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Islamic Republic of Pakistan

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No. NEPRA/R/ADG(Trf)/TRF-522/UHPCO-2020/20196-20198
April 19, 2021

Subject: **Decision of the Authority in the matter of Tariff Petition filed by Uzghor Hydropower (Pvt.) Ltd. (UHPCO) for Tariff Determination of 82.25 MW Turtonas-Uzghor Hydropower Project** (Case No. NEPRA/TRF-522/UHPCO-2020)

Dear Sir,

Please find enclosed herewith the subject decision of the Authority along with Annex-I, II-a & II-b (30 Pages) in Case No. No. NEPRA/TRF-522/UHPCO-2020.

2. The decision 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.

Enclosure: As above

19/4/21

(Iftikhar Ali Khan)

Secretary,
Ministry of Energy (Power Division),
Government of Pakistan
'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 TARIFF PETITION FILED BY UZGHOR HYDROPOWER PVT. LTD FOR TARIFF DETERMINATION OF 82.25 MW TURTONAS-UZGHOR HYDROPOWER PROJECT.

1. Uzghor Hydropower Pvt. Ltd. (hereinafter referred to as the "the Project Company" or "UHPCO" or "the petitioner"), envisages to set up 82.25 MW is run of the river located on River Golen Gol a tributary of Mastuj River District Chitral of Khyber Pakhtunkhwa Province

2. The Company filed a Tariff Petition for determination of generation tariff for the Project pursuant to the National Electric Power Regulatory Authority (Tariff Standards and Procedures) Rules, 1998.

Submissions of the petitioner:

3. The salient features of the petition are as follows:

Project Size	**82.25 MW**
Project Site	River Golen Gol a tributary of Mastuj River District Chitral of Khyber Pakhtunkhwa Province.
Construction Period	48 Months
Plant Factor	53.06%
Saleable Energy	378.48 GWh
Capital Structure	80% Debt and 20% Equity
Proposed Levelized	7.9205 US cents /kWh
Total Project Cost	USD 204.602 million
Rs./USD	123.60

4. The proposed project costs are summarized below:

Project Cost	**USD million**
EPC Cost	148.93
Engineering & Supervision	5.957
Project Development Cost	14.382
Overseas Investment Insurance	0.148
Land Acquisition, Resettlement & Env. Mitigation	3.283
Custom Duties & Taxes	2.230
Insurance During Construction	2.978
Financial Charges	3.558
Interest During Construction	23.136
Total Project Cost	**204.602**

5. The proposed project cost and reference tariff is based on the following assumptions. The petitioner stated that a change in any of these assumptions will necessitate a corresponding adjustment in the reference tariff:

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a. Considering the three-stage tariff determination process as applicable in Pakistan, the tariff is based on the project cost derived from individual costs and quantities as assumed in the feasibility study and will remain subject to adjustments, after detailed engineering design and then agreement of a firm EPC cost, during the second and third stage tariff determinations. Typical tariff re-openers as are available under the applicable tariff determination mechanism will be available to the Project at later stages of tariff determination.

b. Currently, the Project Company has assumed that the debt for the project will be sourced through foreign and local financial institutions. The exact composition of debt i.e. local: foreign will be finalized prior to financial close; adjustment against the same will be requested at the time of COD stage tariff.

c. An exchange rate of Rs. 123.6/USD (as of 20th August, 2018) has been assumed. Indexation against Rs./USD variations from and after the aforesaid date will be permitted for debt servicing payments and all other project costs denominated in foreign currency. Tariff components shall be respectively indexed for exchange rate variations.

d. The timing of drawdown of debt and equity may vary from those specified in this Petition; as such, the Project Cost and IDC will be adjusted on the basis of actual drawdowns at COD. Similarly, ROEDC component will also be updated in the Reference Tariff at the COD;

e. As per NEPRA's mechanism for development of tariff for hydropower projects, Special Return on Equity (SROE) on the amount of equity invested during 30 months prior to financial close has not been included in ROEDC; adjustment against the same will be requested at the time of EPC stage tariff.

f. Adjustments in project cost due to variation in Rs./USD variations and KIBOR /LIBOR fluctuations will also be catered for at the time of COD;

g. Taxes and Duties amounting to USD 2.23 million have been assumed on the import of plant and equipment under Power Generation Policy 2015 will be adjusted as per actual payment at COD;

h. Withholding tax on offshore supplies, sales tax & provincial sales tax on the works and services is not assumed at this stage. In case there is any change in any taxes or duties above, or additional taxes, fees, excise duty, levies etc. are imposed, the same shall be treated as part of EPC/Project cost and the reference tariff will be adjusted accordingly. Furthermore no provincial taxes have been assumed in the tariff petition. In case Project is required to pay any such taxes commensurate adjustment will be requested at the time of EPC stage tariff or the COD stage tariff (as the case may be).

i. The Power Purchaser will compensate for energy delivered to the power purchaser prior to COD. For this purpose Energy Purchase Price shall be paid for all energy delivered prior to COD. Payments will be invoiced to the Power Purchaser as per mechanism specified in the PPA; The Power Purchaser shall be solely responsible for the financing, engineering, procurement, construction, testing and commissioning of the interconnection and transmission facilities. Furthermore, the Power Purchaser will be solely responsible for operation and maintenance of the interconnection and transmission facilities;

j. Hydrological risk will be borne by the Power Purchaser;

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k. The Power Purchase Agreement will be structured as a take-or-pay contract whereby the Capacity Purchase Price will be payable to the project Company regardless of actual dispatch levels;

l. Water Use Charge and its revisions will be in accordance with Power Generation Policy, 2015 as amended from time to time;

m. Project contingency and maintenance reserves are not included in Reference Tariff calculations. If required by lenders, these will be adjusted accordingly in the Reference Tariff;

n. Sinosure on foreign debt is not included in Reference Tariff calculations. If required by Sponsors, it will be adjusted accordingly in the Reference Tariff at the time of EPC Stage;

o. CDM revenues, if any, will be dealt with in accordance with Government Policy;

p. O&M mobilization fee is not included in Reference Tariff calculations. The same will be adjusted accordingly in the Reference Tariff at the time of EPC Stage;

q. No provision for working capital and debt service reserve account has been made in Reference Tariff calculations. If required, the same shall be adjusted in the Reference Tariff at EPC Stage or COD Stage (as the case may be);

r. In case of any unintentional error or omissions, typographic errors, and any genuine assumption being overlooked, the same will be corrected/incorporated and advised to CPPA/NEPRA as soon as the Sponsors/Project Company becomes aware of it;

s. Any additional costs incurred to cater for any modifications or additions required by the PESCO, NPCC, NTDC or Power Purchaser will form part of the Project cost at EPC Stage or COD Stage (as the case may be);

t. The cost of Community Investment Plan (CIP) or activities pertaining to Corporate Social Responsibility (CSR) is not assumed / made part of the Project Cost. If required, the same shall be adjusted in the reference tariff at EPC Stage or COD Stage (as the case may be);

u. Any additional indexation or concession allowed by the GOP, Provincial Government or NEPRA or any other Govt. entity to any IPP will be allowed to Sponsors/Proposed Company without any discrimination.

v. The EPC Cost alongside various other components of Project Cost are currently based on feasibility stage cost estimates and will be firmed up in later stages based on NEPRA Mechanism for determination of tariff for hydropower projects and NEPRA Guidelines for selection of EPC Contractors.

Proceedings:

6. The tariff petition was admitted by the Authority on March 12, 2020 and the salient features of the tariff proposal were published in daily newspapers inviting filing of replies, intervention requests, or comments. It was also decided to conduct a hearing on the matter on September 16, 2020, at 10:00 AM through an online application. Notices of hearing and the proposed issues to be discussed and deliberated upon during the hearing were also published in the national newspapers on August 29,

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2020. In response to the notice of hearing, no intervention requests have been filed, however Central Power Purchasing Agency (Guaranteed) Limited (CPPA-G) has submitted written comments.

Hearing:

7. The hearing in the subject matter was held on September 16, 2020 at 10:00 AM through online application Zoom, which was attended by the representatives of the petitioner, Central Power Purchasing Agency Guarantee Limited (CPPA-G) and other stakeholders. The transcript of the hearing.

Comments of Stakeholders:

8. CPPA-G vide letter dated September 15, 2020, submitted its comments and which were also forwarded to the petitioner for a response. CPPA-G comments along with the petitioner's response is discussed under the relevant issue.

Issues:

9. Based on the contents of the Petition, the following issues framed for the hearing were approved by the Authority:

    i. Whether the project design/feasibility has been approved by the competent Authority/forum?

    ii. Whether an approved Interconnection Study has been obtained?

    iii. Whether the NOC's from IRSA & Provincial Environment depts. has been obtained?

    iv. Whether the plant Capacity and annual generation claimed by the Petitioner are justified?

    v. Whether the construction period of 48 months claimed by the petitioner is justified?

    vi. Whether the requested EPC cost of USD 148.93 million is justified?

    vii. Whether the requested non EPC costs amounting to USD 26.6 million pertaining to Engineering & Supervision, Project Development, Land Acquisition & Resettlement & Environment Mitigation, Insurance during Construction is justified?

    viii. Whether the claimed Overseas Investment Insurance cost on equity is justified?

    ix. Whether the Custom Duties of USD 2.230 million claimed by the Petitioner is justified?

    x. Whether the Financial Charges amounting to 3.558 million claimed is justified?

    xi. Whether the proposed financing/debt terms and Interest during Construction (IDC) are justified?

    xii. Whether the claimed per annum O&M cost of USD 3.067 million for Fixed and Variable O&M during operations is justified?

    xiii. Whether the claimed Water Use Charges are justifiable?

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xiv. Whether the claimed Insurance cost per annum for the operation period based at 1% of the EPC cost justified?

xv. Whether the Return on Equity (ROE) and Return on Equity during Construction (ROEDC) computed at 17% is justified?

xvi. Whether other assumptions of the Tariff are justified?

Issue No. I. Whether the project design/feasibility has been approved by the competent Authority/forum?

10. The petitioner submitted that in order to evaluate the performance of the sponsors and to make sure that the feasibility study of the project is completed in accordance to best international standards, Private Power Infrastructure Board (PPIB) formulated a team of Panel of Experts (PoE) to review and approve the feasibility study at every step. The PoE of PPIB approved the feasibility on vide letter dated June 3rd, 2019.

