National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

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No. NEPRA/UTRLNG-01/4824-4826
April 3, 2015

Subject: **Determination of the Authority in the Matter of Upfront Tariff for RLNG Based Power Plants**

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annex-I, IA, IB, II, IIA, IIB, III, IIIA, IIIB, IV, IVA, IVB, V, VA, VB, VI, VIA and VIB (51 pages).

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 Order of the Authority along with 18 Annexures (Annex-I, IA, IB, II, IIA, IIB, III, IIIA, IIIB, IV, IVA, IVB, V, VA, VB, VI, VIA and VIB) of the Determination needs to be notified in the official Gazette.

Enclosure: As above

03.04.15

(Syed Safeer Hussain)

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

CC:

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

National Electric Power Regulatory Authority
(NEPRA)

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Determination

In the matter of Upfront Generation Tariff on RLNG

April 3, 2015

Interveners

i. Anwar Kamal Law Associates
ii. Engro Powergen Limited

Commentators

i. Government of Sindh, Energy Department
ii. Elengy Terminal Pakistan Limited
iii. Pakarab Energy
iv. Punjab Power Development Board Energy Department
v. Saif Power Limited
vi. Orient Power Company (Private) Limited
vii. RIAA Law Advocates & Corporate Counselors

This determination is being given in exercise of powers under Section 7 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with Rule 3 of NEPRA Tariff (Standards and Procedure) Rules, 1998 and Regulation 3 of the Upfront Tariff (Approval & Procedure) Regulations, 2011. An applicant can opt for the Upfront Generation Tariff for RLNG based Power Plant in the prescribed manner, once notified in the Official gazette pursuant to section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997).

Authority

(Khawaja Muhammad Naeem)
Member

(Maj (R) Haroon Rashid)
Member

(Himayat Ullah Khan)
Member

(Habibullah Khilji)
Vice Chairman

(Brig (R) Tariq Saddozai)
Chairman

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03.04.15

1. **Filing of Proposal/Petition**

1.1 Private Power Infrastructure Board (PPIB) vide its letter No. 6(618)PPIB/UT/RLNG/FIN dated February 4, 2015 submitted the proposal/petition for determination of upfront generation tariff for new capacity addition on Re-gasified Liquefied Natural Gas (RLNG/LNG) in terms of Regulation 3 of Upfront Tariff (Approval & Procedure) Regulations 2011.

1.2 According to PPIB, during the meeting of the Cabinet Committee on Energy (CCE) on 9thJanuary 2015 on the subject of "Presentation On Final Way Forward On 1000 MW Pipeline and 3,600 MW LNG Gas Power Plants", it was inter-alia deliberated that there was a good appetite of the local and international investors for investment in 3600 MW Power Projects based on RLNG. The CCE decided that RLNG based power plants will be located near load centers, i.e. Bhikki, District Sheikhpura; Balloki, District Kasur; and Haveli Bahadur Shah, District Jhang. Exact sites and power plant capacities at each location will be finalized by NTDCL considering the feasibility, supply demand requirements, power evacuation and system studies. Furthermore, the CCE directed the Managing Director NTDC to ensure investment of approximately US$ 38 Million in providing grid connectivity to the three sites selected for RLNG based power plants of 3600 MW close to load centers in Punjab.

1.3 The CCE pursuant to the aforesaid meeting also decided that process of tariff determination will be relentlessly pursued by Ministry of Water & Power and while ensuring conformity to all processes, an early determination would be ensured. According to PPIB, in order to minimize the procedural processes, save time of tariff determination/reviews and to facilitate the investors in carrying out their due diligence regarding financial viability and acceptability of the tariff, the upfront tariff proposal on RLNG based power projects has been prepared.

1.4 PPIB further submitted that the upfront tariff proposal has been prepared utilizing various sources of information including the tariff and cost of existing combined cycle plants earlier determined by NEPRA, tariff and Project cost of Guddu Power Project (GENCO), cost and efficiencies from US Energy Information Administration Report 2013, GTW Handbook 2013 (information on Turbines/Efficiency), PJM report 2014, black & Veatch report 2012 (Cost Estimates) and information obtained from various gas/steam turbine manufacturers to capacities, efficiencies and cost. The proposed Upfront Tariff is calculated using (a) Local financing; and (b) Foreign financing using 20 years and 30 years project life. Plant capacity in an indicative range of 700-900 MW for IPPs is suggested. Further, the tariff has been calculated based on 60% and 92% plant load factors using LHV RLNG prices as US$ 10, US$ 11 and US$12/MMBtu. The basis of upfront tariff mechanism and indexation/adjustment procedure were also provided along with the proposal.

1.5 According to PPIB, the Upfront Tariff was prepared based on best information available as of today and approved by the Minister of Water & Power for submission to NEPRA. Notwithstanding the above, NEPRA is requested to evaluate, approve, determine and declare, the upfront tariff pursuant to and in accordance with the applicable laws, rules and

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regulations and may seek participation from the stakeholders and other interested persons or hold a public hearing to ensure that interests of the companies providing electric power services and the interests of the consumers are appropriately protected.

2. **Salient Features of the Proposal**

The salient features of the proposal are as under:

Reference LNG Price

2.1 PPIB developed the upfront tariff assuming LNG price (LHV) at three different levels i.e. US$ 10/MMBtu, US$ 11/MMBtu and US$ 12/MMBtu providing that the actual price of LNG for power plants will be based and indexed to the LNG prices to be determined by OGRA/GOP.

Project Cost

2.2 PPIB assumed project size of 825 MW (net 800 MW). Detail of the project cost provided by the PPIB is as under:

Description	Local Financing	Foreign Financing
	US$ Million	US$ Million
CAPEX	770.00	770.00
Financial Fees and charges	20.21	20.21
Interest During Construction	108.63	38.68
One Month Escrow Account-LNG	34.49	34.49
Total Project Cost	**933.33**	**863.39**
Project Cost /MW	**1.13**	**1.04**

Other Assumptions for the Upfront Tariff:

2.3 Other assumptions taken by PPIB are as under:

- Gross capacity at the mean site conditions is 825.806 MW (net 800 MW).
- The sponsors of the plant will be at liberty to select plant of any manufacturer based on combined cycle gas turbine technology as long as the minimum efficiency and availability threshold are ensured for the life of the project.
- Customs duties &cess @ 5.95% of the 66.75% of the capital cost.
- Debt Equity ratio of 75:25.
- Interest on local loans at KIBOR 9.57% +300 basis points and for foreign loans LIBOR 0.2556% and 450 basis points.
- Loan Repayment Period 10 years + 28 months grace period in equal quarterly installments.
- IRR on equity of 15%.

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- Net LHV efficiency of 57% in combined cycle mode.
- Variable O&M of Rs. 0.1521/kWh.
- Fixed O&M of Rs. 0.1237/kW/hour.
- Insurance during the operational phase at 1.35% of the EPC cost.
- Cost of working capital of Rs. 0.1198/kW/hour.
- Exchange Rate Rs. 99.675/US$.
- Construction Period 28 Months.
- Dispatch criteria will be the "merit order dispatch".
- Plant availability 92%.
- Nominal Plant Factors of 60% and 92% for calculation of tariff.
- Tariff control Period of 30 Years.
- The proposed validity period is 90 days from the date of notification.
- Maximum proposed capacity under this tariff is 3600 MW to 4000 MW.
- In case of foreign financing, political risk insurance fee such as export credit agency fee or sinosure fee etc. @7% of the total debt servicing would be included in the project cost.
- The companies opting for this tariff will have to achieve financial close in five (5) months from issuance of LOS the failure of which will make the tariff invalid.

Proposed Tariff

2.4 PPIB proposed following tariff:

Particular	60% Plant Factor				92% Plant Factor			
	F.Financing		L.Financing		F.Financing		L.Financing	
	Rs/kWh	cents/kWh	Rs/kWh	cents/kwh	Rs/kWh	cents/kWh	Rs/kWh	cents/kWh
30 Years Project Life	**RLNG Price US$ 10/MMBTU**							
700-900 MW (Combined Cycle)	8.85	8.88	9.58	9.61	7.90	7.93	8.37	8.4
20 Years Project Life								
700-900 MW (Combined Cycle)	9.04	9.07	9.84	9.87	8.02	8.05	8.54	8.57
30 Years Project Life	**RLNG Price US$ 11/MMBTU**							
700-900 MW (Combined Cycle)	9.47	9.5	10.2	10.23	8.51	8.54	8.99	9.02
20 Years Project Life								
700-900 MW (Combined Cycle)	9.66	9.69	10.46	10.5	8.64	8.66	9.16	9.19
30 Years Project Life	**RLNG Price US$ 12/MMBTU**							
700-900 MW (Combined Cycle)	10.09	10.13	10.82	10.86	9.13	9.16	9.60	9.63
20 Years Project Life								
700-900 MW (Combined Cycle)	10.28	10.32	11.09	11.12	9.25	9.28	9.77	9.81

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3 Initiation of Proceedings for Development of Upfront Tariff on LNG Fuel

3.1 The Authority considered the proposal submitted by PPIB and decided to initiate proceedings for the development of upfront tariff for new capacity addition on LNG fuel on the basis of the following:

i. LNG price of US$ 12/MMBtu.
ii. Tariff control period of 30 years.

3.2 The Authority decided to hold a hearing in the matter on 23rd February 2015 in NEPRA Tower. The notice of hearing was published in newspapers on 13th February 2015. Stakeholders were invited to become a party to the proceedings by filing intervention request within 7 days of publication of the advertisement or submit comments in the matter. The complete proposal/petition submitted by PPIB was also made available at the web.

4. Issues for the Hearing

4.1 Following issues were framed for the hearing:

i. Whether the RLNG price of US$ 12/MMBtu is reasonable and justified?
ii. Whether the project cost is reasonable and justified?
iii. Whether the cost of one month Escrow Account – LNG is justified?
iv. Whether the proposed net LHV efficiency level is reasonable and justified?
v. Whether the variable O&M cost is reasonable and justified?
vi. Whether the fixed O&M cost is reasonable and justified?
vii. Whether the working capital cost is justified?
viii. Whether the insurance cost at 1.35% of the EPC cost is justified?
ix. Whether the IRR on equity of 15% is reasonable and justified?

5. Filing of Intervention Requests

5.1 In response to the Notice of Hearing, intervention requests were received from the following:

i. Anwar Kamal Law Associates
ii. Engro Powergen Limited

Anwar Kamal Law Associates (Intervener)

5.2 Anwar Kamal Law Associates vides its letter no. R/NEPRA/081/15 dated February 19, 2015 submitted following comments for the consideration of the Authority:

5.2.1 Prior to stating my objections I would like to draw the attention of the Authority to the under-utilization of dual fuel Power Plants located in the country, namely Orient Power, Saif Power, Sapphire Power and Halmore Power Plants with an accumulated capacity of around 900 MW. It is unfortunate that though comparatively efficient plants, except the newly commissioned Power Plant at Guddu, have been installed, Power from these Power Plants is not being generated and used. The reason is that Gas is not being provided to these Power Plants and Pakistan cannot afford the generation of Power from HSD. Significantly,

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the consumers of electricity are paying the Capacity Purchase Price to these Power Plants, without taking electricity from these Plants, as the owners of these Plants have executed long term Power Purchase Agreements with the Power Purchaser (CPPA of NTDC) on "Take or Pay" basis. As a result of these PPAs, some financial experts assess the per unit price from these Plants in the range of Rs 40 to Rs 50 per unit, depending upon the electricity generation from these Power Plants. In the opinion of these experts, these Power Plants need to be utilized at their full load, even by use of HSD, because the economic cost of not producing even a single unit is much higher than the generation cost, even on HSD.

5.2.2 The use of small Generators, UPSs etc. is costlier for the country in comparison to the generation of Power from these Plants on HSD. It is most regrettable to note that these efficient Plants (efficiency around 51%) are not getting Gas from the Gas suppliers while Power Plants, commissioned much later than these Power Plants, (around 190 MW with 36% efficiency, 220 MW around 42-43% efficiency in K-Electric system) are getting Gas from the Gas suppliers and producing electricity after burning the country's scarce resource inefficiently. It is another dilemma for Pakistan that K-Electric is burning Gas inefficiently and is receiving the costliest generated electricity in the NTDC system at a very cheap rate after shutting its comparatively cheaper electricity Plants. These issues need to the reviewed with an integrated approach as otherwise the economic survival of the country will be at stake.

6.2.3 It is mentioned in the Notice of Hearing that the RLNG is for 800MW. In the considered opinion of the Intervener, this Gas should be allocated to the Power Plants mentioned above. The Upfront Tariff for RLNG should not be announced till such time as Pakistan has long term agreements with national or international RLNG supplying companies and the framework for the distribution/supply of LNG in the country is put in place or clearly stated by those responsible. This is of critical significance in view of the falling prices in the international market.

Engro Powergen Limited (Intervener)

5.3 Engro Powergen Limited vides its letter dated February 19, 2015 submitted following recommendation for the consideration of the Authority:

5.3.1 Whether RLNG price of $12/MMBtu is reasonable and justified?

a. We request that the fuel price is not fixed and that it should be actualized and passed-through. The complete formula however needs to be laid out and component-wise pass-through mechanisms need to be defined. The various components likely to shape the final fuel cost are given in the figure below. The tariff is likely to slightly vary for different power producers based on their location due to variable gas transportation charges.

b. The tariff does not make provisions for liquidated damages or storage costs that are likely to be incurred for refusing LNG supply or directing it to storage if there is an unplanned plant outage or because the Power Purchaser refuses off-take due to grid connectivity issues.

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c. OGRA's rules and regulations relating to third party distribution are ambiguous and open to several interpretations. For example, given that imported LNG has higher calorific value viz-a-viz pipeline gas, clarity is needed on whether the gas distribution companies are liable to supply source equivalent volume of gas or source equivalent energy molecules of gas. If the gas companies are liable to supply only the volume then the cost of the energy differential needs to be built into the pass-through fuel price

5.3.2 Whether the project cost is reasonable and justified?

a. The $770M Capital cost for Gross 825.806MW (net 800MW) is quite low if compared to Indexed cost of Gas based IPPs given in the supporting documents of upfront tariff. This needs serious consideration to avoid financial constraints towards the end of projects.

b. Based on our working, Custom Duties, Cess & Other charges work out to be 6.43% on 66.75% of the total capital cost.

Duty &Cess	5.95%
Landing Charges	0.05%
Miscellaneous Port Charges	0.2%
Clearing Charges	0.13%
Transport	0.1%
Total	6.43%

c. Power evacuation strategy needs to be defined containing details such as configuration of transformers (e.g. 250KVA or 500KVA) to be used, as their costs may differ significantly.

