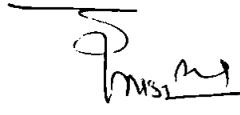No. NEPRA/TRF-UTC/2013/13032-13034
September 23, 2016

Subject: **Decision of the Authority regarding Suo Moto Review Proceedings in the Fuel Price Adjustment Mechanism Determined in Upfront Coal Tariff**

Dear Sir,

Please find enclosed herewith the subject Decision of the Authority (25 Pages) regarding Suo Moto Review Proceedings in the Fuel Price Adjustment Mechanism Determined in Upfront Coal Tariff.

2. The subject Decision is being intimated to the Federal Government for the purpose of notification in the Official Gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

Enclosure: <u>As above</u>

23.09.14

(Syed Safeer Hussain)

Secretary
Ministry of Water & Power,
'A' Block, Pak Secretariats
Islamabad

CC: 1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad.

National Electric Power Regulatory Authority

(NEPRA)

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Decision of the Authority

Regarding *suo moto* Review Proceedings
in the Fuel Price Adjustment Mechanism Determined in Upfront Coal Tariff

September_____ 2 3 ___, 2016

Commentators:

i. Argus Media Limited
ii. China Power Hub Generation Company Limited (CPHGCL)
iii. Norez Abdullah
iv. Anglo American Marketing Limited (AAML)
v. Port Qasim Electric Power Company Limited (PQEPCL)
vi. Global Coal (gC)
vii. NISHAT Chunian Group
viii. SIDDIQSONS Energy Limited
ix. Lucky Electric Power Company
x. Kot Addu Power Company Limited (KAPCO)

Background

1. The Authority approved coal price adjustment mechanism (hereafter "the mechanism") in the determination of coal upfront tariff dated June 26, 2014 (hereinafter referred to as "the Determination"). The mechanism as illustrated in para xxv page 33 of the Determination is reproduced below: -

"

$$
\begin{aligned}
FCC = \ & \left| \left(CP_{(RB)} + Ft_{(M)} + MI + OC \pm Premium/Discount \right) \times \frac{HR}{HV_{(RB)}} \times \frac{Q_{(RB)}}{Q_{(T)}} \right| \\
& \times FC_{(Exch)} \\
& + \left| \left(CP_{(NCA)} + Ft_{(M)} + MI + OC \pm Premium/Discount \right) \times \frac{HR}{HV_{(NCA)}} \right. \\
& \times \left. \frac{Q_{(NCA)}}{Q_{(T)}} \right| \times FC_{(Exch)} \\
& + \left| \left(CP_{(NCI)} + Ft_{(M)} + MI + OC \pm Premium/Discount \right) \times \frac{HR}{HV_{(NCI)}} \right. \\
& \times \left. \frac{Q_{(NCI)}}{Q_{(T)}} \right| \times FC_{(Exch)} + \left| CP_{(Local)} \times \frac{HR}{HV_{(Local)}} \times \frac{Q_{(Local)}}{Q_{(T)}} \right| \\
& + Ft_{(Inland)}
\end{aligned}
$$

Where;

CP(RB)   =   Actual Weighted Average Richard Bay (South Africa) coal prices on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Globalcoal

HV(RB)   =   Actual Weighted Average Heating Value of the coal imported from South Africa

CP(NCA)   =   Actual Average Newcastle (Australia) coal prices on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Globalcoal

HV(NCA)   =   Actual Weighted Average Heating Value of coal imported from Australia

CP(NCI)   =   Actual Average Newcastle (Indonesia) coal prices on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Globalcoal

1

HV(NCl) = Actual Weighted Average Heating Value of coal imported from Indonesia

CP(Local) Actual Coal price of local coal expressed in US$/M.Ton calculated according to the following formula;

$$CP_{(Local)} = \left(\frac{HV_{(Local)}}{\left(\frac{Q_{(RB)}}{Q_{(T)}} \times HV_{(RB)} \right) + \left(\frac{Q_{(NCA)}}{Q_{(T)}} \times HV_{(NCA)} \right) + \left(\frac{Q_{(NCI)}}{Q_{(T)}} \times HV_{(NCI)} \right)} \right)$$
$$\times \left(\left(\frac{Q_{(RB)}}{Q_{(T)}} \times CP_{(RB)} \right) + \left(\frac{Q_{(NCA)}}{Q_{(T)}} \times CP_{(NCA)} \right) + \left(\frac{Q_{(NCI)}}{Q_{(T)}} \times CP_{(NCI)} \right) \right)$$

HV(Local)	=	Heating Value of Local Coal
Ft(M)	=	Actual Weighted Average Contracted Marine Freight per ton from South Africa, Australia and Indonesia
Q(RB)	=	Actual quantity of coal (Tons) purchased from South Africa during the month immediately preceding the invoice month
Q(NCA)	=	Actual quantity of coal (Tons) purchased from Australia during the month immediately preceding the invoice month
Q(NCl)	=	Actual quantity of coal (Tons) purchased from Indonesia during the month immediately preceding the invoice month
Q(Local)	=	Actual Quantity of local coal purchased during the month immediately preceding the invoice month
QT	=	Total quantity of coal purchased during the month immediately preceding the invoice month
Ft(Inl)	=	Actual Inland Freight expressed in Rs./M.Ton
OC	=	Other cost Include Bunker Fuel, Port Charges, Insurance & common Jetty facility in $/Ton
FC(Exch)	=	PKR/$ exchange rate average for the month

Imported Coal (sub-bituminous)

South Africa (6,600 Kcal/Kg)	26,190.91 BTU/Kg	
Australia (6,000 Kcal/Kg)	23,809.92 BTU/Kg	
Indonesia (6,500 Kcal/Kg)	25,794.08 BTU/Kg	
Weighted Average Calorific Values		
Imported Coal	25,555.98 BTU/Kg	
Local Coal (sub-bituminous)	22,046.00 BTUs/Kg	
Richard Bay (South Africa)-FOB	40%	US$93.40/M.Ton
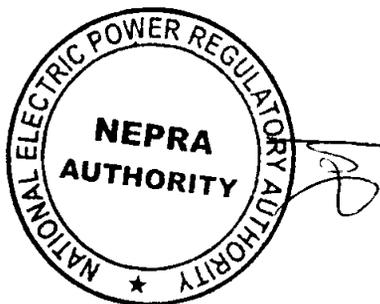
Newcastle -Australia-FOB	20%	US$89.00/M.Ton
Newcastle -Indonesia-FOB	40%	US$87.55/M.Ton
Weighted average FoB		**US$ 90.18**
Marine Freight		US$20.00/M.Ton
Marine Insurance		0.10% of FOB price
Other Costs		10% of FOB price
Weighted Average CIF Price		**US$119.60/M.Ton"**

Argus Media Proposal

2. In May 2015, Mr. Zulkarnain Noor (Vice President – Sales & Business Development) & Mr. Mohammed Ali (Regional Account Manager) of Argus Media, ("Argus") which is an independent media organization whose activities include publication of price assessments for physical energy and related commodities, approached NEPRA to seek certain clarifications on the mechanism. Argus subsequently offered their services to independently review the mechanism and submit their review in writing. The Company submitted a proposal on August 06, 2015. Relevant portion of the proposal are reproduced hereunder:

"Argus Proposes that the ICI 3 be Used as the Indonesian Price Reference instead of Average Newcastle (Indonesia) by globalCoal

*   The ICI index series is the most widely accepted price reference for Indonesian coal. The ICI is a weekly spot price index for Indonesian steam coal. It has been accepted in pricing applications since its launch in June 2006.