11. The Authority observed that the petitioner submitted an approval of PPIB dated June 3, 2019, in respect of its feasibility study which was conducted by a joint venture of Technical, Engineering and Management (TEAM) (Pvt.) Ltd. Pakistan & FICHTNER GmbH, Germany therefore, this issue stands addressed.

Issue No. II. Whether an approved Interconnection Study has been obtained?

12. Regarding the interconnection study, the petitioner submitted that the Sponsors after receiving consent from PESCO and recommendation from CPPA-G have approached NTDC to issue their consent as well as share necessary data of nearby grid availability in order to conduct the project specific grid interconnection/load flow study. NTDC has issued letters to Sponsors & PPIB to inform them that NTDC will carry out Integrated Interconnection Study and Sponsors are not required to carry Project Specific Interconnection Study.

13. The petitioner also submitted that the nearest 132kV switchyard is at 108MW Golen Gol HPP which is about 5 km from the Project. 132kV TL from the Project switchyard can be connected to Golen Gol HPP switchyard or to its outgoing 132kV TL through In/Out connections, subject to NTDC approval.

14. CPPA-G vide letter dated September 15, 2020, submitted that has not issued any consent for purchase of power therefore, CPPA-G may not be considered as a power purchaser for this project.

15. The petitioner in response submitted that the tariff petition has been filed in accordance with NEPRA Tariff (Standards and Procedures) Rules, 1998. The said Rules do not require the petitioner to seek consent from the power purchaser at this stage.

16. The Authority understands that as per the NEPRA Tariff (Standards and Procedures) Rules, 1998 interconnection study is not a requirement, however, it is an important document and from the submission of the petitioner it is apparent they are pursuing the issue and till EPC stage they may obtain it. The Authority, therefore, directs the petitioner that at the time of submission of EPC stage tariff an approved interconnection study is mandatory.

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Issue No.III. Whether the NOC's from IRSA & Provincial Environment depts. has been obtained?

17. The petitioner submitted that the NOCs from IRSA and Provincial Environment Department have been obtained.

18. The Authority acknowledges that petitioner has provided the approval letters regarding NOCs received from Environmental Protection Agency and Indus River System Authority on May 24, 2019 & July 1st, 2020 respectively and accordingly the issue stands addressed.

Issue No. IV. Whether the plant Capacity and annual generation claimed by the petitioner are justified?

19. The petitioner submitted that GTZ's hydropower optimization program HPC (Hydro Power Costing) has been used to analyze & finalize the optimization of Plant Capacity & Design. Design discharges in the range of 16 to 22 m^3/s, was applied during the course of plant optimization studies. As a tool for ranking the options, the levelized energy cost approach was applied for the comparison between the alternative configurations. The figures stated in the tariff petition are duly approved by the PoE of PPIB.

20. Since PPIB has already approved the feasibility study of the project, therefore, the Authority is relying on the assumptions taken in the study to arrive at annual generation numbers. For this purpose, gross annual average energy of 382.33 GWh has been assessed by relying on the efficiencies for turbine (91.5%), generator (97%), and transformer (99%) based on daily flow data of the available records of 52 years of Chitral gauging station as mentioned in the feasibility study, resulting into plant load factor of 53.06%.

21. However, the Authority observed that the petitioner has requested to allow 1% of gross capacity as auxiliary consumption for its power plant. But as per the feasibility study, it was observed that losses of turbine, generator and transformer are included in the gross capacity calculated in the feasibility study; therefore the Authority is of the considered opinion that 0.5% auxiliary consumption is reasonable and the same has been taken into account. The resultant annual net energy works out to be 380.3911 GWh and the same has been approved by the Authority.

Issue No. V. Whether the construction period of 48 months claimed by the petitioner is justified?

22. The petitioner submitted that the construction period of the project is carefully planned keeping in view various aspects such as the project location, accessibility, transportation of construction material, weather & logistics etc. the three month snowfall period is one of the factors for the long construction period. Construction of Headrace Tunnel is a critical activity, which will take 42-44 months.

23. The Authority considered the submission of the petitioner with regard to the above-mentioned issue. The Authority while analyzing the construction period of similar size hydropower plants around the globe noted that the requested construction period of 48 months is reasonable which is also a period approved by the Panel of Expert of PPIB hence the same time period of 48 months is allowed to the petitioner.

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Issue No. VI. Whether the requested EPC cost of USD 148.93 million is justified?

24. The petitioner submitted the following:

I. The cost for civil works, as well as procurement of electro-mechanical equipment, transportation, erection, testing and commissioning, are calculated and thoroughly reviewed/approved by a Panel of Experts during several PoE meetings.

II. The PPIB's Technical Consultant "Associated Consulting Engineers (ACE)" being a PoE member has also conducted a detailed analysis of the costs during the approval process of the feasibility study.

III. The civil works quantities have been calculated on the basis of engineering design drawings prepared during FS consisting of plans and sections of all structures of the project. BOQ was made on the basis of Project design requirements & Rate Analysis has been carried out, keeping in consideration of NEPRA three-stage tariff mechanism. Foreign cost components are based on quotations received from the electro-mechanical manufacturer as well as benchmarked with similar on-going projects in international and domestic power markets.

IV. The cost estimates used in the feasibility study were prepared based on price levels prevalent in August 2018. The nominal exchange rate in August 2018 has been taken as 1 USD = Rs. 123.60.

V. The feasibility stage EPC cost will be firmed up at EPC Stage where EPC contractor for the project will be selected through the International Competitive Bidding ("ICB") process, to be conducted in compliance with the NEPRA's Guidelines for Selection of EPC Contractor

VI. The EPC cost is broadly classified into five sub-categories, summarized as:

Description	USD million
Civil works & Preliminary works	79.986
Electrical & mechanical equipment	40.064
Hydraulic steel equipment	17.931
Transportation & erection charges	5.220
Detail engineering design	5.729
Total EPC cost	**148.93**

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VII. The EPC cost ($1.81Mil/MW) assumed in the feasibility level is in line with the costs approved by the Authority for similar size hydropower projects.

VIII. It is pertinent to mention here that the hydropower project costs are based on project specific site conditions and may not be compared to the costs of other hydropower projects. Moreover, PPIB, which is involved in the development of the majority of hydropower projects, with the passage of time has acquired expertise in hydropower development. The current members of

PPIB's PoE have extensive experience in their fields and have thorough knowledge as compared to PoE's of 2010-2015. PPIB's requirements for conducting a feasibility study is much more stringent than before and there is a proper mechanism to oversee the feasibility study milestones. In this way, unlike the feasibility studies of previous hydropower projects which are now in the implementation phase, a more detailed feasibility study is formulated in order to avoid sudden surprises at the detailed EPC level design of the Project.

25. CPPA-G vide letter dated September 15, 2020, submitted that the EPC cost per MW, civil work cost per MW and overall the total Project cost per MW is high as compared to Gulpur & Azad Pattan HPPs and seems to be unrealistic. CPPA-G is of the view that this cost should be rationalized in line- with other hydropower projects and brought near to a realistic approach.

26. The petitioner submitted that each category of the project cost is thoroughly reviewed by the Panel of Experts (PoE).

27. The Authority after reviewing the comments of CPPA-G and petitioner's submissions observed that keeping in view the international cost benchmarks available in various reports and the regional costs data of the comparable hydropower projects, the EPC cost claimed by the petitioner is on the higher side which needs rationalization.

28. In order to rationalize the components of EPC costs, the Authority has relied upon the costs approved for another project of comparable size located in the same locality with almost the same parameters. The civil works cost of the comparable hydropower project, when adjusted with applicable escalation, yields Rs. 107.07 million per MW as against the claimed cost of Rs. 119.64 million per MW which is on the higher side. The Authority has therefore decided to rely on per MW civil cost of Rs. 107.70 million for the Project, which results in an amount of Rs. 8,806.5075 million and the same is approved.

<u>Electrical & Mechanical Equipment Cost:</u>

29. UHPCO has claimed USD 68.944 million or USD 0.84 million per MW for the procurement of E&M equipment, transportation, erection, testing and commissioning.

30. The proposed E&M costs of USD 0.84 million per MW was compared with E&M costs of similar hydropower projects and it was revealed that the claimed cost under this head is significantly high which needs to be rationalized. Based on the approved cost of USD 0.6 million per MW for a similar size hydropower project, the E&M cost for UHPCO works out as USD 49.35 million and the same is approved.

31. Since the Authority assessment of an EPC cost for this project is based on the approved cost of the hydropower project of an EPC stage tariff, therefore the Authority has also decided that the approved EPC cost will be the maximum ceiling except the variation in the base cost of civil works up to 15%. However, if the variation in civil works cost is beyond 15% due to change in design or other factors, the Authority will only considered it, if it has been reviewed by the PoEs of PPIB, by revising the whole feasibility at an EPC stage. Moreover, additionally the petitioner should select an EPC contractor as per the Authority's approved EPC bidding Guidelines 2017

32. The following price adjustment factor shall be applied only to the local portion of civil works as shown hereunder:

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$$Pn = 0.51 + 0.10 * (Cn/Co) + 0.09 * (Sn/So) + 0.15 * (Fn/Fo) + 0.15(Ln/Lo)$$

Where;

Pn is the adjustment factor to be applied for civil works;

Cn is the index value for the relevant month for Cement as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Sn is the index value for the relevant month for Steel Bar & Sheets as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Fn is the index value for the relevant month for Diesel Oil as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Ln is the index value for the relevant month for Mason (Raj) as per the Wage Rates published in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Co, So, Fo and Lo are the reference values of the price indices for Cement, Steel Bar & Sheets, Diesel Oil and Mason (Raj) respectively as available one month prior to the EPC bidding date.

33. The above escalation shall apply only to 49% of the civil works. The remaining 51% of the approved civil works cost of EPC shall remain fixed and no adjustment including exchange rate adjustment shall be allowed. However, the foreign component of an EPC contract will be adjusted for exchange rate variation.

