

September 05, 2019

**The Registrar**

National Electric Power Regulatory Authority ("NEPRA")  
NEPRA Tower, Attaturk Avenue (East)  
Sector G-5/1, Islamabad

**Subject: Application for Modification of the Generation License**

Dear Sir,

Access Electric (Private) Limited (the "**Company**") was granted the Generation License No. SPGL/05/2014, dated June 26, 2014 (the "Generation License") by NEPRA under Regulation 10 (2) of NEPRA Licensing (Application and Modification Procedure) Regulations 1999 (the Regulations) in respect of its 10.00 MWp Solar PV project to be located at near village Hattar, Tehsil Pind Dadan Khan, District Jhelum, Punjab (the "Project").

The Company filed an application dated February 20, 2014 for grant of the Generation License and was issued the same on June 26, 2014. The application was filed for the Project based on the Upfront and Technology prevalent at that time. Since then because of various reasons the tariff had to be re determined, including change of technology due to market conditions/technological improvements in the plant equipment, a revised tariff determination was issued by the Authority on October 11, 2018 NEPRA/TRF-258/AEPL-2014/15596-15598.

In view of above the Company has to apply for modification of Generation License to reflect the change of technology as provided in the Tariff Determination.

In view of the foregoing and pursuant to the NEPRA Licensing (Application & Modification Procedure) Regulations, 1999 (the "**Regulations**"), I, Mr. Amir Altaf, Manager Accounts of the Company, being the duly authorized representative of the Company by virtue of Board Resolution dated September 01, 2019, hereby apply to NEPRA, on behalf of the Company, for a modification of the Generation License.

In view thereof, your good offices are humbly requested to process this application expeditiously and issue the modified Generation License at the earliest, enabling the Company to proceed with development of the Project.

In relation to the foregoing, I certify that the documents-in-support enclosed with this application are prepared and submitted in conformity with the provisions of the Regulations, and that the Company undertakes to abide by the terms and provisions of

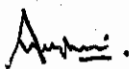
the Regulations. I further undertake and confirm that the information provided in the enclosed documents-in-support is true and correct to the best of my knowledge and belief.

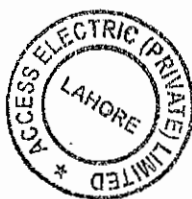
A bank draft dated September 05, 2019 in the sum of Rs. 175,272, being the applicable processing fee is also attached herewith.

In light of this application and its enclosures, you are kindly requested to accept our application for the modification of the Generation License.

Yours sincerely,

For and on behalf of  
**Access Electric (Private) Limited**

  
\_\_\_\_\_  
Amir Altaf  
Manager Accounts



**Appended with this application are the following documents:**

1. Bank Draft dated September 05, 2019 as **Annex A**;
2. Extract of Board Resolution dated September 01, 2019 as **Annex B**;
3. Affidavit dated September 05, 2019 as **Annex C**;
4. Text of the Proposed Modification as **Annex D**;
5. Statement of the Reasons in Support of the Proposed Modification as **Annex E**;
6. Statement of the Impact on the Tariff, Quality of Service and the Performance by the Company of its obligations under the Generation License as **Annex F**.



**ACCESSELECTRIC**

**CERTIFIED COPY OF CIRCULAR RESOLUTION PASSED BY THE BOARD  
OF DIRECTORS OF ACCESS ELECTRIC (PRIVATE) LIMITED ON  
SEPTEMBER 01, 2019**

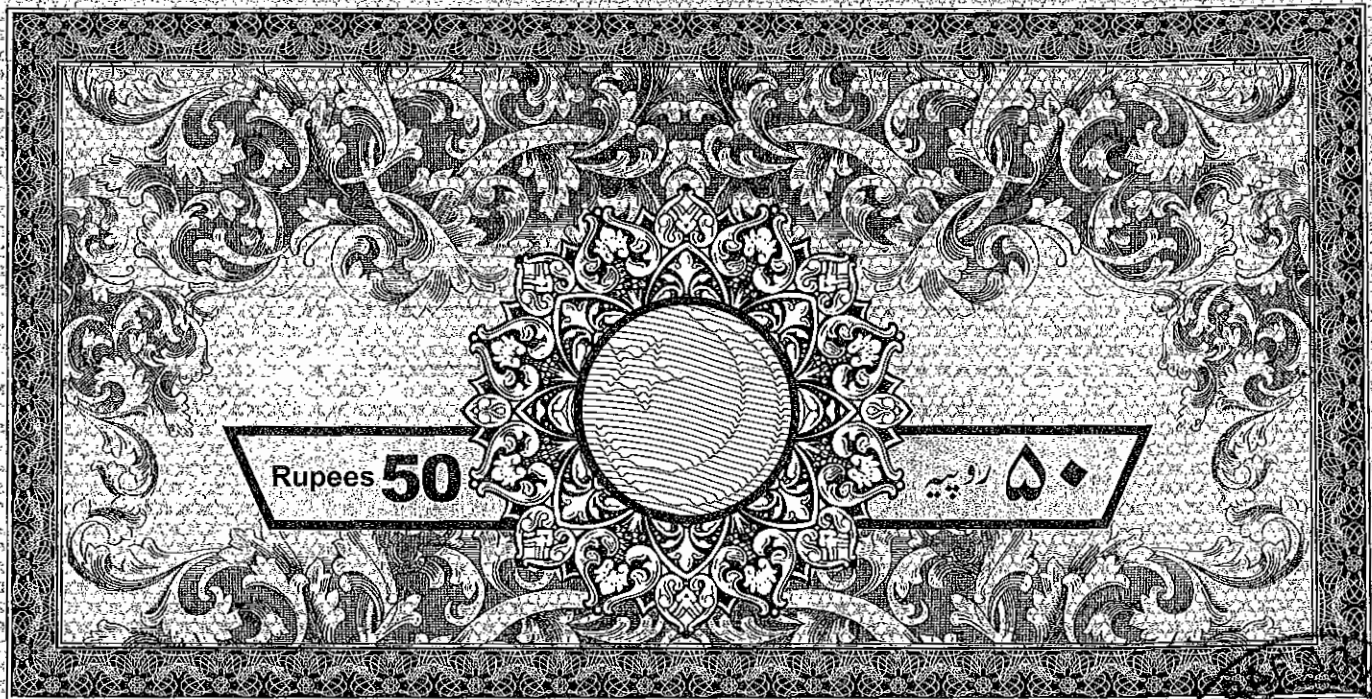
**RESOLVED THAT:** the Board of Directors of Access Electric (Private) Limited do hereby authorize Mr. Amir Altaf, Manager Accounts of Power Generation of the Company to apply for Modification in Generation License from NEPRA and in this respect sign necessary documents/papers, pay the filling fees, and appear before the authority as required, to do and cause to be done all acts, deed and things which may be necessary to give effect of this Resolution and to do all acts necessary for completion and processing of the application for Modification in Generation License.

