



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

Registrar

No. NEPRA/R/DL/LAG-425/ 12878-24

August 9, 2018

Mr. Liu Yidan,
Authorized Representative,
Lahore Xingzhong Renewable Energy Company (Private) Limited,
No. 560, Street No. 14, Sector A, Phase V, DHA,
Lahore.

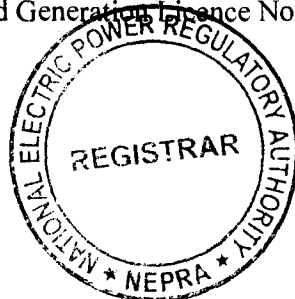
Subject: Grant of Generation Licence No. IGSP/103/2018
Licence Application No. LAG-425
Lahore Xingzhong Renewable Energy Company (Private) Limited (LXZRECPL)

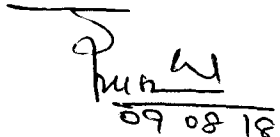
Reference: LXZRECPL's application vide letter dated June 15, 2018 (received on June 17, 2018)

Enclosed please find herewith Generation Licence No. IGSP/103/2018 granted by National Electric Power Regulatory Authority (NEPRA) to Lahore Xingzhong Renewable Energy Company (Private) Limited (LXZRECPL) for its 40.0 MW Waste to Energy based Generation Facility / Thermal Power Plant located at Mauza Lakhoder, Tehsil Shalimar, District Lahore, in the province of Punjab, pursuant to Section 14(B) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997. Further, the determination of the Authority in the subject matter is also attached.

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

Enclosure: Generation Licence
(IGSP/103/2018)




09 08 18
(Syed Safer Hussain)

Copy to:

1. Secretary, Ministry of Energy (Power Division), A-Block, Pak Secretariat, Islamabad.
2. Managing Director, Punjab Power Development Board (PPDB), 8th Floor, EFU House, 6-D Main Gulberg, Jail Road, Lahore.
3. Managing Director, NTDC, 425-WAPDA House, Lahore.
4. Chief Executive Officer, CPPA-G, ENERCON Building, Sector G-5/2, Islamabad.
5. Chief Executive Officer, Lahore Electric Supply Company Limited (LESCO), 22-A, Queen Road, Lahore.
6. Director General, Environment Protection Department, Government of Punjab, National Hockey Stadium, Ferozpur Road, Lahore.

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Application of Lahore Xingzhong Renewable
Energy Company (Private) Limited for the Grant of Generation
Licence

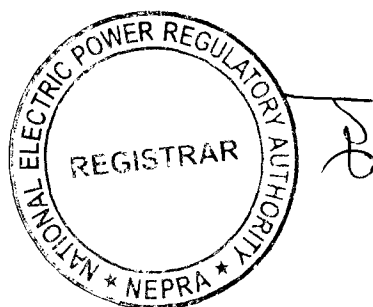
August 09, 2018
Case No. LAG-425

(A). Background

(i). In order to tap the indigenous potential of the province for power generation, the Government of Punjab (GoPb) has formulated a policy titled Punjab Power Generation Policy 2006 as revised in 2009 (the "Punjab Power Policy") to tap the power potential in the province.

(ii). In this regard, the GoPb has issued Letter of Intent (LoI) to different project developers/entrepreneurs for setting up hydel, wind, solar, hydro and waste to energy power projects. One such LoI has been issued to a consortium of China ENFI Engineering Corporation (ENFI) and MCC Tongsin Resources Limited (MCC). The said LoI envisages setting up a 40.00 MW Waste to Energy (WTE) generation facility/thermal power plant at Lahore in the province of Punjab. According to the terms and conditions of LoI, the sponsors of the project incorporated Special Purpose Vehicle (SPV) in the name of Lahore Xingzhong Renewable Energy Company (Private) Limited (LXZRECPL).

(iii). According to the terms and conditions of the LoI, the project company/SPV/LXZRECPL carried out a detailed feasibility study and the same was approved by Panel of Experts (PoEs) appointed by the GoPb. Thereafter, the LXZRECPL decided to approach the Authority for grant of the generation licence.



(B). Filing of Application

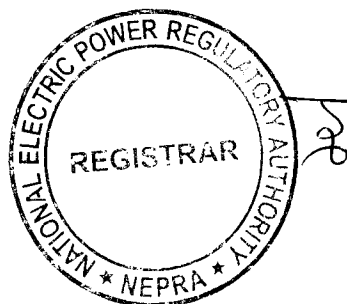
(i). The LXZRECPL submitted an application on May 17, 2018 for grant of the generation licence in terms of Section-15 of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

(ii). The Registrar examined the submitted application and found that application was deficient in terms of the Licensing Regulations. Accordingly, the Registrar directed LXZRECPL for submitting the missing information/documents as required under the said regulations. LXZRECPL completed the submission of missing information/documentation by May 24, 2018. Thereafter, the Registrar placed the matter before the Authority to decide the admission of the application 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 Regulations. Accordingly, the Authority admitted the application on June 13, 2018 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority approved an advertisement to invite comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, notices were published in one (01) Urdu and one (01) English newspapers on June 15, 2018.

(iii). In addition to the above, the Authority also approved a list of stakeholders for seeking their comments for its assistance 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 June 20, 2018, soliciting their comments for assistance of the Authority.

~~LS~~

✓




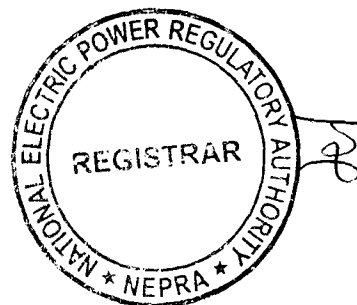
(C). Comments of Stakeholders

(i). In reply to the above, comments were received from two (02) stakeholders which included Lahore Waste Management Company Limited (LWMCL) and Lahore Electric Supply Company Limited (LESCO). The salient points of the comments offered by the said stakeholders are given as below: -

(a). The LWMCL commented that Punjab Power Development Board (PPDB) of Energy Department of GoPb has efficiently led the process under the Punjab Power Policy for setting up of the proposed project. Municipal waste to the tune of 6000 tons/day is produced in the city of Lahore which will be used for generation of electricity which will not only address the environmental issues being faced by the city due to unsafe dumping of the garbage but will help in meeting the energy needs of the city. The project if implemented successfully will pave the way for more such initiatives resulting in cleaner urban areas. In view of the said, the LWMCL fully supported the grant of generation licence to the company; and

(b). LESCO in its comments stated that the 40 MW (33.6 MW net) WTE project is located at Lakhoder Landfill site, Lahore. PPDB issued Lol to MCCT ENFI consortium on October 19, 2016, which formed a SPV in the name of the LXZRECPL. The Grid Interconnection Study (GIS) of the project has been approved/endorsed by LESCO and the NTDC. The company has applied to the Authority for unconditional acceptance of available upfront tariff for municipal solid waste projects. Further, LESCO has consented to the Central Power Purchasing Agency Guarantee Limited (CPPA-G) to procure power from the project company.





(ii). The Authority considered the above offered comments and found the same in support of grant of the generation licence to the LXZRECPL. In view of the said, the Authority considered it appropriate to proceed further in the matter as stipulated in the Licensing Regulations and NEPRA Licensing (Generation) Rules 2000 (the "Generation Rules").

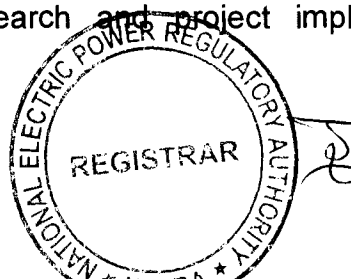
(D). Evaluation/Findings

(i). The Authority has examined the submissions of the LXZRECPL including the information provided in its application for grant of the generation licence. The Authority has also considered the feasibility study of the project, GIS, Initial Environmental Examination (IEE) and the relevant rules & regulations.

(ii). The Authority has observed that the sponsors of the project are the ENFI (main sponsor), the MCC and Chengdu Xingrong Environment Co. Limited (CHXECL). As explained in the preceding paragraphs, the sponsors of the project have got incorporated a SPV in the name LXZRECPL in Pakistan. According to the Memorandum of Association of the SPV, the sponsors i.e. the ENFI, the MCC and the CHXECL hold equity in the ration of 41%, 10% and 49% respectively which is in line with the terms and conditions of the Lol.

