



National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/TRF-351/PPIB-2016/4316-4318
March 16, 2018

Subject: Decision of the Authority in the matter of Modification of the Transmission Tariff/Transmission Service Charge (TSC) dated November 24, 2016 in the matter of Matiari Lahore 4,000 MW ± 660 KV HVDC Transmission Line Project [Case # NEPRA/TRF-351/PPIB-2016]

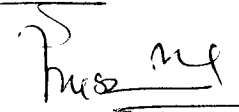
Dear Sir,

Please find enclosed herewith the subject Decision of the Authority along with Annex-I and Annex-II (15 pages) in Case No. NEPRA/TRF-351/PPIB-2016.

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 (XL of 1997).

3. Order of the Authority along with Reference Tariff Table (Annex-I) and Debt Servicing Schedule (Annex-II) of the Decision need to be notified in the official Gazette.

Enclosure: As above


16 3 18
(Syed Safer Hussain)

Secretary
Ministry of Energy
'A' Block, Pak Secretariat
Islamabad

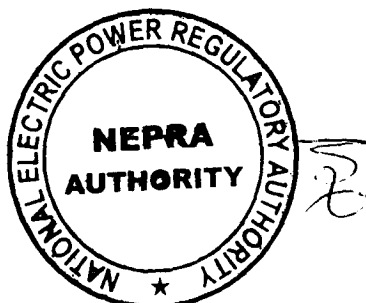
CC:

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

**DECISION OF THE AUTHORITY IN THE MATTER OF MODIFICATION OF THE TRANSMISSION TARIFF /
TRANSMISSION SERVICE CHARGE (TSC) DATED NOV 24, 2016 IN THE MATTER OF MATIARI LAHORE
4,000 MW ± 660 KV HVDC TRANSMISSION LINE PROJECT**

Background:

1. Private Power Infrastructure Board (PPIB) being the one window facilitator filed Petition with NEPRA for tariff determination for ±660kV, 4,000 MW Matiari-Lahore Transmission Line Project. In pursuance of NEPRA Tariff (Standards & Procedure) Rules, 1998 ("Tariff Rules"), NEPRA issued Tariff Determination for the project on Aug 18, 2016. Subsequently the Authority issued the decision on Nov 24, 2016 based on the Review Motion filed by PPIB. In accordance with the clause 10 VI (a) of the Authority's referred decision dated Nov 24, 2016, the Project Company, upon issuance of Letter of Intent (LOI) / Letter of Support (LOS) by the relevant agency (PPIB), had to approach NEPRA for the grant of Special Purpose Transmission License (SPTL) along with a request for the acceptance of aforementioned tariff awarded against the tariff petition filed by PPIB for this Project.
2. Accordingly, Pak Matiari Transmission Company (hereinafter "PMTC") after acquiring LOI on Mar 31, 2017 from PPIB, submitted an application on Apr 07, 2017 with Authority, for unconditional acceptance of the transmission tariff determined for ±660 kV 4000 MW, Matiari-Lahore Transmission Line Project. Considering the application and related information/documents in accordance with the NEPRA's tariff determination for the Project, the Authority vide its decision dated May 04, 2017 granted aforementioned Tariff for this transmission line to PMTC.
3. Later PMTC vide its letter dated Jan 15, 2018 submitted the petition under Rule 3(1) of NEPRA Tariff Rules 1998 for modification of the tariff determination dated May 4, 2017 in the matter of Matiari-Lahore ±660KV 4,000 MW, HVDC transmission line. The grounds submitted by PMTC referred to certain developments and requirements for the operations and Maintenance functions for this first HVDC Transmission Line of the country. The petitioner requested following modifications:
 - i. Re-allocation of O&M cost US\$ 3 Million annually from NTDC O&M component to O&M of the project company (local) as mutually agreed between NTDC and the Project Company;
 - ii. Re-allocation to be limited to O&M cost under local component;
 - iii. Total O&M cost allowed to both NTDC & PMTC under the tariff determination will remain unchanged without any additional indexation implication; thus the overall tariff allowed will not be affected.
4. The petitioner submitted to the Authority for reallocation of the O&M cost component and modification of the tariff determination as the requested reallocation will not cause any change to the overall O&M cost. However, the modification will result in the reduction of the NTDC local component by US\$ 3 Million with corresponding increase in PMTC's local component with same amount of US\$ 3 Million. The Petitioner also submitted that the O&M agreement will be signed by NTDC directly instead of a subsidiary of NTDC.