*   The ICI provides indicative prices for the five most referenced grades of Indonesian coal. The ICI is the driver for official Indonesian HBA (known as Indonesia Coal Price Reference, ICPR).

*   ICI was launched to specifically capture the growing impact of Indonesian coal internationally, the critical requirement for an Indonesian coal price index that is assessed directly, independently, and transparently.

*   ICI has drawn strong attention and support from the Indonesian government and the Indonesian Coal Mining Association (ICMA) as well as from the market. Companies in more than 30 different countries currently subscribe to the ICI indices.

*   ICI pricing is used across many sectors. It is used as a basis for trading and contract evaluation in international trade to Southeast Asia, and Northeast Asia, both on a spot and term reference. It is used in the Indonesian domestic market to establish the
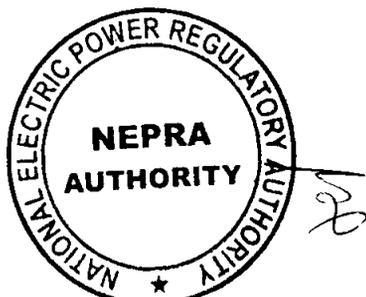
buying price for PLN Persero, the state power generation company. ICI is used to calculate the Domestic Market Obligation (DMO) for Indonesian coal producers.

- The ICI is used by the government Directorate of Mines and Minerals in annual production asset planning. Furthermore, it is the driving component of monthly HBA (ICPR) for Indonesia tax and royalty calculations. The HBA is a basket comprising ICI 1 for 6500 kcal/kg GAR thermal coal, another Indonesian price reference and two Australian price references. However, coal exporters typically use the ICI to track and anticipate changes in the monthly HBA.

- ICI is used by the governor of Kalimantan to assess taxation and mining royalties, and beyond this sphere, companies use the ICI in various financial applications such as project valuation and feasibility, audit and internal reporting.

B) Australian Reference Coal Price to Determine the Upfront Electricity Tariff

Choice of the Australian Price Reference

- The Argus Media endorses NEPRA's inclusion of Australian coal in its *reference coal price formula* for imports into Pakistan. Whilst Australia is a dominant coal producer in the Asia-Pacific region, large volumes of Australian coal might not be purchased by Pakistan's power plant complex going forward given the thermal coal industry's market structure and the specifications of coal required by the power plant complex in Pakistan. However, the price formation of the sea-borne thermal coal market is impacted by decisions made by Australian coal producers and hence its inclusion makes for a more robust *reference coal price formula.* For example, price negotiations between Japanese and Australian producers on term pricing sets a price anchor for the spot markets.

- Care ought to be taken when selecting the calorific value of the Australian coal used in the *reference coal price formula.* One reason for this is on account of the issue of normalization of prices and the error that this can result when calculating the price of coal with a calorific value that is different from the price benchmark used in the normalization. The second reason is the robustness of the underlying price index used and its volatility, which will be discussed below.

Argus Proposes that the API 5 be Used as the Australian Price Reference

- As discussed earlier, the market's expectation is that the calorific value of coal that will be purchased by the Pakistani power plants will err towards the subbituminous variety. Even the higher calorific value coal that will be used for blending with the low rank material will be closer to the 5,500kcal/kg NAR range. Hence, in order to reduce

the errors that emerges due to the normalization of prices. Argus proposes that API 5 be used as the Australian reference price in NEPRA's *reference coal price formula.*

- The volatility of the underlying benchmark coal price is important when making a choice as to its inclusion in a price formula. NEPRA as a regulator seeks to maximize the welfare of the country's inhabitants, which would in this case require that firms are incentivized to build and operate coal-fired power plants in the country. It helps firms to invest when they are not exposed to excessive risk when they do so.

- A measure of price risk is volatility of prices. This dataset consists of 1,154 price points dating from December 2008 and June 2013, that were chosen at random. The API6 price series (in red) shows lesser volatility than its globalCoal counterpart as evidenced by the fewer spikes and troughs in the time series data.

3. The most appropriate and relevant price reference would be one which both reflects most closely the typical grades and quality of coal that would be imported into Pakistan, and which has already won widespread acceptance in the international coal market.

4. The index which most accurately meets these requirements, in terms of robustness and minimizing the errors due to price normalization, is the API 5 index for 5,500 kcal/kg NAR thermal coal.

5. Argus thus recommended the following indices for fuel price adjustment formula:

    - For Indonesia: Indonesian Coal Index (ICI 3) — 5,000kcal/kg GAR

    - For South Africa: Argus/McCloskey's Coal Price Index (API 4) — 6,000kcal/kg NAR

    - For Australia: Argus/McCloskey's Coal Price Index (API 5) — 5,500kcal/kg NAR"

Proceedings

6. In order to further deliberate on the issues and ArgusMedia proposal, the Authority accordingly decided to initiate a *suo moto* proceedings to review the fuel price adjustment mechanism provided in the Upfront Coal Tariff Determination dated June 26, 2014 in exercise of powers under section 7 (2) (g) of NEPRA Act, read with regulation 3(1) of NEPRA (Review Procedure) Regulation, 2009 and stakeholders were informed through advertisement dated January 9, 2016. Individual notices were also sent to relevant stakeholders on January 14, 2016. The Authority also decided to conduct a hearing in the matter which was held on February 18, 2016
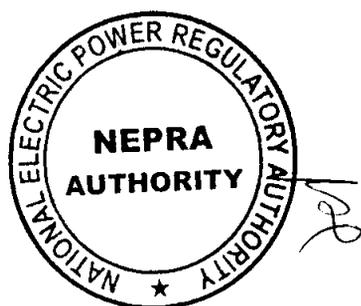
7. Consequently, Summary of Argus recommendation was advertised in the national dailies and Argus proposal was uploaded on the NEPRA's website for public comment. In light of the advertisement and the notices sent, NEPRA received a number of valuable comments. These comments are summarized below:

China Power Hub Generation Company Limited (CPHGCL)

