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## National Electric Power Regulatory Authority Islamic Republic of Pakistan

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No. NEPRA/R/LAG-498/17382-88

September 15, 2022

**Project Director** Gorking Matiltan Hydropower Project Pakhtunkhwa Energy Development Organization PEDO House, 38/B-2, Room No. 105, Phase-V Hayatabad, Peshawar

# Subject:Grant of Generation Licence No. GL(HYDEL)/18/2022Licence Application No. LAG-498Pakhtunkhwa Energy Development Organization (PEDO)

#### Reference: PEDO letter No. PEDO/PD/GMHPP/2020/1645-46 dated 28.12.2020

Enclosed please find herewith Determination of the Authority in the matter of application of Pakhtunkhwa Energy Development Organization (PEDO) for the grant of generation licence along with Generation Licence No. GL(Hydel)/18/2022 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to PEDO for its 88.30 MW Gorkin Matiltan Hydel Power Plant located on River Ushu near Kalam, District Swat, in the province of Khyber Pakhtunkhwa, pursuant to Section-14(B) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/(NEPRA Amended Act 2018).

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: As Above



(Syed Safeer Hussain)

#### Copy to:

- 1. Secretary, Power Division, Ministry of Energy, 'A' Block, Pak Secretariat, Islamabad
- Secretary, Energy & Power Department, Government of Khyber Pakhtunkhwa, 1st Floor, A-Block, Abdul-Wali Khan Multiplex, Civil Secretariat, Peshawar.
- 3. Managing Director, NTDC, 414 WAPDA House, Lahore
- 4. Chief Executive Officer, CPPA(G), 73 West, Shaheen Plaza, A.K. Fazl-ul-Haq Rd, Blue Area, Islamabad
- 5. Chief Executive Officer, Peshawar Electric Supply Company, 166 WAPDA House, Shami Road, Peshawar
- 6. Director General, Environmental Protection Agency (EPA), 3rd Floor, Old Courts Building, Khyber Road, Peshawar

#### National Electric Power Regulatory Authority (NEPRA)

#### <u>Determination of the Authority</u> in the Matter of Application of Pakhtunkhwa Energy Development Organization for the Grant of Generation Licence

<u>September</u>, 2022 <u>Case No. LAG-498</u>

#### (A). <u>Background</u>

(i). The province of Khyber Pakhtunkhwa is blessed with huge hydropower potential. In order to harness hydropower potential in the province, the Government of Khyber Pakhtunkhwa has set up Pakhtunkhwa Energy Development Organization (PEDO).

(ii). PEDO has identified around 6000 MW hydropower potential at various sites all over the province. The identified/selected sites are at different stages of implementation. One of such sites in the province is on Ushu river, near Kalam, district Swat.

#### (B). <u>Filing of Application</u>

(i). PEDO submitted an application on December 29, 2020 for the grant of generation licence in terms of Section-14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

(ii). The Registrar examined the submitted application to confirm its compliance with the Licensing Regulations and observed that the application lacked some of the required information/documentation. In view of the said, the Registrar directed PEDO for submitting the missing information/documentation and the same was received on January 06, 2021. Accordingly, the Registrar submitted the application for the consideration of the Authority to decide the admission of the same or otherwise. The Authority considered the matter and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing

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Regulations. Accordingly, the Authority admitted the application on February 02, 2021 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority also approved a notice of admission to be published in the press for inviting comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, the said notice was published in one (01) Urdu and one (01) English newspaper on February 04, 2021.

(iii). In addition to the above, the Authority also approved a list of stakeholders for seeking their comments for assistance of the Authority in the matter in terms of Regulation-9(2) of the Licensing Regulations. Accordingly, letters were sent to different stakeholders as per the approved list on February 08, 2021, soliciting their comments for assistance of the Authority.

#### (C). <u>Comments of Stakeholders</u>

(i). In reply to the above, the Authority received comments from three (03) stakeholders. These included National Transmission and Despatch Company Limited (NTDC), Indus River System Authority (IRSA) and Central Power Purchasing Agency (Guaranteed) Limited (CPPA-G). The salient points of the comments offered by the said stakeholders are summarized below:-

(a). NTDC commented that it is in the process of revision of Indicative Generation Capacity Expansion Plan (IGCEP). The selection and timelines of the future power plants including the Gorkin Matiltan Hydel Power Project (HPP) shall be decided on the basis of least cost generation analysis in IGCEP. Further, the proposed interconnection scheme for the said HPP as mentioned in Schedule-II in the application is not based on any grid interconnection studies. In fact, an integrated interconnection study along with transmission corridor assessment study is required to propose realistic interconnection schemes for power evacuation of all the HPPs in Khyber Pakhtunkhwa including the Gorkin Matiltan HPP;



