



February 04, 2019

**Mr. Iftikhar Ali Khan**  
Director  
Registrar Office, NEPRA  
Nepra Tower, Ataturk Avenue (East) G-5/1,  
Islamabad.

**Subject: Application of Atlas Energy Ltd. for grant of Generation License in respect of 10 MW Solar Power Projects at various sites**

I, **Maqsood Ahmad**, being the duly authorized representative of **Atlas Energy Limited** by virtue of BOARD RESOLUTION dated 04.02.2019, hereby apply to the National Electric Power Regulatory Authority for the grant of a **Generation License** to the **Atlas Energy Limited** pursuant to section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, and undertake to abide by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

A BANK DRAFT/ PAY ORDER in the sum of Rupees = 163,920/-, being the nonrefundable license application fee calculated in accordance with Schedule II to the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, is also attached herewith.

For & on behalf of

Atlas Energy limited

Maqsood Ahmad

**Chief Executive Officer**

**Certified True Copy of resolutions of the Board of Directors passed by  
circulation on February 4, 2019**

**Resolved:**

“That Mr. Maqsood Ahmed, Chief Executive Officer of the Company, be and is hereby authorised to file; (i) an application for grant of Generation License; (ii) any other clarification submission application petition or document in support thereof; (iii) to make any oral or written representations on behalf of the Company before the National Electric Power Regulatory Authority and any other body, organization, department judicial and quasi-judicial body in relation to the aforesaid filings and to do all other acts deeds, things and matters as may be deemed expedient in giving effect to the aforesaid resolution.

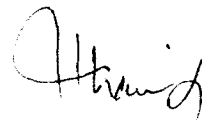
**Further Resolved:**

that Mr. Maqsood Ahmed, Chief Executive Officer of the Company may further delegate the aforesaid powers, in writing, to one or more persons, as deemed expedient from time to time.”

**Further Resolved:**

“that these resolutions duly certified by one of the Directors of the Company or the Company Secretary be communicated to the concerned parties which shall constitute the Company’s mandate to the concerned parties and shall remain in force until revoked/changed by notice in writing to the concerned parties.”

**Certified True Copy**



**Khalid Mahmood**  
Company Secretary



**Atlas Energy Limited**

**Registered Office:** 26 / 27 km, Lahore-Sheikhupura Road, Sheikhupura.  
**Ph:** (92-56) 3406192-94, 3406202, (92-42) 37332808-09, 37332610 **Fax:** (92-42) 37332812



B007438

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

LAHORE

**CERTIFICATE OF INCORPORATION ON CHANGE OF NAME**

[Under section 13 of the Companies Ordinance, 2016 (VI of 2016)]

Corporate Universal Identification No. 0099710

I hereby certify that pursuant to the provisions of section 11 or section 12 of the Companies Ordinance, 2016 (VI of 2016), the name of

**"ATLAS POWER LIMITED"**

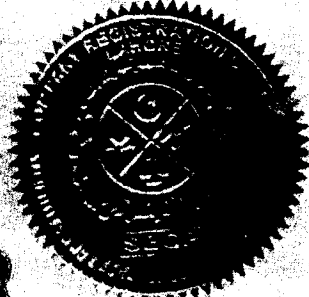
**"ATLAS ENERGY LIMITED"**

and that the said company has been incorporated as a company limited by shares under the provisions of the Companies Ordinance, 2016.

This change is subject to the condition that for a period of three months from the date of issue of this certificate, the company shall continue to mention its former name along with its registration and incorporation number on the outside of its registered office and every office or place in which its business is carried on and in every document or notice referred to in clauses (a) and (d) of section 22.

Given under my hand at Lahore this 25<sup>th</sup> day of November, Two Thousand and Sixteen.

Fee Rs. 5,000/-



(LIAQAT ALI DOLA)  
Additional Registrar

No. ARL/10391 Dated: 25/11/2016

CERTIFIED TO BE TRUE COPY

JOINT REGISTRAR OF COMPANIES  
COMPANY REGISTRATION OFFICE  
LAHORE

A008945



SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

COMPANY REGISTRATION OFFICE, LAHORE

**CERTIFICATE OF INCORPORATION**

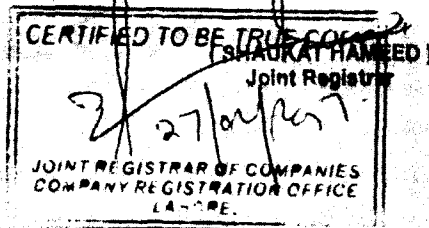
[Under section 32 of the Companies Ordinance, 1984 (XLVII of 1984)]

Corporate Universal Identification No. 00992710

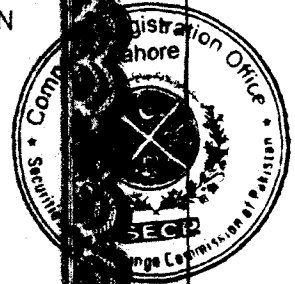
I hereby certify that **ATLAS POWERGEN LIMITED** is this day incorporated under the Companies Ordinance, 1984 (XLVII of 1984) and that the company is Limited by Shares.

Given under my hand at Lahore this Eighteenth day of May, Two Thousand and Sixteen.

Fee Rs. 52,000/-



No. ARL/ 29268 DATED: 18-05-2016



Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**Regulation # 3(5) (a) (ii): Certified Copies of Memorandum and  
articles of association (Certified by SECP)**

THE COMPANIES ORDINANCE, 1984  
(COMPANY LIMITED BY SHARES)

ARTICLES OF ASSOCIATION  
OF  
ATLAS ENERGY LIMITED

PRELIMINARY

*Table 'A' not to apply.*

- 1) The Regulations contained in Table A in the First Schedule to the Companies Ordinance, 1984 shall not apply to the Company except in so far as they are repeated or contained in these Articles (as modified and altered).

*Definitions.*

- 2) In these Articles, the following words and expressions shall have meanings as under, unless excluded by the subject or the context, namely:

**Articles** means these Articles of Association originally framed or as altered from time to time in accordance with the provisions of the Ordinance and the Articles.

**Board of Directors** means collectively the Directors of the Company holding office of Directors for the time being and from time to time.

**Chairman** means the Chairman of the Board of Directors appointed from time to time pursuant to these Articles.

**Chief Executive** means the Chief Executive for the time being of the Company appointed from time to time pursuant to the Articles.

**Commission** means the Securities and Exchange Commission of Pakistan constituted under the Securities and Exchange Commission of Pakistan Act, 1997.

**Company** means ATLAS ENERGY LIMITED.

**Directors** mean the Directors of the Company for the time being, including alternate Directors if any appointed by them.

**Dividend** includes a bonus.

**General Meeting** means an Annual General Meeting and/or an Extraordinary General Meeting.

**Member** means a member of the Company within the meaning of clause 21 of Section 2(1).

**Memorandum** means the Memorandum of Association of the Company as originally framed or as from time to time altered in accordance with the provisions of the Ordinance and the Articles.

**Month** means a calendar month according to the Gregorian Calendar.

**Office** means the Registered Office for the time being of the Company.

**Ordinance** means the Companies Ordinance, 1984 including all statutory modifications thereof for the time being in force and such Other law as may from time to time be passed in substitution or amendment thereof.

**Proxy** means an instrument in writing whereby a Member authorizes another to vote for him at a meeting or meetings and unless the context otherwise requires, includes an attorney duly constituted under a power of attorney.

**Register** means the Register of Members to be kept pursuant to Section 147.

**Section** means a section of the Ordinance.

**Special Resolution** has the meaning assigned thereto by clause (36) of Section 2(1).

**Seal** means the common seal of the Company.

**Secretary** means the Secretary for the time being of the Company.

**In writing and written** include printing, typewriting, lithography, Electronic transmission, including but not limited to facsimile, telex and Electronic mail or any other mechanical or Electronic process, as prescribed by section 3 of the Electronic Transactions Ordinance, 2000 or partly one and partly the other and other modes of representing or reproducing words in a visible form.

Unless the context otherwise requires, words signifying the singular number shall include the plural number and vice versa.

Unless the context otherwise requires, words signifying the masculine gender shall include the feminine gender.

Words importing persons shall include individuals, firms, companies, corporations, government state or agency or any association, trust or partnership (whether or not having a separately legal personality).

The heading and marginal notes are inserted for convenience only and shall not affect the interpretation or construction of these Articles.

#### **PUBLIC COMPANY**

- Public Company** 3) The Company is a public limited company and the Board of Directors shall have regard to the restrictions on the commencement of business imposed under section 146 of the Ordinance, so far as those restrictions are binding upon the Company.

#### **BUSINESS**

- Business of the Company.** 4) Any branch or kind of business which the Company is either expressly or by implication authorised to undertake may be undertaken by the Directors at such time or times as they shall think fit, and further may be suffered by them to be in abeyance whether such branch or kind of business may have been actually commenced or not so long as the Directors may deem it expedient not to commence or proceed with such branch or kind of business.

#### **MINIMUM SUBSCRIPTION**

- Minimum subscription** 5) For the purposes of Section 68(8), the minimum subscription on which the Board may proceed to allotment shall be Rs. 1,000,000 (Rupees one million only).

## SHARES

- Power to issue shares of different classes.*** 6) Subject to Section 90 and any rules in that regard made under the Ordinance, any share in the Company may be issued with such rights and restrictions as may from time to time be determined by the Company in General Meeting.
- Redeemable shares and securities.*** 7) Subject to Section 95(4)(a) and any rules in that regard made under the Ordinance, the Company may issue shares which are to be redeemed or any other redeemable security, on such terms and in such manner as may be provided in the said Section and rules.
- No partly paid shares to be issued.*** 8) The Company shall not issue partly paid shares. In the case of an issue of shares for cash, the amount payable on application shall be the full nominal amount of the share, except where shares are issued at a discount.
- Issue of shares at discount.*** 9) With the previous authority of the Company in General Meeting and the sanction of the Commission and upon otherwise complying with the provisions of Section 84, it shall be lawful for the Board to issue shares in the capital of the Company at a discount.
- Issue of shares.*** 10) The shares in the capital of the Company for the time being remaining unissued, including any new shares resulting from an increase in the authorized share capital, shall be under the control of the Board which may allot or otherwise dispose of the same to such persons on such terms and conditions, with such rights and privileges annexed thereto as the resolution creating the same shall direct, and if no such direction be given, as the Board shall determine either at par or at premium or subject to Article 8 above at a discount, with power to the Board to give any person the right to call for and be allotted shares of any class of the Company at par or at a premium or subject as aforesaid at a discount such option being exercisable at such times and in such manner and for such consideration, as the Directors think fit.
- Allotment of shares.*** 11) As regards any allotment of shares, the Board shall duly comply with the provisions of Sections 68 to 73 as may be applicable.
- Shares may be issued for consideration other than cash.*** 12) The Board may allot and issue shares in the capital of the Company as payment or part payment for any property / assets sold or transferred to the Company, or for services rendered to the Company in the ordinary course of its business, and shares so allotted shall be issued as fully paid up shares and if so issued, shall be deemed to be fully paid up shares.
- Commission for placing shares.*** 13) The Company may at any time pay a commission to any person for subscribing or agreeing to subscribe (whether absolutely or conditionally) for any shares or debentures of the Company or procuring or agreeing to procure subscriptions (whether absolute or conditional) for any shares or debentures of the Company, but so that the amount or rate of commission shall not exceed such amount or rate as is authorized by the Board of Directors (or such other rate as may be prescribed by the Commission under the Ordinance) of the price at which the shares are issued or of the nominal value of the debenture in each case subscribed or to be subscribed. In case any commission is to be paid, the Company shall comply with the provisions of Section 82 of the Ordinance.
- Brokerage*** 14) The Company may pay such brokerage as may be lawful in respect of any issue of shares or debentures.

- Registration as shareholders.** 15) Not more than four persons shall be registered as joint shareholders except in the case of executors or trustees of a deceased member. Shares may be registered in the name of any limited company or other corporate body.
- Joint shareholders.** 16) If any shares stand in the name of two or more persons, the person first named in the Register shall, as regards receipt of Dividend or service of notices and all or any other matters connected with the Company, except voting at the meeting and the transfer of shares, be deemed the sole holder.
- Death of joint shareholders.** 17) In the case of the death of anyone or more of the persons named in the Register as the joint holders of any share, the survivor or survivors shall be the only person or persons recognized by the Company as having any title to or interest in such share.

#### CERTIFICATES

- Members right to certificate.** 18) Every person whose name is entered as a Member in the Register shall be entitled to receive after allotment or registration of transfer one certificate for all his shares or several certificates each for one or more of his shares upon payment of such charge, if any, as the Board may determine for every certificate after the first.
- Issue of certificates.** 19) In accordance with the applicable laws, the certificates of title to shares and duplicates thereof, when necessary, shall be issued under the Seal of the Company and signed by one Director and countersigned by the Company Secretary or such officers of the Company as shall from time to time be authorized by the Board for the purpose. Every person whose name is entered as a member in the Register shall, without payment, be entitled to receive within ninety (90) days after allotment, or within forty-five (45) days of the application for registration of transfer, one (1) certificate for all the shares of each class registered in his name, or if the Board so approves to several certificates each for one (1) or more of such shares. However, in respect of each additional certificate, the Board shall be entitled to charge such fee as it may determine, from time to time. Every certificate of shares shall specify the number and denoting numbers of the shares in respect of which it is issued and the amount paid up thereon. The Board may, by resolution, determine either generally or in any particular case, that the signature of any such Director or officer of the Company may be affixed on share certificates by some mechanical or electronic means, or be printed thereon, in the mode and manner specified in such resolution.
- Certificates in the case of joint holders.** 20) The Company shall not be bound to issue more than one certificate in respect of a share or shares held jointly by two or more persons and delivery of a certificate for a share to anyone of the joint holders shall be sufficient delivery to all.
- Time for issue of certificates.** 21) Unless the conditions of issue of any shares, debentures or debenture stock of the Company otherwise provide, the Company shall within ninety days after the allotment and within forty five days after receipt by the Company of the application for transfer of any such shares, debentures or debenture stock, complete and have ready for delivery

the certificate of all shares, the debentures and the certificate of all debenture stock allotted or transferred, and unless sent by post or delivered to the person entitled thereto within the period aforesaid the Company shall immediately thereafter give notice to that person in the manner prescribed in these Articles for the giving of notices to Members that the certificate is ready for delivery.

