National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/TRF-296/CMECPPL-2015/10362-10364
July 10, 2015

Subject: **Determination of the Authority in the matter of Tariff Petition filed by China Machinery Engineering Corporation Power (Pvt.) Ltd. for its 330 MW Local Coal Project in Pind Dadan Khan, Sal Range, Punjab** [Case No. NEPRA/TRF-296/CMECPPL-2015]

Dear Sir,

Please find enclosed herewith the subject Decision of the Authority along with Annexure-I & II (25 pages) in Case No. NEPRA/TRF-296/CMECPPL-2015.

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

3. Order of the Authority along with Annexure-I & II needs to be notified in the official Gazette.s

Enclosure: As above

10.07.15

(Syed Safeer Hussain)

Secretary
Ministry of Water & Power
'A' Block, Pak Secretariat
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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Determination of the Authority

In the matter of Tariff petition
Filed by China Machinery Engineering Corporation Power Private Limited
for its 330 MW local coal project in Pind Dadan Khan, Salt Range, Punjab

July 10, 2015

Commentators:

- Anwar Kamal Law Associates
- Ministry of Planning, Development & Reforms (Energy Wing) Government of Pakistan

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, rule 16 of 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 the hearings, and all other relevant material, hereby issues this determination.

AUTHORITY

(Khawaja Muhammad Naeem)
Member

- On leave -
(Maj. (R) Haroon Rashid)
Member

(Himayat Ullah Khan)
Member

(Syed Mayood ul Hassan Naqvi)
Member

(Brig. (R) Tariq Saddozai)
Chairman

9/7/15

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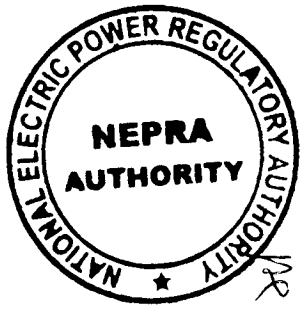
10.07.15

1. China Machinery Engineering Corporation Power Private Limited (CMECPPL) ("hereinafter referred as "the Petitioner" or alternatively "CMECPPL") filed tariff petition pursuant to Rule 3 of the NEPRA (Tariff Standards and Procedure) Rules, 1998 (the "Tariff Rules") for 1×330 MW local coal project to be located in Pind Dadan Khan Salt Range Punjab on January 22, 2015.

Key Technical Features of the Project:

- Project Description: Subcritical Coal Power Plant
- Project Site: Pind Dadan Khan, Salt Range, Punjab
- Fuel: Indigenous Coal in Salt Range
- No. of Units and Configuration of Power Plant: 1 x 330MW (Gross, Mean Site Conditions)
- Net Capacity: 303.6MW (TMCR)
- Auxiliary Consumption: 8%
- Net Efficiency : 37%
- Annual Plant availability: 85%.

Break Up of Project Cost	Million US$
Capital Expenditure	**487.62**
EPC Cost	450.09
Customs Duties (5% of Plant and Equipment)	11.25
Non-EPC Costs	
- Land Acquisition	3.78
- Project Development Cost Prior to Financial Close	6.00
- Sponsor's Costs during Construction	8.00
- Start-up Expenses and Utilities Costs	8.50



2. The petition was admitted by the Authority on February 24, 2015. Salient features along with notice of admission were advertised on April 10, 2015 in daily newspapers (The News & Express). Hearing in the matter was held on May 05, 2015 which was attended by Secretary Mines and Mineral, Government of Punjab, representatives of PPIB, Planning Commission, Punjab mine owners etc.

3. During the hearing, the Petitioner presented his argument in favour of allowing requested tariff of US cents 12.4/kWh. It was observed that the Petitioner while working of levelized tariff inadvertently applied the availability factor of 85% twice. After correction the requested tariff of US Cents 12.40/kWh works out as US Cents 11.67/kWh. High coal price and project cost were the major issues raised in the hearing. Representative of Planning Commission stated that Salt Range area is much more developed than Thar, therefore, high project cost and coal price is not justified. The planning Commission further stated that a certain portion of the project infrastructure cost should be borne by the Punjab Government to reduce the overall project cost. On the issue of price of coal, the Petitioner was directed by the Authority to submit a comparison of CMECPPL's coal

price with Thar coal, imported coal and locally available coal. The Petitioner submitted the said information on May 08, 2015. The Authority also directed the Planning Commission to submit its comments in writing, which subsequently were submitted on May 15, 2015. Anwar Kamal Law Associate (AKLA) also furnished its comments on the tariff petition. AKLA objected that the CMECPPL is not incorporated in Pakistan with Security and Exchange Commission Pakistan (SECP) therefore, tariff application be not processed till the incorporation of the CMEC. In response to comments of AKLA, the Petitioner subsequently informed that on June 01, 2015 the company is formally incorporated as CMEC power Private Limited.

4. Written comments were sent to the Petitioner for reply. The replies were received on June 05, 2015. The commentators' comments along with Petitioner's replies on the matter are discussed wherever applicable in the proceeding paragraphs under relevant issues.

5. On the basis of available pleadings, issues were also framed for presenting evidence and arguments during the course of the hearing. The same were published in the national newspapers on April 25, 2015. Having considered the submission of the Petitioner, the comments of the stakeholders and keeping in view the available benchmarks, the issue-wise details are given in the following paragraphs.

Whether Capital cost US$ 487.62 million is justified?

6. The Petitioner provided the following project cost numbers:

Project Cost Heads	Million US$
Capital Expenditure	**487.62**
EPC Cost	450.09
Customs Duties (5% of Plant and Equipment)	11.25
Non-EPC Costs	
- Land Acquisition	3.78
- Project Development Cost Prior to Financial Close	6.00
- Sponsor's Costs during Construction	8.00
- Start-up Expenses and Utilities Costs	8.50
Financial Charges	**101.36**
Financing Fees & Charges	18.56
Interest During Construction	44.03
Sinosure	38.77
Total Capital Cost of the Project	**588.98**

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7. The Petitioner proposed Item-wise Capital Expenditure without custom duties and taxes amounts to US$ 476.37 million or US$ 1.44 million per MW. The discussion on the justification of Capex is detailed below:

EPC Cost:

8. The Petitioner claimed an EPC cost of US$ 450.09 million. The Petitioner mentions high sulphur as one of the main reason for EPC hike. According to the Petitioner, the above EPC cost also includes insurance premiums (other than Sinosure insurance premium) prior to COD, the Emergency & Safety Spare Parts during commissioning, and housing colony for employees and trainings prior to

COD. The Petitioner has informed that the Government of Punjab shall be responsible for the financing and construction of the access roads to the Project which can also be used by the general public.

Land Acquisition Costs:

9. According to the Petitioner, the total estimated land area required for this project is 86 hectare, including the power complex, ash yard, river-side water pump stations and pipelines outside the power complex. The Petitioner stated that the estimated land acquisition costs of US$ 3.8 Million US$, will cover the purchase of land, together with stamp duty, registration fees, withholding tax, capital value tax, corporation tax, the fees of the broker and the legal consultants. The Government of Punjab shall facilitate the purchase of land.

Project Development Costs prior to Financial Close:

10. The Petitioner estimated this cost to be US$ 6 million which includes the cost of bankable, technical and financial feasibility study, the load flow and system stability study, EIA report, fees of technical, legal and financial consultants both for the sponsor and the lending banks, the bank charges for the guarantees to be issued in favour of PPIB and the Power Purchaser (NTDC/CPPA) and the fees payable to the PPIB and NEPRA. It also covers traveling expenses and administrative expenses incurred by the sponsor prior to the Financial Close.