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- (b). IRSA submitted that the Authority may ask the sponsors to provide it a copy of PC-1, along with feasibility report, of the project and also apply for No Objection Certificate (NOC); and
- (c). CPPA-G submitted that the regulatory requirements for issuance of generation licence are envisaged in the NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules"). In this regard, Rule-3(5) of the Generation Rules stipulates that the project must satisfy the 'least cost option criteria'. In this regard, the company has not submitted approval of the Grid Interconnection Study (GIS) from NTDC and Peshawar Electric Supply Company (PESCO). Rule 3(2) of the Generation Rules requires an entity filing an application for grant of generation licence to satisfy the Authority that the proposed generation facility has interconnection arrangement in place and that it meets the technical limits/specifications with respect thereto. It states that: "The location, technology, interconnection size, arrangements, technical limits, technical functional specifications and other details specific to the generation facilities of the licensee shall be set out in a schedule to the generation licence". The significance of interconnection arrangement is also evident from Rule 3(5)(e) of the Generation Rules and various previous decisions of the Authority stating that approval of GIS and issuance of Power Evacuation Certificates by NTDC/PESCO are necessary in processing and implementing the projects, specifically the renewable projects, so that the stability of the national grid is ensured, and the provisions of the Grid Code are strictly followed. In this regard, PEDO in its application has mentioned that the GIS is still in process of formulation by the consultant and will be completed in shortest possible time however, as per record of CPPA-G, PEDO has not yet executed the GIS of the project under consideration. Further, with reference to the minutes of meeting held between representatives of PEDO and NTDC on November 15, 2019, it was intimated that interconnection issue of Matiltan HPP is very difficult as the Swat corridor in the upper reaches of the valley is narrow and it may not be possible to accommodate



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more than one transmission line. In consideration of the said, the Authority had also directed PEDO to coordinate with relevant stakeholders i.e. NTDC and PESCO to organize a site visit to assess Right of Way (RoW) for construction of transmission line of Matiltan HPP. PEDO was also directed to expedite integrated study of power evacuation from Swat and Chitral/Dir corridors. It was proposed that a comprehensive integrated GIS should be conducted for Swat, Chitral, Kohistan and Mansehra regions to assess the true potential of these localities. However, NTDC opined that such integrated study should only be conducted after the approval of IGCEP to ensure its effectiveness. Further, Regulation-5(2) of Licensing Regulations stipulates that the Authority may decline to issue a licence if the Authority determines in writing that the investments associated with the facility or system are not justifiable in view of needs of the electric power industry or where the applicant has failed to demonstrate, in the opinion of the Authority the existence of the demand for the proposed facility or system. In consideration of the said, the project has failed to satisfy regarding the existence of demand for the proposed facility in the application. It is pertinent to note that the project intends to sell power to the national grid, whereas, the company has not approached the concerned DISCO for filing of Power Acquisition Request (PAR) as per NEPRA (Interim Power Procurement) Regulation, 2005. It may also be noted that the NOC issued by NTDC vide letter dated Nov 17, 2014 regarding purchase of power mentions that the purchase of power shall only be done after fulfilment of pre-requisites, which include an approved interconnection plan by NTDC and confirmation of timeline of project from IGCEP which have not been fulfilled by company so far. In addition to the said, with reference to the Minutes of Meeting held on July 04, 2018 in Ministry of Energy (Power Division) regarding the resolution of outstanding issues pertaining to hydel projects in KPK, it was decided that for all future projects (excluding the Pehur, Machai, Ranolia and Daral Khwar hydropower projects), PEDO will engage consultant for conducting



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integrated power evacuation study in the available corridors in Swat and Chitral, thus enabling the NTDC to consider the same in the formulation of demand forecasting. It was also decided that PEDO will not initiate any future project (excluding the Pehur, Machai, Ranolia and Daral Khwar hydropower projects), without following due legal and regulatory framework and necessary consents of the relevant stakeholders. PEDO has started the construction of the power project without obtaining the required consents/approvals from the relevant stakeholders. CPPA-G vide letter dated January 19, 2021 and February 03, 2021 had approached the Ministry of Energy (Power Division) in furtherance of July 04, 2018 minutes of meeting to guide how to proceed further for the processing of HPPs initiated by PEDO, however, response from the Power Division is still awaited.

(ii). The Authority examined the above comments of stakeholders and in view of the observations, considered it appropriate to seek the perspective of PEDO. Regarding comments of NTDC about inclusion of Gorkin Matiltan HPP in the revised IGCEP 2021, it has been submitted the said project is already mentioned in the latest version of IGCEP. On the comments of IRSA, PEDO approached the same and gave detailed presentation, however, IRSA observed that project was under implementation before issuance of NOCs by it and Environment Protection Agency, Govt. of Khyber Pakhtunkhwa (EPAGoKP) which tantamount to violation of relevant rules. In the absence of the same, the grant of generation licence may be deferred until the requisite NOCs from EPAGoKP and IRSA are acquired by the company. In response, PEDO submitted that it has already obtained NOC from EPAGoKP and the same has been submitted to IRSA.

(iii). Further to the above, PEDO informed that it is in position to submit application for the grant of generation licence once statutory requirements are completed and technical specifications are firm which include detailed design, purchase of land, profile of contractors and sub-contractors executed during construction phase. Further, 88.3 MW Gorkin-Matiltan HPP is a run off river project without any reservoir or storage capacity and therefore does not have any impact on the flow of water in Swat River. It is pertinent to mention that IRSA in past had granted NOCs to number of projects which recercication phase including Daral Khwar



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HPP, Lawi HPP and Jabori HPP. Later on, PEDO obtained the required NOC from IRSA and submitted the same for consideration of the Authority.

(iv). On the observations of the CPPA-G, it was submitted that PEDO is actively pursuing the integrated study for various HPPs including Gorkin-Matiltan HPP. In this regard, a joint survey for corridor assessment in Swat valley was carried by PEDO, NTDC and private consultants (M/s Barqaab Consulting & Power Planners International) on July 01-02, 2021. Afterwards, PEDO has requested NTDC to provide date for carrying out the required study for Gorkin-Matiltan HPP however, the same has not been provided yet.

