reducing tariff shock to consumers.

Tata Mundra UMPP (4*800MW)

Case background: Tata Power had emerged as the L1 bidder for the Mundra UMPP (4000MW) by quoting a levelised tariff of Rs2.26/kWh for the supply of 3800MW to various state DISCOMs². The project was envisaged to be operated on imported coal for which the company also purchased a 30% stake in an Indonesian mining company³. However, due to unanticipated change in the Indonesian law in September, 2011, the increase in the cost of coal was far greater than assumed at the time of bidding which threatened the project viability. Consequently, the company filed a tariff increase petition before the CERC.

Consequently, CERC has devised a formula for calculating the gross compensatory tariff, which will be linked to the Indonesian coal reference index for the relevant calorific value. The fuel under-recovery has already been quantified by the CERC at Rs3.3 bn or 29paise/kWh for FY13. For FY14, tariff arrears to be recovered from DISCOMs, have to be calculated within 2 months from the end of financial year. From FY15 onwards provisional gross compensatory tariff will be calculated using the Indonesian coal reference index at the beginning of each financial year. The company shall then submit quarterly statements of actual costs within 30 days and reconcile the costs at the end of each quarter.

The formula for gross Compensatory Tariff per unit is:

{(GCV adjusted Indonesian coal reference index) x (Normative quantity of coal imported)/Unit supplied under the PPA during the time period} – (quoted non-escalable fuel cost + (escalable fuel cost x CERC escalation index))

¹ The commission shall review the compensatory tariff mechanism after a period of three years unless it is withdrawn earlier

² DISCOMs of Gujarat, Maharashtra, Haryana, Rajasthan and Punjab

³ Bumi Resources - PT Kaltim Prima coal (KPC) and PT Arutmin

Tariff order eliminates fuel risk: Although technical parameters set in the bid are considered (v/s actual) for calculation of compensatory tariff, it allows near complete recovery of fuel cost and hence eliminates fuel risk. This is consistent with the CCEA decision of full fuel pass-through for imported coal based projects. The Commission also directs reduction in tariffs for DISCOMs through 1) cut in RoE by 100 bps and 2) proportionate share in profits of its Indonesian coal business. Thus, the gross compensatory tariff works out to be 53paise/kWh. However, with adjustment of mining profits of ~10paise/kWh and a RoE haircut of 1%, the net compensatory tariff works out to be ~41paise/kWh.

Snapshot of CERC Compensatory tariff order for Tata Mundra UMPP project			
Sr. No.	Tariff components	Unit	
1	Units sold at 80% PLF	MU	26630
2	Fuel charges as per tariff- FOB		
2a	Quoted Non-Escalable Fuel Energy charges (QNEFEC)	USD/kWh	0.00707
2b	Quoted Escalable Fuel Energy charges (QEFEC)	USD/kWh	0.00585
3	CERC escalation index		196.41
4	QEFEC (2b) after indexation	USD/kWh	0.01149
5	Fuel energy tariff component (2a+4)	USD/kWh	0.01856
6	Fuel charges recovered (1*5)	mn USD	494
7	FOB cost of imported coal (say)		63.78
8	Effective import duty		6.33%
9	FOB cost of imported coal + duty	USD/MT	67.82
10	Imported coal for generation	MT	10.73
11	Imported coal cost (9*10)	Mn USD	728
12	Gross compensation (11-6)	Mn USD	233
13	Gross compensation per unit (12/1)	USD/kWh	0.0088
14	Exchange rate (assumed)	INR/USD	60
15	Gross compensation per unit	Rs/kWh	0.53

Source: CERC tariff order, CARE Research estimates

Calculation of share in mining profits for Tata Mundra UMPP project			
Sr. No.	Tariff components	Unit	
1	FOB Indonesian coal price as per invoice	USD/MT	63.7
2	Contracted prices as per FSA	USD/MT	37.7
3	Incremental revenue to Indonesian company/ton	USD/MT	26.0
4	Less: Royalty @ 13.5%	USD/MT	3.5
5	Revenue net of royalty	USD/MT	22.5
6	Incremental tax @45%	USD/MT	10.1
7	Incremental profit to Indonesian mining company	USD/MT	12.4
8	Quantity supplied	MT	12.0
9	Net incremental PAT from Indonesian mining company	mn USD	148.5
10	Tata power share (30%) of incremental PAT (US \$mn)	mn USD	44.6
11	Exchange rate	Rs/USD	60.0
12	<i>Per unit profit</i>	Rs/kWh	0.10
13	Gross Compensatory tariffs	Rs/kWh	0.53
	Less: Adjustments in coal profits	Rs/kWh	0.10
	Less: Adjustments in haircut 1% in RoE	Rs/kWh	0.02
14	Net compensatory tariff	Rs/kWh	0.41