- CPHGCL stated that it is against the usage of notional basket rate for calculation of benchmark coal price.
- CPHGCL proposed that indices should be relevant, transparent & liquid
- For coal imported from Australia, NEWC (globalCoal) index should be used instead of the one proposed by Argus media.
- CPHGCL stated that as per their discussion with the traders, miner and consultant, ICI-3 proposed by the Argus for Indonesia coal is not considered a widely acceptable index. According to CPHGCL, IPP should be given the option to use both NEWC and ICI index for coal coming from Indonesia. {CPHGC later retracted this suggestion}
- According to CPHGCL, freight calculation is a complex matter. It should be indexed on a long term contract with international acceptable benchmark listed on the London based Baltic exchange. Since the major cost of Marine freight is the consumption of Bunker Fuel and hence linkage to bunker oil prices will have to be made. (CPHGCL subsequently submitted a detailed paper on freight calculation which will be discussed in detail under the issue related to freight computation).
- Other cost as currently allowed at 10% of FoB price is not a correct estimation as per CPHGCL, the FoB price of coal are subject to demand and supply of the commodity, port charges, Stevedoring, discharge port sampling other cost are fixed in nature.
- CPHGCL also stated that; Letter of credit cost related to import coal should be allowed as there is no provision for allowance of such cost in the current mechanism.

Norez Abdullah

Mr. Norez Abdullah stated that;
- The selection of coal CV should be regulated at the time of award of generation License.
- Authority should encourage the remote distanced plant to select a relatively higher CV of coal than those located at the south. This would help avoid potential price hike due to excessive demand and cannibalism of supply over long term demand
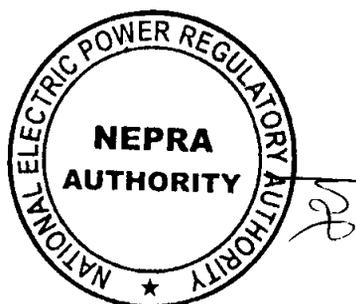
- There should be a minimum limit of CV for coal destined for up country as high CV coal will help reduce the transportation cost (this point was raised in the hearing). For this purpose the Authority should engage third party market analyst for Authority's guidance.

Anglo American Marketing Limited (AAML)

AMML commented that;

- To have at least two coal suppliers to reduce supply risk.
- Indices should be transparent, liquid and have reasonable longevity.
- ICI-3 for Indonesia coal is opposed as according to AAML, these are reported regularly, but not traded and result in discrepancies between the value of indices and actual transaction price.
- The only credible indices are API4 and NEWC.
- Philippines use NEWC to price Indonesia coal with a discount.
- Freight should be based on BSI, with allowance for bunker fuel adjustment.

Port Qasim Electric Power Company Limited (PQEPCL)

PQEPCL submitted that;

- The Argus media proposal is endorsed for using ICI-3 index for Indonesia coal.
- Marine freight, marine insurance, other cost and premium/discount are not directly linked to the reference heating value of the coal and should be determined separately
- PQEPCL proposed a premium of 6%

Global Coal (gC)

- gC proposed a basket rate and stated that, it is likely that Australian coal may not be largely consumed in Pakistan; however, supply and demand of this market has a significant impact on global trade flows and pricing levels. Therefore, gC's NEWC index should be used for pricing coal coming from Australia.

NISHAT Chunian Group

Nishat Chunian Commented that;

- As per Argus, Index is updated once in a week, please identify the exact date for which the index will be used, whether it will be L/C opening date, contract signing date, shipping date, average of few dates or any other.
- What if we purchase coal having a calorific value different from the proposal, for example the proposal for Indonesian coal is ICI 3 which corresponds to 5000 GAR,
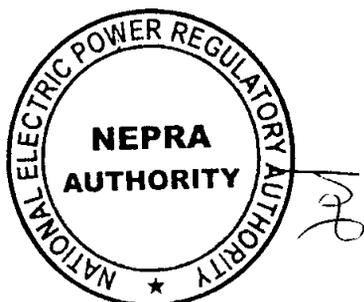
what will be the procedure if we use coal having a calorific value different than reference coal.

- What if the power producer is unable to buy the coal at a price calculated by the index, as the index is based on historical prices and the purchase is concluded on current prices. The differential could either be upwards or downwards.
- What if the quality of coal received is different from the committed quality.
- Coal indexation as provided in the upfront tariff includes Premium and Discount, what exactly does it mean.
- What will be the mechanism for determining the Marine Freight and Inland Freight, what kind of documentation will be required.
- Is there any limit on Marine Insurance?
- What will be included in the other Cost, we believe that all the costs incidental; to bring the coal at site will be included therein, further will there be any limit on it and what kind of documentation will be required.
- What alternate indexes could be used and what if the proposed index is withdrawn.
- What will be the relevant exchange rate?
- Upfront tariff requires that for each shipment third party verification will be conducted by surveyors at loading and discharge port and the certification will in turns be verified by CPPA.
- Upfront tariff also requires Power Producer to furnish a prescribed coal usage and procurement statement duly verified and certified by the CPPA along with a monthly bill. This will not only delay the invoicing process, but also will make it practically impossible hence need to be revisited.

SIDDIQSONS Energy Limited

SEL commented that:
- The index for coal FOB price should be the same as of origin. For example, in case of Indonesian coal, the index should be of Indonesian coal.
- A premium on US $/mmBTU basis should be allowed on the FOB coal price if the IPP is purchasing the coal of CV equal to or higher than the CV of the index coal.
- A discount on US $ / mmBTU basis should be applied on FOB coal price if the IPP is purchasing the coal of CV lower than the CV of index coal.
- With the passage of time, the high CV coals will not be available for long term supply while the boiler design is done for the long term. Considering this, coal with CVs around 4600 GAR should be allowed. Our coal, however, is of 5000 GAR.
- The other components of coal price should also be fixed in a transparent manner in line with our proposal and letter dated January 18, 2016.
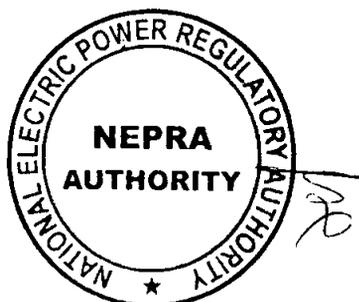
LUCKY ELECTRIC:

Lucky Electric observed that;

- API 4 Index to be used for South African coal.
- Since South African coal is traded on NAR basis, therefore, no adjustment for moisture or ash is required as the pricing is based on NET basis.
- For Indonesian coal which is traded on GAR basis, the formula for adjustment of ash and moisture be clearly defined. Please specify the index to be taken for Indonesian and Australian coal.
- The index of coal source country should apply instead of average index for South African, Indonesian and Australian.
- Premium of up to 6% be allowed on top of the index.
- Mechanism for determination of sea freight, port handling, and inland transportation needs to be clearly defined to avoid ambiguity at later stage.