Sponsor's Costs during Construction:

11. The Petitioner informed that this cost amounting to US$ 8 million covers the expenses of the sponsor prior to COD including the sponsor's offices in China and Pakistan (together with the establishment costs), fees payable to the Independent Engineer during construction, training and inspection at the manufacturer's factory as well as the administrative expenses incurred by the sponsor during construction.

Start-up Expenses and Utilities Costs:

12. The Petitioner estimated this cost to be US$ 8.5 million which according to the Petitioner, includes costs associated with fuel cost, cost of chemicals and other consumables for testing and start-up together with utilities expenses (i.e., electricity, water) required to back feed the power complex during testing and commissioning prior to COD.

13. Planning Commission (PC) while supporting the local energy resource utilization commented that project cost is overloaded due to some cost associated with area development as new city is being planned by Government of Punjab. PC proposed that some benefit from development of infrastructure should be shared with the project. PC further commented that estimated EPC cost is much higher when compared with Thar coal in spite of the fact that enabling infrastructure development and availability of water is much better at the proposed site. The cost and O&M of 3-4 Km water intake line would be much less than the Thar water charges of Rs. 0.447 per kWh as water for Thar coal field is arranged/pumped more than 100 km away after desalination. Under Thar coal up front tariff cost for European Boiler is allowed at US$ 0.1 million/MW whereas, the sponsors will use the Chinese equipment's which are cheaper. According to the PC, these advantages must lead to lower Capex cost compared to proposed US$ million 1.78 per MW.

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14. While responding to the PC comments the Petitioner stated that the project cost is composed of Capex cost and financing charges (IDC, financing fees & charges and Sinosure fee). Area development cost is included under the Capex cost. The area development cost mainly covers the land purchase cost, site levelling and soil treatment cost, which unfortunately cannot benefit from the development of new city in the neighbour. The Petitioner further informed that under the facilitation agreement signed between the Government of Punjab and CMEC, Govt. of Punjab will help in providing the access roads to the proposed power plant. Hence, the costs of access roads are not included in the Capex cost or project cost.

15. On the issue of Thar vs CMECPPL's cost comparison, the Petitioner responded to PC that per megawatt Capex cost of this project is only about 9% higher than that of similar project already determined in the upfront tariff by NEPRA dated 26 June 2014, or 14.7% higher than that of Thar coal. This small difference can be well justified by the technical uniqueness of this project, which are verified by independent technical consultant and financial consultant and submitted to the Authority through letter dated May 08, 2015 bearing reference no. PDKPP-19. The Petitioner asserted that for Thar coal project, govt. of Sindh will construct and provide the sweet water for the Thar coal project up to the boundary of the power plant, which is a significant savings in the Capex cost and hence the project cost. In the Salt Range project, we have to dig wells along the river banks, construct the pump stations and pipelines, and treat the blackish water to sweet water. If govt. of Punjab will commit to do the same, we can cut down the corresponding costs accordingly. The Capex cost of the proposed project is US$ 1.4767 Million/MW, which leads to the project cost of US$ million 1.78 Million/MW. The differences are financial charges, including the IDC, financing fees & charges and Sinosure insurance premiums, calculated as per the regulations of the Authority.

16. In total all the above component sums up to a proposed Capex cost of US$ 476.37 million. The Authority allowed a lump sum Capex of US$ 408.24 million cost to 330 MW Thar coal power plant in its decision dated July 09, 2014 which is also offering same efficiency level of 37%.

17. The Authority noted that the Capex of 408.245 million (that included euro boiler cost @ US$ 0.1 million per MW) allowed to 330 MW Thar coal based power plants need, an adjustment to exclude European boiler as the Petitioner has stated that its cost are estimated based on Chinese boiler and not European boiler. As a result, for the sake of comparison, Thar upfront Capex without the impact of Euro boiler works out to be US$ 382.703 million.

18. The Authority while considering the Capex of both Thar and CMECPPL noted with concern that the requested Capex is substantially higher, i.e. US$ 93.667 million, which means that the CMECPPL provided numbers are 24% higher than the approved benchmark. This is despite the fact that capacity and efficiency remain the same in both cases. The Petitioner informed that high sulfur content, i.e. 2-3% vs 1% sulfur in Thar, is the primary cost driver of the difference as according to the Petitioner, anti-corrosive measures will have to be taken to cope with the sulfur problem.

19. To further study the causes of difference, the Authority also reviewed the feasibility study of the project and observed that the feasibility only has one table summarizing total project cost without any basis and details. The Petitioner was subsequently advised to provide detail break up of estimated EPC cost which should include among other items, boiler and associated cost, steam turbine cost and balance of plant (Mechanical/Electrical), electrical substation, and civil works, other overheads etc.

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20. The Authority also considered the Petitioner argument of high project cost due to high sulphur and observed that the feasibility study of the project discussed the extraordinary coal sulphur content in a transient manner without giving much detail and information regarding its cost. Therefore, the Petitioner was subsequently advised by the Authority to authenticate through an independent consultant the anti-corrosion measures CMECPPL is planning to take which should be supplemented by budgeted cost numbers or quotations.

    a. In reply, the company states that high sulphur content is not the only reason pushing up the capital cost for this project, there are other reasons as well. In support, Petitioner submitted a report of its technical consultant, Northwest Electric Power Design Institute (NWEPDI). The Petitioner, provided many reasons why the capital cost of the project is higher than Thar's capital cost. Some of the key reasons given by the Petitioner are summarized below:

        i. High sulphur content of approx. 2.5-3% of beneficiated coal is much higher than the typical value of 1%, it can create high-temperature sulphur corrosion. This will increase cost for the boiler due to the additional anti-corrosion measures (special coating, etc.) required for the boiler, and will increase investment for FGD due to the increased capacity of limestone slurry and of gypsum system.

        ii. The conveyor belt and trestle are needed to transport coal from coal-washing plant to the power plant, which are additional facilities compared with mine-mouth power plants.

        iii. Due to brackish to Saline Water, reverse osmosis water treatment equipment and anti-corrosion measures for circulating water system equipment will be required.

        iv. Higher environmental standard are set instead of Pakistani standard which required better FGD and ESP etc.

        The tariff for Thar is for two 330MW units whereas, the Petitioner has proposed single unit of 330 MW capacity therefore, according to the Petitioner unit, single unit price is 15-17% higher than the two units.

        vi. High inland transportation cost compared to project like Thar which is to be located in the Sindh, close to the port.

21. The Authority considered the above reasons provided by the Petitioner and observed that concern with regards to the high sulphur content of the proposed Salt Range coal is valid because Thar coal has sulphur content of 1.1% against 2-3% indicated in the Salt Range. With regards to high inland transportation it may be noted that recently the Authority has approved an upfront tariff for two 660MW imported coal project to be located in Sahiwal. The distance between port and the Sahiwal project site is more than 1200 km and Sahiwal coal project has not asked for increase in the approved project cost on account of high inland transportation cost. Nevertheless, the Authority realizes that transportation equipment from the port to the site of the power will bear extra expense but it should not inflate the project cost into two digit percentage increase from project cost to be located in near coastal areas.

