



Registrar

National Electric Power Regulatory Authority

Islamic Republic of Pakistan

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No.NEPRA/R/TRF-204/LEPL-2012/10-10212
November 15, 2012

Subject: **Determination of the Authority in the matter of Tariff Petition filed by Lumen Energia (Pvt.) Ltd. (LEPL) [Case # NEPRA/TRF-204/LEPL-2012]**
Intimation of Determination of Tariff pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997)

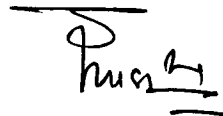
Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annexure-I, II and separate Decision of Mr. Shaukat Alik Kundi, Member NEPRA (27 pages) in Case No. NEPRA/TRF-204/LEPL-2012.

2. The Determination 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) and Rule 16(11) of the National Electric Power Regulatory Authority Tariff (Standards and Procedure) Rules, 1998.

3. Please note that only Order of the Authority at para 17 of the Determination relating to the reference tariff, adjustments, indexation, terms and conditions along with Annexure-I & II needs to be notified in the official gazette.

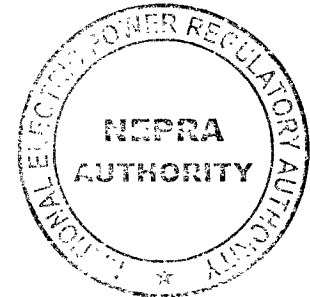
Enclosure: As above


(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, Islamabad.



**NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
(NEPRA)**

Case No. NEPRA/TRF-204/LEPL-2012

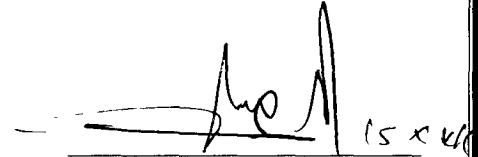
~~October~~ ^{November} 15th, 2012

Petitioner

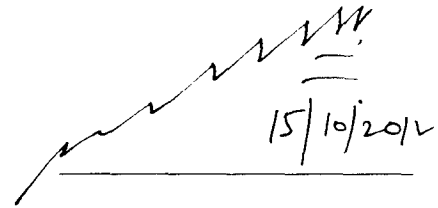
Lumen Energia (Pvt.) Ltd. (LEPL) for Determination of Generation Tariff in respect of 12 MW Biomass based Energy Project.

Authority

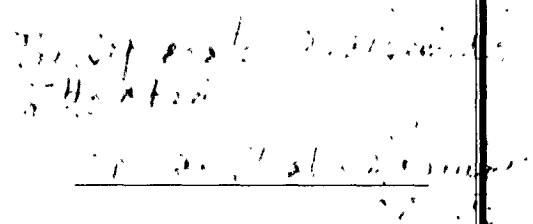
Khawaja Muhammad Naeem
Member (Tariff)

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Habibullah Khilji
Member (M&E)

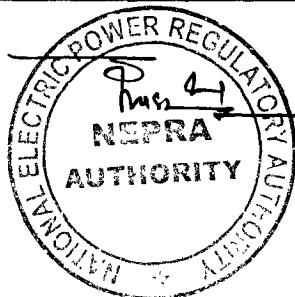
 15/10/2012

Shaukat Ali Kundi
Member (Licensing)



Ghiasuddin Ahmed
Chairman

 15 x 11



Determination of the Authority in the matter of Tariff Petition filed by
Lumen Energia (Pvt) Limited
Case No. NEPRA/TRF-204/LEPL-2012

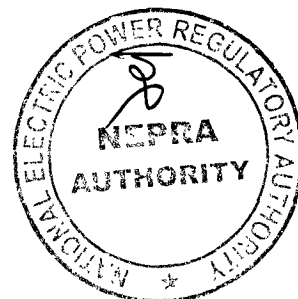
Lumen Energia (Private) Limited (herein after referred to as the "Petitioner" or "LEPL") filed tariff petition before National Electric Power Regulatory Authority (hereinafter referred to as "Authority") on February 23, 2012, under rule 3 of the NEPRA Tariff (Standards and Procedure) Rules 1998 (hereinafter referred to as "Tariff Rules") for determination of reference generation tariff of 12 MW Agriculture Residue Biomass fueled power plant located in district Jhang , province of Punjab.

2. The subject tariff petition was admitted by the Authority on March 7, 2012. After admission, the Authority decided to hold public hearing and accordingly, notice of public hearing was published in the daily newspapers on March 22, 2012. In addition to that, in terms of rule 4(5) of Tariff Rules, written notices were also sent to the ministries, government agencies and public bodies, who in the opinion of the authority were likely to be affected or interested in the petition. Public hearing of the petition was held on April 03, 2012 at main NEPRA Office, Islamabad. No intervention request was received however comments were received from Central Power Purchasing Agency (CPPA) and Punjab Power Development Board (PPDB). The comments of the commentators were sent to the Petitioner for suitable reply and where appropriate, have been discussed under the relevant cost heads.

Submissions of the Petitioner

3. Summary of the technical and financial information provided by the Petitioner is as follows;

Type of the project	Agriculture Residue Biomass
Project Location	District Jhang, province of Punjab
Installed capacity	12.00 MW
Auxiliary load	1.52 MW
Net Capacity	10.48 MW
Concession Period	30 years from Commercial Operation Date (COD)
Proposed Power Purchaser	Faisalabad Electric Supply Company (FESCO)
Technology	Conventional Steam Power Cycle
Plant Make	HTC/WUXI or equivalent
Plant Configuration	1 x Travelling Grate Boiler + 1 x Steam Turbine and Genset.
Boiler and Accessories	WUXI Guolian Power Engine or equivalent
Steam Turbine and Accessories	Hangzhou Steam Turbine or equivalent
Plant Fuel	Multiple (Seasonal) Agriculture Biomass residue
Net Efficiency	22.00% (15514 Btu/kWh)
Capacity Factor	80%
Annual available energy	73.444 GWh



Financial Parameters of the project

Debt/Equity ratio	80:20
Debt Composition	100% Local Debt
Interest rate	6 months KIBOR + 3.00% premium
Debt repayment period	10 years from COD
Repayment basis	Quarterly installments
Return on Equity	18%
Project Cost	US\$ 22.619 million
EPC Contract price	US\$ 15.867 million
Other Project Costs	US\$ 6.752 million
Levelized Tariff	US cents 12.93/kWh or Rs. 11.1175/kWh

4. Based on information provided by the Petitioner, comments of stakeholders and proceedings of the case, the following issues have been discussed for decision of the Authority.

- i) Whether the proposed net annual energy production and auxiliary consumption is justified?
- ii) Whether the EPC Cost of US\$ 15.867 million claimed by the Petitioner is justified?
- iii) Whether Other Project cost of US\$ 6.752 million claimed by the Petitioner is justified?
- iv) Whether the claimed 18% return on equity (IRR based) is justified?
- v) Whether the proposed terms of debt financing are justified?
- vi) Whether the Petitioner's claim for cost of L/C in lieu of Debt Service Reserve Account (DSRA) is justified?
- vii) Whether the proposed net thermal efficiency of 22% is justified?
- viii) Whether the claimed fuel cost component of tariff and the biomass fuel pricing mechanism as proposed by the petitioner is justified?
- ix) Whether the per annum O&M cost of the Petitioner is justified?
- x) Whether the claimed working capital cost is justified?
- xi) Whether two part tariff comprising the Energy charge and the Capacity charge as proposed by the Petitioner is justified?

5. Whether the proposed net annual generation and auxiliary consumption is justified?

5.1 The Petitioner has proposed net annual energy production of 73.444 GWh on the basis of following assumptions.

Installed Capacity	12.00 MW
Auxiliary consumption	1.52 MW
Net available Capacity	10.48 MW
Plant availability factor	80.00%
Net annual energy production	73.444 GWh

5.2 The Authority has examined the information submitted by the Petitioner with regard to plant capacity and estimated annual energy production and is of view that the Petitioner's proposed plant and equipment is of similar configuration and size as of another project (SSJD) whose tariff determination has already been issued by the Authority. The technical professionals of NEPRA in their technical evaluation report for the LEPL's project have proposed auxiliary consumption of 1.50 MW (12.50%) on the basis of

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similarities in the plant and equipment of both SSJD and Lumen Energia power project. Accordingly, the Authority has decided to allow auxiliary consumption of 12.50% (1.50 MW) and net annual energy production of 73.584 GWh based on 80% plant factor in line with its earlier decision for another similar project.

6. Whether the EPC Cost of US\$ 15.867 million claimed by the Petitioner is justified?

6.1 The Petitioner has claimed US\$ 15.867 million on account of EPC cost. In support of its claim the petitioner has provided EPC Contracts duly signed with the EPC contractor (Orient Energy Systems). According to the Petitioner, the scope of work of the EPC Contractor includes procurement, construction and testing/commissioning of the boiler with multiple fuel burning capability, steam turbine, generator, electrical switchyard/transformers, multiple fuel handling facilities, ash mitigation, balance of plant, mechanical & civil work, plant erection and inland transportation to the project site. The EPC Contract of the Petitioner consists of two parts i.e. Onshore and Offshore supply contract as mentioned hereunder.

EPC Cost	US\$ Million
On shore Supply & Services Contract	4.500
Offshore Supply Contract	11.367
Total EPC Contract Price	15.867

6.2 The Petitioner has submitted that its team invited prospective EPC Contractors to submit their comprehensive proposals for complete turn-key design, procurement and construction of the Project. In response detailed proposals were received. Orient Energy Systems (OES) was subsequently shortlisted due to its competitive price, comprehensive proposal and local execution experience. After thorough negotiations, the Petitioner has been able to manage finalization of turn-key EPC price.

