National Electric Power Regulatory Authority

Islamic Republic of Pakistan

Registrar

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No. NEPRA/PAR-148/SNPCL-2015/8278-8280
June 1, 2016

Subject: **Decision of the Authority in the matter of Power Acquisition Request submitted by K-Electric (Private) Ltd. (K-Electric) for Purchase of Power (Gas Fired) from Sindh Nooriabad Power Company (Private) Limited Phase-II** [Case # PAR-148/SNPCL-2015]

Dear Sir,

Please find enclosed herewith the subject Decision of the Authority along with Annex 1 & II (29 pages) in Case No. NEPRA/PAR-148/SNPCL-2015.

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

3. The Order Part of the Authority's Decision along with two Annexures (Annex-1 & II) needs to be notified in the official Gazette.

Enclosure: As above

01.06.16
(Syed Safeer Hussain)

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

CC:

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

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(NEPRA)
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DECISION OF THE AUTHORITY

IN THE MATTER OF

POWER ACQUISITION REQUEST SUBMITTED

BY

K-ELECTRIC (PRIVATE) LIMITED

FOR

PURCHASE OF POWER (GAS FIRED)

FROM

SINDH NOORIABAD POWER COMPANY (PRIVATE) LIMITED PHASE-II

The Authority in exercise of the powers conferred on it under Section 7(3) (a) read with Section 31 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, Interim Power Procurement (Standards & Procedure) Regulations — 2005, and all other powers enabling it in this behalf, and after taking into considering all the submissions made by the parties, issues raised, evidence / record produced during hearing, and all other relevant material, hereby issues this decision.

AUTHORITY

30.5.16.

(HimayatUllah Khan)
Member

(Syed Masood ul Hassan Naqvi)
Member

30/5/16

(Maj. (R) Haroon Rashid)
Member

31/5/16

(Brig. (R)Tariq Saddozai)
Chairman

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Power Acquisition Request (PAR) submitted by K-Electric for Purchase of Power (Gas Fired) from Sindh Nooriabad Power Company Private Limited Phase-II

1. Karachi Electric Limited (hereinafter referred to as "K-Electric") in July, 2015 submitted the Power Acquisition Request ("PAR") to National Electric Power Regulatory Authority (hereinafter referred to as "NEPRA" or "the Authority"), in accordance with NEPRA Interim Power Procurement (Procedures and Standards) Regulations, 2005 (hereinafter referred to as "IPPR-2005"), for purchase of around 50 MW (net) electrical power from Sindh Nooriabad Power Company (Private) Limited Phase-II (hereinafter referred to as "SNPCL-II").

2. K-Electric in the instant PAR submitted that SNPCL-II approached K-Electric for the sale of 50 MW (net) electrical power and in view of the power shortage and rising demand in its licensed service territory, K-Electric showed its interest in purchasing this power subject to approval of Authority and requested SNPCL-II to submit an offer for sale of power. Upon careful review of the power sale proposal received from SNPCL-II, K-Electric submitted its PAR and requested the Authority for the following:

   - To approve the proposed PAR from SNPCL-II under IPPR-2005;
   - To consider the offer for sale of power, PAR and determine reference tariff for finalization of the Power Acquisition Contract ("PAC");
   - To assess the indexation, escalation and adjustment methodologies as described in the offer of power sale proposal and reviewed in PAR;
   - To allow the necessary adjustment and revision of reference tariff at the time of commercial operations date (COD); and
   - Any other matters stated in the PAR.

3. Following reasons for the consideration of the subject PAR were submitted by K-Electric:

   - Cost of gas is lower which will have a favorable impact on the consumer tariff;
   - Natural gas is produced locally, therefore, reduced burden on energy import bill and reduces Government of Pakistan's ("GOP") subsidy payments;
   - Reliable base load supply 24/7; and
   - Potential use of the project as black start facility in case of widespread power outage.

4. **Introduction of SNPCL-II:** SNPCL-II (the Seller) is a Special Purpose Vehicle (under the Companies Ordinance 1984) setup in public private partnership to develop an approximately 50MW (net at Site Conditions) gas-fired electric power generation plant at Nooriabad, Sindh Province, Pakistan. It is jointly sponsored by Government of Sindh ("GOS") and Technomen Kinetics (Pvt.) Limited having share of 49% and 51% respectively. The generation license has been awarded to this project by the Authority on July 15, 2015.

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5. **Summary of the Sale Proposal:** Tabulated below is the summary of the power project;

Project Company	Sindh Nooriabad Power Company Limited Phase-II (SNPCL-II)
Major Sponsors	Government of Sindh (49%), Technomen Kinetics (Pvt.) Limited (51%)
Project Location	Nooriabad, Sindh, Pakistan
Project Life	25 Years from COD.
Power Purchaser	K-Electric Limited
Technical Parameters	
Gross Capacity	52.094 MW
Auxiliary Load	2.114 MW
Net Capacity	49.98 MW
Interconnectivity	132 KVA
Plant Technology	Reciprocating Engines (Wartsila, 20V 34SG) 5 units of 9.72 MW each and Steam Turbine (Shin Nippon) 1 unit of 3.50 MW
Energy Production	437.86 GWh at 100% load factor, 402.83 GWh at 92% load factor
Fuel Type	Gas
Plant Factor	92%
Plant Efficiency	41.63% (Net HHV)
Project Cost	**USD**
EPC-Offshore	40,334574
EPC-Onshore	7,089,800
Total EPC Cost	47,424,374
Gas Supply Pipeline & CMS	1,800,000
Residential Colony	235,000
Landscaping	50,000
Custom Duties (6%)	2,420,074
Land/Expenses	50,000
Fuel for Test/First Fill, 15 days	707,894
Insurance (1.35%)	701,048
Mobilization Advance for O&M (7.5%)	135,774
Project Development and Mgmt. Cost	600,000
Technical/Financial Advisory	250,000
Financing Fee and LC Charges (1%)	481,353
Other Fee and Charges (1%)	481,353
Project Cost Excluding IDC	**55,336,870**
Interest During Construction	4,832,265
Project Cost Including IDC	**60,169,135**
Capital Structure	Debt (80%) = USD 48.135 million : Equity (20%) = USD 12.034 million
Lenders	National Bank of Pakistan Rs. 3,000 million
	Sindh Bank Limited Rs. 1,000 million
	Privately Placed Term Finance Certificate Rs. 814 million
Financing Terms	Loan period: 10 years Interest Rate: KIBOR + 3.00% p.a. (KIBOR 10.18%)
Concession Documents	Power Acquisition Contract, Gas Supply Agreement, EPC & O&M contract
Construction Period	Eighteen (18) months from financial close

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6. **Proposed Tariff:** The tariff negotiated between K-Electric and SNPCL-II as submitted vide subject PAR is given hereunder:

Tariff Inputs	**At 100% plant factor(Rs./kWh)**		
Variable Operating Costs	**Year 1-10**	**Year 11-25**	**Levelized (1-25)**
Fuel Cost	4.0017	4.0017	4.0017
Variable O&M	0.9728	0.9728	0.9728
Total Energy Charge	4.9744	4.9744	4.9744
Fixed Operating Costs			
Fixed O&M	0.4161	0.4161	0.4161
Insurance	0.1553	0.1553	0.1553
Working Capital	0.0687	0.0687	0.0687
Total CPP Operating Costs	**0.6401**	**0.6401**	**0.6401**
Fixed Capital Costs			
Return on Equity	0.5032	0.5032	0.5032
Return on Equity During Construction	0.0690	0.0690	0.0690
Withholding Tax	0.0429	0.0429	0.0429
Debt Servicing	2.0284	0.0000	1.3731
CPP: Capital Cost	**2.6436**	**0.6151**	**1.9882**
Total Tariff	**8.2580**	**6.2296**	**7.6026**

