National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

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No. NEPRA/TRF-346/ST&DCPL-2015/2083-2085
February 10, 2017

Subject: **Determination of the Authority in the matter of Tariff Petition filed by Sindh Transmission and Dispatch Company (Private) Ltd. (ST&DCPL) for the Determination of Tariff for 132 kV Transmission Line Project** [Case No. NEPRA/TRF-346/ST&DCPL-2015]

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annex-I & II (26 pages) in Case No. NEPRA/TRF-346/ST&DCPL-2015.

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

3. Order of the Authority along with two Annexures (Annex-I & Annex-II) of the Determination needs to be notified in the official Gazette.

Enclosure: As above

10.02.17
(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.

DETERMINATION OF THE AUTHORITY IN THE MATTER OF TARIFF PETITION FILED BY SINDH TRANSMISSION AND DISPATCH COMPANY (PRIVATE) LIMITED (ST&DCPL) FOR THE DETERMINATION OF TARIFF FOR 132 KV TRANSMISSION LINE PROJECT

1. Sindh Transmission and Dispatch Company (Private) Limited ("ST&DCPL/ the company/the Petitioner") vide its letter no. NEPRA/2015/15 dated December 21, 2015 submitted a petition to National Electric Power Regulatory Authority ("the Authority/NEPRA") for determination of tariff in respect of 132 KV double circuit transmission line project of about 96 Kms from Sindh Nooriabad Power Company Limited ("SNPCL") and Sindh Nooriabad Power Company Limited Phase-II ("SNPCL-II") to K-Electric Limited's ("K-Electric/power purchaser") KDA-33 Grid Station, Karachi.. ST&DCPL submitted that this petition has been filed in accordance with Section 31(1) of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (" the Act") read with Rule 3 of NEPRA Tariff (Standards and Procedure) Rules, 1998 (" Tariff Rules") and other applicable provisions of NEPRA laws.

2. Upon initial scrutiny, the petition was found deficient of some essential documents for which a letter on January 07, 2016 and subsequently a reminder dated January 11, 2016 were sent to ST&DCPL directing it to provide the necessary documents/data/information. Those documents were provided by ST&DCPL through letter dated January 15, 2016. Upon receipt of the requisite information, the Authority decided to admit the petition for further processing.

3. Brief Introduction of the Company: ST&DCPL submitted that it is registered as a private limited company with Securities and Exchange Commission of Pakistan under Companies Ordinance, 1984. This company has been established by Government of Sindh ("GOS") for providing necessary transmission infrastructure to the power projects in Sindh. The subject project of ST&DCPL is an overhead transmission line network of about 95 km being developed primarily to transmit power from SNPCL and SNPCL-II,, two gas based power projects having capacity of around 50 MW each, to K-Electric KDA-33 Grid Station. ST&DCPL has been issued a Special Purpose Transmission License ("SPTL") by NEPRA on December 17, 2015. As stated in the petition, the main objectives of initiating this project by GOS were to:

- Provide an economically viable and environmentally acceptable power transmission system, to close wide gap between demand and supply of electricity.
- Ensure stable power transmission system for the country.
- Respond to the need of improvement in quality of life through sustainable energy transmission network.

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SUMMARY OF THE SALE PROPOSAL

4. The summary of subject transmission project undertaken by ST&DCPL, as found stated in its petition and its other communications, is tabulated below;

i.) **General details**

Project	Transmission Line from SNPCLs, Sindh to K-Electric's KDA-33 Grid Station Karachi
Petitioner	Sindh Transmission and Dispatch Company (Private) Limited
Project Sponsor	Government of Sindh (GOS)
Length of the Transmission line	95.74 km
Power Generator	SNPCL and SNPCL-II
Power Distributor	K-Electric
Concession Period	30 Years from Commercial Operation Date ("COD")
Construction Period	07 months
EPC Contractor	Technomen Kinetics (Pvt) Limited
O&M Contractor	Not Decided

ii.) **Technical Parameters:** Following technical parameters have been stated in the petition and other communications filed by ST&DCPL for determination of tariff before the Authority;

Power Carrying Capacity	200 MW (approx.)
Nominal Voltage	132 KV
Max. Operation Voltage	145 KV
Min. Operation Voltage	120 KV
Normal Frequency	50 Hz
Transmission Losses	3%
LAL Factor (until determined by NEPRA)	1
Right of Way	30 meters

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iii.) Project Costs: The details of the project cost as stated in the tariff petition are mentioned hereunder;

Cost Heads	Rupees (million)
EPC Cost	1,670
Sindh Sales Tax on services	50.93
Interest during construction (IDC)	35.60
Pre COD Insurance	22.55
Non EPC cost	64.30
Project Development Cost	20.66
Total Project Cost	**1,864.04**

iv.) Capital Structure, Financing terms and Assumptions: Following are the details for the capital structure and respective financing terms as stated in the petition and other communications;

Financing	Completely Funded By GOS
Capital (Debt : Equity) Structure	70 : 30
Financing Terms	IRR = 20% on Equity, KIBOR + 3% on Debt
Debt Repayment Period	Ten (10) years from COD
Insurance during Construction	1.35% of the EPC Cost
Annual Energy Yield	864,000,000 kWh
Net Present Value Discount Rate	10%

v.) Proposed Tariff: Based on tabulated above cost and assumptions, the details of proposed levelized wheeling tariff is given hereunder;

Levelized (1-30)	Debt	Equity	Insurance	O&M	Working Capital	Total		Transmission Losses	Total
	Rs. in Million/ year						Rs./ kWh	Rs./ kWh	
Pak Rupees	135	116	23	221	55	550	0.6367	0.1550	0.7917

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5. ST&DCPL vide its letter No. NEPRA/2016-047 dated February 18, 2016 informed the Authority that the bid prices the company has received for O&M services have been found on the very higher side. In light of that, ST&DCPL informed the Authority that the company has decided to manage O&M of the transmission line by itself which will help to meet the O&M budget mentioned in the tariff petition of ST&DCPL.

6. Based on the information in the tariff petition, the issues were framed and uploaded on NEPRA's website to invite the comments of the concerned stakeholders. The Authority also decided to conduct a hearing regarding the subject petition on March 18, 2016 at Marriott Hotel, Karachi for which the advertisement was published on March 05, 2016 in two daily newspapers with nationwide circulation. In addition, separate notices were also sent to major stakeholders on March 09, 2016.

7. In response to the public advertisement and separate notices, no comments and intervention requests were received before the hearing. However, the comments were advanced by representatives of National Transmission and Dispatch Company Limited ("NTDCL") during the hearing and subsequently in writing dated March 24, 2016. The comments of NTDCL were sent to ST&DCPL for its reply thereon on which the Petitioner submitted its comments on April 06, 2016. The relevant comments of NTDCL have been referred in relevant sections.

