



National Electric Power Regulatory Authority

Islamic Republic of Pakistan

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No. NEPRA/R/SA(Tariff)/TRF-466/NITP-2019/21537-21539
August 18, 2020

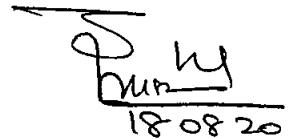
Subject: Determination of the National Electric Power Regulatory Authority in the matter of Tariff Petition filed by Norinco International Thatta Power (Pvt.) Ltd. for Determination of Generation Tariff in respect of 100 MW Wind Power Project (Case No. NEPRA/TRF-466/NITP-2019)

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annex-I & II (29 Pages) in Case No. NEPRA/TRF-466/NITP-2019.

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.
3. Order of the Authority along with Annex-I & II of the Determination is to be notified in the official Gazette.

Enclosure: As above



18 08 20

(Syed Safeer Hussain)

Secretary
Ministry of Energy (Power Division)
'A' Block, Pak Secretariat
Islamabad

- CC:
1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
 2. Secretary, Ministry of Finance, 'A' Block, Pak Secretariat, Islamabad

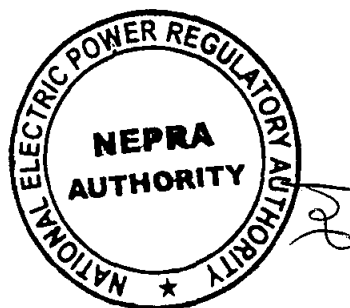
**DETERMINATION OF THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY IN THE
MATTER OF TARIFF PETITION FILED BY NORINCO INTERNATIONAL THATTA POWER (PVT.)
LIMITED FOR DETERMINATION OF GENERATION TARIFF IN RESPECT OF 100 MW WIND POWER
PROJECT**

1. Norinco International Thatta Power (Pvt.) Ltd. ("NITPPL" or "the petitioner" or "the company/project company") vide its letter dated March 12, 2019 filed a tariff petition before National Electric Power Regulatory Authority ("NEPRA" or "the Authority") under the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("NEPRA Act") and NEPRA (Tariff Standards & Procedure) Rules, 1998 ("NEPRA Tariff Rules") for determination of generation tariff in respect of its 100 MW wind power project ("the Project") to be set up at Jhimpir, District Thatta, Sindh. The petitioner requested for the approval of levelized tariff of US Cents 6.1631/kWh (Rs. 8.5543/kWh) over the tariff control period of 25 years.

SUBMISSIONS OF THE PETITIONER

2. The petitioner submitted that it is a private limited company registered under the Companies Ordinance, 1984, established to undertake power generation business and activities in Pakistan. The petitioner, during the proceedings, submitted a copy of Certificate of Incorporation issued by Securities and Exchange Commission of Pakistan ("SECP") dated February 04, 2016.
3. NITPPL submitted that earlier it was issued two Letter of Intent ("LOIs"), for developing two wind power projects of 50 MW each, by Energy Department, Government of Sindh ("EDGOS") on April 20, 2015 in pursuance of Policy for Development of Renewable Energy for Power Generation 2006 ("RE Policy 2006"). Subsequently, EDGOS vide letter dated January 2, 2018 granted approval of merger of aforementioned 2 LOIs of NITPPL into 1 LOI of 100MW. The petitioner informed that the said LOI of 100 MW was extended up to November 13, 2019 by EDGOS on February 27, 2019 and then extended up to September 20, 2020 on February 11, 2020.
4. It is noted that two Generation Licenses were issued earlier by the Authority for 50 MW each wind power projects, however, the same have been merged into one license vide decision of the Authority issued on October 25, 2019. NITPPL during the proceedings of tariff petition informed that Panel of Experts ("POE") of EDGOS has approved the feasibility report of 100

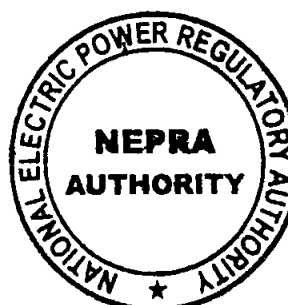
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MW Project on November 12, 2019 and advised the project company for further perusal for tariff.

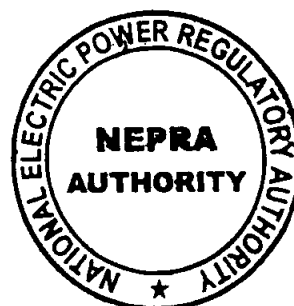
5. Summary of the key information as provided by the petitioner is as follows:

Project Company	:	Norinco International Thatta Power (Pvt.) Ltd.	
Sponsors	:	Norinco International Cooperation	
Capacity	:	100 MW	
Project Location	:	Jhimpir, District Thatta, Sindh	
Land Area	:	2500 acres	
Concession Period	:	25 years from Commercial Operations Date	
Power purchaser	:	Central Power Purchasing Agency (Guarantee) Ltd.	
Wind Turbine	:	Goldwind GW 121/2.5 MW	
Annual Energy Generation	:	330.670 GWh	
Capacity Factor	:	37.75%	
EPC Contractor	:	Offshore: Glory Town Holdings Ltd. Onshore: Norinco International Cooperation Ltd.	
Project Cost		USD in Millions	
EPC cost	:	130.356	
Non-EPC Cost	:	10.000	
Insurance during Construction	:	0.978	
Financial Fee and Charges	:	3.085	
Sinosure Insurance	:	11.243	
Interest during Construction	:	5.573	
Total Project Cost	:	161.235	
Financing Structure	:	Debt 80% : Equity 20%	
Interest Rate	:	Foreign: 3 Month LIBOR (0.60%) + spread 4.5%	
Debt Repayment Period	:	13 years	
Return on Equity	:	14% IRR based	
Annual O&M Cost	:	USD 3.8 million	
Annual Insurance Cost	:	0.5% of EPC	
		PKR/kWh	US\$/kWh
Levelized Tariff	:	8.5543	6.1631
Exchange rate	:	1 USD = PKR 139	



PROCEEDINGS

6. The Authority considered the tariff petition and admitted the same for further processing. Notice of Admission & Hearing containing salient features of the petition, hearing schedule as October 16, 2019 and issues framed for hearing was published in two national daily newspapers on October 2, 2019. Through the said notice, NEPRA also invited comments and intervention requests from the interested parties. Tariff petition and Notice of Admission & Hearing were also hosted on NEPRA's website for information of general public. Subsequently, the Authority decided to re-schedule the hearing for October 23, 2019. Accordingly, advertisement of re-scheduling of hearing was published in national daily newspapers on October 5, 2019. Individual Notices of hearing were also sent to the stakeholders, considered relevant by NEPRA, and the petitioner on October 10, 2019 for participation in the proceedings.
7. Following is the list of issues that were framed by the Authority for the hearing/proceedings:
- i. Whether the details provided for EPC cost are sufficient and whether the claimed EPC cost is competitive and comparative and based on the firm and final agreement(s)? and
 - ii. Whether the NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 have been fully complied with?
 - iii. Whether the details provided for Non-EPC cost are sufficient and claimed Non-EPC cost is justified? Also provide justification for land requirement as claimed by the petitioner.
 - iv. Whether the claimed O&M costs are justified? Provide rationale of claiming foreign & local O&M cost.
 - v. Whether the claimed insurance during operation cost is justified?
 - vi. Whether the claimed return on equity is justified?
 - vii. Whether the claimed financing/debt terms are justified?
 - viii. Whether the claimed annual energy generation and corresponding plant capacity factor are reasonable and justified? And
 - ix. Whether the petitioner's proposed wind turbine technology satisfies the international standards of quality and operation?
 - x. Whether the project grid interconnection study is approved by the relevant organization(s) and whether NTDCL has issued power evacuation certificate?
 - xi. Whether the claimed construction period is justified?