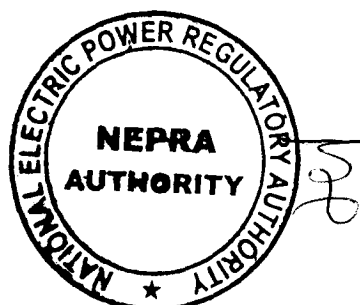
5. Since PPIB being the one window facilitator had earlier submitted the original tariff petition for this project for determination of tariff and decision was issued on Aug 18, 2016 & Nov 24, 2016, therefore the views were sought vide letter dated Feb 02, 2018 from PPIB. In the hearing also, on query from the Authority, the representative of PPIB gave its consent and later through their letter dated Feb 23, 2018 submitted that;

"PPIB supports NTDC's recommendations of re-allocation of O&M cost from NTDC local to O&M ITC local for upto USD 3 million annually to the project company without change in the overall tariff of the project. This may help to achieve successful and timely completion of the HVDC transmission line project in order to avoid any potential loss to NTDC / CPPA-G due to the delay in commissioning"

6. Likewise the Authority also sought views from National Transmission & Despatch Company Limited (NTDCL) through letter dated Feb 02, 2018. NTDCL during the hearing expressed that they support the re-allocation from NTDCL local component for Operation and Maintenance to the Project Company. The same was also confirmed by their letter dated Feb 09, 2018, which reads as under:

"NTDCL supports the modification in decision dated May 04, 2017 & original decision dated Nov 24, 2016 and also agrees for the re-allocation of US\$ 3 million in O&M local component as proposed by PMTC under Rule 3 of the NEPRA (Tariff Standards & Procedures) Rule – 1998 for modification of the tariff determination dated May 04, 2017 in the matter of Matiari-Lahore 4,000 MW, ±660 KV HVDC transmission line project by PMTC."

7. The Authority through its decision dated Mar 09, 2018 has approved the aforementioned Tariff modification. Under this tariff modification, the reallocation of US\$ 3 million will not change the annual overall O&M amount already determined by the Authority and resultantly will have no impact on overall transmission tariff approved for this HVDC Transmission Line project. The Authority also gave due consideration to the fact that NTDCL has confirmed that such re-allocation will not impact their ability to perform their obligations for this transmission line. Likewise, it has also been justified in this tariff modification request that Project Company will be responsible for any defects due to design, manufacture and installation.
8. The Authority also observed that there is no exchange rate implication for this tariff modification since change of equal amount is from a local component to another local component within the overall head of annual O&M cost already allowed. Through this arrangement both PMTC and NTDCL aim to address the operational and maintenance functions for this first HVDC transmission line of the Country. Accordingly, the Authority allowed re-allocation of US\$ 3 million from NTDCL local component to PMTC local component.
9. Since PMTC had earlier applied and was allowed the adoption of the original tariff determination through decision dated May 04, 2017, therefore in addition to modification of the decision dated March 09, 2018, the modification to the same in decision dated Nov 24, 2016 has to be also made. Accordingly through instant decision, the Authority also modifies the decision dated Nov 24, 2016 to the extent of the allocation of US\$ 3 million from O&M NTDCL local component to O & M Project Company local component.

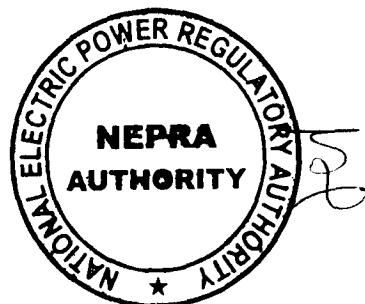


10. **ORDER**

In accordance with the provision of Section 7 read with Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby modifies the approved reference Transmission Tariff/Transmission Service Charge (TSC) vide decision dated Nov 24, 2016 in the matter of Tariff Petition filed by the Private Power & Infrastructure Board (PPIB) for \pm 660kv 4000 MW HVDC Matiari-Lahore Transmission Line Project;

| Tariff Components | Year 1-10 Rs/kW/h | Year 11-25 Rs/kW/h | Indexation |
|--------------------------------------|----------------------|-----------------------|--|
| O&M-ITC: | | | |
| Foreign | 0.0441 | 0.0441 | PKR/US\$, US CPI |
| Local | 0.0323 | 0.0323 | CPI – General |
| NTDCL-O & M Local | 0.0411 | 0.0411 | CPI – General |
| Land Lease | 0.0073 | 0.0073 | As per actual |
| Insurance | 0.0410 | 0.0410 | Annually as per actual up to 1% of EPC Cost, PKR/US\$ |
| Sinosure Fee | As per Annex-I | | As per actual upto 0.60% of the (outstanding debt at the start of the year plus expected interest payment during the year) |
| Debt service | 0.5239 | - | LIBOR, PKR/US\$ |
| Return on equity | 0.1684 | 0.1860 | PKR/US\$ |
| Return on equity during construction | 0.0388 | 0.0388 | PKR/US\$ |

- i. The reference TSC is based on 98.5% availability with 1.5% annual non-penalized maintenance outages.
- ii. The reference PKR/Dollar rate has been assumed at Rs. 104.40
- iii. The above Tariff is applicable to the PMTC as per the LOS by PPIB and as per the acceptance by the Project Company for a period of twenty (25) years commencing from the date of the COD.
- iv. Sinosure Fee on outstanding balance of Debt and interest at gross rate of 0.60% has been allowed for each applicable year as indicated in the reference tariff table attached herewith as Annex-II.
- v. The Tariff is calculated on the basis of Build Own Operate and Transfer (BOOT) basis. The Project will be transferred to NTDCL upon the expiry of the term of the TSA signed between NTDCL and Project Company (ITC).
- vi. All invoicing and payment terms are assumed to be in accordance with the TSA which will be signed between NTDCL and ITC not inconsistent with the instant determination.
- vii. Redemption of equity has been allowed after 10 years of commercial operations of the Transmission Line.
- viii. The payment will be made to ITC in Pak Rupee as per the below mentioned formula:



Payment = Capacity * No of hours in a year * Rate in Rs/kW/hr

Where;

Capacity = The contracted capacity as agreed in TSA

No of hours in a year = 8,760

- ix. The Project Company should maximize engaging of local resources for the project.
- x. The component wise tariff is indicated at Annex-I.
- xi. Debt Servicing Schedule is attached as Annex-II.