8. Following is the list of issues which was approved by the Authority and discussed during the hearing;

i. Whether the claimed EPC cost of Rs. 1,670 million is competitive & comparative nationally/internationally? Whether due process of competitive bidding was followed for the selection of the EPC Contractor i.e. M/s Technoman Kinetics?

ii. Whether the claimed cost of Rs. 64.30 million under the head of Non EPC is justified?

iii. Whether Sindh Sales Tax of Rs. 50.93 million, Insurance during Construction of Rs. 22.55 million, Project Development Cost of Rs. 20.662 million justified?

iv. Whether the claimed Operation and Maintenance cost is justified? As communicated, does ST&DCPL have the technical expertise, logistics and the finances to carry out O&M by itself?

v. Whether the claimed cost of Insurance Cost during Operation is justified?

vi. Whether the proposed construction period of seven (07) months is justified? How ST&DCPL shall ensure timely completion of this transmission line with the generation projects?

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vii. Whether the tariff control period of thirty (30) years is justified?

viii. Whether the level of losses that have been taken into account for the calculation of variable charge component of proposed tariff is justified?

ix. Whether the proposed interconnection arrangement is justified?

x. Whether the proposed two part tariff comprising of Energy purchase price and Capacity purchase price for an infrastructure development project is justified?

xi. Whether the proposed availability factor is justified?

xii. What is the basis and justification of the claimed Return on Equity (IRR Based) of 20%?

xiii. Whether the proposed pass through of withholding tax on dividend is justified?

xiv. Whether the claimed working capital component is justified?

xv. Whether the proposed indexations/adjustments are justified?

xvi. Whether the shortest possible and the most economically feasible route has been followed in laying the transmission line and whether the Right Of Way (ROW) has been acquired?

xvii. What is the basis of selection of tower design? Whether the power purchaser (K-Electric) has approved the design of towers?

xviii. Any other issue considered relevant/important by the Authority.

A. Whether the claimed EPC cost of Rs. 1,670 million is competitive & comparative nationally/internationally? Whether due process of competitive bidding was followed for the selection of the EPC Contractor i.e. M/s Technoman Kinetics?

i. In its petition, ST&DCPL claimed an EPC cost of Rs. 1,670 million while stating that lump sum, fixed price and date certain EPC contract has been signed with the EPC contractor covering whole scope of work during the EPC phase. ST&DCPL submitted that to select the EPC contractor, two stage bidding was carried out in accordance with the Sindh Public Procurement Regulatory Authority ("SPPRA") Rules, 2010. GOS formed a Committee dated March 04, 2015 comprising of ST&DCPL employees, representative from Finance Department and a Co-opted member. Notice Inviting Tender ("NIT") was published in the newspapers on March 08, 2015 stating that "ST&DCPL intends to invite sealed tenders from EPC contractors for installation of Double Circuit 132 kV transmission line from 100 MW power

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plants located at Nooriabad, owned by SNPCL and SNPCL-II and 100 MWs of wind power plant owned by Sindh Renewable Energy Department Limited to Grid Station, located at KDA Scheme 33 or Maymar or Gadap, owned by K-Electric Limited". The estimated EPC cost specified in the aforementioned advertisement was Rs. 1,100 million. Subsequently, a Corrigendum was published by ST&DCPL on March 10, 2015, i.e. with a gap of two days, through which the earlier advertised estimated cost of Rs. 1,100 million was changed to Rs. 1,300 million. In addition, the services of O&M contractors were also invited initially for five (5) years of operation of this project through the said Corrigendum. ST&DCPL submitted that in response to the aforesaid advertisements, following four companies purchased the bidding documents

- North East China International Power Corporation (NECIPC)
- Technomen Kinetics Private Limited ("TKPL")
- Al Hussain Traders
- ICC Pvt. Limited

ii. M/s ICC (Pvt.) Limited requested to extend the date for opening of bid and also asked some queries regarding bidding document, however, the Petitioner submitted that the said request was not entertained. As M/s Al-Hussain Traders did not submit the bid security; therefore, the bid was rejected as non-responsive. Technical bids were opened in front of the representatives of the other two bidders, i.e. NECIPC and TKPL. Based on the technical evaluation of the proposals, both NECIPC and Technomen Kinetics were qualified for financial evaluation phase and finally the Committee selected Technomen Kinetics Pvt. Limited as EPC contractor, being the lowest financial bid of Rs. 1,275 million against Rs. 1,294 million offered by NECIPC. Accordingly, the EPC contract was signed with the selected party on June 12, 2015 in accordance with SPPRA Rules, 2010. ST&DCPL submitted that the report of the bidding process was uploaded on SPPRA website as per the requirement. A summary showing the comparison of amount offered by both the bidders is tabulated hereunder;

Heads	Technomen	NECIPC
Plant and Mandatory Supplies from Abroad	123,380,131	124,038,650
Plant and Mandatory Supplies from within the Employers Country	787,903,107	799,841,177
Design Services	64,586,000	64,917,500
Civil Works	140,964,392	144,145,910
Tower Erection	54,755,382	56,499,857
Electrical Welding	17,325,000	17,718,750
Stringing Work	86,190,000	87,975000
Total	**1,275,104,012**	**1,294,636,844**

PKR/USD parity of 102 has been used

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iii. As per the bidding, the EPC contract was around Rs. 1,275 million. However, later the amount claimed in the petition submitted to the Authority was the bid amount, i.e. Rs. 1,275 million plus the variation of Rs. 395 million (i.e. total amount of Rs. 1,670 million) estimated by the Petitioner till the time of hearing. Subsequently, the Petitioner further changed it claim to Rs. 1,783 million vide its letter dated June 10, 2016 and then again to Rs. 1,823 million vide its letter dated August 26, 2016. Following are the details of the costs/variations claimed by the Petitioner in its final claim;