5.3.3 Whether the fixed and variable O&M cost is reasonable and justified?

a. The fixed and variable O&M given in the upfront tariff document is almost half the comparable benchmarks given in support of the upfront tariff i.e. 0.27 cents in upfront tariff vs. average of 0.57 cents of the four gas based IPPs. Although for larger capacities there is some advantage of synergies and economies of scale but these are not likely to be so significant which would reduce the total O&M component to less than half.

b. The upfront tariff allows 60% of variable O&M and 50% of the Fixed O&M during simple cycle operation of 10 months. The supporting documents for the upfront tariff have not reasonably justified the use of these percentages. In our view these percentages are on the lower side, especially the Fixed O&M as during this phase, majority of the fixed cost would be incurred.

5.3.4 Whether the working capital cost is justified?

We request that working capital is not pegged to a fixed LNG price but to a variable LNG price. Moreover, we propose that the receivable gap should be increased from 45 days to 60 days because payment for fuel is likely to be made in advance in case a

commercial importer is involved. Taking a 30 day gap between payment for fuel supply & consumption, and another 30 day for power sale invoice acceptance takes the number of days of receivables up to 60 days.

5.3.5 Whether the IRR on equity of 15% is reasonable and justified?

a. The 15% IRR has been introduced as a policy since 2002. This policy has failed to attract requisite investments in the power sector, at least in the last four to five years as investors feel this is not enough to cover for the risks taken (e.g. circular debt, high country risk). We recommend that the returns on LNG-based projects should be set in line with coal-based projects (i.e. an IRR of 18%). We further recommend incentivizing fast--track projects by linking returns to how soon a project can be executed.

b. We would request NEPRA to provide clarity on whether withholding tax on dividends is being considered as a pass-through item.

5.3.6 Other Important Considerations:

a. **Unit Size Based Tariff Structure:** Typically project sizes are 225MW, 400MW and 600MW. Larger project sizes can be designed, however the likelihood of their being executed on a fast-track basis is lower due to longer gestation periods of these projects and because currently very few parties have the financial capacity to take on investments in large projects. We propose NEPRA introduces a tier based upfront tariff structure, which defines a different tariff level for different unit sizes (e.g. 200-400MW, 400-600MW, 600+MW) to accommodate potential LNG projects of all sizes. Plant efficiencies vary with project sizes and with technology. For instance the efficiencies of 200-250MW size plants of different technologies range from 51% to 52%, 400-450MW from 59% to 60% and 650-700MW from 58% to 62%. Also the time to bring a plant online varies across different technologies. A "one -size-fit-all" tariff structure will hinder tariff petitions especially of small scale LNG projects which are more likely to get implemented on fast track.

b. **Eligibility Criteria:** We request NEPRA to remove the region-based exclusivity clause of this tariff. There are other equally attractive sites for LNG based power projects which should also be facilitated. For example Bin Qasim in Sindh benefits from its proximity to the first LNG terminal of the country (which will lead to less unaccounted for gas losses in the gas distribution network) and also to a ready load center (ready off-take infrastructure).

c. **Secondary Fuel:** The tariff does not make provisions for using a secondary fuel, required in case of primary fuel supply disruptions, and its storage costs.

d. **Time Given for Financial Close:** Given the size of the proposed LNG projects, financial close within 5 months of the issuance of an LOS is a difficult target. LNG is being imported into the country for the first time and is likely to require complex

contract structuring. Therefore we recommend a realistic but aggressive financial close target of 8 months.

e. **Thermal Efficiency:** In case thermal efficiency is established higher than what is being given in the tariff, a 60:40 sharing mechanism between power purchaser and power producer has been advised in the petition. We would want to highlight that such additional efficiency may not always remain and hence, needs to be re-evaluated on a periodic basis, ideally once a year. Moreover, the efficiency sharing mechanism should be similar to NEPRA's upfront tariff determination for Coal based plants.

f. **Gas Outage Days:** The tariff allows about 29 days of outage i.e. (8% of 365 days) whereas previously higher outage days have been provided to gas-based power projects. For example a typical outage days cycle for a gas based IPP is as follows:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Days of Outage	35	35	40	35	35	74

g. **WPPF and WWF:** The tariff says that WPPF and WWF would be paid on a per KWh basis. We feel this is not in line with the 2002 Power Policy where payment is made on an actual invoice basis.

6. Filing of Comments

6.1 In response to the Notice of Hearing, comments have been received from the following:

i. Government of Sindh, Energy Department
ii. Elengy Terminal Pakistan Limited
iii. Pakarab Energy
iv. Punjab Power Development Board Energy Department
v. Saif Power Limited
vi. Orient Power Company (Private) Limited
vii. RIAA Law Advocates & Corporate Counselors

Government of Sindh, Energy Department (Commentator)

6.2 Government of Sindh, Energy Department vide its letter No. SOPP 6/34/2011-NEPRA/719 dated February 20, 2015 submitted following comments for the consideration of the Authority:

6.2.1 The summary of information provided by PPIB as well as assumptions and the issues set for hearing have been gone through and suggestions are as under:

a. While determining the upfront tariff, the upfront tariff already determined for Coal based projects be considered.

b. The proposed project cost should also be examined particularly the 15% IRR on equity which seems on higher side

c. The 1.35% Insurance cost of the EPC cost needs to be revisited/assessed.

Elengy Terminal Pakistan Limited (Commentator)

6.3 Elengy terminal vide its letter dated February 23, 2015 submitted following comments for the consideration of the Authority:

- Following constituents of LNG/RLNG cost have not been identified and it be clarified that the LNG price of US$ 10/11/12 per MMBTU is delivered price at IPP flange.

a. LNG Price formula on DES basis with cap of price agreed on G2G contract to be signed by PSO.

b. LNG terminal tolling charges.

c. Third party access/tolling charges

d. Blending treatment for heating value.

e. UFG losses.

Alternately:

a. Detail of applicable duties on import of LNG, LC and insurance cost to be separately provided or assumed as a percentage of LNG cost.

b. Tooling charges of terminal be included.

c. Retainage of 1.5% for 200 mmscfd be considered in price notification of OGRA.

d. Some components of RLNG cost such as LNG price, tooling fee &retainage are in US$ while other components of local cost are Rupee. We understand that OGRA will notify RLNG price in Rupee/MMBTU. Mechanism defined for conversion of US$ based cost into Pak Rupees to be applicable for fuel as well.

e. Currently on import of LNG custom duty, sale tax and advance income tax is applicable. It is to be clarified that;

i. Custom duty will be part of landed cost.

ii. Sale tax to be adjustable by importer and same will be charged to SSGC/SNGPL and eventually recovered. Therefore should be clarified as to whether exempted or included.

iii. LNG advance income tax is applicable and in this case to be paid by importer. How it is to be handled or exempted needs to be clarified. Please note that under Power Policy 2002, import is exempted from withholding tax.

- RLNG is delivered to IPPs based on equivalent energy content basis.

- Plant size is of 700 MW up to 900MW. Power plant of such scale requires significant investment. The upfront tariff should also be provided for smaller plant sizes of 225MW to 300MW with corresponding efficiency considerations.
- Project location is only Punjab. However, currently there is a limitation of gas transmission to Punjab and infrastructure expansion is required to the transmission network. This requires investment and will take time to materialize. Therefore, alternate sites should be allowed and NTDC should ensure power off take.
- 1,300 MW can be made available to Punjab earlier if such capacity power plants are established in the vicinity of Port Qasim. Wheeling charges for power would need to be stated. It is to be also noted that these plants will have advantage of lower fuel cost as TPA & UFG will be minimal and will operate at higher efficiency as higher BTU RLNG (unblended) will utilized by such IPPs.
- Sovereign Guarantees under PPA/IA be extendable for fuel procurement with no LDs in case of LNG shipment delay. Long term agreement for 10 years will undertake short, medium & long term contracts.
- Escrow account working mechanism is unclear and should cover cost of 1.5 LNG vessels price for each 700MW-900MW plant.

Pakarab energy (Commentator)

6.4 Pakarab energy vides its letter No. PEL/NEPRA/3103/01 dated February 20, 2015 submitted following comments for the consideration of the Authority:

a. Plant Thermal Efficiency: Plant thermal efficiency at 57% is higher than any other similar project commissioned so far.

b. Project Locations: Locations have been restricted to only 3 sites whereas more similar Options be suggested by investors.

c. Cost per MW: Total project cost per MW is on lower side as compared to other similar projects commissioned.

d. Size of Project: Size of project has been restricted to 800 MW which requires a huge investment from sponsor side thus limiting competition.

e. Timelines for Financial Close: Achievement of FC in 5 months is highly aggressive having no historical reference of any other project which has acquired FC in such short period.

f. ROE during Construction: ROEDC is not allowed requiring adjustment similar to coal based power projects.

g. Withholding Tax on Dividends: Working of Withholding tax is not clear.

h. O&M Expenses: 0&M expense is on lower side as per other similar projects.

i. Open Cycle Issues: Degradation should be available during open cycle till COD.

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j. Financing Currencies: Chinese currency RMB should also be considered due to financing from China.

Punjab Power Development Board Energy Department (Commentator)

6.5 PPDB Energy Department vide its letter No. MD/MF/Thermal/PPDB/205/2015 dated March 3, 2015 submitted the following views/suggestions for the consideration of the Authority:

a. **Size of the Plants:**

Para 2 of the PPIB working paper specifies development of Upfront Tariff for plant capacities in the range of 700-900 MW. In this regard, it is suggested that besides plants of larger capacities, the Authority may also consider, announcement of Upfront Tariff for small capacities in the range of 200-250 MW.

b. **PPIB Specific LOI-Holders:**

Para 3 of the PPIB working paper mentions that LOI-holders of PPIB shall be eligible for the Upfront Tariff. We understand that besides PPIB, LOI-holders of other provincial facilitating agencies may also be rendered eligible for the adoption of Upfront Tariff to be announced by the Authority.

c. **Security Package:**

It is observed that announcement of Upfront Tariff by the Authority about different technologies have not brought the desired results for speedy development of power projects due to unavailability of relevant Security Package simultaneously. It is, therefore suggested that the Authority may ensure readiness of standardized Security Package as well along with the announcement of Upfront Tariff.

Saif Power Limited (Commentator)

6.6 Saif Power Limited vide its letter dated February 25, 2015 submitted the following for the consideration of the Authority:

a. **Force Majeure (FM) and Take OR Pay:**

FM can happen at following ends:

(a) At overseas supplier's terminal
(b) At Vessel under voyage
(c) At Engro/local terminal
(d) At SNGPL/SSGC structure
(e) At IPPs plants (+FORCED OUTAGE)

In all such cases, supply of gas to IPPs may be affected. Position of IPPs in above cases would be as follows:

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If LNG/Gas is being supplied on a firm/guaranteed allocation basis, then: From point (a) to point (d) above, any such Force majeure should automatically become a FM in the PPA (which is not the case in current PPAs). This means that in case of an LNG disruption, the Power Purchaser would either run the plant on alternate fuel or else it may decide to keep the plant on standby mode. In both such instances, IPPs capacity for the period of the FM will be recognized and accepted and payment will be made on the basis of the Available Capacity of the plant/NEOs despatched.

With reference to point (e) above, if any FM or Forced Outage (FO) happens at any plant, the take or pay concept will not apply. The LNG/Gas may be diverted by Gas Supplier either to SNGPL/SSGC grid (pipelines) or it may be diverted to other specific industries/plants. The FM/FO will be considered as an event from the very minute it occurred and the concept of take and pay will remain suspended till the plant is fully back in operations with total available capacity.

If at any given time, the Power Purchaser does not dispatch the plant at all or runs it partly (due to lack of demand), the take or pay mechanism will remain suspended during such partial or total shut down of the plant. Fuel Supplier will divert the gas accordingly.

The take or pay concept will also not be valid during Scheduled outages even if the IPPs are required to change the dates at the last moment due to some technical reasons. Fuel supplier will divert the gas accordingly.

b. Extra Cost:

Any additional cost /liability including costs of SBLCs incurred due to such LNG utilization would have to be a pass through item from NEPRA.

c. Advance Payments

If advance payments are required to be made for such LNG/Gas as per the GSA, NEPRA would be required to approve the additional working capital costs for the IPPs.

d. No Link to Any Specific Gas Field

Under the GSA, the LNG/Gas swapped procedure should not be linked to any specific gas field and should be considered as being supplied from the pipelines only.

e. Escrow Account

Before making any other payments, the Power Purchaser should hold one month's money payable to LNG IPPs in an Escrow account. This is to avoid a drawdown on the guarantees/SBLCs by the overseas supplier in case the Power Purchaser is unable to pay the bills of the IPPs.

Orient Power Company (Pvt) Limited (Commentator)

6.7 Orient Power vides its letter No. OPCOL/FIN15/1029 dated March 2, 2015 submitted the following for the consideration of the Authority:

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6.7.1 The project size proposed for upfront tariff determination is in the range of 700-900 MW size. Each project of this size would require at least US$ 850 million to US$ 1,100 million of funding. This can only be achieved with major portion of foreign debt. Therefore the financial close and the completion timelines are not achievable realistically. Authority needs to consider upfront tariff for different ranges of i.e. 200 MW, 400 MW, 600 MW and 800 MW. Smaller size projects also give more operational flexibility given the sector dynamics i.e. persistent circular debt problem.

6.7.2 The 3,600 MW capacity addition is proposed on a single fuel i.e. RLNG, which is to be procured by GOP. Presently there is no firm commitment available, prior to or at the time of projects opting for upfront tariff that required quantity and quality of gas would be provided on time and for the life of the project. It is also not clear at this stage, how the back to back mechanism is to be structured for firm commitment of gas supply under the concession agreements.

6.7.3 With GOP to procure the LNG and no alternate fuel, either GOP has to take the risk for non-supply of fuel or alternate fuel has to be allowed for use in these projects. The capital cost, output and efficiency numbers also gets adjusted to account for this.

6.7.4 As we understand in order for supply of gas for the additional capacity of 3,600 MW, the required infrastructure, including regasification terminal and pipeline loop in the gas transmission network does not exist today. The timeline for completion of the gas infrastructure has to be tied with completion of the power projects. Appropriate protection would be required, at the time for opting for upfront tariff, against the risk of delay in completion of gas infrastructure that delays commissioning of the project. This risk can be minimized to certain extent by including dual fuel capability.

6.7.5 The Company recently received draft LNG supply agreement from SNGPL for supply of gas to Orient's existing 229 MW (Gross ISO) plant at Balloki. There are some major policy and structural issues in the way the draft gas supply agreement has been drafted. Most of these issues can't be accepted without making changes in Power Purchase Agreement and the tariff. We provide the list of the issues attached as Annexure A to this letter. These issues also would be replicated for the existing capacity addition of 3,600 MW. Company has also shared the draft LNG supply agreement with NEPRA already in December 2014 and has provided comments to the relevant ministry as well. The draft LNG agreement in its current form is unworkable.