Shomail Ghalib  
(Chief Executive Officer)



**REGISTERED OFFICE** c/o Horwath Hussain Chaudhry & Co. 25 E, Main Market Gulberg, Lahore 54660 | +92 42 111 111 HHC | +92 42 357 59226

**PROJECT OFFICE** Unit#2, 17 Aziz Avenue, Canal Bank, Lahore, Pakistan | +92 42 357 60173, 358 78879 | +92 42 357 60480



BEFORE THE NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

### AFFIDAVIT

I, Amir Altaf, Manager Accounts, being the duly authorized representative of Access Electric (Private) Limited, hereby solemnly affirm and declare that the contents of the accompanying 'Application for Modification of the Generation License' dated September 05, 2019 (and its annexes) including all supporting documents, are true and correct to the best of my knowledge and belief and that nothing has been concealed.

I also affirm that all further documentation and information to be provided by me in connection with the accompanying application shall be true to the best of my knowledge and belief.

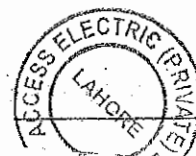


*Amir Altaf*

DEPONENT  
Amir Altaf

### Verification:

Verified on oath at September 05, 2019 that the contents of the above affidavit are correct and true to the best of my knowledge and belief.



*Amir Altaf*

DEPONENT  
Amir Altaf



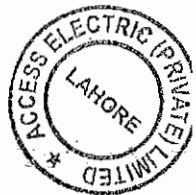
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### TEXT OF THE PROPOSED MODIFICATION

The Company filed an application dated February 20, 2014 for grant of the Generation License and was issued the Generation License No. SPGL/05/2014, dated June 26, 2014. The application was filed for the Project based on the Upfront and Technology prevalent at that time.

We are pleased to inform you that the Company has updated the technology in view of the requirements of the tariff determined by Authority on October 11, 2018 NEPRA/TRF-258/AEPL-2014/15596-15598.

In order to cater to the change the Schedule I & II attached to the Generation License issue need to be replaced. Please see Annex E (*Statement of Reasons*) for further details). The Generation License shall need to be modified to extent of replacement of Schedules.



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### STATEMENT OF REASONS IN SUPPORT OF THE PROPOSED MODIFICATION

The Company filed an application dated February 20, 2014 for grant of the Generation License and was issued the Generation License No. SPGL/05/2014, dated June 26, 2014. The application was filed for the Project based on the Upfront and Technology prevalent at that time.

We are pleased to inform you that the Company has updated the technology in view of the requirements of the tariff determined by Authority on October 11, 2018 NEPRA/TRF-258/AEPL-2014/15596-15598.

In order to cater to the change the Schedule I & II attached to the Generation License issue need to be replaced. The Generation License shall need to be modified to extent of replacement of Schedules.

The Project is currently in its development phase and at this stage the Generation License can be updated to cater for the changes in technology.

In view thereof, your good offices are humbly requested to process this application expeditiously and issue the modified Generation License at the earliest, enabling the Company to proceed the development of the Project.

The Proposed Modification will also be in the best interest for the public as it is in compliance with the applicable laws.

In light hereof, since the Proposed Modification will result in a more resourceful Project and ultimately lead to the benefit of the general public and consumers at large, we request the Authority to proceed in accepting our application for the modification of the Generation License.



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**STATEMENT OF THE IMPACT ON THE TARIFF, QUALITY OF SERVICE AND THE PERFORMANCE BY  
THE COMPANY OF ITS OBLIGATIONS UNDER THE GENERATION LICENSE**

- A. **Impact on Tariff:** The revised determined levelized tariff with improved technology (Rs.6.2343/kWh) is much lower than the originally approved tariff (Rs.15.7793/kWh) at the time of issuance of Generation License.
- B. **Impact on Quality of Service:** The technical performance and quality of service of the Company shall improve significantly.
- C. **Impact on Performance of Obligations under the Generation License:** The overall performance of the Company obligations shall improve significantly after adopting the new technology as requested.