6.3 The EPC cost of the Petitioner works out to be US\$ 1.322 million per MW basis and is therefore higher as compared to US\$ 1.260 million per MW approved for another project of the same size.

EPC Cost	SSJD Bioenergy	Lumen Energia
Date of Determination	Approved	Claimed
Installed Capacity	12 MW	12 MW
EPC Cost (US\$ Million)	15.120	15.867
EPC Cost per MW (US\$ Mln)	1.260	1.322

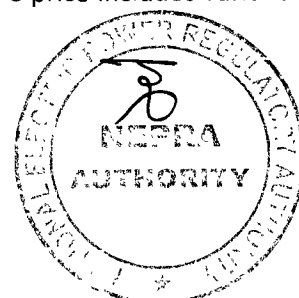
6.4 The issue of higher EPC cost of the petitioner was discussed in the hearing of the petition. The commentators i.e. Punjab Power Development Board (PPDB) and Central Power Purchasing Agency (CPPA) in their comments to the Authority have also objected on higher EPC cost claimed by LEPL.

6.5 In response the Petitioner submitted that it has proposed stand alone "multi fuel" power plant which is different from single fuel bagasse based power plant owing to additional provisions in EPC including; Multiple fuel handling, feeding and storage facilities, boiler technology and metallurgy and state-of-the-art control system. The Petitioner further stated that the cost allowed to other biomass "co-generation project", JDW Power, by the Authority has been used as benchmark while negotiating the EPC Contract price. However, taking in to consideration the economies of scale, inflation and the EPC Contractor's ability to provide a more competitive cost (on per MW basis) for a larger project and the on-going international prices; the EPC and overall project cost cannot be directly linked to that of a larger plant on per MW basis. The Petitioner further submitted that the proposed EPC price includes various additional

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cost components when compared with a co-generation plant which relies on various existing shared facilities.

6.6 The Petitioner argued that its EPC cost has been arrived through competitive bidding and agreed after extensive negotiations with the EPC Contractor. According to the Petitioner, it has chosen Orient Energy System as its EPC Contractor after evaluating its bid against much higher bids of USD 21.0 million by other China based EPC Contractors and USD 30.0 Million by Czech Republic based EPC Contractors.

6.7 On the issue of its higher EPC cost than a comparable project of SSJD, the petitioner submitted that metallurgy (and price) of the boiler in its case is slightly different from other biomass fueled power plants. Further, owing to its management previous experience in power plant operations, it has maintained certain degree of 'redundancy' in power plant equipment to ensure long term availability, which is not known whether SSJD has also opted for similar redundancy.

6.8 The Authority in the case of SSJD Bioenergy which is of the similar size and technology has approved US\$ 15.120 million for its EPC Cost based on its EPC contracts with the same contractor (Orient Energy Systems). The EPC Cost of the Petitioner is higher by US\$ 0.747 million than that of SSJD, which has been attributed to additional multiple fuel handling system and metallurgy of Boiler by the petitioner, however according to technical evaluation done by our technical professionals, there is no significant difference in the boiler metallurgy and technology from that of SSJD's power plant.

6.9 The Authority considers that the petitioner's claim of US\$ 15.867 million for its EPC cost is on higher side as compared to that of SSJD, despite the fact that scope of EPC works and the plant size and equipment are the same in both the cases. Further, the EPC Contracts for both the power projects i.e. SSJD and the petitioner have been finalized/signed with the same contractor i.e. Orient Energy Systems almost at the same time.

6.10 In view of the aforementioned, the Authority finds no justification for allowing higher EPC cost in the instant case. The Authority has therefore decided to approve US\$ 15.120 million for the Petitioner on account of its EPC cost.

7. Whether Other Project cost of US\$ 6.752 million claimed by the Petitioner is justified?

7.1 The Petitioner has claimed US\$ 6.752 million for other project costs as per the following breakups.

Other Project Cost	US\$ Million
Non-EPC Cost (Including housing colony)	0.785
Land (Including land development)	0.602
Custom duties and Federal excise duty	0.576
Insurance during construction	0.214
O&M Mobilization advance	0.300
Project development & administration cost	2.422
Fuel during testing	0.221
Lenders fee & charges; and Hedging cost	0.600
Sub-Total	5.720
Interest during construction (IDC)	1.032
Total	6.752

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7.2 The Other Project cost for each component has been discussed as hereunder.

7.3 Non-EPC cost

7.3.1 The Petitioner has claimed US\$ 0.785 million on account of Non-EPC cost component. According to the Petitioner, this head covers major EPC related costs that are outside the EPC Contractor's scope of work. According to the Petitioner, the major works to be performed at its cost include Water Supply and waste water disposal system, telecommunications & telemetering systems, office and administration block, workshop, housing arrangements (including residences and recreational areas etc, specialized biomass handling vehicles (including front end loaders, tractors, forklift crane etc.) Weigh bridge as well as fuel storage yard civil works and construction of storage sheds. The following break up of Non-EPC cost has been provided by the Petitioner.

Non EPC Cost	USD
Water supply system	80,000
Waste water disposal system	45,000
Telecommunication and Telemetering	50,000
Office, workshop and administration block	120,000
Specialized biomass handling machinery	80,000
Housing arrangements	120,000
Fuel storage yard civil works	90,000
Independent (Third party) EPC boiler technology verification	135,000
Weigh Bridge	65,000
Total	785,000

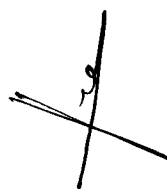
7.3.2 Review of the scope of the EPC contract and "Responsibility Matrix" provided by the Petitioner reveals that provision and installation of Telecommunication and telemetering as well as Weigh bridge is contractor's responsibility. Further, cost of third party verification by an independent consultant estimated to be US\$ 0.135 million has been claimed on the basis of its lender's requirement and therefore will be considered under the cost head of Lenders Cost/ Financial charges.

7.3.3 The Authority considers that the Petitioner's claim for its Non-EPC cost other than the cost of aforementioned items works to be US\$ 0.535 million, which is still higher as compared to US\$ 0.305 million approved by the Authority for another project of the similar size and also keeping in view the scope of work and therefore finds no justification to allow the same.

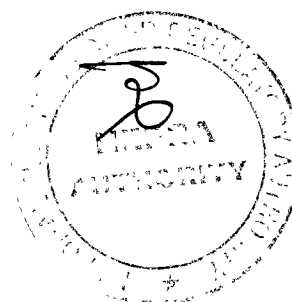
7.3.4 In view of the aforementioned, the Authority has decided to allow US\$ 0.305 million (lumpsum) to the Petitioner for the scope of works to be performed by it under the head of Non-EPC costs.

7.4 Land including land development costs

7.4.1 The Petitioner has claimed US\$ 0.602 million on account of cost of land and land development charges. According to the Petitioner, it has purchased 11 acres of land for the main plant site from open market. The Petitioner has submitted that various factors were considered for selection of plant such as the land site to be within a 5 km radius of the 132 kV grid station for interconnection with its 11 kV substation as per requirement of AEDB's Renewable Energy Policy 2006. The Petitioner has further submitted that in



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addition to land purchase price, the project company has incurred expenditure on site preparation including leveling, compaction and boundary wall and access road construction.

7.4.2 The Authority in the case of SSJD Bioenergy has approved US\$ 0.100 million for its requirement of 12 acres of land and land development cost. The cost of land and land development US\$ 0.602 million as claimed by the petitioner works out to be Rs. 4.541 million per acre which is quite on the higher side as compared to allowed cost of land Rs. 0.717 million per acre in the case of SSJD.

7.4.3 The Petitioner was asked to provide documentary evidence in order to substantiate its claim of land and land development cost. The Petitioner through its letter dated August 7, 2012 has provided the Sale Deed (Registry) of 11.4 acre of land procured by it for the project site.

7.4.4 Scrutiny of documents of land procurement provided by the Petitioner revealed that land has not been purchased in the name of the Petitioner/project company (i.e. Lumen Energia (Pvt) Limited) and therefore cannot be considered by the Authority. In view of the aforementioned, the Authority has therefore decided to allow US\$ 0.100 million to the Petitioner for land procurement and land development charges at this stage. The cost of land will be adjusted at COD based on the principle of 'Prudency' and verified DC value of the land subject to the condition that title of land exists in the name of the project company/petitioner and on production of authentic documentary evidence to the satisfaction of the Authority.

7.5 Custom duty and Federal excise duty

7.5.1 The Petitioner has claimed US\$ 0.576 million on account of 5% custom duty, 1% Federal excise duty and 0.5% for Sindh Infrastructure Cess on import of plant and machinery. The petitioner submitted that cost under this head has been assumed on estimated basis and will be adjusted on actual basis.

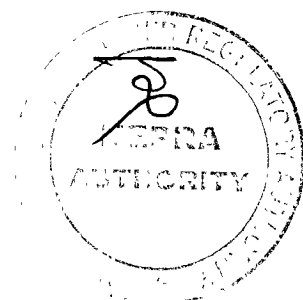
7.5.2 The scope of EPC contracts of the Petitioner revealed that the cost of custom duty on imported plant and equipment is outside the scope of EPC contract, and all taxes, fees and charges for the local works are covered under the Onshore Contract Price and therefore will be borne by the On-shore contractor.