(v). In addition, PEDO also submitted that CPPA-G in its letter refers to a meeting between the PEDO and NTDC officials wherein it was acknowledged that power evacuation from swat valley is a challenge. In this regard, NEPRA has also given directions to coordinate with relevant stakeholders to address the issue of interconnection arrangement for HPPs in Swat valley. In light of the said, a joint survey was carried out as explained above and the report of the same will be submitted to NEPRA. Regarding comments on inclusion of Gorkin Matiltan HPP in the IGCEP, it is pertinent to mention that the said project is already mentioned in the latest version of IGCEP submitted by NTDC however, the same has been returned by the Authority with certain observations. Therefore, it is considered that delay in approval of IGCEP should not hamper the completion of other milestones of the project as the NEPRA has decided to entertain the tariff petition of only those projects which are having valid generation licence.

(vi). CPPA-G has highlighted that Regulation-5 of the Licensing Regulations provides the eligibility criteria for the grant of generation licence which, *inter alia*, include that, "..*the Authority may decline to issue a licence if Authority determines in writing that: the investments associated with the facility or system are not justifiable in view of needs of the electric power industry or where the applicant has failed to demonstrate, in the opinion of the Authority the existence of the demand for the proposed facility or system;*" In this regard, PEDO is of the view that harnessing the hydel potential in district Swat, Khyber Pakhtunkhwa will result in optimal utilization of available resources. Gorkin-Matiltan HPP is being developed through Government's resources i.e. through public sector financing. PEDO is fully aware of its responsibility to develop the project on least cost basis and the same has been



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duly catered in the feasibility study of the project. The hydel project will meet the local requirement of electricity as well as improve load profile of the remote areas.

(vii). On the comments of CPPA-G that PEDO has not approached the concerned DISCO for filing of PAR, it has been stated that the same is not requirement for the grant of generation licence as envisages in the relevant regulations. It is rightly pointed that NTDC through its letter dated November 17, 2014 gave conditional approval for purchase of power from Gorkin-Matiltan subject to completion of certain milestones and obtaining generation licence is one of pre-requisites whereas the remaining are dependent on the said condition as PEDO will proceed for tariff and Power Purchase Agreement (PPA) subsequent to grant of licence. Regarding comments of NTDC about inclusion of Gorkin Matiltan HPP in the revised IGCEP 2021, it is submitted the said project is already mentioned in the latest version of IGCEP as explained in detail above.

(viii). In view thereof, PEDO requested the Authority to consider the grant of conditional generation licence as done previously in the cases of Uzghor Hydro Power Company (Private) Limited and Master Hydro (Private) Limited. Meanwhile, PEDO will conduct integrated GIS of all projects in Swat region including that Gorkin-Matiltan HPP and submit the same once it is completed for approval of concerned quarters.

(ix). The Authority considered the above reply of PEDO and considered it appropriate to proceed further in the matter as stipulated in the Licensing Regulations and the Generation Rules.

#### (D). Evaluation/Findings

(i). The Authority has reviewed the submissions of PEDO including the information provided in its application for the grant of generation licence, comments of the stakeholders and the rejoinder in the matter. Further to the said, the Authority has also considered the feasibility study of the project, interconnection & dispersal arrangement and Environmental Impact Assessment (EIA) of the project and the relevant rules & regulations.



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(ii). The Authority has observed that PEDO is an autonomous organization governed by its Board of Directors and is under the administrative control of Irrigation and Power Department of Khyber Pakhtunkhwa. It is pertinent to mention that under Section-24 of the NEPRA Act, the licensees are required to be companies registered under the Companies Ordinance, 1984 (XLVII of 1984) except WAPDA and PEDO. In view of provisions of the NEPRA Act, PEDO fulfills the said basic criteria for the consideration of a licence. PEDO has successfully completed seven (07) small and medium sized hydel power projects. These include (a). 81.00 MW Malakand-III; (b). 18.00 MW Pehur; (c). 1.80 MW Shishi; (d). 4.20 MW Reshun; (e). 2.40 MW Machai; (f). 17.00 MW Ranolia; (g). 36.60 MW Daral Khwar; and (h). 10.20 MW Jabori Projects.

(iii). Currently, PEDO is working on a number of hydropower projects which are at different stages of implementation. These hydropower potential sites are mainly located in the Northern districts of Khyber Pakhtunkhwa i.e. Chitral, Dir, Swat, Mansehra and Kohistan. The major source of funding for financing these projects had been the Hydel Development Fund and the Annual Development Program of Govt. of Khyber Pakhtunkhwa. In view of the above, the Authority considers that PEDO has the required financial and technical capability to implement hydel power projects'.

(iv). The Authority has reviewed the feasibility study of the project and observed that the project of Gorkin-Matiltan HPP was initially identified as a result of the Regional Power Development Study Swat Valley 1998. The Feasibility Study for Gorkin-Matiltan HPP was carried out in 1996 by a consortium of Sir William Halcrow & Partners in association with NorConsult International, Associated Consulting Engineer, Bak Consulting Engineers and Enterprises & Development Consulting. Later on, PEDO engaged the joint venture led by BARQAAB Consulting Services (Private) Limited (including Consulting Associates Peshawar and Karakoram Engineering Consultants, Skardu) in April, 2012 for review of Feasibility Study of the project and preparation of other documents. Executive Committee of the National Economic Council (ECNEC) approved a revised PC-I of the project on January 12, 2015 with a total cost of approximately Rs. 20,772.94 million.