7. **Assumptions**: Tabulated above tariff is based on the following assumptions:

- Debt to Equity ratio is assumed to be 80:20.
- Debt Repayment period is assumed to be of ten (10) years after Commercial Operation Date (COD).
- Debt Repayment is assumed to be on quarterly basis with an interest rate of KIBOR + 3.00%.
- Plant availability factor of 92% (approximately 335 days per years) has been assumed.
- Return on Equity (RoE) of 18% is assumed over 25 years.
- Return on Equity during Construction (ROEDC) is assumed to be 18% with a construction period of eighteen months.
- Insurance cost is calculated on the basis of 1.35% of EPC Cost.
- Plant efficiency is assumed to 46.15% (LHV) and 41.63% (HHV) but shall be finalized at the time of COD.
- Base fuel price is PKR 488.23/MMBTU on HHV basis (excluding Gas Infrastructure Development Cess "GIDC")
- Exchange Rate of 101.72 PKR/USD.
- Working capital requirement 30 days for trade debts and 30 days for Sales Tax Receivables.
- 7.5% withholding tax has been assumed with the change in the regime, if any, shall be pass through.
- General sales tax and all other taxes on the Project, EPC Contracts as well as on the fuel, if applicable, will also be treated as a "pass through".

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8. The Authority considered the subject PAR and after completion of all the documentary requirements decided to admit the same under Regulation 4(1) of IPPR-2005 in September, 2015. Based on the information provided in the PAR, certain issues were framed by the Authority. In order to satisfy itself in respect of the prudence of the procurement and grant of power acquisition permission to K-Electric for negotiating PAC, the Authority decided to conduct a hearing so that due input from the stakeholders can be obtained.

9. The hearing was held at Islamabad on November 05, 2015 for which advertisement containing the list of approved issues was published in the daily newspapers on October 27, 2015 and separate notices were also sent to interested stakeholders on October 28, 2015. In response to the public advertisement and separate notices, no comments or intervention requests were received by the Authority.

10. Following is the list of issues that was advertised in the notice for discussion along with few matters that were discussed during the hearing. The list is followed by discussion and Authority's decision on each point.

i. Whether any commitment of gas supply is in place?
ii. Did SNPCL-II approach HESCO for the sale of power?
iii. Was the due procedure followed for the selection of investor?
iv. Whether the proposed Engineering, Procurement and Construction ("EPC") cost of USD 47.424 million (USD 0.910 million/ MW) is justified?
v. Whether the proposed Non EPC/ Other cost of USD 7.912 million (USD 0.152 million/ MW) is justified?
vi. Whether the proposed efficiency of 41.63% (Net HHV) is justified?
vii. Whether the proposed fixed and variable O&M components are justified?
viii. Whether the proposed Tariff control period of 25 Years is justified?
ix. Whether the proposed two part tariff comprising of Energy and Capacity Charges is justified?
x. Whether the proposed IRR of 18% is justified?
xi. Whether the proposed financing terms i.e. loan period of 10 years and interest rate of KIBOR + 3% are justified?
xii. Whether the proposed insurance cost is justified?
xiii. Whether the proposed working capital cost is justified?
xiv. Whether the proposed withholding tax cost component is justified?
xv. Whether the proposed interconnection arrangement is justified?
xvi. Whether the claimed wheeling tariff is justified?
xvii. Whether there is any negative impact of this power purchase on the existing tariff of K-Electric?
xviii. Whether WWF/WPPF requested to be allowed as a pass through item is justified?

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A. **Whether any commitment of gas supply is in place for the subject power project?**

i. SNPCL-II during the hearing submitted that province of Sindh had a claim on four dormant gas fields namely, Nur, Bhagla, Jakhro and Sara West, all located in Sindh and operated by Oil and Gas Development Company Limited ("OGDCL"). All four dormant gas fields were handed over to GOS in 2010, however, Ministry of Petroleum & Natural Resources (MoP&NR) decided to divert gas from these dormant gas fields into national network. GOS moved a case with the MoP&NR thereby triggering a summary to Economic Coordination Committee of Cabinet ("ECC") for allocation of 20 MMCFD of pipeline quality gas for a period of 25 years. ECC, headed by Minister of Finance, in its decision dated February 26, 2013 placed the first 20 MMCFD of gas to the 100 MW Nooriabad power project for a term of 25 years. MoP&NR vide its letter dated March 05, 2013 communicated the aforementioned decision of ECC to Sui Southern Gas Company Limited ("SSGCL"), OGDCL, and Sui Northern Gas Pipeline Limited ("SNGPL"). Subsequent to the allocation, SNPCL-II and SSGCL, after the approval of Oil and Gas Regulatory Authority ("OGRA"), signed Gas Supply Agreement ("GSA") on June 16, 2014. During the hearing, the Authority inquired SNPCL-II that when the summary of gas allocation was moved to ECC, was it mentioned therein that on which network (HESCO, NTDC or K-Electric) the electricity from the subject project shall be sold. SNPCL-II informed that no such thing was mentioned on the summary and approval letter issued by MoP&NR. The Authority noted that the signed GSA and aforementioned letter issued by MoP&NR were submitted along with the subject request which shows that subject power project has firm gas commitment.

B. **Did SNPCL-II approach HESCO for the sale of power?**

i. SNPCL-II during the hearing explained that the location of the project (Nooriabad) was selected because that place is an industrial state and there is a load demand of around 110MW. Since Nooriabad falls under the licensed territory of the distribution company named Hyderabad Electric Supply Company ("HESCO"), therefore, the said project was envisioned to sell power to HESCO. For the sale of power to a distribution company, Policy Guidelines for Power Generation through Small Independent Power Projects ("Policy Guidelines") were referred to, which allow sale of power directly to Distribution Companies ("DISCOs"), however, the scope thereof does not allow setting up a power plant more than 50 MW. This was the reason, as stated by SNPCL-II, that the total 100 MW was divided into two projects of 50 MW each.

ii. SNPCL-II submitted that it approached HESCO on September 18, 2012. The letter of Intent (LoI) for the subject project was issued by HESCO on March 25, 2014, i.e. after a lapse of one and a half years. Subsequent to the issuance of LoI, when SNPCL-II approached NEPRA for the issuance of generation license, HESCO commented that it issued LoI to SNPCL-II but the project failed to achieve milestones within the time stipulated in Policy Guidelines, therefore, the granted LoI was cancelled. HESCO also submitted that a large number of private power projects of approximately 1800 MW are in pipeline for sale of power against its demand of 800 MW. In view of upcoming power projects and the demand-supply situation in its licensed

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territory, HESCO submitted that it cannot support the grant of generation license to SNPCL-II as LoI stands terminated. However, SNPCL-II may apply for a fresh LoI, if it is still interested in selling power to HESCO.

iii. Consequent to the aforementioned stance of HESCO, SNPCL-II submitted that it requested the Authority, during the processing of its license application, for the change of power purchaser from HESCO to K-Electric. SNPCL-II also submitted that to supply power to K-Electric, it held discussions with National Transmission and Despatch Company Limited ("NTDCL") for using its system for that purpose. However, NTDC showed its inability to transmit power to K-Electric within the timelines specified for the commercial operation of SNPCL-II. Resultantly, SNPCL-II approached Sindh Transmission & Dispatch Company Limited (STDCL), a wholly-owned entity of GOS for providing assistance in interconnection with Grid Station of K-Electric.

iv. It has been found that during the processing of generation license application of SNPCL-II, the Authority considered the aforementioned submissions of the power company for the change of power purchaser from HESCO to K-Electric and comments in this regard were received from SSGCL, HESCO and NTDC. After following the due process, the Authority stated in the generation license decision of SNPCL-II that as per the NEPRA Act, the distribution companies/licensees are obligated to arrange electric power offered from different sources and HESCO in the particular case of SNPCL-II has not acted pragmatically at all by denying the offered natural gas based electric power from SNPCL-II. The Authority directed HESCO to be careful in future in such matters and not to decline the offered electric power from any prospective investor without any cogent/lawful justification. The Authority also mentioned about the lack of interest shown by NTDC and HESCO in offering their systems to SNPCL-II and directed them to adhere to terms and conditions of their respective Licenses and do not deny any prospective generation company which intended to use their system for wheeling of electric power without any convincing/lawful justification.