7.5.3 The Authority considers that the GoP Policy for Renewable Power Projects 2006 allows exemption from levy of custom duty on imported plant and equipment for renewable energy projects. The Authority has therefore decided not to consider any cost on account of custom duty and other fees/levies at this stage. However, if the petitioner is required to pay custom duty and other duties/taxes, the same will be adjusted in tariff as per actual on the basis of verifiable documentary evidence to the satisfaction of the Authority at the time of COD.

7.6 Insurance during Construction

7.6.1 The Petitioner has claimed US\$ 0.214 million for Insurance during construction as 1.35% of the claimed EPC cost. The Authority in other cases has allowed Insurance during construction based on its benchmark of 1.35% of the approved EPC cost. Accordingly, the cost of Insurance during construction on the aforementioned basis works out to be US\$ 0.204 million and is therefore allowed to the Petitioner. The cost of insurance during construction will be adjusted as per actual subject to the maximum of 1.35% of the approved EPC cost upon production of verifiable documentary evidence at COD.

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7.7 O&M Mobilization cost

7.7.1 The Petitioner has claimed US\$ 0.300 million on account of O&M Mobilization cost. According to the Petitioner, the project will undertake self Operation and Maintenance through setting up of an O&M team comprising industry professionals to be hired by the company. The O&M mobilization team will conduct the construction management activities and will subsequently adopt the role of O&M team for plant operation. The O&M team will work alongside the EPC Contractor to understand and analyze the design, dynamics and operation of a biomass fueled boiler in order to ensure smooth plant operation and high plant availability.

7.7.2 The Authority has already approved US\$ 0.132 million on account of scope of work to be performed under the head of O&M Mobilization Cost in the case of another project of similar size and technology and finds no justification for allowing any higher costs in this regard. Accordingly, US\$ 0.132 million is allowed by the Authority on account of O&M Mobilization cost of the Petitioner.

7.8 Project Development and Administration cost

7.8.1 The Petitioner has claimed US\$ 2.422 million on account of Project Development and Administration cost. The following cost break up for its project development and administration cost has been provided by the Petitioner.

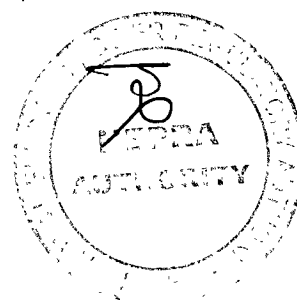
Project Development and Administration cost	USD Million
Project management cost	0.263
Regulatory fee/licenses	0.018
Project Advisory fee	1.697
Studies (Third party costs incurred)	0.352
Proposal fee to AEDB/LOS cost	0.091
Total	2.421

7.8.2 The Authority in the case of SSJD Bioenergy has allowed US\$ 0.935 million as per claim of the petitioner on account of Project development cost which included the following project costs and activities as mentioned at Para 6.4.1 of the determination and also reproduced hereunder.

"The Petitioner has claimed US\$ 0.935 million on account of project development cost. The petitioner has submitted that this cost component includes all costs incurred so far including the cost of feasibility study, environmental study, generation license, office expenditures, travelling, payment to professional team and also includes the costs to be incurred for hiring of owner's engineer, independent engineer under the energy purchase agreement, all fees paid to technical/legal/financial consultants, bank charges on the bank guarantees to be issued in favour of AEDB for obtaining LOS, legal fee payable to AEDB, cost of standby letter of credit in favour of the energy purchaser under the energy purchase agreement, fees payable to AEDB and NEPRA and all company's administration charges and overheads during the project development and construction phase until COD".

7.8.3 The Authority at Para 6.4.5 of its determination for SSJD has approved US\$ 0.935 million on account of project development cost based on the following rationale as reproduced hereunder.

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"The Authority has observed that project development cost is relatively fixed in nature and dependent on project's cost requirement for hiring services of foreign or local consultants. The Authority has also noted that the project is being financed by foreign lenders, for which the project sponsors have to meet stringent requirements of its lenders by hiring services of foreign technical, legal and financial consultants. The Authority, therefore, considers that petitioner's claim of US\$ 0.935 million for its project development cost is justified, hence approves the same as per demand of the Petitioner".

7.8.4 The project development cost of the Petitioner considering the fact that it is being financed by the local banks should in principle be lower than the aforementioned cost of SSJD. The Petitioner had not supported its claimed cost of project development with any documentary evidence in its initial submissions. The petitioner was therefore asked vide letter dated June 27, 2012 to substantiate its claim for all consultancy and advisory costs. The Petitioner through its letter dated July 3, 2012 provided copies of various contracts with project company advisors for carrying out feasibility study, geotechnical investigations, grid interconnection studies and environmental assessment studies. The documentary evidence provided by the Petitioner reveals that it has claimed cost of Project Advisory Fee on the basis of budgeted estimates whereas almost half of total cost claimed under the sub-head of Project Advisory Fee has been paid to the project advisors so far.

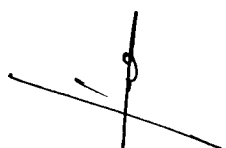

7.8.5 The Authority considers that cost of project development and administration US\$ 2.421 million as claimed by the Petitioner is substantially on the higher side. The Authority is cognizant of the fact that it can only consider and allow the "prudently incurred costs" while determining tariffs in terms of Rule 17(3)(i) of Tariff Rules. The Authority has therefore decided to allow US\$ 0.372 million on account of project development and administration cost as requested by the Petitioner excluding cost of items claimed under the sub-heads of Project Advisory Fee and Studies (Third Party costs incurred) at this stage. The cost of Project Advisory Fee and Studies (third party costs) will be adjusted as per actual subject to the maximum aggregate cost of US\$ 0.935 million under the head of Project development and Administration cost upon production of verifiable documentary evidence to the satisfaction of the Authority at COD.

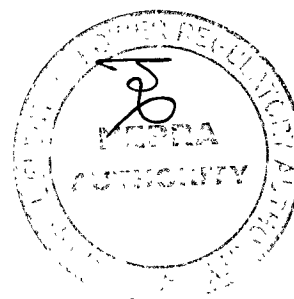
7.9 Fuel during testing

7.9.1 The petitioner has claimed US\$ 0.221 million on account of fuel during testing. According to the Petitioner, this component of project cost includes fuel cost during startup, testing and commissioning phase. The Petitioner has submitted that it requires 3 weeks testing on partial and full load of boiler with no generation of electricity.

7.9.2 According to the terms of the EPC Contracts (Onshore Contract) the cost of fuel (Biomass) required to test performance of boiler before synchronization with the grid is responsibility of the petitioner. The Petitioner has claimed that it requires 3 weeks testing for boiler performance as per technical limits agreed with the EPC contractor. The condition and requirement of 3 weeks testing, however, could not be verified from the EPC contracts and performance schedules on testing of boiler performance, submitted by the Petitioner.

7.9.3 The Authority in the case of SSJD has allowed US\$ 0.130 million on lump sum basis for startup expenses and utility charges. Accordingly, the same amount of US\$ 0.130 million is allowed to the Petitioner on this account.

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7.10 Lender's fee and Hedging cost

7.10.1 The Petitioner has claimed US\$ 0.600 million for lender's fee and hedging cost. According to the petitioner, an amount of US\$ 0.500 million corresponds to lenders' participation and documentation charges fee which is around 3% of the total debt. The Petitioner has submitted that a figure of 3% has been used based on preliminary discussions with local banks and as previously determined by the Authority in its determinations. The Petitioner has further submitted that financing/participation fee may increase in case international banks participate in debt financing as the actual amount will only be firmed at the signing of term sheets and finalization of financing documents with the lenders.

7.10.2 In addition to the lenders fee as mentioned above, the petitioner has claimed US\$ 0.100 million on account of hedging cost. According to the Petitioner if all or part of the project debt is arranged locally in Pak Rupees, the foreign exchange component of the EPC cost will be hedged against devaluation of Pak Rupee against foreign currency (USD). The Petitioner has further submitted that hedging cost associated with the hedging of Pak Rupee will be added to financing cost and will be adjusted at the time of financial close.

7.10.3 The Petitioner has assumed 100% project debt financing in local currency in its petition. The Authority has already set a benchmark of 3% of debt excluding the impact of Interest during construction (IDC) and financial charges for all other power projects. Accordingly US\$ 0.393 million is approved for the petitioner on account of its lenders fees/financial charges. The amount of lenders fee/financial charges comprising all lenders fee, advisory services and charges including boiler third party verification (if any) will be adjusted on the basis of actual subject to the maximum of 3% of the approved debt excluding the impact of IDC and financial charges on production of verifiable documentary evidence at COD.

7.10.4 Regarding the petitioner's claim of US\$ 0.100 million for hedging cost, the Authority has already approved a mechanism for adjustment of foreign component of EPC cost during project construction period due to PKR/US\$ currency exchange rate variation for all other power projects which will also be applicable in the instant case. In order to be consistent with earlier decisions, the Authority does not accede to the Petitioner's request for allowing hedging cost separately.

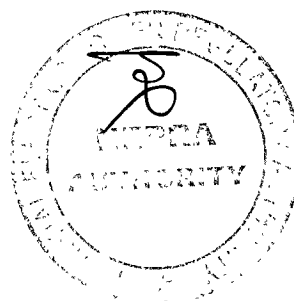
7.11 Interest During Construction (IDC)

7.11.1 The Petitioner has estimated US\$ 1.032 million for interest during construction (IDC) based on project construction period of 24 months. The Petitioner has submitted that cumulative IDC figure will vary with changes in milestones and corresponding drawdown schedule as well as changes in the financing cost (if any) and will be adjusted at the time of COD.