Heads	Original Claim (PKR)	Changes (PKR)	Revised Claim (PKR)
Plant and Mandatory Supplies from Abroad	123,380,131	148,752,910	272,133,041
Plant and Mandatory Supplies from within the Employers Country	787,903,107	230,716,808	1,018,620,069
Design Services	64,586,000	8,163,670	72,749,670
Civil Works	140,964,392	107,429,412	248,393,804
Tower Erection	54,755,382	38,296,067	93,051,449
Electrical Welding	17,325,000	4,162,432	21,487,432
Stringing Work	86,190,000	10,894,416	97,084,416
Total	**1,275,104,012**	**548,415,716**	**1,823,519,882**

iv. The Petitioner during the hearing as well as in its subsequent communications submitted that it erroneously stated in the petition that the contract was of fixed amount. The company further submitted that it was mentioned in the Bill of Quantities ("BOQs") that quantities of items stipulated in that document are tentative and may vary which is the reason for the claim of variations over and above the bid amount. Explaining and justifying the change in its EPC claim to Rs. 1,823 million, ST&DCPL submitted that BOQs which were prepared in the very beginning were tentative in order to speed up the process for laying the transmission line to match with the timing of the power plants. Following are the specific reasons for the claim of the variations submitted by ST&DCPL;

- In the NIT, it was mentioned that the proposed transmission line may terminate into Gadap Grid Station, Maymar Grid Station or KDA-33 Grid Station of K-Electric. Later, at the time of signing of the contract, K-Electric decided to connect this line to KDA-33 Grid Station which is 10 km farthest of all the options. ST&DCPL submitted to the Authority that since this is the first transmission line project initiated by Government of Sindh and there was lack of expertise in the relevant field, this 10 km length was not incorporated in original BOQs.

- ST&DCPL further submitted that during the execution stage, Malir Development Authority ("MDA") only allowed the greenbelt area along the roads for the construction of line, where due to space constraints, only

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Monopoles can be erected, which are costlier than conventional towers. Due to this restriction by MDA, the quantity of monopoles increased from originally anticipated 20 Nos. to 63 Nos.

- Furthermore, ST&DCPL submitted that as it was on the learning curve at the time of bidding for the said project, therefore induction of Gantries and EG Towers were missed in the scope of work. During the execution stage of the project, it was revealed that both these items are inevitable for the completion of the project. Hence, the EPC contractor has claimed both these items in the form of variation request.

v. In one of its communication, ST&DCPL submitted that under the SPPRA Rules, 2010 and SPPRA Guidelines/Regulations for Procurement of Works ("SPPRA Guidelines") read with the relevant clauses of the signed Contract Agreement, the claimed Variation Request is admissible for the subject project. In support of this statement, the Petitioner submitted the legal opinion sought by them from M/s Ahmed and Qazi, Advocates and Legal Consultants stating that Variation Order can be allowed beyond 15% of the contract price. Following table shows the brief of the total costs and the breakup of variations as claimed by the Petitioner for 85kms and additional 10.74kms of transmission line;

Heads	Cost within 85 KMs	Cost for 10.74 KMs	Total Cost
Bid Cost	1,275.104	-	1,275.104
Variations in BOQ Items	179.633	277.716	457.350
Variations due to New Items	48.761	42.304	91.065
Total	**1,503.498**	**320.020**	**1,823.519**

vi. Analyzing the petition and review of the BOQs part of the EPC contract as per the bidding document, it has been noted that General Clause No. 3 of the BOQs stipulates that "the quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work executed and measured by the Contractor and verified by the Engineer and valued at the rates and prices entered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix as per the Contract". Also, it has been found stipulated in the Schedules of rates and prices attached with BOQs that length of the transmission line shall be 85 km and quantity of mentioned materials is tentative and may vary.

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vii. The amount of variations claimed by ST&DCPL was also analyzed in light of the SPPRA Rules, 2010 along with aforementioned SPPRA Guidelines. It was found that the said Rules and Guidelines provide a number of alternative methods of procurement besides the mode of competition. Particularly to claim the variations, two options namely Repeat Orders and Variations Orders have been provided in the said Rules/Guidelines. With the understanding that the additional amount claimed by ST&DCPL has invoked both the methods, i.e. Repeat and Variation Orders, a letter was sent to SPPRA seeking input, inter alia, on whether the variations covered under Repeat and Variation Orders can be simultaneously allowed in one single project. In response, SPPRA vide its letter dated December 8, 2016 informed that according to the documents hoisted on its website, it is transpired that the procuring agency, i.e. ST&DCPL awarded the contract within bid validity period in terms of Rule 49 of SPPRA Rules, 2010. However, the sought clarifications whether Repeat and Variation Orders can be simultaneously allowed in one project were not responded.

viii. The total cost of the subject project has also been compared with the similar lines been installed recently in other distribution/transmission companies. It was found that although those transmission projects were usually completed with certain additional costs compared to their budgets, however, the final costs of those projects were relatively lower than the cost that has been claimed for the subject project by ST&DCPL.

ix. Considering the above discussion, the Authority is of the view that the bidding process has not been carried out effectively by ST&DCPL and there was weak procurement management which the Petitioner has also admitted in its communications referring that the subject line was the first project undertaken by the company. However, it is considered that the problems that were faced by ST&DCPL during the execution of the project especially the increase in line of 10.74 kms and certain right of way issues need to be accounted for.

x. The Authority after deliberations has decided to allow the cost variations in original BOQ items due to additional 10.74 kms of line, i.e. 277.716 million along with the cost of items that were not part of the original BOQs, i.e. Rs. 91.065 million. However, the Authority is of the view that the quantity and corresponding cost of original BOQs for the 85 km line has been arrived through competition; therefore, it would not be justified to allow the claimed variations of Rs. 179.633 million in respect thereof. Resultantly, the total allowed EPC cost works out to be Rs. 1,643.886 million. Following table shows the comparison of the claimed and allowed costs;

Description	Claimed (Million Rs.)	Allowed (Million Rs.)
Within 85 kms	1,503.498	1,323.865
Additional 10.74 kms	320.021	320.021
Total	**1,823.519**	**1,643.886**

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xi. The aforesaid allowed cost comprises of taxes of Rs. 186.178 million claimed by the EPC contractor. Being the part of the EPC bid, this amount has been claimed in the EPC cost for tariff computation. However, the Authority understands that certain taxes included in the claim are of adjustable nature and ST&DCPL should get itself registered with Federal Board of Revenue ("FBR") under applicable laws to enable adjustment of certain taxes. In case there are any unadjusted taxes, the same will be considered on actual at COD upon production of verifiable documentary evidence. Moreover, the variation of USD/PKR parity, if any, on the imported items, shall be allowed at COD on production of authentic documentary evidences to the satisfaction of the Authority.