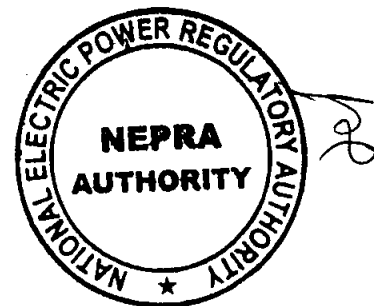
- xii. Any other issue with the approval of the Authority.
8. The hearing on the subject matter was held on October 23, 2019 (Wednesday) at 10:45 A.M. at NEPRA Tower, Islamabad, which was attended by a number of participants including the petitioner, representatives of Central Power Purchasing Agency (Guarantee) Limited ("CPPAGL"), etc.
9. In response to Notice of Admission/Hearing, comments were received from CPPAGL vide letter dated October 16, 2019 and Alternative Energy Development Board ("AEDB") vide letter dated October 18, 2019, however, no intervention request was filed by any party. The related comments of aforesaid parties are discussed in the relevant paragraphs of this determination.
10. The issue wise submissions of the petitioner and the Authority's findings and decision thereon are as under:

Whether the details provided for EPC cost are sufficient and whether the claimed EPC cost is competitive and comparative and based on the firm and final agreement(s)? and whether the NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 have been fully complied with?

11. The petitioner had claimed USD 130.356 million on account of Engineering, Procurement and Construction ("EPC") cost in its tariff petition. Following breakup of the claimed EPC cost is provided in the tariff petition:

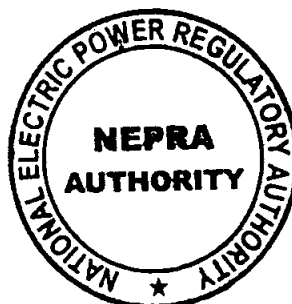
Details	EPC Cost (USD Million)
Offshore Agreement	110.800
Onshore Agreement	19.556
Total	130.356

12. However, during the hearing, NITPPL apprised the Authority that it has negotiated the EPC price with its Contractors to bring it to the current market rates, details thereof are given hereunder:



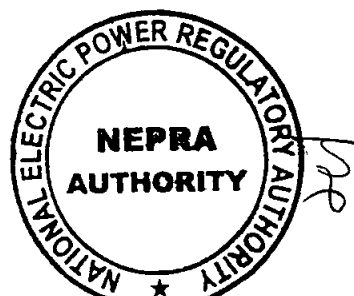
Details	Revised EPC Cost (USD Million)
Offshore Agreement	93.24
Onshore Agreement	17.76
Total	111.00

13. NITPPL in its petition and during the hearing informed the Authority that it had carried out a competitive bidding process for the selection of EPC Contractors. It stated that Request for Proposal (RFP) was issued to six Contractors on March 3, 2016 after which the bid clarification meeting was held on March 25, 2016. The bids from the interested parties were received on April 23, 2016 which were evaluated by the project company using two envelope approach. Based on bid evaluation process and negotiations, Glory Town Holdings and Norinco International Cooperation Limited were selected as preferred bidders on June 3, 2016. The petitioner submitted that the project company signed EPC Offshore Supply of Equipment Contract with Glory Town Holdings Limited on November 29, 2016 with Goldwind Wind Turbine Generator ("WTG") of GW 121-2.5. The Onshore Project Construction Contract was signed with Norinco International Cooperation Limited on November 29, 2016. The Offshore and Onshore Agreements were signed for USD 133.741 million and USD 25.475 million respectively. The petitioner submitted that it subsequently signed Addendum to the EPC contracts on July 02, 2018 to reduce the price to USD 110.800 million and USD 19.556 million respectively for Offshore and Onshore parts. During the hearing, NITPPL apprised that it has now signed Amendment Agreements on August 25, 2019, under which prices have reduced to USD 93.24 million and USD 17.76 million respectively for Offshore and Onshore Contracts. The petitioner submitted the signed copies of above discussed original EPC Contracts, Addendums and Amended Agreements during the proceedings of the subject tariff petition.
14. The petitioner, during the hearing apprised the Authority that the project company had already carried out the bidding process for selection of EPC contractor in March 2016 and EPC Contractors was selected in June, 2016. That is, the bidding process had been completed much earlier than the issuance of NEPRA (Selection of Engineering, Procurement and Construction Contractor by Independent Power Producers) Guidelines 2017 ("NEPRA EPC Guidelines") on May 19, 2017, therefore, NEPRA EPC Guidelines are not applicable to the instant case.



15. NITPPL in the tariff petition submitted that the claimed EPC includes the cost of wind turbine generators, electrical equipment, together with ancillary equipment and other goods, systems and machinery and includes the cost of, inter alia, the erection, testing, completion and commissioning of the equipment and construction of the facility that is capable of fulfilling the intended purpose. The petitioner further submitted that the EPC cost also includes costs for staff accommodation (construction of the camp buildings), supply of drinking water and electricity (to camp buildings), catering services for the staff, certain Project vehicles, standby generator (including fuel), site security during construction period and construction of internal access roads. It further submitted that as per the EPC, confirmed Letter of Credit ("LC") charges is not required.
16. NITPPL submitted that Glory Town Holdings Limited was established in August 30, 2012 in Hong Kong. It serves as the platform of Norinco International for Project management, implementation and worldwide fund allocation. Through years of development, Glory Town Holdings Limited has successfully developed itself into a high level system integrator and solution provider especially for renewable sectors and the company is devoted to green development. The company is also following several wind and solar power projects in Africa, Southeast Asia and West Asia. NITPPL submitted that it selected Norinco International Cooperation Limited as Onshore Contractor based on the best commercial terms, technical soundness and relevant experience packaged with lowest financing terms.
17. To evaluate the EPC cost claim of NITPPL, the Authority has considered the latest available EPC cost data in different parts of the world. The information given in the reports published by International Renewable Energy Agency ("IRENA"), Bloomberg and other sources has been relied upon for this purpose. Furthermore, the tariff determinations approved by the regulators of countries in different regions have also been studied. The costs allowed by the Authority in previously determined wind power projects were also examined. After analysing all this information, the Authority is of the view that EPC cost of USD 111.00 million as claimed by NITPPL is on the higher side. The process of selection of contractors followed by the petitioner may have been transparent; however, the same has not yielded prices which can be considered competitive and comparative. The considerations of the Authority for the assessment of the EPC costs to be allowed to the petitioner are given in the following paragraph.
18. It was noted that the average wind turbine prices across most of the countries were below USD 0.70 million per MW in 2019. The most updated reports provide that average global cost

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of wind turbines to be delivered in 1st Half of 2020 have fallen to around USD 0.69 million per MW. These reports also forecast the gradual reduction in turbine prices in coming years. Beside turbine cost, the absolute amount and proportion of other components that constitute the total EPC cost as given in the referred reports was also analysed. EPC costs in China and India were also checked and found lowest in the world due to their local manufacturing, low cost of land and labour etc. However, the Authority is of the view that the cases of any particular country cannot be made exact reference for Pakistan owing to differences in market conditions, local manufacturing bases, tariff regimes, performance targets and other technological and economic factors. The trend of decrease in EPC prices over last couple of years and reasons thereof were also examined. The competition among WTG suppliers has been reported as the primary factor for the decline in turbine prices and corresponding EPC cost of wind power projects. The variations in the cost of turbine having different hub heights, rotor diameters, nameplate capacity, origin of manufacturing were also analysed. The differences in the civil cost part of the Project due to variations in the number and size of the turbines were also considered. The cost of balance of plant as being allowed in other comparable projects was also considered. The Authority further noted that margins for EPC contractor, transportation costs, level of performance being approved in this determination etc. should also be taken into account to set the EPC cost. After detailed analysis of the available information, factoring in all the aforesaid aspects and considering the project size, the Authority has decided to approve the EPC cost of USD 86.00 million for NITPPL. The allowed EPC cost shall be adjusted at Commercial Operations Date ("COD") in accordance with the mechanism given in the Order part of this determination.

