



Registrar

National Electric Power Regulatory Authority Islamic Republic of Pakistan

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/DL/LAG-327/ 14557-62

October 21, 2016

Mr. Nadeem Abdullah
Chief Executive Officer
Tricon Boston Consulting Corporation Private Limited
7-A/K, Main Boulevard,
Gulberg-II, Lahore

**Subject: Grant of Generation Licence No. WPGL/34/2016
Licence Application No. LAG-327
Tricon Boston Consulting Corporation (Private) Limited (TBCCPL)**

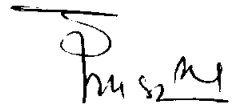
Reference: Your application vide letter No. nil, dated October 02, 2015 (received on October 08, 2015).

Enclosed please find herewith Determination of the Authority in the matter of Application of "Tricon Boston Consulting Corporation (Private) Limited (TBCCPL)" for the "Grant of Generation Licence" along with Generation Licence No. WPGL/34/2016 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to TBCCPL for its 49.60 MW Wind Power Plant-B located at Jhampir, near Nooriabad, District Thatta in the province of Sindh" pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997).

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

**Enclosure: Generation Licence
(WPGL/34/2016)**




(Syed Safeer Hussain) 21.10.16

Copy to:

1. Chief Executive Officer, Alternative Energy Development Board (AEDB), 2nd Floor, OPF Building, G-5/2, Islamabad
2. Chief Executive Officer, NTDC, 414-WAPDA House, Lahore
3. Chief Executive Officer, CPPA-G, 6th Floor, Shaheed-e-Millat Secretariat, Jinnah Avenue, Blue Area, Islamabad
4. Chief Executive Officer, Hyderabad Electric Supply Company Limited (HESCO), WAPDA Offices Complex, Hussainabad, Hyderabad
5. Director General, Environment Protection Department, Government of Sindh, Complex Plot No. ST-2/I, Korangi Industrial Area, Karachi.

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Application of Tricon Boston Consulting
Corporation (Private) Limited for the Grant of Generation Licence
for its 49.6 MW Wind Power Project-B

October 19, 2016
Case No. LAG-327

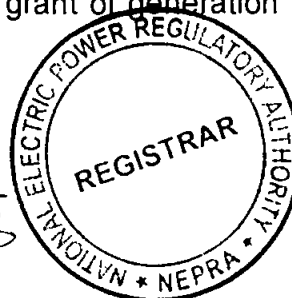
(A). Background

(i). Government of Pakistan has set up Alternative Energy Development Board (AEDB) for harnessing Renewable Energy (RE) resources in the country. AEDB has issued Letter of Intent (LOI) to various RE developers for setting up projects in the country, under the Policy for Development of Renewable Energy for Power Generation 2006 ("the RE Policy").

(ii). AEDB issued a LOI to Tricon Boston Consulting Corporation (Pvt.) Limited for setting up a 49.60 MW wind based generation facility/wind power plant in the Jhimpir wind corridor, district Thatta, Sindh (i.e. TBCCPL Project-B). According to the terms and conditions of the LOI, the applicant carried out a feasibility study of the project including *inter alia*, wind power plant equipment details, micro-sitting details, power production estimates based on wind mast data of the project site, soil tests reports, technical details pertaining to selected wind turbine generator and other allied equipment to be used in the wind power plant, electrical studies, environmental study and project financing etc. The said feasibility study has been approved by AEDB.

(B). Filing of Application

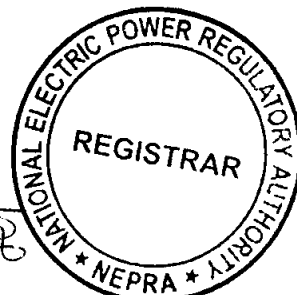
(i). In accordance with Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("the NEPRA Act"), TBCCPL Project-B submitted an application for the grant of generation licence on October 08, 2015.



(ii). The Registrar examined the submitted application to confirm its compliance with the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 ("the Licensing Regulations"). The Registrar observed that the application lacked some of required information/documentation as stipulated in the Licensing Regulations. Accordingly, TBCCPL Project-B was directed to submit the missing information/documentation. TBCCPL Project-B completed the missing information/ documentation on October 22, 2015.

(iii). The Authority considered application of TBCCPL Project-B in its Regulatory Meeting held on January 13, 2016 and observed that NTDC vide its letter dated November 26, 2015 has intimated that approval/vetting of grid interconnection studies of all RE projects will be done in light of recommendations given by GOPA-Intec, once their study is finalized and approved by all stakeholders. In view of the foregoing, the Authority directed NTDC to clarify its position with respect to the above letter and its repercussions on the earlier consent issued to other projects including TBCCPL Project-B.

(iv). Later on, during the meeting held on February 11, 2016, NTDC confirmed that the projects for which the interconnection study has already been approved do not relate to its abovementioned letter. Foregoing in view, The Authority considered the matter in its Regulatory Meeting held on March 29, 2016 and found the form and content of the application of TBCCPL Project-B in compliance with Regulation-3 of the Licensing Regulations. The Authority admitted the application for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority also approved the advertisement containing (a). the prospectus; (b). a notice to the general public about the admission of the application of TBCCPL Project-B, inviting the general public for submitting their comments in the matter as prescribed in Regulation-8 of the Licensing Regulations. Further, the Authority also approved the list of the relevant stakeholders to inform regarding the admission of the application of TBCCPL Project-B and for providing their comments to assist the Authority in the matter, under Regulation-9 of the Regulations.

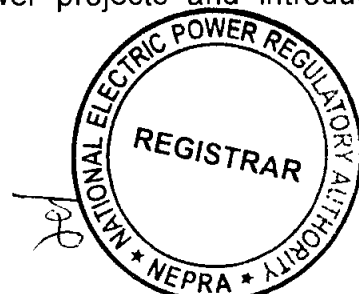


(v). Accordingly, the advertisement was published in "the News" and "daily Express" on April 02, 2016. Apart from the above, separate letters were also sent to Government Ministries, their attached departments, representative organizations and individual experts etc. on April 05, 2016. The said stakeholders were requested for submitting their views/comments for assistance of the Authority.

(C). Comments of Stakeholders

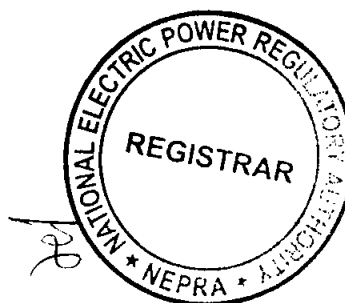
(i). In reply to the above, the Authority received comments from Eight (08) stakeholders. These included Pakistan Council of Renewable Energy Technologies, Anwar Kamal Law Associates, Board of Investment, Energy Department Govt. of Sindh, Central Power Purchasing Agency (Guarantee) Limited (CPPA-G), Alternative Energy Development Board, Ministry of Water & Power and China Sunec Energy (Private) Limited (CSEPL). The salient points of the comments of said stakeholders are summarized below:-

- (a). Pakistan Council of Renewable Energy Technologies commented that contents of the application of TBCCPL Project-B have been examined and it has no objection on grant of the Generation Licence. However, Pakistan Council of Renewable Energy Technologies cannot comment on the financial or other TOR's of the project;
- (b). Anwar Kamal Law Associates in its comments highlighted different issues of surplus capacity, underutilization of power plants and induction of new power plants on "take or pay basis" etc. Further, Anwar Kamal Law Associates has contended that RE power plants are not viable financially and economically due to higher upfront tariff and "must run condition". Anwar Kamal Law Associates also questioned the induction of RE projects in the current scenario (i.e. reduction in oil prices, RLNG contract with Qatar, upcoming coal power projects and introduction of

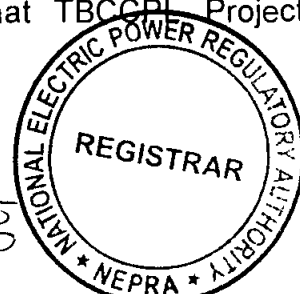


competitive market etc.), affordability vs. availability of electric power and long term PPAs on "take or pay" basis etc. Anwar Kamal Law Associates requested the Authority that the application of TBCCPL Project-B may not be considered for grant of generation licence;

- (c). Board of Investment submitted that energy sector is the priority sector of the Government to cater the short fall in the country. Smooth and affordable supply of energy is the backbone for industrial growth as well as attracting foreign direct investment in the country. Board of Investment supported the grant of generation licence subject to consumer friendly & competitive tariff and completion of all codal/technical formalities under rules & regulations;
- (d). Energy Department Government of Sindh in its comments stated that it is actively supporting the project sponsors for early development of environmental friendly and fuel free power project in line with the RE policy, keeping in view the current energy crisis in the country;
- (e). CPPA-G in its comments submitted that TBCCPL Project-B has selected wind turbine generators of General Electric 1.6XLE of 1.6 MW capacities whereas higher capacity wind turbine generators can also be installed at the same hub height. Further, TBCCPL Project-B needs to ensure that its proposed plant complies with the provisions of the grid code approved by the Authority, as amended in April 2010 for grid integration of wind power plant already enforced within the national grid and directions given by GM Planning Power NTDC vide letter dated February 24, 2016;