B. Whether the claimed Non-EPC cost of Rs. 64.30 million is justified?

i. ST&DCPL claimed Rs. 64.30 million under Non-EPC head with the following details;

Heads	Claim (Rs. million)
Fixed Assets	13.5
Security Cost	0.8
Interconnectivity Cost	50
Total	64.30

ii. Fixed assets cost of Rs. 13.5 million has been claimed on account of vehicles (Rs. 12 million), furniture and computers (Rs. 1 million) and miscellaneous (Rs. 0.5 million). The major portion of the Non-EPC cost claim consists of the interconnectivity cost (78%) for which ST&DCPL during the hearing submitted that this cost is tentative and will be finalized as per the tripartite wheeling agreement to be signed between both SNPCLs, ST&DCPL and K-Electric. Explaining the reason for this uncertainty, ST&DCPL submitted that the duties covered under this cost head will be shared by all the four aforementioned entities which shall be allocated upon finalization of the wheeling agreement. The Authority during the hearing mentioned that the connectivity cost is normally borne by the power purchaser and if not then it can be spent by power seller or contractor and is later on adjusted accordingly. Subsequently, ST&DCPL informed that it has been agreed that K-Electric will bear the interconnection cost at KDA-33 Grid and SNPCLs will bear the interconnection cost at Nooriabad site. In view thereof, the Petitioner submitted that this claim may not be considered. The Authority has analyzed the remaining claims and has found them comparable with the costs that have been allowed to other entities, therefore, has decided to allow the same for this project. This allowed amount shall be adjusted at actual, up to the maximum limit of Rs. 14.3 million, upon submission of verifiable documents at the time of COD adjustment.

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C. **Whether the claimed Sindh sales tax of Rs. 50.93 million, Insurance during construction of Rs. 22.55 million, Project development cost of Rs. 20.662 million is justified?**

i. Sindh Sales Tax: The Petitioner claimed Rs. 50.93 million under the head of Sindh Sales Tax on Service ("SSTS"). ST&DCPL submitted that SSTS of 14% on the services part of EPC contract has been claimed in accordance with Sindh Sales Tax on Services Act, 2011. Justifying this claim, ST&DCPL during the hearing submitted that as per BOQs section of the EPC contract, SSTS was not considered, however, it was stated therein that the same will be claimed as per actual. The Petitioner also submitted that the amount of SSTS claimed in the petition was based on services part of bid EPC amount of Rs. 1,275.104 million. Subsequently, since the EPC cost claim was increased to Rs. 1,823.519 million; therefore, the Petitioner revised SSTS claim to Rs. 74.587 million. Reviewing the bidding document, it was noted that the bidders were supposed to include all duties, taxes and other levies in their bid prices. Clarifying this observation, ST&DCPL submitted that SSTS has not been made part of the BOQs by both the bidders while stating that this tax shall be claimed as per actual. Relevant evidences were submitted by the Petitioner in support thereof including the copies of bids received. It has also been noted that on the allowed portion of the EPC cost, the SSTS works out to Rs. 69.423 million. The Authority understands that this tax is of adjustable nature and ST&DCPL should get itself registered with Federal Board of Revenue ("FBR") to adjust its input and output tax. In case there is any unadjusted tax, the same shall be taken into account at the time of COD upon production of verifiable documentary evidence to the satisfaction of the Authority, maximum to the limit of Rs. 69.423 million.

ii. Insurance during Construction: In its tariff petition, ST&DCPL requested for Insurance during Construction at the rate of 1.35 % of the EPC cost which amounts to Rs. 22.55 million. NTDCL also submitted that the insurance during construction is added as 1.35% which is too high and need negotiations. During the hearing, ST&DCPL clarified that pre-commissioning insurance is the responsibility of the EPC contractor, therefore, this claim not to be considered accordingly.

iii. Project Development Cost: ST&DCPL in the tariff petition has claimed Rs. 20.66 million on account of project development cost which comprises of fees to be paid to NEPRA, fees to Consultants, human resource cost and visits to NEPRA headquarters. In the petition and during the hearing, ST&DCPL submitted that the project development cost of Rs. 20.662 million does not include the costs like technical feasibility of the project, electrical and grid interconnection, construction supervision during pre-COD period, environmental protection agency fee and all other domestic and international travelling charges including accommodation during the construction phase etc. as the same are being borne by the EPC Contractor. The Authority has analyzed and decided to allow this cost of ST&DCPL,

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up to the claimed amount, subject to actual cost incurred to be justified through verifiable documents at the time of COD.

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

Cost Components	PKR Million
EPC Cost	1,643.886
Non-EPC Cost	14.300
Project Development Cost	20.662
Total	**1,678.848**

D. Whether the claimed Operation and Maintenance cost is justified? As communicated, does ST&DCPL have the technical expertise, logistics and the finances to carry out O&M by itself?

i. ST&DCPL vide its petition claimed Rs. 213 million per annum on account of O&M costs crediting it as an uncertain cost component for a transmission project. The Petitioner further submitted that the company is in discussions with the contractor for finalization of O&M contract. Later, ST&DCPL vide its letter dated February 18, 2016 submitted that the offers by O&M bidders were considered high in terms of cost; therefore, the company intends to carry out the O&M of the Project itself in order to meet its budgeted O&M cost of Rs. 213 million per annum as claimed in the tariff petition. In response to the captioned issue for the capability of ST&DCPL to carry out O&M of the project, the Petitioner submitted that the company has seasoned professionals who possess vast national and multi-national experience in operation and maintenance of transmission and distribution lines. The Petitioner further submitted that it has devised a comprehensive O&M plan for carrying out the O&M activities. During the hearing, the Petitioner was directed by the Authority to submit their O&M plan which was provided by the Petitioner post hearing.

ii. It has been found stated in the O&M manual that ST&DCPL shall publish separate Notice Inviting Tenders (NIT) for hiring manpower, services-vehicles, staff rental residences/stores, independent environmental consultant for compliance and procurement of personal protective equipment, tools/equipment, consumables and spares for which three different committees have been formed. The breakup of the O&M cost estimated in the said manual is given below;

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Description	Annual O&M Cost (Rs.)
HR Costs	
• ST&DCPL Management	20,400,000
• ST&DCPL Staff	12,380,000
• O&M Staff	57,480,000
Outsourced Vehicles Cost	44,250,000
Rentals	16,080,000
Consumables	8,400,000
Spares and PPE	43,200,000
Compliance	3,300,000
Contingencies (3% of total project cost)	6,202,800
Total	**212,962,800**

iii. It has been stated in the O&M manual that the tabulated above O&M cost shall be finalized subject to approval of NEPRA. Later, ST&DCPL vide its letter dated November 07, 2016 revised its O&M claim from Rs 213 million to around Rs. 190 million.