7.11.2 The Authority has approved project construction period of 20 months in another similar project. Accordingly, the Authority has decided to allow 20 months project construction period in the instant case as well.

7.11.3 Based on the proposed terms of financing i.e. current KIBOR at 11.99% (as of June 29, 2012) plus 3% premium and project construction period of 20 months, the estimated amount of IDC works out to be US\$ 2.581 million. The amount of IDC will be adjusted on the basis of approved debt, timing of debt draw downs, KIBOR variations and the approved project construction period on production of verifiable documentary evidence by the Petitioner at COD.

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8. **Whether the claimed 18% return on equity (IRR based) is justified?**

8.1 The Petitioner has proposed 18% return on equity (IRR based) and accordingly has worked out its return on equity (ROE) and return on equity during construction period (ROEDC) components of tariff.

8.2 The Authority in all other renewable/alternate energy power projects including hydropower projects has allowed 17% return on equity (IRR) based. The Authority however does not find any justification for allowing higher rate of return in the instant case as requested by the petitioner. The Authority has therefore decided to approve 17% return on equity (IRR based) for the petitioner.

9. **Whether the proposed terms of debt financing are justified?**

9.1 The Petitioner has proposed that 80% of its total project cost will be financed from debt. The Petitioner has assumed 100% local debt financing to be arranged from local commercial banks based on 6-months KIBOR plus premium of 3.00%. The term of loan after COD will be 10 years and repayment of debt will be made in equal quarterly installments. The Petitioner has assumed KIBOR at 12.25% plus premium of 3.00% for calculations of debt servicing component of tariff.

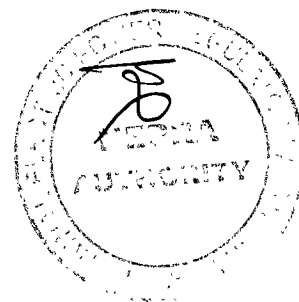
9.2 The terms of financing proposed by the Petitioner are generally in line with GOP Policy for renewable energy 2006 and Authority decisions for other power projects except for petitioner's assumption of 6-months KIBOR. The Authority has approved 3-months KIBOR for quarterly payments of debt in other cases and therefore the same basis i.e. 3-months KIBOR at current rate of 11.99% and 3% spread is approved for the Petitioner. In view of the foregoing, the debt service schedule based on reference numbers has been worked out and attached herewith Annex-II. The debt service component of tariff will be adjusted at COD on the basis of approved amount of debt and variation in KIBOR over the reference KIBOR during the project construction period.

10. **Whether the Petitioner's claim for cost of L/C in lieu of Debt Service Reserve Account (DSRA) is justified?**

10.1 The Petitioner has claimed US\$ 0.170 million as L/C Charges for cost of maintaining debt service reserve account. The amount of claimed L/C Charges has been worked at 2% of total debt servicing requirement for the half yearly debt service installment based on KIBOR at 12.25% and 3% premium.

10.2 The Petitioner has submitted that amount of L/C will be adjusted as per actual at the time of financial close.

10.3 The Authority in other power projects (such as Uch-II and Zorlu Enerji) has allowed L/C charges wherein the financing was arranged from foreign financial institutions such as ADB, IFC etc. Whereas in case of Petitioner, the financing is to be arranged from local commercial banks and further the petitioner has not finalized/signed term sheet with its lenders as yet. In view of this the Authority considers that petitioner's request for L/C charges is not justified hence declined.



11. **Whether the proposed net thermal efficiency of 22% is justified?**

and

Whether the claimed fuel cost component of tariff and the biomass fuel pricing mechanism as proposed by the petitioner is justified?

11.1 The Petitioner has proposed 22% as net thermal efficiency for its biomass energy plant of 12-MW capacity. According to the Petitioner, it will use seasonally available biomass as feedstock proposed proportion of 50% stalk based and 50% husk based. The Petitioner has submitted that while there are various advantages of using multiple biomass fuels; including high yield and availability; there exist certain disadvantages as well such as high moisture content in agriculture residue owing to the fact that biomass is collected directly from farm/cultivation sites and there will be inadequate time for natural drying process.

11.2 The Petitioner has, therefore, proposed the following technical parameters for calculation of its fuel cost component of tariff.

Net thermal efficiency	=	22%
Net plant heat rate (btu/kWh)	=	15,500
Net calorific value of biomass fuel (btu/kg)	=	6,627
Coal price US\$/ton (delivered at site)	=	94.78
Fuel cost component of tariff Rs/kWh	=	5.2199

11.3 The Authority observed that the Petitioner's proposed net thermal efficiency of 22% is significantly less from 24.5% already approved by the Authority in another power plant of same size and configuration. In order to have fair assessment of net thermal efficiency of the Petitioner, the Authority carried out technical evaluation of data submitted by the Petitioner through its technical professionals. According to the NEPRA technical professionals, all the major equipment of the petitioner and SSJD is the same. Further the Petitioner's argument that its boiler has been designed for a multi-fuel firing, therefore lower efficiency should be approved, is also not supported by the information provided and evidence available with the Authority as supplier of boiler has offered same specifications of boiler in case of petitioner as in case of SSJD's. Further, both boilers have been designed on travelling grate technology.

11.4 In view of the aforementioned, the Authority is of the firm opinion that net thermal efficiency of the Petitioner's power plant should not in any way be less than 24.50%. The Authority therefore approves minimum net efficiency of 24.50% for the Petitioner subject to upward adjustment on the basis of heat rate test at COD.

11.5 The Petitioner has worked out its fuel cost component of tariff on the basis of average net calorific value of biomass fuel (50% stalk based and 50% husk based) and biomass price on parity basis with imported coal as given hereunder.

Type of Biomass	Husk based	Stalk based
Calorific value HHV (kcal/kg)	2200	2000
Calorific value LHV (kcal/kg)	1740	1600
Kcal to Btu conversion factor	3.9683	3.9683
Calorific value LHV (Btu/kg)	6905	6349
Mixed fuel composition / annum	50% usage	50% usage
Combined weighted average LHV heat rate	6627	
Price of coal US\$/ton	94.78	
Parity on btu basis - biomass/coal	27.30%	

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11.6 In the opinion of the Authority the net calorific value of mixed fuel (biomass) as 6627 btu/kg proposed by the Petitioner is on lower side due to the fact that calorific value of husk and stalk based fuels is much higher than bagasse, because of lower water content. It has been observed that feasibility study of petitioner indicates btu value of 4252 kcal/kg for cotton stalk and 3200 kcal/kg for rice husk. The other references available internationally also quote GCV of Rice Husk more than 3300 kcal/kg and for Cotton Stalk in the range of 4000 to 4500 kcal/kg.

11.7 In the study carried out by the technical experts of NEPRA, it has been submitted that the calorific value (for Biomass operation in 50:50 ratio of Rice Husk and Cotton Stalk) on LCV basis works out to be 3250 kcal/kg even with the conservative assumptions about moisture.

11.8 In view of the above the Authority has decided to approve 3250 kcal/kg on LCV basis for the proposed biomass fuel of the petitioner. Based on reference CIF price of Coal for April 2012 and other technical data discussed above, the fuel cost component of the petitioner has been worked out as Rs. 6.7851/kWh as given hereunder.

Fuel cost component	Unit	Approved	
		Biomass	Coal
Calorific Value (LHV)	kcal/kg	3250	6000
Calorific value (LHV)	btu/kg	12895	23810
Net heat rate (Thermal efficiency)	btu/kWh	13926	
Net efficiency		24.50%	
Biomass consumption	kg/kWh	1.080	
Reference Coal Price- CIF Karachi	Rs./ton		10942.19
Equivalent price of biomass	Rs./ton	5926.17	
Inland transportation cost Biomass	Rs/ton	356.67	
Total biomass cost	Rs./kg	6282.84	
Fuel Cost Component	Rs/kWh	6.7851	

11.9 The adjustment of fuel cost component of tariff will be made in accordance with the generic mechanism approved by the Authority in the case of SSJD for all biomass/bagasse based energy projects and described in the order of the Authority in the later part of this determination.

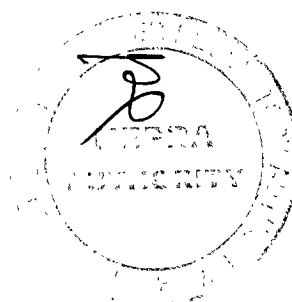
12. Whether the per annum O&M cost of the Petitioner is justified?

Fixed Operation and maintenance cost (Fixed O&M cost)

12.1 The Petitioner has claimed US\$ 1.018 million per annum for its fixed O&M cost apportioned in to foreign and local O&M cost in a ratio of 50:50. The Petitioner has submitted that based on available information and owing to extensive prior experience of the project sponsors in operating power plants around the world (UK, Kazakhstan, Brazil, Argentina, Chile etc) and in Pakistan (including AES Lal Pir, AES Pak Gen and Pakistan's largest private sector integrated utility "KESC") the decision was taken to opt for self operation of LE Biomass project. After careful planning and keeping in mind the objective of maintaining a lean operations team, the project sponsors developed the O&M budget for cost estimates.

12.2 As per the petitioner, fixed O&M budget includes costs associated with operations and maintenance team at plant and project management team at head office as well as certain office running

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expenses of fixed nature. In addition, the fixed O&M budget also includes an agency fee of USD 20,000 payable to lenders on an ongoing basis as Bank's documentation and processing fee.

12.3 The Petitioner has further submitted that in the past, the Authority has approved the bagasse based co-generation projects which have some common expenses between the host sugar factory and co-generation unit. Therefore, the standalone biomass power project's O&M cost should be higher when compared with a co-generation project and those common expenses should be allowed by the Authority.