6.7.6 The OEMs, including GTW Handbook, while referring to capacity and efficiency, gives output and efficiency numbers at ISO conditions and at generator terminal without including any of the plant auxiliaries' consumption and adjustment to site reference conditions. Therefore the output and efficiency numbers get adjusted for changes in temperature, humidity, step up transformer losses and plant auxiliaries. For instance for change of ISO temperature at 15 degrees centigrade to 25 degrees centigrade site reference conditions, the downward adjustment in output is approx. 5%. Similarly after accounting for plant auxiliaries, the number for plant output and efficiency also comes out to be a lower number. The plant auxiliaries are approx. 2.5% of net plant output at site reference conditions similar to the ones identified for capacity addition of 3,600 MW on LNG. As the

Authority would recall that during the hearing, while several comments were made on achievable plant output and efficiencies but without any reference to site specific conditions and break down or specific reference to plant auxiliaries. It appears that present output and efficiency numbers don't take in to certain plant auxiliary consumption or capital cost e.g. gas compressor station.

6.7.7 There is a requirement for the projects to do commissioning on open cycle but it appears that the capital cost does not include cost of bypass stack and dampers required for open cycle operations. The cost for these two items for 800 MW size plant would be US$ 15 US$ 20 million. Furthermore plant with dual operational capability on open cycle as well as combined cycles has 0.5% less efficiency as compared to plant solely with combined cycle capability as due to increase in length of HRSGs and distance between GT and ST.

6.7.8 For capital costs the reference has been made to a study for CONE estimates for PJM Interconnection LLC. The said study is based on GEs 7F machines whereas the proposed 700-900 MW range requires GEs 9F machines or equivalent. The tariff petition does not provide any breakup as to how these capital costs have been adjusted for existing capacity expansion. For instance there are certain exclusions in the CONE study as follows;

a. Gas compressor station;

b. Black start capability;

c. EPC profits on major equipment not included. EPC profit is 12% of EPC cost other than major equipment which may not be relevant for EPC costs in the instant case;

d. Capability to operate on open cycle and combined cycle;

e. The provision of duct firing has been included, which may not be relevant in our case. As has been stated in the reference study the duct firing is relevant only on base load operations and while it increases the output but with lower efficiency. Therefore cost benefit analysis of this aspect needs to be carefully evaluated, if this is to be considered at all. It is therefore critical to see the exclusions/inclusion for the exact basis and breakup of capital costs that have been used in the tariff petition.

6.7.9 The upfront tariff envisages installation of heavy duty gas turbines. These turbines are very sensitive to grid frequency variations that result in loss of output and efficiency. Presently there is no mechanism in the tariff or Power Purchase Agreements whereby the project company is kept neutralized to such frequency variations. This issue needs to be addressed by the Authority in upfront tariff determination.

6.7.10 The choice to opt for tariff is stated to be within 90 days of upfront tariff determination by NEPRA. However in the absence of draft concession agreements, this does not seem realistic. Therefore the period of opting for upfront tariff should run from later of upfront tariff determination or availability of draft concession agreements.

6.7.11 One month equivalent of monetized gas requirement is to be kept in Escrow by project Company and to be used for payment in the event power purchaser defaults. The Escrow is in the nature of working capital and it's not clear as to why it has been made part of the

project cost especially in view of the fact that so far it has been the policy of GOP not to recognize any working capital as part of compensation. Besides it appears that requirement of US$ 34 million for Escrow Account is exclusive of sales tax as this number does not include the same. This needs to be rectified.

6.7.12 It appears that the requirement of Escrow has not been thought through as it would cover for the first payment default but what would happen once payment from Escrow Account to fuel supplier has been triggered and power purchaser still doesn't pay? The project would be required to replenish the Escrow Account. So requirement of any Escrow account has to be back to back with Escrow from the power purchaser or alternatively the Escrow should be taken out from the project cost or working capital altogether and should be maintained by the Power Purchaser or in other words by the entity from where the risk originates.

9.7.13 The annual O&M cost requested in tariff petition for 800 MW plant is US$ 18.5 million. This number is unrealistic and not achievable especially given the technology proposed is high efficiency heavy duty gas turbines which are costly to maintain and operate. The annual O&M number is off by at least US$ 7-9 million.

6.7.14 The following items are altogether missing in the petition for upfront tariff:

a. Return on equity during construction.
b. Indexation of working capital cost to changes in price of LNG
c. Dividend withholding tax
d. Withholding tax in case of interest payment on foreign debt

6.7.15 In all the tariff determinations in the past the debt profiling continues to be done on annuity method. This results in higher payments over the debt term as against debt profiling on equal principal payments over the term. For instance if for the existing capacity addition the debt repayment is structured on equal monthly installments, debt equity of 75:25 and keeping interest rate at 14% (11% KIBOR with 3% spread), results in savings of US$ 461 million over ten years period of debt repayment. Even though the equal principal repayments profiling result in higher cash outlay in the first half of debt term, the Authority ought to consider this as this results in net savings over life of the debt.

6.7.16 Annual availability is proposed to be 92%. This is a reduction of 2% as compared to existing gas based projects and needs to be maintained at 90%.

6.7.17 The timelines to achieve financial close are very aggressive and not achievable especially for larger size projects. This needs to be reviewed by the Authority.

RIAA Law Advocates & Corporate Counselors

6.8 RIA vides its letter dated 20th February 2015 submitted the following comments in the matter:

6.8.1 Whether the RLNG price of US$ 12/MMBtu is reasonable and justified?

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The RLNG price should be in line with the pricing and indexation mechanism under the Gas Supply Agreement, so as to avoid any anomaly in the pricing mechanism. Furthermore, since almost all of the outstanding issues/matters have not yet been initiated and/or resolved.

6.8.2 Whether the project cost is reasonable and justified?

According to the commentator, project cost has been calculated as the mean value for projects with capacities ranging from 700MW to 900MW. Instead of the mean value, the Proposed Tariff should provide the project cost on the higher end i.e. for 900MW. Upon review of the components of the project costs, we have the following observations:

CAPEX: The details of the CAPEX have not been provided in the Summary/Proposed Tariff apart from the fact that 70% of the CAPEX is comprised of the EPC price. In order to provide further comments, we request the Authority to provide a breakdown of what other costs are included in the CAPEX, including land, access roads etc.

Project Development Costs: The project development cost is a significant amount which typically consists of the costs incurred by the sponsors during the development of the project up till the COD e.g. legal counsel fees, regulatory fees etc. The Proposed Tariff does not provide these costs and the same need to be considered by the Authority.

Financing Fees and Charges: As compared to coal projects, the risk profile and documentation for RLNG projects will be more complex. In view thereof, we feel that if the financing fees and charges are taken @4% instead of @3.5%, the same will result in more accurate assumption for the project's financing fees & charges.

Insurance: Whilst political risk insurance is mentioned in the Summary, it is unclear as to whether the same has been included in the Proposed Tariff. The Authority is requested to clarify this point.

6.8.3 Whether the cost of one month escrow account - LNG is justified?

The following factors need to be kept in view in relation to the proposed Escrow Mechanism:

i. The assumption is based on the Gas Supply Framework which is not yet finalized; therefore, this assumption will need to be adjusted with any additional burden that is placed on the project companies by the finalized Gas Supply Framework.

ii. The suggestion that the cash margin amount will be adjusted in the tariff in the last agreement year will not be acceptable to the sponsors/financers as they will be incurring this cost on an on-going basis, which would be constraining their cash flow on a continuous basis. We suggest that the impact on the cash flow margin should reflect on an on-going basis.

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6.8.4 Whether the proposed net LHV efficiency level is reasonable and justified?

According to the commentator, the net thermal efficiency in the UCH-II Determination provides 50.258%. No reasoning behind this increase in the thermal efficiency has been provided which requires revision by the Authority.

6.8.5 Whether the insurance cost at 1.35% of the EPC cost is justified?

It should be noted that the risk profile attached to the infrastructure of gas based projects is far greater compared to projects relying on other sources of fuel. Therefore, in view of the fact that the insurance cost in a project for RLNG will be higher, it is our opinion that this assumption is justified and reasonable.

6.8.6. Whether the IRR on equity of 15% is reasonable and justified?

According to the commentator, 15% ROE will be inadequate in attracting investors for such large scale projects. Minimum IRR of 17% should be provided to reflect the established precedent like upfront coal tariff.

6.8.7 The commentator also submitted comments on the following:

- Gas supply framework
- Pass through
- Availability
- Gross capacity & project price calculation
- Kibor/Libor spread
- Construction and grace period
- Custom duties & cess
- Availability of the project being 92% for calculation of tariff
- Conditions for opting for the tariff/cap on tariff
- Validity of tariff
- Timelines for achieving financial close
- Life of the project
- Indexations and adjustments
- Locations
- Pre-COD sale
- Carrying cost

7. Public Hearing

7.1 The Hearing was held on 23rd February 2015 in NEPRA Tower which was largely participated by the stakeholders.

8. Discussion of The Issues

8.1 Based on the framed issues and comments of the stakeholders, the issue wise discussion, analysis and determination of the Authority is provided in the succeeding paragraphs.

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9. **Whether the RLNG price of US$ 12/MMBtu is reasonable and justified?**

9.1 PPIB assumed LHV LNG price at three different levels i.e. US$ 10/MMBtu (HHV US$ 9.03/MMBtu), US$ 11/MMBtu (HHV US$ 9.93/MMBtu) and US$ 12/MMBtu (HHV US$ 10.83/MMBtu). PPIB further submitted that the LNG price will be replaced/indexed with the LNG price to be determined by OGRA/GOP.

9.2 Engro Powergen in its intervention request submitted that LNG price should be actualized and pass-through. The various components likely to shape the final fuel cost are:

i) Landed price at Paksitan port quoted in US$/MMBtu including taxes.
ii) Re-gasification, storage and other LNG terminal processing charges.
iii) Nitrogen blending charges by the gas distributor to convert high BTU gas into low BTU pipeline quality gas.
iv) Tolling charges per kilometer and unaccounted for gas (UFG) loss charges.
v) Delivered at site HHV US$/MMBtu price.

9.3 Engro further submitted that the tariff does not make provisions for liquidated damages or storage costs that are likely to be incurred for refusing LNG supply or directing it to storage if there is an unplanned plant outage or because the Power Purchaser refuses off-take due to grid connectivity issues.

9.4 Engro also submitted that the OGRA's Rules and Regulations relating to third party distribution are ambiguous and open to several interpretations. For example, given that imported LNG has higher calorific value viz-a-viz pipeline gas, clarity is needed on whether the gas distribution companies are liable to supply source equivalent volume of gas or source equivalent energy molecules of gas. If the gas companies are liable to supply only the volume then the cost of the energy differential needs to be built into the pass-through fuel price.

9.5 Elengy Terminal Pakistan Limited in its comments also raised the issues relating to LNG pricing e.g. customs duties, sales tax and advance income tax, LC and insurance cost, tolling charges and mechanism for conversion of US$ based cost into Pak Rupees. The commentator also requested that LNG be delivered to IPPs based on equivalent energy content basis.

9.6 The spot market LNG prices have a sharp declining trend e.g. in Japan spot LNG contracted price fell from US$ 18.30/MMBtu in March 2014 to US$ 7.60/MMBtu in February 2015, however, LNG agreement under long term contracts will result in different LNG pricing. Ministry Water & Power, Ministry Petroleum & Natural Resources and Oil and Gas Regulatory Authority were requested to provide information on expected LNG import price and pricing mechanism to make an informed decision, however, no information was received. In the absence of any such information, delivered HHV LNG price of US$ 10.83/MMBtu (LHV US$ 12/MMBtu) to the IPPs has been taken for calculation of fuel cost component and working capital requirement. In future, the fuel cost component will be adjusted on account of variation in actual LNG delivered price to the IPPs as and when announced by OGRA/GOP or any other agency authorized in the matter.

9.8 The issues raised by Engro regarding liquidated damages or storage cost due to outages/evacuation problem and whether the gas distribution companies are liable to supply source equivalent volume of gas or source equivalent energy molecules of gas are subject of Power Purchase Agreement/Fuel Supply Agreement and should be addressed by the mutual consent of the fuel supplier, power purchaser and power producer.

10. Whether the project cost is reasonable and justified?
Whether the cost of one month Escrow Account – LNG is justified?

10.1 One of the issues raised by stakeholders is the size of the project. According to Engro Powergen, the typical project sizes are 225MW, 400MW and 600MW. Larger project sizes can be designed, however the likelihood of their being executed on a fast-track basis is lower due to longer gestation periods of these projects and because currently very few parties have the financial capacity to take on investments in large projects. Engro proposed a tier based upfront tariff structure, which defines a different tariff level for different unit sizes e.g. 200-400MW, 400-600MW, 600+MW to accommodate potential LNG projects of all sizes. A "one -size-fit-all" tariff structure will hinder tariff petitions especially of small scale LNG projects which are more likely to get implemented on fast track. According to Pakarab Energy, size of project has been restricted to 800 MW which requires a huge investment from sponsor side thus limiting competition. PPDB suggested that besides plants of larger capacities, the Authority may also consider, announcement of Upfront Tariff for small capacities in the range of 200-250 MW. According to Orient Power, the proposed project size of 700-900 MW would require at least US$ 850 million to US$ 1,100 million of funding which can only be achieved with major portion of foreign debt. Therefore the financial close and the completion timelines are not achievable realistically. Authority needs to consider upfront tariff for different ranges of i.e. 200 MW, 400 MW, 600 MW and 800 MW. Smaller size projects also give more operational flexibility given the sector dynamics i.e. persistent circular debt problem.

10.2 The Authority has considered the comments submitted by the stakeholders regarding the size of the project. In the opinion of the Authority, the issue raised by the stakeholders is pertinent and valid. Project sizes of 200MW/400MW need lesser investment and financing for such projects is comparatively easier, therefore, the Authority has decided to announce upfront tariff for three project sizes i.e. for 225 MW, 400 MW and 800 MW. For all project sizes up to 250 MW, tariff determined for 225MW shall apply, for all project sizes >250 MW ≤450 MW installed capacity, the tariff determined for 400 WM shall apply and for all project sizes >450 MW installed capacity, the tariff determined for 800 WM shall apply.

10.3 PPIB proposed a project cost of US$ 1.13/MW on local financing and US$ 1.04/MW on foreign financing. According to PPIB, the capital cost includes main plant equipment system, gas turbines including auxiliaries, STG and auxiliaries, balance of plant equipment system, other mechanical equipment system, electrical equipment system, gas handling infrastructure, engineering and project management, erection and commissioning, land site development and civil works, transportation and evacuation cost upto interconnection point.

10.2 PPIB in its proposed project cost also included cost of one month consumption of LNG at 100% load to be placed in an Escrow Account to be arranged by the project company and it will be exclusively utilized upon payment default by the power purchaser under the PPA in

respect of fuel cost component. Further this cash margin account will be adjusted in the tariff in the last agreement year of the project. In case of any earlier termination of the project agreement, this amount will be adjusted in the payment if required for which a mechanism/protocol will be included in the project agreements.