(iii). Regarding the portfolio of the sponsors, the Authority has observed that the ENFI (which is the main sponsor), is a wholly-owned subsidiary of the MCC and is involved in the engineering consultancy and design services, scientific research, supervision, equipment development & supply, information and automatic control systems integration, as well as upstream and downstream businesses derived from projects, etc. in the fields of mining engineering, nonferrous metallurgical engineering, electrical engineering & automation, municipal engineering, architecture, chemical engineering, energy engineering and environmental engineering, etc.

(iv). The ENFI is one of the first companies which are engaged in consultation, design, technology research and project implementation for



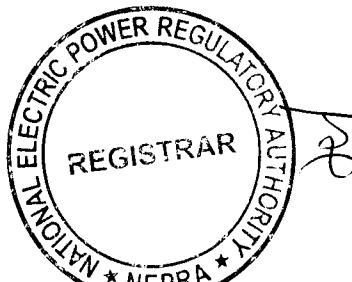
garbage incineration power generation industry. Now, the ENFI has become the only service provider in China which integrates investment, consultation, design, package equipment, construction and operation of garbage incineration power generation projects. The four BOT-based garbage incineration power generation projects invested and built by the ENFI are located in Wuxi, Xiangyang, Harbin and Ganzhou respectively with cumulative daily waste disposal capacity of 5,600 tons. Furthermore, the ENFI has completed the engineering design for over 30 garbage incineration power generation projects. Among them, 20 projects have a production capacity exceeding 1,000 tons. These projects are distributed in more than 20 cities in China, and their total daily waste disposal capacity exceeds 30,000 tons which accounts for 20% of the total garbage treatment capacity of constructed garbage treatment projects in China.

(v). Regarding the MCC which is the parent company of the ENFI, the Authority has observed that it is one of the longest-running iron and steel construction enterprises and the pioneer and main force of the Chinese iron and steel industry. It has undertaken the planning, investigation, design and construction of key facilities for the production of nearly all large and medium iron and steel enterprises in China, thereby making it the founder of the 'iron and steel backbones' of China. The MCC Group is the largest and strongest contractor in metallurgical construction and service provider in metallurgical enterprise operations and the main force for the infrastructure construction of China.

(vi). Regarding the third sponsor i.e. the CHXECL, the Authority has observed that the CHXECL is a state-owned, municipally-run, large-scale environmental protection enterprise that has been focusing on water services and environmental protection for 70 years. It has established an integrated industrial chain that covers the fields ranging from raw water supply, tap water production and supply, sewage treatment, industrial effluents treatment, recycled water use, waste-to-energy, landfill leachate treatment, hazardous waste disposal and sludge disposal to comprehensive governance of river valleys. It is ranked No. 1 in business



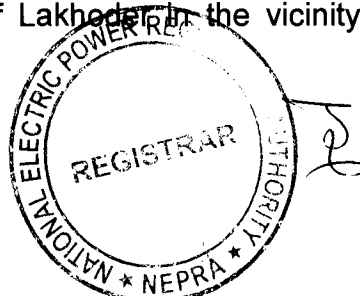
Handwritten signature or initials.



scale across West China and the 6th across China. According to the provided information, the sponsors have a total assets of U.S. \$ 400 million.

(vii). The Authority has observed that based on the financial strength and other evaluation parameters, PPDB issued Lol for development of the project to be located at Lakhoder landfill site, tehsil and district Lahore, in the province of Punjab. As explained above, for the implementation of the project, the sponsor has incorporated a SPV in the name of the LXZRECPL under Section-32 of the Companies Ordinance, 1984 (Corporate Universal Identification No. 0105429, dated February 01, 2017). The Registered/Business office of the SPV is located at House # 560, Street 14, A-Section, Phase 5, DHA Lahore. According to the Memorandum of Association, the objects of the company, inter alia, include business of power generation and its sale thereof. The Authority considers that sponsors have strong financial and technical background to carry out the project. It is pertinent to mention that the sponsors are in negotiation with leading Chinese banks including industrial and Commercial Bank of China, Exim Bank of China and Bank of China for financing the debt portion of the project. According to the submitted information, the total outlay of the project will be U.S. \$ 140.00 million which will be financed through a combination of debt (U.S. \$ 105.00 million) and equity (U.S. \$ 35.00 million) in a ratio of 75:25 which is in line with the benchmark set out in the upfront tariff determination No. NEPRA/UGTMSWPP-2018/10801-10803 dated July 10, 2018 of the Authority in the matter.

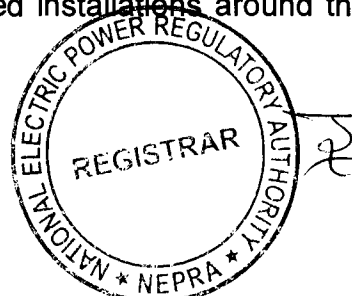
(viii). According to the terms and conditions of the Lol, the sponsors carried out a feasibility study of the project including inter alia, waste sampling, waster characterization study, authenticated lab testing report of waste samples, detailed technology selection and design, IEE report, detailed design of power house, load flow and stability studies, design of interconnection/transmission lines, details pertaining to the infrastructure, project cost, financing and financing terms, tariff calculations and assumptions of financial calculations etc. In order to facilitate the project, the GoPb has allocated land to the tune of approximately 26 acres at land filled site of Lakhoder in the vicinity of city of Lahore. The



sponsors of the project carried out the required feasibility study and the same was approved by the PoE of the PPDB on July 14, 2017.

(ix). In the feasibility study, the LXZRECPL has duly considered the various waste disposal approach in China and worldwide and based on different parameters (of operation, safety, technology reliability, siting, application, final disposal, product market, unit capital cost, resource recycling, surface water contamination, groundwater contamination, air pollution, soil contamination, management skill requirement) and concluded that incineration technology appropriate for the proposed project as the same is superior to sanitary landfill from perspective of capital cost and environmental protection. The feasibility study has also made a comparison of the various types of incinerators including Moving Grate Furnace (MGF), Fluidized Bed (FB), Pyrolytic incinerator and Rotary kiln. The feasibility study duly considering various parameters including (a). waste pre-treatment and immature sorting and unstable performance; (b). higher cost on maintenance and more frequent overhaul; and (c). Poor operating environment due to large amount of dust and fly ash etc. recommended MGF technology for the proposed waste to energy (WTE) project.

(x). The Authority has observed that the proposed WTE generation facility/thermal power plant will utilize the municipal waste for generation of electric power. In this regard, the LXZRECPL plans to deploy the proven latest technology using the solid/municipal waste through combustion. The chosen technology is the conventional thermal power plant technology based on the Rankine Cycle. The solid/municipal waste will be combusted in a high pressure boiler and the steam generated will be fed to the steam turbine to generate electric power. The proposed WTE generation facility/thermal power plant of the LXZRECPL is based on ~~of~~ 40 bar and 400°C steam parameters at the boiler outlet, currently being used in many countries for the WTE projects. The proposed selected boiler is a moving grate boiler and is considered high pressure (40 bar, 400°C). The cycle chosen with the above parameters is the latest amongst any of the WTE fired installations around the world. The above

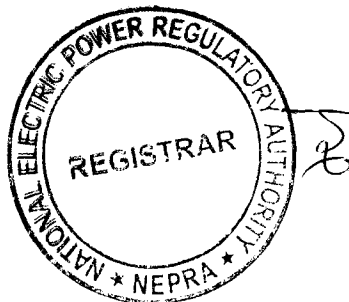



selected parameters make the cycle more efficient and help in the generation of more units from the same quantum of the fuel.

(xi). The LXZRECPL has confirmed that the proposed WTE generation facility/thermal power plant will be consisting of 2 x 20.00 MW conventional condensing steam turbines. In this regard, well reputed turbines of Hangzhou Turbine, China, Sichuan Chuanguo Boiler Co. Limited, China and Hangzhou Boiler Group Company Limited, China or equivalent are being considered. It is pertinent to mention that all the said manufactures are well reputed and have a number of facilities operating worldwide including Pakistan.