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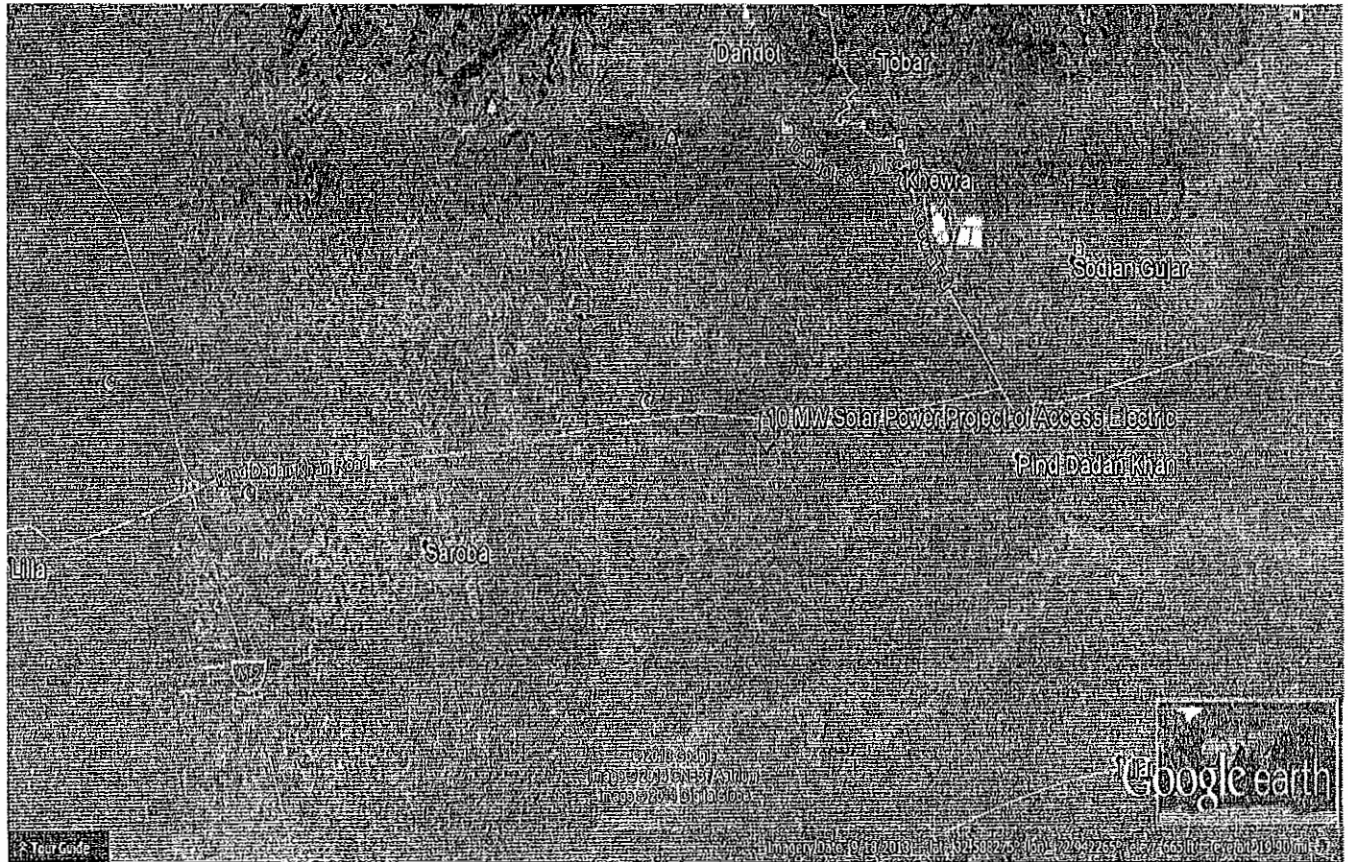
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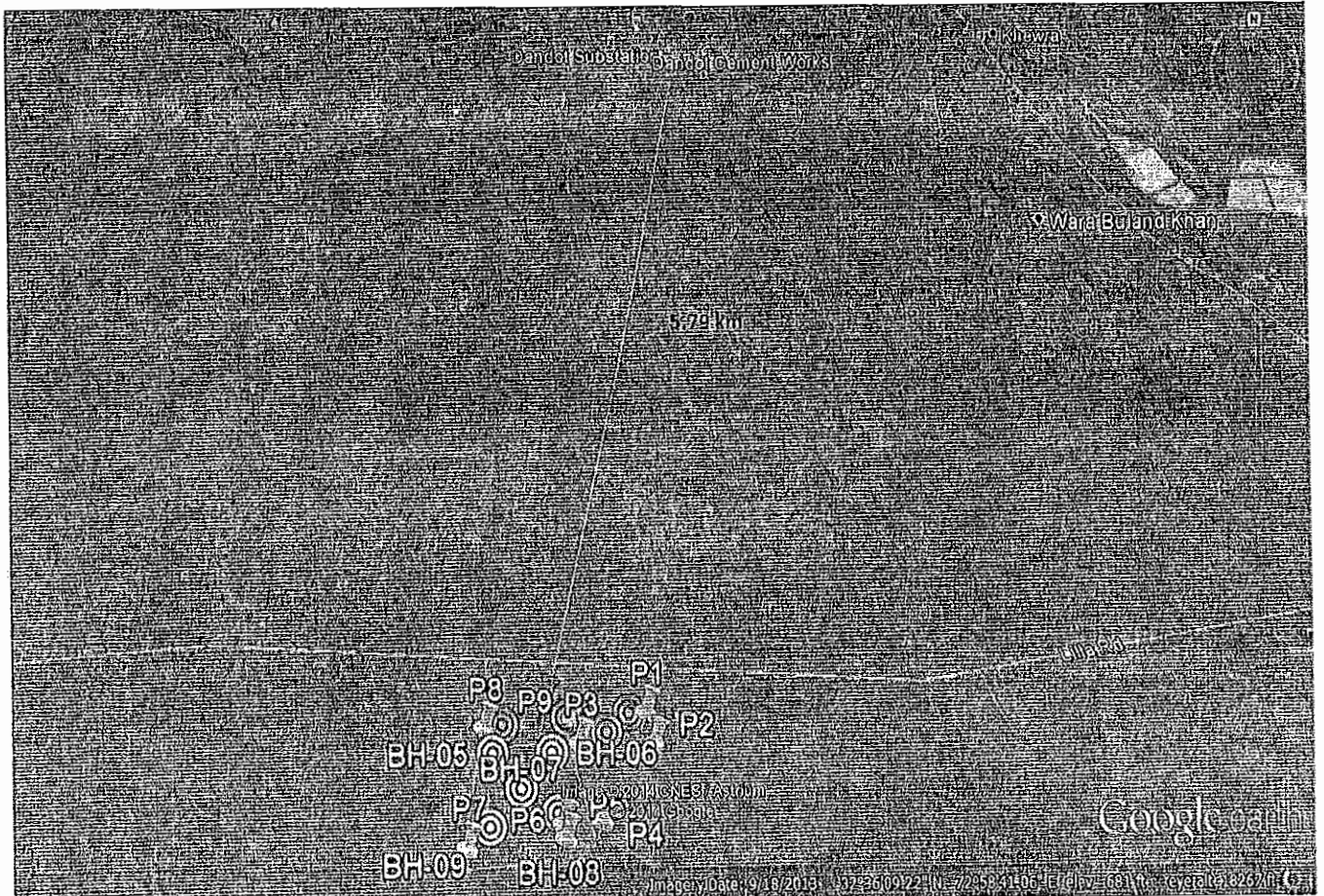
**SCHEDULE-I**