**Lost or mutilated  
certificates.**

- 22) If a certificate of shares, debentures or debenture stock is proved to the satisfaction of the Company to have been lost or destroyed or, being defaced or, mutilated or torn, is surrendered to the Company, and the Company is requested to issue a new certificate in replacement thereof, the Company shall, after making such enquiry as it may deem fit, advise the applicant within thirty days from the date of application the terms and conditions (as to indemnity and otherwise and as to payment of the actual expenses incurred on such enquiry and of a fee not exceeding one rupee) on which the Company is prepared to issue a new certificate and a time for compliance therewith or of the reasons why the Company is unable to issue a new certificate, as the case may be, and in the former case if the applicant shall within the time allowed comply with the terms and conditions specified, the company shall issue a new certificate to the applicant within forty-five days from the date of application.

**TRANSFER OF SHARES**

**Execution of  
transfer.**

- 23) No transfer shall be registered unless a proper instrument of transfer together with the certificate(s) of shares has been delivered to the Company. The instrument of transfer of any share shall be signed both by the transferor and the transferee and the transferor shall be deemed to remain holder of the share until the name of the transferee is entered in the Register in respect thereof.

**Form of transfer.**

- 24) (i) The instrument of transfer of any share shall be substantially in the following form or as near thereto as circumstances will admit:

**ATLAS ENERGY LIMITED**

I \_\_\_\_\_ of \_\_\_\_\_ in consideration of the sum of Rupees \_\_\_\_\_ (Rs \_\_\_\_\_ only) paid to me by \_\_\_\_\_ of \_\_\_\_\_ (the "Transferee"), do hereby transfer to the Transferee \_\_\_\_\_ the share(s) numbered \_\_\_\_\_ to \_\_\_\_\_ inclusive, in ATLAS ENERGY LIMITED to hold unto the Transferee his executors, administrators and assigns, subject to the several conditions on which I held the same at the time of the execution hereof, and I, the Transferee, do hereby agree to take the said share(s) subject to the conditions aforesaid.

As witness our hands this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

WITNESS:

Signature \_\_\_\_\_  
Transferor

Signature \_\_\_\_\_  
Name \_\_\_\_\_  
CNIC No \_\_\_\_\_  
Full Address \_\_\_\_\_

WITNESS:

Signature \_\_\_\_\_  
Transferee

Signature \_\_\_\_\_  
Name \_\_\_\_\_  
CNIC No \_\_\_\_\_  
Full Address \_\_\_\_\_

CNIC No/ Passport No \_\_\_\_\_  
in case of foreigner \_\_\_\_\_  
Full Name \_\_\_\_\_  
Father's/Husband's \_\_\_\_\_  
Name \_\_\_\_\_  
Nationality \_\_\_\_\_  
Occupation \_\_\_\_\_  
Full Address \_\_\_\_\_

- (ii) Every instrument of transfer shall be left at the office for registration, accompanied by the certificate of the shares to be transferred, and such other evidence as the Board may require to prove the title of the transferor or his right to transfer the shares, and upon payment of the proper fee, the transferee shall be registered as a member in respect of such shares. The Board may waive the production of any certificate upon evidence satisfactory to them of its loss or destruction.

***Refusal to register transfer.***

- 25) The Directors shall not refuse to register any transfer of fully paid up shares unless the instrument of transfer is defective or invalid or is not accompanied by the certificate of shares to which it relates or due to non-payment of a fee, if any, as prescribed by the Board of Directors. The Directors may also decline to recognize any instrument of transfer unless it is accompanied, in addition to the certificate of shares to which it relates, by such other evidences as the Directors may reasonably require to show the right of transferor to make the transfer. The Directors may, on such terms and subject to such conditions, including without limitation the submission of indemnities, as the Directors may in their absolute discretion, determine, waive the requirement for the production of any certificate upon evidence satisfactory to them of its loss or destruction.

If the Board refuses to register a transfer of shares, it shall within 30 (thirty) days or such other period as may be required by the applicable laws, after the date on which the instrument of transfer was lodged with the Company, send to the transferee and the transferor notice in writing of the refusal indicating the defect or invalidity to the transferee, who shall, after removal of such defect or invalidity, be entitled to re-lodge the instrument of transfer with the Company. Furthermore, the Directors shall not incur any liability for, in a bonafide manner, registering or acting upon a transfer of shares, although the same may, by reason of any fraud or other cause not known to the Directors, be legally inoperative or insufficient to pass the property in the shares proposed or professed to be transferred, and although the transfer may, as between the transferor and transferee, be liable to be set aside, and notwithstanding that the Directors may have notice that such instrument of transfer was signed or executed and delivered by the transferor in blank as to the name of the transferee or the particulars of the shares transferred, or otherwise in defective manner.

***Register may be closed.***

- 26) On giving seven days prior notice, the transfer books and the Register may be closed during such time as the Board of Directors think fit, not exceeding the whole forty-five days in each year but not exceeding thirty days at a time.

**TRANSMISSION OF REGISTERED SHARES**

***Nominees, executor, administrators and heirs.***

- 27) The executor or administrator of a deceased member or a person nominated under Section 80 or the holder of a succession certificate shall be the only persons recognized by the Company as having any title to the shares, except in cases of joint-holders, in which case the surviving holder or holders, or the executor or administrator of the last surviving holder shall be the only person entitled to be so recognized. The Company shall not be bound to recognize such executor or administrator unless the executor or administrator shall have obtained probate or letters of administration or other legal representation, as the case may be, from a court of competent

jurisdiction provided nevertheless that in special cases as determined by the Board, it shall be lawful for the Board to dispense with the production of probate or letters of administration or such other legal representation, including a succession certificate, upon such terms as to indemnify or otherwise as the Board may deem fit.

***Right of person entitled by death or insolvency.***

- 28) (a) Any person becoming entitled to shares in consequence of the death or insolvency of the holder of such shares, shall have the right, subject to verification by the Board and on giving such indemnities as may be required, to receive and give a discharge for any Dividend or other moneys payable or other advantages arising in respect of the shares to which he would be entitled if he were

the registered holder of the shares, but he shall have no right to receive notice of, attend or vote at any General Meetings or (save as aforesaid) to any one of the right or privileges of Members, in respect of the shares, unless and until he is named on the Register as a holder thereof.

- (b) The Directors shall have the same right to decline or suspend registration as they would have had in the case of a transfer of the share by that Member before his death or insolvency as the case may be.

#### **ALTERATION OF CAPITAL**

***Power to increase, consolidate, sub-divide and cancel capital.***

- 29) The Company may by ordinary resolution and subject to compliance with the requirements of Section 92:
- (a) increase the authorized share capital by such sum, to be divided into shares of such amount, as the resolution shall prescribe;
  - (b) consolidate and divide its share capital into shares of larger amount than its existing shares;
  - (c) by sub-division of its existing shares or any of them, divide the whole or any part of its share capital into shares of smaller amount than fixed by the Memorandum; and
  - (d) Cancel any shares which, at the date of the passing of the resolution have not been taken or agreed to be taken by any person and diminish the amount of its share capital by the amount of the shares so cancelled.

***Offers of shares to existing Members.***

- 30) The Board may from time to time increase the issued share capital by such sum as they think fit. Further issue of shares shall be carried out in accordance with the provisions of the Ordinance. Provided that fractional shares shall not be offered and all fractions less than a share shall be consolidated and disposed of by the Company and the proceeds from such disposition shall be paid to a charitable institution or as decided by the Board of Directors.

***Ranking of new shares.***

- 31) Except so far as otherwise provided by the conditions of issue, or by these Articles, any capital raised by the creation of new shares shall be considered part of the original capital, ranking *pari passu* with the existing shares, and shall be subject to the provisions herein contained with reference to transfer and transmission, and otherwise.

***Reduction of capital.***

- 32) Subject to Section 96, the Company may, by Special Resolution, reduce its share capital in any manner consistent with the law.

***Power to modify rights***

- 33) Variations of the shareholders rights may be effected by the Company in accordance with the provisions of Section 108.

***Share premium account.***

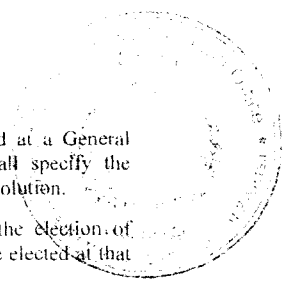
- 34) The share premium account maintained pursuant to Section 83(1) may, be applied by the Company:
- (a) in writing off the preliminary expenses of the Company;
  - (b) in writing off the expenses of, or the commission paid or discount allowed on, any issue of shares or debentures of the Company;
  - (c) in providing for the premium payable on the redemption of any redeemable preference shares or debentures of the Company; or
  - (d) in paying up unissued shares of the Company to be issued as fully paid bonus shares.

### GENERAL MEETINGS

- Statutory Meeting* 35) The statutory general meeting of the company shall be held within the period required by section 157.
- Annual General Meeting.* 36) A General Meeting, designated as the Annual General Meeting, shall be held in accordance with the provisions of Section 158, within eighteen Months from the date of its incorporation of the Company and thereafter once at least in every calendar year, within a period of four Months following the close of each financial year of the Company, but in such manner that an Annual General Meeting is held in every calendar year and not more than fifteen Months elapses between any two consecutive Annual General Meetings, and subject to the above, each such Annual General Meeting shall be held at such time as may be determined by the Board. Unless otherwise allowed by the Commission, Annual General Meetings shall be held in the town in which the Office is situated, and each such Annual General Meeting shall be held at such location in that town as the Board may determine.
- Other meetings.* 37) All General Meetings other than Annual General Meetings shall be called Extraordinary General Meetings.
- Extraordinary General Meeting.* 38) The Board may, whenever they think fit, call an Extraordinary General Meeting and Extraordinary General Meetings shall also be called on such requisition, or in default, may be called by such requisitionists, as provided for by Section 159.

### NOTICE OF GENERAL MEETINGS

- Notice of meetings.* 39) (a) Notice of a General Meeting shall be sent in the manner hereinafter mentioned at least twenty one days before the date on which the meeting is to be convened to all such persons as are under these Articles or the Ordinance entitled to receive such notices from the Company and shall specify the place, day and hour of the meeting and the nature of the business to be transacted thereat.
- (b) In the case of an emergency affecting the business of the Company an Extraordinary General Meeting may be convened by such shorter notice than that specified in Article 39 (a) above and as the Registrar of Companies may authorize.
- (c) Where any special business, that is to say business other than consideration of the accounts, balance sheet and the reports of the Directors and Auditors, the declaration of dividend, the appointment and fixation of the remuneration of Auditors and the election of Directors (all such matters being herein referred to as ordinary business) is to be transacted at a General Meeting, there shall be annexed to the notice of such meeting a statement setting out all such facts as may be material for the consideration of such business including the nature and extent of the interest (whether direct or indirect) of any Director, and where the item of business involves approval of any document, the time and place appointed for inspection thereof, and to the extent applicable such a statement shall be annexed to the notice also in the case of ordinary business to be transacted at the meeting.
- (d) Where a resolution is intended to be proposed for consideration at a General Meeting in some special or particular form, a copy thereof shall be annexed to the notice convening such meeting.

- 
- (e) If a Special Resolution is intended to be passed at a General Meeting, the notice convening that meeting shall specify the intention to propose the resolution as a Special Resolution.
  - (f) A notice for a General Meeting convened for the election of Directors shall state the number of Directors to be elected at that meeting and the names of the retiring Directors.
  - (g) The notice of every General Meeting shall prominently specify that a proxy may be appointed who shall have the right to attend, demand and join in demanding a poll and vote on a poll and speak at the meeting in place of the Member appointing him and shall be accompanied by a form of proxy acceptable to the Company.

***Omission to  
give notice.***

- 40) The accidental omission to give notice of a meeting to, or the non-receipt of notice of a meeting by, any person entitled to receive notice shall not invalidate the proceedings at that meeting.

**PROCEEDINGS AT GENERAL MEETINGS**

***Quorum.***

- 41) No business shall be transacted at any General Meeting unless a quorum is present at the time when the meeting proceeds to business; save as herein otherwise provided (unless specified otherwise in the Ordinance) at least two Members present in person or by proxy representing twenty-five per cent (25%) of the total voting power shall be a quorum.

A company being a member of the Company and present by a representative duly appointed in pursuance of Section 162, shall be deemed to be a Member present personally for the purpose of this Article.

***Lack  
of quorum.***

- 42) If within half an hour from the time appointed for the meeting a quorum is not present, the meeting, if called upon the requisition of Members, shall be dissolved; in any other case, it shall stand adjourned to the same day in the next week at the same time and place, and, if at the adjourned meeting a quorum is not present within half an hour from the time appointed for the meeting the Members present, being not less than two, shall be a quorum.

***Chairman of  
meeting.***

- 43) The Chairman, if any, of the Board of Directors shall preside as Chairman at every General Meeting of the Company or if there is no such Chairman or if he shall not be present within fifteen (15) minutes after the time appointed for the holding of the meeting or is unwilling to act, any one of the Directors present may be elected to be Chairman of the meeting, or if no director is present, or if all the Directors present decline to take the chair, the Members present shall choose one of their members to be Chairman of the meeting.

***While chair  
remains vacant.***

- 44) No business shall be discussed at any General Meeting except the election of a chairman so long as the chair is vacant.

***Decision on  
resolutions.***

- 45) (i) At a General Meeting, a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is (before or on the declaration of the show of hands) demanded:
  - (a) by the chairman of the meeting; or
  - (b) by at least one Member present in person or by proxy if not more than seven such members are personally present, and by two such members present in person or by proxy if more than seven such members are personally present; or
  - (c) by any Member or Members present in person or by proxy holding not less than one-tenth of the issued capital which carries voting rights.