Variable Operations and Maintenance cost ("V O & M")

12.4 The Petitioner has submitted that the amount of variable O&M has been calculated on the basis of operational hours. The budgeted amount is based on replacement cost estimates, and associated man hour cost as well as consumables including chemicals and lubricants. In addition, the Variable O&M cost also includes USD 15,000 Power Purchaser SBLC charges. Based on budget and previous experience, total Variable O&M cost proposed by the Petitioner is USD 415,000 per annum or USD0.415 million. This is further divided in the ratio; foreign: local; 85 : 15.

12.5 The Petitioner has claimed its annual O&M cost based on its experience of thermal power projects. It has also been submitted that the O&M of the plant will be carried by a team of the Petitioner. In the opinion of the Authority the petitioner's claimed annual O&M cost of US\$ 1.018 million for Fixed O&M component and US\$ 0.415 million for Variable O&M component is substantially on higher side. The Authority considers that annual O&M cost of the Petitioner should be significantly low as O&M function of the plant will be carried out by the petitioner itself without involving or outsourcing it to any other O&M contractor. The Authority has already approved annual O&M cost in another independent project of the same size on biomass/bagasse fuel. The Authority does not find any justification for allowing higher O&M cost as per claim of the Petitioner than already approved for a similar project. Accordingly, the following O&M cost component of tariff has been allowed to the Petitioner as mentioned hereunder.

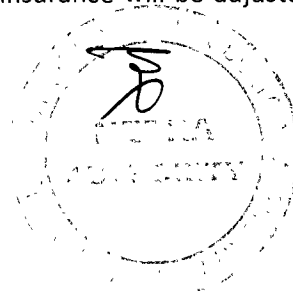
O&M cost	Approved O&M Cost Rs/kWh
Fixed O&M Local	0.4800
Fixed O&M-Foreign	0.2400
Variable O&M-Local	0.1200
Variable O&M- Foreign	0.2400
Total	1.0800

Insurance cost

12.6 The Petitioner has submitted that during operational phase of the project it will be required to pay an annual insurance premium on an on-going basis. As per the petitioner it has calculated the annual insurance premium amount on the basis of 1.35% of EPC cost and additional Non-EPC equipment related costs. The corresponding amount is USD 233,000 or USD 0.233 million.

12.7 The Authority has already set a benchmark of 1.35% of EPC cost in other power projects. The Petitioner has claimed US\$ 0.233 million based at 1.35% of the EPC cost and additional Non- EPC equipment related costs. However, on the basis of principle already set by the Authority, the per annum insurance cost based on 1.35% of the EPC cost works out to be US\$ 0.204 million and therefore is allowed on account of its annual insurance expense. The per annum cost of insurance will be adjusted on annual

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basis at actual subject to the maximum of approved EPC cost on production of verifiable documentary evidence by the Petitioner to the satisfaction of the Authority.

13. **Whether the claimed working capital cost is justified?**

13.1 The Petitioner has claimed US\$ 0.145 million (Rs. 0.1360/kW/hr) on account of cost of its annual working capital requirement. The petitioner's claim for working capital requirement has been based on the following assumptions.

Mark-up charges on total cost of 45 days biomass fuel inventory	= 119,707 USD
Markup charges on delayed payment of Energy invoice	= <u>25,293</u>
Total	<u>145,000</u>

13.2 The Petitioner has worked out its working capital requirement for 45 days fuel inventory assuming CIF price of coal US\$ 94.78/ton, net calorific value of biomass fuel 6627 btu/kg and net plant efficiency of 22%.

13.3 The Authority in a similar case has allowed cost of working capital on the basis of 30 days fuel inventory and invoice receivable period. Accordingly, based on approved net thermal efficiency of 24.5%, reference price of coal for April 2012 (US\$ 97.75/ton) and other technical benchmarks as well as 16% Sales Tax, KIBOR at 11.99% and spread of 2%, the working capital component of tariff has been worked out to be Rs. 0.1442/kWh and approved by the Authority.

14. **Whether two part tariff comprising the Energy charge and the Capacity charge as proposed by the Petitioner is justified?**

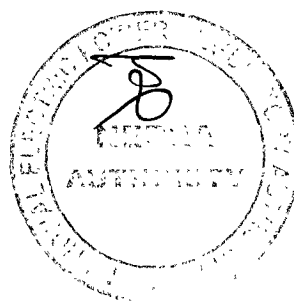
14.1 The Petitioner has proposed two part tariff consisting of Energy Charges to be expressed in Rs/kWh and the Capacity Charges to be expressed in Rs/kW/hr. The Petitioner has further submitted that under the two part tariff arrangement, it will be paid its capacity charges provided the plant is available for dispatch to the standards to be defined in the Power Purchase Agreement (PPA), whereas the Energy charge will be paid based upon the amount of kWh of energy dispatched.

14.2 The Authority has considered the petitioner's proposed two part tariff structure (Capacity charge and Energy charge based tariff) and observed that the petitioner's request for two part tariff is not in accordance with the Alternate Energy Development Board (AEDB) Renewable Policy 2006 which provides for a single part (Energy based) tariff for all renewable/alternate energy power projects. Further the Authority has already approved energy based tariff in another comparable biomass/bagasse based power project, which like the petitioner is being developed under the same aforementioned policy of AEDB.

14.3 The Central Power Purchasing Agency (CPPA) in its comments to the Authority has also objected on petitioner's proposed two part tariff.

14.4 The Authority in the case of all wind power projects has approved a single part tariff (energy based) under the AEDB's renewable policy 2006. In view of the aforementioned the petitioner's request for two part tariff is not justified. The Authority has, therefore, decided to approve single part (energy based) tariff for the petitioner in line with its earlier decision in the case of other biomass/bagasse and wind energy based power projects.

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15. Based on discussion in the foregoing paragraphs, component wise reference tariff table for a period of 30 years from COD on Built-operate –own basis (BOO basis) for the Petitioner is attached herewith Annex-I.

16. Moreover, it has come to the knowledge of the Authority subsequent to filing of instant tariff petition that the Chief Executive of Lumen Energia (Pvt) Limited has been appointed as Chief Executive/Managing Director of National Transmission and Dispatch Company (NTDC). NTDC, as power purchaser, has to safeguard its interests and has to negotiate the terms and conditions of Power Purchase Agreement which also include payment terms in a transparent and effective manner and Lumen Energia, on the other hand, as power seller, has to safeguard its own interest and has to agree on terms and conditions which best protect its business interests, therefore, the Authority is of view that the presence of one person on the board of two different organizations, with different interests, clearly constitutes conflict of interest. The Authority, therefore, in exercise of powers under section 7(3)(b) of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 directs the petitioner to address this issue before negotiating and signing Power Purchase Agreement.

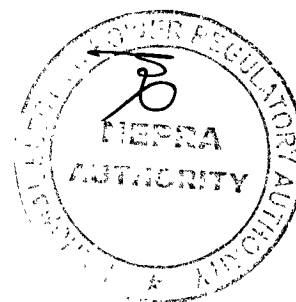
17. Order

Pursuant to Rule 6 of the NEPRA Licensing (Generation) Rules, 2000, Lumen Energia (Pvt) Limited (hereinafter referred to as "LEPL") is allowed to charge the following tariff for delivery of electricity to the Faisalabad Electric Supply Company (FESCO).

Tariff Components	Year 1-10	Year 11-30	Indexation
Variable Charge (Rs/kWh)			
Fuel cost component	6.7851	6.7851	Fuel Price
Variable O&M – Local	0.1200	0.1200	WPI
Variable O&M - Foreign	0.2400	0.2400	PKR/US\$, US CPI
Fixed Charge (Rs/kWh)			
Fixed O&M – Local	0.4800	0.4800	WPI
Fixed O&M – Foreign	0.2400	0.2400	PKR/US\$, US CPI
Insurance	0.2386	0.2386	PKR/US\$
Working Capital Cost	0.1442	0.1442	KIBOR
Debt Service	3.5177	-	KIBOR
Return on Equity	0.7684	0.7684	PKR/US\$
Return on equity during construction (ROEDC)	0.1120	0.1120	PKR/US\$

- The reference tariff has been calculated on the basis of net annual energy production of 73.584 GWh.
- In the above tariff, no adjustment for Carbon Emission Reduction receipts (CERs) has been accounted for. However, upon actual realization of CERs, the same shall be distributed between the Power Purchaser and LEPL in accordance with the GOP Policy for Renewable Energy Projects 2006 as amended from time of time.