10.3 The Authority accepted the proposal of PPIB for cost of one month LNG Escrow Account and the same has been included in the project cost. This cash margin account will be adjusted in the tariff in the last agreement year of the project. In case of any earlier termination of the project agreement, this amount will be adjusted in the payment if required for which a mechanism/protocol will be included in the project agreements.

10.4 The capital cost of the power project is generally linked to steel index and machinery and equipment index and the same is incorporated in the upfront coal tariff. The Steel Index registered a decline of 13.4% over the last three years, 256.5 in January 2012 to 222.1 in January 2015 while Machinery and equipment Index registered a small increase of 2.26% in the same period, 133.8 in January 2012 to 136.9 in January 2015.

10.5 In order to assess the reasonability of the capital costs, the Authority considered the benchmarks available for heavy duty machines installed at Guddu 747 MW and for smaller projects, cost allowed to 225 MW gas based projects. On the basis of EPC cost of US$ 590 million in case of combined cycle 747 MW Guddu project and the EPC cost allowed by the Authority to 225 MW gas based combined cycle facility, the Authority has decided to approve the following project costs for different sizes of the projects:

DESCRIPTION	225 MW		400 MW		800 MW	
	L. Finan.	F. Finan.	L. Finan.	F. Finan.	L. Finan.	F. Finan.
PROJECT COST:	**Million US$**		**Million US$**		**Million US$**	
EPC	0.7680	0.7680	0.7916	0.7916	0.7916	0.7916
Customs Duties & Cess	0.0366	0.0366	0.0377	0.0377	0.0377	0.0377
Non-EPC & Project Development	0.0768	0.0768	0.0792	0.0792	0.0792	0.0792
CAPEX	0.8813	0.8813	0.9085	0.9085	0.9085	0.9085
Financing Fees and Charges	0.0231	0.0231	0.0238	0.0238	0.0238	0.0238
IDC	0.0650	0.0250	0.0973	0.0368	0.0973	0.0368
One Month LNG Escrow Account	0.0539	0.0539	0.0502	0.0502	0.0502	0.0502
Total Project Cost	**1.0233**	**0.9833**	**1.0798**	**1.0193**	**1.0798**	**1.0193**

11. Whether the proposed net LHV efficiency level is reasonable and justified?

11.1 PPIB proposed net LHV efficiency of 57% for net output of 800 MW. PPIB suggested adjustment of fuel cost component on the basis of heat rate test at the time of COD with efficiency gain sharing in the ratio of 60:40 between power purchase and power producer. However, fuel cost component will not be adjusted in case the efficiency established lower than 57%.

11.2 Pakarab Energy in its comments submitted that the 57% thermal efficiency is higher than any other similar project commissioned so far. According to Orient Power, the OEMs, including GTW Handbook, while referring to capacity and efficiency, gives output and

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efficiency numbers at ISO conditions and at generator terminal without including any of the plant auxiliaries consumption and adjustment to site reference conditions. Therefore the output and efficiency numbers gets adjusted for changes in temperature, humidity, step up transformer losses and plant auxiliaries. In the opinion of the commentator the present output and efficiency numbers don't take into account certain plant auxiliary consumption.

11.3 Engro Powergen in its intervention request submitted that the efficiency sharing mechanism should be similar to NEPRA's upfront tariff determination for Coal based plants. Engro in the supplementary information proposed thermal efficiencies of 52%, 56.4% and 57% for 225 MW, 400 MW and 800 MW respectively. Engro also proposed thermal efficiency on HSD operation of 48.5%, 53.4% and 54% respectively.

11.4 The provision of backup fuel was not part of the proposal submitted by PPIB. The stakeholders requested to allow the provision of backup fuel in case of supply disruptions due to any reasons. In the opinion of the Authority, the provision of backup fuel (HSD) is essential and the added cost will be the interest cost of 7 days mandatory HSD inventory requirement which is around Rs. 0.02/kW/hour. Accordingly the Authority has decided to allow HSD as backup fuel for LNG projects.

11.5 In the opinion of the Authority, the net LHV efficiencies of 57%, 56.4% and 52% for 800MW, 400 MW and 225 MW respectively proposed by PPIB (for 800 MW) and Engro Powergen are reasonable and approved as such. Degradation and partial load adjustment shall also be applicable and as per standard practice, degradation and partial load adjustment curves shall be included in the PPA. The Authority has also approved thermal efficiency of 54%, 53.43% and 49.26% for 800MW, 400 MW and 225 MW respectively for HSD in the same ratio as has been provided to the earlier gas based plants.

12. Whether the Variable and Fixed O&M costs are reasonable and justified?

12.1 PPIB proposed variable O&M cost of Rs. 0.1521/kWh with 39% local and 61% foreign and fixed O&M cost of Rs. 0.1237/kW/Hour with 46% local and 56% foreign. According to PPIB operation and maintenance (O&M) expenses comprises of repair and maintenance, establishment including employee expenses, administrative and general expenses. Among others PPIB referred NEPRA's indexed tariff for gas based IPPs.

12.2 Pakarab Energy submitted that O&M expenses are on lower side as compared to other similar projects. Orient Power in its comments submitted that the annual O&M cost requested in tariff petition for 800 MW plant is US$ 18.5 million which is unrealistic and not achievable especially for the proposed high efficient heavy duty gas turbines which are costly to maintain and operate. According to Orient Power, the annual O&M number is short by at least US$ 7-9 million.

12.3 According to Engro Powergen, the fixed and variable O&M given in the upfront tariff document is almost half of the comparable benchmarks given in support of the upfront tariff i.e. 0.27 cents in upfront tariff vs. average of 0.57 cents of the four gas based IPPs. Although for larger capacities there is some advantage of synergies and economies of scale but these are not likely to be so significant which would reduce the total O&M component to less than half.

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12.4 Engro further submitted that the upfront tariff allows 60% of variable O&M and 50% of the Fixed O&M during simple cycle operation of 10 months. The supporting documents for the upfront tariff have not reasonably justified the use of these percentages. In our view these percentages are on the lower side, especially the Fixed O&M as during this phase, majority of the fixed cost would be incurred.

12.5 Engro in its supplementary information submitted detailed calculation of O&M cost on the basis of Long Term Service Agreement (LTSA). The summary is provided hereunder:

Description	225 MW	400 MW	800 MW
LTSA Cost (US$)	24,375,000	40,000,000	65,000,000
Period (Years)	20	6	6
Capacity (kW)	47000	400,000	800,000
Variable O&M (Rs./kWh)	0.36	0.29	0.23
Fixed O&M (Rs./kW/h)	0.24	0.23	0.19

12.6 In order to assess the reasonability of O&M, benchmarks are available for 225 MW gas based projects. Three out of four projects have identical composition of fixed and variable O&M while Orient Power Limited has lesser variable O&M and higher fixed O&M. According to the average of the three identical projects, Variable O&M is Rs. 0.34/kWh and fixed O&M is Rs. 0.23/kW/Hour. The PPIB proposed O&M cost is approximately half of the cost allowed to the existing O&M cost allowed to gas based IPPs. PPIB referred the O&M cost allowed to these IPPs in support of the proposed O&M cost but did not give any reason or justification of reduction in the O&M cost. The actual O&M established in the IPP under 2002 Policy does not support the numbers proposed by PPIB. Considering the average Variable O&M cost of Rs. 0.34/kWh and average fixed O&M cost of Rs. 0.23/kW/Hour allowed to existing gas based IPPs reasonable is being assessed for 225 MW projects.

12.7 For larger projects, benchmarks suggested by Engro seem reasonable except for slight adjustment in the fixed O&M for 400 MW. Accordingly, variable and fixed O&M cost of Rs. 0.29/kWh and Rs. 0.21/kW/hour for 400 MW and Rs. 0.23/kWh and Rs. 0.19/kW/hour for 800 MW respectively is being approved. For HSD operation, variable O&M has also been enhanced to 1.443 times in accordance with the existing ratio of gas based projects. Accordingly variable O&M cost of Rs. 0.4906/kWh, Rs. 0.4185/kWh and Rs. 0.3319/kWh for 225 MW, 400 MW and 800 MW respectively is being approved for HSD operation. In accordance with the existing indexation mechanism in the gas based projects, 57% of the fixed O&M will be indexed with US CPI and Exchange Rate and 43% with Local CPI (General). The whole of Variable O&M will be indexed with US CPI and Exchange Rate in accordance with the existing indexation mechanism in the gas based projects.

13. Whether the working capital cost is justified?

13.1 PPIB proposed working capital cost on the basis of 45 days receivable cycle and cost of SBLC of 1.5% of the cost of 60 days gas requirement. Engro Powergen in its intervention request submitted that working capital must be indexed with the change in LNG price. The

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intervener also proposed that the receivable gap should be increased from 45 days to 60 days because payment for fuel is likely to be made in advance in case a commercial importer is involved. Taking a 30 day gap between payment for fuel supply & consumption, and another 30 day for power sale invoice acceptance takes the number of days of receivables up to 60 days. The intervener in the supplementary information also assumed cost of 7 days HSD inventory as back up fuel in the working capital. Saif Power Limited in its comments suggested that if advance payments are required to be made for such LNG/Gas as per the GSA, NEPRA would be required to approve the additional working capital costs for the IPPs. Orient Power in its comments submitted that either GOP has to take the risk for non-supply of fuel or alternate fuel has to be allowed for use in these projects. Orient Power also suggested indexation of working capital cost to change in LNG price.

13.2 The submissions of the commentator regarding financing cost of 60 days receivable seems logical and approved, however, it will be subject to adjustment at the time of COD on the basis of actual payment terms finalized in the GSA. Similarly as a back to back arrangement, the proposed cost of SBLC is also approved subject to adjustment as per actual arrangement finalized in the GSA. The Authority has decided to allow HSD as backup fuel and accordingly, the financing cost of HSD inventory equivalent to 7 days generation at full load is being allowed.

14. Whether the insurance cost at 1.35% of the EPC cost is justified?

14.1 PPIB in its proposal assumed insurance cost during operational @ of 1.35% of the EPC cost. Keeping in view the actual insurance cost of the commissioned IPPs of 2002 Policy, the Authority allowed insurance cost @ 1% of the EPC in the upfront tariffs for coal, solar and wind and the same is approved in the instant case.

15. Whether the IRR on equity of 15% is reasonable and justified?

15.1 PPIB proposed IRR of 15% on equity investment in line with NEPRA's determination for gas based IPPs. Engro Powergen in its intervention request suggested an IRR on equity of 18% in line with the coal based projects. The intervener in the supplementary information suggested 17% IRR on equity. According to the intervener, RLNG projects being executed for the first time, therefore, the added risk requires higher returns. Two of the commentators submitted that the calculation of ROEDC is missing.

15.2 In the matter of upfront imported coal tariff IRR of 17% was allowed considering the risks involved in the project execution and operation and difficulties involved in the financing of the coal projects. The Authority in principle has decided not to pass on the impact of withholding tax on dividend to the consumers. Accordingly in the cases of coal upfront tariff and solar upfront tariff reimbursement of withholding tax on dividend was not provided. The Authority is however cognizant of the fact that presently investors have to face certain risks, which are partly covered through establishing escrow account and SBLC. Despite the aforesaid, the Authority feels that in order to provide incentive for the projects on RLNG, higher return is required to be given as against the 15% IRR allowed to the IPPs. Accordingly the Authority has decided to allow IRR on equity of 16% for LNG projects.

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16. Cos of Debt

16.1 Cost of debt of 0.45% (LIBOR) plus a premium of 4.5% for foreign loans and 9.5% (KIBOR) plus a premium of 3% has been used for calculating debt servicing component of tariff for foreign and local loans. The savings, if any, in the premium will be shared between the power purchaser and the power producer in the ratio of 60:40. The interest part of the debt servicing component of tariff will be subject to adjustment for change in LIBOR/KIBOR as the case may be and exchange rate in case of foreign financing. The principal repayment in case of foreign financing will also be subject to exchange rate adjustment.

16.2 Orient Power has raised the issue of annuity method of calculating debt servicing component of tariff and suggested that an alternative method of equal principal repayments over the term of the repayment period will result in savings to the power purchaser. In such a scenario, more payments have to be made by the power purchaser on account of principal repayment in the initial years. The higher principal repayments in the initial years do result in lesser interest payments but arrangement of higher principal repayments in the scenario of increasing circular debt is an important consideration. Therefore, the Authority has decided to maintain the existing annuity method of calculating debt servicing component.

17. Other Issues

17.1 **Auxiliary Consumption:** PPIB assumed an auxiliary consumption of 3.12% for 800 MW project. Engro Powergen proposed auxiliary consumption of 5% for all the three types of the projects. Auxiliary consumption in Guddu 747MW project is around 3% and same is being approved for 800 MW category. For 400 MW allowance has been incorporated being of smaller scale as compared to 800 MW and accordingly auxiliary consumption of 4% is allowed. For 225 MW 5% auxiliary consumption is being approved as suggested by Engro Powergen.

17.2 **Construction Period:** PPIB proposed construction period of 28 months for 800 MW. Engro Powergen proposed 32 months for 800MW/400 MW and 21 months for 225 MW. On the basis of feedback from the equipment manufacturer and other stakeholders, the Authority has decided to allow 18 months construction period for 225 MW and 26 months construction period for 800MW/400 MW projects.

17.3 **Simple Cycle Operation:** In the opinion of the Authority, the provision of simple cycle operation will add complexities and may delay in commissioning of the projects in stipulated time period, therefore, is not being considered.

17.4 **Availability:** PPIB proposed plant availability of 92% and the same is being approved.