## **SCHEDULE-I**

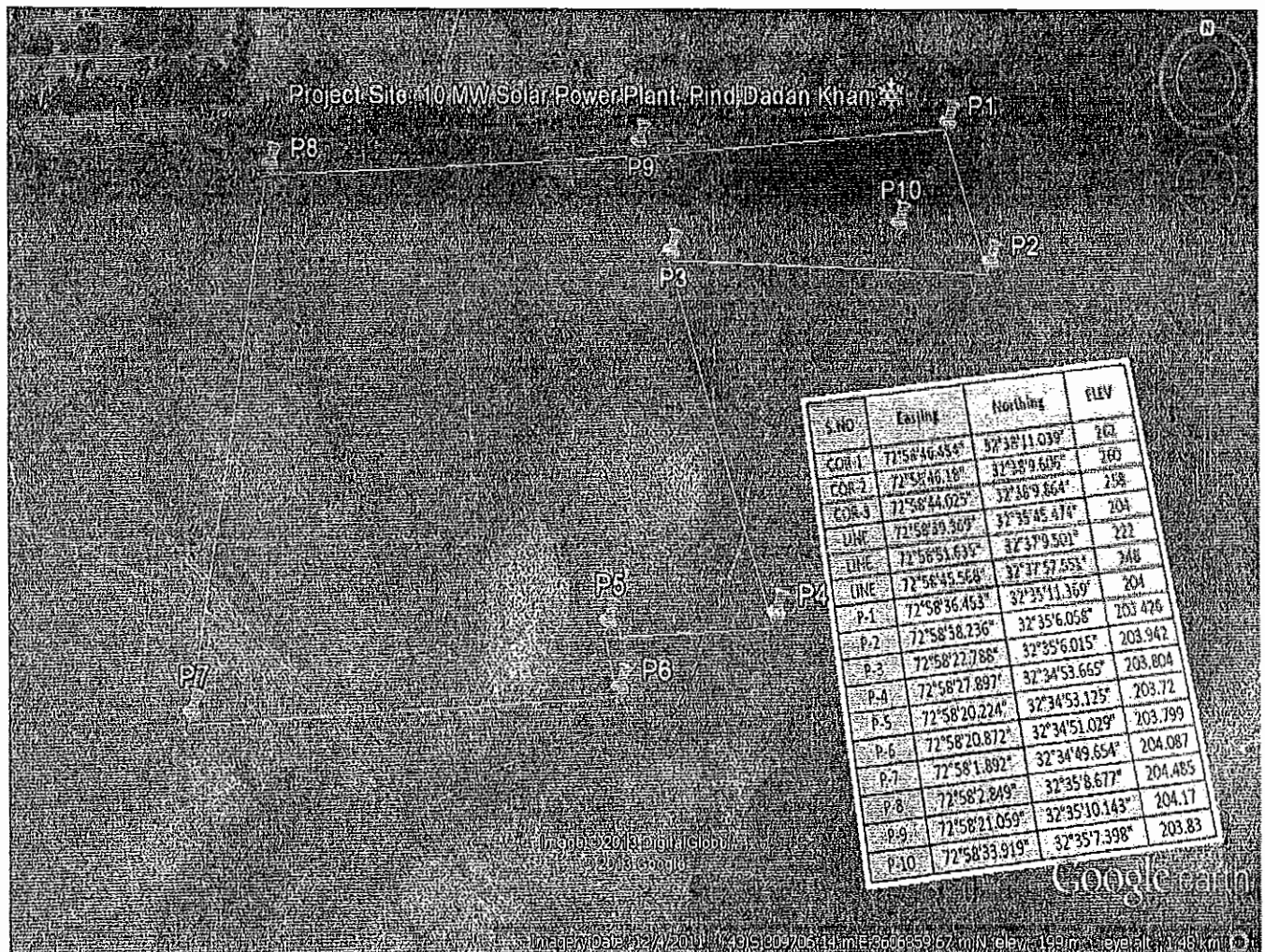
The Location, Size (Capacity 10 MW), Type of Technology, Solar Photovoltaic (PV). Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule



## Location of the Generation Facility/Solar Power Plant/ Solar Farm

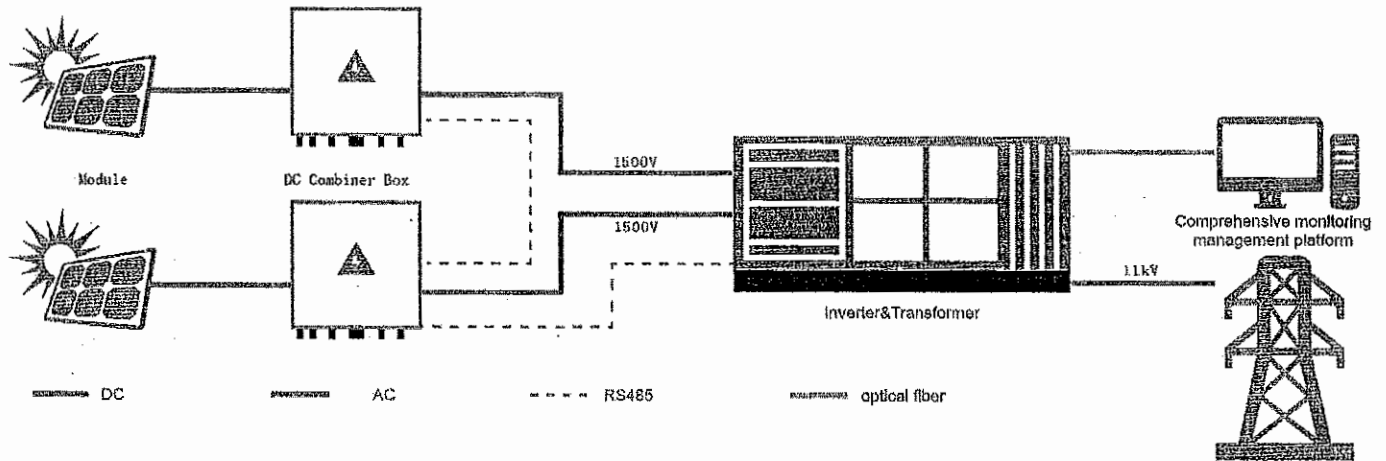


## Co-Ordinates of the Generation Facility /Solar Power Plant/ Solar Farm



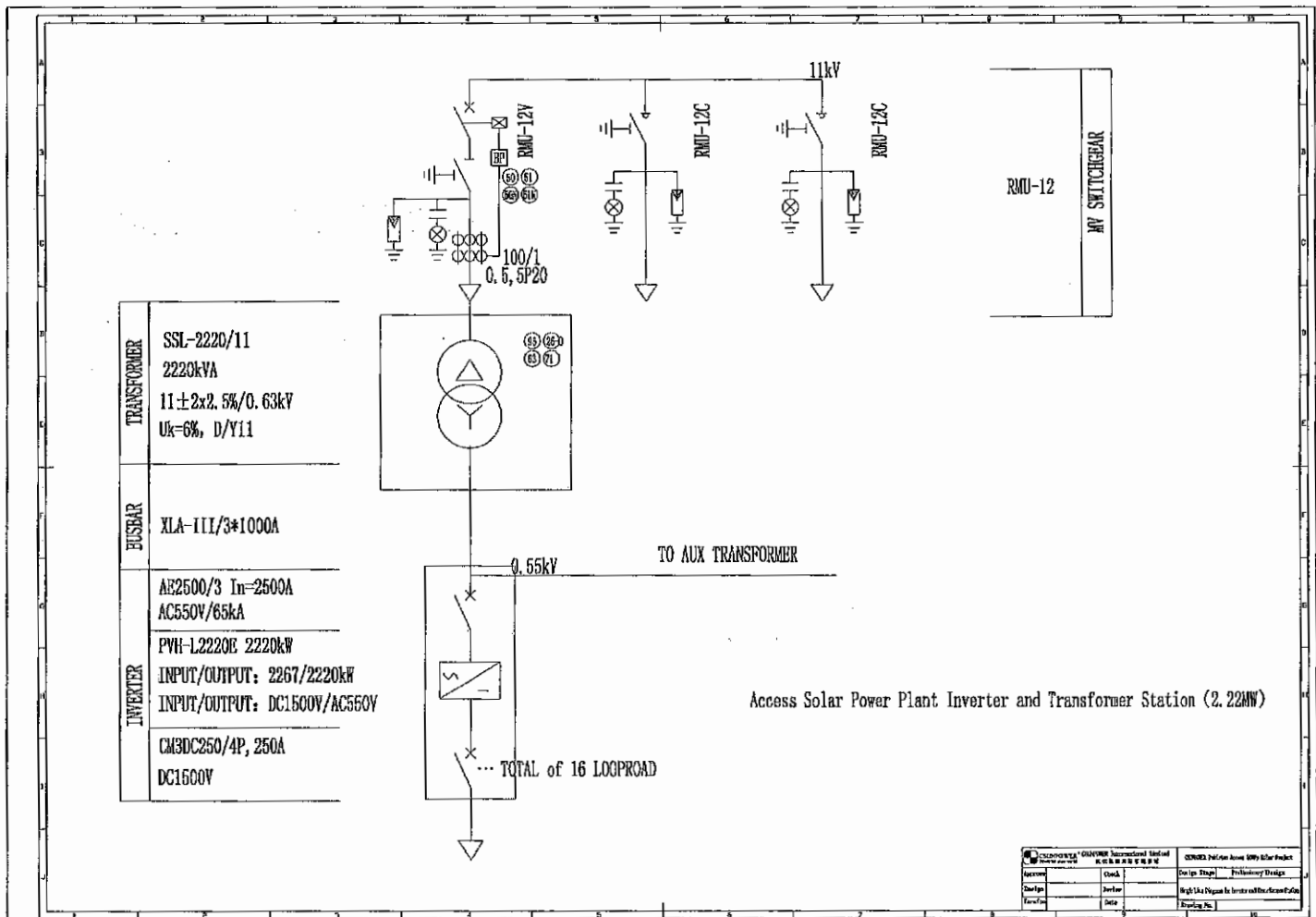


## Process Flow Diagram of the Generation Facility/Solar Power Plant/ Solar Farm

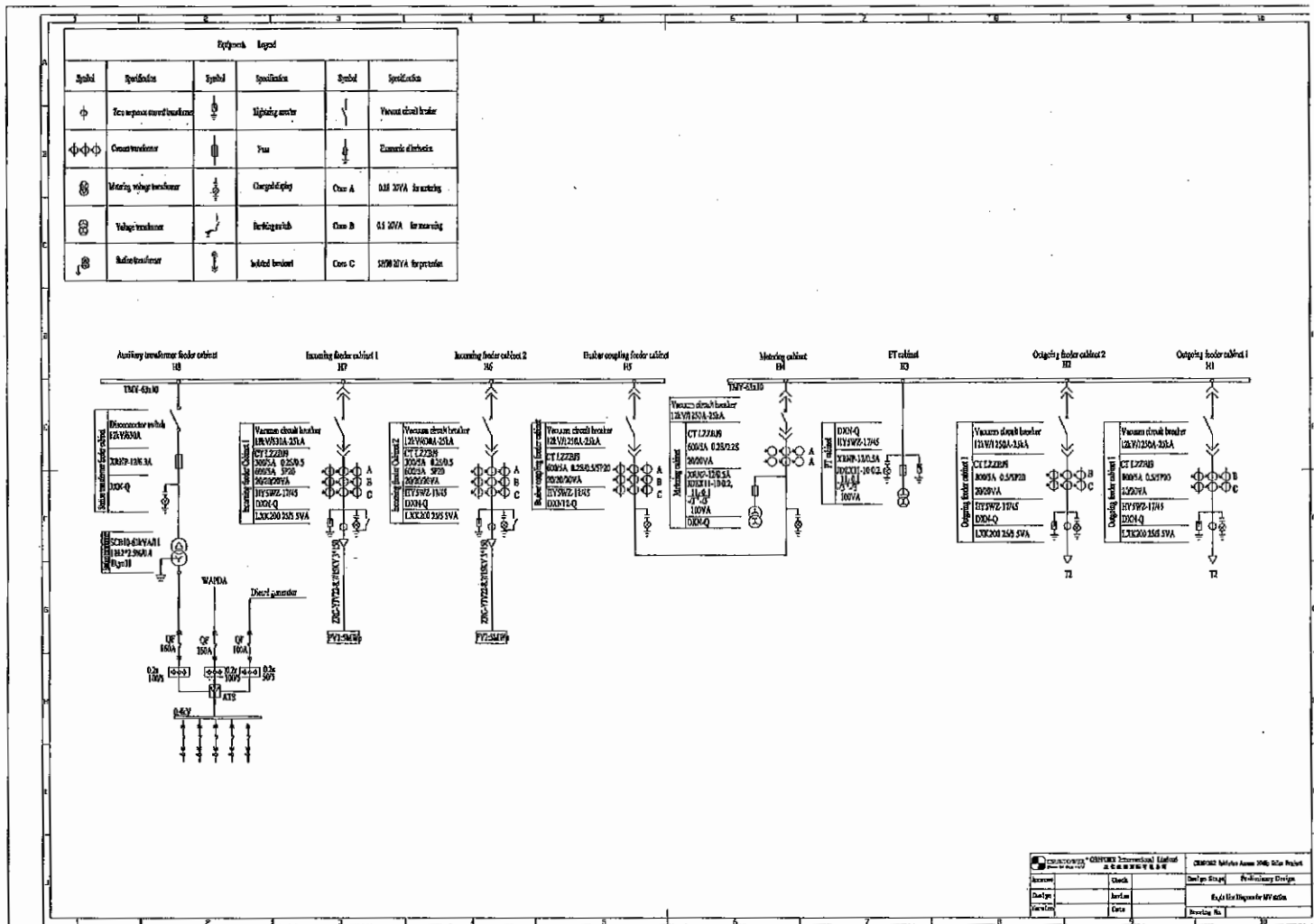




## Single Line Diagram of the Inverter Station of the Generation Facility/Solar Power Plant/Solar Farm



## Single Line Diagram of the MV Station of the Generation Facility/Solar Power Plant/Solar Farm



**Interconnection**  
**Arrangement/Transmission