22. Further, with regards to Petitioner single vs. multiunit argument, the Authority opined that anyone can opt for upfront tariff regardless of unit size. Further, the upfront tariff already contains a reasonable cushion in capital cost to cater for single vs. multi-unit differences. The projects like

Siddiqson's 350 MW and Lucky's 660 MW coal project, which are all single unit have already opted for upfront tariff and have not raised the issue of cost compensation on account of being single unit project. In view thereof, the Petitioner's argument on single vs. multiple units being without any basis is not valid.

23. The Petitioner is mandated to follow Pakistani environmental standard and therefore, entitled to reasonable compensation on account local environmental law compliance. Asking for extra expense in order to be in compliance with World Bank, IFC standard is hence not justified.

24. The Authority is, however cognizant of the non-availability of sweet water, in the region where water is saline/brackish and necessary expenditure like reverse osmosis plant etc. will have to be incurred for water treatment.

25. In view of the above discussion, the Authority considers that the Petitioner will have to incur some additional costs as compared to Thar. In order to cater for the additional Capex requirement to address the Petitioner's project specific concerns, the Authority has assessed US$ 12.45 million over and above the Capex of US $ 382.7 million allowed to Thar project. Accordingly, Capex without custom duties and taxes in the instant case works out to be US$ 395.15 million and is being approved.

Whether custom duties and taxes are justified?

26. The Petitioner estimated Customs duty at the rate of 5% on the import of plant and equipment. The Petitioner estimated this amount to be US$ 11.25 million, which is roughly 47% of the Capex. The Authority observed that in the petition, the requested amount of US$ 11.25 million includes withholding tax of 7% for local services of EPC cost. However, after subsequent communication, it has now been clarified by the Petitioner that withholding tax on local services is not included in the Petitioner's cost estimates.

27. With revised Capex of US$ 395.15 million and applying Customs duties & cess @ 5.95% of the 66.75% of the capital cost as allowed to all upfront coal tariffs, the resultant Custom duties and cess works out to be US$ 15.69 million. This will be adjusted at the time of COD on actual basis. No withholding tax on local/foreign contractors, sub-contractors, supervisory services and technical services provided by foreign (non-residents) entities has been assumed. Actual expenditure, if any, on this account will be included in the project cost at the time of COD on the basis of verifiable documentary evidence.

Whether financing fee and charges amounting to US$ 18.56 million is justified?

28. The Petitioner estimated this amount to be US$ 18.56 million. According to the Petitioner, this covers arrangement fee and commitment fee payable to the lending banks. The arrangement fee is calculated @ 2% of the debt as one-time fee and the commitment fee is calculated @ 1.5% of the remaining balance of the debt not drawn down as recurring fees.

29. The Authority considered the submission of the Petitioner on account of financing fee and charges and observed that instead of flat rate calculation of commitment fee, the Petitioner calculated commitment fee on undrawn amount. This has caused the financing fee to increase in real terms from 3.5% to 4.2% of the total claimed debt i.e. US$ 442 million. In the upfront coal tariff

determination, the Authority allowed all such fees to the maximum of 3.5% flat rate of Authority's assessed debt or actual, whichever is lower. Therefore, in the instance case, based on assessed debt of US$ 367.39 million, and 3.5% benchmark rate, the financing fee and charges work out to be US$ 12.86 million and the same are allowed to the Petitioner. Financing fee and charges will be subject to adjustment at the time of COD based on actual to the max of 3.5% of total loans to be approved by the Authority at the time of COD.

Whether Interests during Construction amounting to US$ 44.03 million is justified?

30. The Petitioner calculated IDC based on tentative 6-month LIBOR of 0.45%, spread over LIBOR of 4.5% per annum, 40 months construction period and on the projected debt drawn down the schedule on a quarterly basis which is almost similar to the one allowed in all upfront tariffs:

Draw down Schedule	Debt
1st Year of Construction Period	33.30%
2nd Year of Construction Period	33.30%
3rd Year of Construction Period	20.00%
Last 4 Months of Construction	13.40%

31. Based on the above, the Petitioner's IDC works out to be US$ 44.03 million on a debt of US$ 442 million. While using the above mentioned interest rate, approved debt drawdowns, and approved debt of US$ 367.39 million, the IDC in the instant case works out to be US$ 33.38 million and the same is allowed in the project cost. IDC will be adjusted at actual based on revised actual interest rate, actual debt drawdown and based on the revised debt to be approved by the Authority at the time of COD.

Sinosure Insurance Premium:

32. The Petitioner has informed that it intends to get financing from Chinese banks. Therefore, upfront Sinosure insurance premium @7% on the total debt servicing needs to be included in the project cost. In this regard, the Petitioner claimed Sinosure premium of US$ 38.8 million. Based on Authority assessed debt schedule, Sinosure fee @7% of debt servicing works out to be US$ 32.76million and the same is allowed to the project. The project cost will be adjusted at the time of COD on the basis of actual Sinosure fee subject to a maximum of 7%. In case the sponsor managed better alternative Sinosure fee arrangement, the same will be considered.

33. Based on the aforesaid discussion, the Petitioner is allowed a total project cost of US$ 489.85 million against the US$ 588.98 million requested. The breakup of approved project cost is given below:

Project Costs	Requested Million US$	Approved Million US$
EPC Cost	450.09	
Non-EPC Costs		
- Land Acquisition	3.78	
- Project Development Cost	6.00	

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Project Costs	Requested Million US$	Approved Million US$
- Sponsor's Costs during Construction	8.00	
- Start-up and Mobilization Costs	8.50	
Capex/ Without Duties and Taxes	**476.37**	395.15
Capex/ Without Duties and Taxes US$ million /MW	**1.44**	**1.20**
Customs Duties	11.25	15.69
Capex With Duties and Taxes	487.62	410.85
Financial Charges	**101.35**	**79.00**
Financing Fees & Charges	18.56	12.86
Interest During Construction	44.03	33.38
Sinosure	38.8	$32.76
Total Project Cost	**588.98**	**489.85**
Total Project Cost US$ million/MW	**1.7848**	**1.48**

Whether the Coal price of $111.85 per ton which in $ per MMBTU terms turns out to be 60% more than Thar coal price is justified?

34. The Petitioner informed that as the entire production of the captive coal mines will be dedicated to supply coal to the Project and significant capital investment is required for these captive coal mines, Two Parts Fuel Cost Component (FCC) for covering the fixed and variable costs is requested to make the coal mines bankable, which has already been granted to Thar Coal based power projects. This is also in line with the stipulations in Power Policy 2002 under Section 6.2 (54), which states, *"For Projects requiring substantial investment in dedicated production and/or transportation facilities for indigenous fuel, expenses would be accounted for in the power tariff in the form of capacity and energy charges"*. The Petitioner has informed that it has proposed cost-plus coal pricing mechanism to the Government of Punjab for the captive coal mines, and has requested the Government of Punjab to liaise with the Authority in this regard. According to the Petitioner, under the proposed cost-plus pricing mechanism, the Mining Project will also be based on guaranteed IRR and cost pass-through like the current IPP structure for power projects, therefore, the fixed and variable costs of the coal mines will be fully reflected in the fixed charges and variable charges of the coal price.