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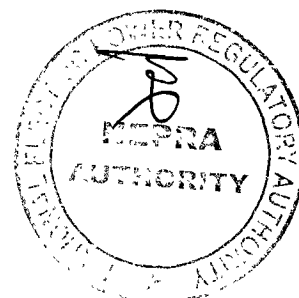


- iii. The above tariff is applicable for a period of thirty (30) years commencing from Commercial Operation Date (COD).
- iv. Debt service will be paid in the first 10 years of commercial operation of plant after COD.
- v. The reference tariff has been calculated at PKR/Dollar exchange rate of Rupees 86.0 to US dollar.
- vi. The component wise tariff is indicated at Annex-I
- vii. Debt Servicing Schedule is attached as Annex-II

I. **One Time Adjustment**

- a. Net thermal efficiency of the plant will be adjusted over the minimum allowed efficiency of 24.5% pursuant to heat rate test to be carried out by the Petitioner at COD.
- b. Interest during Construction (IDC) will be adjusted at COD on the basis of actual debt draw downs (within the overall debt allowed by the Authority at COD), and variation in quarterly KIBOR over the reference KIBOR of 11.99% during the project construction period of 20 months.
- c. The specific items of project cost to be paid in foreign currency (i.e. US\$) will be adjusted at COD on account of actual variation in exchange rate over the reference PKR/US\$ exchange rate of Rs. 86.00 on production of verifiable documentary evidence to the satisfaction of the Authority.
- d. Duties and/or taxes, not being of refundable nature, imposed on the company up to the commencement of its commercial operations for the import of its plant, machinery and equipment will be adjusted on actual at COD.
- e. Insurance during construction will be adjusted as per actually incurred prudent costs, subject to maximum limit of 1.35% of the approved EPC cost, on production of authentic documentary evidence at the time of COD.
- f. The cost of land will be adjusted based on DC value of land upon production of verifiable documentary evidence at COD.
- g. The cost of Project Advisory fee and Studies (Third party costs) will be adjusted under the cost head of Project Development and Administration Cost as per actual subject to the maximum aggregate cost of US\$ 0.935 million on production of verifiable documentary evidence at COD.
- h. Working capital component of tariff will be adjusted on the basis of KIBOR plus 2% premium and revised fuel price at COD.
- i. Financial charges will be adjusted at COD on the basis of actual expense, up to a maximum of 3% of the total debt allowed (excluding the impact of interest during construction and financial charges) on production of authentic documentary evidence.

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- j. Return on Equity during Construction (ROEDC) will be adjusted at COD on the basis of actual equity injection (within the overall equity allowed by the Authority at COD) during the project construction period.
- k. Return on equity (including return on equity during construction) will be adjusted at COD on the basis of PKR/US\$ exchange rate variation.
- l. All tariff adjustments will be restricted to actual project construction period not exceeding the maximum allowed period of 20 months.
- m. The reference tariff table shall be revised at COD while taking in to account the above adjustments. The Petitioner shall submit its request to the Authority within 90 days of COD for necessary adjustments in tariff.

II. Pass-Through Items

No provision for income tax has been accounted for in the tariff. If any tax is imposed on the petitioner, the exact amount paid by the petitioner shall be reimbursed by the power purchaser to the petitioner on production of original receipts. This payment will be considered as a pass-through payment spread over a twelve (12) months period. Furthermore, in such a scenario, the petitioner shall also submit to the power purchaser details of any tax shield savings and the power purchaser shall deduct the amount of these savings from its payment to the petitioner on account of taxation. Withholding tax on dividends is also a pass through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. The Power Purchaser shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 17% return on equity (including return on equity during construction). In case the petitioner does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the net return on equity) would be carried forward and accumulated so that the petitioner is able to recover the same as a pass through from the power purchaser in future on the basis of the total dividend payout.

III. Indexation

The following indexation shall be applicable to the reference tariff:

a) Fuel Cost Component

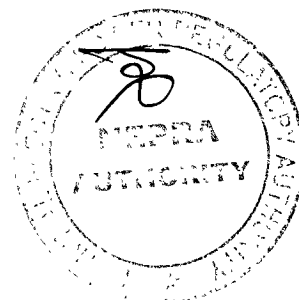
Fuel cost component of tariff will be adjusted on account of variation in price of fuel (biomass) on monthly basis in arrears as per the formula given hereunder.

$$FCC_{(Rev)} = FCC_{(Ref)} \times BFP_{(Rev)} / BFP_{(Ref)}$$

Where;

$$FCC_{(Rev)} = \text{Revised fuel cost component of tariff for the applicable month.}$$

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- $FCC_{(Ref)}$ = Reference fuel cost component of tariff for the relevant month.
- $BFP_{(Rev)}$ = Revised price of biomass fuel in Rs/ton as determined in accordance with mechanism set out below.
- $BFP_{(Ref)}$ = Reference price of biomass fuel for the relevant month. Current reference price is Rs. 6282.85/ton.
- $BFP_{(Rev)}$ = $CPCIF_{(Rev)} \times 12895/23810 + ITB_{(Rev)}$

Where;

$$CPCIF_{(Rev)} = \{CPFOB_{(Rev)} + MF_{(Rev)} + MI_{(Rev)}\} \times ER_{(Rev)}$$

Where;

- $CPCIF_{(Rev)}$ = Revised CIF price of coal in Rs/ton for the applicable month.
- $CPFOB_{(Rev)}$ = Revised FOB price of coal expressed in US\$/ton as published in the Argus McCloskey's API4 index (monthly average) immediately preceding the applicable month.

$$MF_{(Rev)} = \text{Revised marine freight of coal per ton as worked out below.}$$

$$MF_{(Rev)} = \text{US\$ } 29.387 \times BIX_{(Rev)} / BIX_{(Ref)}$$

Where;

$$BIX_{(Rev)} = \text{Revised monthly average of the daily Bunker Index price for 380-CST published by the Bunker Index for the month immediately preceding the applicable month.}$$

$$BIX_{(Ref)} = \text{Reference monthly average of the daily Bunker Index price of 380-CST published by the Bunker Index. Current reference for the month of April 2012 is US\$ 740.8442/ton.}$$

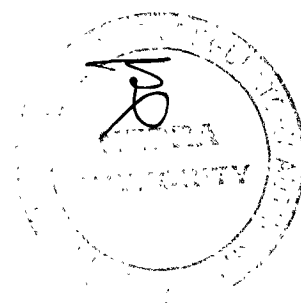
$$MI_{(Rev)} = CPFOB_{(Rev)} \times 0.1\%$$

$$ER_{(Rev)} = \text{Revised monthly average PKR/US\$ exchange rate for the month immediately preceding the applicable month.}$$

$$ITB_{(Rev)} = \text{Revised inland transportation cost of biomass fuel expressed in Rs/ton determined in accordance with the following formula.}$$

$$ITB_{(Rev)} = CDT_{(Rev)} + ME_{(Rev)} + LUL_{(Rev)}$$

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Where;

$ITB_{(Rev)}$	=	Revised inland transportation cost of biomass fuel for the applicable month.
$CDT_{(Rev)}$	=	Revised cost of diesel per ton of biomass fuel over 50 km radius for the applicable month.
$ME_{(Rev)}$	=	Revised maintenance cost of transporter for the applicable month
$LUL_{(Rev)}$	=	Revised loading and unloading cost of biomass fuel for the applicable month.

The constants such as 12895, 23810 and US\$ 29.387 are fixed values representing LHV value of biomass in btu/kg, LHV value of coal in btu/kg and fixed value of marine freight charges per ton of coal respectively. Revised CDT, ME and LUL shall be worked out as per the following formula.

$$CDT_{(Rev)} = \{(FPD_{(Rev)}/3*50)/10\}$$

Where;

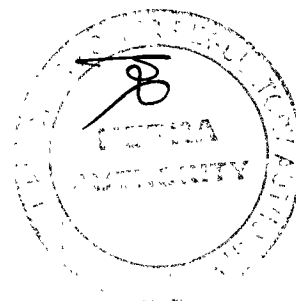
$FPD_{(Rev)}$	=	Revised average fuel price of diesel for the month immediately preceding the applicable month as notified by OGRA. Current reference is based on average price of Diesel Rs. 107/litre of April 2012.
$ME_{(Rev)}$	=	$CDT_{(Rev)}/2$
$LUL_{(Rev)}$	=	$LUL_{(Ref)} \times CPI_{(Rev)}/CPI_{(Ref)}$

Where;

$LUL_{(Ref)}$	=	Reference loading and unloading charges per metric ton for the relevant month. Current reference Rs. 89.17/ton
$CPI_{(Rev)}$	=	Revised consumer price index (general) for the month immediately preceding the applicable month as notified by the Federal Bureau of Statistics (FBS) Government of Pakistan.
$CPI_{(Ref)}$	=	Reference consumer price index (general) for the relevant month as notified by Federal Bureau of Statistics (FBS) Government of Pakistan. Current reference CPI for June 2012 is 169.99

Note:

1. Applicable month means, the month for which adjustment/indexation of fuel cost component is required starting from 1st day and ending on last day of calendar month.
2. Relevant month means the month immediately preceding the applicable month for adjustment/indexation of fuel cost component.



3. The adjustment /indexation of fuel cost component of tariff will be allowed on monthly basis. The Petitioner will submit its request for adjustment/indexation of fuel cost component of tariff based on above mentioned mechanism in the 1st week of each calendar month along with necessary details/data supported with relevant documentary evidence to the Authority.

b) Indexation applicable to O&M

The local part of O&M will be adjusted on account of local Inflation and O&M foreign component will be adjusted on account of variation in Rupee/Dollar exchange rate and US CPI. Quarterly adjustments for inflation and exchange rate variation will be made on 1st July, 1st October, 1st January & 1st April respectively on the basis of the latest available information with respect to CPI (or alternative index as determined by the Authority), US CPI (notified by US bureau of labor statistics) and revised TT & OD Selling rate of US Dollar (notified by the National Bank of Pakistan). The mode of indexation will be as under:

i) Fixed O&M

$$F O\&M_{(LREV)} = O\&M_{(LREF)} * WPI_{(REV)} / 209.470$$

$$F O\&M_{(FREV)} = O\&M_{(FREF)} * US CPI_{(REV)} / 229.478 * ER_{(REV)} / 86$$

Where:

$F O\&M_{(LREV)}$ = The revised applicable Fixed O&M local component of tariff indexed with WPI.