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(v). As explained above, PEDO has submitted the current application for the grant of generation licence for its project of Gorkin-Matiltan which is an 88.30 MW Run of River Project proposed to be developed on Ushu River, near Kalam, District Swat in the province of Khyber Pakhtunkhwa. The site of the Power House is about 6 Km by road from Kalam while the weir and intake sites are about 9 Km further upstream. According to the feasibility study of the project, the 5 m high concrete weir is 40 m long and there will be 1 m high flap gates on the crest. On the right side of the weir, there will be two radial gates, each 5 m wide and 5.3 m high, next to intake. From the intake, the water will flow through 260 m long concrete box culvert which is 30 m long. The diverted water from the weir will flow through a box channel of short length and will pass through a Desander. Then it will pass through a tunnel and enter into penstock having a surge shaft. The penstock will provide the required discharge to the power house and then water will be put back into Ushu River through tailrace channel.

(vi). The total installed capacity of the HPP is 88.30 MW consisting of three (03) Vertical axis Francis turbines (2x36.5 MW + 1x15.3 MW=88.30 MW and nominal generating power of 84.0 MW). The said capacity of the project has been optimized keeping in view the design discharge of 42 m<sup>3</sup>/s (1483 Cusecs). The Gorkin Matiltan HPP is a high head (gross head of 251.8-254.9 m and net head 237.20-254.70 m) run of river project with mean annual energy of approximately 346 GWh at plant factor of 46.9%. The project is in advanced stage and is expected to be completed by July 31, 2023. It is pertinent to mention that Gorkin-Matiltan HPP is already included in IGCEP in the list of committed project having expected commissioning date of July 2023.

(x). Regarding GIS of the project, the Authority has observed that PEDO through its consultant Power Planners International has carried out Integrated Grid Interconnection Study (GIS) for evacuation of power from Gorkin-Matiltan HPP & other hydropower projects in Swat valley. According to the said study, the interconnection arrangement will consist of: (a). a 132 KV twin bundled Rail section with forty (40) KM length from Gorkin-Matiltan HPP to Daral Khwar HPP; (b). a 132 KV Rail section with 9.5 KM from Daral Khwar to Madyan 132 KV Grid Station; (c). 50 KM direct circuit between Gorkin-Matiltan HPP and Madyan 132 KV Grid Station is divided into two parts which include a 40 KM twin bundled Rail circuit and 10 KM



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Rail circuit; and (d). a 400 meters cable is to be laid down at the end of 40 KM twin bundled Rail circuit between Gorkin-Matiltan HPP and Madyan 132 KV Grid Station due to mountainous terrain. Further, a 132 KV Double Circuit transmission line on Rail conductor from Madyan 132 KV Grid Stattion to Khwaza Khel is under construction to meet the N-1 contingency. In this regard, PESCO has already approved the said interconnection arrangement for dispersal of power from the generation facility.

(xi). The Authority has observed that the proposed project, for which generation licence is being sought, is based on clean water source and does not cause pollution as in the case of conventional power plants. However, the operation of the generation facility/HPP may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that PEDO carried out the Environmental Impact Assessment for the project and submitted the same for the consideration and approval of Environment Protection Agency, Government of KPK (EPAGoKPK). In this regard, EPAGoKPK has already issued a NOC to PEDO for construction of the project.

(xii). In terms of Rule-3 of the Generation Rules, the Authority may grant a generation licence to any person to engage in the generation business. The said rule stipulates various conditions pertaining to the grant of generation licence as explained in Rule-3(2), Rule-3(3), Rule-3(4) and Rule-3(5) of the Generation Rules. In the particular case under consideration, the Authority considers that conditions of Rule-3(2) and Rule-3(3) stand satisfied as PEDO has provided details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/hydel Power Plant. The provision of Rule-3(4) of the Generation Rules regarding holding a public hearing is not applicable as there was no issue which required this exercise.

(xiii). The Rule-3(5) of the Generation Rules stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the generation facility proposed in an application for a generation licence are either not suitable on environmental grounds or do not satisfy the least cost option criteria. In this regard, the Rule-3(5) of the Generation Rules also stipulates the conditions pertaining to least cost option criteria which



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include (a). sustainable development or optimum utilization of the renewable or nonrenewable energy resources proposed for generation of electric power; (b). the availability of indigenous fuel and other resources; (c). the comparative costs of the construction, operation and maintenance of the proposed generation facility against the preferences indicated by the Authority; (d). the cost and right-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility and the costs of the transmission system expansion required to remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariff resulting or likely to result from the construction or operation of the proposed generation facility; and (h) the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole.

(xiv). In consideration of the above, the Authority considers that the proposed project will result in optimum utilization of the RE of the province of Khyber Pakhtunkhwa which is untapped, resulting in pollution free electric power. Further, the PLEXOS software has optimized the project based on least cost option criteria and the same is included in list of committed projects in IGCEP. As explained in the preceding paragraphs, the sponsor of the project carried out the GIS which concludes that the project will not face any constraints in transmission system. Further, being located at reasonable distance from the thin population of the area, the project will not likely result in cost and right-of-way issues for the provision of transmission and interconnection facilities. In view of the said, the Authority considers that the project of PEDO fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules, regulations and other applicable documents.

