

**Issues framed for hearing to be held against the Tariff petition filed by PPIB for the Matiari-Lahore  $\pm 660$  KV 4000 MW HVDC Transmission Line Project**

- 1 Is the tariff petition submitted by PPIB duly approved by its Board?
- 2 The Tariff Petition has been filed by PPIB under Rule 3 of NEPRA's Tariff Standards & Procedures Rules, 1998 while the contents of the Petition indicates that the Petitioner is NTDC which intends to seek a Tariff from NEPRA pursuant to the "Policy Framework for Private Sector Transmission Line Projects, 2015"? Can the Petitioner clarify this anomaly?
- 3 Has PPIB given consideration to technical and financial aspects in its due diligence before forwarding the tariff petition? Has it evaluated reasonableness for capital costs and operational costs claimed?
- 4 Has the NTDC looked into the option of construction of the Transmission Line through its own resources or through other funding resources including supplier credit etc.?
- 5 Have the issues highlighted by M/S Teshmont Consultants addressed? If yes, what changes have been proposed in the Project design and cost?
- 6 Is the EPC and O&M cost claimed rationale in view of SGCC built Ningdong-Shandong HVDC Transmission line (also  $\pm 660$  kV 4000 MW)? If not, what is the justification for difference in EPC cost etc?
- 7 Whether the option of HVDC instead of HVAC is justifiable? What is the outcome of any economic and financial evaluation carried out?
- 8 What is the rationale and criteria for the selection of  $\pm 660$  KV HVDC? Considering the cost differential between  $\pm 660$  KV &  $\pm 500$  KV what is the outcome of any technical and financial evaluation carried out? What is the estimated resultant impact on consumer end tariff?
- 9 What will be the technical and financial impact of lowering the requirement of power transfer from 4000 MW to 3000 MW. Has any scenario analysis carried out if voltage level is lowered or both power transfer and voltage level are lowered?
- 10 What is the status of the Transmission Service Agreement (TSA) and Implementation Agreement?
- 11 What is the status of CET application for a special purpose transmission license (SPTL) for the proposed project?
- 12 What is the status of compliance with the section 19 of the NEPRA Act under which a Licensee for SPTL is required to provide transmission and interconnection services /facilities to the National Grid Company (NGC) for making available its transmission facility to NGC?

**13 EPC Costs:**

**Whether the Proposed/Claimed EPC Cost is justifiable?**

- 13.1 What process has been followed by petitioner to ensure EPC cost submitted for this HVDC Transmission Line is competitive and comparative internationally?

13.2 Are cost components claimed for each convertor station rationale and justified? This in particular include the costs claimed for sub-components of:

- Civil & Installation Works (USD 251.8 M)
- Equipment and Material (USD 817.46 M)
- Basic Engineering & Detailed Engineering (USD 303.5 M)
- Station Commissioning & System Commissioning Cost (USD 10.83)
- Transportation Cost (USD 48.48 M)

13.3 What are the major cost components of each Electrode/Grounding Stations?

13.4 What are the major cost components of each Repeater stations?

13.5 What is the basis of selection of Tower design? Is the design and cost of Towers and Cable rationale and justified?

13.6 Has the tower designed optimized to minimize the land acquisition and ROW costs?

13.7 As CET will be the only EPC contractor, are there any overlaps of substantial Project Management costs being claimed under sub-components of EPC?

S.No	Description	Purpose	Amount (US\$ In M)
1	Project Management	Convertor Station	11.44
2	Project Management	Transmission Line	5.57
3	Security Cost (responsibility of GOP)	Convertor station	2.34
4	CET Security Coverage Cost (responsibility of GOP)	Transmission Line	9.89
5	Supervision for construction & Installation	Convertor station	14.68
6	Supervision for construction & installation	Transmission Line	5.38

#### 14 **Non-EPC Cost:**

##### **Whether the Non-EPC cost is Justifiable?**

14.1 What are the cost components and estimation basis of the claimed 'NTDCL Development Costs' of US 15.21 M?

14.2 What is the scope, duration and deliverables of the 'Advisors and Consultants' to be engaged against the amount of US \$ 7.89 M claimed?

14.3 Has the entire amount paid or accrued for US \$ 5.4 M claimed on account of feasibility Study? What was the selection process adopted for the purpose?

14.4 Have all the issues proposed in Feasibility study addressed? Relevant source documents of the study and payments may please also be provided?

- 14.5 What is the summary of HR cost of US\$ 8.79 M claimed?
- 14.6 What is the basis of additional cost being claimed on account of Security when GoP has to make necessary arrangements for this?
- 14.7 What is the summary of the assets and vehicles claimed for US \$ 2.88 M? Particularly the same has already been claimed as part of O&M cost as well?
- 14.8 What is the summary of the Project Administrative cost claimed for US \$ 2.78 M?