iv. The O&M cost of ST&DCPL has been analyzed in detail while comparing the same with the expenses incurred on similar nature transmission lines in other entities. Particularly for the cost of O&M staff, it was noted that the cost of ninety two (92) employees had been claimed by ST&DCPL which has been rationalized to thirty two (32) employees based on benchmarking studies; though the salary cost per employee (both staff and management) has been allowed as claimed by ST&DCPL. Similarly, other components have also been analyzed in detail referring the actual data of the projects which have been setup in other companies. In view thereof, the Authority has decided to allow the O&M cost of around Rs. 125 million per year; details of which are tabulated hereunder;

Description	Claimed Cost (PKR)	Allowed (PKR)
Monthly Cost of ST&DCPL Management/ Staff	91,260,000	56,160,000
Monthly Cost of Hired Transport	29,709,480	29,709,480
Rentals	16,080,000	7,548,200
Consumables	8,400,000	4,336,200
Spares & PPEs	43,200,000	20,235,600
Compliance	3,300,000	3,300,000
Grand Total	184,480,968	121,295,480
Contingencies @ 3% of Total O&M Cost	5,534,429	3,638,684
Total O&M Cost (In Millions)	**190,015,397**	**124,934,344**

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v. Against the approved cost, the Petitioner is hereby directed to ensure local employment to the extent possible. The allowed O&M cost shall be allowed annual indexation with respect to Pakistani Consumer Price Index ("CPI") in accordance with the mechanism prescribed in the Order part of this decision.

E. Whether the claimed cost of Insurance Cost during Operation is justified?

i. The Authority has observed that insurance during operation cost of Rs. 23 million per year has been claimed in its tariff petition by ST&DCPL. The Authority has noted that for comparable projects, 1% of the EPC cost has been allowed. For the subject project, 1% of the allowed EPC cost works out to be around Rs. 16.44 million per year. The Authority has decided to allow up to this percentage, subject to adjustment in accordance with the mechanism prescribed below in the Order part of this decision.

F. Whether the proposed construction period of seven (07) months is justified? How shall ST&DCPL ensure timely completion of this transmission line with the generation projects?

i. ST&DCPL during the hearing submitted that due to lack of information at the commencement of the project, the construction period of seven (07) months was requested which, instead, should have been around fifteen (15) months, however, EPC contractor has been communicated to adhere to the completion of the project within (07) months. Responding to the later part of the issue, ST&DCPL submitted that the tentative completion time of SNPCL's generation plants is July, 2016 which is in line with the completion time of ST&DCPL project. NTDCL commented that time period of seven months should not be extended without sufficient justification. Subsequently, the Petitioner vide its letter dated November 07, 2016, submitted that construction period has been extended to December 31, 2016, because of increase in length of transmission line from 85 km to 95 km, construction of M9 Motorway, overlapping of ST&DCPL line with NTDC and K-Electric's transmission lines and modifications made to the tower designs in order to suffice the objections of Malir Development Authority. The Authority observed that completion time of (07) months was specified for the project in the advertised NIT, agreed upon in the EPC contract and committed by the Petitioner during the hearing. The Authority also analyzed the construction period of similar lines in other distribution companies and found that the earlier claimed construction period of seven (07) months is quite reasonable time to be allowed for the completion of this project. In view thereof, the Authority has decided to approve the constriction period of seven months for the computation of tariff for the subject transmission line.

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G. Whether the Tariff Control period of thirty (30) years is justified?

i. ST&DCPL submitted that the Authority awarded transmission license to the Petitioner for a period of thirty years and the same period was used to work out the levelized tariff in the tariff petition. During the hearing, ST&DCPL requested to calculate the levelized tariff of the company for twenty five (25) years. The Petitioner submitted that since the duration of the agreements/contracts to be signed between K-Electric and SNPCLs are for 25 years, therefore, the tariff control period of this project may also be limited to twenty five (25) years. It has been observed that life of the project does not have any consequence on yearly tariff that has to be paid to the project company; however, a longer control period only results in a lower levelized tariff. The Authority observed that the levelized tariff of SNPCLs has been earlier allowed the control period of twenty five years, consistent to their Gas Supply Agreement ("GSA") having an arrangement for 25 years, however, the Authority had also directed SNPCLs to make efforts for the allocation of gas supply beyond the expiry of GSA in order to reap maximum benefits from those projects being established from which ST&DCPL will transmit power. Further, the Authority understands that this line could be used to transmit energy from other sources as well over its life of thirty years. In view thereof, the Authority has decided to compute levelized tariff of the Petitioner based on the control period of thirty years, as stipulated in the license granted to the ST&DCPL.

H. Whether the level of losses that have been taken into account for the calculation of proposed tariff is justified?

i. ST&DCPL, vide its petition, claimed a variable charge of Rs. 0.1492/kWh which has been computed by applying a loss percentage of 3% on the energy cost component of Rs.4.9744/kWh; claimed by SNPCLs in their petition. In support of its claimed loss of 3%, ST&DCPL submitted that the losses assumed in the petition are in line with what has been allowed in NEPRA Guidelines for determination of Consumer End Tariff Methodology and Process, 2015. NTDCL submitted that the Petitioner has proposed 3% losses as a thumb rule whereas these losses are determined during the planning phase while conducting load flow studies, short circuit studies and stability studies on PSSE. Although reportedly load flow and shot circuit were carried out by M/S Siemens but no stability studies were carried out before taking this project in hand which is a serious omission on the part of ST&DCPL. The Authority observed that ST&DCPL has claimed 3% transmission losses taking into account the maximum limit of losses set by NEPRA for the whole system network for transmission. After analysis, the Authority believes that that the project under consideration is a 132 kV dedicated transmission line comprising of Aluminum Conductor Steel Reinforcement ("ACSR") Rail Conductor

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for which level of technical losses should reasonably be in the range of 0.8-1%. In view thereof, the Authority has decided to cap the loss threshold for ST&DCPL at 1%.

I. Whether the proposed interconnection arrangement is justified?

i. ST&DCPL has submitted that the inter-connection scheme has been agreed with K-Electric and is part of Power Purchase Agreement (PPA) to be signed between SNPCLs and K-Electric. The Authority has observed that K-Electric in its PAR to purchase power from SNPCLs had submitted that ST&DCPL will lay out a transmission line to transfer power from SNPCLs interconnection point to K-Electric KDA-33 grid station. K-Electric also submitted that ST&DCPL shall enter into a wheeling agreement with SNPCLs, also having K-Electric as signatory; defining therein, inter alia, the rights and obligations of the parties. As per the referred wheeling agreement, ST&DCPL shall invoice SNPCL for its determined tariff and then SNPCL shall invoice K-Electric both for its generation tariff and transmission tariff of ST&DCPL. It has been noted that the Authority vide its decision dated June 01, 2016 in the matter of aforesaid PAR had allowed the proposed arrangement 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.