35. For the purpose of proposed tariff, the Petitioner has provided the following levelized coal price (based on discount rate of 10%) for coal mines of 150,000 tons/year, 400,000 tons/ year and 510,000 tons/year which it has based on 85% plant factor:

Year from COD	Variable Charge US$ per Ton	Fixed Charge US$ per Ton @85% Load Factor	Total Coal Price US$ per Ton @85% Load Factor
1	17.20	115.26	132.46
2	17.20	113.48	130.68
3	17.20	111.71	128.91
4	17.20	109.94	127.14

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Year from COD	Variable Charge US$ per Ton	Fixed Charge US$ per Ton @85% Load Factor	Total Coal Price US$ per Ton @85% Load Factor
5	17.20	108.17	125.37
6	17.20	106.40	123.60
7	17.20	104.63	121.83
8	17.20	102.86	120.06
9	17.20	101.09	118.29
10	17.20	99.32	116.52
Year 11 -30	17.20	68.45	85.65
Levelized Coal Price US$/Ton (Discount Rate @10%)		**111.86**	

36. The above coal price has also included beneficiation costs and the transportation costs from the individual coal mines to the beneficiation plant. According to the Petitioner, the coal price will go down if the production scales of individual coal mines can be increased based on the available mining lease area and further geological survey.

37. The high coal price was a major issue with the tariff petition which was also raised in the hearing held on May 05, 2015 by the commentators. The Petitioner was asked why the proposed Salt Range coal in US$ per MMbtu is expected to cost 60% more than Thar coal.

38. In reply, the Petitioner provided the following reasons why the Salt Range coal price is higher:

    a. Due to features of the coal resources (underground mining, thin to super thin coal seam, high ash, high sulphur, relatively low calorific value, among other features), the mining challenges and coal mining costs will be higher.

    b. In addition, the production scale of the proposed mechanized or semi-mechanized coal mines will be limited from estimated 150,000 tons/year to 510,000 tons/year, as restricted by the available mining lease area and the coal seam. Coal price will reduce when production scale increases.

    c. As coal will come from multiple resources/locations within Salt Range, coal screening is needed to make the coal quality consistent.

    d. Coal crushing and beneficiation/washing is required to reduce the sulphur content down to the acceptable limits (below 2.5-3%) before it is allowed to enter into the boiler.

    e. Coal will be transported via trucks or conveyor belts to the Project from different locations with average estimated distance of 50 km. There should be allowances of transportation costs and transportation loss in the coal price.

39. In response to the Authority's instruction in the hearing, the Petitioner provided the following coal comparison:

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	Proposed Coal	Thar Coal	Existing Coal Salt Range	Imported coal
Levelized Coal Price, US$/ton	111.86	69.22*	62.82 **	133.8
LHV,kCal/kg	4,000	2,767	4,286	5,829
Reference Coal Consumption- LHV,KJ/kWh	9,730	9,730	9,730	9,730
kJ/kWh-kCal/kWh Factor	0.239	0.239	0.239	0.239
Reference Coal Consumption- LHV, kCal/kWh	2,325.41	2,325.41	2,325.41	2,325.41
Coal Cost per kWh,US$/kWh	**0.065**	**0.058**	**0.034**	0.053

* Latest coal tariff price obtained from Thar Coal Board.
** According to the Petitioner, this coal price is based on the statistical data provided by Minerals & Mines Department, Punjab. The exchange rate is set as 1 US$= 97.1 Pakistan Rupee.

40. On the issue of coal price, Planning Commission submitted that the proposed coal price of US$ 111.86 per ton is expensive than both Thar coal and imported coal. PC also prepared its own comparison of Fuel cost which is reproduced hereunder:

	Thar Coal	Proposed Coal	Imported Coal
Price (US$/Ton)	50	111	70
CV Value (MMbtu/Tons)	11.01	15.18	25.15
CV Price (US$/mmbtu)	4.54	7.03	2.75

41. With regards to the Salt Range coal price, the Authority compared US$111.86/t requested coal price with Thar coal price for Block-II, which has been recently approved by Thar Coal Energy board (TCEB) for Sindh Engro Coal mining Company (SECMC). For comparison purpose, the Authority relied on the levelized coal price of US$ 60.326/t approved for 3.8 million ton per annum (mtpa) capacity. The Authority believed that this price at this capacity level is more comparable to Salt Range project where annual mining capacity will be lower against the coal price of US$ 42.03/t approved by TCEB @ 6.5 mtpta mining capacity. Further, Secretary Mines and Mineral, Government of Punjab has informed that unlike Thar coal, Punjab coal already has well established coal market. According to the Petitioner, local Punjab coal cost $62.82/t for roughly 4300 Kcal/kg coal. Again, when compared with Salt Range coal available in the market, CMECPPL's coal price is almost double compared to the locally available coal.

Coal	CMECPPL Levelized	Thar coal Levelized	Other Salt Range coal	Imported w/ 45$/t inland transport.
US$/t	111.86	60.326	62.82	129.86
CV MMBtu/t	15.86	11.005	17.00	24.269
US$/MMBtu	7.05	5.48	3.70	5.35
Difference over CMECPPL price		29%	91%	32%

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42. On the basis of the above comparison, the Authority observed that CMECPPL's requested $112/t levelized cost is higher on any scale and/or benchmark. In the opinion of the Authority, the Petitioner's coal price estimate needs to be rationalized and should be brought down to a prudent level. The Authority is concerned that if such high rates are approved, it will turn the whole integrated coal mine/power plant model economically unviable; no matter what method of technology is adopted, no matter how much economic development it will bring to the region, in addition to transfer of technology; in the opinion of the Authority, it doesn't make any economic sense at all to bring foreign expertise to extract coal @ $112 /t when the same is already available half the price. The Authority considered that with 12.4 cent/kWh (corrected US Cents 11.6730/kWh) levelized tariff it would further increase the subsidy of the federal government which is already aggressively pursuing policies to cut the subsidy number.

43. The Authority is cognizant of the fact that Thar coal area is largely un-developed as compared to Salt Range, where a coal trading market already exist. Further, in terms of Infrastructure like road, communication, etc., skilled labor, Salt Range does far better than Thar. Similarly, the quality of Thar coal is much worse than Salt Range. Therefore, at this stage, the Authority has decided to assume Thar coal price of $5.48/Mmbtu with Salt Range CV of 15.86 Mmbtu per ton, CMECPPL coal price works out to be US$ 86.95/ton. The same is therefore, being assumed as levelized cost for calculating fuel cost component.

44. As per discussion with CMECPPL's team, almost 100% local coal will be utilized at least in the first year. At this stage, the Authority has not taken the local coal mix into consideration. In case of a mix of local coal, relevant adjustment in the fuel price shall be made.

45. The Authority is aware that it doesn't have expertise in coal pricing. The Salt Range coal price has to be determined by competent Authority, which in this case is Mines and Mineral Department, Government of Punjab. Secretary Mines and Mineral, has informed vide its letter Dated June 02, 2015 that his department has the mandate to fix the prices of minerals and frame rules as empowered under the provisions of clause 2(7) and (8) of The Regulation of Mines and Oil-fields and Mineral Development [Government Control] Act, 1948, ACT NO XXIV OF 1948, which have been reproduced below:-

    "7. The fixation of prices at which minerals and mineral oils may be bought or sold; and

    8. Any matter ancillary or incidental to the matters set out in the foregoing clauses of the section."

46. The Secretary has further informed that Mines and Minerals Department, while acting as the regulator of the sector is empowered, under the provisions of Punjab Mining Concession Rules, 2002, to determine the rates of minerals including rents, royalties and application fees etc. as and when required. In this regard, the Government of Punjab has agreed to establish a new Coal Pricing Cell in the Technical Wing of Mines and Minerals Department. In order to supervise the working of Coal Pricing Cell, the ***Government of Punjab has established the Punjab Coal Pricing Board*** with the following constitution:

Chairman, P&D	Chairman
ACS (Energy)	Member
Secretary Finance	Member

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Secretary Law	Member
Secretary Industries	Member
Secretary Mines & Minerals	Member/Secretary
Member P&D (Energy)	Member

Any other member if deemed necessary with the permission of the chair

47. Under the given mandate, Coal Pricing Cell (CPC) will determine the price of captive mines including CMECPPL's. It is expected that CPC will determine price based on judicious and transparent manner. The Authority expects that CPC will make efforts so that the CMECPPL's estimated coal prices, which is currently proposed to be substantially higher is brought down to a reasonable level-comparable to regional coal of same quality already traded in the market. So that the overall levelized tariff which is very sensitive to coal price is brought down to an acceptable level.