$F O\&M_{(FREV)}$ = The revised applicable Fixed O&M foreign component of tariff indexed with US CPI and exchange rate variation.

$O\&M_{(LREF)}$ = The reference fixed O&M local component of tariff for the relevant period.

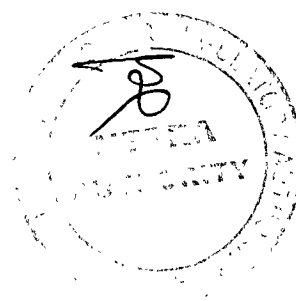
$O\&M_{(FREF)}$ = The reference fixed O&M foreign component of tariff for the relevant period.

$WPI_{(REV)}$ = The Revised Wholesale Price Index (Manufacturers) / or alternative index as determined by the Authority.

$WPI_{(REF)}$ = The Wholesale Price Index (Manufactures) of July 2011 / or alternative index as determined by the Authority applicable for June 2012 and notified by the Federal Bureau of Statistics.

$US CPI_{(REV)}$ = The Revised US Consumer Price Index (All Urban Consumers) notified by the US Bureau of Labor Statistics.

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$US\ CPI_{(REF)}$ = Reference US CPI (All Urban Consumers) notified by the US Bureau of Labor Statistics for the month of June 2012.

$ER_{(REV)}$ = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

ii. Variable O&M

$V\ O\&M_{(LREV)} = O\&M_{(LREF)} * WPI_{(REV)} / 209.47$

$V\ O\&M_{(FREY)} = O\&M_{(FREY)} * USCPI_{(REV)} / 229.478 * ER_{(REV)} / 86$

Where:

$V\ O\&M_{(LREV)}$ = The revised applicable Variable O&M local component of tariff indexed with WPI.

$V\ O\&M_{(FREY)}$ = The revised applicable Variable O&M foreign component of tariff indexed with US CPI and exchange rate variation.

$O\&M_{(LREF)}$ = The reference variable O&M local component of tariff for the relevant period.

$O\&M_{(FREY)}$ = The reference variable O&M foreign component of tariff for the relevant period.

$WPI_{(REV)}$ = The Revised Wholesale Price Index (Manufacturers) / or alternative index as determined by the Authority.

$WPI_{(REF)}$ = The Wholesale Price Index (Manufactures) of July 2011 / or alternative index as determined by the Authority for June 2012 and notified by the Federal Bureau of Statistics.

$US\ CPI_{(REV)}$ = The Revised US Consumer Price Index (All Urban Consumers) notified by the US Bureau of Labor Statistics.

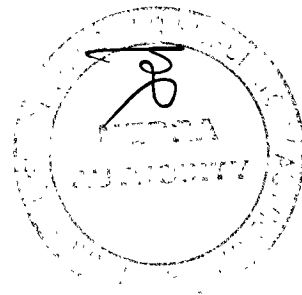
$US\ CPI_{(REF)}$ = Reference US CPI (All Urban Consumers) notified by the Bureau of Labor Statistics for the month of June 2012.

$ER_{(REV)}$ = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

Note: -

At the time of this determination, the Authority is still in the process of establishing an alternative index for WPI (Manufacturers) which has been discontinued by FBS since August 2011. Pending determination of the alternative index by NEPRA, the last available WPI

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(Manufacturers) for the month of July 2011 has been used as reference. Upon determination of the alternative indexation by NEPRA, the reference indexation values shall be revised to the alternative index value for the month of June 2012.

c) Adjustment of working capital cost

The cost of working capital shall be adjusted on account of variation in 3-month KIBOR over the reference KIBOR of 11.93% while premium over KIBOR 2% remaining the same for the entire tariff control period.

d) Insurance

Insurance cost component of tariff, in case insurance is denominated in foreign currency, will be adjusted on account of PKR/US\$ exchange rate variation at COD and thereafter on an annual basis at actual subject to the maximum of 1.35% of the EPC cost on production of authentic documentary evidence by the Petitioner.

e) Adjustment of debt servicing component

This fixed charge component will remain unchanged throughout the term except for the adjustment due to variation in KIBOR. The debt servicing component of tariff will be adjusted accordingly on quarterly basis.

f) Return on Equity

Return on equity (ROE) as well as Return on Equity during Construction (ROEDC) component of tariff shall be adjusted for variation in PKR/US\$ exchange rate according to the following formula:

$$ROE_{(REV)} = ROE_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

$$ROEDC_{(REV)} = ROEDC_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

Where;

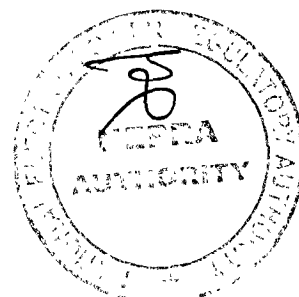
$ROE_{(REV)}$ = Revised Return on Equity component of tariff expressed in Rs/kWh adjusted with exchange rate variation.

$ROEDC_{(REV)}$ = Revised Return on Equity during Construction component of tariff in Rs/kWh adjusted with exchange rate variation.

$ROE_{(REF)}$ = Reference Return on Equity component of tariff expressed in Rs/kWh for the relevant period.

$ROEDC_{(REF)}$ = Reference Return on Equity during Construction component of tariff expressed in Rs/kWh for the relevant period.

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$ER_{(REV)}$ = Revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

$ER_{(REF)}$ = Reference TT and OD selling rate of US dollar.

Note: -

Adjustment on account of inflation and foreign exchange rate variation will be approved by the Authority within fifteen working days after receipt of the petitioner's request for adjustment in tariff in accordance with the requisite indexation mechanism stipulated hereinabove.

IV. Other Terms and Conditions of Tariff

Design & Manufacturing Standards:

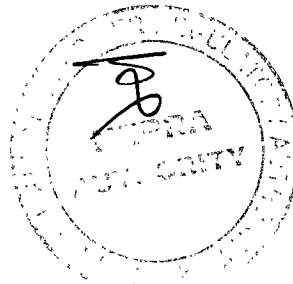
Power Generation system shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards. All plant and equipment shall be new and of standard quality.

Power Curve of the Power Complex:

The power curve of the Power plant shall be verified by the Power Purchaser, as part of the Commissioning tests according to the latest IEC standards and shall be used to measure the performance of the generating units.

Emissions Trading/Carbon Credits:

The Petitioner shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government.



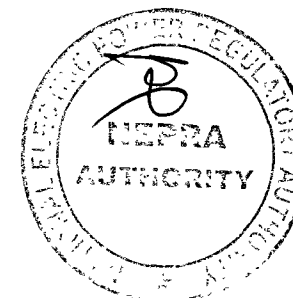
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Lumen Energia Private Limited
Reference Tariff

Year	Fuel cost component	Variable O&M Local	Variable O&M Foreign	Fixed O&M Local	Fixed O & M Foreign	Insurance	Working capital cost	Return on Equity	ROE During Construction	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total Tariff
	Rs./kWh	Rs./kWh	Rs./kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh
1	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	0.8541	2.6637	12.7121
2	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	0.9895	2.5283	12.7121
3	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	1.1463	2.3714	12.7121
4	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	1.3281	2.1897	12.7121
5	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	1.5386	1.9791	12.7121
6	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	1.7826	1.7352	12.7121
7	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	2.0652	1.4526	12.7121
8	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	2.3926	1.1252	12.7121
9	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	2.7719	0.7458	12.7121
10	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	3.2113	0.3064	12.7121
11	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
12	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
13	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
14	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
15	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
16	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
17	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
18	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
19	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
20	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
21	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
22	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
23	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
24	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
25	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
26	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
27	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
28	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
29	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
30	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660			9.1943
Levelized Tariff	6.7851	0.1200	0.2400	0.4800	0.2400	0.2386	0.1442	0.7684	0.1120	0.0660	1.0516	1.2413	11.4872

Levelized Tariff (1-30 years) discounted at 10% per annum = US Cents 13.3573/kWh at reference exchange rate of 1US\$=Rupees 86.00.

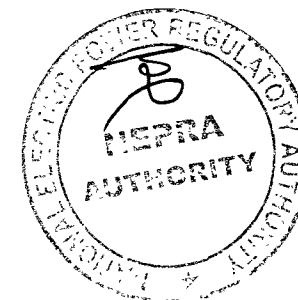
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Lumen Energia Private Limited
Debt Servicing Schedule