#### (E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. The economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of energy/electricity. In view of the said reasons, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including hydel must be developed on priority basis.



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(ii). The existing energy mix of the country is heavily skewed towards the costlier thermal power plants, mainly operating on imported fuel. The import of fuel for electric power generation not only causes depletion of the precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development, it is imperative that indigenous resources are given priority for power generation and their development be encouraged. The Authority considers that the proposed project of PEDO will not only help in diversifying the energy portfolio of the country but it will also enhance the energy security of the country by reducing the dependence on imported furnace oil and will also help in reduction of carbon emission by generating clean electricity, thus improving the environment.

(iii). The Authority has noted that PEDO is setting up a hydel based generation facility/Hydel Power Plant as Run-of-River scheme on Ushu River located near Kalam, district Swat, in the province of Khyber Pakhtunkhwa having an installed capacity of 88.30 MW. As explained in the preceding paragraphs, PEDO has provided the details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical details and other related information for the proposed generation facility/HPP.

(iv). In view of the above, the Authority considers that proposed project fulfils the eligibility criteria for the grant of generation licence as envisaged in the existing regulatory regime. Further, the proposed project of PEDO will help in diversifying the energy portfolio as well increasing share of RE in the country. It will not only enhance the energy security of the country by reducing the dependence on imported fuel but will also help in reducing carbon emissions by generating clean electricity, thus improving the environment.

(v). The Rule-5(1) of the Generation Rules stipulates that the term of a Generation Licence is to be consistent with the maximum expected useful life of the units comprised in a generating facility, except where an applicant consents to a shorter term. According to the information provided by PEDO, the expected Commercial Operation Date (COD) of the generation facility/HPP is July 31, 2023 and will have a useful life of more than thirty (30) years from its COD. In this regard, PEDO has requested that the term of the proposed generation licence may be fixed as thirty years. In consideration of the said, it is clarified that the submissions of PEDO



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are in line with the industry standards and norms. In view of the said and considering the fact that PEDO has consented for a shorter term of thirty (30) years, the Authority fixes the term of the generation licence as thirty (30) years from COD of the project, subject to the Section 14B of the NEPRA Act.

(vi). Regarding the tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. In view of the said, the Authority considers it appropriate to direct PEDO to charge the power purchaser/CPPA-G only such tariff which has been determined, approved or specified by it. Accordingly, the Authority decides to include a specific article in the generation licence and directs PEDO to adhere to the said in letter and spirit without any exception.

(vii). About the compliance with the environmental standards, as discussed in the preceding paragraphs, PEDO has provided the NOC from EPAGoKPK and has confirmed that the project will comply with the required standards during the term of the Generation Licence. In view of the importance of the issue, the Authority has decided to include a specific article in the Generation Licence along with other terms and conditions making it obligatory for PEDO to comply with relevant environmental standards at all times. Further, the Authority directs PEDO to submit a report on a biannual basis, confirming that operation of its generation facility is compliant with the required environmental standards as prescribed by the concerned environmental protection agency. As the proposed generation facility/HPP of PEDO will be using hydel source for generation of power, therefore the project may qualify for the Carbon Credits. In this regard, an article for carbon credits and sharing its proceeds with the power purchaser has been included in the generation licence.



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(viii). In view of the above, the Authority hereby approves the grant of Generation Licence to PEDO for its Gorkin-Matiltan HPP on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence is subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed thereunder and other applicable documents.

#### **Authority**

Engr. Maqsood Anwar Khan (Member)

Rafique Ahmed Shaikh (Member)

Tauseef H. Farooqi

## (Ĉhairman)





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## National Electric Power Regulatory Authority (NEPRA) Islamabad – Pakistan

#### **GENERATION LICENCE**

No. GL(Hydel)/18/2022

In exercise of the powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018, the Authority hereby grants a Generation Licence to:

#### Pakhtunkhwa Energy Development Organization/PEDO Set up under the PEDO Act of 2014 of Government of Khyber Pakhtunkhwa (KPK)

for its Hydel Based Generation Facility/Gorkin Matiltan Hydel Power Plant Located on River Ushu, near Kalam, District Swat in the Province of Khyber Pakhtunkhwa

(Total Installed Capacity: 88.30 MW Gross)

to engage in generation business subject to and in accordance with the Articles of this Licence.

Given under my hand this on  $\frac{15}{15}$  day of <u>September Two</u> <u>Thousand & Twenty Two</u> and expires on <u>30<sup>th</sup></u> day of <u>July Two</u> <u>Thousand & Fifty Three</u>.