C. **Was the due procedure followed for the selection of investor?**

i. SNPCL-II during the hearing submitted that a very transparent process was followed by the GOS for procurement of bidder/private sector investor for this project. On August 27, 2012, the public notice/Request For Qualification (RFQ) was advertised in the daily newspapers and detailed RFQ was placed on the websites of Sindh Public Procurement and Regulatory Authority ("SPPRA") and Public Private Partnership ("PPP") Units. In response to the RFQ, prequalification documents were submitted by six companies, after which request of Engro for inclusion was also entertained.

ii. A Technical and Financial Evaluation Committee ("TFEC") comprising of Additional Chief Secretary, Department of Planning and Development (GOS), Secretary Finance (GOS), Secretary Energy Department (GOS), Director PPP Unit (GOS) and the Deputy Director Energy Department (GOS) was formed by the GOS for evaluation of the proposals.

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iii. Out of those seven companies, three companies based on their financial worth, industry experience etc. were pre-qualified/shortlisted by TFEC, which were issued Request for Proposal ("RFP") and project documents. After due diligence and evaluation, Technomen Kinetics (Pvt.) Ltd. was found as the preferred bidder, based on the sole criteria of lowest tariff, in TFEC's 4th meeting held on November 22, 2012.

iv. On November 27, 2012, the evaluation report of TFEC was moved to the PPP policy board which is headed by the Honorable Chief Minister of Sindh. The PPP Policy Board approved the launch of the projects and permitted issuance of LoI and subsequent signing of concession agreements with the preferred bidder. The minutes and particulars of the aforementioned TFEC's and PPP policy board's meeting were submitted by SNPCL-II after the hearing.

v. SNPCL-II during the hearing submitted that levelized tariff of Rs. 7.929/kWh was offered by the bidder which was qualified after following the aforementioned process. When SNPCL-II approached K-Electric, the power purchaser further slashed the tariff down to Rs. 7.6026/kWh which is being claimed in the instant PAR. SNPCL-II requested the Authority to acknowledge the bidding process and grant the negotiated tariff.

vi. The Authority examined the submitted PAR and noted that few tariff components being claimed are on the quite higher side. The Authority also found that certain constituents of tariff which the Authority has discontinued allowing have been claimed in this PAR. In view thereof, the Authority decided to make assessment of the parameters of the tariff to be allowed for the subject PAR.

D. Whether the proposed EPC cost of USD 47.424 million (USD 0.910 million/ MW) is justified?

i. In its sale proposal, SNPCL-II claimed EPC cost of around USD 47.424 million, i.e. around USD 0.91 million per MW on installed capacity basis. The breakup of this claim is given below;

EPC Cost	USD (million)
Off Shore	40.33
On Shore	7.09
Total	**47.42**

ii. The EPC contract signed between SNPCL-II and Technomen Kinectics dated March 26, 2014 was provided along with the PAR. As per the EPC contract, the stated EPC cost was found out to be around USD 54.702 million. SNPCL-II during the hearing submitted that when the EPC contract was signed, the conversion rate of Euro to USD was around 1.38, however, for the claims in the sale proposal the Euro/USD parity of 1.0572 has been used. Following is the summary of the EPC cost as stated in the contract and the cost which has been claimed in the sale proposal;

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EPC Cost	Contract Prices	1.38 Euro/USD parity (USD million)	1.0572 Euro/USD parity (USD million)
Offshore Contract	22.545 **(Euros)**	31.112	23.834
Offshore Contract	16.500 **(USD)**	16.500	16.500
Onshore Contract	7.089 **(USD)**	7.089	7.089
Total		**54.702**	**47.424**

iii. While reviewing the provided EPC contract, it has been noted that around 50% of the EPC cost comprises of the equipment cost (engines and steam turbine) which is to be paid under two LCs (1 & 2) in the Finland account of the contractor, around 35% consists of the engineering cost which is to be paid under LC No. 3 in the UAE account of the contractor. Lastly, around 15% of the construction cost which is to be paid in equivalent Pakistani currency.

iv. The Authority examined the financial offers of the bidders that submitted the financial bids, i.e. Technomen Kinetics and found that the technical configuration offered by Technomen Kinetics was different from the technology actually being installed for the subject project. The offer of Technomen Kinetics was based on gas engines of Rolls Royce, however, in actual gas engines of Wartsila are being installed for the subject projects. This query was raised with SNPCL-II on which it replied that after finalization of bidding, the preferred bidder, i.e. Technomen Kinetics submitted a letter stating that Rolls Royce is not ready to work in Pakistan and sought approval for an alternate engine of the same size, i.e. Wartsila engine. For the approval of the suggested alternative, SNPCL-II submitted that it set the requisites of comparable size, output, efficiency and costs and after detailed consideration approved the alternative technology.

v. Justifying its EPC cost, SNPCL-II presented a EPC cost comparison of its claim with the Authority's approved EPC cost to RFO based five Independent Power Producers ("IPPs") having similar technology i.e. reciprocating engines. SNPCL-II submitted that the EPC cost allowed by the Authority to the RFO based IPPs, after adjustment of the inflation, comes out in the same range to what is being claimed for the subject power project.

vi. The Authority found that the average EPC cost determined for the RFO based projects, after making the adjustments for general increase in inflation, comes out to be USD 0.9709 million per MW of installed capacity against the SNPCL-II claim of USD 0.9104 million per MW of installed capacity. However, the Authority noted that EPC cost of these projects includes the cost of infrastructure development for inventory (RFO) i.e. cost of the fuel tanks for RFO storage along with fuel loading, fuel unloading pumping system with all heating system and piping as well as the fire containment area, which are not relevant in the case of SNPCL-II, being a gas fired power project.

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vii. It was also noted that the EPC being claimed for the subject project is higher than the costs that have been allowed to gas turbine based IPPs as well as to similar technology based New Captive Power Plants (NCPPs). However, due to different technology and larger project size of gas turbine projects and difference in scope of work of NCPPs, the Authority is of the view that the costs allowed to these sources do not provide an appropriate reference for comparison for the subject project.

viii. In view of the above discussion and considering that firm and binding EPC contract substantiating the claimed cost has been submitted, the Authority has decided to allow the claimed EPC cost for the subject project. The allowed cost will be adjusted at actual on COD, while allowing variation in Euro/USD and USD/PKR parity, on production of authentic documentary evidences to the satisfaction of the Authority.

