National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/TRF-314/LCL-2015/1249-1251
January 28, 2016

Subject: **Decision of the Authority in the matter of Petition filed by Lucky Cement Ltd. (LCL) for Determining the Generation Tariff – 16 MW Waste Heat Recovery Power Project** [Case # NEPRA/TRF-314/LCL-2015]

Dear Sir,

Please find enclosed herewith the subject decision of the Authority along with Annex-I (22 pages) in Case No. NEPRA/TRF-314/LCL-2015.

2. The 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, 1997.

Enclosure: As above

28.01.16

(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)

Draft Decision of the Authority

In the matter of

Tariff Petition filed by

Lucky Cement Limited (LCL)

for

determination of Tariff -16 MW Waste Heat Recovery Power Project

under

NEPRA (Tariff Standards & Procedure) Rules, 1998

Islamabad

28 January, 2016

Decision of the Authority in the matter of Petition filed by Lucky Cement Limited (LCL) for Determining the Generation Tariff -16 MW Waste Heat Recovery Power Project (Case No. NEPRA/TRF-314/LCL-2015)

PETITIONER

Lucky Cement Limited (LCL)

COMMENTATORS

1. Peshawar Electric Supply Company Limited (PESCO)
2. The Federation of Pakistan Chamber of Commerce & Industry

REPRESENTATIVES

1.	Mr. Intisar ul Haq Haqqi	Director Power Generation
2.	Syed Najmul Absar	GM Power Generation
3.	Mr. Irfan Chawala	GM Finance
4.	Mr. Naeem Kasbati	Consultant
5.	Mr. Fayyaz A. Ghaffar	Dy GM Finance
6.	Mr. Muhammad Faisal Maqsood	Manager Accounts

Decision of the Authority in the matter of Petition for determination of Tariff 16 MW Waste Heat Recovery Power Project - Lucky Cement Ltd.

1 BACKGROUND & BRIEF HISTORY.

1.1 Lucky Cement Limited hereinafter referred to as the " Petitioner" or " LCL" vide a letter dated 19.03.2015 filed tariff petition for determination of generation tariff of its 16 MW Waste Heat Recovery based Generation Facility 10 MW already functional and 6 MW being constructed at Pezu, district Lucky Marwat Khyber Pakhtunkhwa.

1.2 LCL is currently constructing a 6 MW Waste Heat recovery power project (the "Project") at its cement plant in Pezu. LCL has already installed a Waste Heat Recovery Steam Generator (WHRSG) of 10.00 MW (Unit 1) at its Kiln, operating on coal. Another WHRSG of 6.00 MW (Unit 2) is at an advanced stage of installation and is expected to achieve COD in October 2015. The combined Installed Capacity of the WHRSG system would be 16.00 MW upon commissioning of Unit 2. LCL intends supplying around 15.00 MW Net Electric Power from the aforementioned WHRSG to Peshawar Electric Supply Company Limited (PESCO) on take-and-pay basis. PESCO has already issued LOI dated February 14, 2012 for purchase of power at 132 kV from LCL premises in Pezu, and on the basis of this LOI of PESCO, LCL has already been granted Generation License for our 16 MW WHR project.

1.3 The Petitioner claims that the objective of the project is to produce electricity from the waste gases in the cement manufacturing process. Until now, almost all the waste heat from the clinker production process at the LCL Pezu Plant was vented to atmosphere; only a small portion of waste heat is recovered for pre-heating of raw inputs and drying of coal. The successful completion of the project will allow relatively cheap electricity to be exported to the PESCO distribution network. The project activity will also contribute towards environmental development, socio-economic development and technology development of the country bringing significant reduction in the emissions of Greenhouse Gases

The Petitioner requested the following relief;

Determination of Generation Tariff under NEPRA Tariff (Standards & Procedure) Rules, 1998 for 16 MW Waste Heat Recovery Generation Facility located in Pezu, Khyber Pakhtunkhwa."

2 PROCEEDINGS:

2.1 In terms of rule 4 of the NEPRA (Tariff standard and Procedure) Rules, 1998 (hereinafter referred to as the "Rules"), the petition was admitted by the Authority on May 14, 2015 in compliance with the provisions of rules 6 & 7 of the Rules.

3 FILING OF OBJECTIONS/COMMENTS:

3.1 Comments/replies and filing of intervention request, if any, were sought from the stakeholders and general public within 7 days of the publication of notice of admission, i.e., June 21, 2015 in terms of Rule 6, 7 & 8 of the Rules. In response thereof, the Federation of Pakistan Chamber of Commerce & Industry (FPCCI) filed comments however, delayed comments were subsequently filed by Peshawar Electric Supply Company Ltd., (PESCO). The Authority decided to admit the filing of comments by

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PESCO and being the potential power purchaser allowed an opportunity of being heard. Therefore second hearing was conducted on October 20, 2015.

4 **THE FEDERATION OF PAKISTAN THROUGH CHAMBERS OF COMMERCE & INDUSTRY (FPCCI-COMMENTATOR):-**

4.1 The commentator stated that keeping in view the serious shortage of energy in the country, it strongly recommends to expedite the processing of all applications of power projects pending before the Authority as it has no objection in the larger interest of the country.

4.2 Further sustainable electrification of Pakistan demands a high level of local participation at all levels and real impact and sustainability can be obtained through close collaboration of local private and financial sector firms.

4.3 The FPCCI therefore, has no objection on holding the public hearing in the matter of petition filed by Lucky Cement Ltd, for the determination of Generation Tariff for its 16 MW waste heat recovery steam generator based generation power project.

5 **PESHAWAR ELECTRIC SUPPLY COMPANY LTD., (PESCO-COMMENTATOR):**

5.1 The commentator raised various concerns against the tariff petition filed by the Petitioner, each concern has been discussed under the relevant issues discussed in the proceeding paras.

5.2 That the commentator submitted that the tariff is on higher side as compared to the tariff of other renewable energy projects like bagasse etc.

6 **PETITIONER'S RESPONSE**

6.1 The Petitioner's reply against concerns raised by PESCO (commentator) has also been discussed under the relevant issues except its reply to the concern raised in the preceding Para 5.1 (i).

6.2 The Petitioner stated that the generation and supply of electricity to PESCO grid from Waste Heat Recovery (WHR) is first of it's kind and therefore the tariff cannot be compared to electricity generated from other renewable energy sources such as bagasse etc which are seasonal. Further, NEPRA has already approved tariff of PKR 15.326/kwh (Levelized PKR 12.706/kWh) for wind based power plants. The Petitioner believes that PESCO requires to take corrective actions to curtail their line losses and improve on its recovery ratios. However, in view of huge electricity shortfall in their area of operations, PESCO needs to strive and get every single KW in to its grid. Further, the concerned area of Pezu for power supply is at the very tail end of PESCO's transmission line hence voltage drops and power losses exist. Source of power in the concerned area will definitely give optimum voltage and no line losses.