Whether the proposed 20% IRR based return is justified?

48. The Petitioner has stated that since the Project is on indigenous coal based power plant therefore it should be allowed a return equal to IRR of 20% allowed to Thar coal. The Petitioner further informed that to date, there's no reference of local coal based power plants other than the on-going Thar Coal based power projects and the Salt Range coal based power project. Given the significance of this Project and its similarities to Thar Coal based power projects, the Return on Equity for this Project is set at 30.65% per annum (or Equity IRR of 20%), on an unbiased basis. In addition the Petitioner also requested to allow withholding tax on dividend at 7.5% on the ROE component.

49. The Authority allowed 18% IRR based return to non-Local Thar coal power plant and 20% IRR to Thar coal power plant. The Authority stated in the Thar Coal upfront tariff determination dated July 2014, that Thar coal is a strategic energy resource, and investment in Thar has to be incentivized in order to expedite Thar coal development. The Authority acknowledges that RoE for Thar coal has to be more than the RoE offered to imported/local coal (non-Thar).

50. The Authority is of the view that Thar coal will play a pivotal role in balancing our national fuel mix and add cheaper all indigenous, base load generation. Further, not a single ton of coal has been extracted from power generation except for few MW that has been generated through underground coal gasification project lead by Dr. Samar Mubarak. Salt Range on the other hand has an active coal market for many decades. Therefore, in the opinion of the Authority, the risk level of coal mining is high in Thar compared to Salt Range no matter what mining technology is used. In view of the above, the Authority has decided to maintain 18% IRR to the project as already allowed in the upfront coal tariff on local coal (other than Thar)

51. With regard to allowing withholding tax on dividend, it must be noted that these taxes are required to be paid by the investors on the dividend declared. In the Authority's opinion as stated in the June 26, 2014 imported coal upfront tariff decision, withholding tax effect shouldn't not be passed on to the consumers as it will further inflate the already high RoE. Therefore, the Authority decided not to allow the impact of withholding tax on dividends in the tariff.

52. Based on the aforesaid discussion, while considering assessed total equity of US$122.46 million and assuming equity drawdown of 80% and 20% in the first and second years respectively, total return

on equity works out to be US$ 32.24 million which translates into Rs 1.1772/kW/h. RoE will be subject to adjustment based on revised approved project cost and based on the actual equity drawdowns at the time of COD.

Whether the proposed fixed O&M cost of 0.421 /kW/hr. and proposed variable cost of Rs 0.18/kWh is justified?

53. The Petitioner provided the following O&M estimates:

Summary of Estimated O&M Costs	Estimated Costs
Variable O&M Cost	4.2 Million US$
Variable O & M - Local	40.00%
Variable O & M - Foreign	60.00%
Ash Disposal Cost	242 PKR/MWh
Limestone	90 PKR/MWh
Fixed O&M Cost	9.8 Million US$
Fixed O & M Amount – Local	40.00%
Fixed O & M Amount – Foreign	60.00%

54. The Petitioner stated that to ensure the guaranteed performance of the power plant, skilled operation and maintenance personnel from China are needed especially during the initial years of operation. Hence, the total O&M costs will be much higher than other similar power plants where local workers will be hired. According to the Petitioner, the ash content of the coal in Salt Range is in the range of 30-40%, much higher than average. Hence, ash disposal cost of this Project is 10% higher than what has been determined by NEPRA, as ash disposal cost is linear to the weight of ash. Ash Transportation cost is based on Rs.1000.00/metric ton, in line with NEPRA's previous determination. The Petitioner further informed that the sulphur content of the coal in Salt Range, even after beneficiation, is estimated to be in the range of 2.5% -3%, which is still much higher than average 1%. Hence, according to the Petitioner, the limestone consumption in the FGD will be much higher than other similar power plants. For the time being, to be in line with NEPRA approved benchmark, the Petitioner estimated cost of limestone @ 90 PKR/MWh, based on approved limestone price of Rs. 1250/metric ton. The Petitioner requested to adjust limestone cost on actual basis at the time of COD.

55. On this issue, PC stated that conditions/reasons similar as given by the sponsors for higher O&M cost also exist in the Thar coal area as such O&M cost which, according to PC, needs to be reviewed so that the proposed tariff could be rationalized.

56. Based on the aforesaid discussion, the Petitioner claimed a total variable O&M cost of Rs 0.18/kWh and fixed O&M cost of Rs 0.421/kW/h. The requested O&M numbers were compared with the approved O&M numbers of similar technology/capacity plant.

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Projects	Variable O&M			Fixed O&M		
	(Foreign)	(Local)	Total	(Foreign)	(Local)	Total
	Rs/kWh	Rs/kWh	Rs/kWh	Rs/kW/h	Rs/kW/h	Rs/kW/h
CMECPPL	0.108	0.0722	0.180	0.253	0.168	0.421
Thar Coal 330 / 220 MW	0.068	0.046	0.114	0.154	0.154	0.307
Difference	0.04	0.03	0.07	0.10	0.01	0.11
	58%	58%	58%	65%	10%	37%

57. While reviewing the above comparison, the Authority noted that the variable O&M cost of CMECPPL is more than 1.5 times the O&M allowed to Thar coal. Similarly, fixed O&M cost is 37% higher than the allowed benchmark. The Authority considered the Petitioner argument that O&M cost will be high because skilled operation and maintenance personnel from China will be needed especially during the initial years of operation. The Authority is aware that Thar Block-II is being developed by the Petitioner's parent Company, CMEC wherein, foreign expertise will be utilized mostly Chinese. Therefore, CMECPPL's argument for increase in O&M for its Salt Range coal is further weakened as Engro-Thar has already opted for the upfront tariff which means that they are satisfied with the approved O&M benchmark.

58. The Authority is of the opinion that there needs to be strong justification and evidence for deviating from the set benchmarks which have been established keeping in view the regional and international benchmarks O&M prices. Any departure from upfront tariff benchmark without valid reasons will set a wrong precedent in the market. Therefore, in view of the above, the Authority has decided not to accept the request of the Petitioner with regards to increase in O&M cost and decided to maintain the same level of O&M cost allowed in the upfront coal that is variable O&M cost of RS 0.1140/kWh and fixed O&M cost of Rs 0.307/kW/h

59. With 40% ash content which is four times more than ash content of Thar/imported coal, the Authority is of the view that an in increase in ash Disposal will however, compensate the Petitioner on account of relatively high ash content disposal. Therefore, the Authority has decided to allow Ash Disposal cost of Rs 0.242/kWh as requested and while maintaining Limestone cost of Rs 0.09/kWh. The cost Limestone and Ash Disposal will be adjusted on actual basis at the time of COD.