E. **Whether the proposed Non EPC/Other costs of USD 7.912 million (USD 0.152 million/ MW) and interest during construction of USD 4.835 million are justified?**

i. **Gas Pipeline:** SNPCL-II during the hearing submitted that a gas pipeline of 18 km common for two projects, i.e. SNPCL and SNPCL-II shall be built from the main gas trunk line located at National Highway-Jhimpir-Nooriabad junction. The total expenditure to be incurred on that gas transmission line shall be USD 1.8 million for each project, which includes Sellers' Metering Station (SMS) comprising of filters, separators, gas metering station, flow computer, instrumentation, civil works etc. In addition, gas pipe line fitting, heat shrinks, excavation, trenching, laying of pipe, etc. The right of way for laying the pipeline and acquisition of land are also included in the cost. On review of the GSA signed between SNPCL-II and SSGC, it has been noted that the responsibility to construct pipes, materials and related facilities which are required to provide services to either of the project lies with the SSGC and the cost of construction of those facilities shall be paid by the power project companies. As an evidence of this claim, SNPCL-II submitted the Gas Pipeline Construction Contract of Rs. 106.84 signed between SNPCL-II and SSGC on November 15, 2015. Furthermore, the contract of USD 2.8 million for the supply of equipment/material required for the construction of gas pipeline which was signed between SNPCL-II and Technomen Kinetics Limited on March 05, 2015 was also submitted with PAR. During the hearing, the Authority observed that it does not seem justified to include the cost of gas pipeline and other related infrastructure in the project cost of a power plant. It was also discussed that as SNPCL-II had signed GSA with SSGC, it could have approached the gas regulator for signing Gas Transportation Agreement ("GTA") with SSGC. Under that arrangement, the cost of the gas pipeline, if borne by SNPCL-II, would have been paid back by SSGC in monthly installments or by some other mechanism. Responding that, SNPCL-II informed that this was decided by Oil and Gas Regulatory Authority ("OGRA") that the cost of pipeline shall be borne by SNPCL-II. The Authority noted that recently OGRA in the cases of RLNG based power projects has decided that 100% cost of infrastructure development works required to supply RLNG, shall be shared by the respective power projects. In view thereof and considering all the relevant documents substantiating that this cost shall be borne by SNPCL-II,

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the Authority has decided to allow this claim.

ii. **Residential Colony, Land Cost and Landscaping:** SNPCL-II submitted that Nooriabad is located 90 km away from Karachi. Daily commuting of staff may not be possible, therefore 20,000 square feet labor accommodation for 40+ staff has been built on site at the cost of Rs. 2500/sqft for which USD 235,000 has been claimed. The land has been leased from the GOS for a period of 30 years for which total cost of USD 50,000 has been claimed. For landscaping, SNPCL-II submitted that a modest amount of USD 50,000 has been kept for 25 acres of land. The Authority examined the residential colony cost which has been allowed to other projects. It has been noted that the rate per square feet allowed to comparable projects was inclusive of landscaping. Further, it has been observed that the geographical location of the subject project is easily reachable compared to those projects, which results in somewhat less costs. Also, the exercise of taking into account the change in inflation indexes was also performed. In view of the foregoing, the Authority decides to allow the claimed residential colony cost of USD 235,000, however, inclusive of cost of landscaping, if any. This allowed amount is upper limit in absolute terms subject to actual upon submission of verifiable documents at the time of COD. For the cost of land, lease agreement was submitted by the petitioner. On review of the mentioned document, it has been found that the lease payments has to be made on yearly basis, therefore, the Authority has decided to include it under fixed O&M cost instead of making it the part of project cost.

iii. **Custom Duties and Clearance Charges**: SNPCL-II submitted that as per S.R.O of Federal Board of Revenue, independent power plants having more than 25 MW capacity and selling electricity to the grid are allowed to import at concessionary Custom Duty of 5%. Besides that, SNPCL-II submitted that Sindh Infrastructure Tax of 0.92% and 0.08% for port clearance charges has been claimed. The Authority noted that custom duties at the rate of 5% of EPC cost and Sindh Infrastructure Cess of 0.92% has been allowed in the comparable cases, therefore, decides to allow the same subject to adjustment on actual at the time of COD. The Authority observed that port clearance charges have not been allowed in any of the tariff cases, therefore, has not taken into account the same. In view thereof, the amount being allowed under this head works out to be around USD 2.3878 million.

iv. **Fuel for Pre-Commissioning:** SNPCL-II submitted that as per the schedule provided by the manufacturer, the plant is to be tested in idle conditions for resolving teething problems and therefore gas for 15 days has been anticipated to be consumed during this exercise. It is observed that this claim has been worked out by multiplying the claimed fuel component of Rs. 4.0017/kWh with the energy at full load operations of the project for fifteen days. It has been found in the provided EPC contract that the provision of fuel for the performance tests is the responsibility of the project company. The Authority noted that it has only allowed fuel for pre-synchronization tests to other comparable projects and in the provided EPC contract, it is not shown that how much would be the duration of these tests. In addition, it is noted that it is not necessary to operate the whole project at full load all the time for all the tests. In view thereof, the Authority has decided

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to limit this claim to seven days against the claim of fifteen days which works out to be around USD 0.317 million against the claim of USD 0.707 million, subject to actual upon submission of verifiable documents to the satisfaction of the Authority at the time of COD.

v. **Insurance during Construction:** SNPCL-II submitted that as per earlier decisions of the Authority for several projects, an insurance expense of USD 0.701 million at the rate of 1.35% has been assumed. It has been noted that in comparable cases, the Authority had allowed insurance during construction at the rate of 1.00% of EPC cost and has decided to allow the same in the subject case. The allowed amount works out to be USD 0.474 million (upper limit in absolute terms), subject to adjustment on actual based on production of verifiable documents at the time of COD.

vi. **Mobilization Fee for O&M Contractor:** SNPCL-II submitted that expenses of USD 0.134 million, equivalent to approximately one month of fixed O&M expenses has been proposed by the O&M Contractor under this head. The Authority examined the workings of this claim and also studied the same in light of what has been allowed in other comparable cases. It has been found that the method and basis applied for calculation of this claim is reasonable, however, the Authority has decided to work out this amount using the allowed, instead of claimed, fixed O&M cost. In view thereof, the allowed amount on this account works out to be USD 0.116 million (upper limit in absolute terms), subject to adjustment on actual based on production of verifiable documents at the time of COD.

vii. **Project Development & Management Expense, Consulting Services:** Project development and management cost of USD 0.6 million and consulting services of USD 0.25 million were claimed. For the development and management cost, SNPCL-II submitted that the project was awarded in March, 2013 and achieved interim financial close in July, 2014. The project expenses during pre-financial close and during construction are met from this cost head which includes salaries, overheads, traveling, various fees and charges, office expenses, etc. For consultancy cost, SNPCL-II submitted that it includes the consultancy charges paid to technical, financial, legal consultants and auditors. The Authority analyzed the costs under the captioned heads that were allowed to other comparable cases, having similar technology as well as equivalent magnitude. The Authority also considered that most of the expenses under these heads would have been common and had been shared between both the projects. In view thereof, the Authority has assessed USD 0.5 million (upper limit in absolute terms) to be allowed under both of these heads for the subject project, subject to adjustment on actual up to this limit on production of verifiable documents at the time of COD.

viii. **Letter of Credit Charges, Financing Fees, Other Fee and Charges:** SNPCL-II submitted that Letter of Credit commission at the rate of 0.2% per quarter has been claimed. For the procurement of gas engines and steam turbine, these charges have been claimed for four quarters and for other equipment, supplies and EPC services, this amount has been claimed for six quarters. For financing fee, SNPCL-II submitted that

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processing fee charged by National Bank of Pakistan ("NBP") and Sindh Bank Limited ("SBL") has been claimed under this account. In absolute terms, an amount of around USD 0.482 million has been claimed under these heads. For other fee and charges of around USD 0.482 million, SNPCL-II submitted that bank success fee and arrangement fee have been assumed as 1% of loan. The Authority has considered this proposal of SNPCL-II and is of the view that the same falls within the limit been allowed by the Authority in the comparable cases and therefore decided to allow the same (upper limit in absolute terms). These allowed costs shall be adjusted on actual based on verifiable documents at the time of COD.

ix. **Interest during Construction:** In the submitted PAR, the Interest during Construction ("IDC") of USD 4.835 million has been claimed. According to the information submitted in the PAR and power sale proposal, the IDC has been calculated based on construction period of eighteen months while using 3 months Karachi Inter Bank Offer Rate ("KIBOR") of 10.18% plus spread of 3.00%. The Authority noted that it has allowed eighteen months of construction time to the projects having similar size. Based on the drawdown schedule and prevailing KIBOR of 6% with spread of 3%, the IDC being allowed works out to be around USD 2.897 million. This IDC shall be re-computed at COD, for the allowed construction period starting from the date of financial close, on the basis of actual drawdowns (within the overall debt allowed by the Authority at COD) by applying 3 months KIBOR applicable at the day of the respective drawdowns.