6.3 The Petitioner mentioned that although availability of Bagasse based energy is seasonal; still fuel cost component proposed for WHR is in line with Bagasse tariff determination for JDW Sugar Mills Ltd dated: Sep 14th , 2015. Fuel cost for JDW 5.9822/kWh Vs LCL 5.986/kWh (73% of Gas price index).

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7 FRAMING OF ISSUES:

7.1 Following issues were framed to be considered during the hearing and for presenting written as well as oral evidence and arguments:-

i) Whether EPC bidding process has been conducted in a transparent manner and justifiable?
ii) Whether the cost of project of US$. 32.363 millions on given technology is justified?
iii) Whether the average annual load factor of 66.25% is justified?
iv) Whether the power purchaser agrees with the cost and specification of the proposed interconnection line?
v) Whether the arrangements of take & pay basis is reasonable and justifiable?
vi) Whether increase in construction period as claimed by the Petitioner is justified?
vii) Whether the proposed gross capacity (92.856GWh) and annual net energy generation for sale (87.433 Gwh) claimed by the Petitioner are justified?
viii) Whether O & M cost of Rs. 2.53/KWhr claimed by the Petitioner is justified?
ix) Whether insurance during construction claimed @ 0.66% of EPC cost is justifiable?
x) Whether insurance during operation claimed @ 3% of project capital expenditures is justifiable?
xi) Whether claimed return on equity @ 21.50% (20% IRR based) is justified?
xii) Whether the concerns raised by the commentators are justified?

8 HEARING:

8.1 The pleadings available on record were examined by the Authority in terms of rule 9 of the Rules; accordingly in order to arrive at a just and informed decision, it was decided to conduct a hearing. As per rule 5 of the Rules notice of admission/hearing were sent to the concerned parties and published in the leading newspapers on June 20 & 21, 2015. Hearing was conducted on 2nd July, 2015 at NEPRA Tower, Islamabad. During the hearing, the Petitioner was represented by Mr. Intisar ul Haq Haqqi, Director Power Generation along with its financial and technical team. The commentators did not participate in the hearing, however the Authority admitted comments filed by PESCO and allowed an opportunity of being heard by conducting a second hearing on October, 20, 2015.

On the basis of pleadings, evidence/record produced and arguments raised during the hearing, issue-wise findings are given as under:

9 Issue # 1 Whether the EPC bidding process has been conducted in a transparent manner and justifiable?

9.1 The Petitioner submitted that EPC contracts have been entered with Sinoma Energy Conservation Ltd.,(SECL) China for supply of engineering and equipment & Orient Energy System (Pvt)Ltd, Pakistan for supply & construction. The Petitioner submitted that it is the first to adopt the WHR technology in Pakistan and opening up a new chapter towards fuel economy, reducing global warming by reduction of hot/exhaust gases into environment and thus moving ahead for an eco-friendly project.

9.2 During the hearing it was stated that SECL is a technology leader in the field and the Petitioner opted it as a lead organization for best results from the 10MW WHR project. Further when opting for 6MW WHR project on Wartsila engines, match of the technology, efficiency and power generation were all

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considered. Wartsila Finland as a lead global power plant manufacturer had collaboration with M/s. ALBORG of Finland, again a technology leader in WHR boilers manufacturing and were chosen. The WHR boilers match with the engines output, exhaust temperatures,
turbo chargers back pressure and the efficiency of the whole system at different load conditions.

9.3 The Petitioner submitted that due to new technology and less competition in the market regarding WHRS, it did not adopt the standard bidding process and therefore EPC contracts were signed accordingly. The Petitioner claimed to have followed the bidding process in the selection of EPC contractor for 6MW which is also not substantiated by the documents submitted against information direction vide NEPRA/R-SAT/-I/TRF-314/10480 dated 16 July 2015.

9.4 Following table demonstrates the installed costs versus capacity of WHR projects in Pakistan as mentioned by International Finance Corporation of World Bank in its June 2014 Market and Supplier Analysis report.

Installed WHR Projects

	Plant	Kiln Type/Capacity/ Number of Lines	Year Started	Technology Provider	WHR Capacity	Total Installed Cost	Power Generation MWh/y	CO2 Savings t/y	Comments
1	Lucky Cement	Dry / 9,000 tpd / 3 lines	2008	Sinoma EC	15 MW	US$12.54 million	87,437	42,992	CDM; project IRR: 7.39% (pre CER); EPC contract
2	Karachi Plant	Rotary/ 6,600 tpd/ 2 lines	2009	Sinoma EC	10 MW	US$9.1 million	58,291	33,820	CDM; Project IRR 7.95% (pre CER); EPC contract
3	Lucky Cement	Dry/3.6Mta /	2009	Anhui Conch/ Kawasaki Engineering	15 MW	US$12.6 million	108,000	48,060	CDM; pre-heater and air coolers
4	Pezu Plant (Unit II)	Rotary /1,600 tpd / 2 lines	2010	Anhui Conch/ Kawasaki Engineering	16.5 MW	US$19.56 million	101,851	49,785	CDM; IRR: 11.47% (pre CER); annual savings US$3.9 m
5	Attock Cement Hub Chowki Plant	4 x 64 M rotary/5,200 tpd/2 lines	2011	Sinoma EC	12 MW	US$18.6 million	58,320	37,908	CDM; IRR 9.1% (pre CER); Avg gross 8.7 MW, avg net 8.1 MW, annual savings US$3.6 m
6	Cherat Cement	Rotary /3,200 tpd / 1 line	2011	Sinoma EC	7 MW	US$9.3 million	41,730	25,761	CDM; 2 HRSGs (3.7 TPH each) on pre-heater end and one HRSG (19.7 TPH) on AQC
7	D.G. Khan Cement Khaipur Plant	Rotax 2/6,700 tpd / 1 line	2012	FLSmidth/ Wasabi Energy	8.5 MW		61,301	28,542	CDM; Kalina cycle system
8	D.G. Khan Cement Dera Ghazi Khan Plant	4/5 stage pre-heater /6,700tpd /2 lines	2012	Anhui Conch/ Kawasaki Engineering	10.4 MW	US$15 million	70,088	40,332	CDM; 2 HRSGs installed on each kiln, one at pre-heater and one on cooler.
9	Fecto Cement Sangjani Plant	Dry/2,600tpd/1 line	2010	CNBM	6 MW	US$7.2 million	38,400	19,584	CDM; Project IRR: 11.76%; EPC contract

Source: UNFCCC CDM; industry sources

9.5 It is evident from the above table that the cost of installation of Power Plant on WHRS is comparable in the cement sector of Pakistan even though the bidding process was not adopted by Petitioner. In the absence of any bidding process the Authority decided to rely on the audited financial statements, bills/invoices and bank statements along with comparable industrial benchmarks as per the above table.