(xii). The Authority has observed that the proposed WTE generation facility/thermal power plant is being developed under the existing up-front tariff regime of the Authority for WTE projects. In this regard, it is clarified that the Authority through its determinations Nos. NEPRA/UGTMSWPP-2018/539-541 and No. NEPRA/UGTMSWPP-2018/10801-10803, dated January 15, 2018 and dated July 10, 2018 announced an up-front tariff (the up-front tariff determination) for WTE projects specifying various parameters to be deployed for the such generation facilities. In this regard, it is clarified that the LXZRECPL approached the Authority for unconditional acceptance of up-front tariff determination and the Authority through its decision dated July 20, 2018 has granted upfront tariff to the LXZRECPL.

(xiii). The Authority has observed that the water requirement of the WTE generation facility/thermal power plant will be met by the ground water through deep bore wells. The water from the bore wells will be stored in a water reservoir, and drawn for usage in the WTE generation facility/thermal power plant. A water treatment plant based on the reverse osmosis principle is proposed for the treatment of the entire feed water for the WTE generation facility/thermal power plant. There will be an adequately designed pre-treatment system with multi-grade filter and ultra-filtration system, upstream of the RO plant;

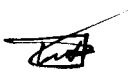


(xiv). The LXZRECPL has carried out the required GIS for dispersal of electric power from the proposed WTE generation facility/thermal power plant. According to the said study, the dispersal of electric power will be made at 132 kV voltage level. The dispersal/interconnection arrangement will be consisting of 132 kV Double Circuit (D/C) transmission line (on ACSR LYNX conductor) measuring about five km (05) in length by looping in-out of 132 kV D/C Mominpura to Darogawala transmission line at the proposed WTE generation facility/thermal power plant. In this regard, LESCO and NTDC have already approved/endorsed the GIS.

(xv). The Authority is encouraged that the proposed project of the LXZRECPL will be utilizing solid/municipal waste for which is RE source. However, the Authority considers that the proposed WTE generation facility/thermal power plant will be working as a conventional thermal power plant using steam turbine for generation of electric power/energy that may cause environmental concerns. In this regard, the LXZRECPL carried out the IEE study and Environmental Protection Agency, Government of the Punjab (EPAGoPb) has issued a No Objection Certificate (NOC) in the matter.

(xvi). 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. In the particular case under consideration, the licensing department confirms that the LXZRECPL 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 facilities satisfying the provisions of Rule-3(2) and Rule-3(3).

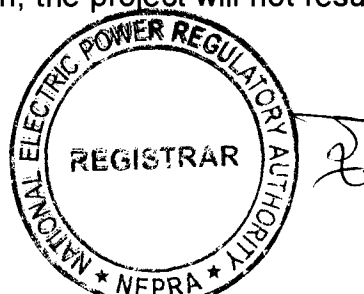
(xvii). Regarding the Rule-3(5) of the Generation Rules which stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the WTE generation facility/thermal power plant proposed in an application for 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 stipulates the conditions pertaining to Least Cost Option Criteria which includes (a). sustainable development or optimum utilization of the RE or non-RE 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 WTE generation facility/thermal power plant 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 WTE generation facility/thermal power plant 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 WTE generation facility/thermal power plant 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.

(xviii). In consideration of the above, the Authority observes that the proposed project will result in optimum utilization of the municipal solid waste of the city which was earlier untapped, resulting in reduction in pollution and generation of electric power. The Authority is of the considered opinion that municipal waste is an indigenous fuel and such fuels should have a preference for the energy security. The Authority through its up-front tariff determination announced an upfront levelized tariff for the future WTE projects which works out to be U.S. ¢ 9.8257/kWh which is very competitive considering the fact that not only cheap electric power will be generated but it will utilize the municipal waste which is otherwise dumped causing serious pollution and environmental issues.

(xix). As explained in the preceding paragraphs, the sponsors 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 thick population, the project will not result in cost and right-of-



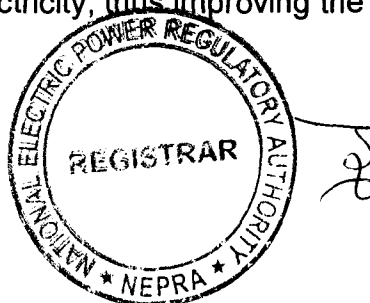
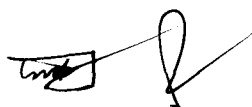
way issue for the provision of transmission and interconnection facilities. It has been observed that LESCO has included the project in its mid and long-term forecasts for additional capacity requirements. In view of the said, the Authority is of the considered view that the project of the LXZRECPL fulfills the eligibility criteria for grant of generation licence as stipulated in the NEPRA Act, rules and regulations and other applicable documents.

(E). Grant of Generation Licence

(i). 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 RE must be developed on priority basis.

(ii). The existing energy mix of the country is heavily skewed towards the thermal power plants, mainly operating on imported fossil fuel. The continuous import of fossil fuel 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 RE resources are given priority for power generation and their development is encouraged. The Energy Security Action Plan 2005 approved by the GoP, duly recognizes this very aspect of power generation through RE and envisages that at least 5% of total national power generation capacity (i.e. 9700 MW) to be met through RE resources by 2030.

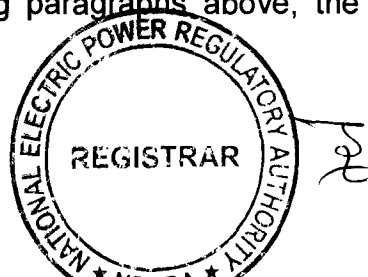
(iii). The Authority considers that the proposed project of the LXZRECPL is consistent with the provisions of Energy Security Action Plan 2005. The project will help in diversifying the energy portfolio of the country. Further, it will not only enhance the energy security of the country by reducing the dependence on imported fuel but will also help in reducing the carbon emission by generating clean electricity, thus improving the environment.



(iv). As explained above, the LXZRECPL has provided the details of location, technology, size, net capacity, interconnection arrangements, technical details and other related information for the proposed WTE generation facility/thermal power plant. Regarding land of the project, the Authority has observed that the GoPb has allocated land to the tune of approximately 26 acres at land filled site of Lakhoder in the vicinity of city of Lahore. The details of the land coordinates have been incorporated in Schedule-I of the generation licence. Accordingly, the Authority directs the LXZRECPL to utilize the allocated land exclusively for the proposed WTE generation facility/thermal power plant and not to carry out any other activity on the said land except with its prior approval.

(v). The term of a generation licence under Rule-5(1) of the Generation Rules is required to match with the maximum expected useful life of the units comprised in a generating facility. According to the information provided by the LXZRECPL, the Commercial Operation Date (COD) of the proposed WTE generation facility/thermal power plant will be January 31, 2022 and it will have a useful life of more than twenty-five (25) years from its COD. In this regard, the LXZRECPL has requested that the term of the proposed generation licence may be fixed to twenty-five (25) years consistent with the term of the proposed Energy Purchase Agreement (EPA) to be signed with the power purchaser. The Authority considers that the submissions of the LXZRECPL about the useful life of the WTE generation facility/thermal power plant and the subsequent request of the LXZRECPL to fix the term of the generation licence is consistent with international benchmarks therefore, the Authority fixes the term of the generation licence to twenty-five (25) years from COD of the project subject to the provisions of 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 and other terms and conditions for supply of electric power services is the sole prerogative of the Authority. As explained at preceding paragraphs above, the project is being

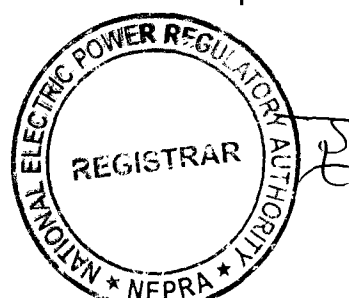


developed in terms of the up-front tariff determination. In this regard, the Authority through its determination No. NEPRA/TR/LXREC-2018/11883-11885 dated July 20, 2018 has already granted upfront tariff to the LXZRECPL. Notwithstanding the said, the Authority through Article-6 of the generation licence directs the LXZRECPL to charge the power purchaser only such tariff which has been determined, approved or specified by the Authority. Further, the Authority directs the LXZRECPL to adhere to the provision of the said article of the generation licence in letter and spirit without any exception.