18. Summary of Tariff and Indexations

18.1 The summary of the determined tariff is provided hereunder:

DESCRIPTION	225 MW		400 MW		800 MW	
	L. Finan.	F. Finan.	L. Finan.	F. Finan.	L. Finan.	F. Finan.
Energy Charge LNG:	Rs./kWh		Rs./kWh		Rs./kWh	
FCC	7.8742	7.8742	7.2599	7.2599	7.1835	7.1835
Variable O&M	0.3400	0.3400	0.2900	0.2900	0.2300	0.2300
Total	8.2142	8.2142	7.5499	7.5499	7.4135	7.4135
Energy Charge HSD:						
FCC	14.0452	14.0452	12.9495	12.9495	12.8118	12.8118
Variable O&M	0.4906	0.4906	0.4185	0.4185	0.3319	0.3319
Total	14.5358	14.5358	13.3680	13.3680	13.1437	13.1437
Capacity Charge:	Rs./kW/hour		Rs./kW/hour		Rs./kW/hour	
Fixed O&M	0.2300	0.2300	0.2100	0.2100	0.1900	0.1900
Cost of Working Capital	0.2153	0.2153	0.1985	0.1985	0.1964	0.1964
Insurance	0.0923	0.0923	0.0941	0.0941	0.0932	0.0932
ROE	0.5537	0.5321	0.6067	0.5727	0.6004	0.5668
Debt Servicing	1.6284	1.1289	1.7004	1.1580	1.6828	1.1461
Total 1-10 Years	2.7197	2.1986	2.8097	2.2333	2.7628	2.1924
Total 11-30 Years	1.0913	1.0697	1.1093	1.0753	1.0800	1.0464
Total Tariff LNG:	Rs./kWh		Rs./kWh		Rs./kWh	
1-10 Years	**11.1704**	**10.6040**	**10.6039**	**9.9774**	**10.4165**	**9.7965**
11-30 Years	**9.4004**	**9.3769**	**8.7557**	**8.7187**	**8.5874**	**8.5508**
Levelized 1-30 Years	**10.5541**	**10.1767**	**9.9604**	**9.5392**	**9.7797**	**9.3628**
Total Tariff HSD:						
1-10 Years	**17.4920**	**16.9256**	**16.4220**	**15.7955**	**16.1467**	**15.5267**
11-30 Years	**15.7220**	**15.6985**	**14.5738**	**14.5368**	**14.3176**	**14.2810**
Levelized 1-30 Years	**16.8757**	**16.4983**	**15.7785**	**15.3572**	**15.5099**	**15.0930**

18.2 Following indexations will also apply to the determined tariff.

Tariff Components	Indexation
Fixed O&M (Local)	CPI (General)
Fixed O&M (Foreign)	US CPI & Rs./US$
Insurance	Actual with subject to maximum limit
Cost of working capital	KIBOR and Fuel Price
ROE	Rs./US$
Debt Servicing	LIBOR/KIBOR & Rs./US$
Fuel cost Component	Fuel Price
Variable O&M (Foreign)	US CPI & Rs./US$

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19. Order

I. The Authority hereby determines and approves the following upfront tariff for new capacity generation on LNG and adjustments/indexations for delivery of electricity to the power purchaser:

DESCRIPTION	225 MW		400 MW		800 MW	
	L. Finan.	F. Finan.	L. Finan.	F. Finan.	L. Finan.	F. Finan.
Energy Charge LNG:	**Rs./kWh**		**Rs./kWh**		**Rs./kWh**	
FCC	7.8742	7.8742	7.2599	7.2599	7.1835	7.1835
Variable O&M	0.3400	0.3400	0.2900	0.2900	0.2300	0.2300
Total	8.2142	8.2142	7.5499	7.5499	7.4135	7.4135
Energy Charge HSD:						
FCC	14.0452	14.0452	12.9495	12.9495	12.8118	12.8118
Variable O&M	0.4906	0.4906	0.4185	0.4185	0.3319	0.3319
Total	14.5358	14.5358	13.3680	13.3680	13.1437	13.1437
Capacity Charge:	**Rs./kW/hour**		**Rs./kW/hour**		**Rs./kW/hour**	
Fixed O&M	0.2300	0.2300	0.2100	0.2100	0.1900	0.1900
Cost of Working Capital	0.2153	0.2153	0.1985	0.1985	0.1964	0.1964
Insurance	0.0923	0.0923	0.0941	0.0941	0.0932	0.0932
ROE	0.5537	0.5321	0.6067	0.5727	0.6004	0.5668
Debt Servicing	1.6284	1.1289	1.7004	1.1580	1.6828	1.1461
Total 1-10 Years	2.7197	2.1986	2.8097	2.2333	2.7628	2.1924
Total 11-30 Years	1.0913	1.0697	1.1093	1.0753	1.0800	1.0464
Total Tariff LNG:	**Rs./kWh**		**Rs./kWh**		**Rs./kWh**	
1-10 Years	**11.1704**	**10.6040**	**10.6039**	**9.9774**	**10.4165**	**9.7965**
11-30 Years	**9.4004**	**9.3769**	**8.7557**	**8.7187**	**8.5874**	**8.5508**
Levelized 1-30 Years	**10.5541**	**10.1767**	**9.9604**	**9.5392**	**9.7797**	**9.3628**
Total Tariff HSD:						
1-10 Years	**17.4920**	**16.9256**	**16.4220**	**15.7955**	**16.1467**	**15.5267**
11-30 Years	**15.7220**	**15.6985**	**14.5738**	**14.5368**	**14.3176**	**14.2810**
Levelized 1-30 Years	**16.8757**	**16.4983**	**15.7785**	**15.3572**	**15.5099**	**15.0930**

Tariff Components	Indexation
Fixed O&M (Local)	CPI (General)
Fixed O&M (Foreign)	US CPI & Rs./US$
Insurance	Actual with subject to maximum limit
Cost of working capital	KIBOR and Fuel Price
ROE	Rs./US$
Debt Servicing	LIBOR/KIBOR & Rs./US$
Fuel cost Component	Fuel Price
Variable O&M (Foreign)	US CPI & Rs./US$

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i) For all project sizes up to 250 MW installed capacity, tariff determined for 225MW shall apply, for all project sizes >250 MW ≤450 MW installed capacity, the tariff determined for 400 WM shall apply and for all project sizes >450 MW installed capacity, the tariff determined for 800 WM shall apply.

ii) The Reference Tariff Tables and Debt Service Schedules are attached as Annexures.

II. One Time Adjustment at COD

i) Since the exact timing of payment to EPC contractor is not known at this point of time, therefore, an adjustment for relevant foreign currency fluctuation for the 92% of the EPC portion of payment in the foreign currency will be made against the reference exchange rate of Rs. 100/US$ on the basis of monthly average exchange rates prevailing on 1st day of each month during the construction period. The adjustment shall be made only for the currency fluctuation against the reference parity values.

ii) The Customs Duties and Cess shall be adjusted as per actual.

iii) Interest during construction shall be reestablished at the time of COD on the basis of actual project financing (local, foreign or mix financing) and weighted average quarterly LIBOR/KIBOR and applicable premiums.

iv) In case export credit agency fee or sinosure fee on foreign financing is payable, the benchmark established in the upfront coal tariff will be applicable subject to maximum of 7% and appropriate adjustment in the project cost will be made.

III. Adjustment due to Variation in Net Capacity

The reference tariff has been determined on the basis of net capacity for each category of project. In order to calculate net capacity, maximum auxiliary consumption of 5%, 4% and 3% for 225 MW, 400 MW and 800 MW has been used. All the tariff components of capacity charge shall be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) tests to be carried out for determination of contracted capacity. Adjustment shall not be made if the net output is established less than the installed capacity minus benchmark auxiliary consumption established for each category of the project.

IV. Adjustment in Insurance as per actual

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 annually as per actual upon production of authentic documentary evidence according to the following formula:

AIC	=	$Ins_{(Ref)} / P_{(Ref)} * P_{(Act)}$
Where		
AIC	=	Adjusted Insurance Component of Tariff
$Ins_{(Ref)}$	=	Reference Insurance Component of Tariff
$P_{(Ref)}$	=	Reference Premium 1% of the EPC cost at Rs. 100/US$.
$P_{(Act)}$	=	Actual Premium or 1% of the EPC cost in Pak Rupees on exchange rate prevailing on the 1st day of the insurance coverage period whichever is lower

V. Indexations:

The following indexations shall be applicable to the reference tariff;

i) Indexation of Return on Equity (ROE)

After COD, ROE component of tariff will be quarterly indexed on account of variation in PKR/US$ parity according to the following formula:

$ROE_{(Rev)}$	=	$ROE_{(Ref)} * ER_{(Rev)} / ER_{(Ref)}$
Where;		
$ROE_{(Rev)}$	=	Revised ROE Component of Tariff
$ROE_{(Ref)}$	=	ROE Component of Tariff established at the time of COD
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference TT & OD selling rate of Rs. 100/US$

ii) Indexation applicable to O&M

The O&M component of tariff will be adjusted on account of local Inflation (CPI) and foreign inflation (US CPI) and exchange rate quarterly on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to CPI notified by the Pakistan Bureau of Statistics (PBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan as per the following mechanism:

F V. O&M$_{(REV)}$	=	F V. O&M $_{(REF)}$ * US CPI$_{(REV)}$ / US CPI$_{(REF)}$ *ER$_{(REV)}$/ER$_{(REF)}$
L F. O&M$_{(REV)}$	=	L F. O&M $_{(REF)}$ * CPI $_{(REV)}$ / CPI $_{(REF)}$
F F. O&M$_{(REV)}$	=	F F. O&M $_{(REF)}$ * US CPI$_{(REV)}$ / US CPI$_{(REF)}$ *ER$_{(REV)}$/ER$_{(REF)}$
Where:		
F V. O&M$_{(REV)}$	=	The revised Variable O&M Foreign Component of tariff
L F. O&M$_{(REV)}$	=	The revised Fixed O&M Local Component of tariff
F F. O&M$_{(REV)}$	=	The revised Fixed O&M Foreign Component of tariff
F V. O&M$_{(REF)}$	=	The reference Variable O&M Foreign Component of tariff
L F. O&M$_{(REF)}$	=	The reference Fixed O&M Local Component of tariff
F F. O&M$_{(REF)}$	=	The reference Fixed O&M Foreign Component of tariff
CPI$_{(REV)}$	=	The revised CPI (General)
CPI$_{(REF)}$	=	The reference CPI (General) for the month of March 2014
US CPI$_{(REV)}$	=	The revised US CPI (All Urban Consumers)
US CPI$_{(REF)}$	=	The reference US CPI (All Urban Consumers) for the month of March 2014
ER$_{(REV)}$	=	The revised TT & OD selling rate of US dollar
ER$_{(REF)}$	=	The reference TT & OD selling rate of RS. 100/US$

iii) <u>Indexation for LIBOR/KIBOR Variation</u>

The interest part of capacity charge component will remain unchanged throughout the term except for the adjustment due to variation in interest rate as a result of variation in 3 months LIBOR/KIBOR according to the following formula;

Δ I	=	P$_{(REV)}$* (LIBOR/KIBOR$_{(REV)}$ - 0.45%/9.5%) /4
Where:		
Δ I	=	the variation in interest charges applicable corresponding to variation in 3 months LIBOR/KIBOR. Δ I can be positive or negative depending upon whether LIBOR/KIBOR$_{(REV)}$ is > or < 0.45%/9.5%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment applicable on quarterly basis.
P$_{(REV)}$	=	The outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculation date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

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iv) Cost of Working Capital

The cost of working capital will be adjusted for variation in KIBOR and fuel prices.

VI. Fuel Price Adjustment

The fuel cost component of tariff shall be adjusted on account of fuel price variation as and when notified by the relevant authority as per the following mechanism:

$FCC_{LNG(Rev)}$	=	$FCC_{LNG(Ref)} * P_{LNG(Rev)}/P_{LNG(Ref)}$
Where:		
$FCC_{LNG(Rev)}$	=	The revised fuel cost component on LNG
$FCC_{LNG(Ref)}$		The reference fuel cost component on LNG
$P_{LNG(Rev)}$	=	The revised LNG price notified by the relevant Authority
$P_{LNG(Ref)}$	=	The reference LNG price
$FCC_{HSD(Rev)}$	=	$FCC_{HSD(Ref)} * P_{HSD(Rev)}/P_{HSD(Ref)}$
Where:		
$FCC_{HSD(Rev)}$	=	The revised fuel cost component on HSD
$FCC_{HSD(Ref)}$		The reference fuel cost component on HSD
$P_{HSD(Rev)}$	=	The revised HSD price notified by the relevant Authority
$P_{HSD(Ref)}$	=	The reference HSD price

V. Terms & Conditions

The following terms and conditions will apply to the determined upfront tariff:

i) All plant and equipment shall be new and shall be designed, manufactured and tested in accordance with the acceptable standards.

ii) The verification of the new machinery will be done by the independent engineer at the time of the commissioning of the plant duly verified by the power purchaser.

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

iv) The upfront tariff has been determined on the basis of debt equity ratio of 75:25. Minimum equity requirement is 20%. There will be no limit on the maximum amount of equity; however, equity exceeding 30% of the total project cost will be treated as debt.

v) The debt part of the project can also be financed through mix of local and foreign financing and the debt servicing component will be adjusted accordingly.

vi) Interest income, if any, on Escrow Account will be credited to the power purchaser through adjustment against the outstanding payments.

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vii) The choice to opt for upfront tariff will only be available up to six (6) months from the date of its notification in the Official Gazette.

viii) The upfront tariff shall be applicable for projects established anywhere in the country.

ix) The applicant will have to achieve financial close within six (6) months from the date of opting the upfront tariff. The upfront tariff granted to the applicant will no longer remain applicable/valid, if financial close is not achieved by the applicant within the stipulated time or generation license is declined to the applicant.

x) The plant availability will be 92%.

xi) The tariff control period will be 30 years from the date of commercial operation.

xii) The targeted maximum construction period after financial close shall be 18 months for ≤250MW projects and 26 months for >250 MW projects. No adjustment will be allowed in this tariff to account for financial impact of any delay in project construction. However, the failure of the applicant to complete construction within the stipulated time will not invalidate the tariff granted to it.

xiii) The grid interconnection study shall be approved by the power purchaser/NTDC.

xiv) The dispatch will be at appropriate voltage level mutually agreed between the power purchaser and the power producer.

xv) No withholding tax on local foreign contractors, sub-contractors, supervisory services and technical services provided by foreign (non-residents) entities has been assumed Actual expenditure, if any, on this account will be included in the project cost at the time of COD on the basis of verifiable documentary evidence.

xvi) No provision for income tax, workers profit participation fund and workers welfare fund, any other tax, levy, charge, surcharge or other governmental impositions except the customs duties and cess has been accounted for in the tariff. If the company is obligated to pay any tax the exact amount will be reimbursed by CPPA/DISCO on production of original receipts. However, withholding tax on dividend will not be passed through under the upfront solar tariff.

xvii) The decision to opt for upfront tariff once exercised will be irrevocable.

xviii) General assumptions, which are not covered in this determination and National Electric Power Regulatory Authority Upfront Tariff (Approval & Procedure) Regulations, 2011, may be dealt with as per the standard terms of the Power Purchase Agreement.

20. Notification

The above Order of the Authority along with 18 Annexes will be notified in the Official Gazette in terms of Section 31(4) of the Regulations of Generation, Transmission and Distribution of Electric Power Act, 1997.