The following indexations shall be applicable to the reference tariff;

I. **One Time Adjustments**

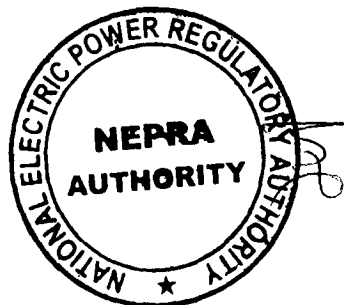
- a) The transmission line cost components will be adjusted at the time of COD, the rates/price is fixed for every component whereas the actual quantities verified by NTDC/Independent Engineer/Owner's Engineer will be considered for COD adjustment as per the mechanism given below;

i) **Tower Material Cost:**

| Type of Tower | Height of Tower | Weight of Tower (Ton) | No of Towers | Total weight of tower (ton) | US \$/ Ton | Total Tower Material Cost |
|--|-----------------|-----------------------|---------------|-----------------------------|---------------|---------------------------|
| 1 | 2 | 3 | 4 | 5=2*3*4 | 6 | 7=5*6 |
| Basis of Adjustment at COD | | | | | | |
| ZP1,ZP2,ZPT,JP1,JP2,JP3 and Electrode Line Tower | As per actual | As per actual | As per actual | To be Calculated | (Fixed) 1,050 | To be Calculated |

ii) **Conductor Cost:**

| Type of Conductor | Length (kM) | Weight of Conductor (Ton/kM) | Total Weight/Ton | USD per Ton | Conductor Cost |
|--|---------------|------------------------------|------------------|--|------------------|
| 1 | 2 | 3 | 4=2*3 | 5 | 6=5*4 |
| ACSR 1250 conductor JL1/G3A-1250/70, ACSR 630 Conductor JNRLH1/G1A-630/45, Ground Wire GJ-80 & AAAC Conductor JL1/LHA1-800/550 | As per actual | As per actual | To be Calculated | (Fixed) 2,600 for ACSR & ground wire, 3,050 for AAAC | To be Calculated |



iii) **Civil Works:**

| Tower Type | Average volume of tower foundation (m ³) | Quantity of tower | Total volume (m ³ of tower foundation) | US \$/ m ³ | Condu. Co: |
|--|--|-------------------|---|-----------------------|------------------|
| 1 | 2 | 3 | 4=2*3 | 5 | 6=4 |
| ZP1,ZP2,ZPT,JP1,JP2,JP3 and Electrode Line Tower | As per actual | As per actual | To be calculated | Fixed 440 | To be calculated |

iv) **Tower Erection:**

| Type of Tower | Weight of Tower (Ton) | No of Towers | Total weight of tower (ton) | US \$/ Ton | Total Tower Material Cost |
|--|-----------------------|---------------|-----------------------------|------------|---------------------------|
| 1 | 2 | 3 | 4=2*3 | 5 | 6=4*5 |
| ZP1,ZP2,ZPT,JP1,JP2,JP3 and Electrode Line Tower | As per Actual | As per Actual | To be Calculated | Fixed 220 | To be Calculated |

v) **Stringing Cost:**

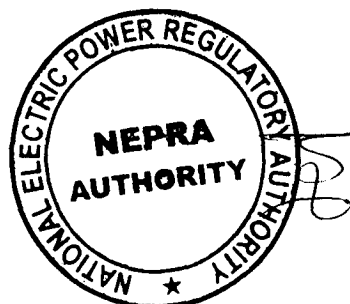
| Length of line | US \$/ Km | Total Tower Material Cost |
|----------------|--------------|---------------------------|
| 1 | 2 | 3=1*2 |
| As per Actual | Fixed 20,000 | To be Calculated |

vi) **Insulator Cost:**

| Type of insulator | Quantity | Per Unit Cost (USD) | Total Cost (USD) |
|------------------------------|---------------|---------------------|------------------|
| HVDC T/Lines | 1 | 2 | 3=1*2 |
| Composite Insulators (Set) | As per actual | (Fixed) 397 | To be Calculated |
| Porcelain Insulators (Piece) | | (Fixed) 70 | |
| Electrode T/Lines | | | |
| Porcelain Insulators (Piece) | | (Fixed) 70 | |

Note:

The above required actual data for COD adjustment must be verified by Independent Engineer/Owner Engineer to be appointed by NTDC, for techno-economic optimized design.



vii) **Total Transmission Line Cost:**

The total transmission line cost will be work out at COD as tabulated:

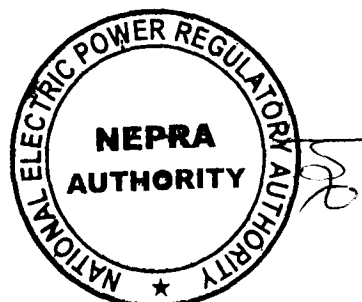
| Sr.No | Description | Price US \$ |
|--------|---|--|
| i. | Tower Material | To be adjusted as per actual quantities |
| ii. | Conductor | |
| iii. | Foundation | |
| iv. | Tower Erection | |
| v. | Stringing | |
| vi. | Insulator | |
| vii. | OPGW | 5.47 % of conductor cost |
| viii. | Hardware | 15.41 % of tower material cost |
| ix. | Grounding Material | 2.16 % of tower material cost |
| x. | Relay Station | US \$ 3,663,217 (Fixed) |
| xi. | OPGW connection | US \$ 301,471 (Fixed) |
| xii. | Total equipment and machinery cost | ***** |
| xiii. | Spare Parts (warranty Period) | 1.42% total equipment and machinery cost |
| xiv. | Design and Engineering | 3.65% total equipment and machinery cost |
| xv. | Mobilization | 8.10% total equipment and machinery cost |
| xvi. | Transportation and custom clearance | 5.85% total equipment and machinery cost |
| xvii. | Project Management Cost | 1.79% total equipment and machinery cost |
| xviii. | Supervision for construction and installation | 1.73% total equipment and machinery cost |

| Sr.No | Description | Price US \$ |
|-------|------------------------|---|
| xix. | Security Coverage Cost | US \$ 9,895,358 (Fixed), cost for deployment of security forces including rangers will be allowed as per actual, subject to submission of documentary evidences to the satisfaction of the Authority at the time of COD |

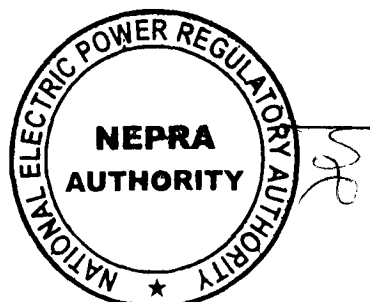
Note:

The above required actual data for COD adjustment must be verified by Independent Engineer/Owner Engineer to be appointed by NTDC, for techno-economic optimized design.

- b) Duties and/or taxes, not being of refundable nature, directly imposed on ITC up to the commencement of its commercial operations for the import of its machinery and equipment for the construction of converter station and transmission line will be subject to adjustment at actual on COD, upon production of verifiable documentary evidence to the satisfaction of the Authority



- c) No withholding tax on contractors has been assumed, however actual expenditure on this account will be allowed at the time of COD on the basis of verifiable documentary evidences.
- d) Security cost only to the extent of deployment of security forces including rangers will be allowed as per actual, subject to submission of documentary evidences to the satisfaction of the Authority at the time of COD.
- e) NTDCL development cost which includes right of way compensation, land lease cost and cost of site survey, load flow studies and environmental studies will be adjusted on the basis of actual up to maximum limit of US \$ 12 Million as allowed by the Authority on verifiable documentary evidence at COD. The cost specific to this project will not be admissible to be claimed by NTDCL in any other tariff petition submitted to the Authority.
- f) Insurance during construction will be adjusted as per actual, subject to maximum limit of 1% of the adjusted and approved EPC cost, on production of authentic documentary evidence at the time of COD tariff adjustment.
- g) Financial charges will be adjusted at COD on the basis of actual, up to a maximum of 3% of the total debt allowed (excluding the impact of interest during construction, Sinosure fees and financial charges), on production of authentic documentary evidence.
- h) Sinosure Fee, applicable on debt and accrued interest thereon (IDC) during the project construction period will be adjusted at COD on the basis of actual subject to the maximum allowed limit and payments terms as approved by the Authority, on account of variation in PKR/US\$ exchange rate during the project construction period, based on documentary evidence to be provided by PMTC.
- i) If ITC is required to make payment of Withholding Tax on Overseas Investment Insurance Fee (Sinosure Fee) on interest part of debt during the project construction period of 2 years 3 months and debt repayment period of ten years after COD, the same shall be allowed as pass through cost in tariff based on actual upon production of verifiable documentary evidence to be provided by ITC.
- j) For Overseas Investment Insurance Fee (Sinosure Fee), reference component of tariff for each year expressed in Rs./kWh as indicated in the reference tariff table at Annex-II will be adjusted on the basis of variation in PKR/US\$ exchange rate variation subject to maximum rate of 0.60% per annum and terms of payment as approved by the Authority at COD. Reference Sinosure component of tariff for each year will be revised accordingly.
- k) The cost of feasibility study will be allowed up to maximum of US\$ 5.4 Million subject to timely submission of studies to NTDCL for endorsement of cost and relevance of studies. In addition, the evidence of payments made to the Institute carrying out the feasibility study will have to be also provided for verification at the time of COD.
- l) Interest during Construction (IDC) will be adjusted at COD on the basis of actual debt composition, variation in PKR/US\$, debt drawdown (not exceeding the amount allowed by the Authority) and applicable 6-months LIBOR/KIBOR during the project construction period allowed by the Authority.
- m) Principal repayment and the cost of debt will be adjusted at COD as per the actual borrowing composition and variation in LIBOR/ KIBOR at relevant dates during the project construction period