KAPCO

KAPCO stated that;

- API 4 or API 2 for South African coal and globalCoal NEWC index for Australian and Indonesian coal may be allowed.
- Currently, most of the traders are reluctant to offer large quantities on long term basis. NEPRA to allow more than one supplier to cover the supply side risk.
- Most of the traders consider 5 years as long term agreement which will be renewed for next five years depending on the availability of same specification coal.
- PIBTL is asking US$ 9 per ton which is not based on any facts but they have adopted this number from NEPRA's upfront tariff KPT charges are less than US$ 4 per ton. It is requested that NEPRA shall take up matter with PQA and finalize the port charges so that terminal agreement can be initiated with PIBTL.
- NEPRA has allowed 2% losses during coal transportation. The probability of coal losses is higher during inland coal transportation as Pakistan Railways will use open hopper trucks. Therefore fine coal particles will fly away from top and also some losses from side gates due to improper sealing. KAPCO requested that additional allowance may be allowed to upcountry projects due to these losses.
- Upcountry plants must use coal of 5300 kcal/kg NAR. However, projects near ports shall also justify the use of low Btu coal on the basis of US$/Net Btu.
- NEPRA to instruct Power Purchaser to agree minimum 70% Take or Pay with IPP.
- NEPRA to also allow 70 to 80% coal procurement through long term agreement and remaining through Spot Market.
- Pakistan Railways (PR) transportation tariff is based on fixed and variable. Fixed
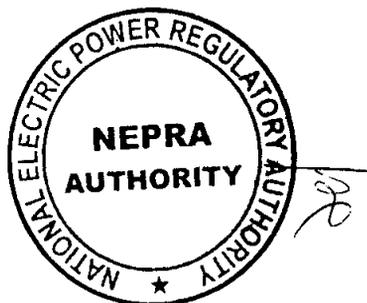
tariff will be charged on committed quantity and variable tariff will be based on actual quantity delivered. By increasing the ToP will reduce the risk of higher cost of fixed charges. It is requested that the actual fixed transportation charges shall be considered as pass through.

- If ToP is increased and Spot purchase is allowed then IPP will agree the committed quantity with PR 10% higher than ToP and take the risk of transportation by trucks if PR refuses to accommodate additional tonnage.

8. The Authority noted that the delivered coal price, which normally referred in the industry as coal CIF price, comprises several components but for simplicity and ease of comprehension, delivered coal price can be divided into four (4) components as indicated below:

   i.   Freight on Board (FoB)

   ii.   Marine Freight

   iii. Insurance

   iv.   Other Costs such as, Port charges, Terminal charges etc.

Accordingly;

Coal price, Cost Insurance freight (CIF) = FoB price + marine freight + Insurance + Other cost

9. During the proceedings, the Authority observed that the price adjustment mechanism to be proposed should not only be simple and transparent but also acceptable to coal based IPPs. In this regard numerous issues came up during the proceedings. Therefore, after considering the submitted comments and detailed discussion with relevant stakeholders, the following issues were framed which are discussed hereunder:

   I.   How to fix indices for pricing FoB coal imported from different regions?
   II.   How to benchmark freight rates and subsequent adjustments?
   III. How to ascertain Other Cost?
   IV.   Whether or not to have a basket benchmark price for coal adjustment to be determined by giving a reasonable weightage to coal exporting countries like South Africa, Australia and Indonesia?
   V.   Whether or not to set minimum quality (CV) of coal to be transported up country?

## How to fix indices for pricing FoB coal imported from different regions?

10. The Argus media proposed the following index in its recommendation:

- For Indonesia: Indonesian Coal Index (ICI 3) — 5,000kcal/kg Gross As Received (GAR)
- For South Africa :Argus/McCloskey's Coal Price Index (API 4) — 6,000kcal/kg Net As Received (NAR)
- For Australia: Argus/McCloskey's Coal Price Index (API 5) — 5,500kcal/kg NAR

11. According to Argus, API indices, which are produced in conjunction with McCloskey, price coal at key import/exporting locations in northwest Europe, South Africa, Australia, South China, Colombia and India. The ICI index, that Argus produces jointly with PT Coalindo Energy price coal, exported from Indonesia and is heavily referenced by buyers and sellers of Indonesian material.

12. It was considered that prior to fixing an index, there are few things which need to be looked into, major and most important among which is transparency in price assessment, frequency of usage by major player and liquidity. It was noted that the Indonesian government includes Argus media published indices in its assessment of royalty since 2006. Argus informed that the Indonesian government will soon increase the weight of ICI index used for royalty assessment from current 25% to 50%. Similarly, it was also brought to the attention of the Authority that India's CERC also uses ICI3 and API4 in the coal price formula.

13. The information submitted by Argus indicates that the ICI has been published since 2006 as a joint report with Coalindo Energy which is based in Jakarta, Indonesia. In case of ICI indices, both independent assessments of Argus and Coalindo are averaged out equally, thus minimizing the price manipulation and volatility. Further SEL has based its draft CSA on ICI-3 and similarly PQEPCL has also proposed ICI-3 in the draft CSA. During subsequent communication it was also noted that there was an overwhelming support for using ICI-3 for pricing Indonesian coal. Therefore, in view of the above, the Authority decided to use ICI-3 as an index for coal import from Indonesia.

14. For the South African Coal (FoB Richard Bay, 6000 kcal/kg), Argus/Mcloskey API4 index is the dominant reference index. The Authority observed that API4 is also used by local cement manufacturer for its coal import from South Africa. It was understood that API4 is the leading price index for coal today with huge acceptance in both physical and derivatives trades. This is again a basket index of two different prices, i.e. Argus and Mcloskey. Because of wide scale acceptability of this index, the Authority therefore decided to use API4 as a benchmark index for coal imports from South Africa.

15. For Australian Coal, in addition to API 5 proposed by Argus, GlobalCoal or "gC" —which is also in the similar line of business as Argus Media is— proposed NEWC (Newcastle). According to gC, the NEWC Index was introduced in 2002, in response to a demand for an
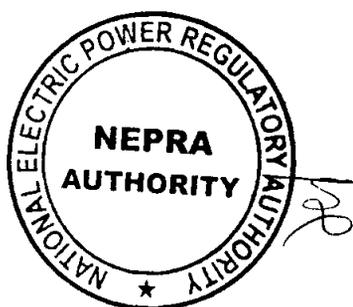
independently established, transparent and reliable reference price for spot FOB Newcastle (NEWC) thermal coal. The unique index methodology was developed in collaboration with the industry and as a result, the NEWC Index has since established itself as *the* price benchmark for the Asia- Pacific thermal coal market. According to gC, in 2015, the derivative market in the NEWC index was estimated at 462 million tonnes, exceeding that of API4 (South African coal).

16. The Authority observed that the index proposed by Argus for Australia i.e. API5 may not be of acceptable liquidity level and the commentators did not support using API5 instead, they preferred gC's NEWC for Australian coal. Therefore, for Australian coal, the Authority decided to give the option to IPPs to choose either NEWC or API5 or both indices.