(vii). Regarding compliance with the environmental standards, the Authority directs the LXZRECPL 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 the LXZRECPL to submit a report on a bi-annual basis, confirming that construction and operation of its project is compliant with required environmental standards as prescribed by the concerned environmental protection agency.

(viii). The proposed WTE generation facility/thermal power plant of the LXZRECPL will be using RE 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. The LXZRECPL has informed that the project will achieve COD by January 31, 2022 which is beyond the said deadline. However, considering the importance of the carbon credit, it is very likely that the said deadline may be extended and the project may get some credit in the matter. In view of the said, an article (i.e. Article-14) for carbon credits and its sharing with the power purchaser has been included in the generation licence. Foregoing in view, the Authority directs the LXZRECPL to initiate the process in this regard at the earliest so that the proceeds of carbon credits are materialized. The LXZRECPL will be required to share the proceeds



~~_____~~

of the carbon credits with the power purchaser as stipulated in Article-14 of the generation licence.

(ix). The Authority observes that the LXZRECPL applied for the grant of generation licence in terms of Section-15 of the NEPRA Act. However, NEPRA Act has been amended through Regulation of Generation, Transmission and Distribution of Electric Power (Amendment) Act, 2018 and Section-15 has been replaced with a new section i.e. Section 14B to provide for the grant of generation licences, therefore this generation licence is being granted under Section-14B of the amended NEPRA Act.

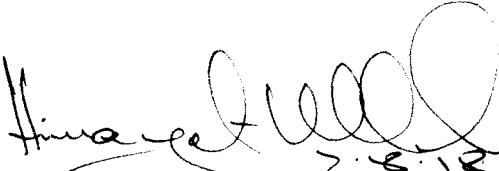
(x). In view of the above, the Authority hereby approves the grant of generation licence to the LXZRECPL on the terms and conditions set out in the generation licence annexed to this determination. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant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

Authority:


Saif Ullah Chattha
(Member)

(Did not Attend—On Leave)


Himayat Ullah Khan
(Member)

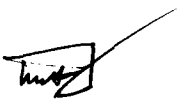

7.8.18

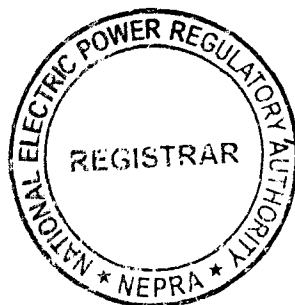
Rehmatullah
(Member/Vice Chairman)

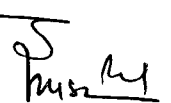

2/5/8/2018

Tariq Saddozai
(Chairman)








09 08 18

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

GENERATION LICENCE

No. IGSP/103/2018

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

Lahore Xingzhong Renewable Energy Company (Private) Limited

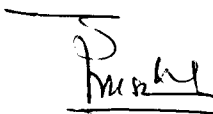
Incorporated under Section-32 of the Companies Ordinance 1984 (XLVII of 1984) Having Corporate Universal Identification No. 0105429, dated February 01, 2017

**for its Waste to Energy based Generation Facility/
Thermal Power Plant Located at Mauza Lakhoder, Tehsil Shalimar, District
Lahore in the Province of Punjab**

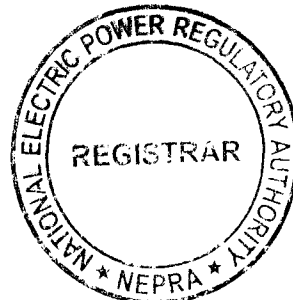
(Installed Capacity: 40.00 MW Gross ISO)

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

Given under my hand on this 9th day of August Two
Thousand & Eighteen and expires on 30th day of January
Two Thousand & Forty-Seven.


07 08 18
Registrar

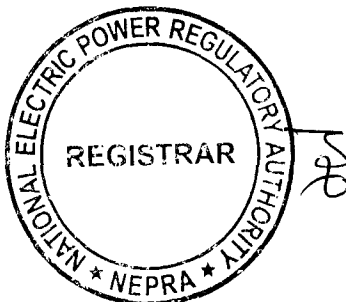




Article-1
Definitions

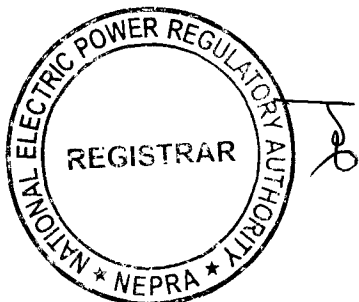
1.1 In this Licence

- (a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 as amended or replaced from time to time;
- (b). "Applicable Documents" mean the Act, 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, if any, 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 the Act, relevant rules and regulations made there under and 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/thermal power plant of the Licensee on which the electric power of all the generators is collected for supplying to the Power Purchaser;

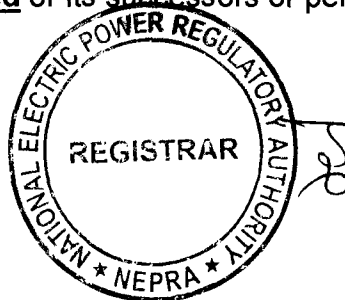


- (g). "Carbon Credits" mean the amount of Carbon Dioxide (CO₂) and other greenhouse gases not produced as a result of generation of energy by the WTE Generation Facility/Thermal Power Plant and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the generation of energy by the generation facility/thermal power plant, which are available or can be obtained in relation to the WTE Generation Facility/Thermal Power Plant after the COD;
- (h). "Commercial Operations Date (COD)" means the day immediately following the date on which the WTE Generation Facility/Thermal Power Plant of the Licensee is commissioned;
- (i). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose for functioning as market operator;
- (j). "Distribution Code" means the distribution code prepared by the concerned distribution company and approved by the Authority, as it may be revised from time to time with necessary approval of the Authority;
- (k). "Generation Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;
- (l). "Grid Code" means the grid code prepared and revised from time to time by NTDC with necessary approval of the Authority;

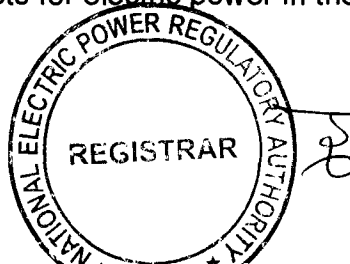
 



- (m). "GoP" means the Government of Pakistan acting through the AEDB which has issued or will be issuing to the Licensee a LoS for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/thermal power plant;
- (n). "GoPb" means the Government of the Province of Punjab acting through the PPDB which has issued letter of intent for the design, engineering, construction, insuring, commissioning, operation and maintenance of the generation facility/thermal power plant;
- (o). "IEC" means the International Electrotechnical Commission or its successors or permitted assigns;
- (p). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;
- (q). "Implementation Agreement (IA)" means the implementation agreement signed or to be signed between the GoP and the Licensee in relation to this particular generation facility/thermal power plant, as may be amended from time to time;
- (r). "LESCO" means Lahore Electric Supply Company Limited or its successors or permitted assigns;
- (s). "Letter of Support (LoS)" means the letter of support issued or to be issued by the GoP through the AEDB to the Licensee;
- (t). "Licensee" means **Lahore Xingzhong Renewable Energy Company (Private) Limited** or its successors or permitted assigns;



- (u). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;
- (v). "Net Delivered Energy" means the net electric energy expressed in kWh generated by the WTE Generation Facility/Thermal Power Plant of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser;
- (w). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;
- (x). "Policy" means the Policy for Development of Renewable Energy for Power Generation, 2006 of GoP as amended from time to time;
- (y). "Punjab Policy" means the Punjab Power Generation Policy, 2006 of GoPb as amended from time to time;
- (z). "Power Purchase Agreement (PPA)" means the power purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric power generated by the generation facility/thermal power plant, as may be amended by the parties thereto from time to time;
- (aa). "Power Purchaser" means any person or registered entity or licence holder which will be purchasing electric power from the Licensee, pursuant to an EPA for procurement of electric energy;
- (bb). "PPDB" means the Punjab Power Development Board or any other entity created for the like purpose established by the GoPb to facilitate, promote and encourage development of private sector participation for development of projects for electric power in the Province of Punjab;



(cc). "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;

(dd). "WTE Generation Facility" means a generation facility using solid or municipal waste for generation 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

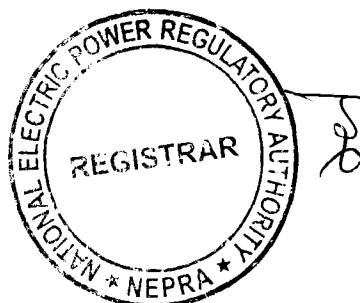
This licence is issued subject to the provisions of the Applicable Law, as amended from time to time.