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225 MW Upfront Tariff for New Power Generation on LNG on Local Financing

Annex-I

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel	Var. O&M	Total	Fixed O&M		Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP			
	Component	Foreign	EPP	Local	Foreign								Rs. /kWh	Cents/kWh
1	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.4983	1.1301	2.7197	2.9562	11.1704	11.1704
2	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.5636	1.0648	2.7197	2.9562	11.1704	11.1704
3	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.6374	0.9910	2.7197	2.9562	11.1704	11.1704
4	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.7209	0.9075	2.7197	2.9562	11.1704	11.1704
5	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.8153	0.8131	2.7197	2.9562	11.1704	11.1704
6	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.9221	0.7063	2.7197	2.9562	11.1704	11.1704
7	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	1.0429	0.5855	2.7197	2.9562	11.1704	11.1704
8	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	1.1795	0.4489	2.7197	2.9562	11.1704	11.1704
9	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	1.3340	0.2944	2.7197	2.9562	11.1704	11.1704
10	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	1.5087	0.1197	2.7197	2.9562	11.1704	11.1704
11	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
12	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
13	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
14	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
15	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
16	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
17	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
18	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
19	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
20	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
21	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
22	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
23	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
24	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
25	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
26	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
27	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
28	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
29	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	9.4004	9.4004
Average														
1-10	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.9223	0.7061	2.7197	2.9562	11.1704	11.1704
11-30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.0000	0.0000	1.0913	1.1862	9.4004	9.4004
1-30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.3074	0.2354	1.6341	1.7762	9.9904	9.9904
Levelized														
1-30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5537	0.5463	0.5151	2.1527	2.3399	**10.5541**	**10.5541**

Levelized Tariff = 10.5541 Rs./kWh 10.5541 Cents/kWh

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225 MW Upfront Tariff for New Power Generation on HSD (Backup Fuel) on Local Financing

Annex-IA

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel	Var. O&M	Total	Fixed O&M		Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
	Component	Foreign	EPP	Local	Foreign									
1	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.4983	1.1301	2.7197	2.9562	17.4920	17.4920
2	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.5636	1.0648	2.7197	2.9562	17.4920	17.4920
3	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.6374	0.9910	2.7197	2.9562	17.4920	17.4920
4	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.7209	0.9075	2.7197	2.9562	17.4920	17.4920
5	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.8153	0.8131	2.7197	2.9562	17.4920	17.4920
6	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.9221	0.7063	2.7197	2.9562	17.4920	17.4920
7	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	1.0429	0.5855	2.7197	2.9562	17.4920	17.4920
8	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	1.1795	0.4489	2.7197	2.9562	17.4920	17.4920
9	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	1.3340	0.2944	2.7197	2.9562	17.4920	17.4920
10	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	1.5087	0.1197	2.7197	2.9562	17.4920	17.4920
11	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
12	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
13	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
14	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
15	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
16	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
17	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
18	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
19	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
20	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
21	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
22	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
23	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
24	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
25	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
26	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
27	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
28	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
29	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	-	-	1.0913	1.1862	15.7220	15.7220
Average														
1-10	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.9223	0.7061	2.7197	2.9562	17.4920	17.4920
11-30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.0000	0.0000	1.0913	1.1862	15.7220	15.7220
1-30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.3074	0.2354	1.6341	1.7762	16.3120	16.3120
Levelized														
1-30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5537	0.5463	0.5151	2.1527	2.3399	**16.8757**	**16.8757**

Levelized Tariff = 16.8757 Rs./kWh 16.8757 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	225.00	MWs	US$/PKR Parity	100.00	
Net Capacity	213.75	MWs	Debt	172.69	US$ Million
LIBOR	9.50%		Debt in Pak Rupees	17,268.84	Rs. Million
Spread over LIBOR	3.00%				
Total Interest Rate	12.50%				

Period	Principal Million Rs.	Principal Repayment Million Rs.	Interest Million Rs.	Balaance Million Rs.	Debt Service Million Rs.	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	17,268.84	222.61	539.65	17,046.22	762.26			
2	17,046.22	229.57	532.69	16,816.66	762.26			
3	16,816.66	236.74	525.52	16,579.92	762.26			
4	16,579.92	244.14	518.12	16,335.78	762.26	0.4983	1.1301	1.6284
1st Year		933.06	2,115.99		3,049.05			
5	16,335.78	251.77	510.49	16,084.01	762.26			
6	16,084.01	259.64	502.63	15,824.37	762.26			
7	15,824.37	267.75	494.51	15,556.62	762.26			
8	15,556.62	276.12	486.14	15,280.51	762.26	0.5636	1.0648	1.6284
2nd Year		1,055.27	1,993.77		3,049.05			
9	15,280.51	284.75	477.52	14,995.76	762.26			
10	14,995.76	293.64	468.62	14,702.12	762.26			
11	14,702.12	302.82	459.44	14,399.30	762.26			
12	14,399.30	312.28	449.98	14,087.01	762.26	0.6374	0.9910	1.6284
3rd Year		1,193.49	1,855.55		3,049.05			
13	14,087.01	322.04	440.22	13,764.97	762.26			
14	13,764.97	332.11	430.16	13,432.86	762.26			
15	13,432.86	342.48	419.78	13,090.38	762.26			
16	13,090.38	353.19	409.07	12,737.19	762.26	0.7209	0.9075	1.6284
4th Year		1,349.82	1,699.23		3,049.05			
17	12,737.19	364.22	398.04	12,372.97	762.26			
18	12,372.97	375.61	386.66	11,997.36	762.26			
19	11,997.36	387.34	374.92	11,610.02	762.26			
20	11,610.02	399.45	362.81	11,210.57	762.26	0.8153	0.8131	1.6284
5th Year		1,526.62	1,522.42		3,049.05			
21	11,210.57	411.93	350.33	10,798.64	762.26			
22	10,798.64	424.80	337.46	10,373.83	762.26			
23	10,373.83	438.08	324.18	9,935.75	762.26			
24	9,935.75	451.77	310.49	9,483.98	762.26	0.9221	0.7063	1.6284
6th Year		1,726.58	1,322.46		3,049.05			
25	9,483.98	465.89	296.37	9,018.10	762.26			
26	9,018.10	480.45	281.82	8,537.65	762.26			
27	8,537.65	495.46	266.80	8,042.19	762.26			
28	8,042.19	510.94	251.32	7,531.25	762.26	1.0429	0.5855	1.6284
7th Year		1,952.74	1,096.31		3,049.05			
29	7,531.25	526.91	235.35	7,004.34	762.26			
30	7,004.34	543.38	218.89	6,460.96	762.26			
31	6,460.96	560.36	201.91	5,900.61	762.26			
32	5,900.61	577.87	184.39	5,322.74	762.26	1.1795	0.4489	1.6284
8th Year		2,208.51	840.54		3,049.05			
33	5,322.74	595.93	166.34	4,726.81	762.26			
34	4,726.81	614.55	147.71	4,112.26	762.26			
35	4,112.26	633.75	128.51	3,478.51	762.26			
36	3,478.51	653.56	108.70	2,824.95	762.26	1.3340	0.2944	1.6284
9th Year		2,497.79	551.26		3,049.05			
37	2,824.95	673.98	88.28	2,150.97	762.26			
38	2,150.97	695.04	67.22	1,455.93	762.26			
39	1,455.93	716.76	45.50	739.16	762.26			
40	739.16	739.16	23.10	0.00	762.26	1.5087	0.1197	1.6284
10th Year		2,824.95	224.09		3,049.05			

225 MW Upfront Tariff for New Power Generation on LNG on Foreign Financing

Annex-II

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel	Var. O&M	Total	Fixed O&M		Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP			
	Component	Foreign	EPP	Local	Foreign								Rs. /kWh	Cents/kWh
1	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.7032	0.4258	2.1986	2.3898	10.6040	10.6040
2	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.7386	0.3903	2.1986	2.3898	10.6040	10.6040
3	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.7759	0.3530	2.1986	2.3898	10.6040	10.6040
4	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.8150	0.3139	2.1986	2.3898	10.6040	10.6040
5	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.8561	0.2728	2.1986	2.3898	10.6040	10.6040
6	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.8993	0.2297	2.1986	2.3898	10.6040	10.6040
7	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.9446	0.1843	2.1986	2.3898	10.6040	10.6040
8	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.9923	0.1367	2.1986	2.3898	10.6040	10.6040
9	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	1.0423	0.0866	2.1986	2.3898	10.6040	10.6040
10	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	1.0948	0.0341	2.1986	2.3898	10.6040	10.6040
11	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
12	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
13	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
14	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
15	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
16	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
17	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
18	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
19	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
20	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
21	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
22	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
23	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
24	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
25	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
26	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
27	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
28	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
29	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	9.3769	9.3769
Average														
1-10	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.8862	0.2427	2.1986	2.3898	10.6040	10.6040
11-30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.0000	0.0000	1.0697	1.1627	9.3769	9.3769
1-30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.2954	0.0809	1.4460	1.5717	9.7859	9.7859
Levelized														
1-30	7.8742	0.3400	8.2142	0.0989	0.1311	0.2153	0.0923	0.5321	0.5559	0.1800	1.8055	1.9625	**10.1767**	**10.1767**

Levelized Tariff = 10.1767 Rs./kWh 10.1767 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

225 MW Upfront Tariff for New Power Generation on HSD (Backup Fuel) on Foreign Financing

Annex-IIA

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel	Var. O&M	Total	Fixed O&M		Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP			
	Component	Foreign	EPP	Local	Foreign								Rs. /kWh	Cents/kWh
1	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.7032	0.4258	2.1986	2.3898	16.9256	16.9256
2	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.7386	0.3903	2.1986	2.3898	16.9256	16.9256
3	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.7759	0.3530	2.1986	2.3898	16.9256	16.9256
4	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.8150	0.3139	2.1986	2.3898	16.9256	16.9256
5	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.8561	0.2728	2.1986	2.3898	16.9256	16.9256
6	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.8993	0.2297	2.1986	2.3898	16.9256	16.9256
7	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.9446	0.1843	2.1986	2.3898	16.9256	16.9256
8	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.9923	0.1367	2.1986	2.3898	16.9256	16.9256
9	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	1.0423	0.0866	2.1986	2.3898	16.9256	16.9256
10	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	1.0948	0.0341	2.1986	2.3898	16.9256	16.9256
11	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
12	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
13	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
14	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
15	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
16	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
17	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
18	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
19	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
20	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
21	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
22	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
23	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
24	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
25	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
26	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
27	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
28	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
29	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	-	-	1.0697	1.1627	15.6985	15.6985
Average														
1-10	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.8862	0.2427	2.1986	2.3898	16.9256	16.9256
11-30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.0000	0.0000	1.0697	1.1627	15.6985	15.6985
1-30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.2954	0.0809	1.4460	1.5717	16.1075	16.1075
Levelized														
1-30	14.0452	0.4906	14.5358	0.0989	0.1311	0.2153	0.0923	0.5321	0.5559	0.1800	1.8055	1.9625	**16.4983**	**16.4983**

Levelized Tariff = 16.4983 Rs./kWh 16.4983 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Annex-IIB

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	225.00	MWs	US$/PKR Parity	100.00	
Net Capacity	213.75	MWs	Debt	165.94	US$ Million
LIBOR	0.45%		Debt in Pak Rupees	16,593.77	Rs. Million
Spread over LIBOR	4.50%				
Total Interest Rate	4.95%				

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	165.94	3.23	2.05	162.71	$5.28			
2	162.71	3.27	2.01	159.44	5.28			
3	159.44	3.31	1.97	156.12	5.28			
4	156.12	3.35	1.93	152.77	5.28	0.7032	0.4258	1.1289
1st Year		**13.17**	**7.97**		**21.14**			
5	152.77	3.39	1.89	149.38	5.28			
6	149.38	3.44	1.85	145.94	5.28			
7	145.94	3.48	1.81	142.46	5.28			
8	142.46	3.52	1.76	138.94	5.28	0.7386	0.3903	1.1289
2nd Year		**13.83**	**7.31**		**21.14**			
9	138.94	3.57	1.72	135.38	5.28			
10	135.38	3.61	1.68	131.77	5.28			
11	131.77	3.65	1.63	128.11	5.28			
12	128.11	3.70	1.59	124.41	5.28	0.7759	0.3530	1.1289
3rd Year		**14.53**	**6.61**		**21.14**			
13	124.41	3.75	1.54	120.67	5.28			
14	120.67	3.79	1.49	116.88	5.28			
15	116.88	3.84	1.45	113.04	5.28			
16	113.04	3.89	1.40	109.15	5.28	0.8150	0.3139	1.1289
4th Year		**15.26**	**5.88**		**21.14**			
17	109.15	3.93	1.35	105.22	5.28			
18	105.22	3.98	1.30	101.24	5.28			
19	101.24	4.03	1.25	97.20	5.28			
20	97.20	4.08	1.20	93.12	5.28	0.8561	0.2728	1.1289
5th Year		**16.03**	**5.11**		**21.14**			
21	93.12	4.13	1.15	88.99	5.28			
22	88.99	4.18	1.10	84.81	5.28			
23	84.81	4.24	1.05	80.57	5.28			
24	80.57	4.29	1.00	76.28	5.28	0.8993	0.2297	1.1289
6th Year		**16.84**	**4.30**		**21.14**			
25	76.28	4.34	0.94	71.94	5.28			
26	71.94	4.39	0.89	67.55	5.28			
27	67.55	4.45	0.84	63.10	5.28			
28	63.10	4.50	0.78	58.60	5.28	0.9446	0.1843	1.1289
7th Year		**17.69**	**3.45**		**21.14**			
29	58.60	4.56	0.73	54.04	5.28			
30	54.04	4.62	0.67	49.42	5.28			
31	49.42	4.67	0.61	44.75	5.28			
32	44.75	4.73	0.55	40.02	5.28	0.9923	0.1367	1.1289
8th Year		**18.58**	**2.56**		**21.14**			
33	40.02	4.79	0.50	35.23	5.28			
34	35.23	4.85	0.44	30.38	5.28			
35	30.38	4.91	0.38	25.47	5.28			
36	25.47	4.97	0.32	20.50	5.28	1.0423	0.0866	1.1289
9th Year		**19.52**	**1.62**		**21.14**			
37	20.50	5.03	0.25	15.47	5.28			
38	15.47	5.09	0.19	10.38	5.28			
39	10.38	5.16	0.13	5.22	5.28			
40	5.22	5.22	0.06	(0.00)	5.28	1.0948	0.0341	1.1289
10th Year		**20.50**	**0.64**		**21.14**			