Whether the details provided for Non-EPC cost are sufficient and claimed Non-EPC cost is justified? Also provide justification for land requirement as claimed by the petitioner.

19. The petitioner has claimed USD 30.879 million on account of Non-EPC cost in the tariff petition. Subsequently, during hearing the petitioner has revised its claim for Non-EPC cost to the tune of USD 12.570 million. Details of Non-EPC cost as provided by NITPPL in the petition and subsequent revision during the hearing are given hereunder:

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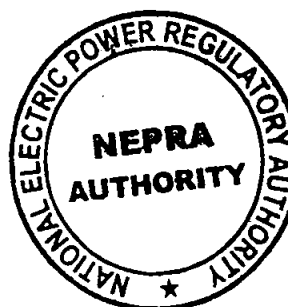
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Non-EPC Cost	Claimed in Tariff Petition (USD million)	Revised during hearing (USD million)
Project Development Cost	10.000	5.00
Insurance during Construction	0.978	0.55
Financial Fee and Charges	3.085	2.38
Sinosure Fee	11.243	-
Interest during Construction	5.573	4.64
Total	30.879	12.570

Project Development Cost

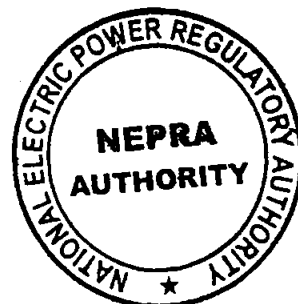
20. The petitioner has claimed USD 5.00 million on account of Project Development Cost ("PDC"). The petitioner submitted that PDC includes, inter alia, costs of feasibility studies, topographical survey of land, geotechnical investigation of land, electric grid interconnection studies, fees of consultants, costs related to the bank guarantee to be furnished to AEDB, costs related to the purchaser letter of credit to be furnished to the power purchaser pursuant to the provisions of the Energy Purchase Agreement ("EPA"), various regulatory fees to be paid to NEPRA and other governmental agencies, costs incurred during the project company's formation and capital enhancement, and costs relating to various permits for the Project, land cost, post financial close technical supervision and site security etc. The petitioner also submitted that initially it was issued two LOIs for development of two wind projects of 50MW which were then merged into one project of 100 MW. NITPPL stated that all studies had to be done twice which increased its development time and cost. Furthermore, the petitioner submitted that the longer development period of the Project after issuance of LOI in 2015 has also contributed towards increase in the PDC. Detailed description of different cost items being claimed under PDC was also provided by NITPPL in the petition.
21. The petitioner during the hearing apprised the Authority that the land lease for 2,500 acres has been signed with GOS on January 15, 2016. The petitioner also submitted the agreement of lease according to which the project company has paid an amount of Rs. 75 million for the first 10 years of lease.



22. It is noted that the Authority in 2018 allowed USD 2.5 million on account of PDC, inclusive of land cost, for wind power projects having 50MW capacity. For a wind power project having capacity of 60MW, the Authority had approved PDC of USD 2.55 million. The Authority understands that a number of items in the PDC such as cost of studies, fees paid to advisors, administration cost, travelling cost etc. do not change in direct proportion with the capacity of the projects. That is, the cost incurred on these items, in absolute terms, for a 50 MW project may be same or slightly higher for a 100 MW project. However, there are certain costs such as fees paid to different government offices, security cost etc. may increase in direct proportion with the size of the projects. The Authority also noted that the proposed area of land of 2,500 acres for the Project is significantly higher as majority of the 50 MW projects are being developed on 300 to 462 acres of land. The requirement of relatively longer construction period for a 100 MW Project was also factored in for the assessment of PDC. Considering above details while rationalizing the approved cost for PKR devaluation since 2018, the Authority has decided to allow USD 2.143 million on account of PDC, including land cost, to the petitioner. This amount is being approved on lump sum basis, i.e. the cost incurred on individual heads of PDC may change but should not exceed the overall amount.

Insurance during Construction

23. The petitioner has claimed USD 0.55 million on account of insurance during construction at the rate of 0.5% of the claimed EPC cost and requested for adjustment to allow at actual up to 1.35% of EPC cost. The petitioner submitted that as per the requirements of lenders, it intends to procure following insurance coverage during the construction period:
- a. Construction all risk insurances (CAR)
 - b. CAR delay in start-up insurance
 - c. Terrorism insurance
 - d. Marine and inland transit insurance
 - e. Marine – delay-in start-up insurance
 - f. Comprehensive general liability
24. It is noted that in the recent tariff cases of wind projects, the Authority has allowed pre-COD insurance at the maximum rate of 0.50% of the approved EPC cost. On this basis, the Authority has decided to allow insurance during construction, inclusive of taxes, charges and/or duties, to the maximum limit of 0.5% of the approved EPC cost for NITPPL also.



Accordingly, the amount being approved under this head works out to be around USD 0.430 million.

Financing Fee & Charges

25. The petitioner has claimed financing fee and charges of USD 2.38 million. NITPPL submitted that the claimed cost includes, inter alia, lenders up-front fee and commitment fee, mandate and processing fee, fees payable and stamp duty applicable on the financing documents, agency fee, security trustee fee, lenders' Project monitoring fee and the fees for the lenders' various advisors. It submitted that financial charges have been claimed in line with the prevailing market conditions and practices applicable for project financing transactions and as allowed by NEPRA in its other tariff determinations. It further submitted that it has not considered any duties and taxes on account of financial fees and charges and requested to allow on actual at the time of COD.
26. The Authority has noted that NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 ("NEPRA Benchmarking Guidelines") issued on June 19, 2018 states the provision of financial fee & charges not exceeding 2% of the approved debt amount of the capital expenses. In accordance with the said benchmark, the Authority has decided to allow the captioned cost at the rate of 2% of approved debt portion of allowed capital expenses, inclusive of taxes, charges and/or duties, to the petitioner. Accordingly, the amount being approved under this head works out to be around USD 1.417 million.

Interest during Construction

27. The petitioner has claimed Interest during Construction ("IDC") of USD 5.573 million in the petition. NITPPL has computed this claim based on foreign financing using 3 month LIBOR (0.6%) plus margin of 4.5%. The petitioner submitted that actual IDC, however, shall be subject to change depending on the fluctuations in base rate, funding requirement (drawdowns) of the Project during the construction period, changes in project cost including changes due to taxes and duties, and variations in PKR/USD exchange rate. Subsequently, during hearing the petitioner has claimed IDC of USD 4.64 million. In this regard, it submitted that after extensive negotiations, the project company succeeded to achieve foreign financing at 3 month LIBOR (2.0%) + margin of 3.5% and requested to allow the same. The construction period of 18 months has been claimed by the petitioner.

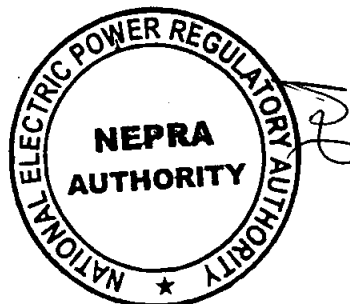


28. Based on the abovementioned approved costs while considering the drawdown schedule as given in the Order part of this determination; the IDC works out to be around USD 2.171 million and is hereby approved. The details of financing terms and construction period that have been used to work out the aforesaid amount of IDC is discussed in the ensuing relevant sections. The allowed IDC shall be adjusted/re-computed at COD as per the mechanism given in the Order part of this determination.