Article-3
Generation Facilities

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

3.2 The net capacity of the WTE Generation Facility/Thermal Power Plant of the Licensee is set out in Schedule-II hereto. The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its WTE Generation Facility/Thermal Power Plant before its COD.

~~14~~ e



Article-4
Term of Licence

4.1 This licence shall become effective from the date of its issuance and will have a term of twenty-five (25) years from the COD of the WTE Generation Facility/Thermal Power Plant of the Licensee, subject to the provisions of Section-14(B) of the Act.

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 Generation Rules read with the Licensing Regulations.

Article-5
Licence fee

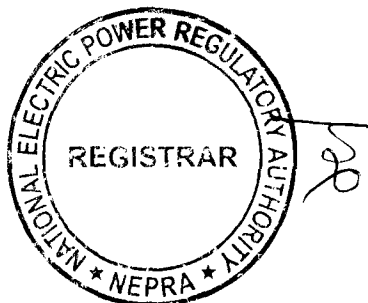
The Licensee shall pay to the Authority the licence fee as stipulated in the National Electric Power Regulatory Authority (Fees) Rules, 2002 as amended or replaced from time to time.

Article-6
Tariff

The Licensee shall charge the Power Purchaser 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 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.

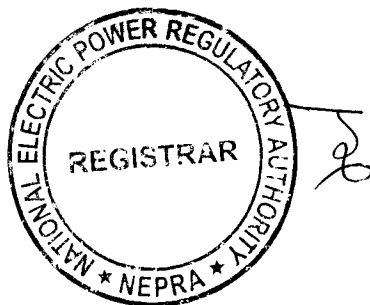
Article-9
Compliance with Performance Standards

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 & Safety Standards

10.1 The WTE Generation Facility/Thermal Power Plant of the Licensee shall comply with the environmental and safety 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 WTE Generation Facility/Thermal Power Plant is in conformity with required environmental standards as prescribed by the relevant competent authority.



Article-11
Power off take Point and Voltage

The Licensee shall deliver the electric power to the Power Purchaser at the outgoing Bus Bar of its generation facility/thermal 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 SCADA System or compatible communication system at its WTE Generation Facility/Thermal Power Plant as well as at the side of the Power Purchaser.

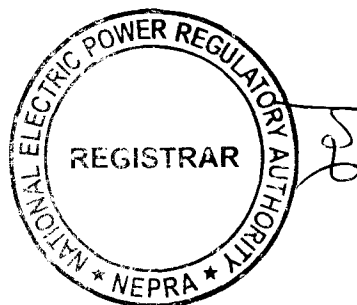
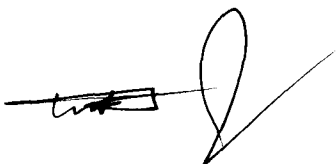
12.2 The Licensee shall transmit the data pertaining to the waste received and the generated electric power of its WTE Generation Facility/Thermal Power Plant to the control room of the Power Purchaser.

Article-13
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.

Article-14
Emissions Trading/Carbon Credits

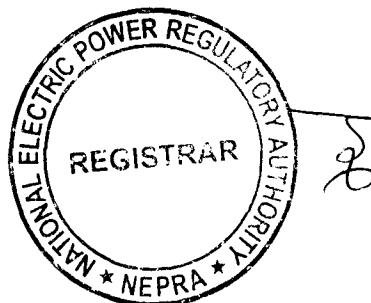
The Licensee shall process and obtain expeditiously the Carbon Credits admissible to the generation facility/thermal power plant. The Licensee shall share the said proceeds with the Power Purchaser as per the Policy.



Article-15
Design & Manufacturing Standards

The WTE Generation Facility/Thermal Power Plant of the Licensee shall be designed, manufactured and tested according to the latest IEC or IEEE or any other equivalent standard. All the plant and equipment of the WTE Generation Facility/Thermal Power Plant shall be unused and brand new.



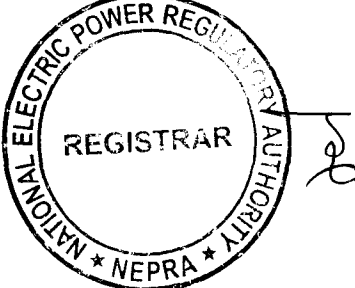
[A large diagonal line is drawn across the page, starting from the bottom left and extending towards the top right.]



Generation Licence
Lahore Xingzhong Renewable Energy Company (Private) Limited
Waste to Energy generation facility/Thermal Power Plant
Located at Mauza Lakhoder
Tehsil Shalimar, District Lahore
in the Province of Punjab

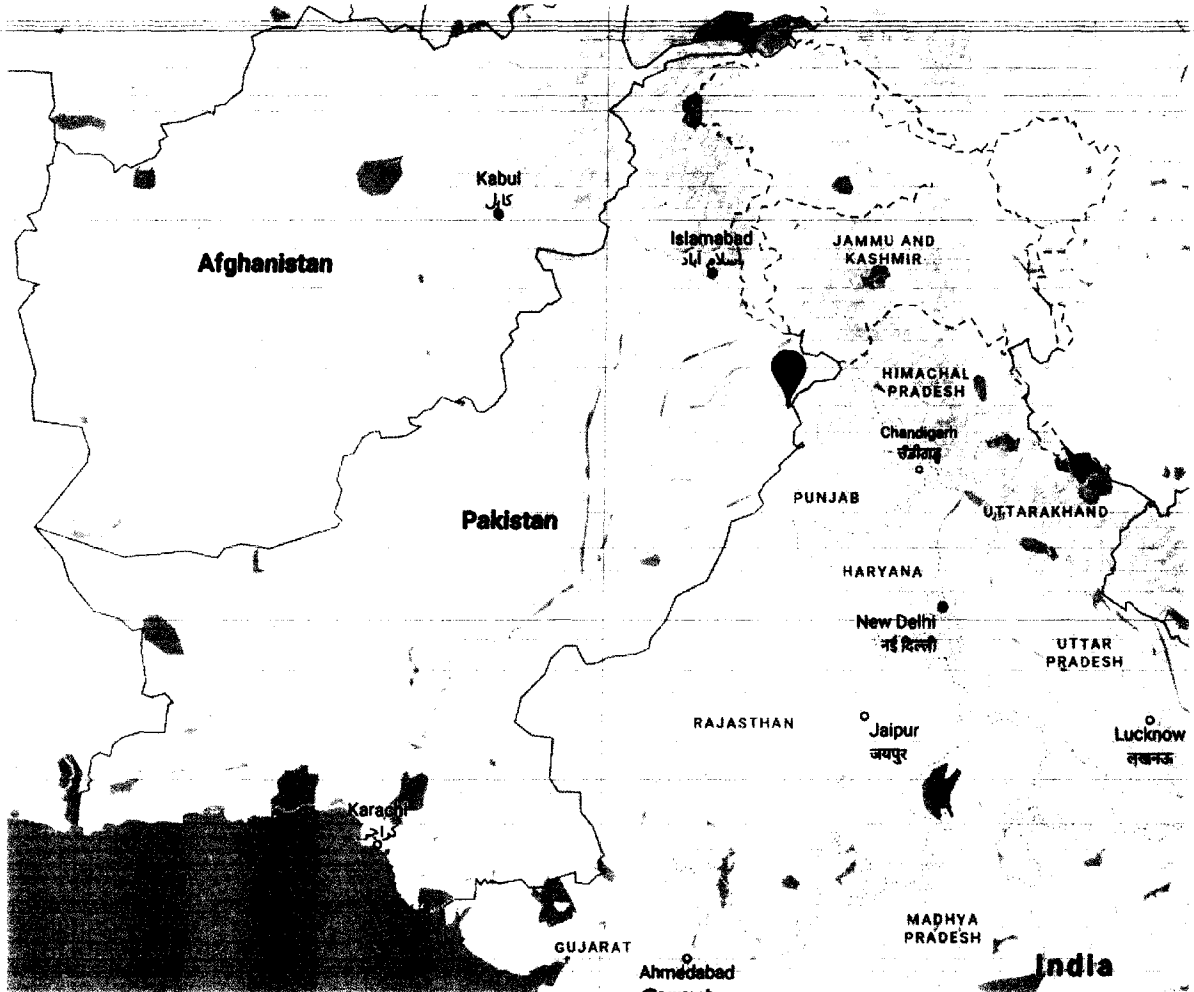
SCHEDULE-I


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.