(ii) Unless a poll be demanded, at any General Meeting a declaration by the Chairman of the meeting that a resolution has on a show of hands been carried, or carried unanimously, or by a particular majority, or lost and an entry to that effect in the book containing the minutes of the proceedings of the Company shall until the contrary is proved, be evidence of the fact without proof of the number or proportion of the votes recorded in favour of or against such resolution.

- Manner of taking of poll.*** 46) If a poll is demanded, it shall be taken in accordance with the provisions of Section 168, and the result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.
- Casting vote.*** 47) Every question submitted to a meeting shall be decided in the first instance by a show of hand and in case of equality of votes, the Chairman shall, both on a show of hands and at the poll, have a casting vote in addition to the vote or votes to which he may be entitled as a Member and/or proxy or corporate representative.
- Timing of polls.*** 48) A poll demanded on the election of a Chairman or on a question of adjournment shall be taken forthwith. A poll demanded on any other questions shall be taken at such time, not being more than fourteen days from the day on which the poll is demanded, as the Chairman of the meeting directs.
- Business may proceed notwithstanding demand of poll*** 49) The demand of a poll shall not prevent the continuance of the meeting for the transaction of any business other than the question on which a poll has been demanded.

#### **VOTES OF MEMBERS**

- Right to vote.*** 50) Subject to any special rights or restrictions as to voting upon which any share may be issued or may for the time being be held, on a show of hand, every Member present in person and being a holder of ordinary shares shall have one (1) vote and every person present as general proxy who is not a Member of the Company or who is a Member not qualified to vote on behalf of a holder or holders of ordinary share shall have one (1) vote and upon a poll every Member present in person or by Proxy shall have one (1) vote for every share held by him in respect of which he is entitled to vote.  
In case of an election or removal of a Director, the provisions of Section 178 and Article 68 and 69 respectively shall apply.
- Procedure where a company is a Member of the Company.*** 51) Where a company or other corporation is a Member of the Company, a person duly appointed to represent such company at a meeting of the Company in accordance with the provisions of the Ordinance, shall not be deemed to be a proxy and shall be entitled to exercise the same powers on behalf of the Company or corporation which he represents as that company or corporation could exercise if it were an individual Member of the Company, present in person. The production before or at the meeting of a copy of such resolution duly signed by one director or secretary of such company or corporation and certified by him as being a true copy of the resolution shall be accepted by the Company as sufficient evidence of the validity of his appointment. A company or corporation which is a Member of the Company but which is not resident in Pakistan may appoint a representative as aforesaid by facsimile transmission which, if purporting to be sent by such company or corporation, need not be certified as a true copy as aforesaid.

*Voting shares in different ways.*

- 52) On a poll, a Member entitled to more than one vote need not, if he votes, use all his votes or cast all the votes he uses in the same way.

*Joint holders.*

- 53) In the case of joint holders, the vote of the senior holder present, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint holders; and for this purpose seniority shall be determined by the order in which their names stand in the Register.

*Member of unsound mind.*

- 54) A Member of unsound mind, or in respect of whom an order has been made by any court having jurisdiction in lunacy may vote, whether on a show of hands or on a poll, by his committee or other legal guardian and any such committee or guardian may, on a poll, vote by proxy.

*Objections to Votes.*

- 55) No objection shall be raised to the qualification of any voter except at the meeting or adjourned meeting at which the vote objected to is given or tendered, and every vote not disallowed at such meeting shall be valid for all purposes. Any such objection made in due time shall be referred to the Chairman of the meeting, whose decision shall be final and conclusive.

*Votes by proxy.*

- 56) On a poll, votes may be given either personally (including without limitation a representative of a company or corporation authorized under Article 51 of these Articles) or by proxy.

*Proxy to be in writing.*

- 57) The instrument appointing a proxy shall be in writing under the hand of the appointer or of his attorney duly authorized in writing, or, if the appointer is a corporation, either under seal or under the hand of an officer or attorney duly authorized. A proxy need not be a Member of the Company.

*Instrument appointing proxy to be deposited.*

- 58) The instrument appointing a proxy and the power of attorney or other authority (if any) under which it is signed, or a notarially certified copy of that power or authority, shall be deposited at the Office not less than forty eight hours before the time for holding the meeting at which the person named in the instrument proposes to vote, and in default the instrument of proxy shall not be treated as valid.

*Form of proxy.*

- 59) An instrument appointing a proxy shall, as nearly as circumstances will admit, be in the following form or in any other form which the Board may approve:

**ATLAS ENERGY LIMITED**

"I/We \_\_\_\_\_ being a member of ATLAS ENERGY LIMITED and entitled to \_\_\_\_\_ votes, do hereby appoint \_\_\_\_\_ of \_\_\_\_\_, failing him, \_\_\_\_\_ of \_\_\_\_\_ as my/our proxy to vote for me/us and on my/our behalf, at the Annual or Extraordinary (as the case may be) General Meeting of the Company to be held on the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_ and at any adjournment thereof.

Signed by me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_".

(Signature of Member)

Witness to the Signature:

I,

Full Name & Address:

*Proxy may demand poll.*

- 60) The instrument appointing a proxy shall be deemed to confer authority to demand or join in demanding a poll.

***Revocation of  
authority***

- 61) A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death or insanity of the principal or revocation of the proxy or of the authority under which the proxy was executed or the transfer of the shares in respect of which the proxy is given, provided that no intimation in writing of such death, insanity, revocation or transfer as aforesaid shall have been received by the Company at the Office before the commencement of the meeting or adjourned meeting at which the proxy is used.

**DIRECTORS**

***Number of  
Directors.***

- 62) The minimum number of Directors of the Company shall be three. The Board shall fix the number of Directors of the Company not later than thirty five days before convening of the General Meeting at which Directors are to be elected, and the number so fixed shall not be changed except with prior approval of the General Meeting of the Company.

***First Directors.***

- 63) The first Directors of the Company shall be as follows:
1. Mr. Saquib Hussain Shirazi
  2. Mr. Fahim Ali Khan
  3. Mr. Maqsood Ahmed

***Election of  
Directors.***

- 64) Subject to the provisions of these Articles and the Ordinance, the Directors shall be elected by the Members in General Meeting.

***Period of office of  
elected Directors.***

- 65) A Director elected by the Members in General Meeting shall hold office for a period of three years following the date from which his election is effective unless he resigns earlier, becomes disqualified from being a Director or otherwise ceases to hold office.

***Casual vacancies.***

- 66) Any casual vacancy occurring among the Directors may be filled up by the Directors, and a person so appointed shall only hold office for the remainder of the term of the Director in whose place he is appointed. The Company shall, prior to every such appointment, secure in the form prescribed for this purpose, the consent and certificate of the person concerned consenting to act as a Director and certifying that he is not ineligible to become a Director and shall within fourteen days of his appointment file such consent with the Registrar of Companies as required by Section 184.

***Eligibility for  
election as  
Director.***

- 67) The Members in General Meeting shall elect the Directors from amongst persons who, not being ineligible in accordance with Section 187, offer themselves for election as Directors in accordance with this Article. Any person claiming to be eligible who desires to offer himself for election shall, whether he is a retiring Director or not, file with the Company not later than fourteen days before the date of the General Meeting at which Directors are to be elected, a notice that he, being eligible, intends to offer himself for election as a Director at that meeting and that he consents to act as a Director if elected. If such person is elected a Director, then the Company shall file his consent to act as a Director with the Registrar of Companies within fourteen days of his election as required by Section 184. A person offering himself for election as a Director may withdraw his candidature at any time before the holding of the election and may do so by withdrawing the notice in which he offered himself for election. Not later than seven days before the date of the meeting, the Company will notify the Members of the persons offering themselves for election as Directors at such meeting.

***Procedure for election of Directors.***

68) The provisions of this Article shall apply for the election of Directors by the Members in General Meeting from amongst the candidates eligible for election, namely:

(a) every Member present in person or by proxy shall have such number of votes as is equal to the product of the number of shares carrying the right to vote held by him and the number of Directors to be elected;

(b) the number of votes calculated in accordance with the preceding clause (a) may be given to a single candidate or may be divided between any two or more candidates in such manner as the person voting may choose; and

(c) the candidate who gets the highest number of votes shall be declared elected as Director and then the candidate who gets the next highest number of votes shall be so declared and so on until the total number of Directors to be elected has been so elected.

***Removal of Directors.***

69) The Company in General Meeting may remove a Director from office by a resolution passed with the requisite number of votes determined in accordance with the provisions of Section 181.

***Qualifying share.***

70) The qualification of a Director, except for a nominee under Section 183 or a Director covered by the proviso to Section 187(h) shall be holding of a share in the Company of the nominal value of Rs. 10/- . A first Director may act before acquiring his qualification, but shall in any case acquire the same within two months from his appointment and he shall be deemed to have agreed to take the said share from the Company, and the same shall be allotted to him accordingly.

***Remuneration of Directors.***

71) The remuneration of the Directors shall, from time to time, be determined by the Board.

***Special remuneration.***

72) Any Director who is an employee of the Company or who serves on any committee or who devotes special attention to the business of the Company, or who otherwise performs services which in the opinion of the Directors are outside the scope of the ordinary duties of a Director, may be paid such remuneration as the Board may determine.

**ALTERNATE DIRECTORS**

***Alternate Directors.***

73) A Director who is about to leave or is absent for a period of three Months or more from Pakistan may with the approval of the Directors appoint any person who is eligible under Section 187 for appointment as a Director to be an Alternate Director during his absence from Pakistan and such appointment shall have effect and such appointee, whilst he holds office as an alternate Director, shall be entitled to exercise in place of his appointer all the functions of his appointer as a Director of the Company but he shall ipso facto vacate office as and when his appointer returns to Pakistan or vacates office as a Director or removes the appointee from office. Any appointment or removal under this Article shall be effected by notice in writing under the hand of the Director making the same. Such alternate Director may be one of the Directors of the Company, in which case he shall be entitled to act in both capacities. An alternate Director need not hold any share qualification.

## **POWERS AND DUTIES OF DIRECTORS**

### **Borrowing Powers**

- Borrowing powers.*** 74) (a) The Directors may exercise all the powers of the Company to raise money otherwise than by the issue of shares and to mortgage or charge its undertaking or property or any part thereof and to issue debentures and other securities whether outright or as security for any obligation or liability or debt of the Company to any third party.
- (b) In exercising the aforesaid powers of the Company, the Directors may, from time to time and on such terms and conditions as they think fit, raise money from banks and financial institutions and from other persons under any permitted system of financing, whether providing for payment of interest or some other form of return, and in particular the Directors may raise money on the basis of mark-up on price, musharika, mudaraba or any other permitted mode of financing, and without prejudice to the generality of the foregoing, the Directors may exercise all or any of the powers of the Company arising under Section 196(2).
- (c) Subject to the provisions of Article 75(a) in regard to the issue of securities, the Directors may exercise all or any of the powers of the Company arising under Sections 19(2), 87, 120 and 196 (2) and in particular the Directors may issue any security as defined in Section 2(1)(34) or may issue any instrument or certificate representing redeemable capital as defined in Section 2(1)(30A) or participatory redeemable capital as defined in Section 2(1)(25).

### **Other Powers and Duties**

- General powers of Company vested in Directors.*** 75) (a) The business of the Company shall be managed by the Directors, who may exercise all such powers of the Company as are not by the Ordinance or any statutory modification thereof for the time being in force or by these Articles are required to be exercised by the Company in General Meeting, subject nevertheless to any regulation of these Articles, to the provisions of the Ordinance, and to such regulations being not inconsistent with the aforesaid regulations or provisions, as may be prescribed by the Company in General Meeting; but no regulation made by the Company in General Meeting shall invalidate any prior act of the Directors which would have been valid if that regulation had not been made.
- (h) A resolution at a meeting of the Directors duly convened and held shall be necessary for exercising the powers of the Company specified in Section 196(2).

- Power of Attorney.*** 76) The Directors may from time to time and at any time by power of attorney appoint any company, firm or person or body of persons, whether nominated directly or indirectly (including any Director or officer of the Company) by the Directors, to be the attorney or attorneys of the Company for such purposes and with such powers, authorities and discretions (not exceeding those vested in or exercisable by the Directors under these Articles) and for such period and subject to such conditions as they may think fit, and any such powers of attorney may contain such provisions for the protection and convenience of persons dealing with any such attorney as the Directors may think fit and may also authorize any such attorney to delegate all or any of the powers, authorities and discretions vested in him; and without prejudice to the generality of the foregoing any such

power of attorney may authorize the attorney to institute, conduct, defend, compound or abandon any legal proceedings by or against the Company, whether generally or any particular case.

***Official seal for use abroad.***

- 77) The Company may exercise the powers conferred by Section 213 with regard to having an official seal for use abroad, and such powers shall be vested in the Directors.

***Office of profit.***

- 78) A Director of the Company or a firm of which such Director is a partner or a private company of which such Director is a director may with the consent of the Company in General Meeting hold any office of profit under the Company provided that no such consent is required where the office held is that of Chief Executive or a full time employee or legal or technical adviser or banker.

***Contracting with Company.***

- 79) Subject to authorization being given by the Directors in accordance with Section 216, a Director shall not be disqualified from contracting with the Company either as vendor, purchaser or otherwise, nor shall any such contract or arrangement entered into by or on behalf of the Company with any company or partnership of or in which any Director of the Company shall be a member or otherwise interested be avoided nor shall any such Director so contracting or being such member or so interested be liable to account to the Company for any profit realized by any such contract or arrangement by reason of such Director holding that office or of the fiduciary relation thereby established.

***Disclosure of interests.***

- 80) A Director who, or whose spouse or minor child, is in any way, whether directly or indirectly, concerned or interested in any contract or arrangement or proposed contract or arrangement with the Company shall disclose the nature of such concern or interest at a meeting of the Directors in accordance with Section 214.