## **15 Operation & Maintenance:**

- 15.1 Is it financially and technically optimal to segregate the O & M responsibilities among different organization?
- 15.2 What will be the difference of scope and responsibilities between foreign & local O&M Contractors to be engaged with costs of US\$ 37.6 M and US \$ 19.95 M respectively?
- 15.3 Have the Foreign O&M Sub-Contractor been identified for the US\$ 37.6 M cost claimed?
- 15.4 What is basis of segregation under same head between Foreign O&M Cost and Local O&M Cost for convertor station?

S.No	Description	Foreign O&M (US \$ in M)	Local O&M (US \$ in M)	Total (US \$ in M)
1	Administrative cost	4.56	8.16	12.72
2	Pay & Allowances	5.88	1.52	7.4
3	Spares & Tools	2.06	1.24	3.3
4	Spare Parts	Transmission Line	2.659	

- 15.5 Is the high percentage 'Administration' cost justified representing 64% of local O&M total cost for Converter Stations?
- 15.6 Does NTDCL have required capacity to carry out O&M operations and render quality service for the HVDC Transmission Line?

## **16 Technical issues**

- 16.1 What are the major differences in design from the earlier parameters proposed by SNC-LAVALIN in their feasibility study?
- 16.2 As referred in Cooperation agreement, has NTDCL carried out interconnection studies, including load flows, short-circuit and transient stability studies for the Project.

- 16.3 Is the petitioner and NTDC are satisfied with load flow studies carried out by SGCC/CET for this project in view of future generation and load centers?
- 16.4 Has the Petitioner taken into account the proposed RLNG based and Coal based Generation plants near load centre in north before finalizing the design of line?
- 16.5 What is the rationale for the proposed losses and non-penalized 1.5% non-availability period in view of international practices for an HVDC line?
- 16.6 Has there been any assessment of impacts including estimated losses variations if the power generation for referred coal projects varies from anticipated production determined for transmission?
- 16.7 What is the rationale for heavy towers instead of guyed towers?
- 16.8 Has the reliability of Transmission networks in line with the requirements of NEPRA Performance Standards (Transmission) Rules-2005 been evaluated and confirmed?
- 16.9 What International Standards will be complied for type/make/model number of equipment/materials & how their compliance will be monitored and ensured?
- 16.10 What is the status of system studies that were required to be conducted by NTDC which include following;
- Insulation coordination;
  - AC and DC filter design, rating and performance ;
  - Reactive power studies , switching arrangement and logic;
  - Temporary overvoltage;
  - Transient over voltage, surge arrester stress;
  - Sub-synchronous resonance (SSR) studies
  - AC equivalent study;
  - Load flow, stability, modulation and frequency controller design study;
  - Dynamic overvoltage study
  - Reliability and availability study
- 16.11 Whether critical path analysis carried out for the project including readiness of the HVAC system?
- 16.12 Whether N-1 contingency has been made available for this transmission line?
- 16.13 How will integration with the HVAC be ensured and whether NPCC would be ready for the new scenario? Are training of NPCC and other professionals' part of the project?
- 16.14 Whether need for additional reactive support is foreseen and whether it is included in scope of work and cost?

## **17 Financial Parameters:**

- 17.1 Whether the proposed/claimed Capital Structure for the project is justified?

- 17.2 Whether the minimum IRR of 17% guaranteed under Cooperation agreement is justified for a transmission Project, particularly with GOP providing guarantee for securing payment obligation also?
- 17.3 Whether the construction period of 27 month is reasonable? Does the proposed timeline of the subject project match with the revised timelines of the power generation projects expected to be installed in the Southern part of the country?
- 17.4 Whether the proposed spread of 4.75% justified with GOP providing guarantee for securing payment obligation?
- 17.5 Whether the proposed spread of 4.75% over Six Months' LIBOR be justified in the presence of SINOSURE fee and GOP guarantees?
- 17.6 Is the assumption that Withholding Tax on dividends shall be considered as a pass-through item justified?
- 17.7 Do the NTDCL have the required financial health & working capital to meet payments monthly /annually obligations?
- 17.8 What will be allied cost of A.C lines? What additional cost will be borne for system stability with proposed induction of HVDC?

#### **18 Right Of Way (ROW) & Environmental Issues**

- 18.1 What is the estimated timeline for ROW acquisition by NTDCL?
- 18.2 Whether the route finalized and necessary approval taken for ROW from concerned Provincial and related Authorities?
- 18.3 What is the segment wise ROW cost worked out? Will ROW be acquired at official rates?
- 18.4 Is the population along the path of this HVDC electrified justifying the HVDC technology?
- 18.5 Have all the requirements of Pakistan Environmental Protection Agency (PEPA) Act 1997 complied? Have necessary approvals taken in this regards?
- 18.6 Has the EIA and IPSA report prepared for this transmission line as specified in Cooperation agreement?
- 18.7 Whether corrosion level in different zones along the corridor has been evaluated?

#### **19 Others:**

- 19.1 Whether the matters highlighted in NEPRA's letter No NEPRA/SAT-I/LAT-100/2570 dated February 24, 2016 have been duly addressed?