Sinosure Fee

29. NITPPL in the tariff petition claimed USD 11.243 million on account of Sinosure fee. In this regard, the petitioner submitted that upfront Sinosure fee @7% (Buyer's Credit) on the total debt servicing has been included in the project cost. During hearing, the petitioner submitted that after considering NEPRA guidelines and recent tariff determinations, it has decided to opt Overseas Investment Insurance @0.6% per annum. The petitioner explained that this Overseas Investment Insurance will reduce the tariff and it is in discussion with the lenders to convince them for the said insurance cover instead of the buyer's credit cover.
30. The Authority has noted that it has been allowing export credit/Sinosure fee on foreign loan either by including that fee as a lump sum amount in the project cost or in form of annual payments. In the upfront tariffs, Sinosure fee was approved as a lump sum amount as part of the project cost. Later, the Authority considering the fact that annual payment of Sinosure has a favourable impact on tariff had allowed that fee at the maximum rate of 0.6% on the respective yearly outstanding amount of foreign debt and interest. Based on above, the Authority has decided to allow the provision of Sinosure fee to the petitioner on its foreign financing, if availed, which shall be made part of the tariff at the time of COD. The said fee shall be allowed as annual payment to the maximum limit of 0.60% on the approved yearly debt servicing amount. It is to be noted that for financing with Sinosure, the spread/margin over LIBOR shall be adjusted to the extent such that the total financing cost (applicable LIBOR + Adjusted Margin + Sinosure) shall not exceed the financing cost without Sinosure (applicable LIBOR + Approved Margin).
31. Recapitulating the above, the approved project cost under various heads is given hereunder:

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Project Cost	USD million
EPC Cost	86.000
Project Development Cost	2.143
Insurance during Construction	0.430
Financing Fee & Charges	1.417
Interest during Construction	2.171
Total	92.161

Whether the claimed O&M costs are justified? Provide rationale of claiming foreign & local O&M cost.

32. The petitioner has claimed O&M Cost of USD 3.80 million per annum. The petitioner submitted that the O&M cost caters for the cost of services rendered by the O&M Operator. NITPPL further submitted that this cost component also includes costs associated with foreign staff, local staff, administrative expenses, corporate fees, audit fees, advisory fees etc. along with the cost related to replacement of parts necessitated due to regular operation / normal wear and tear.
33. In its tariff petition and during hearing, NITPPL submitted that it is in the process of finalization the O&M Agreement with the Norinco International Cooperation Limited. It submitted that O&M Contractor shall be responsible for provision or procurement and performance of all the works, services, supplies and other activities including management services necessary to operate and maintain the Project to ensure energy production is maximized and that the Project is operated and maintained in accordance with the applicable performance standards, agreed environmental-social & monitoring plans and prudent operating practices.
34. During hearing, the petitioner apprised the Authority that the annual O&M cost is estimated as USD 2.50 million. NITPPL submitted that the claimed O&M cost is 39% local component and 61% foreign component. It submitted that the proposed O&M cost is reasonable under the prevailing market conditions.
35. It is noted that the Authority had approved O&M cost of USD 23,000 per MW per year (50% foreign and 50% local) for 14 Nos. 50 MW wind power projects while considering the latest available O&M cost data in different parts of the world. Based on research of new data

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while also taking into account the earlier approvals (adjusted with impact of PKR devaluation and inflation) and project size, the Authority has decided to approve the O&M cost of USD 19,400 per MW per annum for NITPPL.

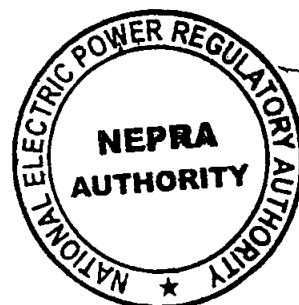
36. The Authority has decided to allow O&M cost into local and foreign components in the ratio of 50:50. Additionally, the Authority has decided that the approved O&M shall be applicable for first two years of operations. Afterward, the Authority may consider making revisions in the O&M cost, while capping the allowed prevailing cost level, anytime during the tariff control period. Those revisions may also entail changing the mix of the approved O&M cost (local and foreign) as well as the indexation mechanism (indices, frequency etc.). For that purpose, the Authority may also direct the petitioner to carry out the competitive bidding to select the contractor for the provision of the O&M cost.

Whether the claimed insurance during operation cost is justified?

37. The petitioner has claimed insurance during operation of USD 0.55 million per annum. NITPPL submitted that the claimed insurance during operation is based on 0.5% of claimed EPC cost. NITPPL during hearing submitted that this cost consists of operations all risk insurance for the Project, as well as business-interruption insurance required by all lenders and are also required under the EPA. The petitioner submitted that as per the lenders requirements, it has proposed to procure following insurance coverage for the operation period:

- a) Comprehensive Machinery Insurance
- b) Natural calamities (like earthquake, floods, etc.)
- c) Third party liability
- d) Sabotage & consequential business interruption, etc.
- e) Terrorism

38. The Authority noted that in the recently approved wind tariff determinations, insurance during operation at the rate of 0.4% of the approved EPC cost has been allowed. NEPRA Benchmarking Guidelines also state the provision of insurance during operation at the rate of 0.4% of EPC cost for wind projects having average construction period of 15-18 months. In view thereof, the Authority has decided to allow insurance during operation at the maximum limit of 0.4% of the approved EPC cost, including all taxes/charges and/or taxes, to the petitioner. This cost shall be allowed adjustment on annual basis as per the mechanism given in the Order part of this determination.

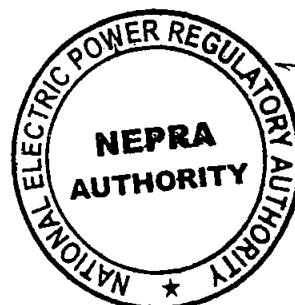


Whether the claimed return on equity is justified?

39. The petitioner has claimed Return on Equity (ROE) and Return on Equity during Construction (ROEDC) of 14% (IRR basis) separately on invested equity net of withholding tax.
40. The Authority allowed ROE of 14% in the tariffs of 15 wind power projects determined in 2018. It was noted that over the passage of time, the Authority has revised the equity returns downward for a number of generation technologies keeping in view the developments in those sectors. The Authority has noted that more than 1200 MWs of wind power projects in Sindh have become operational. Additionally, twelve wind projects have achieved Financial Close and shall be online sometime in 2021. Further, it has been learnt that wind power projects having capacity of more than 2,000 MWs to be setup in Sindh have obtained LOIs from different facilitating agencies. This makes it quite clear that risk profile for developing wind projects, especially in the province of Sindh, has reduced considerably. In view thereof, the Authority has decided to approve the 13% ROE for the petitioner.
41. The approved component of ROE/ROEDC shall be adjusted on yearly basis as per the mechanism given in the Order part of this determination. The payment of this component of tariff, applicable to any year, shall be due to be made at the end of that year. It is to be noted that the approved amount of return on equity shall be the maximum limit of the annual return to be earned by the project company. The amount of return of any year, if exceeds by the given limit, shall be shared between the power producer and consumers through claw back formula to be decided by the Authority.

Whether the claimed financing/debt terms are justified?

42. The petitioner has submitted that 100% foreign loan shall be secured for the Project based on debt to equity ratio of 80:20. The interest rate of LIBOR (0.6%) plus 3.5% for foreign loan has been claimed during hearing. The debt servicing period of thirteen has been claimed by NITPPL for the repayment of foreign loan. The petitioner has submitted indicative term sheet issued by the lender (China Exim Bank) dated June 11, 2016 along with the petition.
43. The Authority has noted that NEPRA Benchmarking Guidelines provides that the debt : equity ratio for all renewable power projects will be 80:20 and in case of change in ratio, the return approved on equity shall be adjusted to maintain cost of capital at the same level as under a 80:20 debt-equity ratio capital structure. The debt-equity ratio of 80:20 has also been approved by the Authority in the recent wind and solar tariff determinations.