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10 **Issue # 2 Whether the cost of project of US$. 32.363 millions on the given technology is justified?**

10.1 A summary of the cost claimed by the Petitioner for complete project is given hereunder;

(Amount in Million)

Particulars	Unit 1		Unit 2		Total	Total
	Amount US$	Amount PKR	Amount US$	Amount PKR	Amount US$	Amount PKR
Power Plant	12.300	1,266.900	7.150	736.450	19.450	2,003.350
Sea Freight	.161	16.595	-		.161	16.595
Transportation	.095	7.700	.194	20.000	.289	27.700
Transit Insurance	.064	6.637	0		.064	6.637
IDC	.022	2.323	.149	15.301	.171	17 624
Duties/Taxes	.214	17.294	.495	51.000	0.709	68 294
PDC	2.004	206.457	1.203	123.874	3.207	330 331
Local Fabrication	2.128	172.257	1.097	113.037	3.225	285.293
Civil Works GS incl Land	1.341	108.571	.777	80.000	2.118	188.571
TL	-	-	-	-	2.967	305.602
Total Project Cost	**18.331**	**1,804.733**	**11.065**	**1,139.662**	**32.363**	**3,249.997**

10.2 The Petitioner explained that the project is currently under construction and a major portion of the project cost has already been incurred. All costs incurred for construction of Unit 1 are full and final. Onshore and Offshore agreements for construction of Unit 2 have also been executed, and EPC contractor is to be mobilized on site soon.

10.3 The Petitioner mentioned that its EPC Agreements are segregated into 2 main parts, i.e. the Offshore agreement and the Onshore agreement. The Offshore agreement covers equipment supply, which is to be imported, and is hence priced and payable in US Dollars. The onshore agreement primarily covers civil works and fabrication, which is a local cost and is hence priced and payable in PKR.

10.4 The Commentator (PESCO) raised objection on the cost claimed for proposed interconnection/transmission arrangement for evacuation of the 16 MW power which will be through 132 kV dispersal scheme, however, PESCO will evaluate technically and financially the willingness of LCL regarding construction of interconnection/transmission line, after receiving the terms & conditions of the said financing. Further the commentator stated that it will also evaluate technically & financially the cost of 132 kV grid station and transmission line and will proceed accordingly in the matter.

10.5 The Petitioner acknowledges that the power purchaser has the right to evaluate technically and financially the willingness of the Petitioner regarding construction of interconnection/transmission line, after receiving the terms & conditions of the said financing.

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10.6 The Petitioner submitted relevant documents for the claim of project costs for Unit 1 and Unit 2 in response to the information direction NEPRA/R-SAT/-I/TRF-314/10480 dated 16 July 2015. Documents include EPC Contracts, Invoices, Bank Statements and relevant portion of financial statements. It is pertinent to mention here that the Unit I of 10MW achieved its COD in the year 2010 therefore all documents are verifiable and have been checked accordingly. As the COD of Unit 1 was achieved in the year 2010 so historical cost is quite relevant and the amount capitalized against the project cost in the financial statement is the basis for verification and therefore project cost of Unit 1 i.e. 10 MW for Rs. 1,258.570 million is verified against the claimed cost of Rs. 1,804.733 million. It is important to mention here that the capitalized amount for Unit I includes all EPC (80%)and Non-EPC (20%) costs. However, project cost of Unit 2 which is 6 MW and is still under construction and except EPC cost which is verifiable for Rs. 728.341 million through bills/invoices and bank statements, claimed Non-EPC cost of Rs. 941.044 million is not verifiable in the absence of bills/invoices, bank statements and due to unavailability of financial statements for FY 2014-15 at this stage because the documentation is not complete and the COD is yet to be achieved along with construction of grid station and transmission line after signing Power Purchase Agreement. Non EPC cost for Unit 2 has been assessed Rs. 182.085 million (20% of the total cost) which will be adjusted on COD of Unit 2 subject to provision of documentary evidence thereof. Further the Petitioner used exchange rate of Rs.103/US$ for valuation of its project cost for Unit 1 which is contrary to the fact that it was installed in the year 2010 the time when exchange rate was around Rs. 80/dollar. Therefore, the Authority assessed Rs. 2,168.996 million for the whole project of 16 MW. The cost of grid station cannot be considered at this stage and will be decided after submission of documentary evidence by the Petitioner and after signing PPA with PESCO.

11 **Issue # 3 Whether the average annual load factor of 66.25% is justified?**
Issue # 7 Whether the proposed gross capacity 92.856GWh and annual net energy generation for sale 87.433 GWh claimed by the Petitioner are justified?

11.1 The Petitioner submitted that it has already gained considerable experience regarding operation of WHRSG projects since it has already partially commissioned the instant project. Further as per experience waste heat recovery power generation systems have a typical annual load factor of around 70%. The down time of 30% is required to conduct scheduled as well as unscheduled maintenance of the system.

11.2 The commentator stated that the auxiliary consumption mentioned is different from that provided in the notice/advertisement. The load factor mentioned is incorrect 66.25% while the correct load factor is 65%. Hence the annual generation based on 65% L.F comes out to be 85.78 GWh instead of 87.433 GWh. The construction period mentioned is 9 months for Unit 2 while the Petitioner has mentioned that the said unit is at an advance stage of installation and is expected to achieve COD in October, 2105. The proposed tariff control period shall be 30 years instead of 20 years. In response to the reply of the commentator, the Petitioner agreed with adoption of tariff period for 30 years instead of 20 years.

11.3 The commentator further stated that time/month for scheduled and unscheduled maintenance, as well as, scheduled & unscheduled outages is not provided. The basis for assuming 70% L.F for unit No.1 be provided that whether the same has been based on 5 years operational data of the unit or any other technical grounds. As per the detail provided in the last Para, it seems that the generation of unit No.2 totally depends upon power plant engine operation and will never operate throughout the year. Thus the L.F, annual generation and the proposed tariff calculations needs to be

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reviewed/revised accordingly. Further it must be clarified that whether the heat supplied by 2 of the 4 cement lines to the system will be sufficient to operate both the generating units. Also the operational/useful period of the rest of the 2 lines needs to be clearly mentioned.