Source: CERC tariff order, CARE Research estimates

In our view, the Commission has capped the project RoE sacrifice at 1%, as the project is already facing fixed cost under-recovery due to ~25% currency depreciation after commissioning of project. Hence, the Commission has taken a favourable view to preserve project viability over the economic life cycle.

Sensitivity Analysis: The primary variables for variable cost of imported coal projects are 1) imported landed cost of coal per tonne and 2) exchange rate dollar value of rupee. Since, 60-70% of coal imports are done from Indonesia due to transportation cost advantages, **CARE Research** is of the opinion that any substantial variation on both these counts can change the compensatory tariff amount significantly. However, we see a limited room for low calorific value coal usage as the developer has no cost advantage (as auxiliary consumption increase and high transportation costs negate the gains to large extent). For every USD change in FOB coal price, the compensatory tariff changes by ~0.4paise/kWh. Similarly for every change in Rs/USD the compensatory tariff changes by ~0.2 paise/kWh.

Sensitivity analysis of net compensatory tariff - Tata Mundra UMPP project											
Coal price-FOB (USD)	58.7	59.7	60.7	61.7	62.7	63.7	64.7	65.7	66.7	67.7	68.7
INR/USD											
55	0.435	0.431	0.428	0.424	0.421	0.417	0.414	0.410	0.406	0.403	0.399
56	0.433	0.430	0.426	0.423	0.419	0.415	0.412	0.408	0.405	0.401	0.397
57	0.432	0.428	0.425	0.421	0.417	0.414	0.410	0.406	0.403	0.399	0.395
58	0.431	0.427	0.423	0.420	0.416	0.412	0.408	0.405	0.401	0.397	0.393
59	0.429	0.426	0.422	0.416	0.414	0.410	0.398	0.403	0.399	0.395	0.391
60	0.428	0.424	0.420	0.416	0.413	0.409	0.405	0.401	0.397	0.393	0.389
61	0.427	0.431	0.419	0.415	0.419	0.407	0.403	0.399	0.395	0.391	0.387
62	0.425	0.421	0.417	0.413	0.409	0.405	0.401	0.397	0.393	0.389	0.385
63	0.424	0.420	0.416	0.412	0.408	0.404	0.400	0.396	0.392	0.387	0.383
64	0.423	0.418	0.414	0.410	0.406	0.402	0.398	0.394	0.390	0.386	0.381
65	0.421	0.417	0.413	0.409	0.405	0.400	0.396	0.392	0.388	0.384	0.379

Source: CARE Research

Adani Mundra (4*330+ 5*660 MW=4620MW)

Case background: Of the total capacity of 4620MW, the compensatory tariff order is for PPA of 1000MW with Gujarat Utilities (Phase III) and 1424MW with Haryana Utilities (Phase IV). Adani Power quoted a levelised tariff of Rs2.35/kWh for Gujarat Utilities and Rs 2.94/kWh for Haryana utilities. This tariff had two/three components for Gujarat/Haryana utilities as shown below:

Levelised tariff for Adani Mundra project (Rs/kWh)		
Tariff components	Gujarat utilities	Haryana utilities
Capacity Charge	1.00	1.00
Energy Charge	1.35	1.35
Transmission Charge	NA	0.60
Total	2.35	2.95

However, due to unanticipated change in the Indonesian law in September, 2011, the increase in the cost of coal was far greater than assumed at the time of bidding which threatened the project viability. Consequently, the company filed a tariff increase petition before the CERC.

The Commission has announced a formula for calculating the gross compensatory tariff, which will be linked to the Indonesian coal reference index for the relevant calorific value. The fuel under-recovery has already been quantified by the CERC at Rs4.2 bn for Gujarat PPA and Rs4.1 bn for Haryana PPA for FY13. For FY14, tariff arrears to be recovered from DISCOMs have to be calculated within 2 months from the end of financial year. CERC has announced a provisional gross compensatory tariff of 85paise/kWh for Gujarat PPA and 36paise/kWh for Haryana for FY15 onwards. The company shall then submit quarterly statements of actual costs within 30 days and reconcile the cost of each quarter.