34. The following is the summary of the claimed vs approved cost.

Description	Proposed by the Sponsor (Cost USD million)	Approved (USD million)
Civil Work Cost	79.986	55.04 (at USD 1=Rs. 160)
E&M Cost	68.944	49.35
EPC Cost	**148.93**	**104.39**

Issue No. VII. Whether the requested non EPC costs amounting to USD 26.6 million pertaining to Engineering & Supervision, Project Development, Land Acquisition & Resettlement & Environment Mitigation, Insurance during Construction is justified?

35. The petitioner during the hearing submitted that the Non-EPC cost is broadly classified into four sub-categories, summarized as under:

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DESCRIPTION	USD million
Engineering & Supervision	5.957
Project Development Cost	14.382
Land Acquisition & Resettlement & Environment Mitigation Cost	2.206 + 1.076 = 3.28
Insurance During Construction	2.978
TOTAL	**26.597**

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Engineering & Supervision (E&S):

36. The petitioner submitted that the proposed cost of USD 5.957 million under this head for the construction period of 48 months is very much in line with the tariff determinations of other comparable hydropower projects. The amount is calculated as 4.0% of the EPC cost.

37. The petitioner further submitted that the E&S costs expected to be incurred on Owners Engineer (OE), Independent Engineer (IE), Reopener Verifier (RE) under Power Purchase Agreement (PPA), Other Engineering Consultants (EC) to deal with various technical matters prior to financial close which includes preparation of EPC tendering documents, evaluation of the EPC tenders, assistance during EPC contract negotiations, selection of electromechanical supplier, review of load flow study, and any other technical matters. These services will continue until the appointment of the Owner's Engineer.

38. The petitioner further submitted that in the case of Gulpur HPP where the construction period is the same as the subject Project, the Authority has allowed Engineering & Supervision cost of 4% of EPC cost ($9.36 million).

39. CPPA-G vide letter dated September 15, 2020 submitted that the break-up for E&S cost has not been provided in the petition, therefore, at this stage it's not possible to compare it with the cost already provided to other HPPs. The Authority may please seek segregation of the Engineering and Supervision cost. Moreover, CPPA-G supports the stance of NERPA for calculating the owner's engineering cost, as already been determined for Azad Pattan hydropower project, similarly the PPA engineer & re-opener verifier cost may be aligned, as the construction period for the subject power plant is 4 years

40. The petitioner in response to CPPA-G comments submitted that the Project Company has proposed a cost of USD 5.957m million under this category for the construction period of 48 months which is very much in line with the tariff determinations of other comparable hydropower projects. The amount is calculated as 4.0% of the EPC cost

Project Development Cost (PDC):

41. The petitioner submitted that the PDC @ 9.6% of EPC cost; which includes company legal advisory charges, financial advisors, feasibility study cost, management & admin. expenses, rent & utilities etc.

42. The petitioner further submitted that sound project development is key to the success of any project, and is absolutely critical for such a project as the development activities and has already taken several man months of time and efforts of various professionals and staff. Due to Project's complexity this will continue all the way to the financial close (five years from the issuance of LoI), then Project COD

(four years after FC) and throughout the term of the PPA. Company needs to ensure it is able to hire and retain both Pakistani as well as Chinese top professionals and has a ready talent pipeline to manage this infrastructure project.

43. The petitioner further stated that the Authority has allowed 10 % of EPC cost as project development cost in various hydro power projects such as Azad Pattan HPP & Gulpur HPP.

44. CPPA-G vide letter dated September 15, 2020, stated that the PDC is 9.66% of the EPC cost while the allowed PDC in case of Karot HPP was 3.5 % of EPC cost. Therefore, the Authority may also align the cost of the subject project with the cost already allowed to the other hydropower projects.

45. The petitioner in response submitted that the comparison of UHPCO's 82.25 MW project with 720 MW mega HPP may not be justified as this is a fixed cost irrespective of the size of the project. However, in the case of Karot HPP 10% project development cost of EPC cost was approved by the Authority.

46. After considering the submissions of the petitioner and comments of CPPA-G the Authority observed that Non-EPC costs of USD 20.4 million claimed by the petitioner for E&S and PDC is not backed up by any reliable and comparable breakup and is also on the higher side. The PDC and E&S costs in the instant case is approximately USD 0.25 million per MW whereas, the cost allowed by the Authority in case of recently approved tariff of hydropower projects is within the limit of USD 0.12 million per MW. Based on this benchmark, an amount of USD 9.87 million has been assessed by the Authority for this project. The individual item may vary but on an overall basis USD 9.87 million shall be capped and only downward adjustment shall be allowed in case the actual amount works out to be lower.

Land Acquisition & Resettlement & Environment Mitigation Cost:

47. The petitioner submitted that the land acquisition & environment mitigation cost is based on standards prevailing in the Golen Gol area through the investigation by the feasibility consultant, environment management & monitoring cost will cover the expenses pertaining to the hiring of environmental specialists to oversee the environmental mitigation plan during the construction period of the project. The petitioner requested to allow adjustment pertaining to additional environment & social costs (if required) based on the requirements of lenders imposed after the start of the project construction at COD stage tariff. The following is the breakup of the claimed cost.

No.	Description	Rs.	USD
1	Land Acquisition	272,756,030/-	2,206,764/-
2	Environment Management & Monitoring Cost	133,070,602/-	1,076,623/-
	Total	**405,826,632/-**	**3,283,387/-**

48. The petitioner further submitted that a total of 66.5 Acres (532 kanals) of land has to be acquired (for temporary and permanent land use) at different locations for various purposes. This land has been categorized as A, B, and C. Category A land includes agricultural land, category B is covered with vegetation, bushes and a few trees and category C is a barren land. Land leasing/rental cost of temporary land use of 110.4 kanals for dumping excavated material is also estimated

49. CPPA-G vide letter dated September 15, 2020, submitted that land acquisition & resettlement & environmental mitigation cost is exorbitant and may be rationalized.

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50. The petitioner in response to CPPA-G comments submitted that, for land acquisition; a total of 66.5 Acres has to be acquired at different locations for various purposes. In accordance with the NEPRA mechanism for the determination of tariff for hydropower projects, land acquisition cost will be adjusted based on the actual verifiable documentary evidence at the time of the Project's COD.

51. The petitioner also stated that the Company is cognizant of its environmental obligations under Pakistan and relevant Provincial laws as well as the environment and safeguard policies of IFC and other multilateral banks. For the implementation of social & environment impact assessment and environmental & social mitigation plan, it is proposed by the feasibility study consultants to hire implementation and monitoring specialists who will monitor the EPC contractor and corporate social compliance.

Land Acquisition Cost:

52. After considering the submissions of the petitioner and CPPA-G, the Authority has observed that the feasibility study consultant estimated a total cost of Rs.272.756 million under this head. The Authority understands that the cost of land is an integral part of any project cost, therefore, the cost claimed by the petitioner amounting to Rs. 272.756 million or USD 1.70 million is hereby allowed at this stage which shall be subject to adjustment at actual with no variation to be allowed on account of exchange rate variation as the amount to be incurred in local currency.

Environmental and Mitigation Cost:

53. The Authority noted that as per the volume-VI of the feasibility study, the total cost estimated for environmental and mitigation is Rs. 133.07 million which includes a contingency of 10%. The Authority allowed the environmental costs to other hydropower projects by excluding the contingency cost. Therefore, after such exclusion, the environmental cost allowed to this project works out as Rs. 121.44 million as a maximum ceiling subject to adjustment at COD and the lower of actual or allowed will be adjusted.

Insurance during Construction:

54. The petitioner submitted that the insurance during construction is taken as 2% of EPC cost which will cover the insurance cost of the project's assets during the construction period as well as to cover the insurance requirements mentioned in PPA. This cost has been calculated in accordance with the NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018. (herein referred as "tariff guidelines") However, the total amount of insurance is subject to adjustment as per actual and will be based on verifiable documentary evidence with max.

55. CPPA-G vide letter dated September 15, 2020 submitted that insurance during construction assumed @ 2% of EPC cost whereas NEPRA has allowed 1.35% of EPC cost in case of Kohala HPP. Insurance during operation may be rationalized in line with recent MoUs signed with IPPs, which is 0.7% of EPC cost.

56. The petitioner in response to CPPA-G comments stated that insurance during construction and operation is calculated in accordance with the tariff guidelines. The project is located in a remote area as compared to Kohala HPP. Keeping view of the remote location, higher seismic activity & Glacial Lake Outburst Floods (GLOF) in the project area, the 2% insurance during construction & 1% insurance during operations is fully justified.

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57. The Authority noted that the petitioner's claimed insurance during construction@ 2% of the EPC is in line with the tariff guidelines and the same percentage was also approved in case of Kohala HPP. However, the Authority in case of another hydropower project approved insurance during construction at a lower rate of 1.6% of EPC cost as per the request of the project company, which indicates a decline in insurance rate, therefore, the same rate is considered and approved by the Authority in the instant case which works out as USD 1.67 million.

58. Recapitulating the above, following is the summary of Non-EPC cost claimed & approved.

Description	Claimed USD million	Approved USD million
Project Development Cost	14.53	9.87
Engineering & Supervision	5.96	
Land Acquisition	2.21	1.70
Environmental & Mitigation	1.08	0.76
Insurance during Construction	2.98	1.67
Total	**26.75**	**14.00**

Issue No. VIII. Whether the claimed Overseas Investment Insurance cost on equity is justified?

59. The petitioner submitted that according to the requirement of the Chinese government, for state-owned enterprises such as Sinohydro, it is essential that the equity investment of Chinese investors is secured for political risks by sinosure. The petitioner also submitted that sinosure on foreign debt is not included in the reference tariff, however, if required the Authority is requested to allow the adjustment in the reference tariff at the time of EPC stage.

60. CPPA-G submitted that the Authority in its previous determinations, for projects being financed by Chinese investors has not allowed sinosure fee on equity therefore "Overseas investment insurance cost on equity" may not be allowed.

61. The petitioner in response submitted that according to the requirement of the Chinese government, state-owned enterprises such as Sinohydro, undertaking overseas investments are required to acquire overseas investment insurance from sinosure. Overseas Investment Policy is intended to provide the insured with risk guarantee when they suffer economic losses because of war, currency exchange ban, requisition, or breach of contract by the government or related counterparts in countries where the insured have made investments.

62. The Authority has never allowed sinosure on equity to any other power projects and accordingly the same is not considered by the Authority in the instant case, however, the sinsosure on debt may be considered at the EPC stage if applicable.