Registrar



#### Article-1 Definitions

#### 1.1 In this licence

- (a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 as amended from time to time;
- (b). "Applicable Documents" means the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, the Commercial Code, or the documents or instruments made by the Licensee pursuant to its generation licence, in each case of a binding nature applicable to the Licensee or, where applicable, to its affiliates and to which the Licensee or any of its affiliates may be subject;
- (c). "Applicable Law" means all the Applicable Documents;
- (d). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;
- (e). "Bus Bar" means a system of conductors in the generation facility/Hydel Power Plant of the Licensee on which the electric power from all the generators is collected for supplying to the Power Purchaser;
- (f). "Carbon Credits" means the amount of Carbon Dioxide (CO<sub>2</sub>) and other greenhouse gases not produced as a result of generation of electric energy by the generation facility/Hydel Power Plant and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of electric energy by the generation facility/Hydel Power





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Plant, which are available or can be obtained in relation to the generation facility/Hydel Power Plant after the COD;

- (g). "Commercial Code" or "Market Commercial Code" means the commercial code prepared and maintained by the market operator pursuant to sections 23A and 23B of the Act and approved by the Authority, from time to time;
- (h). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility/Hydel Power Plant of the Licensee is commissioned;
- (i). "Commissioning" means the undertaking of the Commissioning Tests of the generation facility/Hydel Power Plant as stipulated in the EPA;
- (j). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;
- (k). "Distribution Code" means the code prepared by the concerned Distribution Licensee and approved by the Authority, which defines the technical and operational standards and procedures for Distribution Licensees and all those connected to its system as may be revised from time to time with necessary approval of the Authority;
- (I). "Distribution Licensee" means the a person to whom a licence for distribution of electric power has been granted by the Authority under the Act;
- (m). "Energy Purchase Agreement (EPA)" means the energy purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility/Hydel Power Plant, as may be amended by the parties thereto from time to time;



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- (n). "Generation Rules" means the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;
- (o). "Grid Code" means the code prepared by the national grid company and approved by the Authority or, when a separate entity is licensed as system operator, prepared by the system operator licensee under sections 23H of the Act and approved by the Authority;
- (p). "Hydel Power Plant " means a generation facility for production of electric power using water as source;
- (q). "IEC" means "the International Electrotechnical Commission or its successors or permitted assigns;
- (r). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;
- (s). "Licensee" means <u>Pakhtunkhwa Energy Development</u> <u>Organization (PEDO)</u> or its successors or permitted assigns;
- (t). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021 as amended or replaced from time to time;
- (u). "Net Delivered Energy" means the net electric energy expressed in kWh generated by the generation facility/Hydel Power Plant of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser;
- (v). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;



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- (w). "PESCO" means Peshawar Electric Supply Company Limited or its successors or permitted assigns;
- (x). "Power Purchaser" means CPPA-G which will be purchasing electric energy from the Licensee either on behalf of all or any single Distribution Licensee, pursuant to an EPA for procurement of electric energy;
- (y). "SCADA System" means the supervisory control and data acquisition system for gathering of data in real time from remote locations to control equipment and conditions;

**1.2** The words and expressions used but not defined herein bear the meaning given thereto in the Act or Generation Rules and Licensing Regulations issued under the Act.

#### <u>Article-2</u> Applicability of Law

This licence is issued subject to the provisions of the Applicable Law, as amended from time to time.

#### <u>Article-3</u> <u>Generation Facilities</u>

**3.1** The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Hydel Power Plant of the Licensee are set out in Schedule-I of this licence.

**3.2** The net capacity/Net Delivered Energy of the generation facility/Hydel Power Plant of the Licensee is set out in Schedule-II of this licence. The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/Hydel Power Plant before its COD.



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#### <u>Article-4</u> <u>Term of Licence</u>

**4.1** This licence shall become effective from the date of its issuance and will have a term of thirty (30) years from the COD of the generation facility/Hydel Power Plant of the Licensee subject to Section 14-B of the Act.

**4.2** Unless suspended or revoked earlier or Licence ceases to have effect, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, as stipulated in the Licensing Regulations.

#### Article-5 Licence fee

The Licensee shall pay to the Authority the licence fee as stipulated in the National Electric Power Regulatory Authority (Fees) Regulations, 2021 as amended or replaced from time to time.

#### <u>Article-6</u> <u>Tariff</u>

The Licensee shall charge only such tariff from the Power Purchaser which has been determined, approved or specified by the Authority.

#### <u>Article-7</u> <u>Competitive Trading Arrangement</u>

**7.1** The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement.

**7.2** The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

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**7.3** Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.

#### Article-8 Maintenance of Records

For the purpose of sub-rule(1) of Rule-19 of the Generation Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

#### <u>Article-9</u> <u>Compliance with Performance Standards</u>

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended or replaced from time to time.

#### <u>Article-10</u> <u>Compliance with Environmental & Safety Standards</u>

**10.1** The generation facility/Hydel Power Plant of the Licensee shall comply with the environmental and safety standards in accordance with the NEPRA Power Safety Code, 2021 and such other standards as may be prescribed by the relevant competent authority from time to time.

**10.2** The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility/Hydel Power Plant is in conformity with required environmental standards as prescribed by the relevant competent authority.



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#### <u>Article-11</u> <u>Power off take Point and Voltage</u>

The Licensee shall deliver the electric energy to the Power Purchaser at the outgoing Bus Bar of its generation facility/Hydel Power Plant. The Licensee shall be responsible for the up-gradation (step up) of generation voltage up to the required dispersal voltage level.

#### Article-12 Performance Data

**12.1** The Licensee shall install properly calibrated automatic computerized recording device(s) for measuring flow of water at its generation facility/Hydel Power Plant for recording of data.

**12.2** The Licensee shall install SCADA System or compatible communication system at its generation facility/Hydel Power Plant as well as at the side of the Power Purchaser.

**12.3** The Licensee shall transmit the data for flows of water and power output of its generation facility/Hydel Power Plant to the control room of the Power Purchaser.

#### <u>Article-13</u> Provision of Information

In accordance with provisions of Section-44 of the Act, the Licensee shall be obligated to provide the required information in any form as desired by the Authority without any exception.