60. During the discussion, the Authority was informed that the ash has an active demand in the cement sector. Due to high Ash content of Salt Range project, the Authority expects that there is potential of sale to nearby cement industry at mutually agreed rates. So, in this scenario, the real ash disposal cost may significantly reduce if, depending on the contracts, cement Industry agrees to either dispose the plant's ash to cement factories' site or buy the ash at a price or both. At the time of COD, while the Authority will be approving the ash and limestone cost at actual, ash sales to cement or to other factories shall be taken in to account.

ORDER

61. Pursuant to Section 31 (4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with Rule 16 (11) of NEPRA Tariff Standards and Procedure Rules, 1998, the National Electric Power Regulatory Authority (hereinafter "the Authority") has hereby determined the following reference tariff of CMEC Power (Pvt.) Limited (CMECPPL) (hereinafter 'The Petitioner"):

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Description	Capacity Charge	Energy Charge
	Rs/kW/hr.	Rs/kWh
Average (1-10 years)	3.439	1.139
Average (11-30 years)	1.731	1.139
	Rs/kWh	**USCent/kWh**
Levelized (1-30) Including fixed fuel cost component @85% plant factor	8.2982	8.5461

Note: i) Component wise proposed tariff is indicated at Annex-I.
ii) Debt Servicing Schedule is attached as Annex-II.

Basis for Determination:

62. The above tariff is worked out on the following basis:

Design Coal (Quality of Coal):

63. The Reference LHV calorific value of 15,862.7 Btus/Kg for CMECPPL's Salt Range coal has been assumed for the calculation of fuel cost component which will be subject to adjustment on the basis of actual calorific value.

Plant Size:

64. This tariff has been determined on the basis of plant size of 330 MW (gross). The actual net capacity of the complex will be determined on the basis of Initial Dependable Capacity (IDC) Test at the time of COD and the relevant tariff components will be adjusted downward. However, upward adjustment in tariff will not be allowed if the IDC established lower than the benchmarks stated above. The minimum net capacity will be gross capacity minus maximum allowed auxiliary consumption.

Auxiliary Consumption:

65. The auxiliary power consumption factor shall be 8%.

Exchange Rate:

66. Reference exchange rate of Rs. 97.10/US$ has been used in calculating the reference tariff and the same shall be used for indexations/adjustments where applicable.

Customs Duties, Cess and Withholding Tax:

67. Customs duties & cess @ 5.95% of the 66.75% of the capital cost has been assumed in the project cost which will be adjusted at the time of COD on actual basis. No withholding tax on local foreign contractors, sub-contractors, supervisory services and technical services provided by foreign (non-residents) entities has been assumed. Actual expenditure, if any, on this account will be included in the project cost at the time of COD on the basis of verifiable documentary evidence.

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Construction Period:

68. Construction period for the generation facility shall be 40 months.

Financing of Coal Projects:

69. The sponsor of the project can arrange foreign financing in American Dollar ($), British Pound Sterling (£), Euro (€), Japanese Yen (¥) and Chinese Yuan (¥) or in any currency as the Government of Pakistan may allow.

    a. The tariff has been determined on the basis of debt equity ratio of 75:25;

    b. The minimum equity shall be 20% and the maximum equity shall be 30%; if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as a loan;

Financial Charges:

70. For the purpose of determination of tariff loan tenure of 10 years plus grace period equivalent to construction period has been considered.

71. The reference London Inter-Bank Offer Rate (LIBOR) of 0.45% plus 450 basis points has been used for calculating the IDC and debt servicing component.

72. The interest calculated in the reference debt service schedule shall be subjected to adjustment for variation in quarterly-LIBOR. The adjustment shall be made on 1st July, 1st October, 1st January and 1st April of each year based on latest available TT&OD selling rate and Reuters for the purpose of LIBOR.

73. The maximum allowed premium on LIBOR is 4.5% and there will be no adjustment on the basis of actual higher premium than the maximum allowed limit. In case spread negotiated is less than the said limit, the saving will be shared in the ratio of 60:40 between power purchaser and the power producer respectively.

74. The repayment of loan shall be considered from the first year of commercial operation.

Financing Fees & Charges:

75. Financing fee & charges are taken @3.5% of the borrowing to cater for the upfront fee, commitment fee, lenders' technical, financial and legal consultants' fee etc.

Sinosure Fee:

76. Under the foreign financing originating from Chinese banks, upfront Sinosure fee @7% on the total debt servicing (including principal and mark-up for the entire loan tenor) has been included in the project cost. Project cost will be adjusted at the time of COD on the basis of actual Sinosure fee subject to maximum of 7%. In case the sponsor managed better alternative Sinosure fee arrangement, the same will be considered at the time of COD.

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Interest During Construction (IDC):

77. Interest During Construction (IDC) has been calculated on the basis of 75% of the debt and on the drawdown given indicated below;

Year	330 MW
1st Year	33.33%
2nd Year	33.33%
3rd Year	20.00%
4th Year	13.33%

78. IDC shall be adjusted based on actual debt drawdown percentage during the construction period and on the basis of revised actual LIBOR rate.

79. At the time of COD, IDC shall be re-established on the basis of revised project cost duly approved by the Authority.

Summary of Project Cost:

80. The following project cost has been assumed in the tariff, which will be subject to adjustments at the time of COD in accordance with the methodology prescribed in the preceding paragraphs:

Description	US$ (Mlns)
Capital Cost	395.15
Custom Duties & Cess	15.69
Sub-Total	**410.85**
Financing Fees & Charges	12.86
Sinosure Fee	32.76
IDC	33.38
Total	**489.85**
Total Project Cost US$ million per MW	**1.48**

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Return on Equity (ROE):

81. In case there is a time lag between the construction of power complex and coal mine and the power complex becomes available earlier than the mine, the responsibility for arranging coal will be of the sponsor and the ROE component of tariff will be adjusted accordingly depending on ROE allowed on local coal usage.

Thermal Efficiency:

82. The minimum reference net LHV thermal efficiencies shall be 37% (at mean site conditions) for calculating reference fuel cost component.

83. The fuel cost component will be subject to downward revision in case the actual heat rates established as a result of heat rate test conducted at the time of COD in accordance with the established international procedures in the presence of the representatives of the power purchaser. For acceptance of the test, approval of the power purchaser will be mandatory. Upward

revision in the fuel cost component will not be allowed in case the net LHV efficiency is established lower than the minimum thermal efficiency specified above and the financial impact, if any, of lower thermal efficiency over the term of the Agreement will be borne by the power producer.

Price of Coal:

84. The actual coal price will be determined by Punjab Coal Pricing Board/Competent Authority and the reference fuel cost components will be adjusted accordingly.

85. The basis of coal price shall be provided in the Power Purchase Agreement.

Insurance Cost During Operation:

86. During the term of the Agreement, insurance component of tariff will be adjusted on the basis of actual insurance cost with maximum of 1% of the 70% of Capital Cost and yearly indexation after COD in Rs.-US$ parity will be allowed (if applicable). The reference insurance premium of US$ 2.876 million has been assumed in the calculation of insurance component of tariff.

Interest on Working Capital:

87. The Working Capital requirement has been worked out in accordance with the following:

    a. 30 days coal inventory at 100% plant load.

    b. Receivables equivalent to one month of fuel charges at 100% plant load.

88. Interest on Working Capital has been calculated on the basis of quarterly-KIBOR of 11.91% plus 200 basis point, which will be adjusted for variation in quarterly-KIBOR and weighted average cost of coal inventory.