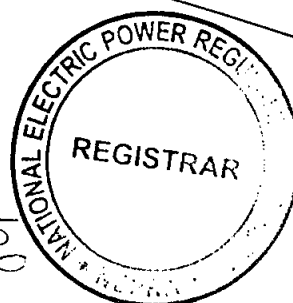


- (f). AEDB commented that from the documents provided by TBCCPL Project-B, original equipment manufacturer and EPC contractor of the project, it has been noted that the wind turbine generator i.e. General Electric 1.6XLE, proposed by the company for development of its 50 MW wind power project is internationally certified as per IEC standards. Further, TBCCPL Project-B and EPC contractor of the project have confirmed that they will import and install new wind turbines of acceptable quality. The said wind turbine has not been imported yet and physical inspection is the responsibility of the power purchaser and independent engineer, hired under Energy Purchase Agreement (EPA), before the Commercial Operation Date of the project. AEDB recommended the grant of generation licence to TBCCPL Project-B;
- (g). Ministry of Water & Power submitted that NEPRA may obtain comments from NTDC and AEDB regarding project assessment and stability of proposed plant and process the application as per provisions of the NEPRA Act and Government of Pakistan policy guidelines; and
- (h). China Sunec Energy (Private) Limited submitted that the intended projects of TBCCPL Project-B are being planned on the land exclusively owned by it for its 50.00 MW WPP being developed at Jhimpir, Thatta, Sindh, for which the Authority has already granted it a generation licence No. WPGL/29/2014 dated November 19, 2014 and its petition for acceptance of upfront tariff for the same is pending with the Authority. China Sunec Energy (Private) Limited informed that its project is integral part of China Pakistan Economic Corridor (CPEC) and AEDB has also issued Letter of Support for the said project, which is valid and in full force. Further, China Sunec Energy (Private) Limited in its additional comments submitted that TBCCPL Project-B was



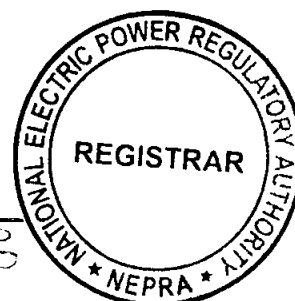
incorporated on August 30, 2012, whereas, its agreement of lease for the project was signed on August 14, 2012 i.e. before its incorporation, which is a clear fraud and documents submitted by TBCCPL Project-B are illegal and fabricated. China Sunec Energy (Private) Limited contested that above mentioned agreements of lease have been signed by Mr. Shahid Ahmed Khan as CEO of TBCCPL before establishing the company. Moreover, China Sunec Energy (Private) Limited through its legal counsel, also served a Legal Notice to the Authority on June 21, 2016, reiterating its above mentioned submission that TBCCPL Project-B does not hold valid title of the project land therefore, the Authority may put the processing of its application for grant of generation licence on hold and appoint a tribunal/commission to investigate the facts and genuineness of the land records for assistance of the Authority.

(ii). The above comments of the stakeholders were examined and it was observed that Pakistan Council of Renewable Energy Technologies, Board of Investment, Energy Department Government of Sindh and AEDB have supported the grant of generation licence. However, Anwar Kamal Law Associates, CPPA-G and China Sunec Energy (Pvt.) Limited have raised certain observations regarding grant of generation licence to TBCCPL Project-B. Therefore, it was considered appropriate seeking perspective of TBCCPL Project-B on the observations of above mentioned stakeholders. Further, clarification was also sought from AEDB regarding dispute of land between China Sunec Energy (Pvt.) Limited and TBCCPL Project-B.



(iii). In reply to the comments/observations of Anwar Kamal Law Associates, TBCCPL Project-B submitted that:

- (a). The comments are general in nature and not specifically related to application of TBCCPL Project-B for the grant of generation licence, rather they are related to working of NEPRA and policies of Government of Pakistan for promotion of RE sector in Pakistan. TBCCPL Project-B appreciates the professional competence of Anwar Kamal Law Associates in the field of Law, however, the comments have been filed without fully understanding and appreciating the dynamics of the project, energy sector, financial and technical considerations relevant for determining project parameters. Therefore, the comments are liable to be dismissed being irrelevant. However, to clarify the concerns raised in the comments TBCCPL Project-B submitted its perspective;
- (b). Presently Pakistan has the lowest contribution of RE in the energy mix which needs to be improved to the level of other developing countries. Therefore, mainstreaming of RE and greater use of indigenous resources will be helpful in diversifying the energy mix, reducing the dependence on any single source (particularly imported fossil fuels), mitigating supply disruptions and price fluctuation risks. Further, additional costs and risks relating to fuel stocking, transportation, and temporary substitute arrangements are also irrelevant for RE projects;
- (c). Anwar Kamal Law Associates is not fully aware about the operational capacity and installed capacity, for instance hydro projects are dependent on the hydrology. Further, sizeable portion of installed capacity is inefficient and not economically viable to be



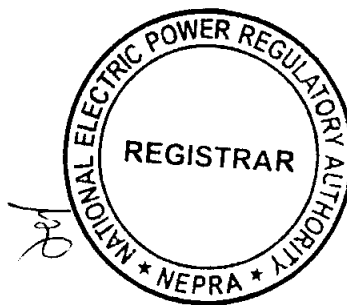
operated. Fuel prices are volatile and we cannot assume the fuel prices to remain on the existing low level; and

- (d). Although there are projects under construction on coal and RLNG fuels, however, the ever increasing demand of electricity will continue to exist, therefore, RE must maintain a sizeable share in the overall energy mix of the country. It is pertinent to mention that indigenous RE contribution will result in savings of precious foreign exchange.
- (e). Comparison of earlier upfront tariffs with the current upfront tariff reveals the improvement of technology/plant factor and reduction in cost, these benefits are reflected in the current upfront tariff offered by the Authority. About the concerns of Anwar Kamal Law Associates on "take or pay" feature of RE Policy, it is submitted that replacing "take or pay" to "take and pay" would result in the end of IPP industry in Pakistan, which to date has been one of the most successful industry in Pakistan .

(iv). Regarding comments of CPPA-G, TBCCPL Project-B submitted that based on the available data, the company found the G.E.-1.6xle-82.5 wind turbine generator of General Electric as more bankable. Further, TBCCPL Project-B confirmed that it will comply with the relevant provisions of the Grid Code.

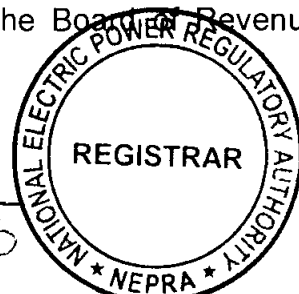
(v). In response to the comments of China Sunec Energy (Pvt.) Limited, TBCCPL Project-B submitted that:

- (a). Its project is proposed to be located in the area of Deh Kohistan 7/1, Jhimpir, District Thatta, in the province of Sindh. Most of the land in the said area of Dehs Kohistan 7/1 & 7/2 is owned by



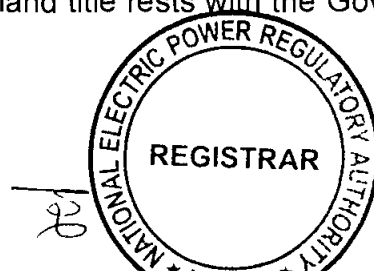
Government of Sindh which has leased pieces of the said land to TBCCPL for establishing its wind power project;

- (b). Due to riots at death of Benazir Bhutto, land record of Taluka Thatta in the Sindh Revenue Department was burnt except the record of Dehs Kohistan 7/1 & 7/2. Thereafter, during reconstruction of the same, some local individuals colluded with the then Assistant Commissioner and got their names entered in the reconstructed record as owners of various pieces of land in Dehs Kohistan 7/1 & 7/2. However, upon request of the then MNA from the area (Dr. Abdul Wahid Soomro), Honourable Supreme Court of Pakistan took suo moto action and appointed the then district Judge Thatta as enquiry officer to probe into the matter. Accordingly, enquiry officer wrote to Deputy Commissioner (DC) to comply with the directions of the Supreme Court. DC investigated the matter and submitted the report to the Supreme Court and Sindh Revenue Board stating that verification of the record revealed that entries in favor of different people in the record of Deh Kohistan 7/1 were made on the basis of incomplete documents/reports and without following the necessary formalities;
- (c). The Supreme Court on November 28, 2012, ordered the Sindh Revenue Board to constitute a supervisory committee to reconstruct the destroyed record of 605 Dehs of District Thatta. Supreme Court also restrained the Government of Sindh and Sindh Revenue Department from mutation, allotment, transfer or conversion of any state land till the entire revenue record of Sindh is reconstructed. The said supervisory committee noted that the entire reconstructed record of rights in VF-VIII of Taluka Thatta was defective and was not prepared as per the guidelines for the revenue officer circulated by the Board of Revenue. Six out of



seven forged sale deeds signed by China Sunec Energy (Pvt.) Limited were registered after the above mentioned restraining orders of Supreme Court. All seven sale deeds of China Sunec Energy (Pvt.) Limited are of no legal effect as the reconstructed record of the Dehs Kohistan 7/1 & 7/2 has been cancelled by the Sindh Board of Revenue pursuant to its notification No.98/MISC/2015/REV-I(II)112;