***Where Director's interest lies in appointment of Chief Executive etc.***

- 81) Where by any contract or resolution of the Directors, an appointment or a variation in the terms of an existing appointment is made (whether effective immediately or in the future) of a Chief Executive, whole time Director or Secretary of the Company, in which appointment any Director of the Company is, or after the contract or resolution becomes, in any way, whether directly or indirectly, concerned or interested, the Company shall inform the Members of such appointment or variation in the manner required by Section 218 and shall comply with the requirements of that Section in regard to the maintaining of such contracts and resolutions open for inspection by Members at the Office, the provision of certified copies thereof and extracts there from and otherwise.

***Prohibition of voting by interested Directors.***

- 82) Except as provided in Section 216, a Director shall not vote in respect of any contract or arrangement in which he is either directly or indirectly concerned or interested nor shall his presence count for the purpose of forming a quorum at the time of any such vote; and if he does so vote, his vote shall not be counted.

***Register of contracts, arrangements and appointments.***

- 83) The Company shall comply with the provisions of Section 219 of the Ordinance with regard to the keeping of a register and the entry therein of the particulars of all contracts and arrangements or appointments of the kind referred to in Sections 214, 215, 216 or 218 of the Ordinance separately for each Section, and with regard to maintaining such register open for inspection by Members at the Office, the provision of certified copies thereof and extracts there from and otherwise.

***Interested  
directorships.***

- 84) A Director of the Company may be or become a director of any other company promoted by the Company or in which the Company may be interested as a vendor, shareholder or otherwise and no such Director shall be accountable for any benefits received as a director or member of such other company.

***Signing powers.***

- 85) All cheques, promissory notes, drafts, bills of exchange and other negotiable instruments, and all receipts for moneys paid to the Company, shall be signed, drawn, accepted, endorsed, or otherwise executed, as the case may be, in such manner as the Directors shall from time to time by resolution determine.

***Minutes of  
meetings.***

- 86) The Directors shall cause minutes of all Board meeting, committee of Directors meeting and General Meeting of the Company to be made in books provided for the purpose and kept at the office:

- (a) of all appointments of officers made by the Directors;
- (b) of the names of the Directors present at each meeting of the Directors and of any committee of Directors;
- (c) of all resolutions and proceedings at all meetings of the Company, and of the Directors and of committee of Directors;

and the Directors present at any meeting of Directors or committee of Directors and all Members and proxies of Members present at any General Meeting shall sign their names in books to be kept for that purpose; and such minutes of such a meeting if purporting to be signed by the chairman thereof, or by chairman of the next succeeding meeting of the same body, shall be sufficient evidence without any further proof of the facts therein stated.

***Payment of  
pensions.***

- 87) The Directors on behalf of the Company may pay a gratuity or pension or allowance on retirement to any Director who has held any other salaried office or place of profit with the Company or to his widow or dependents and may make contributions to any fund and pay premiums for the purchase or provision of any such gratuity or pension or allowance.

**DISQUALIFICATION OF DIRECTORS**

***Disqualification of  
Directors.***

- 88) A Director shall ipso facto cease to hold office if:-
- (a) he becomes ineligible to be appointed as a Director on any one or more of the grounds specified in Section 187, or
  - (b) he absents himself from three consecutive meetings of the Directors or from all meetings of the Directors for a continuous period of three Months, whichever is the longer, without leave of absence from the Directors; or
  - (c) he or any firm of which he is a partner or any private company of which he is a director without the sanction of the Company in General Meeting accepts or holds any office of profit under the Company other than that of a chief executive or a legal or technical adviser or a banker; or
  - (d) he fails to obtain within two Months from the effective date of his appointment or at any time thereafter ceases to hold, the share qualification necessary for his appointment.

## PROCEEDINGS OF DIRECTORS

- Meetings of Directors.** 89) The Directors may meet together for the despatch of business, adjourn and otherwise regulate their meetings as they think fit. Except or otherwise provided herein questions arising at any meeting shall be decided by a majority of votes. In case of an equality of votes, the Chairman shall have a second or casting vote; A Director may, and the Secretary on the requisition of a Director shall, at any time, summon a meeting of Directors. The Board of Directors may determine to hold a meeting through audio or video conferencing or any other technology whereby all the Directors can, simultaneously communicate to and with each other. A copy of the minutes of Directors meetings shall be furnished to each Director within fourteen days of such meeting. Notice shall be given in writing to every Director or his alternate Director for any meeting of the Directors and such notice shall be given in writing to his address in Pakistan and by facsimile or email transmission to his address outside Pakistan, if any, notified by him to the Company for this purpose.
- Quorum of Directors.** 90) Unless otherwise determined unanimously by the Directors, the quorum necessary for the transaction of the business of the Directors shall be majority of directors holding office for the time being. An alternate Director whose appointment is effective shall be counted in a quorum.
- Effect of vacancy.** 91) The continuing Directors may act notwithstanding any vacancy in their body so long as their number is not reduced below the number fixed by or pursuant to these Articles as the necessary quorum of Directors.
- Chairman.** 92) The Directors may elect a Chairman of their meetings and determine the period for which he is to hold office. If no such Chairman is elected, or if at any meeting the Chairman is not present within thirty minutes after the time appointed for holding the same, the Directors present may choose one of their numbers to be the Chairman of such meeting only.
- Powers of meeting.** 93) A meeting of the Directors at which a quorum is present shall be competent to exercise all or any of the authorities, powers and discretions by or under the Ordinance and these Articles for the time being vested in or exercisable by the Directors generally.
- Power to appoint committees and to delegate.** 94) The Directors may delegate any of their powers to committees consisting of such member or members of their body as they think fit and may from time to time revoke such delegation. Any committee so formed shall, in the exercise of the powers so delegated, conform to any regulations that may from time to time be imposed upon them by the Directors.
- Validity of acts.** 95) All acts done at any meeting of the Directors, or of a committee of Directors, or by any person acting as a Director shall notwithstanding that it shall afterwards be discovered that there was some defect in the appointment or continuance in office of any such Directors or person acting as aforesaid, or that they or any of them were disqualified or had vacated office, or were not entitled to vote, be as valid as if every such person had been duly appointed or had duly continued in office and was qualified and had continued to be a Director and had been entitled to be a Director and had been entitled to vote.
- Resolution in writing.** 96) Subject to the provisions of Article 75(b) of these Articles, a resolution in writing, signed by all the Directors (or in their absence their alternate Directors) for the time being available (not being less than the requisite quorum of Directors) or by all the members of a

committee for the time being available shall be as valid and effectual as if it had been passed at a meeting of the Directors, or as the case may be of such committee, duly called and constituted in accordance with the provisions of these Articles. Such resolution be contained in one document or in several documents in like form each signed by one or more of the Directors or members of the committee concerned. A facsimile or email transmission sent by a Director or a member of the committee shall be deemed to be a document signed by him for the purposes of this Article.

***Meeting by way of electronic communication.***

- 97) Subject to any rules framed under or any regulations or directives issued pursuant to the Ordinance, Directors or Members of a committee may take part in a meeting of the Directors or a committee by using any communication equipment which allows everybody participating in the meeting to speak to and hear each other. Taking part in this way will count as being present at the meeting. Meetings will be treated as taking place where the largest group of the participants are or, if there is no such group, where the Chairman of the meeting is present.

**CHIEF EXECUTIVE**

***Appointment of Chief Executive.***

- 98) The Company shall have an office of Chief Executive which shall be filled from time to time by the Directors who may appoint a Director or (subject to Section 201) any other person to be the Chief Executive for a period not exceeding three years and on such terms and conditions as the Directors may think fit, and such appointment shall be made within fourteen days from the date on which the office of Chief Executive falls vacant. Upon the expiry of his term of appointment, the Chief Executive shall be eligible for re-appointment. If the Chief Executive at any time is not already a Director he shall be deemed to be a Director of the Company. The Chief Executive may be removed from office in accordance with the provisions of Section 202.

***Remuneration of Chief Executive.***

- 99) The Chief Executive shall receive such remuneration as the Directors may determine and it may be made a term of his appointment that he be paid a pension and/or gratuity and/or other benefits on retirement from his office.

***Powers of Chief Executive.***

- 100) The Directors may entrust to and confer upon the Chief Executive any of the powers exercisable by them as they may think fit, and may confer such powers for such time, and to be exercised for such time, and to be exercised for such objects and purposes, and upon such terms and conditions, and with such restrictions as they may think fit and may from time to time revoke, alter or vary all or any of such powers.

**OTHER APPOINTMENTS**

***Appointment of Company Secretary.***

- 101) The Company Secretary may be appointed by the Directors from time to time for such term, at such remuneration and upon such conditions as they may think fit. The directors may from time to time remove, dismiss him from office and appoint another in his place.

**THE SEAL**

***Common Seal.***

- 102) The Directors shall provide for the safe custody of the Seal which shall only be used by the authority of the Directors or of a committee of the Directors authorized by the Directors on that behalf; and every instrument to which the Seal shall be affixed shall either be signed by one Director and countersigned by the Secretary or by a second Director or by some other person appointed by the Directors for the

purpose or be signed by the Chief Executive alone, but so that the Directors may by resolution determine either generally or in any particular case, that the signature of the Chief Executive, any Director and/or Secretary may be affixed by some mechanical means to be specified in such resolution including without limitation by printing, lithography or stamping.

#### **DIVIDENDS AND RESERVES**

- Declaration of dividend.*** 103) The Company in General Meeting may declare Dividends, but no Dividends shall exceed the amount recommended by the Directors.
- Interim dividends.*** 104) The Directors may from time to time pay to the Members such interim Dividends as appear to the Directors to be justified by the profits of the Company.
- Dividends payable out of profits.*** 105) No Dividends shall be paid otherwise than out of profits of the year or any other undistributed profits and in the determination of the profits available for dividends the Directors shall give due regard to the provisions of the Ordinance, in particular Sections 83, 235 and 248.
- Reserve.*** 106) (a) The Directors may, before recommending any dividend set aside out of the profits of the Company such sums as they think proper as a reserve or reserves which shall, at the discretion of the Directors, be applicable for meeting contingencies, or for equalizing Dividends, or for any other purpose to which the profits of the Company may be properly applied, and pending such application, at the like discretion, either be employed in the business of the Company or be invested, subject to the provisions of the Ordinance, in such investments (other than shares of the Company) as the Directors may from time to time think fit.
- (b) The Directors may also carry forward any profits which they may think prudent not to distribute, without setting them aside as a reserve.
- Apportionment of dividends.*** 107) All Dividends shall be declared and paid according to the amounts paid on the shares. All dividends shall be apportioned and paid proportionally to the amounts paid or credited as paid on the shares during any portion or portions of the period in respect of which the Dividend is paid. If any share is issued on terms providing that it shall rank for dividend as from a particular date, such share shall rank for dividend accordingly.
- Effect of transfer.*** 108) A transfer of shares shall not pass the right to any Dividend declared thereon before the registration of the transfer.
- Payment by post.*** 109) The dividend in respect of any share shall be paid to the registered holder of such share or to his banker or to a financial institution (as defined in Section 2(1)(15A)) nominated by him for the purpose. Unless otherwise instructed in writing by the registered holder of a share, any Dividend payable in cash in respect of such share may be paid by cheque or warrant sent through the post by registered mail to the registered address of the holder or, in the case of joint holders, to the registered address of that one of the joint holders who is first named on the Register or to such banker or financial institution as may have been nominated by the registered holder. Every such cheque or warrant shall be made payable to the order of the person to whom it is sent. Anyone of two or more joint holders may give effectual receipts for any Dividends payable in respect of the shares held by them as joint holders.

- Time for payment of dividend.*** 110) All Dividends shall be paid within the periods specified in Section 251 of the Ordinance.
- Dividend not to bear interest.*** 111) No Dividend payable in respect of a share shall bear interest against the Company.
- Unclaimed Dividends.*** 112) All dividends unclaimed for one year, after having been declared, may be invested or otherwise made use of by the Directors for the benefit of the Company until claimed, and the Company shall not be deemed to be a trustee in respect thereof.
- Payment of dividends in specie.*** 113) With the sanction of a General Meeting, any Dividend may be paid wholly or in part by the distribution of specific assets and in particular of paid up shares or debentures of any other company or in anyone or more of such ways. Where any difficulty arises in regard to such distribution, the Directors may settle the same as they think expedient, and in particular may issue fractional certificates and fix the value for distribution of such specific assets or any part thereof and may determine that cash payments shall be made to any Members upon the footing of the value so fixed, in order to adjust the rights of all Members, and may vest any such specific assets in trustees upon trust for the Members entitled to the dividend as may seem expedient to the Directors.

#### ACCOUNTS

- Keeping of accounts.*** 114) The Directors shall cause to be kept proper books of account with respect to:-
- (a) all sums of money received and expended by the Company and the matters in respect of which the receipts and expenditures take place;
  - (b) all sales and purchases of goods by Company;
  - (c) all assets of the Company;
  - (d) all liabilities of the Company; and
  - (e) where the provisions of Section 230(1)(e) of the Ordinance are applicable, such particulars relating to utilization of material or labour or to other inputs or items of cost as may be prescribed.
- Location.*** 115) The books of account shall be kept at the Office or at such other place in Pakistan as the Directors may decide and shall be open to inspection by the Directors during business hours. If the Directors decide to keep the books of account at a place other than the Office they shall comply with the directions contained in the proviso to Section 230(1).
- Period.*** 116) The Company shall preserve in good order the books of account of the Company in respect of any financial year for such period as is required by law following the close of that year.
- Inspection by Members.*** 117) The Directors shall from time to time determine whether and to what extent and at what times and places and under what conditions or regulations the accounts and books of the Company or any of them shall be open to the inspection of Members not being Directors and no Member (not being a Director) shall have any right of inspecting any account or books or papers of the Company except as conferred by the Ordinance or authorized by the Directors or by the Company in General Meeting.