Operation and Maintenance (O & M) Expenses:

89. Operation and Maintenance or O&M expenses comprise of repair and maintenance, establishment. Including employee expenses, administrative & general expenses.

90. The following shall be the breakup of O&M expenses:

Plant Size	Fixed O&M	Variable O&M
330 MW	Rs.0.307/kW/h	Rs.0.114/kWh

91. 50% of the fixed O&M expenses shall be indexed with local CPI whereas 50% shall be indexed with USCPI and Exchange rate (PKR/US$) variation.

92. 40% of the variable O&M shall be indexed with local CPI whereas 60% shall be indexed with USCPI and exchange rate (PKR/US$) variation.

93. The reference WPI and US CPI will be of June 2014.

94. The following costs with respect to lime stone and ash handling have been determined, which are shown separately in the reference tariff table;

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Cost of Lime Stone	
Cost of Lime Stone including Transportation	Rs.1250.00/M.Ton
Consumption	Kg.0.07/kWh
Cost of Lime Stone	Rs.0.09/kWh
Cost of Ash Disposal	
Ash Transportation cost	Rs.1000.00/M.Ton
Ash Disposal Cost	Rs.0.242/kWh

95. The cost of Lime Stone and Ash Disposal will be adjusted on actual basis at the time of COD.

Fuel Price Adjustment Mechanism:

96. During the tariff period, the fuel cost components shall be adjusted for actual variation in coal prices as and when announced by the competent Authority. The approved fuel price adjustment mechanism will be prescribed at the time of COD.

97. If the plant has to operate on imported fuel due to unavailability of Salt Range Coal, the pricing mechanism for imported coal as described in the imported coal tariff determination dated June 26, 2014 will be applied to calculate fuel cost component.

Monitoring Mechanism for the use of coal fuel:

98. The Power Producer shall furnish a monthly coal usage and coal procurement statement duly verified and certified by the Central Power Purchasing Agency (CPPA) for each month, along with the monthly energy bill. The statement shall cover details such as:-

    a. Quantity of fuel (tons) consumed and procured along with heating value during the month for power generation purposes;

    b. Cumulative quantity (tons) of coal consumed and procured till the end of that month during the year;

    c. Actual (gross and net) energy generation (denominated in units) during the month;

    d. Cumulative actual (gross and net) energy generation (denominated in units) until the end of that month during the year;

    e. Opening fuel stock quantity (tons);

    f. Receipt of fuel quantity (tons) at the power plant site; and

    g. Closing fuel stock quantity (tons) for available at the power plant site.

Tariff Structure:

99. The tariff for coal based generation technologies shall be two-part consisting of the following:

    a. **Energy Purchase Price:**

        i. Fuel Cost Component;

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ii. Variable O&M Local;

iii. Variable Foreign;

iv. Cost of Lime Stone; and

v. Cost of Ash Disposal.

b. **Capacity Purchase Price:**

i. Fixed O&M (Local);

ii. Fixed O&M (Foreign);

iii. Insurance Cost;

iv. Cost of Working Capital;

v. Return on equity; and

vi. Debt Service (Principal Repayment and Interest Charges).

Tariff Design:

100. The Capacity portion of the tariff has been determined for two periods i.e. for the period of first ten years when the project will be paying its debt and the remaining period of twenty years without debt servicing.

101. For the purpose of comparison, levelized tariff assuming 10% discount factor has also been worked out.

102. Levelization has been carried out for the "useful life" of the project which in the instant case is equivalent to "Tariff Period".

Dispatch Criteria:

103. The sole criterion for dispatch of power plants shall be the "merit order dispatch".

104. Variable fuel cost component will be the basis of dispatch.

105. The coal based generation facility shall be subjected to scheduling and dispatch code as specified under NEPRA Grid Code.

106. The generation plant shall be connected at 132/220kV and /or 500KV connection point.

Plant Availability:

107. The guaranteed availability of the plants will be 85%.

General Conditions:

108. In case of mix financing, separate debt service schedules shall be developed using the annuity method at COD;

109. During life of the project operations, Quarterly adjustments/indexations for local inflation, foreign inflation, exchange rate variations and interest rate variations will be made on 1st July, 1st October, 1st January and 1st April each year based on latest available date with respect to CPI notified by the Federal Board of Statistics (FBS), USCPI issued by US Bureau of Labor Statistics and revised TT&OD selling rate of foreign currencies (US Dollar, British Pound Sterling, Euro, Japanese Yen and Chinese Yuan or any other currency as the Government of Pakistan may allow) notified by the National Bank of Pakistan. The method of indexation will be as follows:

Tariff Components	Tariff Indexation & Adjustment
Fuel Cost component	Delivered Fuel Price (inclusive of transportation) at the Power Plant
Variable O&M (Foreign)	US$ to Pak Rupees & US CPI
Variable O&M (Local	Pakistan PI
Fixed O&M (Foreign)	US$ to Pak Rupees & US CPI
Fixed O&M (Local	Pakistan CPI
Cost of Working Capital	Adjustments for relevant KIBOR variations
Return on Equity	US$ to Pak Rupees
Principal Repayment (Foreign Currency)	US$ to Pak Rupees (based on borrowing by the Company)
Interest//Mark-up Payments (Foreign Currency Loan)	• Adjustments for relevant LIBOR • Adjustment for variation in Rs./ US$ rates as applicable

Eligibility Criteria:

110. This tariff shall be only for the brand new machinery only.

Definitions and Interpretations:

111. "Auxiliary energy consumption" means the quantum of energy consumed by auxiliary equipment of the generating facility, and transformer losses within the generating facility, expressed in Megawatts as well as in percentage of the sum of gross output at the generator terminals of all the units of the generating plant;

112. "Capital cost" means the cost of all capital work including plant and machinery, civil work, erection and commissioning and evacuation infrastructure up to inter-connection point;

113. "Design Coal" means the ideal type of coal or fuel that is selected to be used during performance testing of steam generators in power plant engineering;

114. "Grace Period" means a period equivalent to the construction period of the coal project.

115. "Installed capacity" means the summation of the name plate capacities of all the units of the generating facility or the capacity of the generating facility (reckoned at the generator terminals), approved by the Authority from time to time as indicated in the generation license;

116. "Inter-connection Point" shall mean interface point of energy generating facility with the transmission system or distribution system, as the case may be:

117. "Operation and maintenance expenses" or 'O&M expenses' means the expenditure incurred on operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables and overheads;

118. "Project" means a generating facility or the evacuation system up to inter-connection point;

119. "Tariff period" means the period for which the CMECPPL tariff has been determined by the Authority on the basis of reference parameters which in the instant case is 30 years. The tariff period shall commence from the date of commercial operation.

120. 'Useful Life' in relation to a unit of a generating facility including evacuation system shall mean the period during which the generating facility including evacuation system is expected to be usable for the purpose of generating electricity from the date of commercial operation (COD) of such generation facility, namely coal based power project is 30 years;

121. "Year" means a period of 12 months.

Notification:

122. The above Order of the Authority along with two Annexes will be notified in the Official Gazette in terms of Section 31(4) of the Regulations of Generation, Transmission and Distribution of Electric Power Act, 1997.