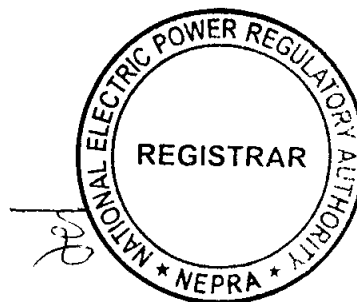
- (d). DC Thatta vide its letter dated March 04, 2016 has confirmed that land leased to TBCCPL Project-B is leased by the rightful owner of the land (i.e. the Government of Sindh). Further, it was also confirmed that the said land is free from encumbrances and the same was granted through lease agreements executed pursuant to the land grant policy of 2012. DC Thatta pursuant to his letter dated April 04, 2016 addressed to Energy Department Government of Sindh has confirmed that the entries in favor of China Sunec Energy (Pvt.) Limited do not exist in the record of rights and VF-VII/A are manipulated in favor of China Sunec Energy (Pvt.) Limited. China Sunec Energy (Pvt.) Limited has been defrauded by certain individuals by collusion with some officials. TBCCPL Project-B is the rightful lessee of the land and has already taken over the possession of the same; and
- (e). The matter is pending with the Honorable Court of the Senior Civil Judge, Thatta and the Court has also passed an interim order on our application for interim injunction restraining China Sunec Energy (Pvt.) Limited from dispossessing the company on the suit land and from raising any allegations against our title before the Authority. The land has been leased by the Government of Sindh and all the relevant documents confirming the authenticity of title are available. The Government of Sindh in its internal inquiry has already determined that the land title rests with the Government of



Sindh and that the land was validly leased to the TBCCPL Project-B, therefore, comments of China Sunec Energy (Pvt.) Limited may kindly be rejected. The company requested the Authority to approve the grant of generation licence at the earliest as it has already finalized terms for securing debt for its project with International Finance Corporation and aim to achieve financial close and start construction activities within 3-4 months.

(vi). In response to the letter of NEPRA, AEDB forwarded the letters of Energy Department Government of Sindh and DC Thatta, wherein it was confirmed that the entries in favor of China Sunec Energy (Pvt.) Limited do not exist in the record of rights and VF-VII/A are manipulated in favor of China Sunec Energy (Pvt.) Limited situated in Deh Kohistan 7/1, Makan Ghar, Tapo Jhimpir, Taluka Thatta. Further, above mentioned letter of DC Thatta also stated that all the reconstructed record of rights of VF-VII/A of Deh Kohistan 7/1 & 7/2 has been suspended by the then DC Thatta under Order dated November 29, 2012. Further, AEDB also informed that it has cancelled the LOS of China Sunec Energy (Pvt.) Limited because the company failed to achieve the requirements under terms & conditions of LOS and in accordance with the Policy for Development of Renewable Energy for Power Generation, 2006.

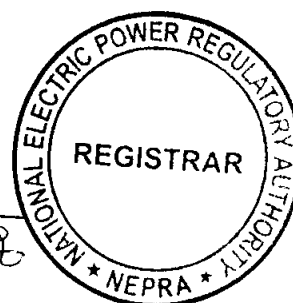
(vii). Accordingly, China Sunec Energy (Pvt.) Limited vide letter dated July 11, 2016 and July 27, 2016 was directed to establish its title to the projects land and to provide an update on the status of its project particularly after cancellation of LOS by AEDB. In response to the said, China Sunec Energy (Pvt.) Limited in its letter dated July 28, 2016, stated that it has already submitted its stance in the matter and the Authority has failed to take any prompt action in this regard. China Sunec Energy (Pvt.) Limited also informed that it has filed a Writ Petition in the Islamabad High Court against NEPRA and others pertaining to processing of application of TBCCPL Project-B for the grant of generation licence.



(viii). Later on, China Sunec Energy (Pvt.) Limited vide its letter dated August 08, 2016 submitted that it has unequivocally withdrawn all its submissions sent to the Authority relating to the land dispute and other ancillary matters. Moreover, China Sunec Energy (Pvt.) Limited through its letter dated September 02, 2016 informed that it has withdrawn its Writ Petition against NEPRA filed in the Islamabad High Court. Foregoing in view, China Sunec Energy (Pvt.) Limited vide letter dated September 07, 2016 was directed to clarify whether it has also withdrawn its objections to the grant of generation licence to TBCCPL Project-B, claims to the disputed land and Writ Petition filed against NEPRA to challenge the generation licence application of TBCCPL Project-B.

(ix). In response, China Sunec Energy (Pvt.) Limited in its letter dated September 22, 2016, submitted that it no longer has any objections to the grant of generation licence to TBCCPL Project-B and has no longer any claims to the disputed land. Further, China Sunec Energy (Pvt.) Limited has also withdrawn its Writ Petition against NEPRA and generation licence application of TBCCPL Project-B. Moreover, China Sunec Energy (Pvt.) Limited requested the Authority to cancel/revoke its generation licence. The Authority has acceded to request of China Sunec Energy (Pvt.) Limited for cancellation/revocation of its generation licence.

(x). The above submissions of the applicant were examined and found plausible. Regarding the comments of Anwar Kamal Law Associates, it is relevant to mention that most of the comments are related to regulatory and policy decisions and reiteration of its earlier comments which have already been deliberated in the upfront tariffs and generation licence applications in detail. In view of the foregoing, it was considered appropriate to process the application of TBCCPL Project-B for the grant of generation licence as stipulated in the Regulations and NEPRA Licensing (Generation) Rules, 2000 ("the Generation Rules").



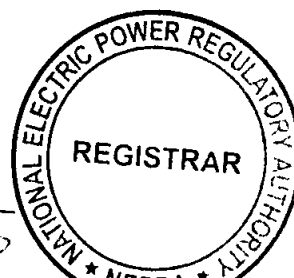
(D). Analysis of the Authority

(i). The Authority examined the entire case in details including the information provided by TBCCPL Project-B along with the generation licence application. The main features of the application under consideration are that the applicant company is a private limited company incorporated under Section-32 of the Companies Ordinance, 1984 (XLVII of 1984), having corporate universal identification No. 0080968, dated August 30, 2012.

(ii). The registered/business office of the company is 7-A/K, Main Boulevard, Gulberg-II, Lahore. The memorandum of association of the company, *inter alia*, includes the business of power generation and sale as one of its business objects. According to the submitted memorandum of association of the company, two individuals namely Mr. Khan Shahid Ahmed and Mrs. Shaheena Naveed hold 80% & 20% shares of the company respectively;

(iii). The applicant company is planning to install a 49.60 MW wind based generation facility/wind power plant in the Jhimpir wind corridor, district Thatta, Sindh. According to provided information the proposed generation facility/wind power plant will be consisting of (31) wind turbine generators of General Electric (G.E-1.6xle-82.5) of 1.6 MW each. The cut-in, rated and cut-out wind speeds for G.E-1.6xle-82.5 wind turbine generator are 3m/s, 12m/s (static) and 25m/s (10 min. avg.) respectively;

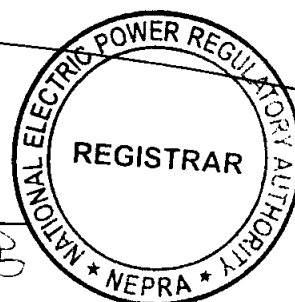
(iv). Regarding feasibility study of the project, it is observed that according to the terms and conditions of the LOI, TBCCPL Project-B carried out a feasibility study of the project including *inter alia*, wind power plant equipment details, micro-sitting details, power production estimates based on wind mast data of the project site, soil tests reports, technical details pertaining to selected wind turbine generator and other allied equipment to be used in the wind power plant, electrical studies, environmental study and project financing etc. The said feasibility study has been approved by AEDB.



(v). Regarding grid interconnection of the project, the Authority observes that TBCCPL Project-B carried out an interconnection and system stability study for dispersal of electric power from the above mentioned wind power plant. According to the said study, the dispersal/interconnection arrangement will be consisting of 132-KV double circuit transmission line looping in-out with the sub-cluster connecting the wind projects of TBCCPL Project-A and TBCCPL Project-C to Jhimpir-New 220/132KV collector substation. The study confirmed that proposed wind turbine generators will be in conformity with the required stability and reliability standards of NTDC as stipulated in the Grid Code. NTDC has approved the submitted interconnection and stability studies and has issued certificate for evacuation of power from the wind power plant of TBCCPL Project-B. Further, NTDC has also confirmed that necessary interconnection arrangement for dispersal of power from TBCCPL will be available well before the Commercial Operation Date (COD) of the proposed wind power plant of TBCCPL (i.e. August 31, 2017);

(vi). Regarding impact of the project on environment, the Authority is of the opinion that the proposed wind power plant of TBCCPL Project-B for which generation licence has been sought, is based on a renewable energy source and does not cause any pollution however, the operation of the wind power plant may cause some other type of pollution including soil pollution, water pollution and noise pollution during construction and operation. In this regard, TBCCPL Project-B carried out an Initial Environment Examination study and obtained No Objection Certificate from Environmental Protection Agency, Government of Sindh.