***Annual accounts and reports.***

- 118) (a) The Directors shall arrange to place before the Annual General Meeting of the Company at some date not later than eighteen Months after the incorporation of the Company and subsequently once in every calendar year, a duly audited balance sheet and profit and loss account, conforming to the requirements of Sections 234, 237, 238 and 240 and prepared by a date not more than four Months before the date of such meeting and having the auditor's report attached thereto, and a report of the Directors, conforming to the requirements of Section 236.
- (b) As required by Section 241, the balance sheet and profit and loss account shall first be approved by the Directors and when so approved shall be signed by the Chief Executive and at least one Director, but if on account of his absence from Pakistan or other reason the signature of the Chief Executive cannot be obtained, the balance sheet and profit and loss account shall be signed by at least two Directors for the time being in Pakistan, and in every such case a statement signed by those two Directors shall be joined to the balance sheet and profit and loss account stating the reason why the signature of the Chief Executive was not obtained.
- (c) The Directors may authorize the Chairman or the Chief Executive to sign the report of the Directors which may then be signed accordingly, but in the absence of any such authority the report of the Directors shall be signed as required by Section 236(3) in the same manner as the balance sheet and profit and loss account.

***Copies of annual accounts and reports.***

- 119) (a) A copy of the balance sheet, profit and loss account and the reports of the Directors and auditors shall be sent not less than twenty one days before the date of the Annual General Meeting to the Members and other persons entitled to receive notices of General Meetings in the manner in which notices are to be given hereunder and a copy thereof shall be kept for a period of at least twenty-one days before the meeting at the Office for inspection by the Members.
- (b) After the balance sheet, profit and loss account and the reports of the Directors and auditors have been laid before the Annual General Meeting of the Company, such number of copies thereof along with prescribed documents, signed by the signatories thereto shall be filed with the Registrar of Companies within thirty days from the date of the meeting and the Company shall also comply with the provisions of Section 242(2) where applicable.

***Compliance with the Ordinance.***

- 120) The Directors shall in all respects comply with the provisions of Sections 230 to 247 of the Ordinance, or any statutory modification thereof for the time being in force.

**CAPITALIZATION OF PROFITS**

***Power to capitalize.***

- 121) The Company in General Meeting may upon the recommendation of the Directors resolve that it is desirable to capitalize any part of the amount for the time being standing to the credit of any of the Company's reserve accounts or to the credit of the profit and loss account or otherwise available for distribution, and accordingly that such sum be set free for distribution amongst the Members who would be entitled thereto if distributed by way of Dividend and in the same proportions on condition that the same be not paid in cash but be applied either in or towards paying up any amounts for the time being unpaid on any shares held by such Members respectively or paying up in full unissued shares or debentures of the Company to be allotted and distributed as fully paid up to and amongst such Members in the proportion aforesaid, or partly in the one way and partly in the other, and the Directors shall give effect to such resolution.

- Effect of resolution to capitalize.** 122) Whenever such a resolution as, aforesaid shall have been passed the Directors shall make all appropriations and applications of the undivided profits resolved to be capitalized thereby, and all allotments and issues of fully paid shares or debentures, if any, and generally shall do all acts and things required to give effect thereto, with full power to the Directors to make such provision by the issue of fractional certificates or by payment in cash or otherwise as they think fit for the case of shares or debentures becoming distributable in fractions and also to authorize any person to enter on behalf of all the Members entitled thereto into an agreement with the Company providing for the allotment to them respectively, credited as fully paid up, of any further shares or debentures to which they may be entitled upon such capitalization, or (as the case may require) for the paying up by the Company on their behalf, by the application thereto of their respective proportions of the profits resolved to be capitalized, of the amounts or any part of the amounts remaining unpaid on their existing shares, and any agreement made under such authority shall be effective and binding on all such Members.

#### AUDIT

- Auditors.** 123) Auditors shall be appointed and their duties regulated in accordance with Sections 252 to 255 of the Ordinance, or any statutory modifications thereof for the time being in force.

#### NOTICES

- Notice to Member.** 124) (a) A notice may be given by the Company to any Member either personally or by sending it by post to him to his registered address or by courier or (if he has no registered address in Pakistan) to the address, if any, within Pakistan supplied by him to the Company for the giving of notices to them.

(b) Where a notice is sent by post, service of the notice shall be deemed to be effected by properly addressing, prepaying and posting a letter containing the notice and, unless the contrary is proved, to have been effected at the time at which the letter would be delivered in the ordinary course of post.

- Notices by advertisement.** 125) If a Member has no registered address in Pakistan and has not supplied to the Company an address within Pakistan for the giving of notices to him, a notice addressed to him or to Members generally and advertised in a newspaper circulating in the province in which the Office is situated shall be deemed to be duly given to him on the day on which the advertisement appears. In all such cases, the Company shall also comply with the requirements of the proviso to Section 50(3) of the Ordinance where applicable.

- Notice to joint holders.** 126) A notice may be given by the Company to the joint holders of a share by giving the notice to the joint holder named first in the Register in respect of the share.

- Notice to legal representatives.** 127) A notice may be given by the Company to the persons entitled to a share in consequence of the death or insolvency of a Member by sending it through the post in a prepaid letter addressed to them by name, or by the title of representatives of the deceased, or assignee of the insolvent or by any like description, at the address (if any) in Pakistan supplied for the purpose by the persons claiming to be so entitled, or (until such an address has been so supplied) by giving the notice in any manner in which the same might have been given if the death or insolvency had not occurred.

**Notice to foreign shareholder.**

- 128) Notwithstanding anything hereinabove to the contrary, in addition to any other notice it or he shall be entitled to receive, a Member which is a foreign corporation, company or individual shall be given notice, if applicable, by facsimile transmission, electronic mail addressed to such Member at the facsimile number or electronic mail address supplied by it or him to the Company.

**Notices of General Meetings.**

- 129) Notice of every General Meeting shall be given in some manner hereinbefore authorized to (a) every Member except those Members who (having no registered address within Pakistan) have not supplied to the Company an address within Pakistan for the giving of notices to them, (b) every Member of the Company being a foreign corporation or company which has supplied to the Company a facsimile number or electronic mail address for the sending of notices to it, (c) every person entitled to a share in consequence of the death or insolvency of a Member, who but for his death or insolvency would be entitled to receive, notice of the meeting, and (d) the auditors of the Company.

**Binding value of prior notices.**

- 130) Every person who, by operation of law, transfer or other means whatsoever shall become entitled to any shares shall be bound by every notice in respect of such shares, which previously to his name and address being entered on the Register shall have been duly given to the person from whom he derived his title to such shares.

**WINDING-UP**

**Distribution of assets in specie.**

- 131) If the Company shall be wound up, the liquidator may, with the sanction of a Special Resolution of the Company and any other sanction required by the Ordinance, divide amongst the Members in specie or kind the whole or any part of the assets of the Company (whether they shall consist of property of the same kind or not) and may, for such purpose, set such value as he deems fair upon any property to be divided as aforesaid and may determine how much division shall be carried out as between the Members or different classes of Members. The liquidator may, with the like sanction, vest the whole or any part of such assets in trustees upon such trusts for the benefit of the Members or any of them as the liquidator with the like sanction shall think fit, but so that no Member shall be compelled to accept any shares or other securities whereon there is any liability.

**SECRECY**

**Inspection of the premises of the Company.**

- 132) Save as otherwise provided in the Ordinance, no Member or other person (not being a Director) shall be entitled to visit and inspect any of the Company's premises or properties of the Company without the permission of Directors of the Company for the time being or any person authorized in this behalf by the Directors or to require discovery of or any information respecting any detail of the Company's trading or any matter which is or may be in the nature of a trade secret, mystery of trade or secret process or of any matter whatsoever which may relate to the conduct of the business of the Company and which in the opinion of the Directors will be inexpedient in the interest of the Members of the Company to communicate to the public.

**INDEMNITY**

**Indemnity of Directors, Officers and Auditors.**

- 133) Every Director or officer of the Company and every person employed by the Company as Auditor shall be indemnified out of the funds of the Company against all liability incurred by him as such Director, officer or Auditor in defending any proceedings, whether civil or criminal, in which judgment is given in his favour, or in which he is acquitted, or in connection with any application under Section 488 in which relief is granted to him by the Court.

## DISPUTE RESOLUTION

*Settlement of  
dispute through  
mediation*

134) In the event of a dispute, claim or controversy arises between the Company, its management or its shareholders, or between shareholders inter-se, or the directors inter-se, all steps shall be taken to settle the dispute and resolve the issue through mediation by an accredited mediator before taking recourse to formal dispute resolution such as arbitration or litigation.

*Differences to be  
referred to  
Arbitration(s)*

135) Whenever any difference arises between the Company on the one hand and any of the Members, their executors, administrators or assigns on the other hand, touching the true intent or construction, or the incident or consequence of these Articles or of the statutes, or touching anything there or thereafter done, executed, omitted or suffered in pursuance of these Articles or of the statutes or touching any breach or alleged breach of these Articles, or any claim on account of any such breach, or alleged breach, or otherwise relating to the premises, or to these Articles or to any statute affecting the Company or to any of the affairs of the Company, every such difference shall, as a condition precedent to any other action at law be referred in conformity with the Arbitration Act, 1940, or any statutory modification thereof and any rules made there under, to the decision of an arbitrator to be appointed by the parties in difference or if they cannot agree upon a single arbitrator, to the decision of two arbitrators of whom one shall be appointed by each of the parties in difference, or in the event of the two arbitrators not agreeing, then of an umpire to be appointed by the two arbitrators, in writing, before proceeding on the reference, and such decision shall be final and binding on the parties.

We, the several persons, whose names and addresses are subscribed, are desirous of being formed into a Company in pursuance of this Articles of Association, and we respectively agree to take the number of shares in the capital of the Company indicated herein below against our respective names:

Sl. No.	Name and Surname in Full	Father's Name in Full	Nationality with any former Nationality	Occupation	CNIC Number	Residential address in full	No. of Shares	Signature
1	Saqib Hussain Shirazi	Yusuf H Shirazi	Pakistani	Business	42000-0509678-5	12 Khayaban-e-Bukhari, 5 <sup>th</sup> Street, Phase 5, DHA, Karachi	1 (One)	
2	Frahim Ali Khan	Ibrahim Ali Khan	Pakistani	Business Executive	42301-8765118-9	10-B-II, South Park Avenue, Phase II, DHA, Karachi	1 (One)	
3	Maqsood Ahmed	Chaudhry Muhammad Sadiq	Pakistan	Business Executive	35202-2632190-1	House No 397/B, EME, Thokar Niaz Bag, Lahore	1 (One)	
Total number of shares taken							3 (Three)	

Date the 13<sup>th</sup> day of May 2016

Witnesses to above signatures

National Institutional Facilitation Technologies (Pvt) Limited  
5<sup>th</sup> Floor, AWI Plaza,  
11 Chundrigar Road,  
Karachi  
Pakistan

**The Companies Ordinance, 1984**  
**COMPANY LIMITED BY SHARES**

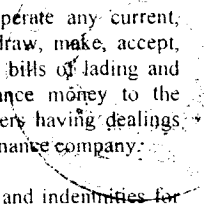


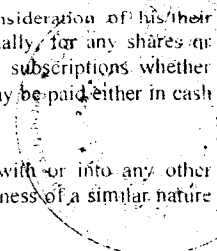
**Memorandum of Association**  
**of**

**ATLAS ENERGY LIMITED**

- I. The name of the Company is ATLAS ENERGY LIMITED.
- II. The Registered Office of the Company will be situated in the Province of Punjab.
- III. The objects for which the Company is established are to do all or any of the following:
  - i. To design, insure, build, establish, own, operate, maintain, manage electric power generating plants for the generation, supply & transmission of electric power and in relation thereto, to establish, fix, carry out and maintain without limitation, any ancillary works, cables, wires, meter, lines, overhead lines, sub stations, switching stations, interconnect facilities, grid stations, transmission facilities, civil, electrical and mechanical works, subject to approval of concern authority (National Electric Power Regulatory Authority).
  2. To carry on the business of power generation and in relation thereto, to generate, accumulate, transmit, distribute and sell electric power to the public sector, including the Water and Power Development Authority, National Transmission and Despatch Company, Government and Government bodies, and the private sector, subject to approval of concern authority (National Electric Power Regulatory Authority).
  3. To manufacture, purchase, import or otherwise acquire, construct, own, process, operate and maintain buildings, workshops, warehouses and other storage facilities, apparatus, fixtures, fittings, plants, machinery, materials, and things as may be necessary, incidental to or convenient in connection with power generating plant for the generation of electric power and or in connection with supply, transmission and distribution of electric power.
  4. To buy, sell, manufacture, repair, alter, improve, exchange or let out, import, export and deal in all works, plant, machinery, engines, tanks, cylinders, valves, regulators, testing equipment, tools, utensils, appliances, cookers, stoves, heaters, apparatus, products, materials, substances, raw materials, chemicals, natural gas (whether in vaporized form or liquefied), liquefied petroleum gas, fuel oil, coal, lubricants, articles and things and to manufacture, experiment with, render marketable and deal in all products, incidental to or obtained in the business carried on by the Company.
  5. To purchase, take on lease or tenancy or in exchange, hire, take options over or otherwise acquire for any estate or interest whatsoever and to hold, develop, work, cultivate, deal with and turn to account concessions, grants, decrees, licenses, privileges, claims, options, leases, property, real or personal or rights or powers of any kind which may appear to be necessary or convenient for the business of the Company but not to act as a leasing company or property developer.
  6. To sell, exchange, mortgage, let on royalty or tribute, grant licenses, easements, options and other rights over and in any manner deal with or dispose of the Company's property or any part thereof for such consideration as may be thought fit and in particular for stocks, shares or securities of any company but in any event not to act as an investment company or leasing company.