Therefore, the Authority has decided to compute and approve tariff of NITPPL on debt to equity ratio of 80:20.

44. For foreign financing, NEPRA Benchmarking Guidelines say that spread not exceeding 4.25% over LIBOR shall be approved for foreign financing without Sinosure. The petitioner has claimed margin of 3.5% over LIBOR along with the provision of Sinosure at the rate of 0.6% on yearly debt servicing. As Sinosure fee is not being reflected in this tariff and only provision is being allowed, hence, the Authority has decided to compute the tariff of NITPPL at the financing cost of LIBOR (0.302%) plus margin of 4.25%. In case the petitioner shall avail financing with Sinosure then its tariff shall be adjusted at COD on financing cost as per the mechanism given in the Oder part of this determination.
45. The petitioner has claimed debt servicing period of thirteen years for foreign financing. The Authority in recently approved wind and solar tariff determinations has allowed foreign debt repayment period of not less than thirteen years. In view of approvals given in the recent tariff determinations, the Authority has decided to approve foreign debt repayment period of 13 years as claimed by the petitioner.

Whether the claimed annual energy generation and corresponding plant capacity factor are reasonable and justified? And whether the petitioner's proposed wind turbine technology satisfies the international standards of quality and operation?

46. The petitioner submitted the following technical details/parameters in this regard:

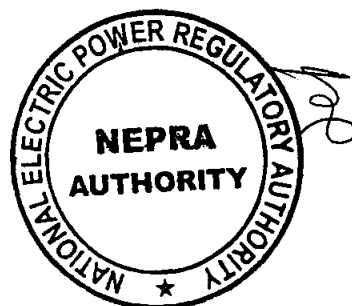
Project Capacity	100 MW
Annual Power Generation	330.67 GWh
Net Capacity Factor	37.75%
Hub Height	90 m
Rotor Diameter	121 m
Name Plate Capacity (Each Turbine)	2.5 MW

47. During the proceedings, the petitioner submitted a copy of Wind Resource and Energy Yield Assessment Report ("Energy Report") of the Project.
48. NITPPL submitted that Goldwind is the largest wind turbine manufacturer with more than 31 Gigawatts of installed capacity and more than 22,000 installed WTG units worldwide.



Goldwind continues to lead the global wind industry with mature manufacturing capabilities and innovative product line. The petitioner submitted that Goldwind's GW 121-2.5 has been selected based on technical specifications and suitability to the Project's site. The basis of selecting this turbine is its Permanent Magnet Generator which is gearless technology (Type 4 WTG) having lesser maintenance requirements and grid friendly behavior. NITPPL submitted that the selected 2.5 MW platform has more than 1698 installed units in the world. It submitted that the selected turbine complies with the IEC standards and is in conformance with DNV GL standards for the certifications of wind turbines.

49. It has been noted that the Modification Generation License for the proposed technology has already been approved for NITPPL which actually addresses the matter with respect to technology.
50. To assess the annual capacity factor, the Authority has analysed the data of energy yields of currently operational wind power plants in the country. The data of energy yields in different regions of the world and their trend in last couple of years has also been reviewed. It has been noted that worldwide, the capacity factors have improved as new machines are yielding better energy output within a given wind resource regime. These improvements have also been noted while comparing the energy production of old and newly commissioned wind power projects in Jhimpir region. It is found that the primary reason of these better results has been the change in turbine design through improvement in hub height, nameplate capacity and especially the enhancement in rotor diameters. For NITPPL also, it has been found that the mentioned three parameters are better than the turbines installed by the earlier wind power projects which are under operation in the country. Keeping in view these considerations while comprehensively analysing the information submitted by the petitioner with respect to wind resource, location, technology etc. the Authority understands that the net annual plant capacity factor as claimed by the petitioner is slightly on the lower side. In view of these considerations, the Authority has decided to set the tariff of NITPPL at net annual plant capacity factor of 39%. Further, the Authority has decided that the wind resource risk shall be borne by the power producer and a sharing mechanism given in the Order part of this determination shall be applied on the energy produced beyond the approved annual capacity utilization factor.



Whether the project grid interconnection study is approved by the relevant organization(s) and whether NTDC has issued power evacuation certificate?

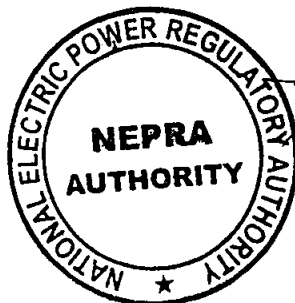
51. The petitioner in the tariff petition submitted that approval of Grid Interconnection Study (GIS) of the Project was granted by NTDC on February 11, 2019. The Authority has noted that this issue was framed to confirm that the integration of the subject project does not affect the overall grid system. It is further noted that the Generation License for the Project and Modification therein have already been issued by NEPRA while taking into account the requirements of the GIS and certificate. In view thereof, the Authority considered this issue settled.

Whether the claimed construction period is justified?

52. The petitioner has claimed construction period of 18 months from financial close for the Project. The Authority noted that it has approved construction period of 15 months in the recently approved tariff cases of wind power projects (50-60 MW). Considering the relatively bigger size of the Project, the Authority has decided to approve construction period of 18 months for NITPPL.

Comment of CPPAGL and AEDB

53. CPPAGL in its comments dated October 16, 2019 submitted that NITPPL falls under Category-III of the Cabinet Committee on Energy ("CCOE") decision dated March 29, 2019 which provides for procurement through competitive bidding. It further states that procurement of power from power projects under category-III of CCOE decision, is subject to the quantum ascertained by Indicative Generation Capacity Expansion Plan ("IGCEP") which shall form basis for the issuance of consent of power purchaser. CPPAGL submitted that it does not support the awarding of tariff to NITPPL.
54. AEDB in its comments October 18, 2019 submitted as per the decisions of the CCOE dated April 4, 2019, all projects that are lying under Category-III (including NITPPL) are allowed to proceed ahead subject to becoming successful in the competitive bidding process to be undertaken by AEDB based on the quantum ascertained for each technology in IGCEP. AEDB submitted that it has already started the preparation/development of RFP documents to carry out the competitive bidding. It also highlighted that the competitive procurement has the potential to secure lower tariffs than cost-plus tariffs.

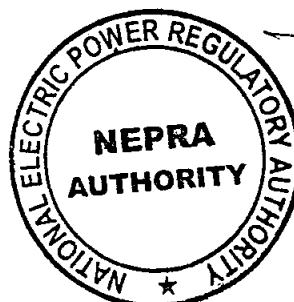


55. Regarding the comments with respect to CCOE decision, the Authority has noted that it has time and again clarified that Federal Government can give plan and guidelines to NEPRA as per the National Electricity Policy and NEPRA shall follow such policy while determining tariff as and when such electricity policy is approved by Council of Common Interest, as envisaged under Section 14-A of the NEPRA Act, 1997. It is further noted that the levelized tariff, being approved for the subject project, is less than half of the most expensive generation cost in the existing mix of the country. Therefore, it cannot be considered justified and rationale to not determine such economical tariffs for replacement of expensive electricity and consequent lowering of the average system generation cost.