400 MW Upfront Tariff for New Power Generation on LNG on Local Financing

Annex-III

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel	Var. O&M	Total	Fixed O&M		Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
	Component	Foreign	EPP	Local	Foreign									
1	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.5203	1.1800	2.8097	3.0540	10.6039	10.6039
2	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.5885	1.1119	2.8097	3.0540	10.6039	10.6039
3	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.6656	1.0348	2.8097	3.0540	10.6039	10.6039
4	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.7528	0.9476	2.8097	3.0540	10.6039	10.6039
5	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.8513	0.8490	2.8097	3.0540	10.6039	10.6039
6	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.9629	0.7375	2.8097	3.0540	10.6039	10.6039
7	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	1.0890	0.6114	2.8097	3.0540	10.6039	10.6039
8	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	1.2316	0.4687	2.8097	3.0540	10.6039	10.6039
9	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	1.3929	0.3074	2.8097	3.0540	10.6039	10.6039
10	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	1.5754	0.1250	2.8097	3.0540	10.6039	10.6039
11	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
12	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
13	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
14	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
15	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
16	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
17	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
18	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
19	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
20	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
21	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
22	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
23	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
24	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
25	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
26	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
27	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
28	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
29	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	8.7557	8.7557
Average														
1-10	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.9630	0.7373	2.8097	3.0540	10.6039	10.6039
11-30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.0000	0.0000	1.1093	1.2058	8.7557	8.7557
1-30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.3210	0.2458	1.6761	1.8219	9.3718	9.3718
Levelized														
1-30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.6067	0.5704	0.5379	2.2176	2.4105	**9.9604**	**9.9604**

Levelized Tariff = 9.9604 Rs./kWh 9.9604 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

400 MW Upfront Tariff for New Power Generation on HSD (Backup Fuel) on Local Financing

Annex-IIIA

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel Component	Var. O&M Foreign	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
1	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.5203	1.1800	2.8097	3.0540	16.4220	16.4220
2	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.5885	1.1119	2.8097	3.0540	16.4220	16.4220
3	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.6656	1.0348	2.8097	3.0540	16.4220	16.4220
4	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.7528	0.9476	2.8097	3.0540	16.4220	16.4220
5	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.8513	0.8490	2.8097	3.0540	16.4220	16.4220
6	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.9629	0.7375	2.8097	3.0540	16.4220	16.4220
7	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	1.0890	0.6114	2.8097	3.0540	16.4220	16.4220
8	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	1.2316	0.4687	2.8097	3.0540	16.4220	16.4220
9	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	1.3929	0.3074	2.8097	3.0540	16.4220	16.4220
10	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	1.5754	0.1250	2.8097	3.0540	16.4220	16.4220
11	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
12	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
13	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
14	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
15	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
16	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
17	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
18	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
19	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
20	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
21	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
22	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
23	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
24	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
25	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
26	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
27	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
28	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
29	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	-	-	1.1093	1.2058	14.5738	14.5738
Average														
1-10	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.9630	0.7373	2.8097	3.0540	16.4220	16.4220
11-30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.0000	0.0000	1.1093	1.2058	14.5738	14.5738
1-30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.3210	0.2458	1.6761	1.8219	15.1898	15.1898
Levelized														
1-30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.6067	0.5704	0.5379	2.2176	2.4105	**15.7785**	**15.7785**

Levelized Tariff = 15.7785 Rs./kWh 15.7785 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	390.80	MWs	US$/PKR Parity	100.00	
Net Capacity	375.17	MWs	Debt	316.50	US$ Million
LIBOR	9.50%		Debt in Pak Rupees	31,649.57	Rs. Million
Spread over LIBOR	3.00%				
Total Interest Rate	12.50%				

Period	Principal Million Rs.	Principal Repayment Million Rs.	Interest Million Rs.	Balaance Million Rs.	Debt Service Million Rs.	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	31,649.57	407.99	989.05	31,241.58	1,397.04			
2	31,241.58	420.74	976.30	30,820.84	1,397.04			
3	30,820.84	433.89	963.15	30,386.95	1,397.04			
4	30,386.95	447.45	949.59	29,939.50	1,397.04	0.5203	1.1800	1.7004
1st Year		**1,710.07**	**3,878.09**		**5,588.16**			
5	29,939.50	461.43	935.61	29,478.07	1,397.04			
6	29,478.07	475.85	921.19	29,002.22	1,397.04			
7	29,002.22	490.72	906.32	28,511.50	1,397.04			
8	28,511.50	506.06	890.98	28,005.45	1,397.04	0.5885	1.1119	1.7004
2nd Year		**1,934.06**	**3,654.10**		**5,588.16**			
9	28,005.45	521.87	875.17	27,483.58	1,397.04			
10	27,483.58	538.18	858.86	26,945.40	1,397.04			
11	26,945.40	555.00	842.04	26,390.40	1,397.04			
12	26,390.40	572.34	824.70	25,818.06	1,397.04	0.6656	1.0348	1.7004
3rd Year		**2,187.38**	**3,400.78**		**5,588.16**			
13	25,818.06	590.23	806.81	25,227.84	1,397.04			
14	25,227.84	608.67	788.37	24,619.17	1,397.04			
15	24,619.17	627.69	769.35	23,991.48	1,397.04			
16	23,991.48	647.31	749.73	23,344.17	1,397.04	0.7528	0.9476	1.7004
4th Year		**2,473.89**	**3,114.27**		**5,588.16**			
17	23,344.17	667.53	729.51	22,676.64	1,397.04			
18	22,676.64	688.39	708.64	21,988.24	1,397.04			
19	21,988.24	709.91	687.13	21,278.33	1,397.04			
20	21,278.33	732.09	664.95	20,546.24	1,397.04	0.8513	0.8490	1.7004
5th Year		**2,797.93**	**2,790.23**		**5,588.16**			
21	20,546.24	754.97	642.07	19,791.27	1,397.04			
22	19,791.27	778.56	618.48	19,012.71	1,397.04			
23	19,012.71	802.89	594.15	18,209.82	1,397.04			
24	18,209.82	827.98	569.06	17,381.83	1,397.04	0.9629	0.7375	1.7004
6th Year		**3,164.41**	**2,423.75**		**5,588.16**			
25	17,381.83	853.86	543.18	16,527.98	1,397.04			
26	16,527.98	880.54	516.50	15,647.44	1,397.04			
27	15,647.44	908.06	488.98	14,739.38	1,397.04			
28	14,739.38	936.43	460.61	13,802.94	1,397.04	1.0890	0.6114	1.7004
7th Year		**3,578.89**	**2,009.27**		**5,588.16**			
29	13,802.94	965.70	431.34	12,837.25	1,397.04			
30	12,837.25	995.88	401.16	11,841.37	1,397.04			
31	11,841.37	1,027.00	370.04	10,814.37	1,397.04			
32	10,814.37	1,059.09	337.95	9,755.28	1,397.04	1.2316	0.4687	1.7004
8th Year		**4,047.66**	**1,540.50**		**5,588.16**			
33	9,755.28	1,092.19	304.85	8,663.10	1,397.04			
34	8,663.10	1,126.32	270.72	7,536.78	1,397.04			
35	7,536.78	1,161.52	235.52	6,375.26	1,397.04			
36	6,375.26	1,197.81	199.23	5,177.45	1,397.04	1.3929	0.3074	1.7004
9th Year		**4,577.83**	**1,010.33**		**5,588.16**			
37	5,177.45	1,235.24	161.80	3,942.20	1,397.04			
38	3,942.20	1,273.85	123.19	2,668.36	1,397.04			
39	2,668.36	1,313.65	83.39	1,354.71	1,397.04			
40	1,354.71	1,354.71	42.33	0.00	1,397.04	1.5754	0.1250	1.7004
10th Year		**5,177.45**	**410.71**		**5,588.16**			

400 MW Upfront Tariff for New Power Generation on LNG on Foreign Financing

Annex-IV

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel Component	Var. O&M Foreign	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
1	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.7213	0.4367	2.2333	2.4275	9.9774	9.9774
2	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.7577	0.4003	2.2333	2.4275	9.9774	9.9774
3	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.7959	0.3621	2.2333	2.4275	9.9774	9.9774
4	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.8360	0.3220	2.2333	2.4275	9.9774	9.9774
5	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.8782	0.2799	2.2333	2.4275	9.9774	9.9774
6	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.9224	0.2356	2.2333	2.4275	9.9774	9.9774
7	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.9690	0.1891	2.2333	2.4275	9.9774	9.9774
8	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	1.0178	0.1402	2.2333	2.4275	9.9774	9.9774
9	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	1.0691	0.0889	2.2333	2.4275	9.9774	9.9774
10	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	1.1231	0.0350	2.2333	2.4275	9.9774	9.9774
11	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
12	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
13	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
14	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
15	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
16	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
17	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
18	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
19	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
20	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
21	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
22	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
23	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
24	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
25	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
26	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
27	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
28	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
29	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	8.7187	8.7187
Average														
1-10	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.9090	0.2490	2.2333	2.4275	9.9774	9.9774
11-30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.0000	0.0000	1.0753	1.1688	8.7187	8.7187
1-30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.3030	0.0830	1.4613	1.5884	9.1383	9.1383
Levelized														
1-30	7.2599	0.2900	7.5499	0.0903	0.1197	0.1985	0.0941	0.5727	0.5702	0.1846	1.8301	1.9893	**9.5392**	**9.5392**

9.5392 Rs./kWh **9.5392 Cents/kWh**

400 MW Upfront Tariff for New Power Generation on HSD (Backup Fuel) on Foreign Financing

Annex-IVA

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel Component	Var. O&M Foreign	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
1	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.7213	0.4367	2.2333	2.4275	15.7955	15.7955
2	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.7577	0.4003	2.2333	2.4275	15.7955	15.7955
3	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.7959	0.3621	2.2333	2.4275	15.7955	15.7955
4	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.8360	0.3220	2.2333	2.4275	15.7955	15.7955
5	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.8782	0.2799	2.2333	2.4275	15.7955	15.7955
6	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.9224	0.2356	2.2333	2.4275	15.7955	15.7955
7	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.9690	0.1891	2.2333	2.4275	15.7955	15.7955
8	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	1.0178	0.1402	2.2333	2.4275	15.7955	15.7955
9	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	1.0691	0.0889	2.2333	2.4275	15.7955	15.7955
10	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	1.1231	0.0350	2.2333	2.4275	15.7955	15.7955
11	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
12	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
13	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
14	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
15	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
16	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
17	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
18	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
19	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
20	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
21	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
22	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
23	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
24	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
25	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
26	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
27	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
28	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
29	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	-	-	1.0753	1.1688	14.5368	14.5368
Average														
1-10	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.9090	0.2490	2.2333	2.4275	15.7955	15.7955
11-30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.0000	0.0000	1.0753	1.1688	14.5368	14.5368
1-30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.3030	0.0830	1.4613	1.5884	14.9564	14.9564
Levelized														
1-30	12.9495	0.4185	13.3680	0.0903	0.1197	0.1985	0.0941	0.5727	0.5702	0.1846	1.8301	1.9893	**15.3572**	**15.3572**

Levelized Tariff = 15.3572 Rs./kWh 15.3572 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	390.80	MWs	US$/PKR Parity	100.00	
Net Capacity	375.17	MWs	Debt	298.75	US$ Million
LIBOR	0.45%		Debt in Pak Rupees	29,875.25	Rs. Million
Spread over LIBOR	4.50%				
Total Interest Rate	4.95%				

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	298.75	5.82	3.70	292.94	$9.51			
2	292.94	5.89	3.63	287.05	9.51			
3	287.05	5.96	3.55	281.08	9.51			
4	281.08	6.04	3.48	275.05	9.51	0.7213	0.4367	1.1580
1st Year		**23.70**	**14.35**		**38.06**			
5	275.05	6.11	3.40	268.94	9.51			
6	268.94	6.19	3.33	262.75	9.51			
7	262.75	6.26	3.25	256.49	9.51			
8	256.49	6.34	3.17	250.15	9.51	0.7577	0.4003	1.1580
2nd Year		**24.90**	**13.16**		**38.06**			
9	250.15	6.42	3.10	243.73	9.51			
10	243.73	6.50	3.02	237.23	9.51			
11	237.23	6.58	2.94	230.65	9.51			
12	230.65	6.66	2.85	223.99	9.51	0.7959	0.3621	1.1580
3rd Year		**26.16**	**11.90**		**38.06**			
13	223.99	6.74	2.77	217.25	9.51			
14	217.25	6.83	2.69	210.42	9.51			
15	210.42	6.91	2.60	203.51	9.51			
16	203.51	7.00	2.52	196.52	9.51	0.8360	0.3220	1.1580
4th Year		**27.47**	**10.58**		**38.06**			
17	196.52	7.08	2.43	189.43	9.51			
18	189.43	7.17	2.34	182.26	9.51			
19	182.26	7.26	2.26	175.00	9.51			
20	175.00	7.35	2.17	167.66	9.51	0.8782	0.2799	1.1580
5th Year		**28.86**	**9.20**		**38.06**			
21	167.66	7.44	2.07	160.22	9.51			
22	160.22	7.53	1.98	152.68	9.51			
23	152.68	7.62	1.89	145.06	9.51			
24	145.06	7.72	1.80	137.34	9.51	0.9224	0.2356	1.1580
6th Year		**30.32**	**7.74**		**38.06**			
25	137.34	7.81	1.70	129.53	9.51			
26	129.53	7.91	1.60	121.61	9.51			
27	121.61	8.01	1.50	113.60	9.51			
28	113.60	8.11	1.41	105.50	9.51	0.9690	0.1891	1.1580
7th Year		**31.84**	**6.21**		**38.06**			
29	105.50	8.21	1.31	97.29	9.51			
30	97.29	8.31	1.20	88.98	9.51			
31	88.98	8.41	1.10	80.56	9.51			
32	80.56	8.52	1.00	72.05	9.51	1.0178	0.1402	1.1580
8th Year		**33.45**	**4.61**		**38.06**			
33	72.05	8.62	0.89	63.42	9.51			
34	63.42	8.73	0.78	54.69	9.51			
35	54.69	8.84	0.68	45.86	9.51			
36	45.86	8.95	0.57	36.91	9.51	1.0691	0.0889	1.1580
9th Year		**35.14**	**2.92**		**38.06**			
37	36.91	9.06	0.46	27.85	9.51			
38	27.85	9.17	0.34	18.68	9.51			
39	18.68	9.28	0.23	9.40	9.51			
40	9.40	9.40	0.12	(0.00)	9.51	1.1231	0.0350	1.1580
10th Year		**36.91**	**1.15**		**38.06**			

800 MW Upfront Tariff for New Power Generation on LNG on Local Financing

Annex-V

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel Component	Var. O&M Foreign	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
1	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.5150	1.1678	2.7628	3.0031	10.4165	10.4165
2	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.5824	1.1004	2.7628	3.0031	10.4165	10.4165
3	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.6587	1.0241	2.7628	3.0031	10.4165	10.4165
4	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.7450	0.9378	2.7628	3.0031	10.4165	10.4165
5	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.8426	0.8402	2.7628	3.0031	10.4165	10.4165
6	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.9529	0.7299	2.7628	3.0031	10.4165	10.4165
7	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	1.0777	0.6051	2.7628	3.0031	10.4165	10.4165
8	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	1.2189	0.4639	2.7628	3.0031	10.4165	10.4165
9	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	1.3786	0.3042	2.7628	3.0031	10.4165	10.4165
10	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	1.5591	0.1237	2.7628	3.0031	10.4165	10.4165
11	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
12	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
13	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
14	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
15	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
16	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
17	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
18	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
19	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
20	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
21	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
22	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
23	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
24	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
25	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
26	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
27	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
28	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
29	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	8.5874	8.5874
Average														
1-10	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.9531	0.7297	2.7628	3.0031	10.4165	10.4165
11-30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.0000	0.0000	1.0800	1.1739	8.5874	8.5874
1-30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.3177	0.2432	1.6409	1.7836	9.1971	9.1971
Levelized														
1-30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.6004	0.5645	0.5323	2.1769	2.3662	**9.7797**	**9.7797**