(vii). Regarding land of the project, the Authority has observed that Government of Sindh has leased about 1284 acres of land to TBCCPL Project-B in Deh Makan Ghar Tappo Jhimpir, Taluka Thatta, District Thatta, in the Province of Sindh for setting up its proposed 49.60 MW wind power plant.



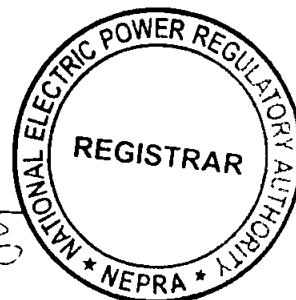
(viii). In view of the clarification and justifications given above, the Authority is of the considered view that the project of TBCCPL Project-B fulfils the eligibility criteria for grant of generation licence as given under the NEPRA Act, rules and regulations and other applicable documents.

(E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. In fact, 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 renewable energy must be developed on priority basis.

(ii). The existing energy mix of the country is heavily skewed towards the costlier thermal power plants, mainly operating on imported fuel. The continuous import of furnace oil not only creates pressure on 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 renewable energy resources are given priority for power generation and their development is encouraged. The Energy Security Action Plan 2005 approved by the Government of Pakistan, duly recognizes this very aspect of power generation through renewable energy and envisages that at least 5% of total national power generation capacity (i.e. 9700 MW) to be met through RE resources by 2030.

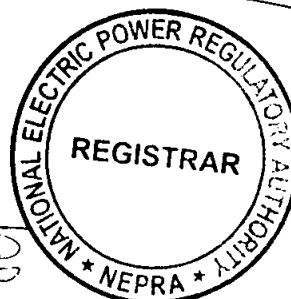
(iii). The Authority considers that the proposed project of TBCCPL Project-B is consistent with the provisions of Energy Security Action Plan 2005. The project will help in diversifying the energy portfolio of the country. Further, it will not only enhance the energy security of the country by reducing the dependence



on imported furnace oil but will also help reduction in carbon emission by generating clean electricity, thus improving the environment.

(iv). The term of a generation licence under Rules-5(1) of the Rules is to commensurate with the maximum expected useful life of the units comprised in a generating facility, except where an applicant for a generation licence consents to a shorter term. According to the information provided by TBCCPL Project-B, its wind power plant will achieve Commercial Operation Date (COD) by August 31, 2017 and will have a useful life of more than twenty (20) years from its COD. In this regard, TBCCPL Project-B has requested that the term of the proposed generation licence may be fixed as twenty (20) years, consistent with the term of its proposed Energy Purchase Agreement. The Authority considers that the information provided by TBCCPL Project-B on useful life of its wind power plant is consistent with the international benchmarks and with other similar cases. Forgoing in view, the Authority fixes the term of the generation licence as twenty (20) years from COD of the project.

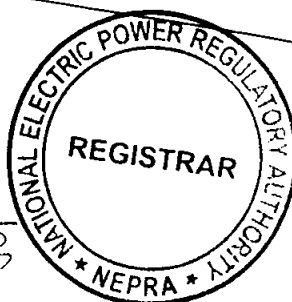
(v). Regarding the tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. In view of the said, the Authority through Article-6 of the proposed generation licence has directed TBCCPL Project-B to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. Further, the Authority through its determination No. NEPRATIRF-344/TBCCPL-B-2015/6491-6493 dated May 13, 2016, has granted upfront tariff to TBCCPL Project-B. The Authority directs TBCCPL Project-B to adhere to the Article-6 of the proposed generation licence and the terms and conditions of the said up-front tariff determination in letter and spirit without any exception.



(vi). Regarding land of the project (mentioned in the Schedule-I of the generation licence), the Authority directs TBCCPL Project-B that the same shall be exclusively used by TBCCPL Project-B for the proposed wind power project and TBCCPL Project-B cannot carry out any other generation activity on this land except with prior approval of the Authority.

(vii). Regarding compliance with the environmental standards, the Authority directs TBCCPL Project-B to ensure that the project will comply with the environmental standards during the term of the generation licence. In view of the said, the Authority has included a separate article (i.e. Article-10) in the generation licence along with other terms and conditions that the licensee will comply with relevant environmental standards. Further, the Authority directs TBCCPL Project-B to submit a report on a bi-annual basis, confirming that operation of its project is compliant with required environmental standards as prescribed by the concerned environmental protection agency.

(viii). The proposed wind power plant of TBCCPL Project-B will be using renewable energy resource for generation of electric Power. Therefore, the project may qualify for the carbon credits under the Kyoto Protocol. Under the said protocol, projects coming into operation up to the year 2020 can qualify for the carbon credits. TBCCPL Project-B has informed that the project will achieve COD by August 31, 2017 which is within the deadline of the Kyoto Protocol. In view of this, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. In view of the said, the Authority directs TBCCPL Project-B to initiate the process in this regard at the earliest so that proceeds for the carbon credits are materialized. TBCCPL Project-B shall be required to share the proceeds of the carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.



(ix). In view of the above, the Authority hereby approves the grant of generation licence to TBCCPL Project-B on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed there under and other applicable documents.

Authority:

Maj. (R) Haroon Rashid
(Member)

[Signature]
20/10/16

Syed Masood-ul-Hassan Naqvi
(Member)

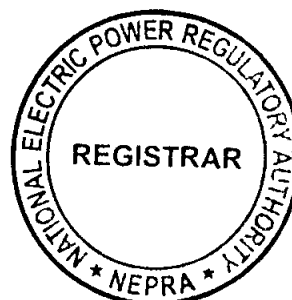
[Signature]
20/10

Himayat Ullah Khan
(Member/Vice Chairman)

[Signature]
21.10.16

Tariq Saddozai
(Chairman)

—



[Signature]
21.10.16

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

GENERATION LICENCE

No. WPGL/34/2016

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, the Authority hereby grants a Generation Licence to:

**TRICON BOSTON CONSULTING CORPORATION (PRIVATE)
LIMITED**

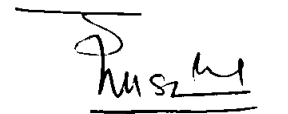
Incorporated under the Companies Ordinance, 1984 Having
Corporate Universal Identification No. 0080968, dated August 30, 2012

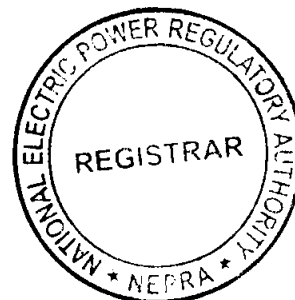
for its Wind Power Plant-B Located at Jhimpir, near Nooriabad, District Thatta,
in the Province of Sindh

(Installed Capacity: 49.60 MW Gross ISO)

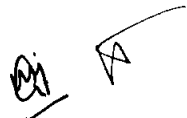
to engage in generation business subject to and In accordance with the
Articles of this Licence.

Given under my hand on 21st day of October Two Thousand
& Sixteen and expires on 30th day of August Two Thousand
& Thirty Seven.


21.X.16
Registrar



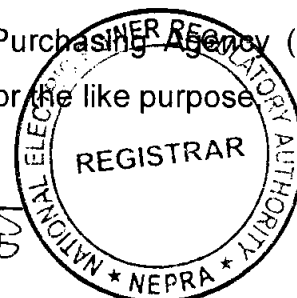




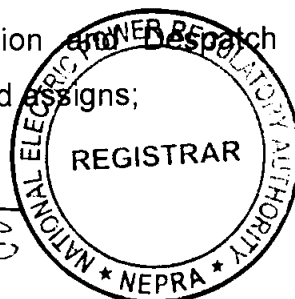
Article-1
Definitions

1.1 In this Licence

- (a). "Act" means "the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997";
- (b). "Applicable Documents" have the same meaning as defined in the Rules;
- (c). "Authority" means "the National Electric Power Regulatory Authority constituted under Section-3 of the Act";
- (d). "Bus Bar" means a system of conductors in the generation facility/Wind Farm of the Licensee on which the electric power of all the Wind Turbine Generators or WTGs is collected for supplying to the Power Purchaser;
- (e). "Carbon Credits" mean the amount of Carbon Dioxide (CO₂) and other greenhouse gases not produced as a result of generation of energy by the generation facility/Wind Farm, and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of energy by the generation facility/Wind Farm, which are available or can be obtained in relation to the generation facility/Wind Farm after the COD;
- (f). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility of the Licensee is Commissioned;
- (g). "CPPA-G" means "Central Power Purchasing Agency (Guarantee) Limited" or any other entity created for the like purpose