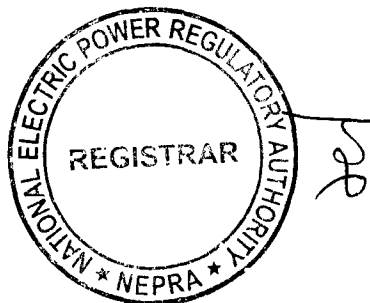
  

Generation Licence
Lahore Xingzhong Renewable Energy Company (Private) Limited
Waste to Energy generation facility/Thermal Power Plant
Located at Mauza Lakhoder
Tehsil Shalimar, District Lahore
in the Province of Punjab

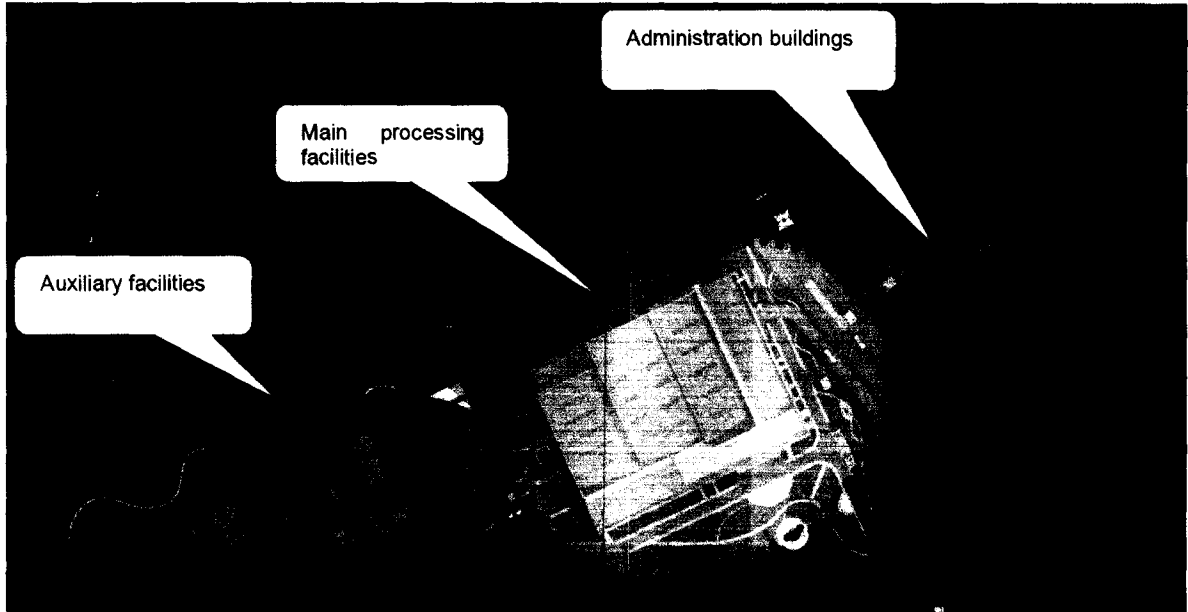
Location of the
WTE Generation Facility/Thermal Power Plant of the Licensee
on Map of Pakistan



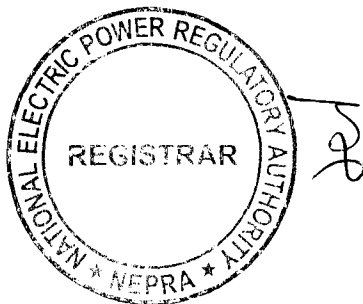


Lay-out and Land Coordinates of the WTE Generation Facility/Thermal Power Plant of the Licensee

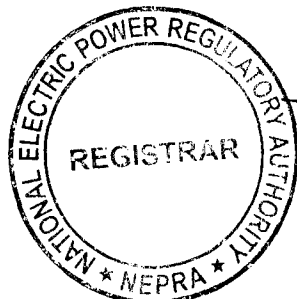
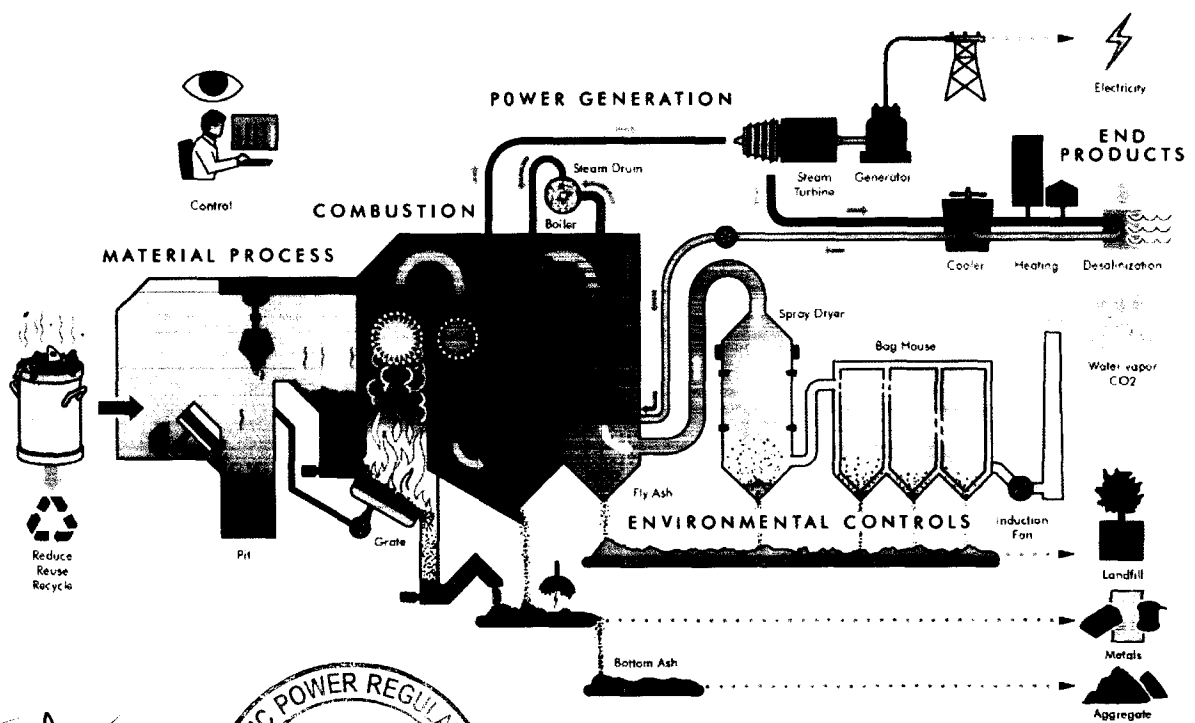
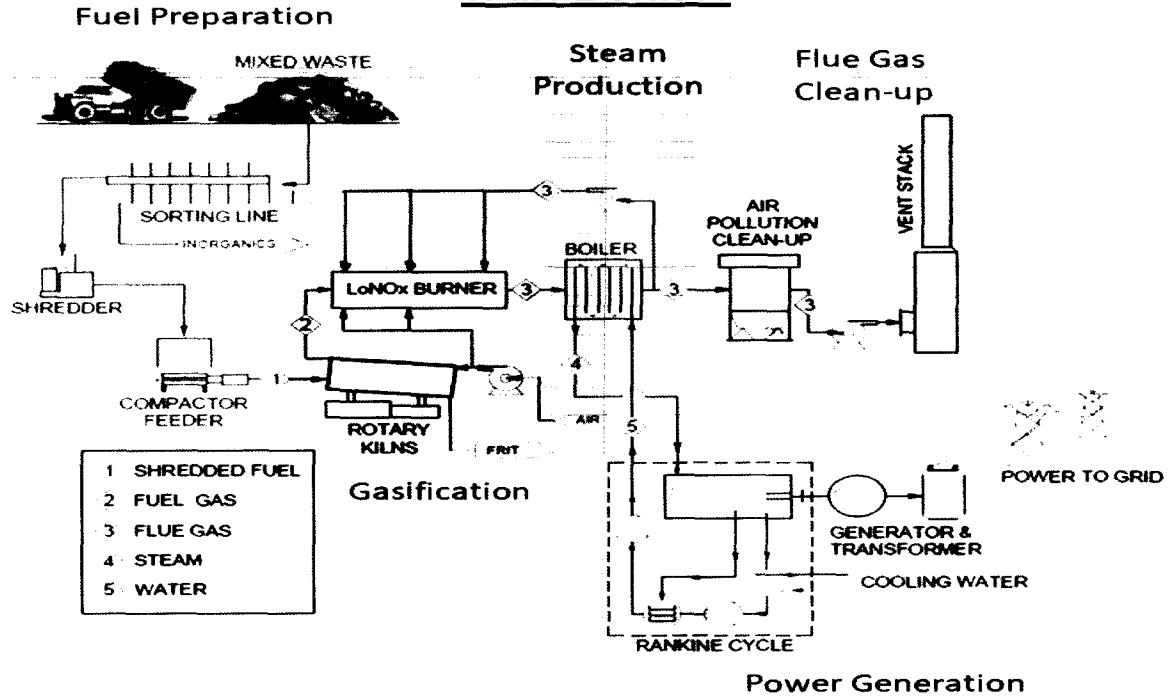