Issue No. IX. Whether the Custom Duties of USD 2.230 million claimed by the petitioner is justified?

63. The petitioner submitted that customs duties and taxes have been calculated as USD 2.230 million, which is 5.00% of the foreign portion of hydro electrical and mechanical equipment cost of the project

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that will be imported from other countries. No other taxes or duties, including but not limited to sales tax, excise duty or road tax have been assumed to be applicable. The petitioner is requested to allow the cost which will be adjusted as per actual at COD stage

64. The Authority noted that the petitioner has claimed custom duties of USD 2.230 million @5% on the claimed foreign portion of electro-mechanical equipment cost only, which constitute about 77% of the total cost of E&M. Based on this proportion, while assuming custom duties at 5% on such imports, the allowed cost under this head works out as USD 1.90 million which shall be subject to adjustment as per actual on the provision of verifiable documentary evidence.

Issue No. X. Whether the Financial Charges amounting to USD 3.558 million claimed is justified?

65. The petitioner submitted that the financial charges of USD 3.558 million are calculated at 2.5% of the total loan amount (excluding Financial Charges and IDC). This cost is related to the debt financing i.e. fee related to the arrangement of debt, legal fees, advisory charges, lenders' mandate fee, up-front fee, commitment fee, stamp duty; agency fee; security trustee fee, commitment fee, mandate fee, lenders project monitoring fee etc.

66. CPPA-G vide letter dated September 15, 2020, submitted that financial charges of USD 3.558 million is on the higher side and maybe rationalized in a limit of less than 2% in-line with other hydropower projects and NEPRA (Benchmarks for tariff Determination) Guidelines, 2018, wherein it is stated that "financing fee not exceeding 2.00% of Debt shall be approved ").

67. The petitioner in response to CPPA-G comments submitted that financial fee and charges include the costs related to the debt financing of the project. Such costs include the fee related to the arrangement of debt, legal fees, advisory charges, lenders' mandate fee, up-front fee, commitment fee and charges related to various letters of credit to be established in favour of various contracting parties; fees payable and stamp duty applicable on the financing documents; agency fee; security trustee fee, commitment fee, mandate fee, lenders project monitoring fee and charges as may be required by the lenders. Therefore, marginally higher financial charges of 0.17% are justified.

68. The Authority noted that the tariff guidelines prescribed a limit of 2% for financing fee therefore, the same is allowed to the Project which works out as USD 2.41 million.

Issue No. XI. Whether the proposed financing/debt terms and Interest during Construction (IDC) are justified?

69. The petitioner submitted that the financing plan is based on the assumption that the Project will be financed through a combination of local and foreign loans; however, the plan will be finalized at a later stage. The spread over LIBOR/KIBOR is assumed in accordance with the tariff guidelines with the following details:

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Particulars	Description
Financing	USD 163.68 million (90% foreign; 10% local)
Debt: Equity Ratio	80:20
Construction Period	4 Years
Repayment Period	12 Years from COD
Debt Cost	LIBOR (2.31%) + 4.6%; KIBOR (7.93%) + 2.75%
Repayment	Quarterly
IDC	USD 23.136 million

70. CPPA-G vide letter dated September 15, 2020, submitted that the company has assumed a spread over LIBOR of 4.60% and spread over KIBOR of 2.75% for a foreign loan and local loan respectively which increase the tariff vigorously. Since there is GOP guarantee, overall risk insurance, force majeure risk coverage and sinosure insurance is available, therefore the risk premium may be rationalized accordingly.

71. The petitioner in response submitted that the assumed spread over LIBOR/KIBOR in accordance with tariff guidelines.

72. The Authority noted that the petitioner's assumption for the Project financing is in line with the Authority's existing tariff guidelines and therefore, the same is considered by the Authority, however, in case of any revision in the existing tariff guidelines, the then applicable Benchmark shall apply at the time of EPC stage tariff. In case of sinosure on debt is availed by the petitioner the spread shall not be allowed to increase beyond 4.6% over LIBOR. However, in case of no sinosure, the spread will be reduced as per the then applicable tariff guidelines of the Authority.

73. Further, the Authority is of the opinion that the current tariff structure is front-loaded due to shorter debt repayment periods (10-12 years) of power projects relative to their PPA terms. This is a much bigger issue in case of heavy CAPEX projects such as hydros which have comparatively longer economic lives. In recent cases of PEDO funded projects such as Karora and Jabori HPPs, the Authority on the suggestions of PEDO spread the approved debt for 30 years. This option offered by PEDO was much appreciated by the Authority. The Authority understands that unlike in public sector projects, for the private sector, it may be challenging for them to raise debt with repayment spread out on the entire PPA however, there is a strong case now to start this process especially in hydro IPPs for debt elongations. Similar extensions of loans have already been agreed in MoUs signed by the government with a number of IPPs having outstanding loans.

74. Therefore, in view of the above, the Authority has decided to enhance the debt repayment from the requested 13 years to 15 years for the Project.

75. The Authority has thus approved IDC of USD 10.95 million while assuming 3 months base LIBOR and KIBOR of 0.22038% and 7.25% respectively with debt injections assumed equally during the approved construction time of 48 months without any compounding.

76. The summary of the requested and approved project cost is tabulated below:

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Description	Claimed USD million	Approved USD million
Civil Work Cost	79.986	55.04
E&M Cost	68.544	49.35
EPC Cost	**148.93**	**104.39**
Project Development Cost	14.53	9.87
Engineering & Supervision	5.96	
Land Acquisition	2.21	1.70
Environmental & Mitigation	1.08	0.76
Insurance during Construction	2.98	1.67
Non-EPC	**26.75**	**14.00**
Custom Duties	**2.23**	1.90
Total Capex	**177.91**	**120.29**
Financial Charges	3.56	2.41
Interest During Construction	23.14	10.95
Total Project Cost	**204.60**	**133.65**

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Issue No. XII. Whether the claimed per annum O&M cost of USD 3.067 million for Fixed and Variable O&M during operations is justified?

77. The petitioner submitted that for Operations and Maintenance of the complex, an annual figure of USD 3.067 million per annum is proposed which is 1.50% of the project cost. This includes administrative/ management expenses, maintenance cost, replacement of parts necessitated due to regular operation/ normal maintenance & other costs. The O&M cost will be incurred in local as well as foreign currency.

78. The petitioner further submitted that the ratio of Fixed and Variable O&M is 80:20. For Variable O&M, the breakup between foreign and local sub-components is 35% and 65% respectively, while in the case of Fixed O&M, the breakup between foreign & local sub-components is 65% and 35% respectively. The breakup is as follows:

Sub-component	Fixed O&M	Variable O&M	Indexation
Local	35%	65%	Pakistan CPI (General)
Foreign	65%	35%	US CPI (All Urban Consumers) Rs./USD Indexation

79. The petitioner also submitted that the O&M cost is in line with O&M allowance for various other hydropower projects which will be incurred in local as well as foreign currency – percentage of local: foreign is based on a recent determination by NEPRA in case of other hydro projects. In the EPC stage, this percentage will be finalized based on the expense's breakup. Further, the O&M Contractor will be finalized in accordance with NEPRA Guidelines.

80. CPPA-G vide letter dated September 15, 2020 submitted that the petitioner has not provided any information for the proposed O&M contract/arrangement, further, there is no detail for the basis of foreign, local, fixed and variable O&M cost worked out by the Company. The Authority may call additional information with respect to operation and maintenance cost of the project.

81. The petitioner in response submitted that for O&M an annual figure of USD 3.067 million/annum, which is 1.50% of Project cost is proposed and finalized in accordance with NEPRA Guidelines. The petitioner further submitted that the ratio of Fixed and Variable O&M is 80:20. For Variable O&M, the breakup between foreign and local sub components is 35% and 65% respectively, while in the case of Fixed O&M, the breakup between foreign & local sub components is 65% and 35% respectively.

82. The Authority has considered the submission of the petitioner and feels that the O&M cost based on 1.5% of the project cost seems reasonable when compared to other hydropower projects and lies within the international benchmarks for HPPs. Therefore, the Authority has applied the same rate which for the instant Project works out as USD 2.0048 million per annum approved cost.

83. The petitioner shall conduct a transparent and competitive bidding process for the selection of O&M contractors in line with NEPRA (Selection of Operation and Maintenance Contractors by Generation Companies) Guidelines, 2021. Further, the allowed O&M cost is the maximum cap subject to actual whichever is lower. The following is the breakup of approved O&M cost:

Operation and Maintenance Cost			
Description		**Approved**	
		USD in million	**Rs./kWh**
Fixed O&M	Foreign	0.9623	0.4048
		60%	
	Local	0.6415	0.2698
		40%	
Variable O&M	Foreign	0.2406	0.1012
		60%	
	Local	0.1604	0.0675
		40%	
Total O&M Cost		**2.0048**	**0.8433**

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Issue No. XIII. Whether the claimed Water Use Charges are justifiable?

84. The petitioner stated that the rate of WUC is assumed as Rs 0.425/kWh, as per the GoP Power Policy 2015; with adjustment from time to time. The petitioner further submitted that as per the decision there will be no indexation, however, rates will be revised from time to time; so, it is requested to allow any change in Water Use Charge as a pass-through.

85. The Authority noted that the WUC component claimed by the petitioner is in accordance with the Power Policy 2015 and the same is therefore allowed by the Authority.

Issue No. XIV. Whether the claimed Insurance cost per annum for the operation period based at 1% of the EPC cost justified?

86. The petitioner stated that the insurance during operation period is in line with the NEPRA's established benchmark of 1% of EPC Cost which translates to USD 1.489 million per annum.

87. The Authority noted that there is a decline in the global insurance cost, the impact of which is also seen in recent hydropower projects where the annual insurance premium paid was as low as 0.46% of the EPC cost. In view thereof, the Authority has decided to allow insurance during operation @0.75% of EPC cost subject to adjustment on the basis of actual up to the maximum at 1% of the EPC cost upon provision of verifiable documentary evidence by the petitioner at the time of COD.

Issue No. XV. Whether the Return on Equity (ROE) and Return on Equity during Construction (ROEDC) computed at 17% is justified?