J. Whether the proposed two part tariff comprising of Energy purchase price and Capacity purchase price for an infrastructure development project is justified?

i. Responding this issue, ST&DCPL submitted that it is only claiming Capacity Purchase Price to meet its revenue requirements. The variable or energy charge is being claimed on account of the line losses which will incur during the transmission of power from the power plants to K-Electric Grid station. It has been observed that the tariff for NTDCL is determined by the Authority in the same lines, i.e. ensuring its fixed payment (monthly/annually), independent of power/energy transmitted by the company. In view thereof, the Authority hereby allows ST&DCPL to charge the determined tariff as fixed payments.

ii. Regarding the losses component, this figure represents the cost of energy lost during the transmission process. This component is calculated by applying the allowed losses percentage on the variable cost component of the generation companies. With the same target of losses, loss component changes due to change in the variable component of the generation companies. The Authority has observed that the component of transmission losses is

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY NEPRA AUTHORITY included in the NTDCL's tariff as it has agreements with the power producers and DISCOs for purchase and sale of power respectively. Had there been direct agreements between the generation companies and DISCOs, the transmission loss component would have been part of the invoices raised by generation companies. As discussed above, as per the tripartite wheeling agreement, K-Electric shall be paying the regulated generation tariff of SNPCLs as well as the determined transmission tariff of the Petitioner to SNPCLs and then the generation companies shall pay the share of transmission tariff to ST&DCPL. Due to this proposed contractual arrangement, the Authority understands that ST&DCPL's tariff should only include wheeling capacity charge covering its investments, the allowed cost of finances, operations & maintenance cost and insurance. To account for the cost of lost energy, SNPCLs shall invoice to K-Electric its determined/adjusted variable component while taking into account the impact of transmission losses which have been allowed to ST&DCPL. During any month, if the transmission losses are found to be less than the set target of 1% then the energy charge component of each generation source shall be adjusted based on actual losses. However, for the transmission loss of more than 1% in any month, the variable charge of the generation companies shall be invoiced using 1% transmission target loss and the adjustments shall be made in the ST&DCPL's applicable tariff. For that purpose, recorded energy numbers both at billing meter installed at the premises of SNPCLs/Other Generation Source(s) and at K-Electric's Grid Station shall be shown in the invoices raised to K-Electric.

K. Whether the proposed availability factor is justified?

i. ST&DCPL submitted that in its tariff petition, it has assumed the availability of its transmission line of 100% on ideal conditions, however, requested the Authority to work out the tariff based on availability factor of 98%. The Authority observed that as per internationally accepted practices, a margin of 1.5% on account of schedule and forced outages is acceptable and the same is thus appropriate to be allowed to ST&DCPL.

L. What is the basis and justification of the claimed Return on Equity (IRR Based) of 20%?

i. ST&DCPL submitted that since this project is GOS's first ever energy sector project, therefore, IRR of 20% has been claimed with USD/PKR indexation for the claimed component. The Petitioner submitted that the higher earnings shall make the project company self-sufficient to finance other similar projects in the near future and shall also make it financially stable for attracting funds from foreign investors in the power transmission. In view of the claimed IRR, the Petitioner was asked to confirm the source of equity on which return is being sought, i.e. whether the GOS has

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secured some loan or has funded the project out of its development funds. In response, ST&DCPL has submitted a letter issued by GOS on September 15, 2016 stating that the financing structure is for the total cost of this GOS funded project, to be realized at the time of COD, may be treated as 70% debt and 30% equity. Debt financing may be treated at a variable interest rate of KIBOR + 3% repayable within 10 years from COD. It has also been noted that for the debt portion for the project, ST&DCPL in its petition had claimed the cost at the rate of KIBOR + 3% stating that the interest rate has been assumed to be fixed throughout the term of the loan, therefore, no adjustment will be claimed for the variation in the rate of KIBOR. Later, the Petitioner vide its letter dated June 10, 2016 submitted that since KIBOR is fluctuating rate so the adjustment of KIBOR may be allowed.

ii. As stated above, the project is completely funded by GOS, therefore, the Authority observed that the tariff has to be set at optimal project financing debt : equity structure, keeping in view rationale returns given on equity portion and reasonable cost allowed for debt component. In view thereof, the Authority has decided to compute the tariff based on debt : equity ratio of 80 : 20. Regarding the claimed return on equity, the Authority noted that the return of any project should be linked with its risk profile. As prescribed in its framework, the Authority generally determines the returns based on the precedents of the comparable projects. It has also been observed that for transmission projects, the returns are mostly associated with distribution business than generation projects. For the instant project, the Authority observed that the equity returns being allowed to NTDCL/DISCOs is the close reference. Referring the returns that have been allowed over the last few years to NTDCL/DISCOs, the Authority has decided to allow the return on equity at 15% on IRR basis. Similar exercise was also carried out for the cost of debt and the Authority has decided to allow cost of debt at the rate of six month KIBOR + 2.75%. Accordingly, based on the allowed construction period and spread at six month KIBOR rate of 6.12%, the amount of Interest during Construction works out to be Rs. 34.895 million which is hereby approved by the Authority. This amount shall be adjusted at COD based on actual KIBOR rate and related evidence submitted to the satisfaction of the Authority.

M. Whether the proposed pass through of withholding tax on dividend is justified?

i. ST&DCPL submitted that according to the provision in the Finance Act, 2015, withholding tax rate of 12.5% on dividends of the company may be allowed as a pass through item. The Authority has observed that it has principally decided not to allow this item and the similar treatment was made in the tariff decisions of SNPCLs and other generation and transmission projects. In view thereof, the Authority has decided not to allow withholding tax on divided as a pass through item.

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N. Whether the claimed working capital component is justified?

i. ST&DCPL claimed Rs. 60 million/year on account of working capital cost to cover the time lag between the payments and receipts. ST&DCPL submitted that annual working capital requirement has been worked out by applying certain percentage on the revenue flows of debt, equity, insurance and O&M. The Authority observed that the issue of timely receipts and payments should be addressed through appropriate arrangements in the commercial contracts. The Authority further observed that this claim has been disallowed in the tariff decisions of SNPCLs also. In view thereof, the Authority has decided that there is no justified basis to allow this claim of the Petitioner.

O. Whether the proposed indexations/adjustments are justified?

i. The Petitioner submitted that the purpose of claiming indexation is to remove any exposure of investors to uncontrollable cost escalations over the life of the Project. Below are some of those which should be passed through to power purchaser:

- Indexation with respect to O&M: ST&DCPL had claimed the variations on account of USD/PKR variations and inflation. The Petitioner has submitted that merely around 3-4% of the O&M cost comprises of the foreign component. In view thereof, the Authority has decided to allow indexation on O&M indexation with respect to Pakistan CPI on yearly basis.