11.4 The Petitioner replied that instant 16MW project is expected to operate at a weighted average annual load factor of 66.25% (i.e. 70% for 10MW WHRSG and 60% for 6MW WHRSG) its 10MW WHRSG which is already operational, remains operational throughout the year (excluding the down time for scheduled and unscheduled maintenance), whereas its 6MW under construction WHRSG, will be operating only at certain times during any given year. The reason behind the difference in load factors of the two units is that only 2 of the 4 lines supplying waste heat to the system are in use throughout the year, while the remaining 2 lines become useful at certain times during the year when our cement plant is operating at full capacity utilization. Hence, the expected annual energy to be available for sale to PESCO on take and pay basis is approximately 87 GWh, and the same has been used for the purpose of calculation of tariff in this petition.

11.5 During the hearing, the Petitioner explained that it has one 10 MW steam turbine operational since past few years and its experience for its normal operation including its annual and general maintenance is sufficient to decide the available power from it as per following calculation after deducting parasitic load. 9500 X0.77 X24 X330 = 58,254,000 kWh

11.6 Considering annual / routine and or shut down maintenance periods, approximately 75% power is available to outsource excluding parasitic load. For 6 MW capacity WHR turbine as the installation is underway, its generation condition much depends on cement plant production and its electrical equipment load. The Petitioner estimates that approximately 60 to 65 % electric power will be available for dispatch; (5566 X .66 X 24 X 330) = 29,254,896 kWh, thus total annual output of electric Power available for export will be 58,254,000 +29,254,896 = 87,508,896 kWh

11.7 Keeping in view the submissions and the documentary evidence produced by the Petitioner along with the analysis of load factors for the similar technology based power plants in operation, the Authority decided to allow load factor of 66.25%.

12 Issue # 4 Whether the power purchaser agrees with the cost and specification of the proposed interconnection line?

12.1 The Petitioner submitted that it got LOI from PESCO for supply of electricity but it was for 20MW. During the hearing as it was enquired that in the light of changing of scenario, whether the PESCO will still be able to purchase the electricity.? The Petitioner replied that matter is still under consideration with PESCO.

12.2 The commentator (PESCO) stated that the Petitioner has wrongly correlated the LOI issued by it i.e. PESCO on 14.02.2012 for their 20 MW gas based power with the instant offer of 16 MW based on waste heat recovery system. Similarly, PESCO requests the Authority (NEPRA) to reconsider its proceedings, wherein the Authority has also based the proceedings on the said LOI. The fact is that PESCO issued the said LOI to M/s LCL solely for their 20 MW gas based power after detail technical & financial evaluations of their said offer and then got processed/approved from PESCO BOD for the same. The subject of the LOI clearly reveals that the said LOI is specifically meant for 20 MW (Gas based) power and is not intended for any offers in general. Similarly, the terms & conditions of the LOI are exclusively related to the gas based offer of the Petitioner. Thus for any other offer, the

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Petitioner is/was supposed to get fresh LOI/NOC from PESCO and PESCO will proceed as per the prevailing procedure & rules in vogue. Further during generation license processing of the Petitioner regarding its 16 MW WHRS based power, PESCO could not submit any comments due to non availability of complete details, feasibility study, interconnectivity etc. and accordingly NEPRA was informed vide letter No. 654 dated 19.06.2014. It has also been quoted by tariff division of NEPRA that "PESCO will file PAR to NEPRA for 20 MW gas based power under N-CPP policy" which confirms PESCO plea regarding the fact that the said LOI was solely meant for gas based offer. In addition to the above, other terms of the said LOI like approval from PESCO BOD, fuel supply arrangement, N-CPP policy etc clearly reveals that the said LOI was issued by PESCO for purchase of 20 MW gas based power only. In light of the above details, PESCO considers that since the said LOI was for 20 MW gas based offer of LCL, therefore the same stands invalid in the instant case.

12.3 Having considered the claim of the Petitioner and concern shown by PESCO regarding Letter of Intent (LOI), it is pertinent to mention here that the determination of generation tariff under NEPRA (Tariff Standards & Procedure Rules), 1998 does not require LOI from any prospective power purchaser. Therefore the Authority declines the concern of the commentator regarding LOI. The Authority determines the tariff under the prescribed rules, determination of tariff, however the same should not be construed as guaranteed sale of power in any case. It is also pertinent to mention here that the claim of the Petitioner that Waste Heat Recovery Energy Power Project is a renewable energy project is also not valid as per *Policy for Development of Renewable Energy for Power Generation, 2006,* therefore the project cannot be accepted as renewable.

13 Issue # 5 Whether the arrangements of take & pay basis is reasonable and justifiable?

13.1 The Petitioner submitted that the expected annual energy to be available for sale to PESCO on take and pay basis is approximately 87 GWh, and the same has been used for the purpose of calculation of tariff in the petition. WHRSG will be operating depending upon power plant engines operations as per required electrical power/load by cement plant. Presently only two of the four cement lines supplying waste heat to the system are in use throughout the year, while the remaining two lines become useful at certain times during the year when our cement plant is operating at full capacity utilization. Hence the expected annual energy to be available for same to PESCO on take and pay is approximately 87 GWh, and the same has been used for the purpose of calculation of tariff in this petition.

13.2 The Authority has to determine the generation tariff for the petition filed by the petitioner. Terms and Conditions amongst power seller and power purchaser are settled under the Power Purchase Agreement (PPA). The Authority declines the arrangement of any negotiation between the Petitioner and power purchaser at the time of determination of generation tariff.

14 Issue # 6 Whether the increase in construction period as claimed by the Petitioner is justified?

14.1 The Petitioner submitted that the construction period of Unit 2 having capacity of 6 MW is 9 months. The Petitioner further clarified that timeline of 9 months was mentioned for the construction of grid station and transmission line and not meant for installation of 6MW WHR which will be commissioned by the end of October 2015. The tariff period amendment from 20 to 30 years, can be reviewed/revised after further discussions with PESCO and necessary approvals from NEPRA.

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14.2 The Authority considers that the useful life of the project is 30 years as admitted by the Petitioner, therefore the tariff would be applicable for 30 years. Terms and Conditions regarding construction period are settled in Power Purchase Agreement (PPA), therefore the Authority will consider it the same under the relevant rules.

15 Issue #8 Whether O & M cost of Rs. 2.53/kWh claimed by the Petitioner is justified?

15.1 Based on actual books for the year 2013-14 of our 10 MW WHR plant, following is a breakup of Petitioner's O&M costs:

S.No.	Particulars	Rs./kWh
1.	Store & Spares	0.78
2.	Oil, Lubricants & Chemicals	0.46
3.	Electricity Duty	0.03
4.	Salaries & Wages	0.68
5.	Repairs & Maintenance	0.09
6.	Other Manufacturing Costs	0.29
7.	Grid Station & Transmission Line	0.21
	TOTAL O&M COST	**2.53**

15.2 The Petitioner submitted that the total O&M is divided into Fixed & Variable basis.

15.3 The fixed O&M cost comprises of 77.77% of our total O&M and consists of, salaries of staff and executives of plant operations, administration expenses, security, legal fees, audit, environmental monitoring, and major periodical overhauls. Most of the expenses incurred under this head will be denominated in Pakistani Rupees, therefore the Authority is requested to allow 80% of fixed O&M as a local component, whereas 20% of fixed O&M has been claimed as foreign component. The fixed O&M cost includes fixed O&M related to the plant as well as company interconnection facilities up to bus bar.