- (h). "Distribution Code" means the distribution code prepared by XW-DISCO(s) and approved by the Authority, as it may be revised from time to time with the necessary approval by the Authority;
- (i). "Energy Purchase Agreement" 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/Wind Farm, as may be amended by the parties thereto from time to time;
- (j). "Grid Code" means the grid code prepared by NTDC and approved by the Authority, as it may be revised from time to time by NTDC with the approval by the Authority;
- (k). "HESCO" means Hyderabad Electric Supply Company Limited and its successors or permitted assigns;
- (l). "IEC" means "the International Electro-technical Commission and its successors or permitted assigns;
- (m). "IEEE" means the Institute of Electrical and Electronics Engineers and its successors or permitted assigns;
- (n). "Law" means the Act, relevant rules and regulations made there under and all the Applicable Documents;
- (o). "Licensee" means **Tricon Boston Consulting Corporation (Pvt.) Limited** and its successors or permitted assigns;
- (p). "NTDC" means National Transmission and Despatch Company Limited and its successors or permitted assigns;

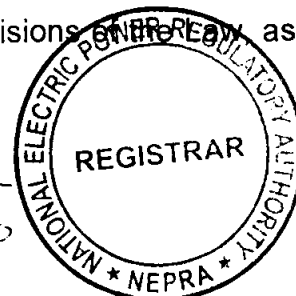


- (q). "Policy" means "the Policy for Development of Renewable Energy for Power Generation, 2006" of Government of Pakistan as amended from time to time;
- (r). "Power Purchaser" means the CPPA-G purchasing electric power on behalf of XW-DISCO(s) from the Licensee, pursuant to an Energy Purchase Agreement for procurement of electricity;
- (s). "Regulations" mean "the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999" as amended or replaced from time to time;
- (t). "Rules" mean "the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000";
- (u). "Wind Farm" means "a cluster of Wind Turbines in the same location used for production of electric power";
- (v). "Wind Turbine Generator" or "WTG" means the machines installed at the generation facility/Wind Farm with generators for conversion of wind energy into electric power/energy;
- (w). "XW DISCO" means "an Ex-WAPDA distribution company engaged in the distribution of electric power".

1.2 Words and expressions used but not defined herein bear the meaning given thereto in the Act or Rules and Regulations issued under the Act.

Article-2
Applicability of Law

This Licence is issued subject to the provisions of the Act, as amended from time to time.



Article-3 **Generation Facilities**

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

3.2 The net capacity of the generation facility/Wind Farm of the Licensee is set out in Schedule-II hereto.

3.3 The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/Wind Farm before its COD.

Article-4 **Term of Licence**

4.1 The Licence is granted for a term of twenty (20) years from the COD of the generation facility/Wind Farm.

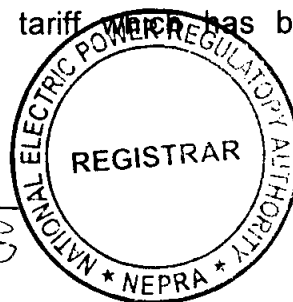
4.2 Unless suspended or revoked earlier, the Licensee may apply for renewal of this licence ninety (90) days prior to the expiry of the above term, as stipulated in the Regulations.

Article-5 **Licence fee**

After the grant of this licence, the Licensee shall pay to the Authority the Licence fee, in the amount, manner and at the time set out in the National Electric Power Regulatory Authority (Fees) Rules, 2002.

Article-6 **Tariff**

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



Article-7
Competitive Trading Arrangement

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. 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.

7.2 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

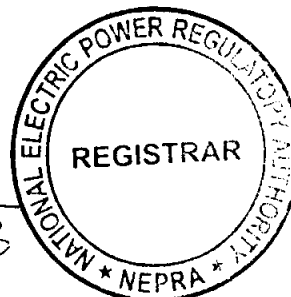
For the purpose of sub-rule (1) of Rule-19 of the Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

Article-9
Compliance with Performance Standards

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

Article-10
Compliance with Environmental Standards

The Licensee shall comply with the environmental standards as may be prescribed by the relevant competent authority from time to time.



Article-11
Power off take Point and Voltage

The Licensee shall deliver power to the Power Purchaser at the outgoing bus bar of its grid station. The up-gradation (step up) of generation voltage up to the required dispersal voltage level will be the responsibility of the Licensee.

Article-12
Performance Data of Wind Farm

The Licensee shall install monitoring mast with properly calibrated automatic computerized wind speed recording meters at the same height as that of the wind turbine generators and a compatible communication/SCADA system both at its Wind Farm and control room of the Power Purchaser for transmission of wind speed and power output data to the control room of the Power Purchaser for record of data.

Article-13
Provision of Information

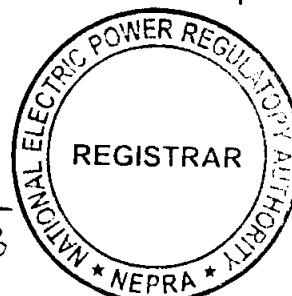
13.1 The obligation of the Licensee to provide information to the Authority shall be in accordance with Section-44 of the Act.

13.2 The Licensee shall in addition to 13.1 above, supply information to the Power Purchaser regarding the wind data specific to the site of the Licensee and other related information on a regular basis and in a manner required by it.

13.3 The Licensee shall be subject to such penalties as may be specified in the relevant rules made by the Authority for failure to furnish such information as may be required from time to time by the Authority and which is or ought to be or has been in the control or possession of the Licensee.

Article-14
Emissions Trading /Carbon Credits

The Licensee shall process and obtain emissions/Carbon Credits expeditiously and credit the proceeds to the Power Purchaser as per the Policy.



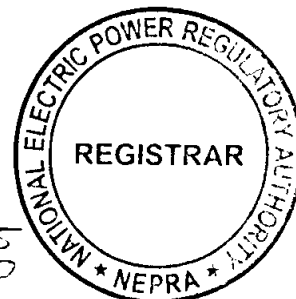
Article-15
Design & Manufacturing Standards

15.1 The Wind Turbine Generator or WTG and other associated equipments of the generation facility/Wind Farm shall be designed, manufactured and tested according to the latest IEC, IEEE standards or other equivalent standards in the matter.

15.2 All the plant and equipment of the generation facility/Wind Farm shall be unused and brand new.

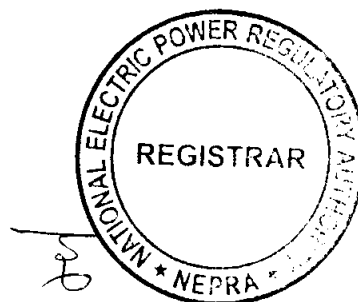
Article-16
Power Curve

The power curve for the individual Wind Turbine Generator or WTG provided by the manufacturer and as mentioned in Schedule-I of this Generation Licence, shall form the basis in determining the cumulative Power Curve of the generation facility/Wind Farm.

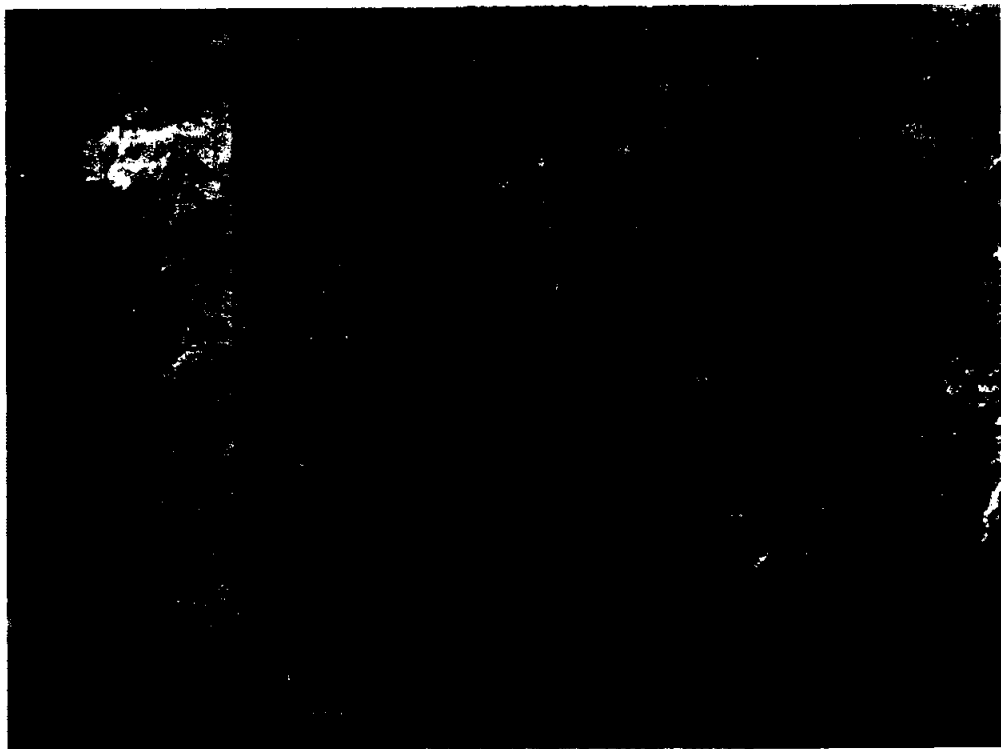
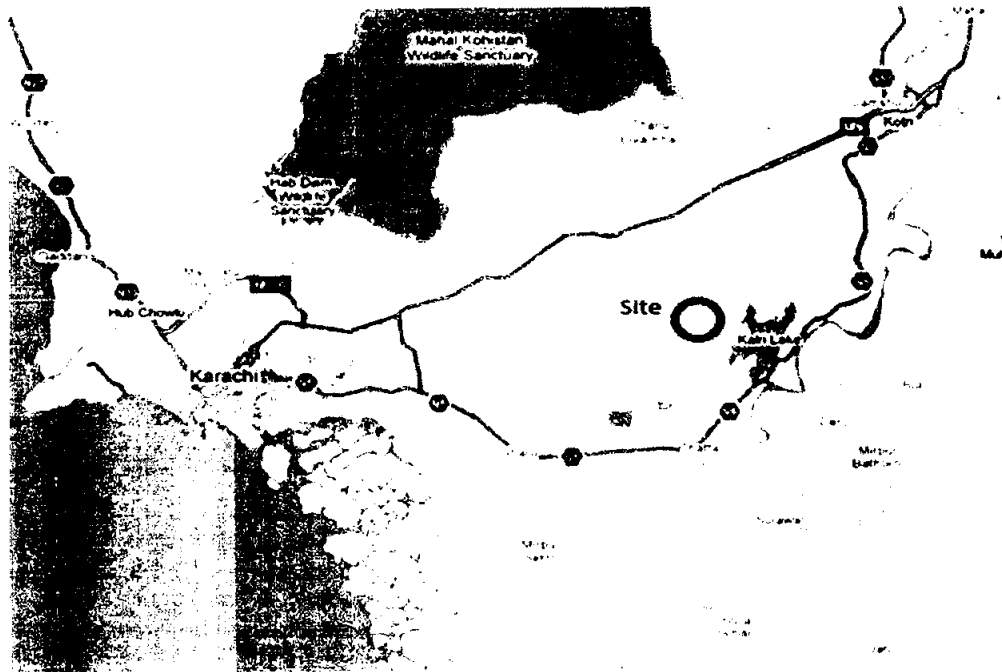