Recapitulating the approved project cost under various heads is given hereunder;

Cost Components	USD Million
EPC Cost	47.424
Gas Supply Pipeline	1.800
Residential Colony, Land Expenses, Landscaping	0.235
Custom Duties	2.387
Fuel for Test/First Fill, 05 days	0.317
Insurance	0.474
Mobilization Advance for O&M	0.116
Project Development and Mgmt. Cost, Advisors Cost	0.500
Financing Fee and LC Charges	0.481
Other Fee and Charges	0.481
Interest During Construction	2.897
Total	**57.115**

Note: At COD, for all project costs payable in PKR, the amounts allowed in USD will be converted into PKR using the reference PKR/dollar rate of 101.72 to determine maximum limit allowed.

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F. **Whether the proposed net efficiency of the Power Plant (Net HHV of 41.63%, LHV of 46.12%) is justified?**

i. The net efficiency of 41.63% on HHV basis (46.12% on LHV) has been requested in the subject PAR. During the hearing, SNPCL-II submitted that following numbers have been guaranteed by the EPC contractor;

Parameter	Unit	Value
Gross Electrical Power Guarantee Genset	kW	48650
Gross Electrical Power Guarantee Steam Turbine	KW	3444
Gross Electrical Power Guarantee (Genset + Steam Turbine)	KW	52094
Auxiliary Consumption	kW	2114
Minimum Electrical Power (Minimum Performance Requirement) Genset	kW	49980
Gross Heat Rate Guarantee, Genset + Steam Turbine at generation terminals (LHV)	kJ/kWh	7641 (47.11%)
Net Heat Rate Guarantee, Genset + Steam Turbine - Auxiliaries (LHV)	kJ/kWh	7964 (45.20%)
Net Heat Rate Guarantee, Genset + Steam Turbine - Auxiliaries (HHV)	kJ/kWh	8821 (40.81%)

ii. During the hearing the Authority inquired from SNPCL-II representative that efficiency number guaranteed by the EPC contractor is 40.81%, however, in the PAR this claim appears to be 41.63%. In response to that, SNPCL-II representative explained that the tabulated above guaranteed figures are based on two individual projects having two small transformers and resultantly high losses. However, SNPCL-II has actually planned to install one big transformer for both the projects so that losses shall reduce and this is the reason of this difference. Justifying its claim, SNPCL-II submitted that the claimed efficiency is in the range of what has been allowed by the Authority to the projects having furnace oil based Wartsila engines technology.

iii. The Authority examined the literature of the technology being installed in the subject project and studied the efficiencies being exhibited by these engines both in single and combined cycle mode. Detailed workings were also performed for the factors such as auxiliary consumption, transformer losses, LHV/HHV conversion, reference and mean site conditions etc. The Authority also considered that since gas is a scarce resource, therefore, should be utilized to the optimum level possible. After detailed analysis and taking into account all the aforementioned factors, the Authority is of the view that the efficiency of 44% (7756 BTUs/kWh), net HHV at mean site conditions (48.75% net LHV), can be achieved by this power plant and hereby approves the same. These results have been arrived at while accounting for about 3% usage value both for auxiliary consumption and transformer losses.

iv. While accounting for the allowed auxiliary consumption, the net capacity of the power plant works out to be 50.7957 MW, corresponding annual energy of which has been used for the computation of the different tariff components. The relevant tariff components shall be adjusted at the time of COD only in case the net plant capacity is established higher than 50.7957 MW and Plant Net Heat Rate is established lower than 7756

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BTUs/kWh. The applicable degradation shall be decided and allowed at the time of COD on submission of such curves as provided by Original Equipment Manufacturer ("OEM").

G. **Whether the proposed fixed and variable O&M components are justified?**

i. Following are the details of the fixed and variable Operation and Maintenance (O&M) components being claimed in the PAR;

Components	**Rs./kWh at 100% plant factor**
Fixed O&M	
Foreign	0.1300
Local	0.2861
Total	**0.4161**
Variable O&M	
Foreign	0.5409
Local	0.4319
Total	**0.9728**

ii. SNPCL-II submitted that fixed O&M cost consists of O&M contract Fee, remuneration of staff and executives of plant operations, overheads and miscellaneous costs including rent, utilities, local taxes transportation, tax and legal fees, audit, environmental monitoring and company overheads. For variable O&M, SNPCL-II submitted that the same comprises of the consumption of spare parts, lube oil, turbine oil, chemicals etc. SNPCL-II during the hearing submitted that O&M agreement is in the process of negotiation and shall be finalized in two weeks' time. Initially, O&M agreement proposal dated January 01, 2015 and subsequently draft O&M agreement dated November 20, 2015 were submitted by SNPCL-II.

iii. The Authority analyzed the claimed fixed and variable O&M costs with the present level of O&M costs which has been allowed to different IPPs. For certain gas based IPPs, it has been found that the average fixed and variable O&M cost comes out to be Rs. 0.2680/kWh and Rs. 0.3200/kWh respectively. For NCPPs, the current level of fixed and variable O&M cost comes out to be Rs. 0.3855/kWh and Rs. 0.4950/kWh respectively. For furnace oil based IPPs, fixed and variable O&M cost found out to be around Rs. 0.300/kWh and Rs. 0.9344/kWh respectively. In view thereof, the Authority noted that the claims made by SNPCL-II under this head are higher even when comparison is made with furnace oil based IPPs.

iv. SNPCL-II during the hearing submitted that the reason of claiming higher fixed O&M cost compared to other Wartsila engines based IPPs is the smaller size of its project. The Authority considered this point, analyzed the costs that have been allowed to comparable projects and after taking into account the cost of land has

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assessed fixed O&M cost of Rs. 0.3200/kWh to be allowed to the subject project with the apportionment of Rs. 0.1/kWh and Rs. 0.2200/kWh between foreign and local components respectively.

v. For variable O&M costs, the Authority noted that the requirement of spare parts and lubes for gas engines is considerably lower than furnace oil engines. In addition, relatively less maintenance schedules are required for gas stations compared to furnace oil projects. Hence, claiming variable O&M cost by SNPCL-II while referring the costs that have been allowed to furnace oil based plants is not justified. Nevertheless, the Authority also noted that the variable O&M cost cannot be directly compared with variable O&M cost of gas turbine projects owing to differences in size and consumption of lubes. In view thereof, the Authority has assessed variable O&M cost of Rs. 0.6200/kWh to be allowed to the subject project with the apportionment of Rs. 0.3410/kWh and Rs. 0.2790/kWh between foreign and local components respectively.

H. **Whether the proposed Tariff Control Period is justified?**

i. The levelized tariff proposed by SNPCL-II has been worked out on the basis of control period of twenty five (25) years. SNPCL-II representative during the hearing submitted that the reason of working out the tariff for twenty five years is because the GSA has been signed for that much time. The Authority noted that life of the technology being installed is stated to be thirty (30) years in the PAR. SNPCL-II during the hearing submitted that it is negotiating PPA with K-Electric for twenty five (25) years extendable to another 5 years. The Authority noted that life of the project does not affect the workings of the yearly tariff that has to be paid by the power purchaser to the generation company; however, longer control period results in a lower levelized tariff. The Authority has worked out the levelized tariff taking into account the control period of twenty five years, however, SNPCL-II is hereby directed to make all efforts for the provision of gas supply after the expiry of GSA in order to reap maximum benefits from this project.