15.4 The variable O&M represents, consumption of imported spare parts as well as necessary foreign technical services during normal scheduled as well as unscheduled maintenance. Moreover, the variable portion of O&M includes consumables which are locally available. The variable O&M (22.22% of the total O&M) is further segregated into 50% foreign and 50% local component. The variable O&M cost includes variable O&M related to the plant as well as company interconnection facilities up to bus bar.

Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O&M Foreign	Total O&M
Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
0.28	0.28	1.67	0.30	2.53

15.5 The commentator stated that variable O&M and fixed O&M costs may be segregated as both are shown under O&M costs. Further the breakup of the O&M costs mentioned is that of unit No.1 without breakup and which is already in operation since 2010, therefore complete breakup of O&M costs regarding both the units shall be provided. Breakup of the segregated variable O&M 50% foreign

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& 50% local needs to be provided, as the detail of equipments/materials to be imported and locally purchased/acquired is not given therein. The variable O&M mentioned for interconnection facilities up to PESCO 132 kV grid station does not clearly show name of PESCO grid station, therefore the variable O&M for the same seems to be without basis. Since the periodical overhauls are included under the repair and maintenance head of variable O&M, therefore separate provision is not justified. The breakup provided of O&M expenses is related to unit No.1, therefore it is not clear that whether the costs of unit No. 2 are based on assumptions or taking average of the costs already incurred on unit No.1. The electricity duty claimed needs clarification regarding the grounds/facts on which the same has been included in the fixed O&M costs. In addition thereof it is also worth mentioning that all the costs incurred in case of unit No.1, as well as unit No. 2 (which is expected to achieve COD in October, 2015) will need to be reviewed/analyzed in light of the availability of original invoices/ bidding documents etc.

15.6 During the hearing the Petitioner replied that identical O&M Cost per kWh for Unit-1 and Unit-2 has been considered for tariff petition. Further basis of O&M working is as under:-

	Rate Per Rs/kWh					
Expenses	Total O & M	WC on Revenue	Gas Cost Component	WPPF	WWF	O & M
Store & Spares	0.78	0.15	0.15			0.49
Oil, Lubricants & Chemicals	0.46		0.15			0.31
Electricity Duty	0.03					0.03
Salaries & Wages	0.68			0.32		0.36
Repairs & Maintenance	0.09					0.09
Other Mfg. Overheads	0.29				0.12	0.17
Total - O&M Cost Excl. Transmission Line	**2.33**	**0.15**	**0.30**	**0.32**	**0.12**	**1.45**
O&M related to Transmission Line	0.21					0.21
Total - O&M Cost Including Transmission Line	**2.53**	**0.15**	**0.30**	**0.32**	**0.12**	**1.65**

15.7 The Petitioner, in response to the comments, has clearly communicated that power supply will be connected to Pezu grid station. This fact has also been acknowledged by PESCO in its letter dated 15-07-15. Further overhauls are carried out at fixed schedules depending upon running hours of plant and auxiliaries which are in continuous operation and are not dependent upon actual power generation. The Petitioner acknowledged the inference is correct; since the nature of maintenance is similar due to similarity in the basic equipment and technology. Electricity duty is claimed @ Rs.0.03/kWh which is as per the rate already determined by government of KPK as per section 4(A) of West Pakistan Finance Act 1964. Further documents pertaining to costs incurred at Unit 1 & Unit 2 have already been submitted to NEPRA. However complete documentation of Unit 2 will be provided upon completion of the same.

15.8 The commentator (PESCO) mentioned that carbon credits shall be decided by NEPRA as per existing rules in vogue and as per the Policy for Development of Renewable Energy for Power Generation 2006, as amended from time to time. In reply, the Petitioner replied that since currently carbon credits rate is very low and uncertain; hence, actual carbon credit may be considered for tariff

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adjustment at the time of realization. Further it agrees with the indexation mechanism prescribed by the Authority.

15.9 The Authority is cognizant of the fact that O&M expenses are necessary for smooth plant operation; to ensure required availability standards and efficient fuel utilization. O&M expenses comprise of variable and fixed cost. Variable O&M expenses generally include cost of lube oil, chemicals, spares and parts and part of O&M operator's fees, which are associated with the plant operation, whereas Fixed O&M expenses include fixed O&M operator's fees, Salaries & Wages of own staff and other office expenses. Fixed O&M expenses are fixed in nature and have to be incurred even if the plant is shutdown due to maintenance or gas supply cut offs. Since no proper basis or justification in support of O&M expenses of Rs.2.53/kWh was provided by the Petitioner as there has been no O&M contract available, therefore the prudence of the O&M could not be established. In the absence of relevant details/working of the O&M expenses, the Authority had to rely on the benchmarks established in the cases of other CPPs.

15.10 On the basis of technical analysis, it has been observed that WHR system operating and maintenance costs are function of size, technology, site specific operational constraints or requirements. These costs can vary widely and are also influenced by staffing and operating hours of the kiln and availability of the heat recovery system etc. According to (Holcim 2013) and one stone research 2012, 2013, the O&M costs for WHR power projects are typically taken as 2.5% of total capital costs. The O&M costs proposed by the Petitioner in its petition for subject power project seems to be on higher and same needs to be rationalized. In this regard, we consider that the recommended value regarding Fixed O&M may be Rs.1.33/kWh and for Variable O&M may be Rs.0.2455/kWh which collectively comes out to Rs. 1.575/kWh

15.11 Based on technical evaluation, the Authority assessed the fixed O&M cost Rs.1.575/kWh for 16MW to be paid to the Petitioner on unit delivered basis, which will be subject to indexation on annual basis with CPI as published by Federal Bureau of Statistics, Pakistan.