Facilities for Dispersal of Power**  
**from the Generation Facility/ Solar Power Plant/Solar Farm of**  
**Access Electric (Private) Limited (AEPL)**

The power generated from the Generation Facility/Power Plant/Solar Farm of AEPL shall be dispersed to the load center of IESCO.

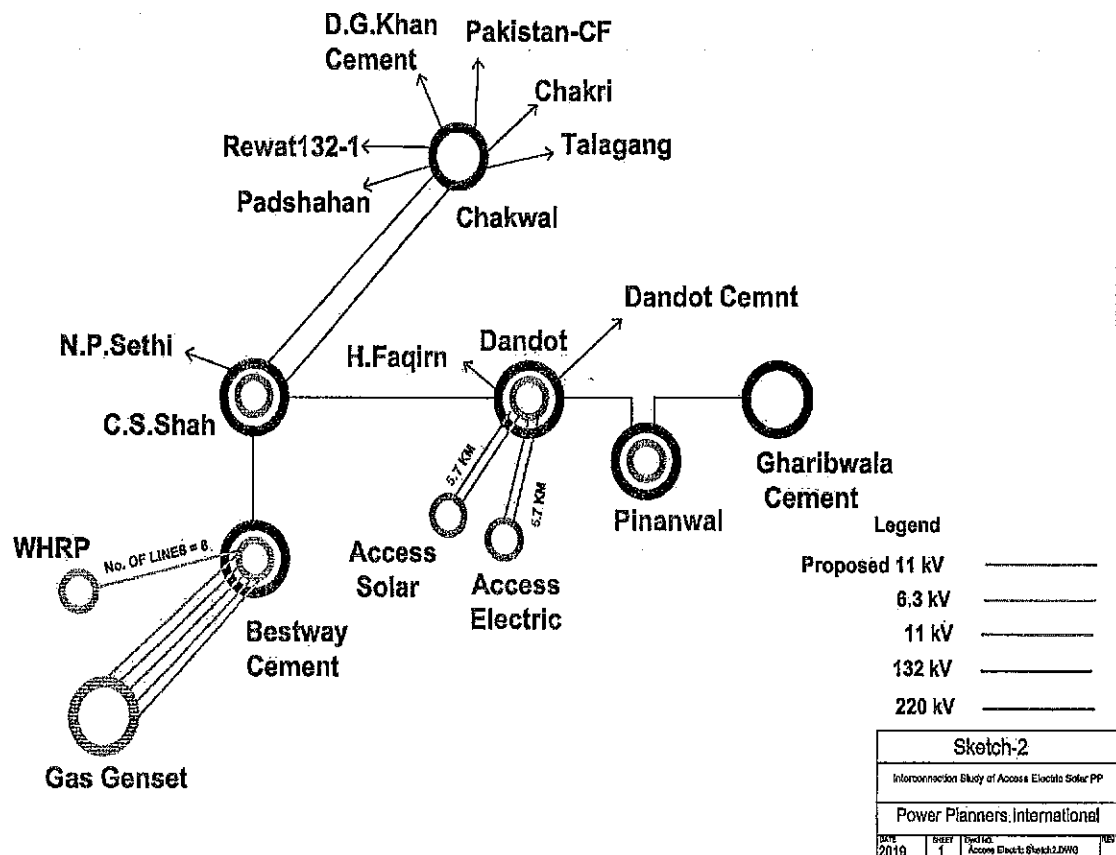
(2). The proposed Interconnection/dispersal arrangement for the project will be consisting of two (02) 11 KV Feeders using ACSR OSPREY Conductor connecting the Generation Facility/Power Plant/Solar Farm with 132 KV Dandot Grid Station located in the service area of IESCO.