17. Some of the commentators like AAML during the discussion requested that IPPS should be free to choose one index from one region/country and apply to price coal from another. However, Argus and other stakeholder opposed it. The Authority assessed the merit of this suggestion is of the view that such flexibility in price assessment may lead to price distortion as the dynamics of NEWC pricing which reflects the market and the laws of Australia may not be relevant for instance, to price the coal of Indonesia or other export hubs. From regulator's point of the view this price distortion due to wrong application of base index should be discouraged. Therefore, it is decided not to consider this option of pricing one region of coal on the basis of an index derived from another region.

18. Some commentators requested that coal from Colombia should also be considered for Pakistan. The Authority was informed that Colombia coal – which is superior to Indonesian coal in terms of CV and perhaps better than South African coal, with low production cost —is facing a market downturn. The reason is that the Colombian coal traders have heavily relied on Europe for its export and the demand for coal in Europe is receding due to many reasons, major among them is the environmental impact of coal and lack of financing for new coal plants. Hence, the Colombia coal traders are currently exploring new market and some are willing to offer discounts in order to make sure their coal mines are running.

19. While Colombia coal might have its own advantage, the Authority, however is aware that Colombia is very far from Pakistan and from coal import point of view, it doesn't naturally fit for Pakistan. However, considering the low marine freight these days and the possibilities that Colombia coal traders may offer competitive price for its coal, the Authority reckons that there is potential for Pakistan to take advantage of the situation in Colombia. The Authority therefore decided that IPP should also be allowed to import coal
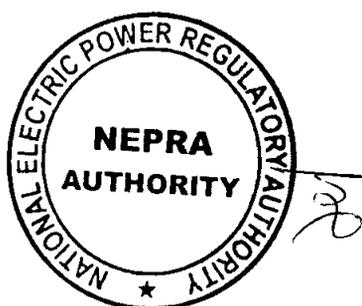
from Colombia, as long as the delivered price to any of the Pakistan Port in terms of US$/MMbtu is comparable to South Africa coal or Indonesia whichever is lower at that time. An IPP proposing Colombian coal should suggest an appropriate index that is relevant, transparent and liquid.

Summary Decision
- For Indonesia: Indonesian Coal Index (ICI 3) — 5,000kcal/kg GAR
- For South Africa :Argus/McCloskey's Coal Price Index (API 4) — 6,000kcal/kg NAR
- For Australia: Argus/McCloskey's Coal Price Index (API 5) — 5,500kcal/kg NAR or NEWC (6000 kCal/kg NAR) or both

How to benchmark freight rates and subsequent adjustments

20. In the Determination, the freight rate was to be adjusted at actual. It was felt that a mechanism needs to be developed that brings some level of transparency and minimize room for gaming or manipulation of freight price. During discussion, it came to the notice of the Authority that there isn't an established coal import route from places like Indonesia and Australia to Pakistan. Only a few million tons of coal is imported from South Africa, mainly for the consumption of local cement industry. The issue of freight calculation is further complicated due to the fact that it varies from vessel to vessel, for instance capsize vessel with a typical weight of over 150,000 DWT will have different freight and will take more time to reach the destination as compared to a smaller Panamax which is 65,000 DWT vessels.

21. In this regard, SEL and CPHGC submitted a freight calculation formula. SEL submitted the following:

Freight rate US$ /MT = BF + TCA + BAF + PCA + PIR+ PPBD + DVC

Where,
BF = Base Freight
TCA = TC Average Factor
BAF = Bunker Adjustment Factor
PCA = Port Cost Adjustment
PIR = Piracy Cost Adjustment
PPBD = Pre/Post Berthing Delays Charge at Discharge Port
DVC = Deviation charges

22. In accordance with the above mechanism, SEL proposed freight rates that worked out to be US$14 per ton. While justifying the component wise break up of freight, SEL informed that out of US$ 14/ton freight, US$ 4.7 /t related to base freight for which no justification was provided by its coal supplier to SEL. SEL however, informed that this formula is based
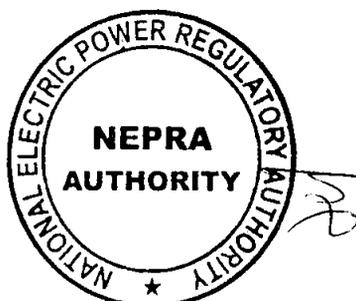
on firmed coal supply agreement which means that this is the only acceptable formula for coal transport to Pakistan.

23. CPHGC also shared a freight formula which is relatively more transparent with clear break up of each and every major component of freight, all linked with some international benchmark/index.

Freight = ((Delivery Days x Time Charter Rate) + (Bunker Consumed x Bunker Price x Bunker Adjustment) + Port Charges & Other Costs) / Cargo Quantity
Where;
> Delivery days travel days in addition to loading, unloading days
> Time Charter rates Applicable Baltic Time Charter (TC) rates
> Bunker Price applicable Platts Bunker Price
> Port charges and insurances etc. cannot be provided for each shipment as they are determined by independent port and insurance entities

24. Time Charter rates are linked with reputable index such as Baltic Dry Index based on the type of vessel. Fuel charges are derived though inputs such as fuel consumed times bunker price published by Platts. There is also bunker adjustment factor to accommodate the fuel prices to cater for price volatility and other fuelling charges

25. The Authority observed that the CPHGC's formula is more detailed and avoid the issue of base freight which was proposed by SEL. The Authority, however noted that port charges and insurance are separately covered under Other cost and Insurance cost respectively. Therefore, there is no need to include these costs in the freight calculation. In view of the above, the formula is, therefore, being allowed for marine freight calculation:

Freight = ((Delivery Days x Time Charter Rate) + (Bunker Consumed x Bunker Price x Bunker Adjustment) / Cargo Quantity
Where;

> Delivery days is the vessel travel days in addition to loading unloading days
> Time Charter rates are the relevant vessel rate indicated in the Baltic Time Charter (TC) rates
> Bunker Price is the price indicated in the Platts Bunker Price
> Bunker Adjustment is to be mutually agreed between the parties of the CSA reflective of the market.

How to benchmark Insurance

26. The Authority allowed marine insurance of 0.1% of FoB price. SEL in the instant case proposed Insurance of 0.2% of the price delivered to the power plant (DAP). The Authority was informed that the L/C opening bank will require to insure the delivered cargo of coal that already has a freight component. The Authority considers that the inclusion of freight in the calculation of insurance cost is a reasonable suggestion however, it was decided to allow insurance upto 0.1% of the CFR coal price instead of the
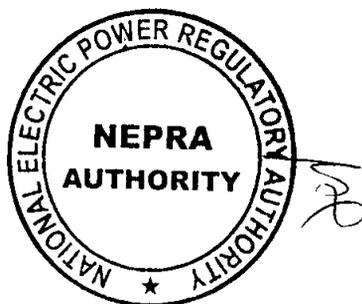
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proposed 0.2% of DAP. The insurance cost shall be adjusted to the maximum of 0.1% of Cost and freight of coal or actual whichever is lower. For this purpose, IPP will have to provide all the relevant documents in support of this while requesting a fuel cost adjustment.