7. To establish laboratories and to employ and promote scientific research and invention, patronize such invention and enter into manufacture in collaboration with outside parties for transfer of technology from abroad and to promote transfer of technology from Pakistan abroad, and to carry on business in all other allied fields permissible by law.
8. To invest and deal with any surplus moneys of the Company not immediately for the time being required for any of the purposes of the Company in such investments as may be thought proper and to hold, sell or otherwise deal with such investments but in any event not to act as an investment company.
9. For the purposes of the business of the Company only, to advance money upon such terms as the Company may approve, and to guarantee the obligations and contracts of customers and others but not to act as a banking company.
10. To apply for, purchase or otherwise acquire and protect, prolong and renew whether in Pakistan or elsewhere any patents, patent rights, brevets d'invention, trade marks, design licenses, protections, concessions and the like conferring any exclusive or non-exclusive or limited right to use any secret or other information as to any invention, process or privilege which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company and to use, exercise, develop, manufacture under grant, licenses, privileges in respect of, or otherwise turn to account the property, rights and information so acquired and to carry on any business in any way connected therewith.
11. To get insured against losses, damages, risks, accidents and liabilities of all kinds which may affect the company whether in respect of its contracts, agreements, advances or securities or in respect of servants or employees or directors of the company, or in respect of property belonging to or leased to or hired by the company, either by setting apart funds of the company or by effecting such insurance and in later case to pay the premium thereon.
12. To train personnel and workers, in Pakistan and/or abroad, to obtain technical proficiency in various specialties connected with the business of the Company.
13. To undertake and execute any project the undertaking whereof may seem desirable, and either gratuitously or otherwise.
14. To procure the Company to be registered or recognized in any foreign country or place.
15. To acquire and undertake all or any part of the business, property, goodwill and liabilities of any person or company carrying on any business which the Company is authorized to carry on or possessed of property suitable for the purposes of the Company.
16. To adopt such means of making known the business and/or services of the Company as may seem expedient and in particular by advertising in the press, or in the other media or by way of participation in exhibitions.
17. For the purposes of the Company, to purchase, manage, acquire by lease, mortgage, dispose of, sell, exchange, turn to account any part of the property and rights of the Company.
18. To employ or appoint any persons, experts, consultants, advisers, contractors (including O&M contractors), brokers in connection with the business of the Company.
19. To pay for any property or rights acquired by the Company, either in cash or fully paid shares or by the issue of securities, or partly in one mode and partly in another and generally on such terms as may be determined.

- 
20. Only in connection with the business of the Company to open and operate any current, overdraft, loan, fixed or savings bank accounts for the Company, and draw, make, accept, discount, endorse, execute and issue promissory notes, bills of exchange, bills of lading and other negotiable or transferable instruments or securities and to advance money to the Company's executives, officers and employees/agents/customers and others having dealings with the company but in any event not to act as an investment, banking or finance company.
  21. In connection with the business of the Company only, to give guarantees and indemnities for the payment of money or the performance of contracts or obligations by this Company but in any event not to act as an investment, banking or finance company.
  22. To borrow and where required, to secure the payment of money in such manner as the Company shall think fit and in particular by the creation of mortgages and charges over the (present and future) property, assets and/or undertaking of the Company and/or by issue of debentures, participation term certificates, term finance certificates and other securities charged upon all or any of the Company's property both present and future, and to purchase, redeem and pay off any such securities.
  23. To take, or otherwise acquire, and hold shares in any other company having objects altogether or in part similar to those of this Company or carrying on any business capable of being conducted so as directly or indirectly to benefit this Company but in any event not to act as an investment company.
  24. To enter into partnership or into any agreement or agreements for sharing profits, union of interests, cooperation, joint venture, reciprocal concession and/or facilities with any person or company whether or not having objects similar to those of this Company but in any event not to act as managing agents.
  25. So far as is permissible in law, to establish, maintain and/or contribute to any pension, superannuation, death benefits, funds or schemes for the benefit of, and to give, award or procure the giving or awarding, of donations, pensions, gratuities, allowances, annuities, emoluments or other benefits whatsoever to any persons who are or have at any time been in the employment or service of the Company or of any company which is its holding or which is a subsidiary of either the Company or any such holding company or of any company which is otherwise allied to or associated with the Company, or who are or have at any time been Directors or officers (or held comparable or equivalent offices) of the Company or of any or of any such other company, and also to the wives, widows, families and dependents of any such persons; to establish, subsidise or subscribe to any institutions, associations, clubs or funds which may be considered likely to benefit all or any such persons; to make payments for or towards the insurance of any such persons; to establish, support and maintain any form of profit-sharing, share purchase, share incentive, share option or employees' share scheme for any such persons eligible to participate in them or benefit from them (or to trustees on their behalf) for the purposes of or in connection with the operation and enjoyment of any such scheme.
  26. To enter into any agreement or agreements with any government or other authority, supreme, municipal, local or otherwise, that may seem conducive to all or any of the objects of the Company and/or to obtain from such government or authority including the State Bank of Pakistan or National Electric Power Regulatory Authority (NEPRA) any rights, concessions or privileges, licenses which the Company may think desirable to obtain and to carry out, exercise and comply with any such arrangements, rights, privileges, concessions and licenses.
  27. To pay all or any costs charges and expenses preliminary and incidental to the promotion, formation, establishment and registration of the Company and to pay any development costs incurred (whether before or after the incorporation of the Company) by the sponsors of the Company in connection with any project of the Company.

- 
28. To pay brokerage or commission to any person or persons in consideration of his/their subscribing, or agreeing to subscribe, whether absolutely or conditionally, for any shares or debentures of the Company, or for procuring or agreeing to procure subscriptions whether absolute or conditional for the same which brokerage or commission may be paid either in cash or shares of the Company, credited as fully paid up.
29. To amalgamate, consolidate, or merge, either in whole or in part, with or into any other companies, associations, firms or persons carrying on any trade or business of a similar nature to that which this Company is authorized to carry on.
30. To resolve, settle disputes by negotiation, conciliation, mediation, arbitration, litigation or other means, judicial or extra judicial, and to enter in compromise agreement with creditors, members and any other persons in respect of a difference or dispute with them and to exercise the power to sue and be sued and to initial or oppose all actions, steps, proceedings or application which may seem calculated directly or indirectly to benefit or prejudice, as the case may be, the interest of the Company or of its members.
31. To do all or any of the things herein in any part of the world either as principals, agents, contractors or otherwise, and either alone or in conjunction with others but in any event not to act as managing agents.
32. To provide engineering, construction, consultancy and design services and radio and other communication systems and services, and any facilities, equipment and installations whether related to such services and systems or otherwise, subject to permission of concern authority.
33. To carry on any other business whether manufacturing or otherwise that may seem to the Company capable of being conveniently carried on in connection with the above objects or calculated directly or indirectly to enhance the value of or render profitable any of the Company's property or rights or which it may be advisable to undertake with a view to improving, developing, rendering or turning to account any property real or personal belonging to the Company or in which the Company may be interested and to do all or any of the above things either as principals, agents, contractors or otherwise, and either alone or in conjunction with others and either by or through agents, sub-contractors, trustees or otherwise, and to do all such things as are incidental or conducive to the attainment of the above objects but in any event not to act as managing agents.
34. To do all and everything necessary, suitable or proper or incidental or conducive to the accomplishment of any of the purposes or the attainment of any of the objects or the furtherance of any of the powers hereinbefore set forth, either alone or in association with other corporate bodies, firms or individuals or with any Government authority or public or quasi-public authority or any other authority, and to do every other act or thing incidental or appertinent to or arising out of or connected with the business or powers of the Company or part thereof, provided the same be lawful.
35. IT IS HEREBY UNDERTAKEN that the Company shall not engage in the banking business or Forex, illegal brokerage, business of a finance, investment, leasing or insurance company, or non-banking finance company or as a modaraba management company, or the business of land development or a managing agency or any unlawful business and that nothing in the objects clause shall be construed to entitle it to engage in such business directly or indirectly. The Company shall not launch multi-level marketing (MLM), Pyramid or Ponzi schemes.
36. Notwithstanding any thing stated in any object clause, the company shall obtain such other approval or license from the competent authority, as may be required under any law for the time being in force, to undertake a particulars business.

IV. The liability of the Members is limited.

- V. The authorized capital of the Company is Rs. 10,000,000 (Rupees ten million) divided into 1,000,000 (One million) shares of Rs. 10 (Pak Rupees Ten) each, with power of the Company, specifically, to increase the authorized share capital to include a further issue including of preference shares and generally, to increase or reduce the capital and to divide the shares in the capital for the time being into several classes in accordance with the provisions of the Companies Ordinance, 1984 and any rules made there under, and to attach thereto respectively such preferential, deferred, qualified or special rights, privileges or conditions as may be determined by or in accordance with the Articles of Association of the Company for the time being, and to vary, modify or abrogate any such rights, privileges or conditions in such manner as may for the time being be provided by the Articles of Association of the Company in accordance with law.

We, the several persons, whose names and addresses are subscribed below, are desirous of being formed into a Company in pursuance of this Memorandum of Association, and we respectively agree to take the number of shares in the capital of the Company indicated herein below against our respective names:

Sr. No.	Name and Surname in Full	Father's Name in Full	Nationality with any former Nationality	Occupation	CNIC Number	Residential address in full	No. of Shares	Signature
1	Saqib Hussain Shirazi	Yusuf H Shirazi	Pakistani	Business	42000-0509678-5	12 Khayaban-e-Bukhari, 5 <sup>th</sup> Street, Phase 6, DHA, Karachi	1 (One)	
2	Fahim Ali Khan	Ibrahim Ali Khan	Pakistani	Business Executive	42301-8765118-9	19-B/II, South Park Avenue Phase II, DHA, Karachi	1 (One)	
3	Maqsood Ahmed	Chaudhry Muhammad Sadiq	Pakistani	Business Executive	35202-2632390-1	House No 397/B, EME, Thokar Niaz Bag, Lahore	1 (One)	
Total Number of shares taken							3 (Three)	

Date the 13<sup>th</sup> day of May 2016

Witnesses to the above signature

National Institutional Facilitation Technologies (Private) Limited  
5<sup>th</sup> Floor, AWT Plaza,  
I.I. Chundrigar Road,  
Karachi  
Pakistan

*[Handwritten Signature]*  
27/04/2017

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**3(5) (a)(iii): Certified Copies of Last Filed Annual Return of the  
company (Certified by SECP)**

THIRD SCHEDULE  
(See section 100)

FORM A - ANNUAL RETURN OF COMPANY HAVING SHARE CAPITAL

1. Registration No.	0099710		
2. Name of the Company	ATLAS ENERGY LIMITED		
3. Form A made up to (Day/Month/Year)	01/06/2017		
4. Date of AGM (Day/Month/Year)	01/06/2017		

**PART - A**

5. Registered Office Address	25-21 km LAHORE SHEKHUPURA ROAD SHEKHUPURA Punjab 38100		
6. Email Address	khalid@atlaspower.com.pk		
7. Office Tel No.			
8. Office Fax No.			
9. Nature of Business	POWER GENERATION, TRADING, OTHERS		
10. Authorized Share Capital			
Type of Shares	No. of Shares	Amount	Face value
Ordinary Shares		10,000,000.00	

11. Paid up Share Capital			
Type of Shares	No. of Shares	Amount	Issue Price
Ordinary Shares		10,000,000.00	

12. Amount of indebtedness on the date upto which form A is made in respect of all Mortgages/Charges	0.00		
--	------	--	--

13. Particulars of the holding company			
Name	Atlas Power Limited		
Registration No.	0059066	% Shares Held	100

14. Chief Executive			
Name	Masood Ahmed	NIC	35702-2632090-1
Address	House No. 397/B, EME Sector, DHA, Thoker Niaz Baig, Lahore Punjab Pakistan 53710		

**Next Page**









Previous Page

**PARTICULARS OF DIRECTORS AND OFFICERS, INCLUDING THE CHIEF EXECUTIVE, MANAGING AGENT, SECRETARY, CHIEF ACCOUNTANT, AUDITORS AND LEGAL ADVISERS, OR OF ANY CHANGE THEREIN**

THE COMPANIES ORDINANCE 1984

FORM 29

[SECTION 205]

1. Incorporation Number	0099710	
2. Name of Company	ATLAS POWERGEN LIMITED	
3. Fee Paid (Rs.)	400.0	Name and Branch of Bank Credit Card
4. Receipt No.	E-2016-492193	07/10/2016
5. Mode of Payment (Indicate)	Bank Challan	

**6. Particulars\*:****6.1 New Appointment/Election**

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation *** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointment / change / any other remarks (i)
Khalid Mahmood	35202-2887843-9	Faqr Muhammad Shari	303 Chambelli Block Sector C Bahria Town Lahore	Secretary	Pakistan		29/09/2016	Appointed

**6.2 Ceasing of Office/Retirement/Resignation**

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation *** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointment / change / any other remarks (i)

**6.3 Any other change in particulars relating to columns (a) to (g) above**

Present Name in Full (a)	NIC No. or Passport No. in case of Foreign National (b)	Father / Husband Name (c)	Usual Residential Address (d)	Designation (e)	Nationality** (f)	Business Occupation *** (if any) (g)	Date of Present Appointment or Change (h)	Mode of Appointment / change / any other remarks (i)

Name of Signatory	Maqsood Ahmed	Designation	Chief Executive
Signature of Chief Executive/Secretary		Date (DD/MM/YYYY)	07/10/2016

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**Regulation # 3(5) (b): Profile of experience of the applicant its management, staff and its members in power sector.**

**Atlas Energy Limited**

Application for Generation License 10 MW On-grid Solar PV Plant

# **Applicants Profile**

# Atlas Energy Limited

## 1. Introduction

- 1.1. **Atlas Energy Limited** was incorporated as an unquoted - public limited company in Pakistan on 18 May 2016, under the Companies Ordinance, 1984. 4. The copy of certificate of incorporation is **Annexure — A**. The copy of Memorandum & Articles is **Annexure — B**.
- 1.2. The registered office of the Company is situated at 26-27 km, Lahore - Sheikhpura Road, Sheikhpura.
- 1.3. The Company was incorporated to provide cost effective tailored solar solutions for industrial and commercial consumer through sale of power, Engineering, Procurement and construction (EPC), operation and Maintenance and giving attractive return to investors.
- 1.4. The Applicant Company has financial strength to meet with the requirements of the Projects through its parent Company Atlas Power Limited - parent company held 100% ordinary shares of the Company. In addition to above, equity of approximately PKR 16 million will be injected through Parent Company shortly.
- 1.5. The Applicant Company has three Directors, besides the Auditor and Legal Advisor named below: (Annual Return of the Company Form-A is **Annexure — C**)
  - 1.5.1. **Directors: (Profile of Directors Annexure — D)**  
Mr. Maqsood Ahmad  
Mr. Saquib H. Shirazi  
Mr. Fahim Ali Khan
  - 1.5.2. **Auditors:**  
  
**EY Ford Rhodes**  
Charter Accountants  
96 B-1, 4<sup>th</sup> Floor, Pace Mall Building,  
M.M.Alam Road Gulberg-II,  
Lahore, Pakistan.
  - 1.5.3 **Legal Advisors:**  
  
**Cornelius, Lane & Mufti (CLM)**  
Nawa-e-Waqt House  
Shahrah-e-Fatima Jinnah, Lahore – 54000, Punjab, Pakistan

**Atlas Energy Limited**

Application for Generation License 10 MW On-grid Solar PV Plant

- 1.6. Atlas Power Limited** (the Company) was incorporated as an unquoted - public limited company in Pakistan on 05 January 2007, under the Companies Ordinance, 1984.