SCHEDULE-I

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 Facility of the Licensee are described in this Schedule.

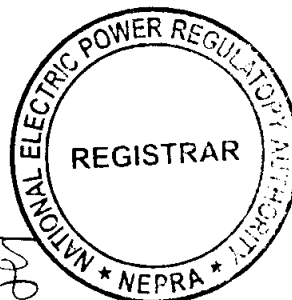
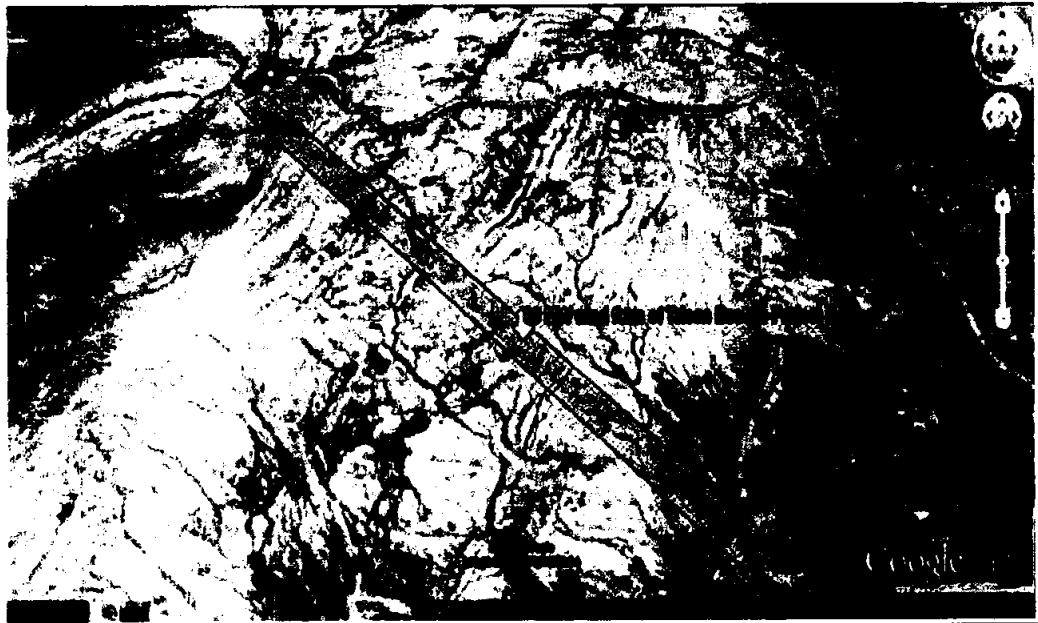


Location
of Generation Facility/Wind Power Plant-B

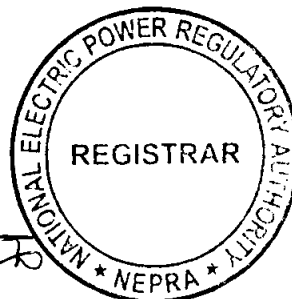


Land
of the Generation Facility/Wind Power Plant-B

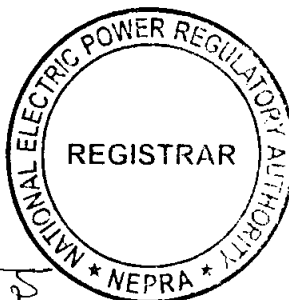
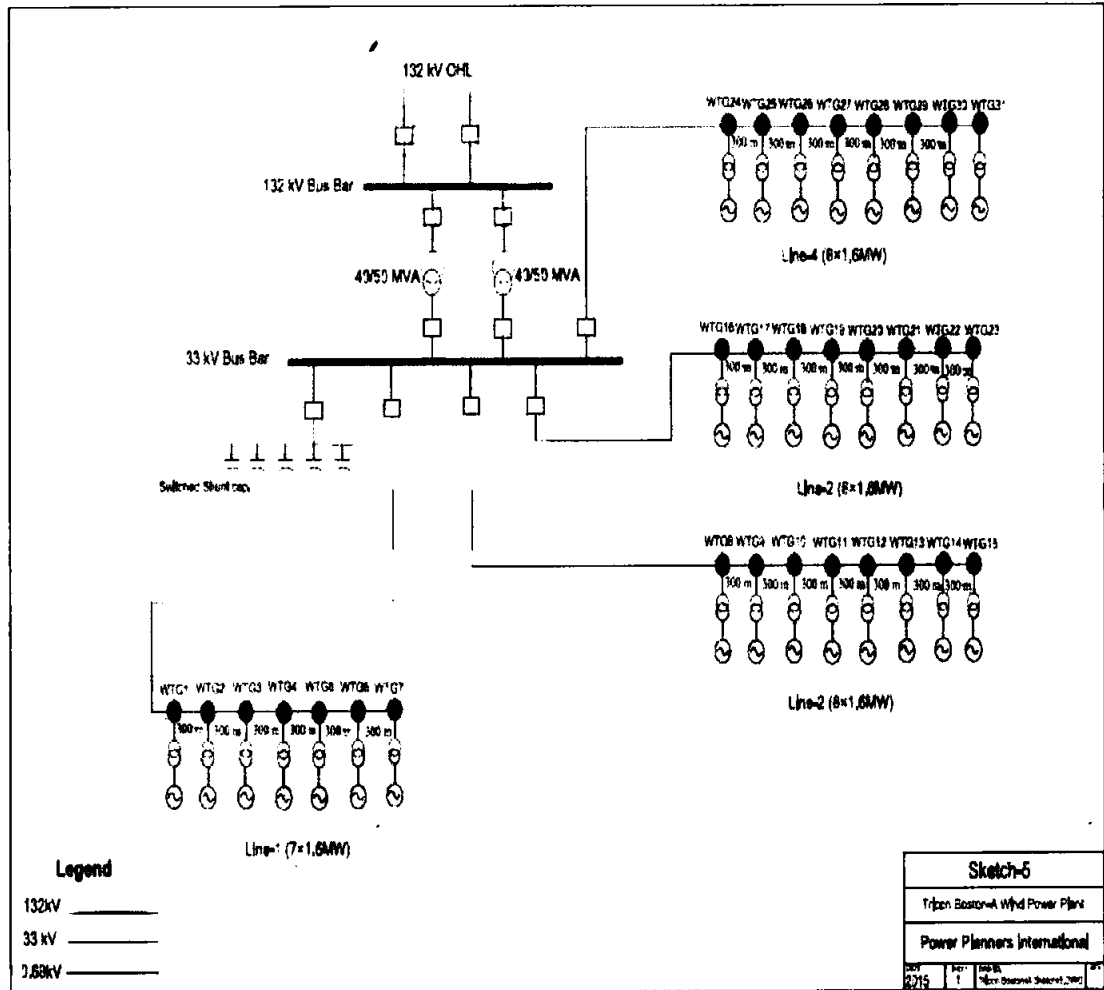
Total Land Area: 1284 Acres		
Geodetic Coordinates		
Point No.	Latitude	Longitude
Boundary 1	25.02374059	67.09062032
Boundary 2	25.02730000	67.09062032
Boundary 3	25.09062032	67.09062032
Boundary 4	25.09062032	67.09062032



Micro-Sitting
of the Generation Facility/Wind Power Plant-B



Single Line Diagram of the Generation Facility/Wind Power Plant-B



Interconnection Arrangement/Transmission Facilities for Dispersal of Power from Generation Facility/Wind Power Plant-B

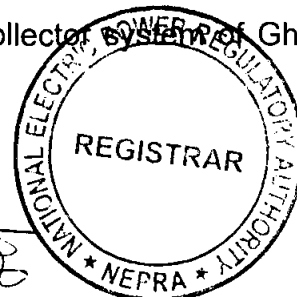
The electric power generated from the Generation Facility/Wind Power Plant-B of TBCCPL shall be dispersed to the National Grid through the load center of HESCO.