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Annex-I

China Machinery Engineering Corporation Power Private Limited (CMECPPL) 1 ×330 MW Coal fired Power plant
Reference Tariff

Period	Energy Purchase Price-EPP (PKR/kWh)						Fixed Fuel Cost		Capacity Purchase Price - CPP (PKR/kWh)								Capacity Charge @ 85% Plant Factor	Total Tariff	
	Variable Fuel Cost	Ash Disposal	Limestone	Variable O&M		Total	Rs/kW/h	Rs/kWh	Fixed O&M		Cost of W/C	Insurance	ROE	Loan Re-payment	Interest Charges	Total CPP	PKR/kWh	PKR/ kWh	US ¢ per kWh
				Variable O&M (Foreign)	Variable O&M (Local)		Fixed FCC@100 % Plant factor	Fixed FCC @ 85% Plant Factor	Fixed O&M (Foreign)	Fixed O&M (Local)									
1	0.693	0.242	0.090	0.068	0.046	**1.139**	3.95	4.643	0.1535	0.1535	0.142	0.105	1.177	1.064	0.644	3.439	4.046	9.828	10.121
2	0.693	0.242	0.090	0.068	0.046	**1.139**	3.89	4.571	0.1535	0.1535	0.142	0.105	1.177	1.118	0.591	3.439	4.046	9.756	10.048
3	0.693	0.242	0.090	0.068	0 046	**1.139**	3 82	4.500	0.1535	0.1535	0.142	0.105	1.177	1 174	0.534	3 439	4.046	9.685	9.974
4	0.693	0 242	0.090	0.068	0.046	**1.139**	3.76	4 429	0.1535	0.1535	0.142	0.105	1.177	1.234	0.475	3.439	4.046	9.614	9.901
5	0.693	0.242	0.090	0.068	0.046	**1.139**	3.70	4.357	0.1535	0 1535	0.142	0.105	1.177	1.296	0 413	3.439	4.046	9.542	9.827
6	0.693	0.242	0.090	0.068	0.046	**1.139**	3.64	4.286	0.1535	0.1535	0.142	0.105	1.177	1.361	0.348	3.439	4.046	9.471	9.754
7	0.693	0.242	0.090	0.068	0.046	**1.139**	3.58	4.215	0.1535	0.1535	0.142	0.105	1.177	1.430	0 279	3.439	4.046	9.400	9.681
8	0.693	0.242	0.090	0.068	0.046	**1.139**	3.52	4.143	0.1535	0.1535	0.142	0.105	1.177	1.502	0.207	3.439	4.046	9.329	9.607
9	0.693	0.242	0.090	0 068	0.046	**1.139**	3.46	4.072	0.1535	0.1535	0.142	0.105	1.177	1.578	0.131	3.439	4.046	9.257	9.534
10	0.693	0.242	0.090	0.068	0.046	**1.139**	3.40	4.001	0.1535	0.1535	0.142	0.105	1.177	1.657	0.052	3.439	4.046	9.186	9.460
11	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2 757	0 1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
12	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
13	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
14	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
15	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
16	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
17	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
18	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
19	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1 731	2.036	5.932	6.110
20	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
21	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0 142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
22	0 693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
23	0 693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
24	0 693	0.242	0 090	0.068	0.046	**1.139**	2.34	2 757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
25	0.693	0.242	0.090	0 068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
26	0.693	0.242	0.090	0.068	0 046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
27	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
28	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
29	0.693	0.242	0.090	0.068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
30	0.693	0.242	0.090	0 068	0.046	**1.139**	2.34	2.757	0.1535	0.1535	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
Average (1-10 years)	0.693	0.242	0 090	0 068	0.046	1.139	3.673	4.322	0.154	0.154	0.142	0.105	1.177	1.341	0.367	3.439	4.046	9.507	9.791
Average (11-30 years)	0.693	0.242	0.090	0.068	0.046	1.139	2.344	2.757	0.154	0.154	0.142	0.105	1.177	-	-	1.731	2.036	5.932	6.110
Levelized (1-30 years)	**0.6928**	**0.2420**	**0.0900**	**0.0684**	**0.0456**	**1.1388**	**3.2410**	**3.8130**	**0.1535**	**0.1535**	**0.1415**	**0.1050**	**1.1772**	**0.8414**	**0.2724**	**2.8445**	**3.3464**	**8.2982**	**8.5461**

Debt Serving Schedule

Gross Capacity	330 MWs	US$/ PKR Exchange Rate	97.10	
Net Capacity	303.6 MWs	Equity	122	Million US$
LIBOR	0.45%	Debt	367	Million US$
Spread over LIBOR	4.50%	Debt in Pak Rupees	35,673 22	PKR Million
Total Interst Rate	4.95%			

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balance Million $	Debt Service Million $	Principal Repayment Rs./kWh	Interest Rs./kWh	Debt Servicing Rs./ kWh
1	367	7 15	4.55	360	11.70			
2	360	7 24	4.46	353	11.70			
3	353	7.33	4.37	346	11.70			
4	346	7.42	4.28	338	11 70			
1st Year		**29.15**	**17.65**		**46.80**	**1.0643**	**0.6444**	**1.7087**
5	338	7 51	4 19	331	11 70			
6	331	7.61	4 09	323	11 70			
7	323	7 70	4.00	315	11 70			
8	315	7 80	3 90	308	11.70			
2nd Year		**30.62**	**16.18**		**46.80**	**1.1180**	**0.5907**	**1.7087**
9	308	7.89	3 81	300	11.70			
10	300	7.99	3 71	292	11.70			
11	292	8 09	3 61	284	11 70			
12	284	8 19	3 51	275	11.70			
3rd Year		**32.16**	**14.64**		**46.80**	**1.1743**	**0.5344**	**1.7087**
13	275	8 29	3 41	267	11 70			
14	267	8.39	3 31	259	11 70			
15	259	8.50	3 20	250	11.70			
16	250	8.60	3 10	242	11 70			
4th Year		**33.79**	**13.01**		**46.80**	**1.2336**	**0.4751**	**1.7087**
17	242	8.71	2.99	233	11.70			
18	233	8 82	2.88	224	11 70			
19	224	8 93	2 77	215	11 70			
20	215	9 04	2 66	206	11 70			
5th Year		**35.49**	**11.31**		**46.80**	**1.2958**	**0.4129**	**1.7087**
21	206	9 15	2 55	197	11 70			
22	197	9.26	2 44	188	11 70			
23	188	9.38	2 32	178	11.70			
24	178	9 49	2 21	169	11 70			
6th Year		**37.28**	**9.52**		**46.80**	**1.3611**	**0.3476**	**1.7087**
25	169	9 61	2 09	159	11 70			
26	159	9.73	1 97	150	11 70			
27	150	9.85	1 85	140	11 70			
28	140	9.97	1 73	130	11 70			
7th Year		**39.16**	**7.64**		**46.80**	**1.4297**	**0.2790**	**1.7087**
29	130	10 09	1.61	120	11 70			
30	120	10 22	1 48	109	11 70			
31	109	10 35	1 35	99	11 70			
32	99	10 47	1 23	89	11.70			
8th Year		**41.13**	**5.67**		**46.80**	**1.5018**	**0.2069**	**1.7087**
33	89	10.60	1 10	78	11 70			
34	78	10 74	0 97	67	11 70			
35	67	10.87	0.83	56	11 70			
36	56	11.00	0 70	45	11.70			
9th Year		**43.21**	**3.59**		**46.80**	**1.5776**	**0.1311**	**1.7087**
37	45	11 14	0 56	34	11.70			
38	34	11 28	0 42	23	11.70			
39	23	11.42	0 28	12	11 70			
40	12	11 56	0 14	0	11 70			
10th Year		**45.39**	**1.41**		**46.80**	**1.6571**	**0.0516**	**1.7087**