- n) In case, the spread on LIBOR/KIBOR is agreed at lower than 450/300 basis points, the benefit of such reduction in rate will be adjusted in proportion of 40% to ITC and 60% to the consumer through necessary adjustment in tariff at COD.
- o) Return on Equity (ROE) and Return on Equity During Construction (ROEDC) will be adjusted at COD on the basis of actual equity injections and PKR/US\$ exchange rate variation (within the overall equity allowed by the Authority at COD) during the project construction period as allowed by the Authority.
- p) The specific items of project cost paid in foreign currency (i.e. US\$) will be adjusted at COD on account of actual variation in exchange rate over the reference PKR/US\$ exchange rate of Rs. 104.40 on production of verifiable documentary evidence to the satisfaction of the Authority.
- q) The reference tariff table shall be revised at COD while taking into account the above adjustments. The ITC shall submit its request to the Authority within 90 days of COD for necessary adjustments in tariff.

II. **Pass-Through Items**

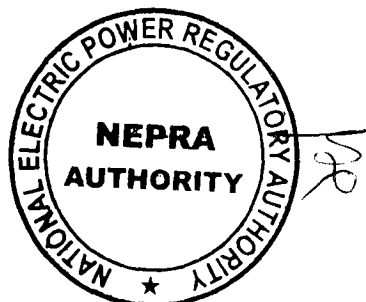
- a. No provision for Income Tax has been accounted for in the tariff. If ITC is obligated to pay any tax in relation to its transmission business, the exact amount paid by ITC may be reimbursed by the NTDC to ITC on production of original receipts. This payment may be considered as pass-through payment (as Rs./kWh) spread over a 12 months period in addition to fixed charges proposed in the Reference Tariff. Furthermore, in such a scenario, ITC may also submit to the NTDC details of any tax shield savings and the NTDC will deduct the amount of these savings from its payment to the Petitioner on account of taxation.
- b. If ITC is required to make payment of Withholding Tax on Sinosure Fee and Debt Servicing component of tariff, the same shall be treated as Pass Through cost of ITC.
- c. Sales Tax, Excise Duty or other Duty, Levy, Charge, Surcharge or Other Impositions applicable on the ITC (whether federal or provincial) not considered in the Tariff will be Pass-Through under the TSA.
- d. No provision for the payment of Workers Welfare Fund and Workers Profit Participation has been made in the tariff. In case, the ITC has to pay any such fund, that will be treated as pass through item in the TSA.
- e. As security is the responsibility of GoP as mentioned above in this document, no extensive security costs have been assumed. If such costs apply, these will be treated as pass-through item in the TSA.

III. **Indexations:**

The following indexation shall be applicable to the reference tariff:

i. **Indexation applicable to O&M**

The local part of ITC-O&M cost and NTDC O & M will be adjusted on account of Inflation (CPI) and ITC-O&M foreign will be adjusted on account of variation in Rupee/Dollar exchange rate and US CPI. Quarterly Adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January & 1st April respectively on the basis of latest available information with respect to CPI - General (notified by the Pakistan Bureau of Statistics), US CPI (notified by US bureau of labor



statistics) and revised TT & OD Selling rate of US Dollar as notified by the National Bank of Pakistan. The mode of indexation will be as follows:

$$F-O\&M-ITC_{(FREV)} = F-O\&M-ITC_{(FREF)} * US\ CPI_{(REV)} / US\ CPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

$$F-O\&M-ITC_{(LREV)} = F-O\&M-ITC_{(LREF)} * CPI - G_{(REV)} / CPI - G_{(REF)}$$

$$F-O \& M-NTDCL_{(LREV)} = F-O\&M-NTDCL_{(LREF)} * CPI - G_{(REV)} / CPI - G_{(REF)}$$

Where;

F-O&M-ITC_(FREV) = The revised applicable Fixed O&M foreign component of the fixed charges of Independent Transmission Company indexed with US CPI and US \$/PKR fluctuation. CPI – General

F-O&M-ITC_(LREV) = The revised applicable Fixed O&M Local component of the fixed charges of Independent Transmission Company indexed with CPI - General

F-O & M-NTDCL_(LREV) = The revised applicable Fixed O&M Local component of the fixed charges of NTDCL indexed with CPI – General

F-O&M-ITC_(FREF) = The reference Fixed O&M foreign component of the fixed charges of Independent Transmission Company for the relevant period

F-O&M-ITC_(LREF) = The reference Fixed O&M local component of the fixed charges of Independent Transmission Company for the relevant period

F-O & M-NTDCL_(LREV) = The reference Fixed O&M local component of the fixed charges for NTDCL for the relevant period

CPI - G_(REV) = The Revised Consumer Price Index (General)

CPI - G_(REF) = 207.30, Reference Consumer Price Index (General) of June, 2016 as notified by the Pakistan Bureau of Statistics

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

US CPI_(REF) = 241.38, Reference US CPI notified by the Bureau of Labor Statistics (All Urban Consumers) for the month of June, 2016.