The formula for the Gross compensatory tariff per unit is:

$$\text{Compensatory Tariff/Fuel Adjustment Charge for a particular year (Rs cr)} = \text{Energy costs at PPA defined delivery point (Rs cr) for that particular year corresponding to units supplied during the year} - \text{Energy charges revenue @quoted energy cost charges under the PPA for that particular year (Rs cr) corresponding to units supplied during the year}$$

Tariff order eliminates fuel risk: Although technical parameters set in the bid are considered vs actual for calculation of compensatory tariff, it allows near complete recovery of fuel cost and hence eliminates fuel risk. The Commission also directs reduction in tariffs for DISCOMs through 1) suggested cut in RoE by 100/25 bps for Gujarat/Haryana PPA, 2) proportionate share in profits of its Adani Enterprises (AEL) coal business in Indonesia (Bunyu mines) and 3) ~60% share of profit from merchant sale (>80% PAF). Thus, the gross compensatory tariff works out to be 85/36paise/kWh for Gujarat/Haryana PPAs. However, with adjustment of mining profits and share from merchant power sale (calculation assumes merchant rate of Rs 4/kWh), the net compensatory tariff works out to be ~55paise/kWh and 9paise/kWh for Gujarat and Haryana utilities respectively.

Snapshot of CERC Compensatory tariff order for Adani Power - Gujarat PPA (1000 MW)					
Sr. No.	Tariff components	Unit	Type 1 coal (High GCV)	Type 2 coal (Low GCV)	Blending ratio 53:47 (Low GCV : High GCV)
1	Coal Type	kcal/kg	6322	3000	4556
2	FOB value	USD/MT	78.8	22.0	
3	Ocean Freight	USD/MT	10.3	10.3	
4	Insurance, Finance & Transport	USD/MT	2.7	1.0	
5	CIF	USD/MT	91.8	33.3	
6	Transit Loss up to Mundra @ 0.8%	USD/MT	0.73	0.27	
7	CIF incl. transit loss	USD/MT	92.5	33.6	
8	Exchange Rate	Rs/USD	59.74	59.74	
9	CIF	Rs/MT	5525	2005	
10	Port handling charges	Rs/MT	293.93	293.93	
11	Handling losses of Mundra port	Rs/MT	15	6	
12	Landed price of imported coal		5833	2304	
13	Cost per unit	kg/kWh	0.26	0.29	
14	Coal used	Rs/kWh	1.52	0.67	2.185
15	Cost per unit	Rs/kWh			0.015
16	Secondary Fuel charges	Rs/kWh			2.200
17	Quoted fuel cost	Rs/kWh			1.35
18	Under-recovery (Gross)	Rs/kWh			0.8509
19	Profit from Indonesian Mines				0.0550
20	Sale beyond Normative Availability				0.2421
21	Reduction due to sacrifice in RoE				#
22	Compensatory Tariff				0.5537

Source: CERC tariff order, CARE Research estimates # final figure to be decided mutually

Sensitivity Analysis of Gujarat PPA: The sensitivity analysis given below has its limitation mainly on account of non-linear coal price movement with varying GCVs. However for illustrative purposes, the sensitivity below assumes linear co-relation price change for Type1/Type 2 coal. For every dollar USD change in FOB coal price, the compensatory tariff changes by ~3.1paise/kWh. Similarly for every change in Rs/USD the compensatory tariff changes by ~3.3paise/kWh.