(2). The proposed Interconnection Arrangement/Transmission Facilities for dispersal of power from Wind Power Plant-B of TBCCPL will consist of the following:-

- (a). A 132 KV double circuit transmission line looping in-out between sub clusters of 50.00 MW Wind Power Plants of TBCCPL-A and TBCCPL-C to Jhimpir-New 220/132 KV collector substation.

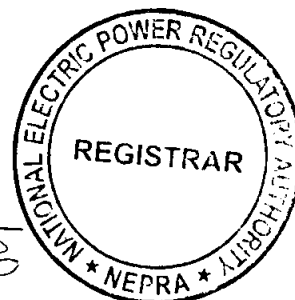
(3). The scheme of interconnection of Wind Power Plant-B of TBCCPL also proposes the following reinforcement already in place in Jhimpir cluster:-

- (a). 220/132 KV Jhimpir-New Substation at suitable location in Jhimpir cluster;
- (b). 80 KM long double circuit from Jhimpir-New 220 KV Substation to the existing T.M. Khan Road 220 KV Substation;
- (c). A 132KV double circuit of 82 km using Greeley conductor would be constructed to connect Jhimpir-New 220/132 KV Substation with T.M. Khan in HESCO network;
- (d). 220/132 KV Gharo-New substation at suitable location in Gharo cluster;
- (e). 65 km long 220 KV double circuit from Gharo-New 220 KV Substation to Jhimpir-New 220 KV Substation;
- (f). Five sub-collectors groups will be connected to Jhimpir 220/132 KV collector substation through 132 KV double circuits. Wind Power Plant-B of TBCCPL would be incorporated to one of these double circuits;
- (g). Four Wind Power Plants in the collector system of Gharo 220/132 KV substation;

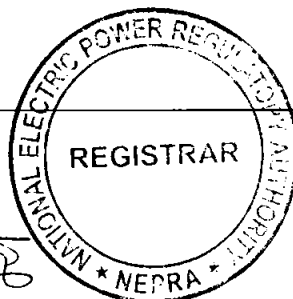
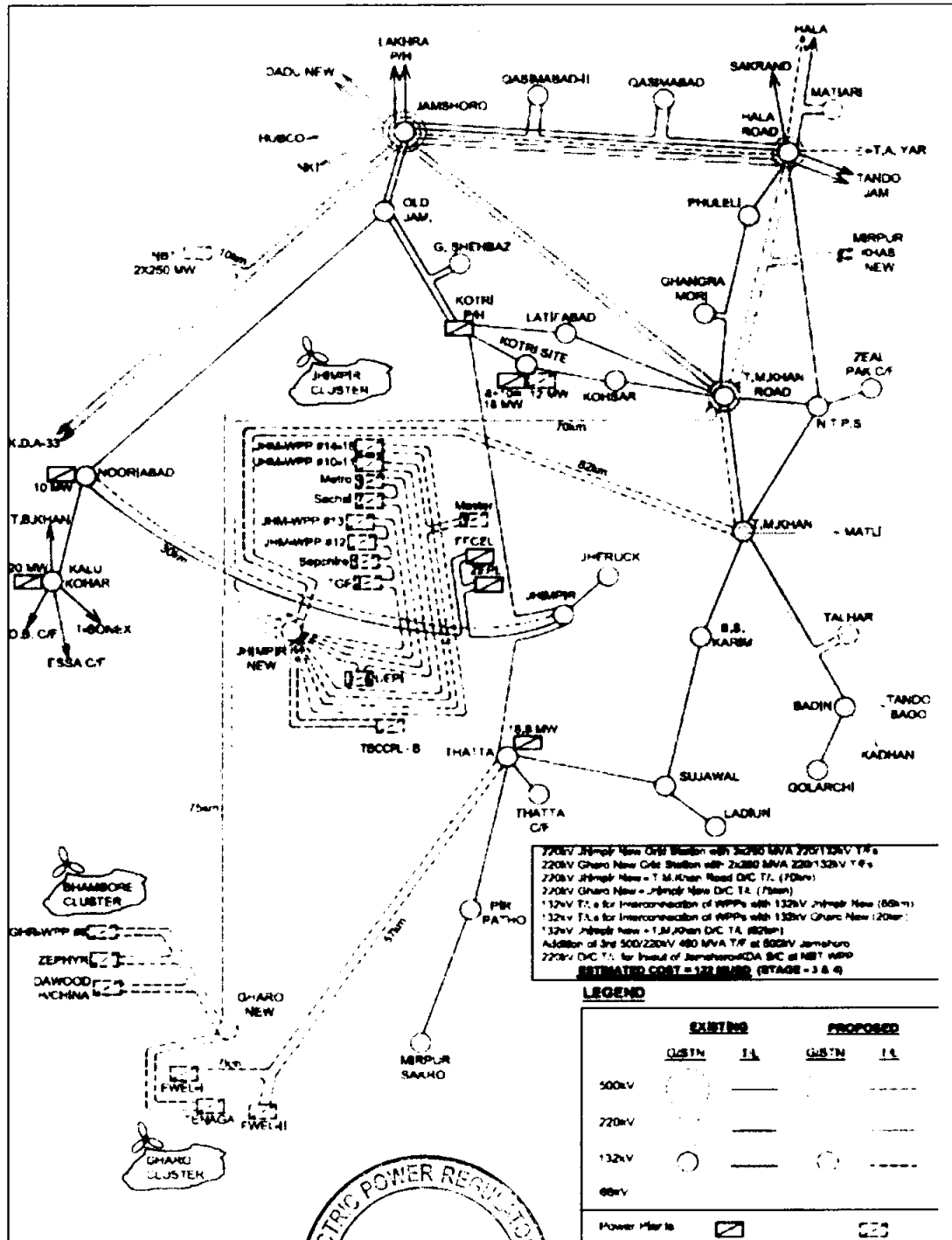


(h). Rehabilitation of the exiting 132 KV lines in the vicinity of WPP clusters, i.e. Jhimpir-Kotri, Jhimpir-Thatta, Thatta-Sujawal and Nooriabad-Jamshoro Old.

(4). Any change in the above mentioned Interconnection Arrangement/Transmission Facilities duly agreed by TBCCPL, NTDC and HESCO, shall be communicated to the Authority in due course of time.



Schematic Diagram of Interconnection Arrangement/Transmission Facilities for Dispersal of Power from Generation Facility/Wind Power Plant-B



Details of Generation Facility/Wind Power Plant-B

(A). General Information

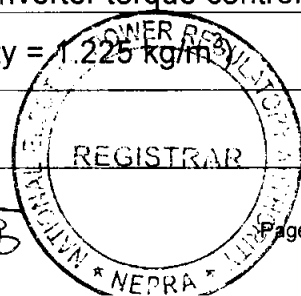
(i).	Name of the Company/Licensee	Tricon Boston Consulting Corporation (Private) Limited
(ii).	Registered/Business Office	7-A/K, Main Boulevard, Gulberg II, Lahore
(iii).	Plant Location	Jhimpir, Nooriabad, District Thatta, Sindh
(iv).	Type of Generation Facility	Wind Power Plant

(B). Wind Farm Capacity & Configuration

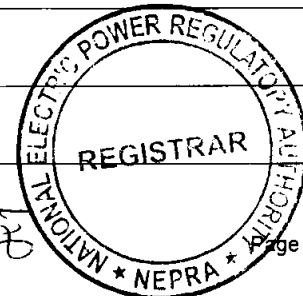
(i).	Wind Turbine Type, Make & Model	General Electric (G.E. 1.6 xle – 82.5m)
(ii).	Installed Capacity of Wind Farm (MW)	49.6 MW
(iii).	Number of Wind Turbine Units/Size of each Unit (KW)	31 x 1.60 MW

(C). Wind Turbine Details

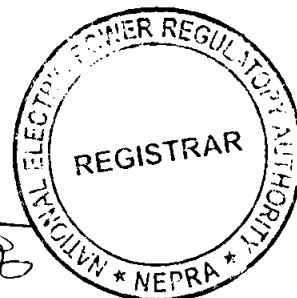
(a). Rotor		
(i).	Number of Blades	3
(ii).	Rotor Speed	9.8 – 18.7 rpm
(iii).	Rotor Diameter	82.5 m
(iv).	Swept Area	5346 m ²
(v).	Power Regulation	Combination of blade pitch angle adjustment, and generator/converter torque control
(vi).	Rated Power at	12 m/s (air density = 1.225 kg/m ³)
(vii).	Cut-in wind speed	3 m/s