9.7797 Rs./kWh **9.7797 Cents/kWh**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

800 MW Upfront Tariff for New Power Generation on HSD (Backup Fuel) on Local Financing

Annex-VA

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel Component	Var. O&M Foreign	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs./kWh	Cents/kWh
1	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.5150	1.1678	2.7628	3.0031	16.1467	16.1467
2	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.5824	1.1004	2.7628	3.0031	16.1467	16.1467
3	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.6587	1.0241	2.7628	3.0031	16.1467	16.1467
4	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.7450	0.9378	2.7628	3.0031	16.1467	16.1467
5	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.8426	0.8402	2.7628	3.0031	16.1467	16.1467
6	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.9529	0.7299	2.7628	3.0031	16.1467	16.1467
7	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	1.0777	0.6051	2.7628	3.0031	16.1467	16.1467
8	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	1.2189	0.4639	2.7628	3.0031	16.1467	16.1467
9	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	1.3786	0.3042	2.7628	3.0031	16.1467	16.1467
10	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	1.5591	0.1237	2.7628	3.0031	16.1467	16.1467
11	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
12	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
13	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
14	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
15	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
16	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
17	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
18	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
19	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
20	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
21	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
22	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
23	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
24	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
25	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
26	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
27	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
28	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
29	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	-	-	1.0800	1.1739	14.3176	14.3176
Average														
1-10	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.9531	0.7297	2.7628	3.0031	16.1467	16.1467
11-30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.0000	0.0000	1.0800	1.1739	14.3176	14.3176
1-30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.3177	0.2432	1.6409	1.7836	14.9273	14.9273
Levelized														
1-30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.6004	0.5645	0.5323	2.1769	2.3662	**15.5099**	**15.5099**

Levelized Tariff = 15.5099 Rs./kWh 15.5099 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff - Debt Servicing on Local Financing

Gross Capacity	786.90	MWs	US$/PKR Parity	100.00	
Net Capacity	763.29	MWs	Debt	637.28	US$ Million
LIBOR	9.50%		Debt in Pak Rupees	63,727.72	Rs. Million
Spread over LIBOR	3.00%				
Total Interest Rate	12.50%				

Period	Principal Million Rs.	Principal Repayment Million Rs.	Interest Million Rs.	Balaance Million Rs.	Debt Service Million Rs.	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	63,727.72	821.51	1,991.49	62,906.22	2,813.00			
2	62,906.22	847.18	1,965.82	62,059.04	2,813.00			
3	62,059.04	873.65	1,939.34	61,185.38	2,813.00			
4	61,185.38	900.95	1,912.04	60,284.43	2,813.00	0.5150	1.1678	1.6828
1st Year		**3,443.29**	**7,808.70**		**11,251.99**			
5	60,284.43	929.11	1,883.89	59,355.32	2,813.00			
6	59,355.32	958.14	1,854.85	58,397.18	2,813.00			
7	58,397.18	988.09	1,824.91	57,409.09	2,813.00			
8	57,409.09	1,018.96	1,794.03	56,390.13	2,813.00	0.5824	1.1004	1.6828
2nd Year		**3,894.30**	**7,357.69**		**11,251.99**			
9	56,390.13	1,050.81	1,762.19	55,339.32	2,813.00			
10	55,339.32	1,083.64	1,729.35	54,255.68	2,813.00			
11	54,255.68	1,117.51	1,695.49	53,138.17	2,813.00			
12	53,138.17	1,152.43	1,660.57	51,985.74	2,813.00	0.6587	1.0241	1.6828
3rd Year		**4,404.39**	**6,847.60**		**11,251.99**			
13	51,985.74	1,188.44	1,624.55	50,797.30	2,813.00			
14	50,797.30	1,225.58	1,587.42	49,571.72	2,813.00			
15	49,571.72	1,263.88	1,549.12	48,307.83	2,813.00			
16	48,307.83	1,303.38	1,509.62	47,004.46	2,813.00	0.7450	0.9378	1.6828
4th Year		**4,981.28**	**6,270.71**		**11,251.99**			
17	47,004.46	1,344.11	1,468.89	45,660.35	2,813.00			
18	45,660.35	1,386.11	1,426.89	44,274.24	2,813.00			
19	44,274.24	1,429.43	1,383.57	42,844.81	2,813.00			
20	42,844.81	1,474.10	1,338.90	41,370.71	2,813.00	0.8426	0.8402	1.6828
5th Year		**5,633.75**	**5,618.25**		**11,251.99**			
21	41,370.71	1,520.16	1,292.83	39,850.55	2,813.00			
22	39,850.55	1,567.67	1,245.33	38,282.88	2,813.00			
23	38,282.88	1,616.66	1,196.34	36,666.22	2,813.00			
24	36,666.22	1,667.18	1,145.82	34,999.04	2,813.00	0.9529	0.7299	1.6828
6th Year		**6,371.67**	**4,880.32**		**11,251.99**			
25	34,999.04	1,719.28	1,093.72	33,279.77	2,813.00			
26	33,279.77	1,773.00	1,039.99	31,506.76	2,813.00			
27	31,506.76	1,828.41	984.59	29,678.35	2,813.00			
28	29,678.35	1,885.55	927.45	27,792.80	2,813.00	1.0777	0.6051	1.6828
7th Year		**7,206.24**	**4,045.75**		**11,251.99**			
29	27,792.80	1,944.47	868.53	25,848.33	2,813.00			
30	25,848.33	2,005.24	807.76	23,843.09	2,813.00			
31	23,843.09	2,067.90	745.10	21,775.19	2,813.00			
32	21,775.19	2,132.52	680.47	19,642.67	2,813.00	1.2189	0.4639	1.6828
8th Year		**8,150.13**	**3,101.86**		**11,251.99**			
33	19,642.67	2,199.16	613.83	17,443.50	2,813.00			
34	17,443.50	2,267.89	545.11	15,175.61	2,813.00			
35	15,175.61	2,338.76	474.24	12,836.85	2,813.00			
36	12,836.85	2,411.85	401.15	10,425.01	2,813.00	1.3786	0.3042	1.6828
9th Year		**9,217.66**	**2,034.33**		**11,251.99**			
37	10,425.01	2,487.22	325.78	7,937.79	2,813.00			
38	7,937.79	2,564.94	248.06	5,372.85	2,813.00			
39	5,372.85	2,645.10	167.90	2,727.76	2,813.00			
40	2,727.76	2,727.76	85.24	0.00	2,813.00	1.5591	0.1237	1.6828
10th Year		**10,425.01**	**826.98**		**11,251.99**			

800 MW Upfront Tariff for New Power Generation on LNG on Foreign Financing

Annex-VI

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel	Var. O&M	Total	Fixed O&M		Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
	Component	Foreign	EPP	Local	Foreign									
1	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.7138	0.4322	2.1924	2.3831	9.7965	9.7965
2	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.7498	0.3962	2.1924	2.3831	9.7965	9.7965
3	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.7877	0.3584	2.1924	2.3831	9.7965	9.7965
4	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.8274	0.3187	2.1924	2.3831	9.7965	9.7965
5	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.8691	0.2770	2.1924	2.3831	9.7965	9.7965
6	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.9129	0.2331	2.1924	2.3831	9.7965	9.7965
7	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.9590	0.1871	2.1924	2.3831	9.7965	9.7965
8	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	1.0073	0.1387	2.1924	2.3831	9.7965	9.7965
9	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	1.0581	0.0880	2.1924	2.3831	9.7965	9.7965
10	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	1.1115	0.0346	2.1924	2.3831	9.7965	9.7965
11	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
12	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
13	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
14	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
15	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
16	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
17	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
18	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
19	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
20	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
21	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
22	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
23	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
24	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
25	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
26	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
27	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
28	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
29	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	8.5508	8.5508
Average														
1-10	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.8997	0.2464	2.1924	2.3831	9.7965	9.7965
11-30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.0000	0.0000	1.0464	1.1373	8.5508	8.5508
1-30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.2999	0.0821	1.4284	1.5526	8.9661	8.9661
Levelized														
1-30	7.1835	0.2300	7.4135	0.0817	0.1083	0.1964	0.0932	0.5668	0.5643	0.1827	1.7934	1.9493	**9.3628**	**9.3628**

Levelized Tariff = 9.3628 Rs./kWh 9.3628 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

800 MW Upfront Tariff for New Power Generation on HSD (Backup Fuel) on Foreign Financing

Annex-VIA

Reference Tariff Table

Year	Energy Purchase Price (Rs./kWh)			Capacity Purchase Price (PKR/kW/Hour)								Capacity Charge@ 92%	Total Tariff	
	Fuel Component	Var. O&M Foreign	Total EPP	Fixed O&M Local	Fixed O&M Foreign	Cost of W/C	Insurance	ROE	Debt Repayment	Interest Charges	Total CPP		Rs. /kWh	Cents/kWh
1	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.7138	0.4322	2.1924	2.3831	15.5267	15.5267
2	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.7498	0.3962	2.1924	2.3831	15.5267	15.5267
3	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.7877	0.3584	2.1924	2.3831	15.5267	15.5267
4	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.8274	0.3187	2.1924	2.3831	15.5267	15.5267
5	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.8691	0.2770	2.1924	2.3831	15.5267	15.5267
6	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.9129	0.2331	2.1924	2.3831	15.5267	15.5267
7	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.9590	0.1871	2.1924	2.3831	15.5267	15.5267
8	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	1.0073	0.1387	2.1924	2.3831	15.5267	15.5267
9	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	1.0581	0.0880	2.1924	2.3831	15.5267	15.5267
10	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	1.1115	0.0346	2.1924	2.3831	15.5267	15.5267
11	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
12	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
13	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
14	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
15	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
16	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
17	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
18	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
19	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
20	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
21	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
22	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
23	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
24	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
25	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
26	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
27	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
28	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
29	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	-	-	1.0464	1.1373	14.2810	14.2810
Average														
1-10	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.8997	0.2464	2.1924	2.3831	15.5267	15.5267
11-30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.0000	0.0000	1.0464	1.1373	14.2810	14.2810
1-30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.2999	0.0821	1.4284	1.5526	14.6963	14.6963
Levelized														
1-30	12.8118	0.3319	13.1437	0.0817	0.1083	0.1964	0.0932	0.5668	0.5643	0.1827	1.7934	1.9493	**15.0930**	**15.0930**

Levelized Tariff = 15.0930 Rs./kWh 15.0930 Cents/kWh

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Upfront Tariff - Debt Servicing on Foreign Financing

Gross Capacity	786.90	MWs	US$/PKR Parity	100.00	
Net Capacity	763.29	MWs	Debt	601.55	US$ Million
LIBOR	0.45%		Debt in Pak Rupees	60,155.02	Rs. Million
Spread over LIBOR	4.50%				
Total Interest Rate	4.95%				

Period	Principal Million $	Principal Repayment Million $	Interest Million $	Balaance Million $	Debt Service Million $	Principal Repayment Rs./kW/h	Interest Rs./kW/h	Debt Servicing Rs./kW/h
1	601.55	11.71	7.44	589.84	$19.16			
2	589.84	11.86	7.30	577.98	19.16			
3	577.98	12.01	7.15	565.97	19.16			
4	565.97	12.15	7.00	553.82	19.16	0.7138	0.4322	1.1461
1st Year		**47.73**	**28.90**		**76.63**			
5	553.82	12.30	6.85	541.52	19.16			
6	541.52	12.46	6.70	529.06	19.16			
7	529.06	12.61	6.55	516.45	19.16			
8	516.45	12.77	6.39	503.68	19.16	0.7498	0.3962	1.1461
2nd Year		**50.14**	**26.49**		**76.63**			
9	503.68	12.92	6.23	490.76	19.16			
10	490.76	13.08	6.07	477.67	19.16			
11	477.67	13.25	5.91	464.43	19.16			
12	464.43	13.41	5.75	451.02	19.16	0.7877	0.3584	1.1461
3rd Year		**52.67**	**23.96**		**76.63**			
13	451.02	13.58	5.58	437.44	19.16			
14	437.44	13.74	5.41	423.69	19.16			
15	423.69	13.91	5.24	409.78	19.16			
16	409.78	14.09	5.07	395.69	19.16	0.8274	0.3187	1.1461
4th Year		**55.32**	**21.31**		**76.63**			
17	395.69	14.26	4.90	381.43	19.16			
18	381.43	14.44	4.72	367.00	19.16			
19	367.00	14.62	4.54	352.38	19.16			
20	352.38	14.80	4.36	337.58	19.16	0.8691	0.2770	1.1461
5th Year		**58.11**	**18.52**		**76.63**			
21	337.58	14.98	4.18	322.60	19.16			
22	322.60	15.17	3.99	307.44	19.16			
23	307.44	15.35	3.80	292.08	19.16			
24	292.08	15.54	3.61	276.54	19.16	0.9129	0.2331	1.1461
6th Year		**61.04**	**15.59**		**76.63**			
25	276.54	15.74	3.42	260.80	19.16			
26	260.80	15.93	3.23	244.87	19.16			
27	244.87	16.13	3.03	228.75	19.16			
28	228.75	16.33	2.83	212.42	19.16	0.9590	0.1871	1.1461
7th Year		**64.12**	**12.51**		**76.63**			
29	212.42	16.53	2.63	195.89	19.16			
30	195.89	16.73	2.42	179.16	19.16			
31	179.16	16.94	2.22	162.22	19.16			
32	162.22	17.15	2.01	145.07	19.16	1.0073	0.1387	1.1461
8th Year		**67.35**	**9.28**		**76.63**			
33	145.07	17.36	1.80	127.70	19.16			
34	127.70	17.58	1.58	110.13	19.16			
35	110.13	17.79	1.36	92.33	19.16			
36	92.33	18.02	1.14	74.32	19.16	1.0581	0.0880	1.1461
9th Year		**70.75**	**5.88**		**76.63**			
37	74.32	18.24	0.92	56.08	19.16			
38	56.08	18.46	0.69	37.62	19.16			
39	37.62	18.69	0.47	18.92	19.16			
40	18.92	18.92	0.23	(0.00)	19.16	1.1115	0.0346	1.1461
10th Year		**74.32**	**2.31**		**76.63**			

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