The registered office of the Company is situated at 26-27 KM Lahore - Sheikhpura Road, Sheikhpura.

The Company has been established to build, operate and own a power plant of 213.856 Mega Watts for net generation of electricity and onward sale to National Transmission and Despatch Company Limited (NTDC). The Company has commenced its commercial operations on 18 December 2009. The power plant is situated at 26-27 KM Lahore - Sheikhpura Road, Sheikhpura.

Shirazi Investments (Private) Limited - parent company held 84.6 % (2017: 84.6%) ordinary shares of the Company.

**Company Information:**

**National Tax Number (NTN)**  
2878470-7

**Sales Tax Number (STN)**  
17-00-2716-003-64

**Company Registration Number**  
00000013517/20070107

**Status of the Company**  
Public (Unlisted) Company

**Auditors of the company**  
EY Ford Rhodes  
Chartered Accountants - Lahore

**Legal Advisor of the Company**  
Mohsin Tayebaly & Co.

**Regulator of the company**  
Securities & Exchange Commission of Pakistan.

**Membership of Industry & Associations.**  
Overseas Investors Chamber of Commerce & Industry  
Pakistan German Business Forum  
Lahore Chamber of Commerce & Industry  
Independent Power Producers Advisory Council

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**Regulation # 3(5) (c): CVs of applicant's Senior Management  
and Technical professionals**

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

# **Profile & Experience of Applicants**

(Annexure — D)

1.7. The list of the directors, senior management, of the Applicant Company is as under: -

Name	Designation
Mr. Saquib H. Shirazi	Director
Mr. Frahim Ali Khan	Director
Mr. Maqsood Ahmad	CEO & Director

Brief introduction of the above named personal is as follows:

**1.7.1. Saquib H. Shirazi**  
**Director**

Mr. Saquib H. Shirazi is the Group Director Strategic Planning and Chief Executive Officer of Atlas Honda Limited. He graduated from the Wharton School of Finance before completing his Masters from the Harvard Business School. He has worked with the Bank of Tokyo-Mitsubishi UFJ Limited in Japan and is the former CEO of Atlas Investment Bank Limited. At present, he is serving as a member on the Board of Pakistan Petroleum Limited, Pakistan Cables Limited and Cherat Cement Limited. Previously, he has been on the Board of National Refinery Limited, Sui Southern Gas Company Limited, PERAC and the Privatization Commission of Pakistan. He has also been on the Board of Harvard Business School's Global Alumni and served as President for the year from 2006 to 2008.

**1.7.2. Frahim Ali Khan**  
**Director**

Mr. Frahim Ali Khan has over 47 years of experience in General Management, Finance, Investment and Taxation. He graduated in Commerce from Karachi University in 1965 and also obtained a degree in law from the same university. He has also attended the Senior Managers' Program from Harvard University, USA, Financial Management Program from Stanford University, USA and General Management Program from Insead University, France. He joined the Atlas Group in 1967 and has served in different positions. Currently, his other directorships include Atlas Engineering Limited, Atlas Power Limited, Atlas Battery Limited, Atlas Hitec (Private) Limited, Atlas Autos (Private) Limited,

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**Regulation # 3(5) (g) (a): The type, technology, model, technical details and design of the facilities proposed to be acquired, constructed, developed or installed**

Details of Generation Facility

Project Profile

Project Size	810 kW
Location	Various Sites as per Table 1.1
Type of Project	Roof Mounted
Construction Period	2-3 Months (Phase-I)

Energy Generation:

Description	Specifications
Capacity Utilization Factor	16.5 %
Energy Generation Units	16,844,512 kWh
Degradation Factor	First Year 2.5% & remaining 24 Years 0.7%

**Equipment & Technical Details**

**PV Modules:**

Sr. No.	Specification	Data
1	Type of Module	JKM400M-72H
2	Type of Cell	Mono crystalline
3	Dimensions of each module	2008×1002×40mm (79.06×39.45×1.57 inch)
4	Weight	22.5 Kg
5	No of Modules (Qty.)	Site1: 75 Site 2: 54 Site 3: 48 Site 4: 20 Site 5: 1,445 Site 6: 432
6	Module Area	2.012016 m <sup>2</sup>
7	Total Land Area Used	96.6 m <sup>2</sup>
8	Module Frame	Anodized aluminum alloy
9	Nominal Max. Power (Pmax)	400Wp
10	Opt. Operating Voltage (Vmp)	41.7V
11	Opt. Operating Current (Imp)	9.60A
12	Open Circuit Voltage (Voc)	49.8V
13	Short Circuit Current (Isc)	10.36A
14	Module Efficiency	19.88%
15	Operating Temperature	-40°C ~ +85°C
16	Max. System Voltage	1000VDC (IEC)
17	Module Fire Performance	TYPE 1(UL 1703) & (IEC 61730) (IEC 61215)

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant

**Inverters:**

Sr. No.	Specification	Data			
1	Manufacturer	ABB	ABB	ABB	ABB
2	Capacity of each Unit	20 KW	7.5 KW	100 KW	27.6 KW
3	No of Inverters (Qty.)	3	1	5	5
4	MPP Input Voltage Range	440 V to 800 V	320 V to 800 V	480 V to 850 V	500 V to 800 V
5	Rated Input Voltage	620V	620V	620V	620V
6	Max Input Voltage	1000 V	1000 V	1000 V	1000 V
7	Total Power	20 KW	8 KW	500 KW	138 KW
8	Max Input Current Input A/Input B	50A	30A	50A	64A
9	Max Output Current	33 A	12.5 A	145 A	45 A
10	Output Electrical System	3 Phase AC	3 Phase AC	3 Phase AC	3 Phase AC
11	AC Nominal Voltage	320 to 480 V	320 to 480 V	320 to 480 V	320 to 480 V
12	Rated Power Frequency	50 Hz	50 Hz	50 Hz	50 Hz
13	Efficiency	98.2%	98.%	98.4%	98.2%
14	Relative Humidity (Non-Condensing)	100%	100%	100%	100%
15	Noise Emission	50dB(A)	50 dB(A)	68 dB(A)	53 dB(A)
16	Degree of Protection	IP65	IP65	IP65	IP65

**Combiner Box:**

Not required with this ABB model.

**PV Mounting Structure:**

S. No	Specification	Data
1	Structure	Galvanized Steel
2	Tilt of Array Frame	15°

**Foundation Pillars:**

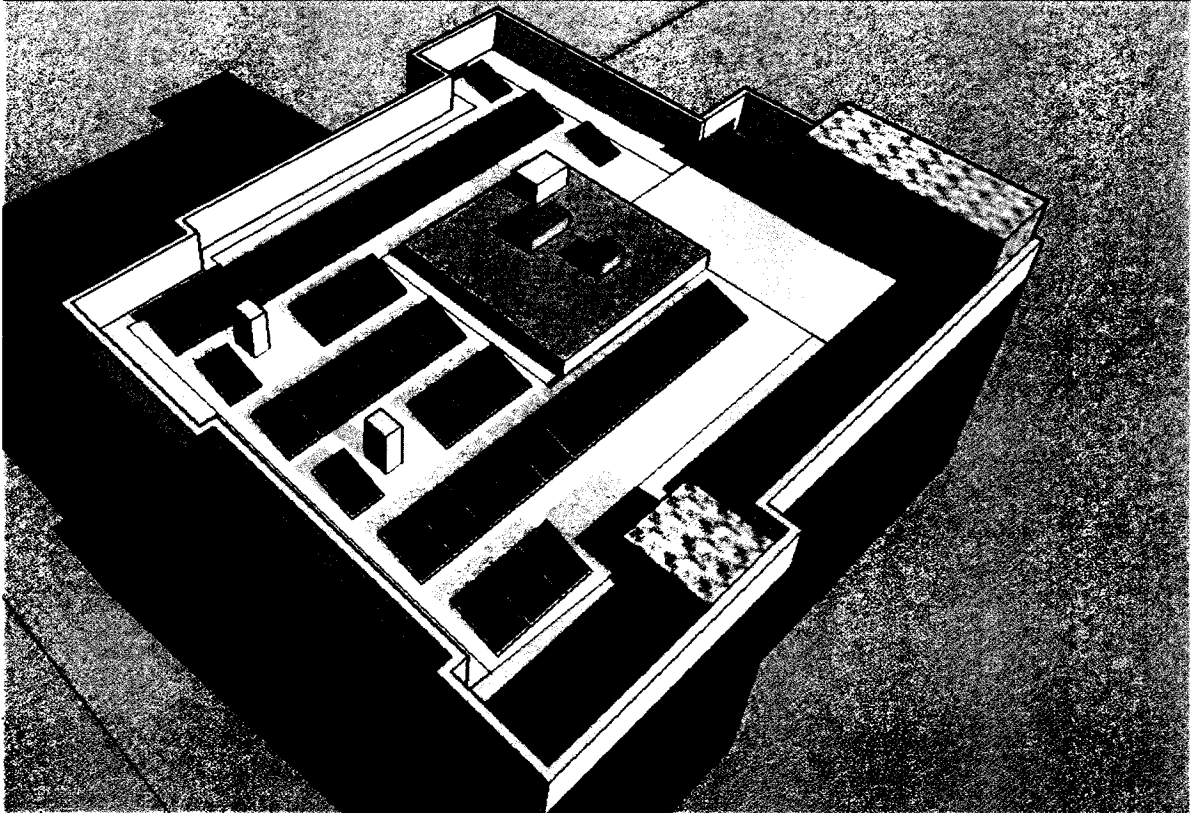
Sr. No	Specification	Data
1	Foundation Structure	Reinforced Concrete

**Data Collecting System:**

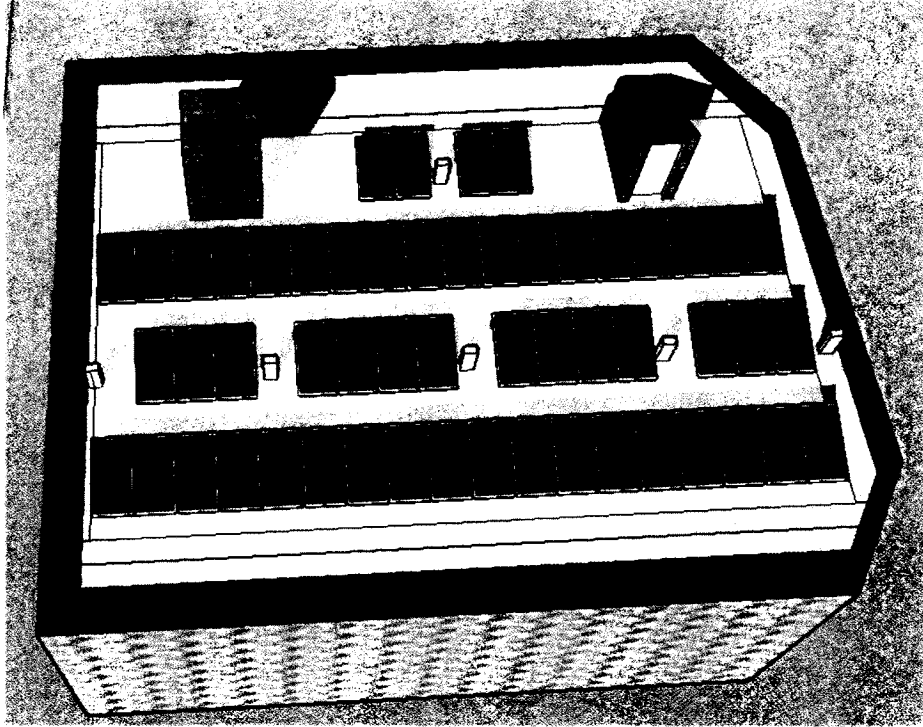
S. No	Specification	Data
1	System Data	Continuous on-line logging and monitoring over web portal

## General Layout & Single Line Diagram

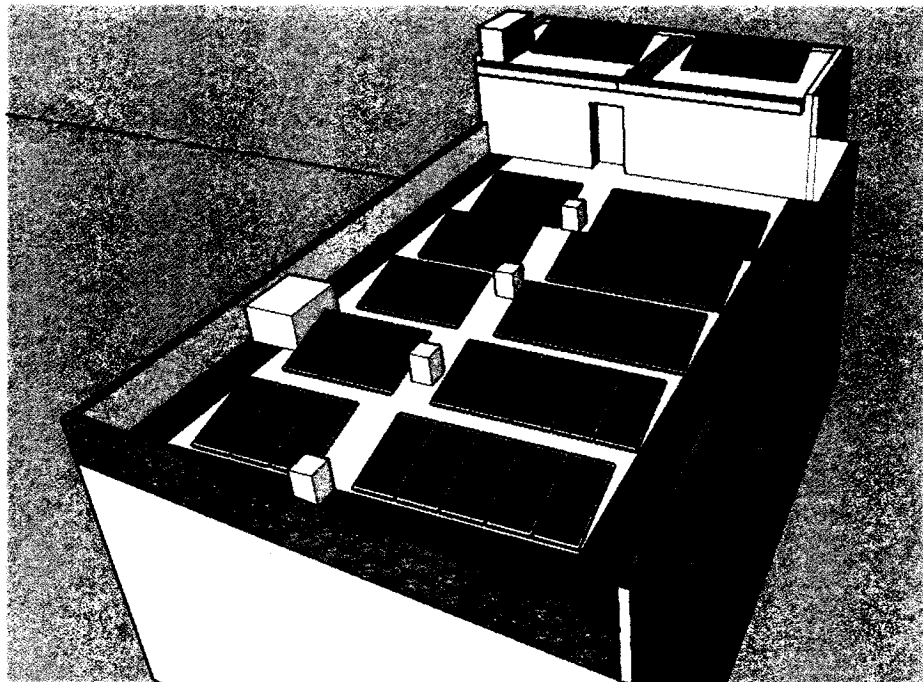
Layout:



Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan.