16 **Issue # 9 Whether insurance during construction claimed @ 0.66% of EPC cost is justifiable?**

Particulars	Amount (USD)
Cost of power plant/Grid Station	22,176,717
Transportation-Sea Freight	161,117
From Khi port to Pezu Plant	289,306
Insurance cost including terrorism insurance in transit	64,439
Insurance during construction	171,104
Duties, Taxes and other charges.	708,804
Civil work (Orient)/Grid Station including land cost.	2,358,341
Local fabrication/civil work including STG building	3,225,614
Project development (Management fee)	3,207,099
Total Value of Project	32,362,541
LESS Amount not taken for insurance purpose	
Cost of Grid Station.	2,726,717
Project Development (Management Fee)	3,207,099
Total Deduction for insurance purpose.	5,933,816
Net Cost considered for insurance during construction	26,428,725
Value of insurance premium.	171,104
Percentage of insurance premium.	0.66%

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16.1 The Petitioner submitted that the Insurance during construction phase for our project is to be covered through an All Risk Insurance Policy. Insurance during construction will cover the insurance cost of Company's assets during construction and typically includes Construction All Risk Insurance, Terrorism Insurance, Business-Interruption, Marine and Inland Transit Insurance, and Comprehensive General Liability. The Insurance during Construction has been assumed as US$ 0.171 Million i.e. about 0.66% of our EPC cost for Unit 1 & Unit 2.

16.2 The commentator submitted that as mentioned that the insurance during construction is to be covered through an All Risk Insurance Policy, therefore whether the same is risk coverage like hydrological risk or wind risk? Since the power offered will be based on take & pay, thus any such risk claims will be an extra burden on the power purchaser and hence will ultimately affect end consumer tariff. LCL has stated that the insurance during construction will cover the insurance cost of company's assets during construction. However the fact is that unit No.1 has already been in operation since 2010 and unit No. 2 is expected to achieve COD in October, 2015(which means that the construction work of the plant has almost been completed), therefore, LCL plea regarding the insurance cost during construction seems to be unreasonable and unjustified. The insurance figure mentioned can only be reviewed/analyzed as per available original statements. The operational period, for which the insurance has been claimed, shall clearly be mentioned, keeping in view the COD of both the units.

16.3 The Petitioner replied that the claim made by PESCO regarding inclusion of hydrological risk is incorrect in our case as these types of risks are involved during construction of dams. This presumption is incorrect as no such risk needs to be covered. Insurance during construction is capitalized in the total cost of the project. Hence cost of such insurance is included in quotations for filing of tenders/bids against any project.

16.4 Having gone through the submission of the petitioner, it is mentioned that insurance during construction has been claimed for Unit 1 US$ 0.022 million (PKR 2.323 million) and for Unit 2 US$ 0.149 million (PKR 15.301 million) as project costs. It is pertinent to mention that while assessing the project cost of the Unit 1, insurance during construction was also included in the project cost as per financial statements. Whereas for Unit 2, it will be adjusted at the time of COD with all verifiable documentary evidence.

16.5 The Authority allowed the insurance during construction for Unit 1 as per financial statements in the project cost and further directs the Petitioner to provide verifiable documentary evidence for Unit 2 after COD regarding its adjustment.

17 **Issue # 10 Whether insurance during operation claimed @ 3% of project capital expenditures is justifiable?**

17.1 The Petitioner submitted that its total operational insurance is expected to be around US$ 0.971 Million per annum, i.e. around 3% of the project capital expenditure. The Authority is requested to allow the same for our operational period.

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Description	Value	UOM
Project Cost (WHR and Grid Station)	32.36	US$ in Million
Project Cost (WHR and Grid Station)	3,333.29	PKR in Million
Cost of Line C&D Rotary Kiln and Preheater	2,825.00	PKR in Million
Cost of 10 Gensets	522.21	PKR in Million
Total Cost of Assets for Insurance Purpose	6,680 50	
Insurance- Fire	1 20	Percentage
Insurance- Terrorism	0.30	Percentage
	1.50	
Total Cost of Insurance	100.21	PKR in Million
Insurance in %	3.00	Percentage

17.2 The commentator (PESCO) raised concern that the insurance figure mentioned can only be reviewed/analyzed as per available original statements. The operational period, for which the insurance has been claimed, shall clearly be mentioned, keeping in view the COD of both the units.

17.3 The Petitioner replied that it has submitted quotation pertaining to Insurance during operations with NEPRA which clearly mentions complete details of risks covered together with associated cost. However details of insurance premiums will be provided after finalization of Unit 2 and during PPA meeting.

17.4 The Authority in the case of other CPP projects has allowed annual insurance expense for the operation period with maximum ceiling of 1.00% of the EPC Cost. Considering the location of project and other project specific requirements, the Authority decided to allow annual insurance expense at 1.00% of the EPC cost which works out to be Rs.17.35 million which will be subject to adjustment on the basis of actual or up to a maximum of 1.00% of the EPC cost on production of verifiable documentary to be provided by the Petitioner upon every payment.

18 Issue # 11 Whether claimed return on equity @ 21.50% (20% IRR based) is justified?

18.1 The Petitioner submitted that the Authority in the cases of renewable energy IPPs such as Wind and Hydro has allowed 17% internal rate of return (IRR). In case of hydropower projects, the IRR of 17% frequently translates into Return on Equity (ROE) of around 23-25%. The Authority is requested to allow us the same rate of return as allowed to other renewable energy projects, however, due to the relatively short construction period of our project, the required ROE of our project is expected to be close to 21 5% Therefore, the Authority is requested to allow us return on equity of 21.5%. Since our project is 100% equity financed and no debt has been used for financing of our project, 100% equity has been considered for the calculation of Return. The Return/ Financial cost component will be indexed quarterly with US$/PKR exchange rate with reference exchange rate of 1US$ = 103 rupees.

18.2 Further, it is submitted that the auxiliary power needs of LCL Pezu plant are fulfilled through gas fired engines and our current fuel (gas) cost for Power Generation at present fuel (gas) cost of Rs. 573/MMBtu is Rs. 6.0/kWh. The Petitioner requests the Authority that Rs. 6.0 out of the Return / Financial cost portion of our Capacity Purchase Price also be indexed with Gas Price, taking our current gas price of Rs. 573/MMBtu as reference. The breakup of the Return/Financial cost portion of our tariff for indexation purposes is therefore 6.0 + 2.20 = 8.20. If fuel (gas) cost is revised/raised, then

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according to gas cost component, this Rs. 8.20 factor be also revised/raised. For example, if gas price goes up to say Rs. 700/MMBtu, the new ROE component will be:

Return/ Financial Cost (rev) = [GP (rev)/GP (ref) X 6.0] + 2.2
700/573 X 6.0 + 2.2 = Rs. 9.53 per kWh

18.3 The Petitioner stated that the formula would provide the Petitioner reasonable cover against gas price inflation over time, which would be directly impacting our own power generation cost. In case, the gas prices become exorbitantly high in future, our own power generation cost may become so high that it would no longer be commercially attractive to continue to supply power to PESCO, while cheaper energy is available through our own waste heat recovery system. Therefore, indexing part of our capacity purchase price would ensure that there is incentive over the long term for LCL to continue supplying power to PESCO.