56. **ORDER**

In pursuance of section 7(3)(a) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with NEPRA (Tariff Standards & Procedure) Rules, 1998, the Authority hereby determines and approves the following generation tariff along with terms and conditions for Norinco International Thatta Power (Pvt.) Limited (NITPPL) for its 100 MW wind power project for delivery of electricity to the power purchaser:

- Levelized tariff works out to be Rs. 5.3418/kWh (US Cents 3.1655/kWh).
- The tariff has been worked out on Build, Own and Operate basis.
- EPC cost of USD 86.00 million has been approved.
- PDC cost, including cost of land, of USD 2.143 million has been approved.
- Insurance during construction at the rate of 0.5% of the EPC cost has been allowed.
- Financing fee & charges at the rate of 2.0% of the debt portion of the capital cost has been approved.
- Debt to Equity ratio of 80:20 has been approved.
- 100% foreign local has been used.
- The cost of debt of 3 month LIBOR (0.302%) + spread (4.25%) has been used for foreign financing.
- Debt Repayment period of 13 years has been taken into account for foreign financing.
- Annual ROE & ROEDC of 13% has been allowed.
- Net Annual Plant Capacity Factor of 39% has been approved.
- O&M Cost of USD 19,400 per MW per year has been approved.



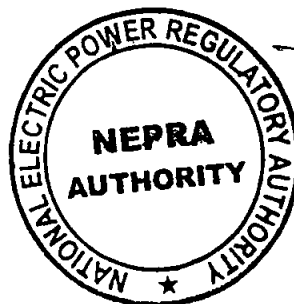
- Insurance during Operation has been calculated as 0.4% of the allowed EPC Cost.
- Reference Exchange Rates of 168.75 PKR/USD has been used.
- Construction period of eighteen (18) months has been used for the workings of ROEDC and IDC.
- IDC and ROEDC have been worked out using following drawdown schedule:

Quarter 1	10%
Quarter 2	10%
Quarter 3	20%
Quarter 4	20%
Quarter 5	20%
Quarter 6	20%

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

A. One Time Adjustments at COD

- The EPC cost shall be verified and adjusted at actual considering the approved amount as the maximum limit. Applicable foreign portion of the EPC cost will be adjusted at COD on account of variation in PKR/USD parity during the construction period, on production of authentic documentary evidence by the petitioner to the satisfaction of the Authority. The adjustment in applicable portion of the approved EPC cost shall be made only for the currency fluctuation against the reference parity values.
- The petitioner has submitted M/s DNV GL certification No. TC-DNVGL-SE-0074-00766-0 dated August 16, 2016 about the design, specification and country of origin of various components of the wind turbine to be installed for the Project. At the time of COD stage tariff adjustments, the petitioner will have to provide a confirmation from the EPC Contractor as to the fullest compliance of the equipment having same design and origin of manufacture as given in the type certificate. Where needed, the bill of lading and other support documents will also have to be submitted.

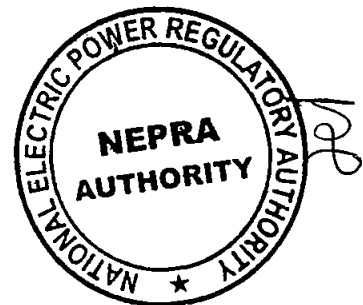


- PDC, Insurance during construction and Financing fee & charges shall be adjusted at actual at the time of COD considering the approved amount as the maximum limit. The amounts allowed on these accounts in USD will be converted in PKR using the reference PKR/USD rate of 168.75 to calculate the maximum limit of the amount to be allowed at COD.
- Duties and/or taxes, not being of refundable nature, relating to the construction period directly imposed on the company up to COD will be allowed at actual upon production of verifiable documentary evidence to the satisfaction of the Authority.
- The tariff has been determined on debt : equity ratio of 80 : 20. The tariff shall be adjusted on actual debt : equity mix at the time of COD, subject to equity share of not more than 20%. For equity share of more than 20%, allowed ROE shall be neutralized for the additional cost of debt : equity ratio.
- IDC will be recomputed at COD on the basis of actual timing of debt draw downs (for the overall debt allowed by the Authority at COD) for the project construction period of 18 months starting from the date of financial close. For foreign loan, IDC shall also be allowed adjustment for change in applicable LIBOR.
- 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 18 months from the date of financial close.
- For foreign and local loans, if any, the savings in the approved spreads shall be shared between the power purchaser and power producer in the ratio of 60:40.

B. Indexations during Operations

ROE, ROEDC and Insurance shall be allowed adjustment on yearly basis starting from either 1st July or 1st January. Debt Servicing and O&M component shall be allowed adjustment on quarterly basis starting from 1st July, 1st October, 1st January and 1st April. The indexation mechanisms are given hereunder:

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i) **Operation and Maintenance Costs**

O&M components of tariff shall be adjusted based on revised rates of local Inflation (CPI) as notified by Pakistan Bureau of Statistics, foreign inflation (US CPI) as notified by US Bureau of Labour Statistics and TT&OD selling rate of US Dollar as notified by National Bank of Pakistan according to the following formula;

F. O&M _(REV)	=	F. O&M _(REF) * US CPI _(REV) / US CPI _(REF) * ER _(REV) /ER _(REF)
L. O&M _(REV)	=	L. O&M _(REF) * CPI _(REV) / CPI _(REF)
Where;		
F. O&M _(REV)	=	The revised O&M Foreign Component of Tariff
L. O&M _(REV)	=	The revised O&M Local Component of Tariff
F. O&M _(REF)	=	The reference O&M Foreign Component of Tariff
L. O&M _(REF)	=	The reference O&M Local Component of Tariff
US CPI _(REV)	=	The revised US CPI (All Urban Consumers)
US CPI _(REF)	=	The reference US CPI (All Urban Consumers) of 256.394 for the month of May, 2020
CPI _(REV)	=	The revised CPI (General)
CPI _(REF)	=	The reference CPI (General) of 268.25 for the month of May, 2020
ER _(REV)	=	The revised TT & OD selling rate of US dollar
ER _(REF)	=	The reference TT & OD selling rate of RS. 168.75/USD

Note: (i) The reference index of CPI shall be revised for making the required adjustments in local O&M component at the time of COD. For the adjustment of local O&M component at COD, the revised CPI General value for the middle month of preceding quarter prior to the date of COD shall be considered. Thereafter, the CPI value taken at COD shall become reference for subsequent adjustments in the local O&M component.

(ii) The reference indices of US CPI and exchange rate shall be revised for making the required adjustments in foreign O&M component at the time of COD. For the adjustment of foreign O&M component at COD, the revised US CPI for the middle month of preceding quarter prior to the date of COD shall be considered. The revised exchange rate for the last day of the preceding quarter prior to the date of COD shall be considered. Thereafter, the values of US CPI and exchange rates taken at COD shall become reference for subsequent adjustments in the foreign O&M component.



ii) Insurance during Operation

The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser, not exceeding 0.4% of the approved EPC cost, will be treated as pass through. Insurance component of reference tariff shall be adjusted annually as per actual upon production of authentic documentary evidence according to the following formula:

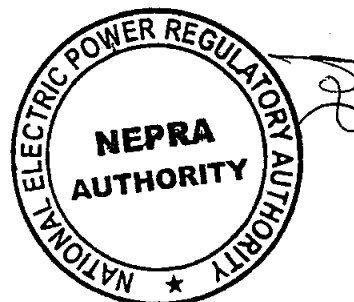
AIC	=	$Ins_{(Ref)} / P_{(Ref)} * P_{(Act)}$
Where;		
AIC	=	Adjusted insurance component of tariff
$Ins_{(Ref)}$	=	Reference insurance component of tariff
$P_{(Ref)}$	=	Reference premium @ 0.4% of approved EPC Cost at Rs. 168.75/USD
$P_{(Act)}$	=	Actual premium or 0.4% of the approved EPC Cost converted into Pak Rupees on exchange rate prevailing on 1 st day of the insurance coverage period whichever is lower

iii) Return on Equity

The ROE (ROE + ROEDC) component of the tariff will be adjusted annually on account of change in PKR/USD parity. The variation relating to these components shall be worked out according to the following formula:

$ROE_{(Rev)}$	=	$ROE_{(Ref)} * ER_{(Rev)} / ER_{(Ref)}$
Where;		
$ROE_{(Rev)}$	=	Revised ROE Component of Tariff
$ROE_{(Ref)}$	=	Reference ROE Component of Tariff
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	The reference TT & OD selling rate of Rs. 168.75/USD

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



iv) **Indexations applicable to debt**

For foreign debt, respective principal and interest components will be adjusted on quarterly (bi-annual/annual, if applicable) basis, on account of revised TT & OD selling rate of US Dollar, as notified by the National Bank of Pakistan as at the last day of the preceding period, over the applicable reference exchange rate as approved at COD.

v) **Variations in LIBOR**

The interest part of tariff component for the foreign loan shall also be subject to variation in interest rate as a result of variation in LIBOR according to the following formula:

ΔI	=	$P_{(REV)} * (LIBOR_{(REV)} - 0.3020\%) / 4$
Where;		
ΔI	=	The variation in interest charges applicable corresponding to variation in 3 month LIBOR. ΔI can be positive or negative depending upon whether 3 month LIBOR (REV) per annum > or < 0.3020%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment.
$P_{(REV)}$	=	The outstanding principal (as indicated in the attached debt service schedule to this order), at the relevant quarterly calculations date. Quarter 1 shall commence on the COD (i.e. the first figure will be used for the purposes of calculation of interest for the first quarter after COD).
$LIBOR_{(REV)}$	=	Revised 3 month LIBOR as at the last day of the preceding quarter.

Note: The reference tariff component shall be revised after making the required adjustments at the time of COD. These variations may also be approved on biannually/yearly basis depending on the final terms approved at the time of COD.

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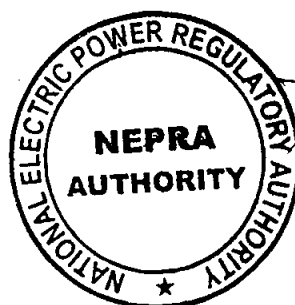
C. Terms and Conditions

The following terms and conditions shall apply to the determined tariff:

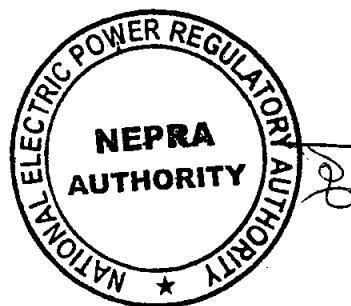
- All plant and equipment shall be new and of acceptable standards. The verification of the plant and equipment will be done by the Independent Engineer at the time of the commissioning of the plant duly appointed by the power purchaser.
- This tariff will be limited to the extent of net annual energy generation supplied to the power purchaser up to 39% net annual plant capacity factor. Net annual energy generation supplied to the power purchaser in a year, in excess of 39% net annual plant capacity factor will be charged at the following tariffs:

<u>Net annual plant capacity factor</u>	<u>% of prevalent tariff allowed to power producer</u>
Above 39% up to 40%	-
Above 40% up to 41%	10%
Above 41% up to 42%	20%
Above 42% up to 43%	30%
Above 43%	40%

- The petitioner is required to ensure that all the equipment is installed as per the details/specifications provided in the Generation License/Tariff Determination. Any change in the power curve of the turbines as provided in studies along with the petition and the relevant assumptions contained therein shall not be allowed.
- The petitioner is required to maintain the availability levels as declared in the Tariff Petition and the studies provided therein. Necessary clauses shall be included in the EPA so that the power producer cannot intentionally suppress the capacity factors. NPCC shall conduct detailed monitoring/audit of the operational record/log of all the wind turbines on quarterly basis to verify output/capacity of the power plant.
- The risk of wind resource shall be borne by the power producer.



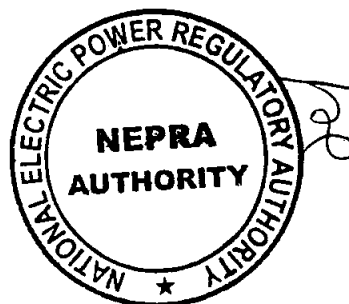
- In the tabulated above tariff, no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same shall be distributed between the power purchaser and the power producer in accordance with the applicable GOP Policy, amended from time to time.
- The savings in the approved limit of spread over foreign loan shall also be shared between power purchaser and power producer in the ratio of 60:40 at the time of COD or during any time of loan tenor, as applicable.
- In case the company shall secure full or part of local conventional loan then the tariff of company shall be adjusted at the time of COD at applicable KIBOR + spread of 2.25%. The savings in the approved spreads during the loan tenor shall be shared between the power purchaser and power producer in the ratio of 60:40. The tenor of the debt servicing shall not be less than thirteen years for this loan.
- In case the company shall secure foreign loan under any credit insurance (Sinasure etc.) then the cost of that insurance shall be allowed to the maximum limit of 0.6% of the approved yearly outstanding principal and interest amounts. For financing with Sinasure, the spread/margin over LIBOR shall be adjusted to the extent such that the total financing cost (applicable LIBOR + Adjusted Margin + Sinasure) shall not exceed the financing cost without Sinasure (applicable LIBOR + Approved Margin).
- After two years of operations, the Authority may consider making revisions in the O&M cost, while capping the allowed prevailing level, anytime during the tariff control period. Those revisions may also entail changing the mix of the approved O&M cost (local and foreign) as well as the indexation mechanism (indices, frequency etc.). For that purpose, the Authority may direct the petitioner to carry out the competitive bidding to select the contractor for the provision of the O&M cost.
- The payment of ROE (including ROEDC) components of tariff shall be due to be made at the end of respective years.
- In case the company earns annual profit in excess of the approved return on equity (including ROEDC), then that extra amount shall be shared between the



power producer and consumers through claw back formula to be decided by the Authority. For that sharing, the share of producer as given in the bonus energy mechanism shall be taken into account.

- The company will have to achieve financial close within one year from the date of issuance of tariff determination. The tariff granted to the company will no longer remain applicable/valid, if financial close is not achieved by the company, for whatever reason, in the abovementioned timeline or its generation license is declined/revoked by NEPRA.
- The targeted maximum construction period from prescribed date/time of financial close is 18 months. No adjustment will be allowed in this tariff to account for financial impact of any delay in project construction. However, the failure of the company to complete construction within 18 months will not invalidate the tariff granted to it.
- Pre COD sale of electricity is allowed to the project company, subject to the terms and conditions of EPA, at the applicable tariff excluding debt servicing and return on equity components. However, pre COD sale will not alter the required commercial operations date stipulated by the EPA in any manner.
- In case the company is obligated to pay any tax on its income from generation of electricity, or any duties and/or taxes, not being of refundable nature, are imposed on the company, the exact amount paid by the company on these accounts shall be reimbursed on production of original receipts. This payment shall be considered as a pass-through payment. However, withholding tax on dividend shall not be a pass through item.
- No provision for the payment of Workers Welfare Fund and Workers Profit Participation has been made in the tariff. In case, the company has to pay any such fund, that will be treated as pass through item in the EPA.
- The approved tariff along with terms & conditions shall be made part of the EPA. General assumptions, which are not covered in this determination, may be dealt with as per the standard terms of the EPA.