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



## Single Line Diagram of the Interconnection Arrangement/Transmission Facilities for Dispersal of Power from the Generation Facility/ Solar Power Plant/Solar Farm

### Existing 132 kV Network Near Dandot With Access Solar PP



## **Detail of Generation Facility/Solar Power Plant/ Solar Farm**

### **(A). General information**

(i).	Name of Licensee	Access Electric (Private) Limited.
(ii)	Registered Office	C/O Horwath Chaudhary & Co. 25E, Main Market, Gulberg, Lahore.
(iii).	Principal Office	Unit No. 2, 17 Aziz Avenue, Canal Bank, Lahore.
(iii).	Plants Location	Near Village Hattar, Tehsil Pind Dadan Khan, District Jhelum in the Province of Punjab.
(iv).	Type of Generation Facility	Solar Photovoltaic (PV).

### **(B). Solar Power Generation Technology & Capacity**

(i).	Type of Technology	Photo Voltaic (PV) Cell
(ii).	System Type	Grid Connected
(iii).	Installed Capacity of Solar Farm (MW)	10.00 MWp

### **(C). Technical Details of Equipment**

<b>(a).</b>	<b>Solar Panels – PV Modules</b>	
(i).	Type of Module	Monocrystalline PV Module
(ii).	Type of Cell	Monocrystalline
(iii).	Dimension of each Module	2024 × 1004 × 35 mm
(iv).	Module Surface Area	2.032 sq.m.
(v).	No. of Panel/ Modules	25002 pcs

(vi).	Total Module Area	50806 sq.m	
(vii).	Total Land Area Used	17.5 Hectors (approximately)	
(viii).	Frame of Panel	Anodized Aluminum	
(ix).	Weight of one Module	22.8kg	
(x).	Module Output Warranty	For 1st year	For 2nd to 25th year
		97.5 %	The loss of power output shall not exceed 0.7% per year
(xi).	Number of Solar Cells in each module	144	
(xii).	Efficiency of module	19.7%	
(xiii).	Environment Protection System	Encapsulation and sealing arrangements for protection from environment.	
(xiv).	Maximum Power (Pmax)	400W, 0 ~ +5W	
(xv).	Voltage @ (Pmax)	42.0V	
(xvi).	Current @ Pmax	9.53A	
(xvii).	Open circuit voltage (Voc)	49.6V	
(xviii).	Short circuit current (Isc)	10.16A	
(xix).	Maximum system open Circuit Voltage	1500Vdc	
(b).	PV Array		
(i).	No. of Sub-arrays	309	
(ii).	Modules in a string	27 pcs	
(iii).	Total No. of Strings	926	
(iv).	Modules in Sub-Array	81 pcs/ sub-array	

(v).	Total Modules	25002
(c).	<b>PV Capacity</b>	
(i).	Total	10.00 MWp

(d).	<b>Inverters</b>		
(i)	Capacity of each unit	2220W	
(ii)	Inverter Model	PVH-L2220E	
(iii)	Manufacturer	TMEIC	
(iv)	Rated Input Voltage	800~1300Vdc	
(v)	Input Operating Voltage Range	800~1300Vdc	
(vi)	Number of Inverters	4	
(vii)	Total Power	8880kW	
(viii)	Efficiency	Max.:99%; EU: 98.5%	
(ix)	Max. Allowable Input voltage	1500V	
(x)	Max. Current	Input: 2834A; output: 2332A	
(xi)	Max Power Point Tracking Range	800~1300Vdc	
(xii)	Output electrical system	3 phase	
(xiii)	Rated Output Voltage	550V	
(xiv)	Rated Frequency	50/60Hz	
(xv)	Power Factor	>0.99	
(xvi)	Power Control	Adjustable from 0.85 leading to 0.85 lagging	
(xvii)	Environmental Enclosures	Operating Temperature Range	-20°C ~ +60°C (derating above 50°C)
		Relative Humidity	5% ~ 95% (non-condensing)

		Audible Noise		<70 dB
		Operating Elevation		3000m (derating above 2000m)
		Warranty Period		5 years
	Grid Operation Protection	(a)		Islanding protection
		(b)		short-circuit protection
		(c)		over/under voltage protection
		(d)		over/under current protection
		(e)		over/under frequency protection
		(f)		over temperature protection
		(g)		DC input protection
(e).	Junction Boxes Installed and fixed on main steel structure in Array Yard			
(i)	Number of Junction Box units	39		
(ii)	Input circuits in each box	24		
(iii)	Max. Input current for each circuit	10A		
(iv)	Max. Input voltage	1500V		
(v)	Power at each box	259.2kWp		
(vi)	Protection Level	IP65		
(vii)	Over-Current protection	Fuse		
(viii)	Output switch	315A, 1500V circuit breaker		
(ix)	Surge protection	1500V, Type		
(x)	Purpose of Junction Box	(a).	Combine groups of modules into sub-arrays that will be wired into the inverter.	
		(b).	Provide arrangement for disconnection for each of the groups.	