How to ascertain Other Cost?

27. In the Determination, other cost was allowed at 10% of FoB which was a provisional number subject to adjustment at actual. Other cost is a sum of all the ancillary cost associated with transport of coal. It mainly includes Ports charges, terminal charges, L/C charges and jetty cost (if any). The Authority observed that these are mostly on a tonnage basis. Due to lack of information concerning other cost, the Authority therefore, decided to allow Other Cost at actual based on the submission of authentic documentary evidence. The Authority however, may review the actual cost under this head, after a year of large coal imports to the country and fix a benchmark if required.

Whether or not to have a basket benchmark price for coal adjustment to be determined by giving a reasonable weightage to coal exporting countries like South Africa, Australia Indonesia?

28. While assessing reference fuel cost component of coal, the Authority priced the coal based on the following reference weightage:

   - Indonesia 40%

   - South Africa 40%

   - Australia 20%

29. In the fuel price formula, this was subject to change as per actual. Argus while reviewing our formula proposed that there should be some sort of weightage while fixing benchmarking fuel price. Similarly, gC also agreed with prescribing weightages for computing coal price and stated that such basket benchmark coal prices is also practiced by regulator in India and Indonesia.

30. The Authority observed that If the coal price is fixed as per any fixed benchmark weightages, then, even if an IPP procure 100% Indonesian coal, its coal price will be determined based on price prevalent at that time at each of the above three regions in a given percentage let say Indonesia 40%, South Africa 40% and Australia 20%. In the opinion of the Authority this will increase the risk of IPP as the benchmark price may be more or less than the actual price paid for the shipment by an IPP. Further, it will also

necessitate to set benchmark freight which itself is a complex exercise, and also premiums and other cost and thus will lead to fix a benchmark CIF price which will have no bearing with the actual price of coal. Prescribing fixed weightages will complicate the exercise of monthly fuel cost adjustment. Also, Pakistan has no experience handling such large quantities of coal that is destined in the coming 5-6 years to be used for power generation. The Authority is aware that IPPs lack experience and local infrastructure is yet to be established and Pakistan is not like India and Indonesia, where a robust domestic and export market is already established and wherein such mechanism can be easily applied. In view thereof, it is considered that the market is not ripe to fix benchmark prices based on assumed basket. This may be reconsidered after 5 years or earlier when actual coal import data is available which could prompt revision in the pricing mechanism.

Whether or not to set minimum quality (CV) of coal destined to be transported up country?

31. The commentators namely, Mr. Norez Abdullah and KAPCO have proposed that NEPRA should fix a minimum quality of coal that is to be transported upcountry for the power plants like Sahiwal power project and other Coal conversion projects, Lalpir Pakgen etc. The reason they are concerned is inland coal transportation is on per ton basis and power plant will need specific amount of Btus or heat to produce a certain fixed number of units. Hence, annual coal quantity will depend entirely on the quality of coal procured. This means that more quantity of coal with low quality/heating value will be required to be transported to make sure the plant received the same Btus. This will increase the inland local transportation cost for power plant to be established in the upcountry. The Authority was informed that, with the CV of 6200 Kcal/kg, a typical power plant with a capacity of 660 × 2 MW will approx. need 3.07 million tons per annum (mtpa). Whereas, if coal with low CV of 4600 kCal/kg is supplied to the power plant, its requirement will jump to 4.34 mtpa which is 1.27 mtpa more. The extra 1.27 mtpa means the transportation bill will increase by approx. Rs 8 billion. In the opinion of the Authority setting a minimum CV of coal is a reasonable proposition and in the consumer's interest.

32. The Authority is also aware that before fixing minimum CV of coal, there are some key factors that need to be looked into, for example a) whether good quality of coal is available in the market to ensure long term supply for the entire project life of the power plant b) whether a power plant current design needs to be changed to accommodate the revised CV. Both these factors are important. During the proceedings, with ArgusMedia suggested that that 5500 Kcal/kg (NAR) should be the minimum quality of coal that should be allowed to use for up country power plants as such quality of coal is
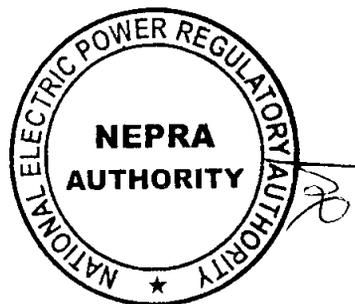
abundantly available and that there is always the option for coal suppliers to mix two different qualities of coal together to maintain the approved minimum CV i.e. 5500 NAR. With regards to changing design, some of the IPPs have informed that their boilers are designed for a range of CV and ±1500 kcal/kg can be accommodated in the power plants. Therefore, setting a minimum CV will not lead to boiler design change.

33. In view of the above, it has been decided to set a minimum CV of 5500 Kcal/kg (NAR) on noncoastal power plants.
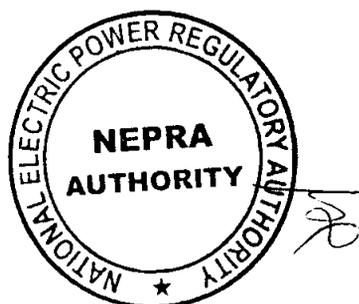
Whether Premium over coal price should be allowed

34. On this issue the SEL and CPHGCL, commentators informed that under the long-term coal supply contract, a supplier provides a certain quantity commitment to the buyer. In order to fulfill the obligation, the supplier line up all their resources well before the actual delivery of coal, this takes place years before the actual shipment. The Authority was also informed that, the level of premium depends on the strength of the buyer. For instance, a company which is already buying a good quantity of coal from the same supplier backed by strong finances may negotiate a coal supply agreement with a minimum or no premium. The issue of premium doesn't arise if coal is purchased through spot market. But an IPP can't buy all of its required coal from spot market because spot purchases carry the risk of limited supply. The Authority is aware that there is no benchmark available in the international market wherein, one can analyze, compare and fix a max premium ceiling for the upcoming coal import. The SEL, Lucky Energy and PQEPC have proposed a premium of 6%. In the opinion of the Authority coal is abundantly available in an import market whose demand is dwindling. Therefore, although COD of the plant will be achieved in 2-4 years, it is expected that the current condition will prevail. In view of the above, the Authority decided to not to allow the premium over and above the benchmark index price.