Sensitivity analysis of net compensatory tariff-Adani Mundra-Gujarat PPA (1000MW)											
Coal price-FOB (USD) (Type 1/Type 2)	73.8/ 11.6	74.8/ 12.6	75.8/ 13.6	76.8/ 14.6	77.8/ 15.6	78.8/ 16.6	79.8/ 17.6	80.8/ 18.6	81.8/ 19.6	82.8/ 20.6	83.8/ 21.6
INR/USD											
54.7	0.234	0.265	0.297	0.328	0.359	0.389	0.422	0.453	0.484	0.498	0.513
55.7	0.264	0.296	0.328	0.360	0.392	0.422	0.455	0.487	0.519	0.533	0.548
56.7	0.294	0.327	0.359	0.391	0.424	0.455	0.489	0.521	0.553	0.568	0.583
57.7	0.324	0.357	0.390	0.423	0.454	0.488	0.522	0.555	0.588	0.603	0.618
58.7	0.355	0.388	0.422	0.455	0.489	0.521	0.556	0.589	0.623	0.638	0.653
59.7	0.385	0.419	0.453	0.487	0.521	0.554	0.589	0.623	0.657	0.673	0.689
60.7	0.415	0.449	0.484	0.517	0.555	0.587	0.623	0.657	0.692	0.708	0.724
61.7	0.445	0.480	0.515	0.550	0.586	0.620	0.656	0.691	0.726	0.743	0.759
62.7	0.475	0.511	0.546	0.582	0.618	0.653	0.690	0.726	0.761	0.778	0.798
63.7	0.505	0.541	0.578	0.614	0.650	0.686	0.723	0.760	0.796	0.813	0.829
64.7	0.535	0.572	0.609	0.646	0.683	0.718	0.755	0.794	0.831	0.847	0.864

Source: CARE Research

Snapshot of CERC Compensatory tariff order for Adani Power - Haryana PPA (1424 MW)						
Sr. No.	Tariff components	Unit	Imported Coal Stream 1 (22%)	Imported Coal Stream 2 (20%)	Domestic Coal (58%)	Blending ratio 58:42
1	Coal	kcal/kg	6322	6322	3300	4569
2	FOB value	USD/MT	78.76	78.76		
3	Ocean Freight	USD/MT	12.6	12.0		
4	Insurance, Finance & Transport	USD/MT	0.3	2.7		
5	Loss of Transit of Coal			0.8		
6	CIF	USD/MT	91.7	94.2		
7	Exchange Rate	Rs/USD	59.7	59.7		
8	CIF	Rs/MT	5475	5626		
9	Port handling charges	Rs/MT	294	294		
10	Port handling Losses	Rs/MT		15		
11	Landed price of imported/ domestic coal	Rs/MT	5769.3	5934.3	2032.3	3634.8
12	Contracted Capacity	MW				1425
13	PLF	%				80.00
14	Units Sold (MUs)					9986.4
15	Qty of coal required (MT)	kg/kWh				5.6
16	Energy Cost at bus bar					2.0448
17	Transmission charges	Rs/kWh				0.3490
18	Transmission Losses	Rs/kWh				0.1000
19	Secondary fuel charges	Rs/kWh				0.0150
20	Total energy charges	Rs/kWh				2.5088
21	Quoted Energy Charges	Rs/kWh				2.145
22	Under-recovery (Gross)	Rs/kWh				0.3638
23	Profit from Indonesian Mines					0.0382
24	Sale beyond Normative Availability					0.2360
25	Reduction due to sacrifice in RoE					#
26	Compensatory Tariff					0.0895

Source: CERC tariff order, CARE Research estimates

final figure to be mutually decided

Sensitivity Analysis of Haryana PPA: The sensitivity analysis given below has its limitation mainly on account of non-linear coal price movement with varying GCVs. For every dollar USD change in FOB coal price, the compensatory tariff changes by ~2.3paise/kWh. Similarly for every change in Rs/USD the compensatory tariff changes by ~2.1paise/kWh.

Sensitivity analysis of net compensatory tariff-Adani Mundra-Haryana PPA (1424MW)											
Coal price-FOB (Type 1/Type 2) ⁴	73.8/10.3	74.8/11.3	75.8/12.3	76.8/13.3	77.8/14.3	78.8/15.3	79.8/16.3	80.8/17.3	81.8/18.3	82.8/19.3	83.8/20.3
INR/USD											
54.7	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.028	0.050	0.070	0.083
55.7	0.000	0.000	0.000	0.000	0.000	0.004	0.027	0.050	0.073	0.093	0.105
56.7	0.000	0.000	0.000	0.000	0.002	0.026	0.049	0.072	0.095	0.116	0.129
57.7	0.000	0.000	0.000	0.000	0.023	0.047	0.071	0.094	0.118	0.138	0.152
58.7	0.000	0.000	0.000	0.020	0.044	0.068	0.092	0.116	0.141	0.161	0.175
59.7	0.000	0.000	0.016	0.041	0.065	0.090	0.114	0.139	0.163	0.184	0.198
60.7	0.000	0.011	0.036	0.061	0.090	0.111	0.136	0.161	0.186	0.207	0.222
61.7	0.006	0.031	0.056	0.082	0.107	0.132	0.158	0.183	0.208	0.230	0.245
62.7	0.025	0.051	0.076	0.102	0.128	0.154	0.179	0.205	0.231	0.253	0.268
63.7	0.044	0.070	0.096	0.123	0.149	0.175	0.201	0.227	0.253	0.276	0.291
64.7	0.063	0.090	0.117	0.143	0.170	0.196	0.223	0.249	0.276	0.299	0.314