88. The petitioner submitted that hydropower project is high-risk investment given: (a) the long development period (at least 6 years pre-construction period + 4 to 5 year construction period) (b) a large amount of financing required for completion together with the fact that the civil works amount to over 50% of project costs; (c) uncertainties during construction such as floods, snowfall, landslides etc.; (d) possibility of unforeseen eventualities. The economic return to the Pakistan economy is much higher by the construction of a hydropower project as compared to the corresponding economic return associated with wind/solar power projects, as a hydropower project uses local materials and labor far more extensively. Accordingly, a higher return is required in order to motivate and encourage investments in hydropower

89. The petitioner further stated that hydropower projects being indigenous and relatively complex in nature should be allowed a higher rate of return on equity than other competing technologies. Moreover. hydropower projects experience cost overruns due to unforeseen conditions resulting in project delays that are not covered in the allowed tariff and therefore the actual return ultimately results in a lower than the allowed rate of return on equity to the investors.

90. The petitioner submitted that, in order to compensate for increased political risk and security issues, coupled with ongoing economic uncertainties, circular debt, the required rate of return of 17% IRR is, therefore, fully justified and hereby requested approval from the Authority.

91. CPPA-G vide letter dated September 15, 2020, submitted that the Return on Equity (ROE) and Return of Equity during Construction (ROEDC) as claimed by the petitioner may be rationalized in the light of the recent MOU signed by GOP with IPPs.

92. The petitioner in response submitted that return on equity is a means of compensating the Sponsors for investing equity into a project. It is based on two factors (i) the cost of capital, and (ii) the perception of risks associated with the project. Where the project is structured in a manner that passes most of risks outside the control of Sponsors to the Power Purchaser or the GoP, and where the legal, regulatory and institutional environment ensures the contractual rights of project financiers, the Sponsor can accept lower equity returns even as low as 15%. In contrast, a hydropower project is a highly risky investment given various factors.

93. PPIB vide letter dated June 3rd, 2019 regarding the approval of feasibility study for the instant project also stated that an IRR of 17% has been assumed in a feasibility study by the Sponsor whereas NEPRA has recently allowed 15% IRR in other hydropower projects, therefore, we understand that NEPRA has the mandate to finally determine the appropriate IRR at the time of determination of feasibility study stage tariff in view of the current market dynamics, sectoral technological advancements and risk profile of power sector etc.

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94. After considering the submission of the petitioner, CPPA-G and PPIB, the Authority noted that in the recently concluded negotiation with IPP for the reduction in tariff, the GoP appointed Committee agreed to an IRR of 13% (USD) for solar and wind plants and for thermal IPPs with foreign equity, the IRR was agreed to be reduced from 15% to 12% in USD and 17% for the local investor at a fixed 148 exchange rate. Further in the MoUs signed with Bagasse IPPs, IRR of 17% was reduced to 12% IRR with USD indexation for the next 5 years after which it shall be changed to 17% Rs. based per annum on NEPRA approved equity at COD calculated at Rs./USD exchange rate of 168/USD, with no future USD indexation.

95. In view thereof, the Authority has decided to allow an IRR of 13% with the assumption that the sponsors of the Project are 100% foreigners. However, at the time of COD of the Project, the origin of the shareholder whether local or foreign shall be reconsidered and the indexation shall be accordingly decided. In the case of local equity, a revised IRR shall be prescribed beyond which no indexation on return components shall be allowed.

Issue No. XVI. Whether other assumptions of the tariff are justified?

Withholding Tax on Dividend:

96. CPPA-G vide letter dated September 15, 2020 submitted that as per the NEPRA Guidelines for Tariff Determination 2018 "Withholding tax on dividends shall not be allowed as pass-through item in any technology." Further, the Authority has not allowed the same in recent similar tariff determinations. Therefore, Withholding Tax on dividends should not be allowed as a pass-through item.

97. The petitioner in response submitted that the reference tariff and project cost in the tariff petition is based on the assumption of withholding tax on dividends at the rate of 7.5% of dividends paid by the company and this rate is not considered as a pass through. However, in case of any increment by the government in the rate of withholding tax on dividends above 7.5%, the same shall be treated as pass-through.

98. The Authority's approved tariff guidelines clearly stipulate that the withholding tax on dividends (WHT) shall not be allowed as a pass-through item in any technology. Therefore, the request of the petitioner to allow WHT as a pass-through item, being inconsistent with the guidelines is hereby declined.

Special Return on Equity (SRoE):

99. The petitioner submitted that keeping in view the long project development period for hydropower projects, Special RoE on equity injection for a period comprising of 30 months prior to financial close may be allowed in accordance with ECC decision dated July 2009 as has been allowed by the Authority to other Hydropower Projects in the past. The petitioner further stated that RoE will be adjusted in the tariff at COD, based on audited accounts and related verifiable documentary evidence provided by the Company.

100. The Authority is of the view that provision of SRoE as per the ECC decision 2009 is an old incentive given to promote the development of hydro in the private sector and may not be justified to the current project when a lot of investments have already been carried out and hydro projects are under different stages of development in the private sector. For the same reason, the Authority has not allowed this rovision to recent hydropower projects, such as Mahl 640 MW, Riali-II 7.08 MW, Kathai-II 8 MW etc. Therefore, the Authority has decided to disallow SRoE as requested by the petitioner.

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Order:

101. 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 the terms and conditions for Turtonas-Uzghor Hydropower Project for delivery of electricity to the Power Purchaser:

Tariff Components (Rs./kWh)	Year 1-15	Year 16-30	Indexation
Water Use Charges (WUC)	0.4250	0.4250	-
Variable O&M Local	0.0675	0.0675	PAK(NCP-I)
Variable O&M Foreign	0.1012	0.1012	Rs./USD, US CPI
Fixed O&M – Local	0.2698	0.2698	PAK(NCP-I)
Fixed O&M – Foreign	0.4048	0.4048	Rs./USD, US CPI
Insurance	0.4391	0.4391	Annual as per Actual
Debt Service (Local)	0.5820	-	KIBOR
Debt Service (Foreign)	3.8061	-	LIBOR, Rs./USD
Return on Equity (ROE)	1.3812	1.6759	Rs./USD (if foreign)
ROE During Construction	0.4094	0.4094	Rs./USD (if foreign)

i) The reference tariff has been calculated on the basis of net annual benchmark energy generation of 380.3911 GWh for an installed capacity of 82.25 MW. An auxiliary consumption has been restricted to 0.5%.

ii) The above charges will be limited to the extent of net annual energy generation of 380.3911 GWh. Net annual generation supplied during a year to the Power Purchaser in excess of benchmark energy of 380.3911 GWh will be charged at 10% of the prevalent approved tariff.

iii) EPC cost of USD 104.39 million has been approved.

iv) Non-EPC cost of USD 14.00 million has been approved.

v) Debt to Equity ratio of 80:20 has been approved.

vi) Debt repayment period of 15 years has been taken into account for 90% foreign & 10 % local loan.

vii) The 3-month base KIBOR rate of 7.25% and a LIBOR rate of 0.22038% has been taken into account while calculating the cost of debt.

viii) Annual ROE & ROEDC of 13% has been approved.

ix) O&M cost of USD 2.0048 million per annum has been approved.

x) Insurance during the operation has been calculated as 0.75% of the EPC cost.

xi) The reference Rs./USD rate has been taken as Rs. 160.

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xii) The construction period of 48 months has been approved and the same is used for the workings of ROEDC and IDC.

xiii) For calculating IDC and ROEDC equally phasing out of drawn down has been assumed.

xiv) In the above tariff no adjustment for carbon emission reduction receipts has been accounted for. However, upon actual realization of carbon emission reduction receipts, the same shall be distributed between the Power Purchaser and the petitioner in accordance with the approved mechanism given in the applicable government policy.

xv) The above tariff is applicable for a period of thirty years commencing from the commercial operations date (COD).

xvi) Debt service will be paid in the first 15 years of commercial operation of the plant after COD.

xvii) Redemption of equity has been allowed after 15 years of commercial operations of the plant

xviii) The component wise tariff is indicated at (Annex-I).

xix) Debt Servicing Schedule is attached as (Annex-II-a & b).

One Time Adjustments

The following one-time adjustments shall be applicable to the reference tariff:

a. The EPC cost shall be verified and adjusted at actual considering the approved amount as the maximum ceiling except the variation in the base cost of civil works up to 15%. The allowed foreign portion of the EPC cost will be adjusted at COD on account of variation in Rs./USD parity during the construction period, on the production of authentic documentary evidence by the petitioner to the satisfaction of the Authority. The local portion of the EPC contract will not be subject to any exchange rate variation.

b. The local portion of Civil Works cost only will be adjusted on account of variation in the price of construction material (Cement, Steel, Labour and Fuel) during the project construction period as per the following mechanism/formula:

$$Pn = 0.51 + 0.10 * (Cn/Co) + 0.09 * (Sn/So) + 0.15 * (Fn/Fo) + 0.15(Ln/Lo)$$

Where;

Pn is the adjustment factor to be applied for civil works;

Cn is the index value for the relevant month for Cement as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Sn is the index value for the relevant month for Steel Bar & Sheets as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

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Fn is the index value for the relevant month for Diesel Oil as given in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Ln is the index value for the relevant month for Mason (Raj) as per the Wage Rates published in the Monthly Bulletin of Statistics published by the Pakistan Bureau of Statistics;

Co, So, Fo and Lo are the reference values of the price indices for Cement, Steel Bar & Sheets, Diesel Oil and Mason (Raj) respectively as available one month prior to the EPC bidding date.

c. Any liquidated damages, penalties, etc. (by whatever name called), actually recoverable by the petitioner from the EPC contractor(s), pertaining to the construction period allowed by the Authority, will be adjusted in the project cost at COD.

d. Cost of land acquisition and resettlement will be adjusted based on authentic documentary evidence at COD as against Rs. 272 million allowed.

e. Non-EPC cost excluding land acquisition cost shall be subject to verification at COD in Rs. only. The lower of actual or approved shall be taken into consideration.

f. If no insurance cost has been incurred during the operation phase of the power plant or the same is the part of the O&M cost, the assumed calculated tariff component shall be excluded from the tariff components at COD stage.

g. The Principal repayment and the cost of debt will be adjusted at COD as per the actual borrowing composition and LIBOR/KIBOR at the relevant date.

h. Interest During Construction (IDC) will be adjusted at COD on the basis of actual debt composition, debt drawdown of the loan (not exceeding the amount allowed by the Authority) and based on the applicable 3-month LIBOR/KIBOR during the actual project construction period (not exceeding the construction period allowed by the Authority). In case of any savings resulting from a reduction in the construction period, it shall also be adjusted in the tariff. The increase in IDC due to delay in construction shall, however, not be allowed.