18.4 The commentator (PESCO) objected that the Authority has already allowed internal rate of return of 17% in the determinations other than those for upfront tariff of hydropower projects Similarly NEPRA has also allowed an IRR of 17 % in case of the upfront tariff for new Bagasse based Co-generation projects. Therefore the Authority may allow 17 % IRR to LCL instead of 20%. Further NEPRA has allowed the 20% IRR in case of upfront tariff for hydropower projects while LCL application is for determination of generation tariff instead of upfront tariff. LCL plea regarding the formula wherein protection/safety has been sought against the gas price inflation is unjustified and baseless. LCL plea is incorrect and in contradiction to their statement wherein it has been clearly mentioned that no fuel component is involved and the generation is based on waste heat of the cement plant & engines exhaust gases. Therefore linking of Return/Financial cost portion of the capacity purchase price with gas is baseless. In addition to the above, the plea of LCL regarding return/financial cost needs to be reviewed in light of NEPRA directives issued vide letter No. NEPRA/ TRF-100/N-CPP/9797-9801 dated 30.10.2012, wherein it was intimated that "the gas based tariff of CPPs does not include the financial cost.

18.5 The Petitioner responded that it will be erroneous to compare LCL return with IPPs as they enjoy tax exemption on their earnings. LCL net of tax return is 14.62% considering the tax incidence of 32%. Tariff indexation with Gas price is very logical because in case of increase in the same, LCL power generation cost will become high considering that all power generating units operate on natural gas. Thus in case of higher gas prices, it would no longer be commercially viable to continue power supply to PESCO. Indexation part of our purchase price would ensure that there is long term incentive for LCL and PESCO.

18.6 Having considered the submission, arguments and concern raised by the commentator, it is evident that as the WHRS claims generation of power without fuel as it is the by-product of the main function of the cement plant operation. The Petitioner's core function of the cement plant is production of cement and not generation of power, therefore the claim of fuel (gas) price indexation is invalid in the calculation of Return on Equity. The Petitioner's request for indexing its return with gas price is not only unprecedented but also against the basic principle of project financing. The Petitioner be allowed return on its investment in accordance with the established norms. In view thereof the Petitioner's request for allowing indexation with gas price variation on part of return being without any basis is not accepted. The Authority while determining the return as a principle has allowed return on equity ranging minimum of 20% and maximum of 30%. Beyond 30% equity injection is considered as loan. The same principle in the instant case is being adopted. In this regard

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KIBOR plus a premium of 3% for local loans have been used for calculating the reference cost of debt. For calculation of return on equity component of tariff 17% on equity has been employed. In lieu of debt servicing depreciation on straight line basis for 30 years has been taken and adjusted for calculation of Return on Assets. Since the Petitioner has incurred project cost as 100% equity, the Rate of Return allowed to the Petitioner would be Weighted Average Cost of Capital (WACC) comprising of two components (i) Cost of debt & (ii) Cost of Equity.

19 Return on Assets (ROA)

19.1 The Authority allows a reasonable return to the investor on capital investment commensurate to that earned by other investments of comparable risks. Since the project cost and operation is 100% equity based therefore for making fair assessment of return on assets the Authority has already decided in principle that the equity in a project will be in the range of 20% to 30%. In case the equity is beyond 30% thresh-hold level than the amount exceeding 30% shall be treated as loan. Accordingly in the instant case for calculation of WACC debt equity ratio of 70:30 has been used. While using Return on equity of 17% and Cost of debt as KIBOR of 6- month tenor i.e. 6.44 plus 3% spread results a WACC of 11.71% On the basis of project cost of Rs. 2,168.996 million resulting a debt portion of Rs.1,518.297 million equivalent to 70% of the assessed project cost and the equity portion is Rs. 650.699 million, the levalized ROA at WACC of 11.71% works out as Rs. 1.8986/kWh payable. In addition to ROA, the Authority decided to allow depreciation on straight line basis. Depreciation component included in tariff comes out to Rs.0.7786/kWh payable.

20 Whether the concerns raised by the commentators are justified?
Response of the Authority on the comments filed by the Peshawar Electric Supply Company Ltd., (PESCO)

20.1 Having gone through the concerns so raised qua the response given by the Petitioner and discussed under the relevant issue as above. The Authority's finding on the rest of the concerns are that (PESCO) has the right to evaluate proposed interconnection/transmission arrangement for evacuation of the 16 MW power will be through 132 kV dispersal scheme as per prescribed procedures.

20.2 Further the Authority will take into account the proceeds against carbon credits being generated as per existing rules and as per the Policy for Development of Renewable Energy for Power Generation 2006, as amended from time to time. As per norms and practice indexation will be applied accordingly. Tariff period is for 30 years instead of 20 years as requested to the Authority and all calculations base on this period.

20.3 During second hearing, as the commentator was being represented by the Director Technical and on his statement that the PESCO will not buy the energy even at it is available at cheap tariff, the Authority showed great concern that the commentator should be responsible in supporting or raising concerns against any claim and it must respond logically to defend any of its concerns. Being the regulator, it has to ensure that every cheap source available must be brought into the national grid to mitigate the energy crises.

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21 Reference Tariff

21.1 On the basis of discussion in the preceding paragraphs, the assessed reference tariff on unit delivered basis is enclosed as Annexure I.

22 Order

22.1 Pursuant to section 31 (4) of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with Rule 6 of the NEPRA Licensing (Generation) Rules 2000, Lucky Cement Limited (LCL) is allowed to charge, subject to adjustment/ indexation of the specified tariff for delivery of electricity at Annexure I to the Power Purchaser.

Note:

i) The reference tariff has been calculated on the basis of net annual benchmark energy generation of 92.85 GWh at annual net plant capacity factor of 66.25% for installed capacity of 16 MW.

ii) The tariff is applicable for 30 years commencing from the commercial operation date of Unit 2.

iii) Reference PKR/dollar rate has been assumed at Rs.103/- for Unit 2.

iv) The applicable component wise tariff is indicated at **Annex-I**.

The following adjustments /indexations shall be applicable to reference tariff;

23 Onetime adjustment in Project Cost of Unit 2 (6MW)

23.1 Onetime adjustment of EPC cost of Unit 2 (6 MW) shall be made for foreign currency fluctuation on account of the portion paid in the relevant foreign currency at the time of COD. In this regard, the sponsor will be required to provide all the necessary relevant details along with verifiable documentary evidence. Based upon such information, the relevant currency of Project Cost (Unit 2) shall be established and applied to the total project cost components i.e. EPC Cost, Transportation Cost, Duties & Taxes, Local Fabrication, Project Development Cost. Further insurance during construction for the minimum cover required under contractual obligations, not exceeding 1% of the EPC cost, will be adjusted at COD of Unit 2 upon the production of authentic documentary evidence by LCL.