Source: CARE Research, N.B.-* Type 2 coal is only used for calculation of profit from Indonesian coal mines

Impact on DISCOMs: Contrary to popular belief, even after compensatory tariff hike, the project tariffs still remain fairly competitive for DISCOMs with tariffs at Rs3.03/kWh for Tata UMPP, Rs2.90/kWh Adani Power Phase-III (Gujarat PPA) and Rs3.03/kWh for Adani Power Phase-IV (Haryana PPA). Further, these tariffs still remain within the range of ~25-50% of merit order dispatch (MOD) for all the eleven DISCOMs. Thus, DISCOMs stand to gain even after compensatory tariff hikes as most of recent Case-1 and Case-2 bids are being clinched at higher tariffs i.e. Rs 4.5-5.0/KWh.

PPA Details (MW)	Gujarat	Haryana	Maharashtra	Punjab	Rajasthan
Tata UMPP	1805	380	760	475	380
Adani Power	1000	1424	NA	NA	NA
Total	2805	1804	760	475	380
Average PPA cost for DISCOM pre-tariff hike (Rs KWh) - FY14	3.1765	3.2623	3.6447	3.6723	3.3043
Average PPA cost for DISCOM post-tariff hike (Rs KWh) - FY14	3.2430	3.2674	3.6569	3.7311	3.3253
% increase	2.1%	0.2%	0.3%	1.6%	0.6%

Source : Company, DISCOM Tariff orders FY13-14 , CARE Research

Will under-recoveries with respect to project costs persist?

In Tata Mundra (CGPL), the Commission has specifically restricted itself to compensate the developer for variable charges, which is for long term project viability and lender comfort. However, there is still under recovery in case

⁴ Type 1 coal is high GCV coal of 6322kcal/kg and Type 2 coal is sourced from *Bunyu mines (Indonesia)* used only for calculation of mining profits while calculating net Compensatory Tariff

of capital costs on account of foreign debt (rupee depreciation). This under-recovery is expected to continue for the entire project life cycle unless the rupee appreciates or the developer re-finances the project debt at more favorable terms (extended tenure or lower interest rate or both).

In case of Adani Mundra Phase-III and Phase-IV projects, company had entered into two power purchase agreements (PPAs) with the Gujarat (1000MW) and Haryana (1424MW) DISCOMs for a period of 25 years at a levelised tariff of Rs2.35/kWh and Rs2.94/kWh respectively. The under-recovery on fixed costs can be attributed to bid structure, where the developer quoted 96% of capacity charges as non-escalable element. Further, increase in capital costs can be attributed to 1) EPC cost over-run of Rs16.5 bn due to adverse currency movement and 2) Rs6.1 bn (as on 31st March, 2013) on Flue Gas Desulphurization (FGD) due to blending on low calorific coal. However, **CARE Research** is of the view that Adani Power can be allowed an increase in fixed costs at a later stage through filing separate tariff petition, since the foreign exchange rate variation during construction of the project is covered as full pass-through in Case-1 bidding framework.

The way forward: CARE Research believes that the ‘**Compensatory Tariff**’ hikes for both imported coal based projects i.e. Tata Mundra UMPP and Adani Power Mundra project are landmark judgments. In this process, the Commission has managed to achieve a pragmatic solution for all the stakeholders including 1) developers (without compromising on project viability and preserving the sanctity of the PPA), 2) DISCOMs (with minimum hike in power purchase costs) and 3) lenders (by preserving credit profile of developer). Thus, CERC has been able to avert a situation, which might have caused these projects to become Non-Performing Assets (NPAs) causing distress to project developers and burdening DISCOMs with expensive power purchase options.

Although, the judgment has set the precedent for many more imported coal based projects to seek tariff revisions on similar grounds, **CARE Research** is of the view that power generation companies seeking tariff revisions would be **strictly evaluated on case-to-case basis**.

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