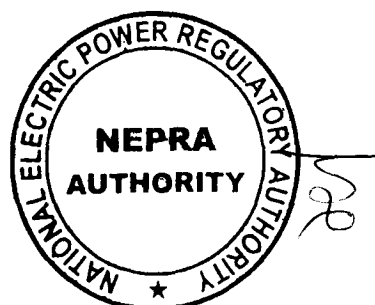
ER_(REV) = The Revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

ER_(REF) = 104.4 The reference TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

ii. Adjustment for LIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to exchange rate variation and variation in 6-

28



month LIBOR, while spread on LIBOR (4.50%) remaining the same, according to the following formula

$$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 1.1442\%) / 2$$

Where:

ΔI = The variation in interest charges applicable corresponding to variation in 6-month LIBOR. ΔI can be positive or negative depending upon whether $LIBOR_{(REV)} >$ or $< 1.1442\%$. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each period under adjustment applicable on bi-annual basis.

$P_{(REV)}$ = Is the outstanding principal (as indicated in the attached debt service schedule to this order at Annex-II) on a Bi-annual basis at the relevant calculations dates.

Note:

Foreign debt and its interest shall be adjusted on account of actual variation in PKR/US\$ over the applicable reference PKR/US\$ exchange rate on bi-annual basis.

iii. Sino-sure:

In case of Overseas Investment Insurance Policy, ITC will be allowed annual indexation in the reference tariff component of sino-sure fee based on the submission of documentary evidences upto the allowed limit (0.60% of the outstanding debt plus interest payment during the year). Further, the tariff component of Sinosure Fee will also be adjusted on account of variation in PKR/US\$ exchange rate variation on annual basis.

iv. Return on Equity and Return on Equity During Construction

The Return on Equity (ROE) and Return on Equity during Construction (ROEDC) components of tariff will be adjusted for variation in PKR/US\$ exchange rate on the basis of revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan according to the following formula;

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

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

Where:

$ROE_{(REV)}$ = The revised ROE component of the tariff expressed in Rs/kWh

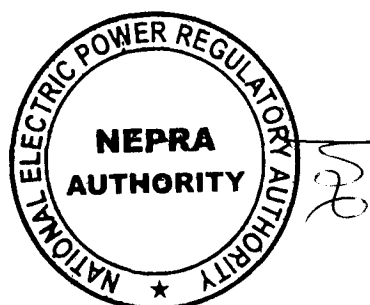
$ROE_{(REF)}$ = The reference ROE component of the tariff expressed in Rs/kWh

$ROEDC_{(REV)}$ = The revised ROEDC component of the tariff expressed in Rs/kWh

$ROEDC_{(REF)}$ = The reference ROEDC component of the tariff expressed in Rs/kWh

$ER_{(REV)}$ = The revised US\$/PKR exchange rate as notified by the National Bank of Pakistan

$ER_{(REF)}$ = The reference exchange rate of PKR 104.4=1 US\$



v. Insurance:

Insurance cost component of tariff, in case insurance is denominated in foreign currency, will be adjusted on account of PKR/US\$ exchange rate variation at COD and thereafter on an annual basis at actual subject to the maximum of 1% of the EPC cost on production of verifiable documentary evidence by ITC, according to the following formula:

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

Where:

| | | |
|---------------|---|---|
| $Ins_{(REV)}$ | = | Revised Insurance cost component of tariff adjusted with the exchange rate variation (PKR/US\$) |
| $ER_{(REV)}$ | = | The revised US\$/PKR exchange rate as notified by the National Bank of Pakistan |
| $ER_{(REF)}$ | = | The reference exchange rate of PKR 104.4=1 US\$ |

vi. Land Lease:

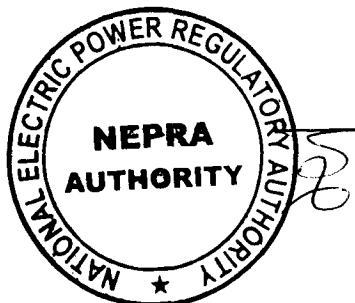
Land Lease component of tariff will be adjusted on annual basis on production of verifiable documentary evidence by ITC.

- vii. Adjustment on account of inflation, US CPI, foreign exchange rate variation and LIBOR variation will be approved and announced by the Authority within fifteen working days after receipt of the Petitioner's request for adjustment in tariff in accordance with the requisite indexation mechanism stipulated herein.

IV. Directions to the Petitioner and NTDC

The Authority directed following aspects to be addressed by Petitioner and NTDC:

- i. Since it is the first HVDC project of the Country, it needs to be ensured that there is a reliable and robust power transmission corridor fully integrated with the power generation projects at the sending end and fully capable of receiving at the Lahore converter station. It should be ensured that generation load of 4,000 MW is timely and consistently available for this transmission line. It is important that clear responsibilities are identified and defined in this regards.
- ii. It should be ensured by NTDC to effectively and efficiently manage in its network the energy transmitted through this HVDC transmission line.
- iii. Both, technical and financial capability of NTDC should be ensured with regards to various obligations being entrusted for this HVDC transmission line.
- iv. TSA and IA and related other legal covenants should incorporate and consider technology transfer and indigenous capacity development for this and future HVDC projects. Specifically training to NPCC to be ensured.
- v. All required system studies should be completed by the EPC contractor and NTDC.
- vi. Necessary contingency planning should be carried out for this HVDC Transmission Line as it has envisaged significant energy transmission from South to load centers.
- vii. Compliance should be ensured with grid code and NEPRA Performance Standard (Transmission) Rules, 2005.