#### <u>Article-14</u> Emissions Trading /Carbon Credits

The Licensee shall process and obtain expeditiously the Carbon Credits admissible to the generation facility/Hydel Power Plant. The Licensee shall share the said proceeds with the Power Purchaser as per the relevant policy.



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#### <u>Article-15</u> Design & Manufacturing Standards

The generation facility/Hydel Power Plant of the Licensee shall be designed, manufactured and tested according to the latest IEC, IEEE standards or any other equivalent standard in the matter. All the plant and equipment of generation facility/Hydel Power Plant shall be unused and brand new.

#### Article-16 Power Curve

The Power Purchaser shall verify the power curve of the generation facility of the Licensee, as part of the Commissioning tests according to the latest IEC/IEEE standards and shall be used to measure its performance.

#### <u>Article-17</u> <u>Compliance with Applicable Law</u>

The Licensee shall comply with the provisions of the Applicable Law, guidelines, directions and prohibitory orders of the Authority as issued from time to time.

#### <u>Article-18</u> <u>Corporate Social Responsibility</u>

The Licensee shall comply with the NEPRA Social Investment Guidelines, 2021, as may be amended from time to time and submit a report on its activities pertaining to Corporate Social Responsibility (CSR) on an annual basis.

#### <u>Article-19</u> <u>Compliance with the Cyber Security Regulations</u>

The Licensee shall comply with National Electric Power Regulatory Authority (Security of Information Technology and Operational Technology) Regulations, 2022 as amended from time to time.



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## SCHEDULE-I

The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.



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<u>Single</u>	<u>line</u>	Diagra	<u>ım (Ele</u>	<u>ectrical</u>	<u>) of the</u>
Genera	tion	Facilit	y/Hyd	el Powe	er Plant
		Of the	Licen	see	



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#### Interconnection Arrangement for Dispersal of Electric Energy/Power from the Generation Facility/Hydel Power Plant of the Licensee

The electric power generated from the generation facility/Hydel Power Plant of the Licensee/Pakhtunkhwa Energy Development Organization (PEDO) shall be dispersed to the load centre of PESCO.

(2). The proposed interconnection arrangement/transmission facilities for dispersal of power from the generation facility/Hydel Power Plant of PEDO will be consisting of: (a). a 132 KV twin bundled Rail section with forty (40) KM length from Gorkin-Matiltan HPP to Daral Khwar HPP; (b). a 132 KV Rail section with 9.5 KM from Daral Khwar to Madyan 132 KV Grid Station; (c). 50 KM direct circuit between Gorkin-Matiltan HPP and Madyan 132 KV Grid Station is divided into two parts which include a 40 KM twin bundled Rail circuit and 10 KM Rail circuit; and (d). a 400 meters cable is to be laid down at the end of 40 KM twin bundled Rail circuit between Gorkin-Matiltan HPP and Madyan 132 KV Grid Station due to mountainous terrain. Further, a 132 KV Double Circuit transmission line on Rail conductor from Madyan 132 KV Grid Station to Khwaza Khel is under construction to meet the N-1 contingency.

(3). Any change in the above interconnection arrangement/transmission facility duly agreed by Licensee/PEDO, PESCO and NTDC, shall be communicated to the Authority in due course of time.



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#### Schematic Diagram for Dispersal of Electric Energy/Power from Generation Facility/Hydel Power Plant of the Licensee

#### Sketch of HPP Location & Interconnection in Swat Valley





Legend

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Proposed Reinforcement 132kV Twin Bundle Rail Conductor 404MVA) 132 kV ( Rail Conductor-202MVA)

Plant Under Study



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#### <u>Detail of</u> <u>Generation Facility/Hydel Power Plant</u> <u>of the Licensee</u>

### (A). <u>General Information</u>

(i).	Name of the Licensee/ Company	Pakhtunkhwa Energy Development Organization (PEDO)
(ii).	Registered/Business Office of the Licensee/ Company	PEDO House, 38-B2, Phase-V, Hayatabad, Peshawar
(iii).	Location of the Generation Facility	Near Kalam, District Swat, Khyber Pakhtunkhwa
_ (iv).	Type of Generation Facility	Hydel Power Plant

## (B). <u>Configuration etc.</u>

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(i).	Size/ Installed Capacity of the Generation Facility (Gross)	88.30 MW	
(ii).	Type of Storage etc.	Run of River Hydel Power Plant	
(iii).	Water Source	Ushu River	
(iv).	Type of Technology	Three (03) Vertical Shaft Francis Turbines	
(v).	Number of Units & Size (MW)	2x36.5 MW + 1x15.3 MW = 88.30 MW Nominal Generating Power: 84.0 MW	
(vi).	Turbine Make & Model	Vertical shaft Francis (HLA351e-LJ-220)	
(vii).	COD of the Generation Facility	July 31, 2023 (Anticipated)	
(viii).	Expected Life of the Generation Facility from COD	Thirty (30) Years	



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(i).	Design Discharge Q	42 m³/sec	
(ii).	Gross Head	254 m	
(iii).	Installed elevation of generating unit	2,044.301 m.a.s.l.	
(iv).	Rated net head	240.00 m	
(v).	Head Loss	14.0 m	
(vi).	Maximum Head	254.0 m	
(vii).	Minimum Head	238.60 m	