Point	Total Area = 26 Acres	
	<u>Longitude</u>	<u>Latitude</u>
Lakhoder Landfill	31°37'35.10" N	74°25'7.77" E
Plant Area	31°37'24.16" N	74°25'8.52" E
Office Area	31°37'28.39" N	74°25'15.79" E

[Handwritten signature]

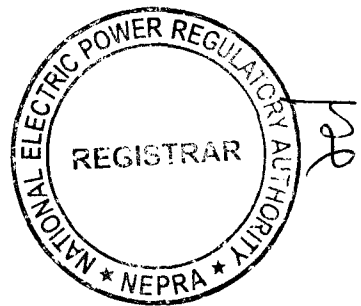
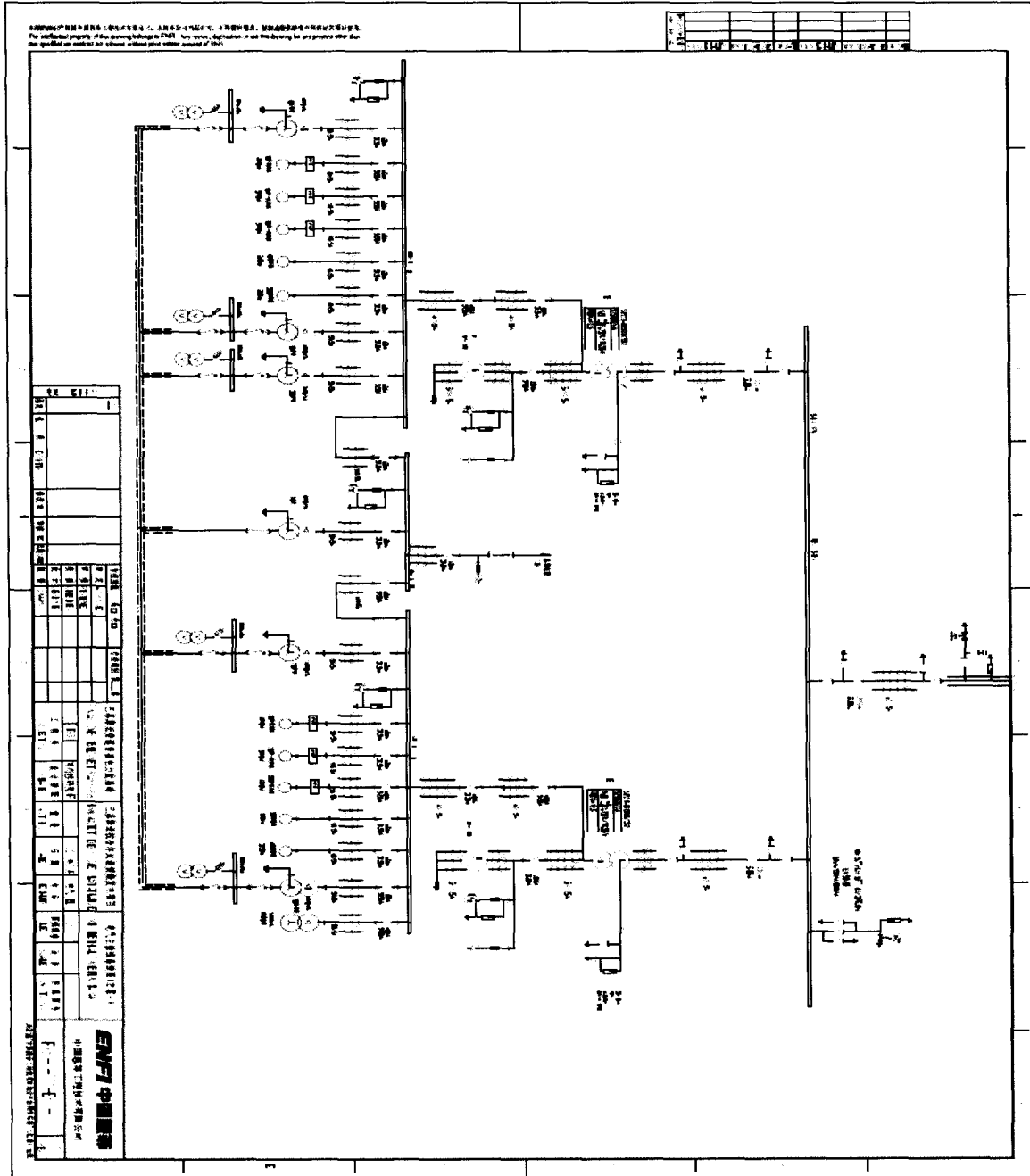


Process Diagram of the WTE Generation Facility/Thermal Power Plant of the Licensee



Generation Licence
 Lahore Xingzhong Renewable Energy Company (Private) Limited
 Waste to Energy generation facility/Thermal Power Plant
 Located at Mauza Lakhoder
 Tehsil Shalimar, District Lahore
 in the Province of Punjab

**Single line Diagram (Electrical) of the
 WTE Generation Facility/Thermal Power Plant
 of the Licensee**



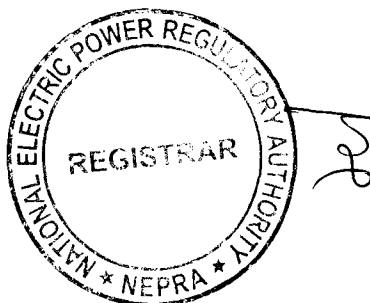
**Interconnection Arrangement for
Dispersal of Electric Energy/Power from the WTE
Generation Facility/Thermal Power Plant of the Licensee**

The electric power from the WTE Generation Facility/Thermal Power Plant of Licensee will be disbursed/dispatched to the load center of concerned distribution company i.e. LESCO.