24 Adjustment for variation in Dollar/Rupee parity

24.1 Relevant reference tariff components shall be adjusted at COD of Unit 2 on account of variation in Dollar/Rupee parity.

25 Pass-Through Items

25.1 No provision for income tax, workers' profit participation fund and workers' welfare fund, any other tax, excise duty or other duty, levy, charge, surcharge or other governmental impositions, payable on the generation business has been accounted for in the tariff. If LCL is obligated to pay any tax on the income purely generated from its main operation i.e. generation of electric power, the exact amount should be reimbursed by Power Purchaser on production of the original receipts. This payment may be considered as pass-through (Rs./kW/hr) payment spread over a 12 months period. Furthermore, in

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such a scenario, LCL may also submit to the Power Purchaser details of any tax shield savings and the Power Purchaser will deduct the amount of these savings from its payment to LCL on account of taxation.

26 Indexations:

26.1 The following indexation shall be applicable to the reference tariff as follows:

Description	Indexations
O&M Cost Fixed & Variable	CPI - General per annum
Insurance	Lower of actual or 1% of EPC Cost per annum
Return on Assets	KIBOR (Six monthly)

27 Indexation applicable to O&M

27.1 The Fixed O&M component of Capacity Charge will be adjusted on account of Inflation (CPI-General) as per available information with respect to CPI General notified by the Federal Bureau of Statistics (FBS). The mode of indexation will be as under:

i) **Fixed O&M**

$FO\&M_{(REV)}$ =Rs.0.2455 / kW / Hour *CPI General $_{(REV)}$/204.22

Where:

$F\ O\&M_{(REV)}$ = The revised Fixed O&M Component of tariff

$CPI_{(REV)}$ = The revised Consumer Price Index (General)

$CPI_{(REF)}$ = The reference CPI (General) of 204.22 of November 2015

Note: The reference numbers indicated above shall be replaced by the revised numbers after incorporating the required adjustments at COD of Unit 2.

ii) **Variable O&M**

The formula for indexation of variable O&M component will be as under:

$V\ O\&M_{(REV)}$ = Rs. 1.3300 /kWh * CPI (REV)204.22

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Where:

$CPI_{(REV)}$	=	The revised Consumer Price Index (General)
$CPI_{(Ref)}$	=	Reference Consumer Price Index (General) of the reference 204.22 of November 2015

Note:

The reference Variable O&M indicated above shall be replaced with the revised number at COD after incorporating the required adjustment based upon the IDC Test.

28 Adjustment in Insurance as per actual

28.1 The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser, not exceeding 1% of the EPC cost, will be treated as pass-through. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon the production of authentic documentary evidence by LCL.

29 Adjustment for KIBOR variation

29.1 The cost of debt in WACC part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variations in interest rate as a result of variation in half yearly KIBOR according to the following formula;

$$\Delta I = P_{(REV)} * (K1BOR+3\%_{(REV)} - 9.44\%) / 2$$

Where:

$\Delta I_{(debt)}$	=	the variation in interest charges applicable corresponding to variation in six monthly KIBOR. A I can be positive or negative depending upon whether $KIBOR+3\%_{(Rev)}$ > or < 9.44%. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each half yearly under adjustment applicable on six monthly basis.

30 Adjustment for Carbon Credits:

30.1 In the Tariff no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same shall be distributed between the power purchaser and the power producer accordingly.

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31 Terms and Conditions of Tariff:

i) The tariff is applicable for a period of 30 years commencing from the date of the Commercial Operation of Unit 2.
ii) All new equipment will be installed and the plant will be of standard configuration.
iii) Dispatch criterion will be based on the Energy Charge.
iv) All invoicing and payment terms shall be in accordance with the standardized PPA.
v) If there is any change in any assumption that may lead to change in the tariff shall be referred to NEPRA for approval.
vi) No corporate income tax and no minimum turnover tax have been assumed.

AUTHORITY

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Member

Himayat Ullah Khan
Member

Syed Masood-ul-Hassan Naqvi
Member

Maj (R) Haroon Rashid
Member

Brig (R) Tariq Saddozai
Chairman

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Lucky Cement Ltd.,
Reference Tariff Table

Year	Fixed O&M	Variable O&M	Insurance	Return on Assets	Depreciation	Total Tariff
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh
1	0.2455	1.3300	0.1869	2.6441	0.7786	5.1851
2	0.2455	1.3300	0.1869	2.5530	0.7786	5.0939
3	0.2455	1.3300	0.1869	2.4618	0.7786	5.0028
4	0.2455	1.3300	0.1869	2.3706	0.7786	4.9116
5	0.2455	1.3300	0.1869	2.2794	0.7786	4.8204
6	0.2455	1.3300	0.1869	2.1882	0.7786	4.7292
7	0.2455	1.3300	0.1869	2.0971	0.7786	4.6381
8	0.2455	1.3300	0.1869	2.0059	0.7786	4.5469
9	0.2455	1.3300	0.1869	1.9147	0.7786	4.4557
10	0.2455	1.3300	0.1869	1.8235	0.7786	4.3645
11	0.2455	1.3300	0.1869	1.7324	0.7786	4.2734
12	0.2455	1.3300	0.1869	1.6412	0.7786	4.1822
13	0.2455	1.3300	0.1869	1.5500	0.7786	4.0910
14	0.2455	1.3300	0.1869	1.4588	0.7786	3.9998
15	0.2455	1.3300	0.1869	1.3677	0.7786	3.9086
16	0.2455	1.3300	0.1869	1.2765	0.7786	3.8175
17	0.2455	1.3300	0.1869	1.1853	0.7786	3.7263
18	0.2455	1.3300	0.1869	1.0941	0.7786	3.6351
19	0.2455	1.3300	0.1869	1.0029	0.7786	3.5439
20	0.2455	1.3300	0.1869	0.9118	0.7786	3.4528
21	0.2455	1.3300	0.1869	0.8206	0.7786	3.3616
22	0.2455	1.3300	0.1869	0.7294	0.7786	3.2704
23	0.2455	1.3300	0.1869	0.6382	0.7786	3.1792
24	0.2455	1.3300	0.1869	0.5471	0.7786	3.0881
25	0.2455	1.3300	0.1869	0.4559	0.7786	2.9969
26	0.2455	1.3300	0.1869	0.3647	0.7786	2.9057
27	0.2455	1.3300	0.1869	0.2735	0.7786	2.8145
28	0.2455	1.3300	0.1869	0.1824	0.7786	2.7233
29	0.2455	1.3300	0.1869	0.0912	0.7786	2.6322
30	0.2455	1.3300	0 1869	(0.0000)	0.7786	2.5410
Levelized	**0.2455**	**1.3300**	**0.1869**	**1.8986**	**0.7786**	**4.4396**

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