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i. The return on equity (including return on equity during construction) 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 allowed by the Authority.

j. Duties and/or taxes, not being of refundable nature, imposed on the Company up to the commencement of its commercial operations for the import of its plant, machinery and equipment will be adjusted on an actual basis at COD, as against reference allowed amount of USD 1.90 million, upon production of verifiable documentary evidence to the satisfaction of the Authority.

k. Insurance during construction will be adjusted at COD based on actual subject to the maximum of 2% of the adjusted and approved EPC cost upon production of verifiable documentary evidence to the satisfaction of the Authority.

l. Financial charges will be adjusted at COD on the basis of actual subject to the maximum of 2% of the total debt allowed on the production of authentic documentary evidence.

m. In case, the spreads on LIBOR and KIBOR are agreed at lower than 460 basis points and 275 basis points respectively, the benefit of such reduction in rate will be adjusted in proportion of 40% to the UHPCO and 60% to the consumer through necessary adjustment in tariff.

Indexation

The following indexation shall be applicable to the reference tariff:

i) Indexation applicable to O&M

The Variable O&M cost is based on 40% local and 60% foreign expenses. The Fixed O&M cost is based on 40% local and 60% foreign expense. The local part of O&M will be adjusted on account of Inflation (N-CPI), whereas the foreign part of O&M will be adjusted on account of Rupee/Dollar exchange rate variation 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 the latest available information with respect to N-CPI (or alternative index as determined by the Authority), US CPI (notified by US bureau of labor statistics) and revised TT & OD Selling rate of US Dollar (notified by the National Bank of Pakistan). The mode of indexation will be as under:

a. Fixed O&M

$$F\ O\&M_{(LREV)} = FO\&M_{(LREF)} * CPI_{(REV)} / CPI_{(REF)}$$
$$F\ O\&M_{(FREV)} = FO\&M_{(FREF)} * USCPI_{(REV)} / USCPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$$

Where:

$FO\&M_{(LREV)}$ = The revised applicable Fixed O&M local component of tariff indexed with Pakistan N-CPI.
$FO\&M_{(FREV)}$ = The revised applicable Fixed O&M foreign component of tariff indexed with US CPI and exchange rate variation.
$FO\&M_{(LREF)}$ = The reference fixed O&M local component of tariff for the relevant period.
$FO\&M_{(FREF)}$ = The reference fixed O&M foreign component of tariff for the relevant period.
$CPI_{(REV)}$ = The Revised Pakistan N-CPI as notified by the Pakistan Bureau of Statistics for the relevant month.
$CPI_{(REF)}$ = 140.86 Consumer Price Index (N-CPI) of December 2020 as notified by the Pakistan Bureau of Statistics.
$US\ CPI_{(REV)}$ = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.
$US\ CPI_{(REF)}$ =260.474 US CPI (all urban consumers) for the month of December, 2020 as notified by the US Bureau of Labor Statistics

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$ER_{(REV)}$ = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.
$ER_{(REF)}$ = The reference TT and OD selling rate of US dollar of Rs. 160.

b. Variable O&M

$VO\&M_{(LREV)} = VO\&M_{(LREF)} * CPI_{(REV)} / CPI_{(REF)}$
$VO\&M_{(FREV)} = VO\&M_{(FREF)} * USCPI_{(REV)} / USCPI_{(REF)} * ER_{(REV)} / ER_{(REF)}$

Where:
$VO\&M_{(LREV)}$ = The revised applicable Variable O&M local component is indexed with Pakistan N-CPI.
$VO\&M_{(FREV)}$ = The revised applicable Variable O&M foreign component of tariff indexed with US CPI and exchange rate variation.
$VO\&M_{(LREF)}$ = The reference variable O&M local component of tariff for the relevant period.
$VO\&M_{(FREF)}$ = The reference variable O&M foreign component of tariff for the relevant period.
$CPI_{(REV)}$ = The Revised Pakistan N-CPI as notified by the Pakistan Bureau of Statistics for the relevant month.
$CPI_{(REF)}$ = 140.86 Consumer Price Index (N-CPI) of December 2020 as notified by the Pakistan Bureau of Statistics.
$US\ CPI_{(REV)}$ = The Revised US Consumer Price Index (All Urban Consumers) notified by the Bureau of Labor Statistics.
$US\ CPI_{(REF)}$ = 260.474 US CPI (all urban consumers) for the month of December, 2020 as notified by the US Bureau of Labor Statistics
$ER_{(REV)}$ = The revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.
$ER_{(REF)}$ = The reference TT and OD selling rate of US dollar of Rs. 160.

ii) Water Use Charges

Water Use Charge will be paid on units delivered basis and revised/ indexed as per government policy.

iii) Insurance

The insurance component of the reference tariff will be adjusted as per actual incurred prudent costs, subject to the maximum ceiling of 1% of the approved EPC cost, on an annual basis upon production of authentic documentary evidence by the petitioner.

iv) 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 3 months LIBOR, while spread of 4.10% on LIBOR remaining the same, according to the following formula:

$\Delta I = P_{(REV)} * (LIBOR_{(REV)} - 0.22038\%) / 4$
Where;

Δ I = the variation in interest charges applicable corresponding to variation in three-month LIBOR. Δ I can be positive or negative depending upon whether LIBOR $_{(REV)}$ > or <0.22038%. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each period under adjustment applicable on quarterly basis.

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

v) <u>Adjustment for KIBOR Variation</u>

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to variation in 03 months KIBOR, while the spread of 2.75% on KIBOR remaining the same, according to the following formula:

Δ I = P $_{(REV)}$ * (KIBOR $_{(REV)}$ – 7.25%) / 4

Where;

Δ I = the variation in interest charges applicable corresponding to variation in three-month KIBOR. Δ I can be positive or negative depending upon whether KIBOR $_{(REV)}$ > or < 7.25%. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each period under adjustment applicable on quarterly basis.

P $_{(REV)}$ = the outstanding principal on a quarterly basis at the relevant calculations dates.

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vi) <u>Return on Equity</u>

In the case of foreign equity, Return on equity (ROE), as well as Return on Equity during Construction (ROEDC) component of the tariff, shall be adjusted for variation in Rs./USD exchange rate according to the following formula:

ROE $_{(REV)}$ = ROE $_{(REF)}$ * ER $_{(REV)}$/ER $_{(REF)}$
ROEDC $_{(REV)}$ = ROEDC $_{(REF)}$ * ER $_{(REV)}$/ER $_{(REF)}$

Where;

ROE $_{(REV)}$ = Revised Return on Equity component of tariff expressed in Rs./kWh adjusted with exchange rate variation.

ROEDC $_{(REV)}$ = Revised Return on Equity during Construction component of tariff in Rs./kWh adjusted with exchange rate variation.

ROE $_{(REF)}$ = Reference Return on Equity component of tariff expressed in Rs./kWh for the relevant period.

ROEDC $_{(REF)}$ = Reference Return on Equity during Construction component of tariff expressed in Rs./kWh for the relevant period.

ER $_{(REV)}$ = Revised TT and OD selling rate of US dollar as notified by the National Bank of Pakistan.

ER $_{(REF)}$ = Reference TT and OD selling rate of US dollar of Rs. 160.

V. Other Terms and Conditions of Tariff

Design & Manufacturing Standards:

Hydel Power Generation system shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards. All plants and equipment shall be new and of standard quality.

Power Curve of the Hydel Power Complex:

The power curve of the Hydel Power plant shall be verified by the Power Purchaser, as part of the Commissioning tests according to the latest IEC standards and shall be used to measure the performance of the hydel generating units.

Emissions Trading/Carbon Credits:

The Project Company shall process and obtain emissions/carbon credits expeditiously and credit the proceeds to the Power Purchaser as per the policy issued by the Federal Government.

Others:

i. The Authority has allowed/approved only those cost(s), terms term(s), condition(s), provision(s), etc. which have been specifically approved in this tariff determination. Any cost(s), term(s), condition(s), provision(s), etc. contained in the tariff petition or any other document which are not specifically allowed/approved in this tariff determination, should not be implied to be approved, if not adjudicated upon in this tariff determination.

ii. The above tariff and terms and conditions shall be incorporated as the specified tariff approved by the Authority pursuant to Rule 6 of the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 in the power purchase agreement between the petitioner and the Power Purchaser. General assumptions, which are not covered in this determination, may be dealt with as per the standard terms of the PPA.

iii. 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 a claw back mechanism to be decided by the Authority.

iv. 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.

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102. This tariff determination shall be notified in the official Gazette as per Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 read with regulation 4(4) of the NEPRA (Import of Electric Power) Regulations, 2017.