- viii. Petitioner and NTDC should ensure that limits of reactive power exchange between HVDC link and AC system needs are clearly defined and duly complied.
- ix. Minimum possible transmission line length should be ensured giving due consideration to future transmission plans, social and environment aspect. Among other benefits, it will also reduce the construction cost, land cost and associated maintenance and security costs.
- x. NTDC to ensure mitigation measures for reinforcement to strengthen its network after completion of detailed studies.
- xi. The security related costs claimed as part of this Project Cost should not duplicate the amount and security measures as assured to CPEC Projects.
- xii. The TSA should adequately cover and address transmission consideration including NTDC role as System Operator.
- xiii. TSA must be consistent with the provisions of the SPTL granted by NEPRA.
- xiv. TSA should specify on bi-directional transmission based on future requirements envisaged at this stage.
- xv. Any payment by NTDC inconsistent to this determination will not be recognized as allowed cost in NTDC Revenue Requirements in its tariff Petition submitted to NEPRA.
- xvi. The Authority directs the ITC to meet the maximum targeted losses of 4.3% and the comprehensive mechanism in this regard for achieving these targeted losses and the penalties for failure to achieve the targeted losses must be agreed in the TSA.

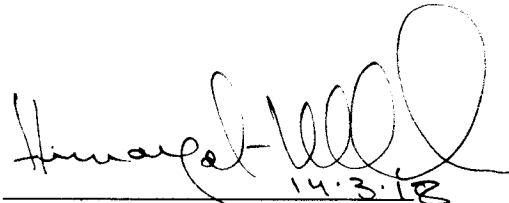
V. Eligibility criteria and Terms and Conditions of Tariff:

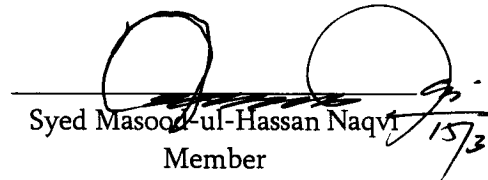
- a. Upon issuance of LOI/LOS to the relevant Special Purpose Transmission Company (SPTC) by relevant agency, SPTC shall be required to approach NEPRA for the grant of Special Purpose Transmission License (SPTL) along with a request for the approval of tariff as per relevant provisions of NEPRA Act, Rules and Regulations.
- b. The TSA and IA should clearly set out related terms and conditions including financial, technical and performance specifications as per international standards.
- c. The Petitioner/PPIB shall be required to decide clearly the responsibility structure for construction, operations, routine and related maintenance for the project as per the international standards.
- d. All requirements of the Pakistan Environmental and Protection Agency (PEPA) Act 1997 relating to environmental protection environmental impact and social assessment shall be required to be ensured by the Petitioner at the time of issuing LOS to the related entity/organization including NOCs from respective Provincial Authorities of Sindh and Punjab.
- e. PPIB shall ensure that all technical studies which are in progress are finalized to the satisfaction of NTDC. NTDC shall provide a certificate to the effect that it is satisfied with the results of such studies and all concerns identified under "Adequacy of Studies" para no 47.6.2 have been fully addressed.
- f. TSC shall be payable if the transmission line is complete and capable of transmitting 4,000MW as per commitment of petitioner.
- g. The TSC will be due and paid whether or not any power is transmitted to the Transmission Line subject to the availability of the transmission line and the detailed mechanism to be agreed under the TSA



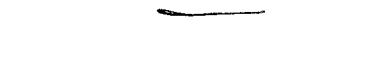
- h. Relevant and applicable Income Tax, Sales Tax Incentives and reduced Duties (Custom) Cess etc. to be ensured by PPIB to ITC.
 - i. Pre-COD energy transmission is allowed on terms and conditions to be mutually agreed and mentioned in Transmission Service Agreement (TSA). The Transmission Service Charge however should not exceed the rates as approved by the Authority in this tariff determination.
 - j. The Petitioner/PPIB shall be required to decide and agree the relevant terms and duration for lock-in period for this Project.
11. The order along with, reference tariff table and debt servicing schedule as attached thereto are 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