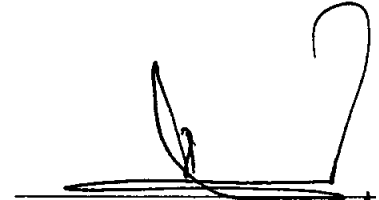
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57. The Order part along with ~~three~~^{two} Annexures is recommended for notification by the Federal Government in the official gazette in accordance with Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

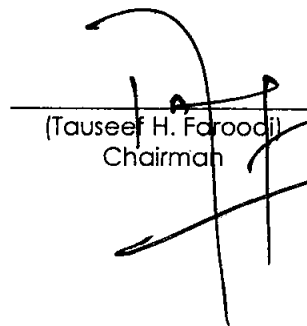
AUTHORITY

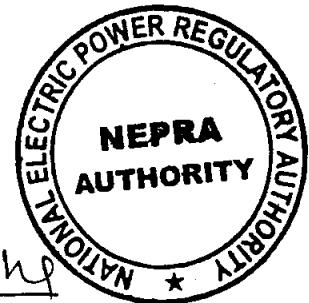

(Rafique Ahmed Shaikh)
Member

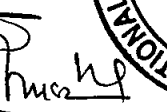

(Eng. Bahadur Shah)
Member


(Rehmatullah Baloch)
Member


(Saif Ullah Chattha)
Vice Chairman
11.8.2020

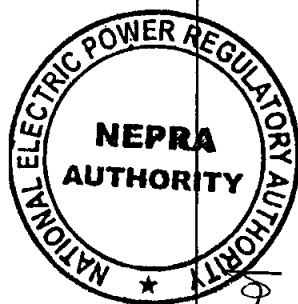

(Tauseef H. Faroodi)
Chairman




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Norinco International Thatta Power (Pvt.) Ltd.
Reference Tariff Table

Year	O&M-Local	O&M-Foreign	Insurance	Return on Equity	Return on Equity during Construction	Principal Repayment	Interest Charges	Tariff
	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh
1	0.4791	0.4791	0.1699	1.1836	0.1134	2.1048	1.6221	6.1521
2	0.4791	0.4791	0.1699	1.1836	0.1134	2.2023	1.5247	6.1521
3	0.4791	0.4791	0.1699	1.1836	0.1134	2.3042	1.4227	6.1521
4	0.4791	0.4791	0.1699	1.1836	0.1134	2.4109	1.3160	6.1521
5	0.4791	0.4791	0.1699	1.1836	0.1134	2.5226	1.2044	6.1521
6	0.4791	0.4791	0.1699	1.1836	0.1134	2.6394	1.0876	6.1521
7	0.4791	0.4791	0.1699	1.1836	0.1134	2.7616	0.9654	6.1521
8	0.4791	0.4791	0.1699	1.1836	0.1134	2.8895	0.8375	6.1521
9	0.4791	0.4791	0.1699	1.1836	0.1134	3.0232	0.7037	6.1521
10	0.4791	0.4791	0.1699	1.1836	0.1134	3.1632	0.5637	6.1521
11	0.4791	0.4791	0.1699	1.1836	0.1134	3.3097	0.4173	6.1521
12	0.4791	0.4791	0.1699	1.1836	0.1134	3.4629	0.2640	6.1521
13	0.4791	0.4791	0.1699	1.1836	0.1134	3.6233	0.1037	6.1521
14	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
15	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
16	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
17	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
18	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
19	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
20	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
21	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
22	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
23	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
24	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
25	0.4791	0.4791	0.1699	1.1836	0.1134	-	-	2.4252
Levelized Tariff	0.4791	0.4791	0.1699	1.1836	0.1134	2.0654	0.8512	5.3418



Norinco International Thatta Power (Pvt.) Ltd.
Debt Service Schedule-Foreign

Relevant Quarters	Base amount (USD)	Principal Repayment (USD)	Interest (USD)	Balance Principal (USD)	Total Debt Service (USD)	Annual Principal Repayment Rs/kWh	Annual Interest Rs/kWh
1	73,728,787	1,047,303	839,034	72,681,484	1,886,337	2.1048	1.6221
2	72,681,484	1,059,222	827,115	71,622,262	1,886,337		
3	71,622,262	1,071,276	815,061	70,550,986	1,886,337		
4	70,550,986	1,083,467	802,870	69,467,520	1,886,337		
5	69,467,520	1,095,797	790,540	68,371,723	1,886,337	2.2023	1.5247
6	68,371,723	1,108,267	778,070	67,263,456	1,886,337		
7	67,263,456	1,120,879	765,458	66,142,578	1,886,337		
8	66,142,578	1,133,634	752,703	65,008,943	1,886,337		
9	65,008,943	1,146,535	739,802	63,862,408	1,886,337	2.3042	1.4227
10	63,862,408	1,159,583	726,754	62,702,825	1,886,337		
11	62,702,825	1,172,779	713,558	61,530,047	1,886,337		
12	61,530,047	1,186,125	700,212	60,343,922	1,886,337		
13	60,343,922	1,199,623	686,714	59,144,299	1,886,337	2.4109	1.3160
14	59,144,299	1,213,275	673,062	57,931,024	1,886,337		
15	57,931,024	1,227,082	659,255	56,703,942	1,886,337		
16	56,703,942	1,241,046	645,291	55,462,896	1,886,337		
17	55,462,896	1,255,169	631,168	54,207,727	1,886,337	2.5226	1.2044
18	54,207,727	1,269,453	616,884	52,938,274	1,886,337		
19	52,938,274	1,283,899	602,438	51,654,374	1,886,337		
20	51,654,374	1,298,510	587,827	50,355,864	1,886,337		
21	50,355,864	1,313,287	573,050	49,042,577	1,886,337	2.6394	1.0876
22	49,042,577	1,328,232	558,105	47,714,345	1,886,337		
23	47,714,345	1,343,348	542,989	46,370,997	1,886,337		
24	46,370,997	1,358,635	527,702	45,012,362	1,886,337		
25	45,012,362	1,374,096	512,241	43,638,266	1,886,337	2.7616	0.9654
26	43,638,266	1,389,733	496,603	42,248,532	1,886,337		
27	42,248,532	1,405,549	480,788	40,842,984	1,886,337		
28	40,842,984	1,421,544	464,793	39,421,440	1,886,337		
29	39,421,440	1,437,721	448,616	37,983,719	1,886,337	2.8895	0.8375
30	37,983,719	1,454,082	432,255	36,529,637	1,886,337		
31	36,529,637	1,470,630	415,707	35,059,007	1,886,337		
32	35,059,007	1,487,365	398,972	33,571,642	1,886,337		
33	33,571,642	1,504,292	382,045	32,067,350	1,886,337	3.0232	0.7037
34	32,067,350	1,521,410	364,926	30,545,940	1,886,337		
35	30,545,940	1,538,724	347,613	29,007,216	1,886,337		
36	29,007,216	1,556,235	330,102	27,450,981	1,886,337		
37	27,450,981	1,573,945	312,392	25,877,036	1,886,337	3.1632	0.5637
38	25,877,036	1,591,856	294,481	24,285,180	1,886,337		
39	24,285,180	1,609,972	276,365	22,675,208	1,886,337		
40	22,675,208	1,628,293	258,044	21,046,915	1,886,337		
41	21,046,915	1,646,823	239,514	19,400,092	1,886,337	3.3097	0.4173
42	19,400,092	1,665,564	220,773	17,734,528	1,886,337		
43	17,734,528	1,684,518	201,819	16,050,010	1,886,337		
44	16,050,010	1,703,688	182,649	14,346,323	1,886,337		
45	14,346,323	1,723,076	163,261	12,623,247	1,886,337	3.4629	0.2640
46	12,623,247	1,742,684	143,653	10,880,562	1,886,337		
47	10,880,562	1,762,516	123,821	9,118,046	1,886,337		
48	9,118,046	1,782,574	103,763	7,335,473	1,886,337		
49	7,335,473	1,802,859	83,478	5,532,614	1,886,337	3.6233	0.1037
50	5,532,614	1,823,376	62,961	3,709,238	1,886,337		
51	3,709,238	1,844,126	42,211	1,865,112	1,886,337		
52	1,865,112	1,865,112	21,225	(0)	1,886,337		