35. In view of the above discussion, the following coal pricing mechanism is, therefore, being allowed:

Fuel Cost Component (South African Coal)
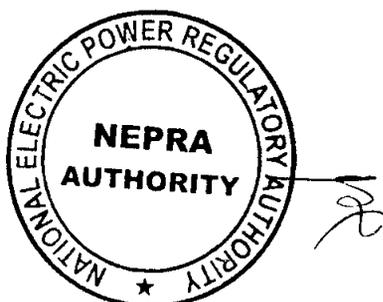
$$FCC = \left[(CP_{(RB)} + Ft_{(M)} + MI + OC - Discount) \times \frac{HR}{HV_{(RB)}} \right] \times FC_{(Exch)}$$

CP(RB)   =   Actual Weighted Average Richard Bay (South Africa) Coal Prices (CP) in US$/kg on the basis of Opening Inventory of coal and purchases of coal till the

month immediately preceding the invoice month indicated in Argus/McCloskey's Coal Price Index (API 4) 6000 kCal/kg NAR

HV(RB)	=	Actual Weighted Average Heating Value (HV) (LHV) in Btu/kg of the coal imported from South Africa
HR	=	Heat Rate in Btu/kWh
Ft$_{(M)}$	=	Actual marine freight computed on the basis of approved mechanism in US$/kg
OC	=	Other Charges to include all port and terminal charges etc. in US$/kg
MI	=	Marine Insurance in US$/kg
FC$_{(Exch)}$	=	Average PKR to US$ exchange rate for the month

Fuel Cost Component (Australian Coal)

$$FCC = [(CP_{(NCA)} + Ft_{(M)} + MI + OC - Discount) \times \frac{HR}{HV_{(NCA)}}] \times FC_{(Exch)}$$

CP(NCA)	=	Actual Average Newcastle (Australia) coal prices (CP) in US$/kg on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in Argus/McCloskey's Coal Price Index (API 5) or GlobalCoal NEWC (6000 Kcal/kg NAR)
HV(RB)	=	Actual Weighted Average Heating Value (HV) (LHV) in Btu/kg of the coal imported from Australia
HR	=	Heat Rate in Btu/kWh
Ft$_{(M)}$	=	Actual marine freight computed on the basis of approved mechanism in US$/kg
OC	=	Other Charges to include all port and terminal charges etc. in US$/kg
MI	=	Marine Insurance in US$/kg
FC$_{(Exch)}$	=	Average PKR to US$ exchange rate for the month

Fuel Cost Component (Indonesian Coal)

$$FCC = [(CP_{(Indo)} + Ft_{(M)} + MI + OC - Discount) \times \frac{HR}{HV_{(Indo)}}] \times FC_{(Exch)}$$

CP(Indo)	=	Actual Average Indonesia coal prices (CP) in US$/kg on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Indonesian Coal Index (ICI 3) 5,000kcal/kg GAR

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HV(Indo)	=	Actual Weighted Average Heating Value (HV) (LHV) in Btu/kg of the coal imported from Indonesia
HR	=	Heat Rate in Btu/kWh
$Ft_{(M)}$	=	Actual marine freight computed on the basis of approved mechanism in US$/kg
OC	=	Other Charges to include all port and terminal charges etc. in US$/kg
MI	=	Marine Insurance in US$/kg
$FC_{(Exch)}$	=	Average PKR to US$ exchange rate for the month

Fuel Cost Component (Local Coal)

$$FCC = \frac{(CP_{(Local)} + Ft_{(Inland)}) \times HR}{HV_{(Local)}}$$

Where;

HR	=	Heat Rate in Btu/kWh
Ft(Inland)	=	Inland Freight expressed in Rs/kg
HR	=	Heat Rate in Btu/kWh
HV(local)	=	Heating Value (LHV) in Btu/kg
CP (Local)	=	Local coal price in Rs/kg determined by relevant/competent agency

Terms and Conditions:

- Marine Insurance will be allowed at 0.1% of the CFR price or actual whichever is lower. For this purpose IPP shall submit all the relevant documents, including insurance invoice, etc.
- Other Charges shall include port/terminal charges, L/C charges, common jetty cost if any etc. This shall be adjusted on actual based on the submission of authentic documentary evidence.
- Coal losses shall be calculated at a maximum of 2% on delivered coal price of imported coal and 1% of local coal.
- IPP will have the option to procure coal in any combination of the above loading regions, i.e. South Africa, Australia and Indonesia. In this regard fuel cost component shall be adjusted based on actual weightage.
- For the coal destined for upcountry, IPP shall ensure a minimum calorific value of coal of 5500 kCal/kg (NAR). For fuel price adjustment purpose, Argus's ICI-2 (which is already benchmark for a coal CV of 5500kCal/kg NAR) or equivalent index shall be used, provided that the index is transparent and liquid.
- IPP shall justify the choice of coal to the satisfaction of the Authority

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- IPP will have the option to procure coal in any combination of the above loading regions, i.e. South Africa, Australia and Indonesia. In this regard fuel cost component shall be adjusted based on actual weightage.
- For the coal destined for upcountry, IPP shall ensure a minimum calorific value of coal of 5500 kCal/kg (NAR). For fuel price adjustment purpose, Argus's ICI-2 (which is already benchmark for a coal CV of 5500kCal/kg NAR) or equivalent index shall be used, provided that the index is transparent and liquid.
- IPP shall justify the choice of coal to the satisfaction of the Authority
- The pricing mechanism shall be reviewed after three years when the actual coal price, quality, quantity, source, etc., data is available. It can be reviewed earlier if it is noted that current mechanism leads to a coal price that is unrealistic and detrimental to both the interest of consumers and the project sponsors.
- Bill of lading will be used as date of coal procurement.
- In case Thar coal is utilized for non-mine mouth power plant in full or in part, the price of Thar coal shall be determined by the Thar Coal Energy Board/Relevant Agency and fuel price will be determined based on the weightage average actual percentage of coal i.e. Thar and imported coal.
- The Federal Government is actively promoting imported coal based power plants to address the demand/supply gap and also to have a base load generation option. These plants are expected to achieve COD in the next 2-3 years. Without a clear pricing mechanism, the operation of these upcoming power plants could be jeopardized. It is felt that the Federal Government may take the initiative to establish an imported coal pricing agency for the purpose of prescribing a coal pricing mechanism based on the international best practices. Therefore, in the absence of imported coal pricing mechanism, and till such time a coal pricing mechanism is put in place, this adjustment mechanism as approved in this decision shall be used.