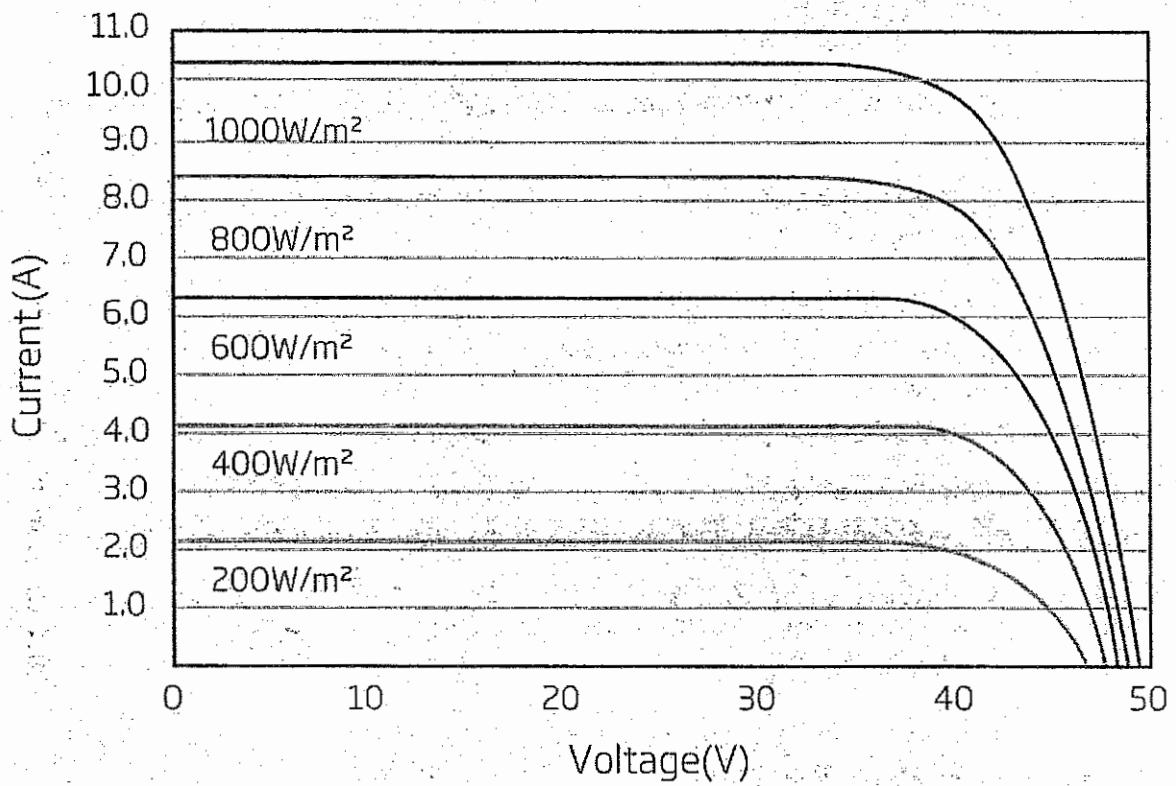
		(c).	To provide group array isolation.
		(d).	The current carrying ratings of the junction boxes shall be suitable with adequate safety factor to inter-connect the solar PV array.
		(e).	24 protected inputs at 15A to prevent backflow of short circuit current.
<b>(f)</b>	<b>Data Collecting System</b>		
<b>(i).</b>	<b>Weather Data</b>	(a).	Total radiation
		(b).	Ambient temperature
		(c).	Solar panel temperature
		(d).	Wind direction
		(e).	Wind speed
<b>(ii).</b>	<b>System Data</b>	(a).	DC input voltage(V)&current(A) of each Inverter (Phase, Line)
		(b).	Total DC power (kW) generated by PV array.
		(c).	AC output voltage(V)&current(A) of each Inverter (Phase, Total)
		(d).	AC output power(KW) & energy (kWh) of each Inverter
		(e).	Frequency(Hz)
		(f).	Power Factor(PF)
		(g).	Temperature inside inverter station
<b>(g)</b>	<b>Isolating Transformer</b>		
<b>(i)</b>	<b>Rating</b>	2220kva, 11±2x2.5%/0.55kV	
<b>(ii)</b>	<b>Type of Transformer</b>	Oil Natural Air Natural	
<b>(iii)</b>	<b>Input voltage</b>	0.55kV	
<b>(iv)</b>	<b>Output Voltage</b>	11kV	
<b>(v)</b>	<b>Purpose of Transformer</b>	Step Up Voltage, Galvanic Isolation	

		and Eliminate DC Current Injection
(vi)	Efficiency	>99%
<b>(h)</b>	<b>Outdoor Cubicle Control Room</b>	
(i)	Data record	Continuous logging with data logging Software
(ii)	Control Room System	Computerized Data Acquisition System
(iii)	Control room System Detail	Interfacing Hardware & Software, Industrial Type PC, which will be robust & rugged suitable to operate in the Control Room Environment
<b>(i)</b>	<b>Mounting Structure</b>	
	Structure	HDG steel / aluminum with concrete pile foundations
(i)	Tilt of Array Frame	$\pm 45^\circ$
(ii)	Array Specification	Certified for wind and seismic requirements
<b>(j)</b>	<b>Foundation Pillars</b>	
(i)	No. of Foundations	4017(Preliminary design)
(ii)	Foundation Structure	Reinforced concrete

**(D). Other Details**

(i)	COD of the Generation Facility/Solar Power Plant (Anticipated)	August, 2020
(ii)	Expected Life of the Generation Facility/Solar Power Plant from the COD	25 years

### V-I Curve of Solar Cell



**SCHEDULE-II**

## **SCHEDULE-II**

The Total Installed Gross ISO Capacity of the Generation Facility/Power Plant/Solar Plant (MW), Total Annual Full Load (Hours), Average Sun Availability, Total Gross Generation of the Generation Facility/Solar Farm (in kWh), Annual Energy Generation (25 years Equivalent Net Annual Production-AEP) KWh and Net Capacity Factor of the Generation Facility/Power Plant/Solar Farm of Licensee is given in this Schedule.



## SCHEDULE-II

(1).	Total PV Installed Capacity of Generation Facility	10,00 MWp
(2).	Average Sun Hour Availability/Day (Irradiation on Inclined Surface)	1775h
(3).	Days per Year	365
(4).	PV Plant Generating Capacity Annually (As Per Simulation)	17,748 MWh
(5).	Expected Total Generation in 25 years Life Span	443,694 MWh
(6).	Generation per Year from plant keeping 24 Hours Working under STC Condition	$10.00 \times 24 \times 365 = 87,600 \text{ MWh}$
(7).	Net Capacity Factor	20.26%

### Note

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