- Indexation with respect to Insurance: The Petitioner has requested for the adjustment of insurance component with respect to the USD/PKR and US CPI. The Authority has considered this claim of the Petitioner and has decided to allow the variations being allowed in the comparable projects.

- Adjustment of IRR: The Petitioner had claimed the variations of USD/PKR on the ROE component of tariff. The Authority has noted that similar projects are being given local currency returns. It was also considered that the complete financing has also been done through GOS funds. In view thereof, the Authority has decided not to allow the claimed PKR/USD variations on this component

- Indexation with respect to KIBOR: The Petitioner vide its letter dated June 10, 2016 submitted that since KIBOR is fluctuating rate so the adjustment of KIBOR may be allowed. The Authority has considered this claim and decided to allow six months variations of KIBOR in the tariff.

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P. Whether the shortest possible and the most economically feasible route has been followed in laying the transmission line and whether the Right Of Way (ROW) has been acquired?

i. ST&DCPL submitted that at the start, the project was expected to attain shortest possible and most economically feasible route which was calculated to be at 85Kms. However, various issues in the Right Of Way (ROW) due to construction of M-9 Motorway, Bahria Town etc. were experienced. Resultantly, the route of the line was changed which has resulted in an increase in the length of the line to around 96 kms. For the later part of the issue, the Petitioner has submitted that now almost complete ROW has been acquired. The Authority has considered the response of ST&DCPL and found it acceptable.

Q. What is the basis of selection of tower design? Whether the power purchaser (K-Electric) has approved the design of towers?

i. The Petitioner submitted that the project shall comprise of installation of 500 Lattice Steel towers to support conductor wires. ST&DCPL submitted that it has adopted the design standards followed by NTDCL & WAPDA for their 132 KV transmission lines. Regarding the later part of the issue, ST&DCPL submitted that K-Electric has already signed/initialed agreement with SNPCLs with the understanding that the line has followed design specifications of NTDCL. Since no objection was raised by K-Electric on this matter, hence, the Authority understands that the parties after considering the matter have agreed over the design of the project. NTDCL in this regard submitted that from safety point of view, ST&DCPL should have different color on their towers in order to distinguish from HESCO/NTDCL system. The Petitioner responded that as per best engineering practices, all design is optimized after careful consideration of parametric costs. However, to distinguish the transmission line of the Petitioner with other lines, a name plate of ST&DCPL for each tower is already in our design.

R. What is the plan of adding another 100 MW project?

The Authority observed that in the bidding documents, it was stated that the subject line shall be used to transmit 200 MW of electric power. On inquiry, the Petitioner vide its letter dated August 26, 2016 informed that the GOS has decided to raise the capacity of SNPCL to 200 MW by adding another power generating unit of 100 MW in due course of time which shall be transmitted on the subject line. The Authority has considered the aforesaid response of ST&DCPL and is of the view that the early installation of that additional plant shall not only ensure the optimum utilization of this transmission line but also reduce the fixed transmission charges per unit being allowed in this decision. In this regard, the Authority hereby directs the Petitioner to coordinate with the relevant agencies and GOS

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and submit a timeline of setting up referred further generation sources from which power will be transmitted through this transmission line. However, the essential contingency requirements should be considered for doing so.

9. **<u>ORDER</u>:** The Authority hereby determines and approves following reference transmission tariff under section 7 read with section 31(4) of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 and Rule 16 of NEPRA Tariff (Standards and Procedures) Rules, 1998 in the matter of tariff petition filed by ST&DCPL for its 95.74 kms, 132 kV transmission line project;

(Rs./kW/hour)

Tariff Components	Year 1-10	Year 11-30	Levelized (1-30)
O&M	0.1404	0.1404	0.1404
Insurance	0.0185	0.0185	0.0185
Debt Service	0.2355	-	0.1535
Return on Equity	0.0603	0.0603	0.0603
Total Tariff	**0.4547**	**0.2191**	**0.3727**

- The tariff has been calculated on the basis of Build Own and Operate (BOO) basis.
- The cumulative capacity of 101.59 MW of SNPCLs has been used to work out the above tabulated tariff. Upon introduction of new capacity, the tariff components shall be modified upon filing of tariff modification petition by ST&DCPL. However, the tariff amount in absolute terms shall not be changed except because of the adjustment allowed in this determination.
- Tariff shall be charged as fixed payments.
- The aforementioned tariff is applicable for thirty (30) years commencing from the date of COD.
- The reference tariff is based on availability factor of 100% with 1.5% non-penalized maintenance outages.
- Debt Service shall be paid in the first 10 years of commercial operation of the project.
- Debt Repayment Schedule has been worked out using six months KIBOR (6.12%) + spread (2.75%).
- Debt to Equity ratio has been assumed to be 80:20.
- Discount factor of 10% has been used to compute the levelized tariff.
- Return on Equity during construction and operation of 15% has been allowed.
- Construction period of seven (07) 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.

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- Exchange Rates of 102 PKR/USD has been used.
- 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 USD/PKR parity, if any, on production of authentic documentary evidences to the satisfaction of the Authority.
- Taxes of un-adjustable nature on equipment will be considered on actual at COD upon production of verifiable documentary evidence. Any taxes unadjusted in this regards will be considered at the time of COD upon production of relevant grounds.
- Un-adjusted SSTS, will be considered on actual at COD upon production of verifiable documentary evidence.
- Taxes paid in the course of transmission business, not being of refundable nature, imposed on ST&DCPL up to COD will be adjusted at actual on 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.
- 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 seven months allowed by the Authority.