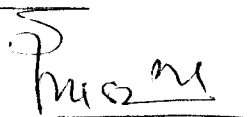

14.3.18
Himayat Ullah Khan
Member


15/3
Syed Masood-ul-Hassan Naqvi
Member


16.3.2018
Saif Ullah Chattha
Vice Chairman

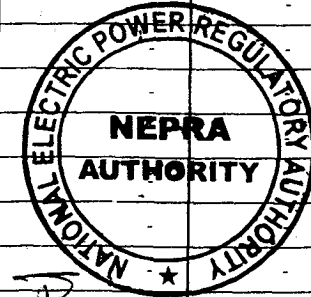

Brig (R) Tariq Saddozai
Chairman




16 03 18

REFERENCE TARIFF TABLE-MATIARI LAHOR HVDC TRANSMISSION LINE

| Year | O&M | | | | Total O&M | Insurance | Return on Equity | ROEDC | Loan Repayment | Interest Charges | Sinonure | Tariff |
|-------------------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------|---------------|----------------|------------------|---------------|---------------|
| | Foreign | Local ICT | Local NTDC | Land | | | | | | | | |
| | Rs. / kW/h | Rs. / kW/h | Rs. / kW/h | Rs. / kW/h | | | | | | | | |
| 1 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.3038 | 0.2189 | 0.0250 | 0.9203 |
| 2 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.3212 | 0.2015 | 0.0231 | 0.9184 |
| 3 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.3396 | 0.1831 | 0.0211 | 0.9163 |
| 4 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.3590 | 0.1637 | 0.0189 | 0.9142 |
| 5 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.3796 | 0.1431 | 0.0166 | 0.9119 |
| 6 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.4013 | 0.1214 | 0.0142 | 0.9095 |
| 7 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.4243 | 0.0984 | 0.0117 | 0.9069 |
| 8 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.4485 | 0.0741 | 0.0090 | 0.9042 |
| 9 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.4742 | 0.0485 | 0.0061 | 0.9014 |
| 10 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1680 | 0.0388 | 0.5014 | 0.0213 | 0.0031 | 0.8984 |
| 11 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 12 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 13 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 14 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 15 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 16 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 17 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 18 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 19 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 20 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 21 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 22 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 23 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 24 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| 25 | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1856 | 0.0388 | - | - | - | 0.3902 |
| Levelized Tariff | 0.0441 | 0.0323 | 0.0411 | 0.0073 | 0.1249 | 0.0409 | 0.1737 | 0.0388 | 0.2562 | 0.0976 | 0.0113 | 0.7435 |



The reference TSC is based on 98.5% power transmitting capacity with 1.5% annual non-penalized maintenance outages.

Exchange Rate 1 US \$ = 104.4 PKR

Levelized Tariff @ 10% works out to be US Cents 0.7121/kW/h

DEBT SERVICING SCHEDULE-MATIARI LAHOR HVDC TRANSMISSION LINE

Libor 1.144%

Spread 4.500%

Interest rate 5.64%

| Period | Foreign Debt | | | | | Annual Principal Repayment Rs./kW/h | Annual Interest Rs./kW/h | Annual Debt Servicing Rs./kW/h |
|--------|---------------|------------|------------|---------------|--------------------|--|-----------------------------|-----------------------------------|
| | Principal | Repayment | Mark UP | Balance | Total Debt Service | | | |
| | US \$ | US \$ | US \$ | US \$ | US \$ | | | |
| 1 | 1,326,671,165 | 50,272,921 | 37,439,987 | 1,276,398,244 | 87,712,908 | 0.3038 | 0.2189 | 0.5227 |
| 2 | 1,276,398,244 | 51,691,673 | 36,021,235 | 1,224,706,571 | 87,712,908 | | | |
| 3 | 1,224,706,571 | 53,150,464 | 34,562,444 | 1,171,556,107 | 87,712,908 | 0.3212 | 0.2015 | 0.5227 |
| 4 | 1,171,556,107 | 54,650,423 | 33,062,485 | 1,116,905,684 | 87,712,908 | | | |
| 5 | 1,116,905,684 | 56,192,713 | 31,520,195 | 1,060,712,972 | 87,712,908 | 0.3396 | 0.1831 | 0.5227 |
| 6 | 1,060,712,972 | 57,778,527 | 29,934,381 | 1,002,934,444 | 87,712,908 | | | |
| 7 | 1,002,934,444 | 59,409,095 | 28,303,813 | 943,525,349 | 87,712,908 | 0.3590 | 0.1637 | 0.5227 |
| 8 | 943,525,349 | 61,085,679 | 26,627,229 | 882,439,670 | 87,712,908 | | | |
| 9 | 882,439,670 | 62,809,578 | 24,903,330 | 819,630,092 | 87,712,908 | 0.3796 | 0.1431 | 0.5227 |
| 10 | 819,630,092 | 64,582,127 | 23,130,781 | 755,047,965 | 87,712,908 | | | |
| 11 | 755,047,965 | 66,404,699 | 21,308,209 | 688,643,266 | 87,712,908 | 0.4013 | 0.1214 | 0.5227 |
| 12 | 688,643,266 | 68,278,706 | 19,434,202 | 620,364,560 | 87,712,908 | | | |
| 13 | 620,364,560 | 70,205,600 | 17,507,308 | 550,158,960 | 87,712,908 | 0.4243 | 0.0984 | 0.5227 |
| 14 | 550,158,960 | 72,186,872 | 15,526,036 | 477,972,088 | 87,712,908 | | | |
| 15 | 477,972,088 | 74,224,058 | 13,488,850 | 403,748,030 | 87,712,908 | 0.4485 | 0.0741 | 0.5227 |
| 16 | 403,748,030 | 76,318,735 | 11,394,173 | 327,429,296 | 87,712,908 | | | |
| 17 | 327,429,296 | 78,472,526 | 9,240,382 | 248,956,770 | 87,712,908 | 0.4742 | 0.0485 | 0.5227 |
| 18 | 248,956,770 | 80,687,099 | 7,025,809 | 168,269,671 | 87,712,908 | | | |
| | 168,269,671 | 82,964,170 | 4,748,738 | 85,305,501 | 87,712,908 | 0.5014 | 0.0213 | 0.5227 |
| | 85,305,501 | 85,305,501 | 2,407,407 | - | 87,712,908 | | | |