I. **Whether the proposed two part tariff comprising of Energy and Capacity Charges is justified?**

i. SNPCL-II submitted that the project is being developed as an IPP and will exclusively supply power to K-Electric. SNPCL-II further submitted that all IPPs have been developed on "take or pay" basis due to the large investment made by the project company to supply exclusive power to a utility. Moreover, SNPCL-II stated that as per bidding carried out by GOS, the project is designed to have a two part tariff comprising of energy and capacity charges. During the hearing, the Authority inquired from K-Electric representative that whether K-Electric is guaranteeing SNPCL-II the purchase of their power. K-Electric responded positively thereon and submitted that this is the reason K-Electric has agreed to pay capacity price to SNPCL-II.

ii. The Authority examined the energy purchase trend of K-Electric from different IPPs and found that at times energy from those power sources have not been purchased at their full deliverable capacity by K-Electric. At the same time, the Authority observes that SNPCL-II is a generation facility established for the sole purpose of sale of power and shall be having fixed payment obligation for its lenders, insurer, O&M

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contractor etc. hence, the final arrangement should ensure these payments. In view thereof, the Authority has decided to grant two part tariff comprising of energy and capacity charges. However, keeping in view K-Electric's past practice with respect to giving low despatch to IPPs, even when they fall in economic merit order, the Authority has decided that if it is found that SNPCL-II plant was available and was also falling in the economic merit order of K-Electric system but was not given despatch, the capacity payment made to SNPCL-II by K-Electric shall not be passed on to the consumers to the extent of capacity of this plant not despatched/utilized by K-Electric. In addition, the energy charge differential between the costliest sources of power in K-Electric's system and of SNPCL-II shall also not be passed on to the consumers.

J. **Whether the proposed IRR of 18% is justified?**

i. SNPCL-II submitted that all the IPPs developed for NTDC enjoy GOP Guarantee under the Implementation Agreement. In the absence of such GoP Guarantee the risk profile of the project will increase and therefore instead of normal 17% IRR allowed by NEPRA for other projects of similar nature, a nominal increase of 1% in Equity IRR is requested from the Authority. The Authority noted that to all the gas based projects; IRR of 15% has been allowed by the Authority and decided to maintain the same for the subject case.

K. **Whether the Financing terms KIBOR+3% is justified?**

i. It has been stated in the PAR that the project shall be developed based on debt : equity ratio of 80 : 20. The loan shall be obtained from local banks which include National Bank of Pakistan, Sindh Bank Limited and remaining amount shall be raised from privately placed Term Finance Certificates. It has been informed that the principal repayment term shall be ten (10) years from the COD. For the workings of debt servicing charges, KIBOR of 10.18% and spread of 3.00% has been used. The Authority has noted that for the comparable projects, it has allowed the financing cost on similar terms being claimed for the subject project; therefore, decided to allow the same. However, SNPCL-II is hereby directed to submit all the relevant documents/contracts/agreements at COD signed with each of the mentioned above financing source, stating the terms on which loans have been secured. If the allowed spread is found to be lower than the one being allowed, the savings in the spread over KIBOR shall be shared between the power purchaser and the power producer in the ratio of 60:40 respectively. In case the premium on KIBOR is higher than that mentioned above, no adjustment on the basis of actual higher premium will be allowed. It is informed that debt servicing component calculations have been made on the basis of currently prevailing KIBOR rate of 6% which shall be adjusted as per the mechanism provided in the following sections.

L. **Is Insurance component during operations claimed by SNPCL-II Justified?**

i. The insurance during operation has been claimed equivalent to 1.35% of the proposed EPC cost, gas pipeline cost, residential colony cost and land cost which results in insurance component of Rs. 0.1553/kWh. It is

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stated in the PAR that the proposed insurance cost covers all risks of machinery breakdowns, third party liability, business interruption and consequential loss. The Authority noted that in its recent tariff decisions of all the technologies, it has allowed insurance during operation at the rate of 1% of EPC cost only, and the same is being allowed for the subject project. The tariff component works out to be Rs. 0.1084/kWh, subject to adjustment as per actual, provided it does not exceed 1.0% of EPC Cost and shall be indexed to variation as per the mechanism provided in the following sections.

M. **Whether the claimed working capital component is justified?**

i. The working capital component of Rs. 0.0687/ kWh with regards to financing cost for the lag of 30 days in receipt of trade debtors and sales tax receivables has been claimed. The Authority considered that it is imprudent to allow the cost for the lag in receipt and payments, as the same can be managed through certain arrangements in contracts. In view thereof, the Authority decided to disallow this claim.

N. **Whether the claimed Withholding tax component is justified?**

i. Withholding Tax on Dividend at the rate of 7.5% was claimed as a tariff component of Rs. 0.0429/ kWh. The Authority noted that it has principally decided not to allow this tariff component in any of the tariff decisions and maintain its said standpoint for the subject case as well.

O. **Whether the proposed interconnection arrangement is justified?**

i. In its PAR, K-Electric has submitted that for the transmission of power, STDC, a company wholly owned by GOS will lay out a transmission line of 95 km that will originate from SNPCL-II and end at K-Electric's Grid Station. K-Electric has submitted that STDCL shall enter into a long term wheeling agreement with SNPCL-II, also having K-Electric as signatory, defining therein, inter alia, the rights and obligations of the parties. STDC shall receive energy at entry point (SNPCL-II interconnection point) and deliver energy at exit point (K-Electric Grid Station). STDC shall invoice SNPCL-II for the wheeling charges as per the wheeling agreement and SNPCL-II shall make the payment thereof. Afterwards, SNPCL-II shall invoice K-Electric its generation tariff and wheeling tariff it had paid to STDCL. The Authority noted that under the proposed arrangement, K-Electric shall be invoiced by SNPCL-II both for the generation tariff and wheeling charges. The Authority is of the view that for the sale and purchase to be taken place at the Authority's determined tariffs and other terms & conditions, both for the generation and transmission companies, as stated in their respective license and tariff decisions, the proposed interconnection arrangement is allowed.

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P. **Whether the claimed wheeling tariff is justified?**

i. In addition to the generation tariff, K-Electric had also requested for a levelized wheeling tariff of Rs. 0.5830/ kWh for STDC. The Authority noted that STDC is a separate company and a separate licensee performing a different supply chain function and has filed a separate application for the tariff with the Authority, therefore, now there is no need to determine and grant STDC's tariff with the subject PAR.

Q. **Whether there is any negative impact of this power purchase on the existing tariff of K-Electric?**

i. K-Electric during the hearing submitted that gas based electricity is cheaper than coal fired, oil fired and renewable based electricity therefore SNPCL-II power supply will provide relief to consumers of K-Electric. The Authority noted that the efficiency of the whole existing fleet of K-Electric is around 36-38%. Further, majority of the external sources from which K-Electric is purchasing power are RFO based power plants. Therefore, the proposed purchase of electricity from SNPCL-II on gas at allowed 44% of efficiency shall not negatively impact the tariff of K-Electric.

R. **Whether WWF/WPPF requested to be allowed as pass through item is justified?**

i. SNPCL-II in its sale proposal and during the hearing submitted that the Workers Profit Participation Fund ("WPPF") and Workers Welfare Fund ("WWF") may be allowed to be treated as pass through item as the tariff determined by NEPRA is exclusive of any taxes and other charges i.e. cost plus principle whereby all the operating costs plus Equity IRR are paid out from the tariff proceeds. SNPCL-II also submitted that NEPRA has allowed WWF and WPPF to various IPPs on actual paid out basis. The Authority noted that as per current practice, IPPs are allowed WWF/ WPPF as a pass through item under the PPA. In view thereof, the Authority decides to allow WPPF/WWF as a pass through item for the subject project.