Period	Local Debt					Local Debt					Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh	Annual Debt Service Rs./kWh
	Principal Million \$	Repayment Million \$	Mark-Up Million \$	Balance Million \$	Debt Service Million \$	Principal Million Rupees	Repayment Million Rupees	Mark-Up Million Rupees	Balance Million Rupees	Debt Service Million Rupees			
	15 4699	0 1727	0 5797	15 2971	0 7525	1,330 4085	14 8553	49 8571	1,315 5532	64 7124			
	15 2971	0 1792	0 5733	15 1179	0 7525	1,315 5532	15 4120	49 3004	1,300 1412	64 7124			
	15 1179	0 1859	0 5665	14 9320	0 7525	1,300 1412	15 9896	48 7228	1,284 1516	64 7124			
	14 9320	0 1929	0 5596	14 7391	0 7525	1,284 1516	16 5888	48 1236	1,267 5628	64 7124			
1	15 4699	0 7308	2 2791	14 7391	3 0099	1,330 4085	62 8457	196 0038	1,267 5628	258 8495	0 8541	2 6637	3 5177
	14 7391	0 2001	0 5523	14 5390	0 7525	1,267 5628	17 2104	47 5019	1,250 3523	64 7124			
	14 5390	0 2076	0 5448	14 3314	0 7525	1,250 3523	17 8554	46 8570	1,232 4969	64 7124			
	14 3314	0 2154	0 5371	14 1160	0 7525	1,232 4969	18 5245	46 1878	1,213 9724	64 7124			
	14 1160	0 2235	0 5290	13 8925	0 7525	1,213 9724	19 2188	45 4936	1,194 7536	64 7124			
2	14 7391	0 8466	2 1633	13 8925	3 0099	1,267 5628	72 8092	186 0403	1,194 7536	258 8495	0 9895	2 5283	3 5177
	13 8925	0 2318	0 5206	13 6606	0 7525	1,194 7536	19 9390	44 7734	1,174 8147	64 7124			
	13 6606	0 2405	0 5119	13 4201	0 7525	1,174 8147	20 6862	44 0262	1,154 1285	64 7124			
	13 4201	0 2496	0 5029	13 1705	0 7525	1,154 1285	21 4614	43 2510	1,132 6671	64 7124			
	13 1705	0 2589	0 4936	12 9116	0 7525	1,132 6671	22 2657	42 4467	1,110 4014	64 7124			
3	13 8925	0 9808	2 0290	12 9116	3 0099	1,194 7536	84 3522	174 4972	1,110 4014	258 8495	1 1463	2 3714	3 5177
	12 9116	0 2686	0 4839	12 6430	0 7525	1,110 4014	23 1001	41 6123	1,087 3013	64 7124			
	12 6430	0 2787	0 4738	12 3644	0 7525	1,087 3013	23 9657	40 7466	1,063 3356	64 7124			
	12 3644	0 2891	0 4634	12 0753	0 7525	1,063 3356	24 8639	39 8485	1,038 4717	64 7124			
	12 0753	0 2999	0 4525	11 7753	0 7525	1,038 4717	25 7966	38 9167	1,012 6761	64 7124			
4	12 9116	1 1363	1 8735	11 7753	3 0099	1,110 4014	97 7253	161 1241	1,012 6761	258 8495	1 3281	2 1897	3 5177
	11 7753	0 3112	0 4413	11 4641	0 7525	1,012 6761	26 7623	37 9500	985 9138	64 7124			
	11 4641	0 3229	0 4296	11 1413	0 7525	985 9138	27 7652	36 9471	958 1485	64 7124			
	11 1413	0 3350	0 4175	10 8063	0 7525	958 1485	28 8058	35 9066	929 3428	64 7124			
	10 8063	0 3475	0 4050	10 4588	0 7525	929 3428	29 8852	34 8271	899 4575	64 7124			
5	11 7753	1 3165	1 6934	10 4588	3 0099	1,012 6761	113 2186	145 6309	899 4575	258 8495	1 5386	1 9791	3 5177
	10 4588	0 3605	0 3919	10 0983	0 7525	899 4575	31 0052	33 7072	868 4523	64 7124			
	10 0983	0 3740	0 3784	9 7242	0 7525	868 4523	32 1671	32 5453	836 2852	64 7124			
	9 7242	0 3881	0 3644	9 3362	0 7525	836 2852	33 3726	31 3398	802 9126	64 7124			
	9 3362	0 4026	0 3499	8 9336	0 7525	802 9126	34 6232	30 0892	768 2894	64 7124			
6	10 4588	1 5252	1 4847	8 9336	3 0099	899 4575	131 1681	127 6814	768 2894	258 8495	1 7826	1 7352	3 5177
	8 9336	0 4177	0 3348	8 5159	0 7525	768 2894	35 9207	28 7916	732 3687	64 7124			
	8 5159	0 4333	0 3191	8 0826	0 7525	732 3687	37 2668	27 4455	695 1018	64 7124			
	8 0826	0 4496	0 3029	7 6330	0 7525	695 1018	38 6634	26 0489	656 4384	64 7124			
	7 6330	0 4664	0 2860	7 1666	0 7525	656 4384	40 1123	24 6000	616 3261	64 7124			
7	8 9336	1 7670	1 2429	7 1666	3 0099	768 2894	151 9633	106 8861	616 3261	258 8495	2 0652	1 4526	3 5177
	7 1666	0 4839	0 2686	6 6827	0 7525	616 3261	41 6155	23 0968	574 7105	64 7124			
	6 6827	0 5020	0 2504	6 1806	0 7525	574 7105	43 1751	21 5373	531 5355	64 7124			
	6 1806	0 5208	0 2316	5 6598	0 7525	531 5355	44 7931	19 9193	486 7424	64 7124			
	5 6598	0 5404	0 2121	5 1194	0 7525	486 7424	46 4717	18 2407	440 2707	64 7124			
8	7 1666	2 0472	0 9627	5 1194	3 0099	616 3261	176 0564	82 7941	440 2707	258 8495	2 3926	1 1252	3 5177
	5 1194	0 5606	0 1919	4 5588	0 7525	440 2707	48 2132	16 4991	392 0575	64 7124			
	4 5588	0 5816	0 1708	3 9772	0 7525	392 0575	50 0200	14 6924	342 0374	64 7124			
	3 9772	0 6034	0 1490	3 3738	0 7525	342 0374	51 8945	12 8179	290 1429	64 7124			
	3 3738	0 6260	0 1264	2 7477	0 7525	290 1429	53 8393	10 8731	236 3037	64 7124			
9	5 1194	2 3717	0 6382	2 7477	3 0099	440 2707	203 9670	54 8825	236 3037	258 8495	2 7719	0 7458	3 5177
	2 7477	0 6495	0 1030	2 0982	0 7525	236 3037	55 8569	8 8555	180 4468	64 7124			
	2 0982	0 6738	0 0786	1 4244	0 7525	180 4468	57 9501	6 7622	122 4967	64 7124			
	1 4244	0 6991	0 0534	0 7253	0 7525	122 4967	60 1218	4 5906	62 3749	64 7124			
	0 7253	0 7253	0 0272	(0 0000)	0 7525	62 3749	62 3749	2 3375	(0 0000)	64 7124			
10	2 7477	2 7477	0 2622	(0 0000)	3 0099	236 3037	236 3037	22 5458	(0 0000)	258 8495	3 2113	0 3064	3 5177

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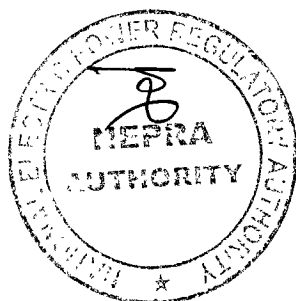


DECISION OF MR. SHAUKAT ALI KUNDI, MEMBER NEPRA UNDER SECTION 6 OF THE NEPRA ACT, 1997 IN THE MATTER OF TARIFF PETITION FILED BY M/S LUMEN ENERGIA PVT LTD FOR DETERMINATION OF GENERATION TARIFF IN RESPECT OF 12 MW BIOMASS ENERGY POWER PROJECT. (CASE NO. NEPRA/TRF-204/LEPL-2012)

1. The Petitioner M/s Lumen Energia (Pvt) Limited filed the tariff petition with Authority on 23-02-2012. Under Rule 16 (2) of the NEPRA (Tariff Standard and Procedure) Rules, 1998 ("the Rules"), the Authority is required to decide a tariff petition in four months from the date of admission of the petition. However, on account of non submission of the required information by the Petitioner the matter was delayed. The case officer sought extensions in time for deciding the petition which I disallowed on the ground that as record of the case reveals, the default was on the part of the petitioner to submit the information in time. The extension could only be granted under the Rules if it is delayed due to a reason beyond the control of the Authority, however, in the instant case the delay was on part of the Petitioner to provide the information in time.

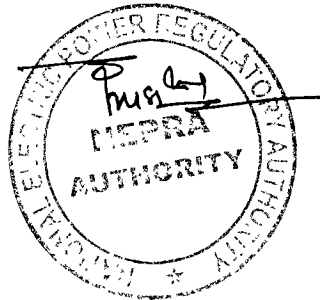
2. The Petitioner Company in its tariff petition has claimed US \$ 0.602 million on account of land procurement and land development charges. A perusal of the Sale Deed (Registry) of 11.4 acre of land reveals that the land proposed for installation of the plant is not in the ownership of the Petitioner Company, and is in the name of an individual/director. Company being a separate legal entity owns its assets and land of a director cannot be taken as an asset of the petitioner company. Legally speaking, the land on which the project is proposed to be built should be in the name of the Petitioner Company and not in the name of its director. Since land is not in the ownership of the Petitioner Company so it has no legal justification to claim cost for the said land. Therefore I decline the cost of the land of the Petitioner which if granted shall have a considerable impact on the overall tariff of the Petitioner

3. The incumbent Chief Executive Officer (CEO) of the Petitioner is also the sitting CEO of the National Transmission and Dispatch Company (NTDC) owned by the Government of Pakistan and which besides other has a role of negotiating and entering into sale and purchase of power from IPPs therefore the vested interest of the CEO of the



petitioner company cannot be ruled out and his presence on the panel of both the entities is apt to influence the power purchase price. One person cannot be a seller and a buyer at the same time. Both the seller and the buyer have their vested interests, each guarding and endeavoring for their own interest. I am therefore of the opinion that holding two executive positions by one person on different companies, involved in purchasing and selling of power, with different interests and status may lead to serious conflict of interest and may also influence or affect the negotiation of power purchase price and other terms and conditions of power purchase agreement (PPA).

4. For what has been stated above, the tariff petition in my opinion doesn't make merit hence I am constrained to decline the tariff petition of the petitioner company.



(Shaukat Ali Kundi)
Member
06-11-2012