(viii).	Cut-out wind speed	25 m/s
(ix).	Survival wind speed	56 m/s for 3 Sec, 40 m/s for 10 Mins
(x).	Pitch regulation	Electric motor drives a ring gear mounted to the inner race of the blade pitch bearing
(b). Blades		
(i).	Blade Length	40.3 m
(ii).	Material	Fiberglass polyester resin
(iii).	Weight	6,200 kg
(c). Gear Box		
(i).	Type	Three-stage planetary/helical gear design
(ii).	Gear ratio	1 : 104.5
(iii).	Weight	15,800 kg
(iv).	Oil quantity	300 – 450 Liters
(v).	Main shaft bearing	Roller bearing mounted in a pillow-block housing arrangement
(d). Generator		
(i).	Power	1,600 kW
(ii).	Voltage	690 V
(iii).	Type	Double-fed asynchronous generator, air-cooled
(iv).	Speed	Range: 1000 – 2000 rpm (synchronous speed 1500 rpm)
(v).	Enclosure class	IP 54
(vi).	Coupling	Flexible coupling
(vii).	Efficiency	≥ 97%
(viii).	Weight	8,450 kg

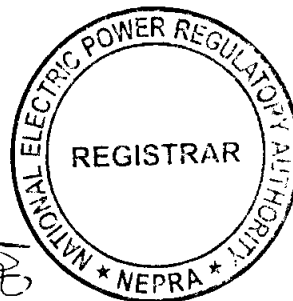


(ix).	Power Factor	±0.95 (Leading to Lagging)
(e). Yaw System		
(i).	Yaw Bearing	Roller bearing
(ii).	Brake	Planetary yaw drives (with brakes that engage when the drive is disabled)
(iii).	Yaw Drive	4 Planetary yaw drives
(iv).	Speed	0.5 Degree/Sec
(f). Control System		
(i).	Type	Automatic or manually controlled
(ii).	Grid Connection	Via IGBT converter
(iii).	Scope of Monitoring	Remote monitoring of more than 300 different parameters, e.g. temperature sensors, pitch parameters, speed, generator torque, wind speed and direction, etc.
(iv).	Recording	Production data, event list, long and short-term trends
(g). Brake		
(i).	Design	Three independent systems, fail safe (individual pitch)
(ii).	Operational Brake	Aerodynamic brake achieved by feathering blades
(iii).	Secondary Brake	Mechanical brake on (high speed) shaft of gearbox
(h). Tower		
(i).	Type	Cylindrical tubular steel tower
(ii).	Hub Heights	80 m



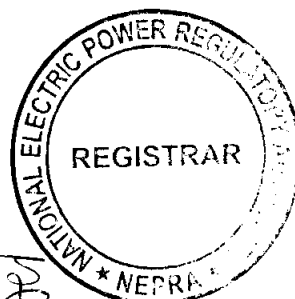
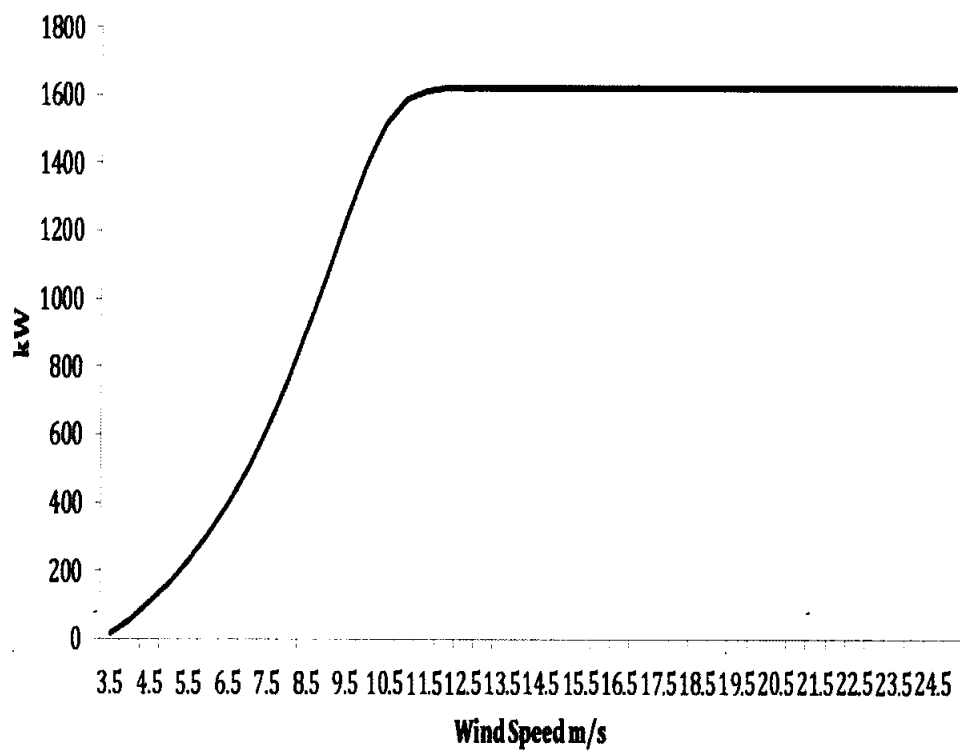
(D). Other Details

(i).	Project Commercial Operation Date-COD (Anticipated)	August 31, 2017
(ii).	Expected Life of the Generation Facility/WPP from COD	20 years



Power Curve
of Wind Turbine Generator of
General Electric (G.E. 1.6 xle – 82.5m)
(Graphical)

GE 1.6xle Power Curve



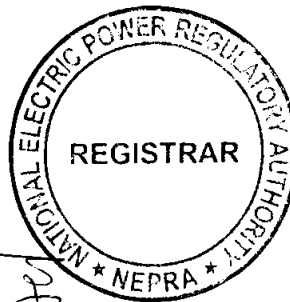
Power Curve
of Wind Turbine Generator of
General Electric (G.E. 1.6 xle – 82.5m)
(Tabular)

Standard Atmospheric Conditions (Air Density of 1.225 kg/m³)

Rotor Diameter: 82.5 m

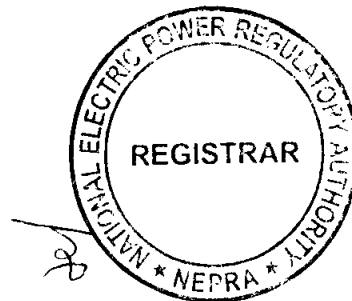
(Cut-out wind speed based on 10 minute average)

Wind Speed at Hub Height [m/s]	Normal Turbulence Intensities 10% < TI < 15%	Low Turbulence Intensities TI < 10%	High Turbulence Intensities 15% < TI < 20%	Cp, Normal Turbulence Intensities
3.0	0	0	0	-
3.5	20	18	24	0.14
4.0	63	61	69	0.30
4.5	116	114	123	0.39
5.0	178	175	186	0.43
5.5	248	244	259	0.46
6.0	331	326	344	0.47
6.5	428	422	446	0.48
7.0	540	532	562	0.48
7.5	667	657	692	0.48
8.0	812	801	840	0.48
8.5	971	960	990	0.48
9.0	1136	1132	1140	0.48
9.5	1289	1296	1274	0.46
10.0	1431	1447	1400	0.44
10.5	1530	1553	1488	0.40
11.0	1590	1607	1552	0.36
11.5	1615	1620	1593	0.32
12.0	1620	1620	1615	0.29
12.5 - cutout	1620	1620	1620	-



SCHEDULE-II

The Total Installed/Gross ISO Capacity (MW), Total Annual Full Load Hours, Average Wind Turbine Generator (WTG) Availability, Total Gross Generation of the Generation Facility/Wind Farm (in GWh), Array & Miscellaneous Losses (GWh), Availability Losses (GWh), Balance of Plant Losses (GWh) and Annual Energy Generation (GWh) of the Generation Facility /Wind Farm of Licensee is given in this Schedule



SCHEDULE-II

(1).	Total Installed Gross ISO Capacity of the Generation Facility /Wind Farm (MW/GWh)	49.6 MW
(2).	Total Annual Full Load Hours	3390 Hrs
(3).	Average Wind Turbine Generator (WTG) Availability	95.0 %
(4).	Total Gross Generation of the Generation Facility/Wind Farm (in GWh)	204.9 GWh
(5).	Array & Miscellaneous Losses GWh	20.29 GWh
(6).	Availability Losses GWh	12.29 GWh
(7).	Balance of Plant Losses GWh	4.09 GWh
(8).	Annual Energy Generation (20 year equivalent Net AEP) GWh	168.2 GWh
(9).	Net Capacity Factor	38.7 %

Note

All the above figures are indicative as provided by the Licensee. The Net energy available to NTDC for dispatch will be determined through procedures contained in the Energy Purchase Agreement.