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ORDER

11. The Authority has decided to approve the subject PAR and grant permission to K-Electric for negotiating the PAC for purchase of 50.7957 MW (net) electric power from SNPCL-II on following tariff which shall be incorporated in the mentioned contract:

Tariff Components	Year 1-10	Year 11-25	Levelized (1-25)
Energy Purchase Price (Rs./kWh)			
Fuel Cost	5.4292	5.4292	5.4292
Variable O&M-Foreign	0.3410	0.3410	0.3410
Variable O&M-Local	0.2790	0.2790	0.2790
Total	**6.0492**	**6.0492**	**6.0492**
Capacity Purchase Price (Rs./kW/hour)			
Fixed O&M -Foreign	0.1000	0.1000	0.1000
Fixed O&M- Local	0.2200	0.2200	0.2200
Insurance	0.1084	0.1084	0.1084
Return on Equity	0.3917	0.3917	0.3917
Return on Equity During Construction	0.0433	0.0433	0.0433
Debt Servicing	1.5950	-	1.0797
Total	**2.4584**	**0.8634**	**1.9431**
Total Tariff (100% plant factor)	**8.5077**	**6.9126**	**7.9923**

- The aforementioned tariff is applicable for twenty five (25) years commencing from the date of COD.
- Plant availability factor of 92% (approximately 336 days per years) has been taken into account.
- The dispatch shall be in accordance with economic merit order.
- Tariff shall be charged on Take or Pay basis.
- The tariff has been calculated on the basis of net capacity of 50.7957 MW.
- Debt Service shall be paid in the first 10 years of commercial operation of the plant.
- Debt Repayment Schedule has been worked out using three months KIBOR (6%) + spread (3%).
- Net Thermal Efficiency has been taken as 44% (net HHV) over the tariff control period.
- Base fuel price of Rs. 700/MMBTU on HHV basis has been used for the calculation of tariff.
- Debt to Equity ratio has been assumed to be 80:20.
- Return on Equity during construction and operation of 15% has been allowed.
- Construction period of eighteen (18) months has been used for the workings of ROEDC and IDC.
- Insurance during Operation has been calculated as 1.00% of the allowed EPC Cost.
- Exchange Rates of 101.72 PKR/USD and 1.0572 USD/ Euro have been used.

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- Detailed component wise tariff is attached as **Annex-I** of this decision.
- Debt Servicing Schedule is attached as **Annex-II** of this decision.

A. **One Time Adjustments at COD**

- EPC cost will be adjusted at COD on account of variation in Euro/USD and USD/PKR parity, on production of authentic documentary evidences to the satisfaction of the Authority.
- Gas Pipeline Cost (Supply of Equipment/Material and Services Contract) shall be adjusted for USD/PKR parity.
- For other project cost items, the amounts allowed in USD will be converted in PKR using the reference PKR/USD rate of 101.72 to calculate the maximum limit of the amount to be allowed.
- Duties and/or taxes paid in the course of generation business, not being of refundable nature, imposed on SNPCL-II up to COD will be adjusted at actual on COD, as against USD 2.3878 million, upon production of verifiable documentary evidence to the satisfaction of the Authority.
- Fuel costs allowed for tests before COD shall be adjusted on actual at COD, upon production of verifiable documentary evidence to the satisfaction of the Authority.
- IDC will be adjusted at COD on the basis of actual debt draw downs (within the overall debt allowed by the Authority at COD), by applying three months KIBOR prevailing at the respective drawdown dates.
- The reference tariff has been worked out on the basis of 3 months KIBOR of 6% plus a premium of 300 basis points. In case negotiated spread is less than the said limits, the savings in the spread over KIBOR shall be shared between the power purchaser and the power producer in the ratio of 60:40 respectively.
- ROEDC will be adjusted at COD on the basis of actual equity injections (within the overall equity allowed by the Authority at COD) during the project construction period of eighteen months allowed by the Authority.
- All the relevant tariff components shall be adjusted at the time of COD based upon the Initial Dependable Capacity Test to be carried out for determination of net dependable capacity in case the capacity is established higher than 50.7957 MW, however, no adjustment shall be made if the capacity comes out less than 50.7957 MW.

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- The allowed tariff has been worked out on the basis of minimum net efficiency of 44% (net HHV at mean site conditions). Based upon the heat rate test of the complex to be carried out at the time of COD, the reference fuel cost component of tariff may be adjusted only if the net efficiency will be established higher than 44%.

- The applicable degradation shall be decided and allowed at the time of COD only subject to submission of such curves as provided by Original Equipment Manufacturer ("OEM").

B. Indexations

i) **Fuel Price Variation**

The variable charge part of the tariff relating to fuel cost will be adjusted on account of the fuel price variation as and when notified by the relevant authority, which in the instant case is the OGRA. In this regard, the variation in SNPCL-II allowed rate relating to fuel cost shall be revised according to the following formula:

$FCC_{GAS(REV)}$	=	$FCC_{GAS(REF)} * P_{GAS(REV)} / P_{GAS(REF)}$
Where:		
$FCC_{GAS(REV)}$	=	The revised fuel cost component on Gas
$FCC_{GAS(REF)}$	=	The reference fuel cost component on Gas
$P_{GAS(REV)}$	=	The revised HHV Gas price notified by the relevant Authority
$P_{GAS(REF)}$	=	The reference HHV Gas price of PKR 700/MMBtu

Note: The reference numbers shall be revised after making the required adjustments at the time of COD.

ii) **Variable Operation and Maintenance Costs**

Variable O&M components of tariff shall be adjusted on account of local Inflation (CPI), 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:

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F V. O&M$_{(REV)}$	=	F V. O&M $_{(REF)}$ * US CPI$_{(REV)}$ / US CPI$_{(REF)}$ *ER$_{(REV)}$/ER$_{(REF)}$
L V. O&M$_{(REV)}$		L V. O&M $_{(REF)}$ * CPI $_{(REV)}$ / CPI $_{(REF)}$
Where:		
F V. O&M$_{(REV)}$	=	The revised Variable O&M Foreign Component of Tariff
L V. O&M$_{(REV)}$	=	The revised Variable O&M Local Component of Tariff
F V. O&M$_{(REF)}$	=	The reference Variable O&M Foreign Component of Tariff
L V. O&M$_{(REF)}$	=	The reference Variable O&M Local Component of Tariff
US CPI$_{(REV)}$	=	The revised US CPI (All Urban Consumers)
US CPI$_{(REF)}$	=	The reference US CPI (All Urban Consumers) of 237.111 for the month of February, 2016
CPI$_{(REV)}$	=	The revised CPI (General)
CPI$_{(REF)}$	=	The reference CPI (General) of 203.28 for the month of March 2016
ER$_{(REV)}$	=	The revised TT & OD selling rate of US dollar
ER$_{(REF)}$	=	The reference TT & OD selling rate of RS. 101.72/USD

Note: The reference numbers shall be revised after making the required adjustments at the time of COD.

iii) **<u>Fixed Operation and Maintenance Costs</u>**

Fixed O&M components of tariff shall be adjusted on account of local Inflation (CPI), 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:

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F F. $O\&M_{(REV)}$	=	F F. $O\&M_{(REF)}$ * US $CPI_{(REV)}$ / US $CPI_{(REF)}$ * $ER_{(REV)}/ER_{(REF)}$
L F. $O\&M_{(REV)}$		L F. $O\&M_{(REF)}$ * $CPI_{(REV)}$ / $CPI_{(REF)}$
Where:		
F F. $O\&M_{(REV)}$	=	The revised Fixed O&M Foreign Component of Tariff
L F. $O\&M_{(REV)}$	=	The revised Fixed O&M Local Component of Tariff
F F. $O\&M_{(REF)}$	=	The reference Fixed O&M Foreign Component of Tariff
L F. $O\&M_{(REF)}$	=	The reference Fixed O&M Local Component of Tariff
US $CPI_{(REV)}$	=	The revised US CPI (All Urban Consumers)
US $CPI_{(REF)}$	=	The reference US CPI (All Urban Consumers) of 237.111 for the month of February, 2016
$CPI_{(REV)}$	=	The revised CPI (General)
$CPI_{(REF)}$	=	The reference CPI (General) of 203.28 for the month of March 2016
$ER_{(REV)}$	=	The revised TT & OD selling rate of US dollar
$ER_{(REF)}$	=	The reference TT & OD selling rate of RS. 101.72/USD

Note: The reference numbers shall be revised after making the required adjustments at the time of COD.

iv) **<u>Insurance during Operation</u>**

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 EPC Cost at Rs. 101.72
$P_{(Act)}$	=	Actual premium or 1% of the EPC Cost converted into Pak Rupees on exchange rate prevailing on the 1st day of the insurance coverage period whichever is lower

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v) **Return on Equity and Return on Equity During Construction**

The ROE and ROEDC components of the tariff will be adjusted on quarterly basis on account of change in USD/PKR parity. The variation relating to these components shall be worked out according to the following formula;

$ROE_{(Rev)}$	=	$ROE_{(Ref)} * ER_{(Rev)} / ER_{(Ref)}$
Where;		
$ROE_{(Rev)}$	=	Revised ROE Component of Tariff
$ROE_{(Ref)}$	=	Reference ROE Component of Tariff
$ER_{(Rev)}$	=	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. 101.72/USD

Note: The reference numbers shall be revised after making the required adjustments at the time of COD.

vi) **Variations in KIBOR**

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

ΔI	=	$P_{(REV)} * (KIBOR_{(REV)} - 6\%) / 4$
Where		
ΔI	=	The variation in interest charges applicable corresponding to variation in 3 months KIBOR. ΔI can be positive or negative depending upon whether 3 months $KIBOR_{(REV)}$ per annum > or < 6%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment.
$P_{(REV)}$	=	The outstanding principal (as indicated in the attached debt service schedule to this order), at the relevant quarterly calculations date. Quarter 1 shall commence on the commercial operations date (i.e. the first figure will be used for the purposes of calculation of interest for the first quarter after commercial operations date).
$KIBOR_{(REV)}$	=	Revised 3 months KIBOR as at the last day of the preceding quarter

Note: The reference numbers shall be revised after making the required adjustments at the time of COD.

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General:

- K-Electric before signing the Power Acquisition Contract shall satisfy itself that the plant and machinery proposed to be installed is new and of international standards.
- Pre COD sale of electricity is allowed, subject to the terms and conditions of Power Acquisition Contract, at the fuel component of the applicable tariff. However, pre COD sale will not alter the construction time allowed, in any manner.
- General assumptions, which are not covered in this decision, and IPPR, 2005, may be dealt with as per the standard terms of the Power Acquisition Contract.

12. The order part along with two Annexures is recommended for notification by the Federal Government in the official gazette in accordance with Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

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Annex-I

SINDH NOORIABAD POWER COMPANY PRIVATE LIMITED PHASE-II

REFERENCE TARIFF TABLE ON TAKE OR PAY BASIS

Years	Energy Purchase Price (Rs./kWh)				Capacity Purchase Price (Rs./kW/hour)							
	Fuel Component	Variable O&M		Total EPP	Fixed O&M		Insurance	Return on Equity During Construction	Return on Equity	Principal Component	Interest Component	Total CPP
		Foreign	Local		Foreign	Local						
1	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	0.6774	0.9176	2.4584
2	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	0.7405	0.8545	2.4584
3	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	0.8094	0.7856	2.4584
4	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	0.8848	0.7103	2.4584
5	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	0.9671	0.6279	2.4584
6	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	1.0571	0.5379	2.4584
7	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	1.1555	0.4395	2.4584
8	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	1.2631	0.3319	2.4584
9	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	1.3807	0.2144	2.4584
10	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	1.5092	0.0858	2.4584
11	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
12	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
13	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
14	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
15	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
16	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
17	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
18	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
19	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
20	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
21	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
22	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
23	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
24	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
25	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	-	-	0.8634
Levelized Tariff												
1 - 25	5.4292	0.3410	0.2790	6.0492	0.1000	0.2200	0.1084	0.0433	0.3917	0.6596	0.4201	1.9431

Net Capacity	50.7975	MW
Reference Exchange Rate	101.72	PKR/USD
Levelized Tariff (at 92% plant factor)	8.1613	PKR/kWh

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SINDH NOORIABAD POWER COMPANY PRIVATE LIMITED PHASE-II

DEBT SERVICING SCHEDULE

Gross Capacity	52.1 MW	USD/PKR Parity	101.72
Net Capacity	50.80 MW	Equity	20%
KIBOR	6.00%	Debt	80%
Spread Over KIBOR	3.00%		
Total Interest Rate	9.00%		

Quarters	Base Amount (Rs. million)	Interest (Rs. million)	Principal Repayment (Rs. million)	Balance Principal (Rs. million)	Annual Principal Component (Rs./kWh)	Annual Interest Component (Rs./kWh)
1	4,647.82	104.58	72.87	4,574.95	0.6774	0.9176
2	4,574.95	102.94	74.51	4,500.45		
3	4,500.45	101.26	76.18	4,424.27		
4	4,424.27	99.55	77.90	4,346.37		
5	4,346.37	97.79	79.65	4,266.72	0.7405	0.8545
6	4,266.72	96.00	81.44	4,185.28		
7	4,185.28	94.17	83.27	4,102.01		
8	4,102.01	92.30	85.15	4,016.87		
9	4,016.87	90.38	87.06	3,929.80	0.8094	0.7856
10	3,929.80	88.42	89.02	3,840.78		
11	3,840.78	86.42	91.02	3,749.76		
12	3,749.76	84.37	93.07	3,656.69		
13	3,656.69	82.28	95.17	3,561.52	0.8848	0.7103
14	3,561.52	80.13	97.31	3,464.21		
15	3,464.21	77.94	99.50	3,364.72		
16	3,364.72	75.71	101.74	3,262.98		
17	3,262.98	73.42	104.02	3,158.96	0.9671	0.6279
18	3,158.96	71.08	106.37	3,052.59		
19	3,052.59	68.68	108.76	2,943.83		
20	2,943.83	66.24	111.21	2,832.63		
21	2,832.63	63.73	113.71	2,718.92	1.0571	0.5379
22	2,71B.92	61.18	116.27	2,602.65		
23	2,602.65	58.56	118.88	2,483.77		
24	2,483.77	55.88	121.56	2,362.21		
25	2,362.21	53.15	124.29	2,237.92	1.1555	0.4395
26	2,237.92	50.35	127.09	2,110.83		
27	2,110.83	47.49	129.95	1,980.89		
28	1,980.89	44.57	132.87	1,848.02		
29	1,848.02	41.58	135.86	1,712.15	1.2631	0.3319
30	1,712.15	38.52	138.92	1,573.24		
31	1,573.24	35.40	142.04	1,431.19		
32	1,431.19	32.20	145.24	1,285.95		
33	1,285.95	28.93	148.51	1,137.44	1.3807	0.2144
34	1,137.44	25.59	151.85	985.60		
35	985.60	22.18	155.27	830.33		
36	830.33	18.68	158.76	671.57		
37	671.57	15.11	162.33	509.24	1.5092	0.0858
38	509.24	11.46	165.98	343.26		
39	343.26	7.72	169.72	173.54		
40	173.54	3.90	173.54	-		

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