AUTHORITY

Engr. Rafique Ahmed Shaikh
Member

Rehmatullah Baloch
Member

Tauseef H.Farooqi
Chairman

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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19/4/21

Annex-I

TURTONAS UZGHOR HYDROPOWER PROJECT
REFERENCE TARIFF TABLE

Year	(Rs./kWh)												Total
	WUC	Variable O&M		Fixed O&M		Insurance	ROEDC	ROE	Debt Servicing Foreign		Debt Servicing Local		Rs./kWh
		Foreign	Local	Foreign	Local				Principal	Interest	Principal	Interest	
1	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	1.8888	1.9173	0.1373	0.4447	7.8860
2	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	1.9815	1.8246	0.1516	0.4304	7.8860
3	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.0787	1.7273	0.1673	0.4147	7.8860
4	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.1807	1.6253	0.1847	0.3973	7.8860
5	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.2878	1.5183	0.2039	0.3782	7.8860
6	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.4001	1.4060	0.2250	0.3570	7.8860
7	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.5179	1.2882	0.2484	0.3336	7.8860
8	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.6415	1.1646	0.2742	0.3078	7.8860
9	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.7711	1.0350	0.3026	0.2794	7.8860
10	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	2.9071	0.8990	0.3341	0.2480	7.8860
11	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	3.0498	0.7563	0.3687	0.2133	7.8860
12	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	3.1995	0.6066	0.4070	0.1750	7.8860
13	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	3.3565	0.4495	0.4493	0.1328	7.8860
14	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	3.5213	0.2848	0.4959	0.0861	7.8860
15	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.3812	3.6941	0.1120	0.5474	0.0346	7.8860
16	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
17	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
18	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
19	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
20	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
21	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
22	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
23	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
24	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
25	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
26	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
27	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
28	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
29	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
30	0.4250	0.1012	0.0675	0.4048	0.2698	0.4391	0.4094	1.6759					3.7927
Levelized Tariff	**0.4250**	**0.1012**	**0.0675**	**0.4048**	**0.2698**	**0.4391**	**0.4094**	**1.4381**	**2.0021**	**1.0688**	**0.2035**	**0.2661**	**7.0954**

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Annex-II a

Turtonas Uzghor Hydropower Project
Debt Servicing Schedule (Foreign)

Period	Installment	Opening Balance USD	Mark-UP USD	Principle Repayment USD	Debt Service USD	Closing Balance USD	Annual Principal Repayment-Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	1	96,230,048	1,159,663	1,102,514	2,262,177	95,127,534	0.4637	0.4878	0.9515
	2	95,127,534	1,146,377	1,115,800	2,262,177	94,011,734	0.4693	0.4822	0.9515
	3	94,011,734	1,132,931	1,129,247	2,262,177	92,882,487	0.4750	0.4765	0.9515
	4	92,882,487	1,119,322	1,142,855	2,262,177	91,739,632	0.4807	0.4708	0.9515
1		**96,230,048**	**4,558,294**	**4,490,415**	**9,048,709**	**91,739,632**	**1.8888**	**1.9173**	**3.8061**
	5	91,739,632	1,105,550	1,156,628	2,262,177	90,583,005	0.4865	0.4650	0.9515
	6	90,583,005	1,091,611	1,170,566	2,262,177	89,412,439	0.4924	0.4592	0.9515
	7	89,412,439	1,077,505	1,184,672	2,262,177	88,227,766	0.4983	0.4532	0.9515
	8	88,227,766	1,063,228	1,198,949	2,262,177	87,028,818	0.5043	0.4472	0.9515
2		**91,739,632**	**4,337,894**	**4,710,815**	**9,048,709**	**87,028,818**	**1.9815**	**1.8246**	**3.8061**
	9	87,028,818	1,048,780	1,213,397	2,262,177	85,815,420	0.5104	0.4411	0.9515
	10	85,815,420	1,034,157	1,228,020	2,262,177	84,587,400	0.5165	0.4350	0.9515
	11	84,587,400	1,019,359	1,242,819	2,262,177	83,344,582	0.5228	0.4288	0.9515
	12	83,344,582	1,004,381	1,257,796	2,262,177	82,086,786	0.5291	0.4225	0.9515
3		**87,028,818**	**4,106,677**	**4,942,032**	**9,048,709**	**82,086,786**	**2.0787**	**1.7273**	**3.8061**
	13	82,086,786	989,224	1,272,954	2,262,177	80,813,832	0.5354	0.4161	0.9515
	14	80,813,832	973,883	1,288,294	2,262,177	79,525,538	0.5419	0.4096	0.9515
	15	79,525,538	958,358	1,303,819	2,262,177	78,221,719	0.5484	0.4031	0.9515
	16	78,221,719	942,646	1,319,531	2,262,177	76,902,188	0.5550	0.3965	0.9515
4		**82,086,786**	**3,864,112**	**5,184,598**	**9,048,709**	**76,902,188**	**2.1807**	**1.6253**	**3.8061**
	17	76,902,188	926,744	1,335,433	2,262,177	75,566,755	0.5617	0.3898	0.9515
	18	75,566,755	910,651	1,351,526	2,262,177	74,215,229	0.5685	0.3830	0.9515
	19	74,215,229	894,364	1,367,813	2,262,177	72,847,416	0.5753	0.3762	0.9515
	20	72,847,416	877,881	1,384,297	2,262,177	71,463,119	0.5823	0.3693	0.9515
5		**76,902,188**	**3,609,640**	**5,439,069**	**9,048,709**	**71,463,119**	**2.2878**	**1.5183**	**3.8061**
	21	71,463,119	861,198	1,400,979	2,262,177	70,062,141	0.5893	0.3622	0.9515
	22	70,062,141	844,315	1,417,862	2,262,177	68,644,279	0.5964	0.3551	0.9515
	23	68,644,279	827,229	1,434,948	2,262,177	67,209,330	0.6036	0.3479	0.9515
	24	67,209,330	809,936	1,452,241	2,262,177	65,757,089	0.6108	0.3407	0.9515
6		**71,463,119**	**3,342,679**	**5,706,030**	**9,048,709**	**65,757,089**	**2.4001**	**1.4060**	**3.8061**
	25	65,757,089	792,435	1,469,742	2,262,177	64,287,347	0.6182	0.3333	0.9515
	26	64,287,347	774,724	1,487,454	2,262,177	62,799,894	0.6257	0.3259	0.9515
	27	62,799,894	756,798	1,505,379	2,262,177	61,294,515	0.6332	0.3183	0.9515
	28	61,294,515	738,657	1,523,520	2,262,177	59,770,995	0.6408	0.3107	0.9515
7		**65,757,089**	**3,062,615**	**5,986,095**	**9,048,709**	**59,770,995**	**2.5179**	**1.2882**	**3.8061**
	29	59,770,995	720,297	1,541,880	2,262,177	58,229,115	0.6485	0.3030	0.9515
	30	58,229,115	701,716	1,560,461	2,262,177	56,668,654	0.6564	0.2952	0.9515
	31	56,668,654	682,911	1,579,266	2,262,177	55,089,387	0.6643	0.2872	0.9515
	32	55,089,387	663,879	1,598,298	2,262,177	53,491,090	0.6723	0.2792	0.9515
8		**59,770,995**	**2,768,804**	**6,279,905**	**9,048,709**	**53,491,090**	**2.6415**	**1.1646**	**3.8061**
	33	53,491,090	644,618	1,617,559	2,262,177	51,873,531	0.6804	0.2711	0.9515
	34	51,873,531	625,125	1,637,052	2,262,177	50,236,479	0.6886	0.2629	0.9515
	35	50,236,479	605,397	1,656,780	2,262,177	48,579,699	0.6969	0.2546	0.9515
	36	48,579,699	585,432	1,676,746	2,262,177	46,902,953	0.7053	0.2462	0.9515
9		**53,491,090**	**2,460,573**	**6,588,136**	**9,048,709**	**46,902,953**	**2.7711**	**1.0350**	**3.8061**
	37	46,902,953	565,225	1,696,952	2,262,177	45,206,001	0.7138	0.2377	0.9515
	38	45,206,001	544,775	1,717,402	2,262,177	43,488,599	0.7224	0.2291	0.9515
	39	43,488,599	524,079	1,738,098	2,262,177	41,750,501	0.7311	0.2204	0.9515
	40	41,750,501	503,133	1,759,044	2,262,177	39,991,457	0.7399	0.2116	0.9515
10		**46,902,953**	**2,137,213**	**6,911,496**	**9,048,709**	**39,991,457**	**2.9071**	**0.8990**	**3.8061**
	41	39,991,457	481,935	1,780,242	2,262,177	38,211,215	0.7488	0.2027	0.9515
	42	38,211,215	460,481	1,801,696	2,262,177	36,409,519	0.7578	0.1937	0.9515
	43	36,409,519	438,769	1,823,408	2,262,177	34,586,111	0.7670	0.1846	0.9515
	44	34,586,111	416,795	1,845,382	2,262,177	32,740,729	0.7762	0.1753	0.9515
11		**39,991,457**	**1,797,981**	**7,250,728**	**9,048,709**	**32,740,729**	**3.0498**	**0.7563**	**3.8061**
	45	32,740,729	394,557	1,867,620	2,262,177	30,873,109	0.7856	0.1660	0.9515
	46	30,873,109	372,050	1,890,127	2,262,177	28,982,982	0.7950	0.1565	0.9515
	47	28,982,982	349,272	1,912,905	2,262,177	27,070,077	0.8046	0.1469	0.9515
	48	27,070,077	326,220	1,935,957	2,262,177	25,134,120	0.8143	0.1372	0.9515
12		**32,740,729**	**1,442,100**	**7,606,609**	**9,048,709**	**25,134,120**	**3.1995**	**0.6066**	**3.8061**
	49	25,134,120	302,890	1,959,287	2,262,177	23,174,833	0.8241	0.1274	0.9515
	50	23,174,833	279,279	1,982,899	2,262,177	21,191,934	0.8340	0.1175	0.9515
	51	21,191,934	255,383	2,006,794	2,262,177	19,185,140	0.8441	0.1074	0.9515
	52	19,185,140	231,199	2,030,978	2,262,177	17,154,162	0.8543	0.0972	0.9515
13		**25,134,120**	**1,068,751**	**7,979,958**	**9,048,709**	**17,154,162**	**3.3565**	**0.4495**	**3.8061**
	53	17,154,162	206,724	2,055,453	2,262,177	15,098,708	0.8646	0.0870	0.9515
	54	15,098,708	181,954	2,080,223	2,262,177	13,018,485	0.8750	0.0765	0.9515
	55	13,018,485	156,885	2,105,292	2,262,177	10,913,193	0.8855	0.0660	0.9515
	56	10,913,193	131,514	2,130,663	2,262,177	8,782,530	0.8962	0.0553	0.9515
[illegible]		**17,154,162**	**677,077**	**8,371,632**	**9,048,709**	**8,782,530**	**3.5213**	**0.2848**	**3.8061**
	57	8,782,530	105,838	2,156,339	2,262,177	6,626,190	0.9070	0.0445	0.9515
	58	6,626,190	79,852	2,182,325	2,262,177	4,443,865	0.9179	0.0336	0.9515
	59	4,443,865	53,553	2,208,624	2,262,177	2,235,240	0.9290	0.0225	0.9515
	60	2,235,240	26,937	2,235,240	2,262,177	(0)	0.9402	0.0113	0.9515
15		**8,782,530**	**266,179**	**8,782,530**	**9,048,709**	**(0)**	**3.6941**	**0.1120**	**3.8061**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
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Annex-II b