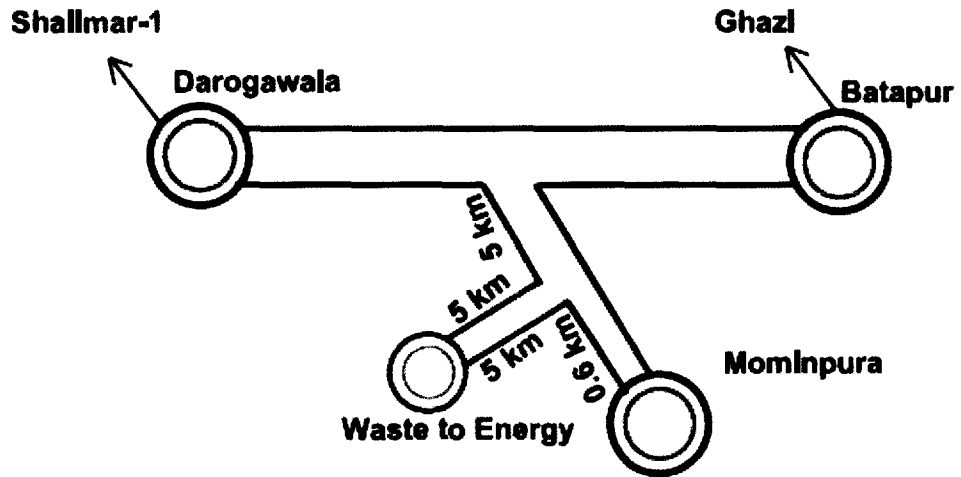
(2). The Interconnection Facilities (IF)/Transmission Arrangements (TA) for supplying to LESCO from the above mentioned generation facility shall be at 132 kV level. The dispersal/interconnection arrangement will be consisting of a 132 kV Double Circuit (D/C) Transmission Line (on ACSR LYNX Conductor) measuring about 5.00 KM for making an In-Out of one circuit existing 132 kV Mominpura to Darogawala D/C transmission line at WTE Generation Facility/Thermal Power Plant of the Licensee connecting the WTE Generation Facility/Thermal Power Plant with the network of LESCO.

(3). The above IF/TA is based on the approval of LESCO regarding the Grid Interconnection Study. Any change in the above mentioned IF/TA for dispersal of electric power as agreed by the Licensee, LESCO or NTDC or the Power Purchaser shall be communicated to the Authority in due course of time.

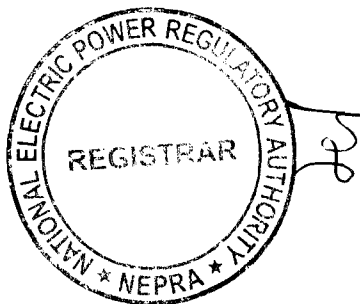




**Schematic Diagram for
Dispersal of Electric Energy/Power from the WTE Generation
Facility/Thermal Power Plant**



Legend
11kV _____
132kV _____
Proposed 11kV _____
Proposed 132kV _____



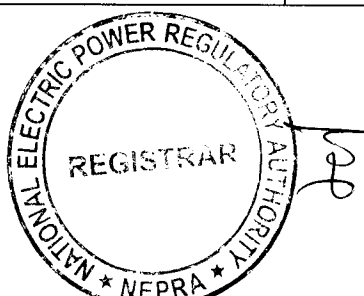
Details of Waste to Energy Generation Facility/ Thermal Power Plant

(A). General Information

(i).	Name of the Company/Licensee	Lahore Xingzhong Renewable Energy Company (Private) Ltd.
(ii).	Registered Office of the Company	House # 560, Street 14, A-Section, Phase 5, DHA Lahore, Lahore.
(iii).	Business Address/ Office of the Company	-Do-
(iv).	Location of the Generation Facility	Mauza Lakhoder, Tehsil Shalimar, District Lahore, in the Province of Punjab
(v).	Type of the Generation Facility	Thermal Power Plant

(B). Configuration of Generation Facility

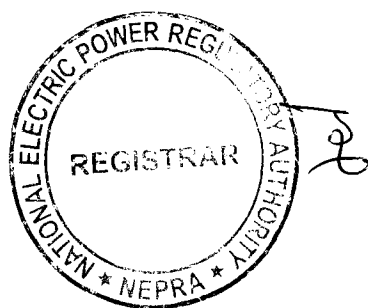
(i).	Installed Capacity/Size of the Generation Facility	40.00 MW	
(ii).	Type of the Technology of the Generation Facility	Conventional Steam Turbine based Power Plant [2 x 20.00 MW condensing Steam Turbines and One (01) Moving Grate Furnace and a boiler Operating at 40 bar (kg/cm ²), 400°C and Producing 192.6 Tons of Steam Per Hour-TPH].	
(iii).	Number of Units & Size of Each Unit of the Generation Facility	Steam Turbine	2 x 20.00 MW
(iv).	Make/Model/Type/ Year of Manufacture Etc. of each Unit of the Generation Facility	Steam Turbine	Hangzhou Turbine, China/Sichuan Chuanguo Boiler Co. Ltd, China Hangzhou Boiler Group Company Ltd, China or equivalent etc.
		Boiler	-Do-



(v).	Expected/ Anticipated COD of the Generation Facility	January 31, 2022
(vi).	Expected Useful Life of the Generation Facility from COD	25 Years (Minimum)

(C). Fuel/Raw Material Details

(i).	Primary Fuel	Municipal Solid Waste	
(ii).	Alternate Fuel	-Nil-	
(iii).	Fuel Source (Imported/Indigenous)	Primary Fuel	Alternate Fuel
		Indigenous	Nil
(iv).	Fuel Supplier	Primary Fuel	Alternate Fuel
		Lahore Waste Management Company	Nil
(v).	Supply Arrangement	Primary Fuel	Alternate Fuel
		Through Conveyor Belts/Loading Trucks/Tractor Trolleys etc.	Nil
(vi).	Waste Disposal	2,000 Ton per day	
(vii).	Fuel/Waste Storage facilities	Waste Storage Pit	
(viii).	Capacity of Storage facilities	5 to 7 days storage	
(ix).	Gross Storage Capacity	7 days storage	

(D). Emission Values

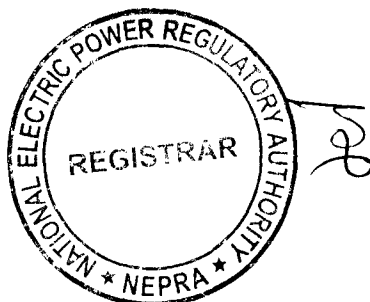
		Primary Fuel	Alternate Fuel
(i).	SO _x	<80 mg/Nm ³	Nil
(ii).	NO _x	<250 mg/ Nm ³	Nil
(iii).	CO ₂	-	Nil
(iv).	CO	<80 mg/ Nm ³	Nil
(v).	PM ₁₀	-	Nil

(E). Cooling System

(i).	Cooling Water Source/Cycle	RCC Cooling tower of induced draft counter flow type. Make up water will be drawn from the bore wells/Closed Loop.
------	----------------------------	--

(F). Plant Characteristics


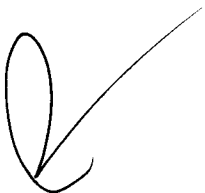
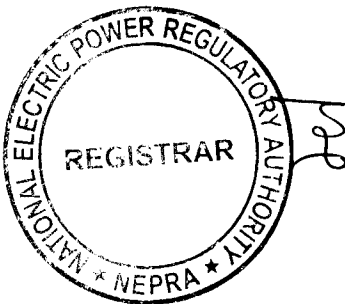
(i).	Generation Voltage	11.00 KV
(ii).	Frequency	50 Hz
(iii).	Power Factor	0.90 lagging - 0.95 leading
(iv).	Automatic Generation Control (AGC)	Nil
(v).	Ramping Rate	About 3%
(vi).	Time required to Synchronize to Grid	100ms/AUTO

Generation Licence
Lahore Xingzhong Renewable Energy Company (Private) Limited
Waste to Energy generation facility/Thermal Power Plant
Located at Mauza Lakhoder
Tehsil Shalimar, District Lahore
in the Province of Punjab

SCHEDULE-II

The Installed/ISO Capacity (MW), De-Rated Capacity at Mean Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity at Mean Site Conditions (MW) of the Generation Facilities of Licensee are given in this Schedule

SCHEDULE-II

(1).	Total Gross Installed Capacity of the Generation Facility	40.00 MW
(2).	De-rated Capacity of Generation Facility at Reference Site Conditions	40.00 MW
(3).	Auxiliary Consumption of the Generation Facility	06.40 MW
(4).	Total Installed Net Capacity of Generation Facility at Reference Site Condition	33.60 MW

Note

All the above figures are indicative as provided by the licensee. The net capacity available to Power Purchaser for dispatch will be determined through procedure(s) contained in the Power Purchase Agreement.