## (C). Main Design Features

## (D). <u>Weir Structure</u>

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´ (i).	Weir Type	Concrete Ogee Weir	
(ii).	Height of over flow section from riverbed	9.50 m	
(iii).	Height from weir top (road level) to riverbed	6.0 m	
(iv)	Depth below riverbed	2.0 m	
(V)	Crest width overflow section	41 m	
(vi)	Design Flood (500 year return period)	1,000 m³/sec	



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## (E). Intake Structure

(i).	Intake orientation	Lateral Intake Structure
(ii).	Location	Right bank of river
(iii).	Invert level of intake structure	2298.00 m.a.s.l.
(iv)	Width height of orifice	12 m x 3.46 m

## (F). <u>Connecting Tunnel</u>

(i).	Structure	Connecting channel Arc Type
(ii).	Height	5.50 m
(iii).	Width	5.0 m
(iv).	Length	47.00 m
(v)	Invert level	2296.00 m.a.s.l.

## (G). <u>Desander</u>

Elf.

(i).	Location	Right bank, 700 m downstream of weir
<b>(</b> ii).	No. of Chambers	Five chamber
(iii).	Working length	40 m
(iv)	Working width (single chamber)	7.40 m
(v)	Working depth	6.75 m



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(vi)	Total Width	40 m
(vii)	Total Length	70.87 m
(viii).	Cross Sectional Area	53.36 m²

## (H). <u>Headrace tunnel</u>

(i).	Туре	Inverted U Type
(ii).	Internal Height	5.5 m
(iii).	Internal Width / radius	5.0 m
(iv)	Cross Sectional area	25.0 m <sup>2</sup>
(v)	Total Length	6,671 m

## (I). Surge Tank (Shaft Type)

(i).	Internal Diameter	5.50 m
(ii).	Cross Sectional area	23.76 m <sup>2</sup>
(iii)	Height	106 m

## (J). <u>Penstock Tunnel</u>

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(i).	Internal Diameter	5.50 m	C POWER RECY
(ii).	Cross Sectional area	25 m²	E CISTO AD
(iii).	Length	35 m	THE REGISTING AND THE REGISTIN
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(i).	Туре	Box channel/Pond
(ii). •	Pond Dimension	17.04 m x 8.70 m
(ii).	Pond Width	29.27 m
(iii).	Height	3 m
(iv).	Length	70 m

## (K). <u>Tailrace & Tailrace Pond</u>

## (L). <u>Turbine(s)</u>

(i).	Type of Turbine	Vertical Axis Francis	
(ii).	No. of Units	03	
(iii).	Unit(s) Discharge	Unit 1 & 2	Unit 3
		16.50 m³/s	7 m³/s
(iv)	Rated Turbine Speed	Generator 1 & 2	Generator 3
		428 rpm	600 rpm
(V).	Turbine Runaway Speed	Generator 1 & 2	Generator 3
		685 rpm	960 <b>r</b> pm

## (M). <u>Generator(s)</u>

(i).	No. of Generators	03 .	
(ii).	Generator Capacity	Generator 1 & 2	Generator 3
		42 MVA	18 MVA
(iii).	Excitation	Static	WER REGUL
(iv).	Frequency	50 Hz	GISTRAR
		AMOTHER *	Page 3 of 15 of Scher

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(v).	Generator(s) Efficiency	97%
(vi).	Insulation Class	F
(vii).	Limit of Utilization	Class B
(viii).	Connection	Y

## (N). <u>Transformer(s)</u>

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(i).	No. of Step-Up Transformers	03	
(ii).	Capacity of Each Transformer	Transformer 1 & 2	Transformer 3
		42 MVA	18 MVA
(iii).	Primary Voltage	11 kV	
(iv).	Secondary Voltage	132 kV ± 5.0%	
(V).	Vector group	YNd	
(vi).	Cooling	ONAN/ONAF	



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(i).	Generation Voltage	11 kV
(ii).	Frequency	50 Hz
(iii).	Power factor	0.85
(iv).	Automatic Generation Control	Yes
(v)	Ramping Rate	<ul> <li>(a). 2-3 minutes for bigger units of 36.5</li> <li>MW</li> <li>(b). 1.5-2 minutes for smaller unit of 15.3MW</li> </ul>
(vi)	Time required to Synchronize to Grid and loading the Complex full load	Less than 3.0 minutes

## (P). Plant Characteristics

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#### SCHEDULE-II

The Total Installed Gross ISO Capacity (MW), De-Rated Capacity At Reference Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity At Reference Site Conditions (MW) of the Generation Facility/Hydro Power Plant of Licensee is given in this Schedule



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## SCHEDULE-II

(1).	Total Installed Gross Capacity of the Generation Facility/Hydel Power Plant (2x36.50 MW + 1x15.30 MW Vertical Francis Turbines)	88.30 MW
(2).	Total De-Rated Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions (03 Vertical Francis Turbines)	88.30 MW
(3).	Auxiliary Consumption of the Generation Facility/Hydel Power Plant (03 Vertical Francis Turbines)	0.883 MW
(4).	Net Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions Condition (03 Vertical Francis Turbines)	87.417 MW
(5).	Mean Annual Energy of the Generation/Hydel Power Plant	346 GWh

All the above figures are indicative as provided by the Licensee. The Net Delivered Energy available to Power Purchaser for dispatch will be determined through procedures contained in the Energy Purchase Agreement (EPA) or the Applicable Document(s).

Note



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