Turtonas Uzghor Hydropower Project
Debt Servicing Schedule (Local)

Period	Installment	Opening Balance Rs.	Mark-UP Rs.	Principle Repayment Rs.	Debt Service Million Rs.	Closing Balance Rs.	Annual Principal Repayment-Rs./kWh	Annual Interest Rs./kWh	Annual Debt Servicing Rs./kWh
	1	1,710,756,405	42,768,910	12,579,869	55,348,779	1,698,176,536	0.0331	0.1124	0.1455
	2	1,698,176,536	42,454,413	12,894,366	55,348,779	1,685,282,170	0.0339	0.1116	0.1455
	3	1,685,282,170	42,132,054	13,216,725	55,348,779	1,672,065,445	0.0347	0.1108	0.1455
	4	1,672,065,445	41,801,636	13,547,143	55,348,779	1,658,518,302	0.0356	0.1099	0.1455
1		**1,710,756,405**	**169,157,014**	**52,238,103**	**221,395,117**	**1,658,518,302**	**0.1373**	**0.4447**	**0.5820**
	5	1,658,518,302	41,462,958	13,885,822	55,348,779	1,644,632,480	0.0365	0.1090	0.1455
	6	1,644,632,480	41,115,812	14,232,967	55,348,779	1,630,399,513	0.0374	0.1081	0.1455
	7	1,630,399,513	40,759,988	14,588,791	55,348,779	1,615,810,721	0.0384	0.1072	0.1455
	8	1,615,810,721	40,395,268	14,953,511	55,348,779	1,600,857,210	0.0393	0.1062	0.1455
2		**1,658,518,302**	**163,734,025**	**57,661,092**	**221,395,117**	**1,600,857,210**	**0.1516**	**0.4304**	**0.5820**
	9	1,600,857,210	40,021,430	15,327,349	55,348,779	1,585,529,861	0.0403	0.1052	0.1455
	10	1,585,529,861	39,638,247	15,710,533	55,348,779	1,569,819,328	0.0413	0.1042	0.1455
	11	1,569,819,328	39,245,483	16,103,296	55,348,779	1,553,716,032	0.0423	0.1032	0.1455
	12	1,553,716,032	38,842,901	16,505,878	55,348,779	1,537,210,154	0.0434	0.1021	0.1455
3		**1,600,857,210**	**157,748,061**	**63,647,056**	**221,395,117**	**1,537,210,154**	**0.1673**	**0.4147**	**0.5820**
	13	1,537,210,154	38,430,254	16,918,525	55,348,779	1,520,291,629	0.0445	0.1010	0.1455
	14	1,520,291,629	38,007,291	17,341,489	55,348,779	1,502,950,140	0.0456	0.0999	0.1455
	15	1,502,950,140	37,573,754	17,775,026	55,348,779	1,485,175,114	0.0467	0.0988	0.1455
	16	1,485,175,114	37,129,378	18,219,401	55,348,779	1,466,955,713	0.0479	0.0976	0.1455
4		**1,537,210,154**	**151,140,676**	**70,254,441**	**221,395,117**	**1,466,955,713**	**0.1847**	**0.3973**	**0.5820**
	17	1,466,955,713	36,673,893	18,674,886	55,348,779	1,448,280,826	0.0491	0.0964	0.1455
	18	1,448,280,826	36,207,021	19,141,759	55,348,779	1,429,139,068	0.0503	0.0952	0.1455
	19	1,429,139,068	35,728,477	19,620,303	55,348,779	1,409,518,765	0.0516	0.0939	0.1455
	20	1,409,518,765	35,237,969	20,110,810	55,348,779	1,389,407,955	0.0529	0.0926	0.1455
5		**1,466,955,713**	**143,847,359**	**77,547,758**	**221,395,117**	**1,389,407,955**	**0.2039**	**0.3782**	**0.5820**
	21	1,389,407,955	34,735,199	20,613,580	55,348,779	1,368,794,375	0.0542	0.0913	0.1455
	22	1,368,794,375	34,219,859	21,128,920	55,348,779	1,347,665,455	0.0555	0.0900	0.1455
	23	1,347,665,455	33,691,636	21,657,143	55,348,779	1,326,008,312	0.0569	0.0886	0.1455
	24	1,326,008,312	33,150,208	22,198,571	55,348,779	1,303,809,741	0.0584	0.0871	0.1455
6		**1,389,407,955**	**135,796,902**	**85,598,215**	**221,395,117**	**1,303,809,741**	**0.2250**	**0.3570**	**0.5820**
	25	1,303,809,741	32,595,244	22,753,536	55,348,779	1,281,056,205	0.0598	0.0857	0.1455
	26	1,281,056,205	32,026,405	23,322,374	55,348,779	1,257,733,831	0.0613	0.0842	0.1455
	27	1,257,733,831	31,443,346	23,905,433	55,348,779	1,233,828,397	0.0628	0.0827	0.1455
	28	1,233,828,397	30,845,710	24,503,069	55,348,779	1,209,325,328	0.0644	0.0811	0.1455
7		**1,303,809,741**	**126,910,704**	**94,484,413**	**221,395,117**	**1,209,325,328**	**0.2484**	**0.3336**	**0.5820**
	29	1,209,325,328	30,233,133	25,115,646	55,348,779	1,184,209,682	0.0660	0.0795	0.1455
	30	1,184,209,682	29,605,242	25,743,537	55,348,779	1,158,466,145	0.0677	0.0778	0.1455
	31	1,158,466,145	28,961,654	26,387,126	55,348,779	1,132,079,019	0.0694	0.0761	0.1455
	32	1,132,079,019	28,301,975	27,046,804	55,348,779	1,105,032,215	0.0711	0.0744	0.1455
8		**1,209,325,328**	**117,102,004**	**104,293,113**	**221,395,117**	**1,105,032,215**	**0.2742**	**0.3078**	**0.5820**
	33	1,105,032,215	27,625,805	27,722,974	55,348,779	1,077,309,241	0.0729	0.0726	0.1455
	34	1,077,309,241	26,932,731	28,416,048	55,348,779	1,048,893,193	0.0747	0.0708	0.1455
	35	1,048,893,193	26,222,330	29,126,449	55,348,779	1,019,766,744	0.0766	0.0689	0.1455
	36	1,019,766,744	25,494,169	29,854,611	55,348,779	989,912,133	0.0785	0.0670	0.1455
9		**1,105,032,215**	**106,275,035**	**115,120,082**	**221,395,117**	**989,912,133**	**0.3026**	**0.2794**	**0.5820**
	37	989,912,133	24,747,803	30,600,976	55,348,779	959,311,157	0.0804	0.0651	0.1455
	38	959,311,157	23,982,779	31,366,000	55,348,779	927,945,157	0.0825	0.0630	0.1455
	39	927,945,157	23,198,629	32,150,150	55,348,779	895,795,006	0.0845	0.0610	0.1455
	40	895,795,006	22,394,875	32,953,904	55,348,779	862,841,102	0.0866	0.0589	0.1455
10		**989,912,133**	**94,324,086**	**127,071,031**	**221,395,117**	**862,841,102**	**0.3341**	**0.2480**	**0.5820**
	41	862,841,102	21,571,028	33,777,752	55,348,779	829,063,350	0.0888	0.0567	0.1455
	42	829,063,350	20,726,584	34,622,195	55,348,779	794,441,155	0.0910	0.0545	0.1455
	43	794,441,155	19,861,029	35,487,750	55,348,779	758,953,405	0.0933	0.0522	0.1455
	44	758,953,405	18,973,835	36,374,944	55,348,779	722,578,460	0.0956	0.0499	0.1455
11		**862,841,102**	**81,132,475**	**140,262,642**	**221,395,117**	**722,578,460**	**0.3687**	**0.2133**	**0.5820**
	45	722,578,460	18,064,462	37,284,318	55,348,779	685,294,143	0.0980	0.0475	0.1455
	46	685,294,143	17,132,354	38,216,426	55,348,779	647,077,717	0.1005	0.0450	0.1455
	47	647,077,717	16,176,943	39,171,836	55,348,779	607,905,881	0.1030	0.0425	0.1455
	48	607,905,881	15,197,647	40,151,132	55,348,779	567,754,748	0.1056	0.0400	0.1455
12		**722,578,460**	**66,571,405**	**154,823,712**	**221,395,117**	**567,754,748**	**0.4070**	**0.1750**	**0.5820**
	49	567,754,748	14,193,869	41,154,911	55,348,779	526,599,838	0.1082	0.0373	0.1455
	50	526,599,838	13,164,996	42,183,783	55,348,779	484,416,055	0.1109	0.0346	0.1455
	51	484,416,055	12,110,401	43,238,378	55,348,779	441,177,677	0.1137	0.0318	0.1455
	52	441,177,677	11,029,442	44,319,337	55,348,779	396,858,339	0.1165	0.0290	0.1455
13		**567,754,748**	**50,498,708**	**170,896,409**	**221,395,117**	**396,858,339**	**0.4493**	**0.1328**	**0.5820**
	53	396,858,339	9,921,458	45,427,321	55,348,779	351,431,019	0.1194	0.0261	0.1455
	54	351,431,019	8,785,775	46,563,004	55,348,779	304,868,015	0.1224	0.0231	0.1455
	55	304,868,015	7,621,700	47,727,079	55,348,779	257,140,936	0.1255	0.0200	0.1455
	56	257,140,936	6,428,523	48,920,256	55,348,779	208,220,680	0.1286	0.0169	0.1455
14		**396,858,339**	**32,757,458**	**188,637,659**	**221,395,117**	**208,220,680**	**0.4959**	**0.0861**	**0.5820**
	57	208,220,680	5,205,517	50,143,262	55,348,779	158,077,418	0.1318	0.0137	0.1455
	58	158,077,418	3,951,935	51,396,844	55,348,779	106,680,574	0.1351	0.0104	0.1455
	59	106,680,574	2,667,014	52,681,765	55,348,779	53,998,809	0.1385	0.0070	0.1455
	60	53,998,809	1,349,970	53,998,809	55,348,779	0	0.1420	0.0035	0.1455
15		**208,220,680**	**13,174,437**	**208,220,680**	**221,395,117**	**0**	**0.5474**	**0.0346**	**0.5820**

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