B. INDEXATIONS

i) **Operation and Maintenance Costs:** O&M cost of tariff shall be adjusted on account of local Inflation (CPI) on yearly basis. For the purpose of this adjustment, the CPI notified by the Pakistan Bureau of Statistics (PBS) for the month preceding the month of COD shall be used which shall become the reference for future adjustments. The adjustments shall be made using the tabulated below formula;

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$O\&M_{(REV)}$	=	$O\&M_{(REF)} * CPI_{(REV)} / CPI_{(REF)}$
Where:		
$O\&M_{(REV)}$	=	The revised Fixed O&M Component of Tariff
$O\&M_{(REF)}$	=	The reference Fixed O&M Component of Tariff
$CPI_{(REV)}$	=	The revised CPI (General)
$CPI_{(REF)}$	=	The reference CPI (General) of 203.28 for the month of March 2016

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

ii) **Insurance during Operation**

The actual insurance cost, not exceeding 1% of the allowed EPC cost, has been included in the reference tariff. Insurance cost shall be adjusted annually as per actual, upon production of authentic documentary evidence by the Petitioner in accordance with the mechanism tabulated below;

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 PKR. 102/USD
$P_{(Act)}$	=	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

iii) **Variations in KIBOR:** The interest 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	=	$P_{(REV)} * (KIBOR_{(REV)} - 6.12\%) / 2$
Where		
ΔI	=	The variation in interest charges applicable corresponding to variation in 6 months KIBOR. ΔI can be positive or negative depending upon whether 6 months $KIBOR_{(REV)}$ per annum > or < 6.12%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each period under adjustment.
$P_{(REV)}$	=	The outstanding principal (as indicated in the attached debt service schedule to this order), at the relevant calculations date. Period 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 period after commercial operations date).
$KIBOR_{(REV)}$	=	Revised 6 months KIBOR as at the last day for the months of December and June.

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C. DIRECTIONS OF THE AUTHORITY

i. ST&DCPL should ensure to effectively and efficiently manage this transmission line.

ii. Both, technical and financial stability of the ST&DCPL should be duly ensured by the stakeholders.

iii. Compliance should be ensured with grid code and NEPRA Performance Standards (Transmission) Rules, 2005.

iv. Wheeling Agreement must be consistent with the provisions of this determination and the SPTL granted by NEPRA.

v. Any payment by K-Electric inconsistent with this determination will not be recognized as allowed cost in K-Electric's tariff adjustment request submitted to NEPRA.

vi. Minimum losses should be ensured endeavoring it to be less than allowed 1%. A comprehensive mechanism for penalties in case of failure to achieve the targeted losses to be clearly incorporated in the Wheeling Agreement, consistent to broad parameters referred in this determination.

D. GENERAL CONDITIONS

i. The wheeling agreement should clearly set out related terms and conditions including financial, technical and performance specifications.

ii. General assumptions, which are not covered in this decision, may be dealt with as per the standard terms of the wheeling agreement.

10. 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.

AUTHORITY

9/2/17
(Maj. (R) Haroon Rashid)
Member

3.2.17
(Himayat Ullah Khan)
Member

(Syed Masood ul Hassan Naqvi) 9/2
Member

(Brig. (R) Tariq Saddozai)
Chairman

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Annex-I

REFERENCE TARIFF TABLE

Year	O&M	Insurance	ROE	Debt Servicing	Total
	Rs/kW/hour	Rs/kW/hour	Rs/kW/hour	Rs/kW/hour	Rs/kW/hour
1	0.1404	0.0185	0.0603	0.2355	0.4547
2	0.1404	0.0185	0.0603	0.2355	0.4547
3	0.1404	0.0185	0.0603	0.2355	0.4547
4	0.1404	0.0185	0.0603	0.2355	0.4547
5	0.1404	0.0185	0.0603	0.2355	0.4547
6	0.1404	0.0185	0.0603	0.2355	0.4547
7	0.1404	0.0185	0.0603	0.2355	0.4547
8	0.1404	0.0185	0.0603	0.2355	0.4547
9	0.1404	0.0185	0.0603	0.2355	0.4547
10	0.1404	0.0185	0.0603	0.2355	0.4547
11	0.1404	0.0185	0.0603	-	0.2191
12	0.1404	0.0185	0.0603	-	0.2191
13	0.1404	0.0185	0.0603	-	0.2191
14	0.1404	0.0185	0.0603	-	0.2191
15	0.1404	0.0185	0.0603	-	0.2191
16	0.1404	0.0185	0.0603	-	0.2191
17	0.1404	0.0185	0.0603	-	0.2191
18	0.1404	0.0185	0.0603	-	0.2191
19	0.1404	0.0185	0.0603	-	0.2191
20	0.1404	0.0185	0.0603	-	0.2191
21	0.1404	0.0185	0.0603	-	0.2191
22	0.1404	0.0185	0.0603	-	0.2191
23	0.1404	0.0185	0.0603	-	0.2191
24	0.1404	0.0185	0.0603	-	0.2191
25	0.1404	0.0185	0.0603	-	0.2191
26	0.1404	0.0185	0.0603	-	0.2191
27	0.1404	0.0185	0.0603	-	0.2191
28	0.1404	0.0185	0.0603	-	0.2191
29	0.1404	0.0185	0.0603	-	0.2191
30	0.1404	0.0185	0.0603	-	0.2191
Levelized (1-30) in PKR	0.1404	0.0185	0.0603	0.1535	0.3727

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DEBT SERVICING SCHEDULE

Capacity	101.59
KIBOR	6.12%
Spread Over KIBOR	2.75%
Total Interest Rate	8.87%

Periods	Base Amount (Rs.)	Interest (Rs.)	Principal Repayment (Rs.)	Balance Principal (Rs.)	Annual Principal Component (Rs/kW/hour)	Annual Interest Component (Rs/kW/hour)
1	1,371,027,145	60,805,054	44,001,419	1,327,025,726	0.1011	0.1345
2	1,327,025,726	58,853,591	45,952,882	1,281,072,843		
3	1,281,072,843	56,815,581	47,990,893	1,233,081,951	0.1102	0.1253
4	1,233,081,951	54,687,185	50,119,289	1,182,962,662		
5	1,182,962,662	52,464,394	52,342,079	1,130,620,583	0.1202	0.1153
6	1,130,620,583	50,143,023	54,663,450	1,075,957,133		
7	1,075,957,133	47,718,699	57,087,774	1,018,869,358	0.1311	0.1044
8	1,018,869,358	45,186,856	59,619,617	959,249,741		
9	959,249,741	42,542,726	62,263,747	896,985,994	0.1430	0.0925
10	896,985,994	39,781,329	65,025,144	831,960,849		
11	831,960,849	36,897,464	67,909,010	764,051,840	0.1560	0.0795
12	764,051,840	33,885,699	70,920,774	693,131,066		
13	693,131,066	30,740,363	74,066,110	619,064,955	0.1701	0.0654
14	619,064,955	27,455,531	77,350,942	541,714,013		
15	541,714,013	24,025,016	80,781,457	460,932,556	0.1856	0.0500
16	460,932,556	20,442,359	84,364,114	376,568,442		
17	376,568,442	16,700,810	88,105,663	288,462,779	0.2024	0.0331
18	288,462,779	12,793,324	92,013,149	196,449,630		
19	196,449,630	8,712,541	96,093,932	100,355,698	0.2207	0.0148
20	100,355,698	4,450,775	100,355,698	0		

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