ORDER

1. In exercise of Power under section 7(2) (g) of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with regulation 3(1) of NEPRA (Review Procedure) Regulations, 2009 the Authority has decided to review its decision regarding reconsideration Request filed by GoP in the matter of Upfront coal Tariff for Coal Power Projects dated June 24, 2016, hereinafter referred to as "the Decision" to the extent of the following:

2. Para 56, subsection xxv page 33 of the Decision may be replaced with the following

"Fuel Cost

During the tariff period the fuel cost shall be calculated according to the following

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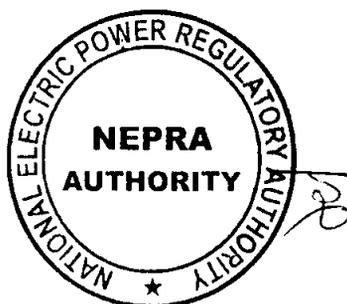
formula on monthly basis:

Fuel Cost Component (South African Coal)

$$FCC = \left(\left(\left(CP_{(RB)} + Ft_{(M)} + MI + OC - Discount \right) \times \frac{HR}{HV_{(RB)}} \right) \times FC_{(Exch)} \right)$$
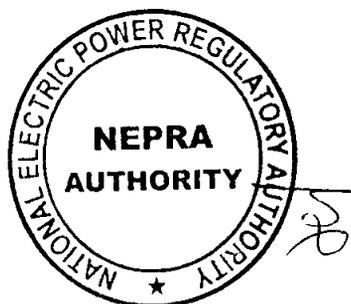
CP(RB)	=	Actual Weighted Average Richard Bay (South Africa) Coal Prices (CP) in US$/kg on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in Argus/McCloskey's Coal Price Index (API 4) 6000 kCal/kg NAR
HV(RB)	=	Actual Weighted Average Heating Value (HV) (LHV) in Btu/kg of the coal imported from South Africa
HR	=	Heat Rate in Btu/kWh
$Ft_{(M)}$	=	Actual marine freight computed on the basis of approved mechanism in US$/kg
OC	=	Other Charges to include all port and terminal charges etc. in US$/kg
MI	=	Marine Insurance in US$/kg
$FC_{(Exch)}$	=	Average PKR to US$ exchange rate for the month

Fuel Cost Component (Australian Coal)

$$FCC = \left(\left(\left(CP_{(NCA)} + Ft_{(M)} + MI + OC - Discount \right) \times \frac{HR}{HV_{(NCA)}} \right) \times FC_{(Exch)} \right)$$

CP(NCA)	=	Actual Average Newcastle (Australia) coal prices (CP) in US$/kg on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in Argus/McCloskey's Coal Price Index (API 5) or GlobalCoal NEWC (6000 Kcal/kg NAR)
HV(RB)	=	Actual Weighted Average Heating Value (HV) (LHV) in Btu/kg of the coal imported from Australia
HR	=	Heat Rate in Btu/kWh
$Ft_{(M)}$	=	Actual marine freight computed on the basis of approved mechanism in US$/kg
OC	=	Other Charges to include all port and terminal charges etc. in US$/kg
MI	=	Marine Insurance in US$/kg
$FC_{(Exch)}$	=	Average PKR to US$ exchange rate for the month

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Fuel Cost Component (Indonesian Coal)

$$FCC = \left(\left(\left(CP_{(Indo)} + Ft_{(M)} + MI + OC - Discount \right) \times \frac{HR}{HV_{(Indo)}} \right) \times FC_{(Exch)} \right)$$

CP(Indo)	=	Actual Average Indonesia coal prices (CP) in US$/kg on the basis of Opening Inventory of coal and purchases of coal till the month immediately preceding the invoice month indicated in the Indonesian Coal Index (ICI 3) 5,000kcal/kg GAR
HV(Indo)	=	Actual Weighted Average Heating Value (HV) (LHV) in Btu/kg of the coal imported from Indonesia
HR	=	Heat Rate in Btu/kWh
$Ft_{(M)}$	=	Actual marine freight computed on the basis of approved mechanism in US$/kg
OC	=	Other Charges to include all port and terminal charges etc. in US$/kg
MI	=	Marine Insurance in US$/kg
$FC_{(Exch)}$	=	Average PKR to US$ exchange rate for the month

Fuel Cost Component (Local Coal)

$$FCC = \frac{(CP_{(Local)} + Ft_{(Inland)}) \times HR}{HV_{(Local)}}$$

Where;

HR	=	Heat Rate in Btu/kWh
Ft(Inland)	=	Inland Freight expressed in Rs/kg
HR	=	Heat Rate in Btu/kWh
HV(local)	=	Heating Value (LHV) in Btu/kg
CP (Local)	=	Local coal price in Rs/kg determined by relevant/competent agency

Terms and Conditions:

- Marine Insurance will be allowed at 0.1% of the CFR price or actual whichever is lower. For this purpose IPP shall submit all the relevant documents, including insurance invoice, etc.
- Other Charges shall include port/terminal charges, L/C charges, common jetty cost if any etc. This shall be adjusted on actual based on the submission of authentic documentary evidence.
- Coal losses shall be calculated at a maximum of 2% on delivered coal price

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- IPP will have the option to procure coal in any combination of the above loading regions, i.e. South Africa, Australia and Indonesia. In this regard fuel cost component shall be adjusted based on actual weightage.

- For the coal destined for upcountry, IPP shall ensure a minimum calorific value of coal of 5500 kCal/kg (NAR). For fuel price adjustment purpose, Argus's ICI-2 (which is already benchmark for a coal CV of 5500kCal/kg NAR) or equivalent index shall be used, provided that the index is transparent and liquid.

- IPP shall justify the choice of coal to the satisfaction of the Authority

- The pricing mechanism shall be reviewed after three years when the actual coal price, quality, quantity, source, etc., data is available. It can be reviewed earlier if it is noted that current mechanism leads to a coal price that is unrealistic and detrimental to both the interest of consumers and the project sponsors.

- Bill of lading will be used as date of coal procurement.

- In case Thar coal is utilized for non-mine mouth power plant in full or in part, the price of Thar coal shall be determined by the Thar Coal Energy Board/Relevant Agency and fuel price will be determined based on the weightage average actual percentage of coal i.e. Thar and imported coal.

- The Federal Government is actively promoting imported coal based power plants to address the demand/supply gap and also to have a base load generation option. These plants are expected to achieve COD in the next 2-3 years. Without a clear pricing mechanism, the operation of these upcoming power plants could be jeopardized. It is felt that the Federal Government may take the initiative to establish an imported coal pricing agency for the purpose of prescribing a coal pricing mechanism based on the international best practices. Therefore, in the absence of imported coal pricing mechanism, and till such time a coal pricing mechanism is put in place, this adjustment mechanism as approved in this decision shall be used.

3. Para 56 subsection III page 34 of the determination, "Central Power Purchasing Agency (CPPA)" may be replaced with "Central Power Purchasing Agency (CPPA) itself or through internationally recognized reputable third party firm"."

4. Para 56 subsection xx (d) may be deleted.

The Authority, in exercise of the powers conferred on it under Section 7(3) (a) read with Section 31 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, Tariff Standards and Procedure Rules, 1998 and all other powers enabling it in this behalf, and after taking into consideration all the submissions made by the parties, issues raised, evidence/ record produced during hearings, and all other relevant material, hereby issues this decision.

AUTHORITY

(Maj. (R) Haroon Rashid)
Member

(Syed Masood-ul-Hassan Naqvi)
Member

(Himayat Ullah Khan)
Member/Vice Chairman

(Brig. (R) Tariq Saddozai)
Chairman

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