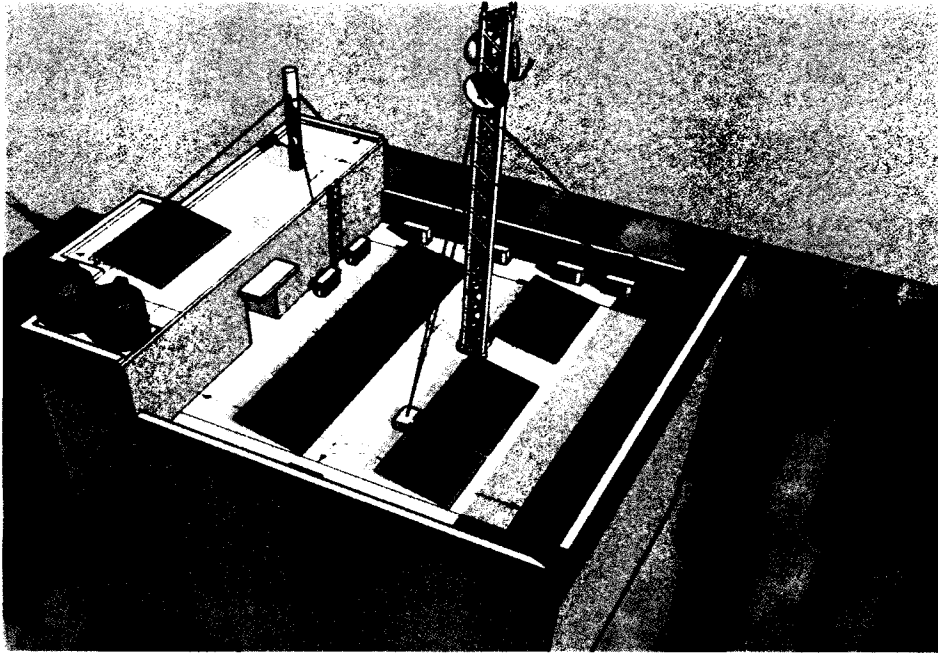


Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar khan

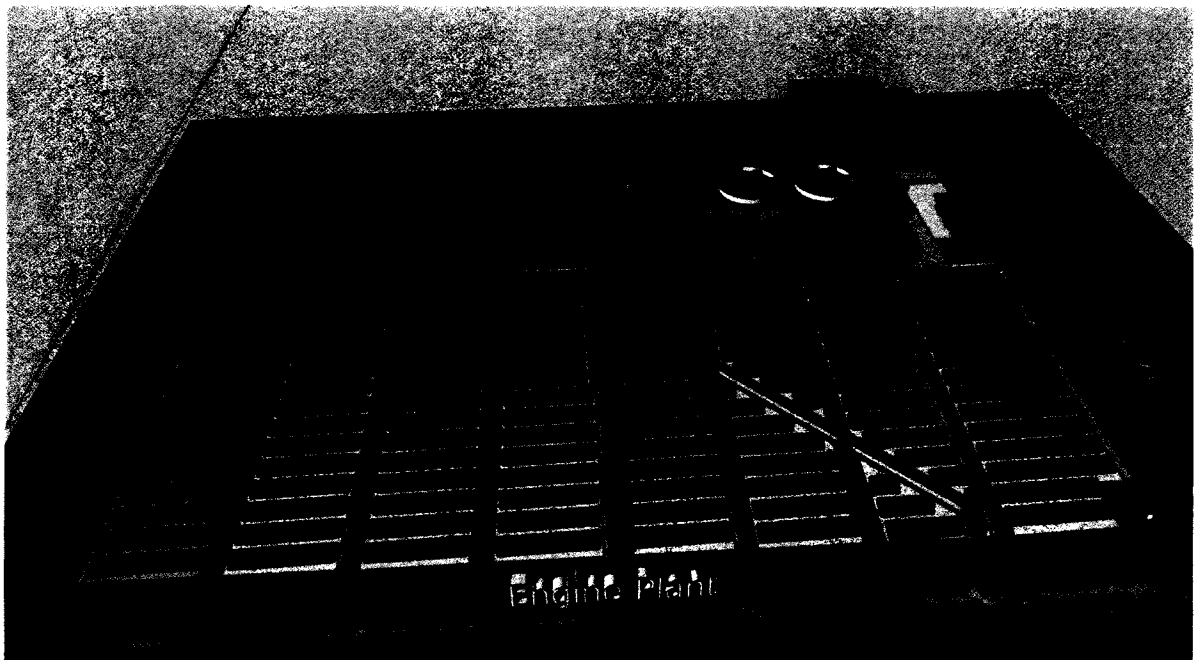


Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



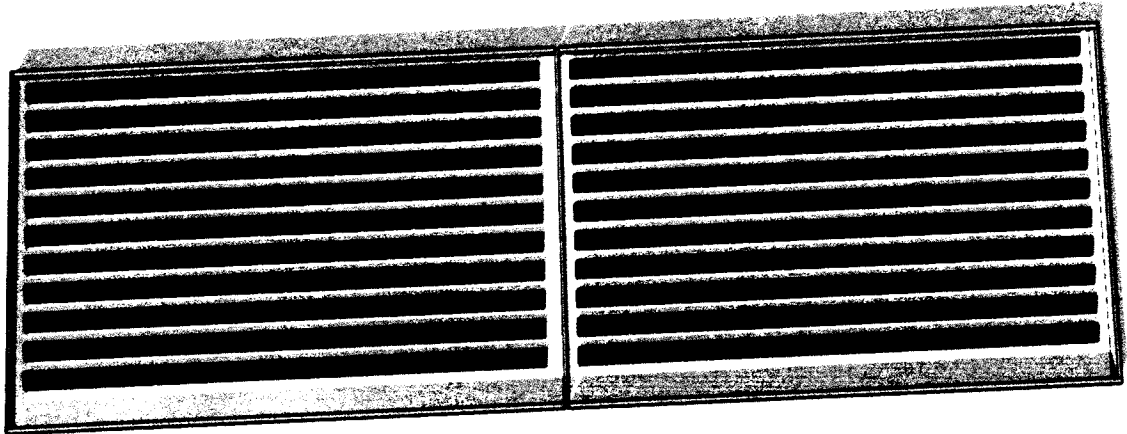
Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore



Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

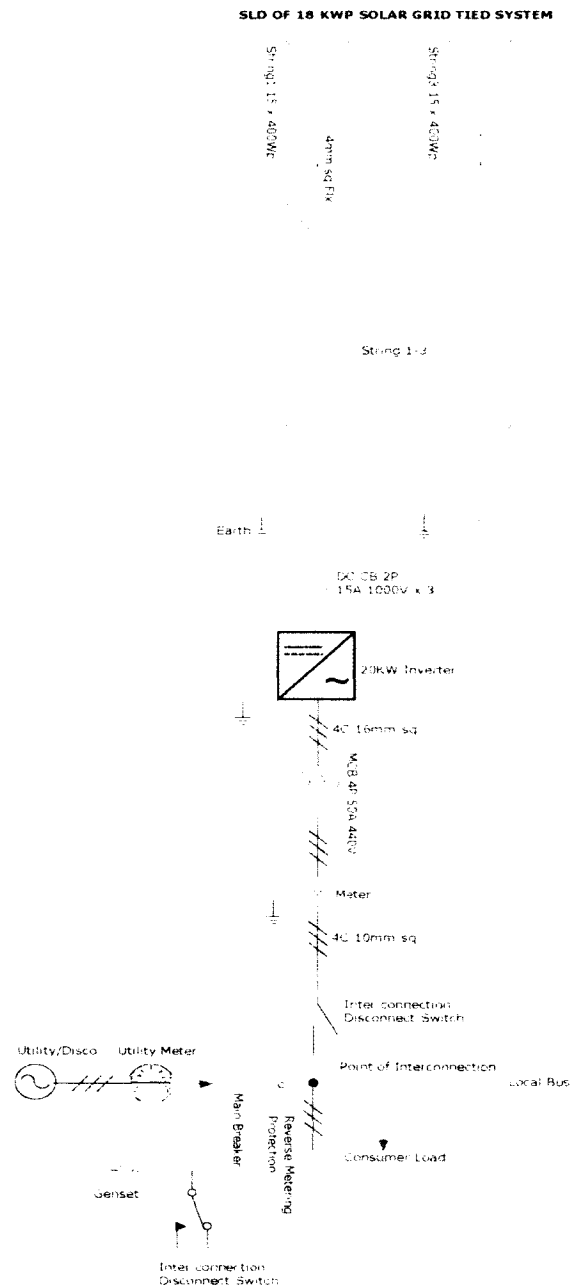


Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

Atlas Energy Limited

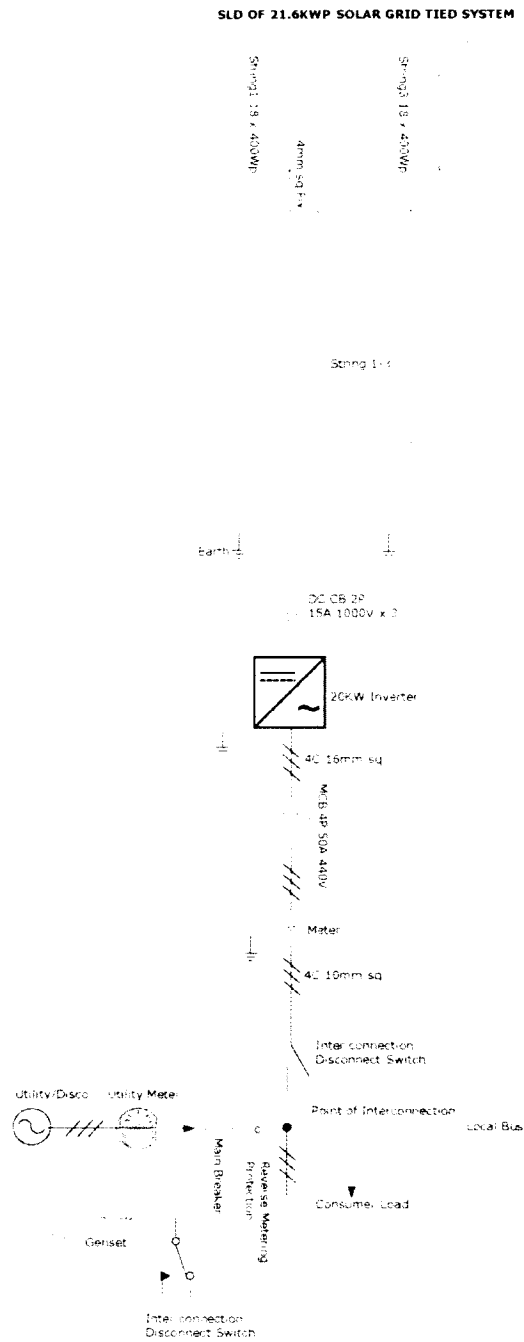
Application for Generation License 10 MW On-grid Solar PV Plant

## Single Line Diagram



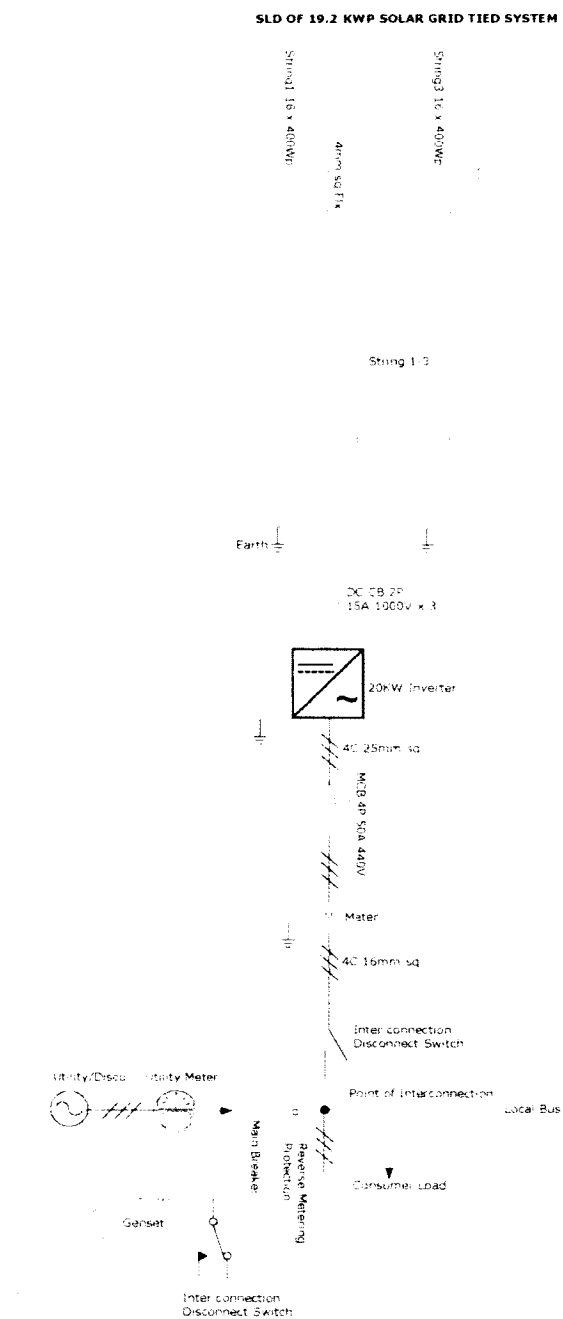
**Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



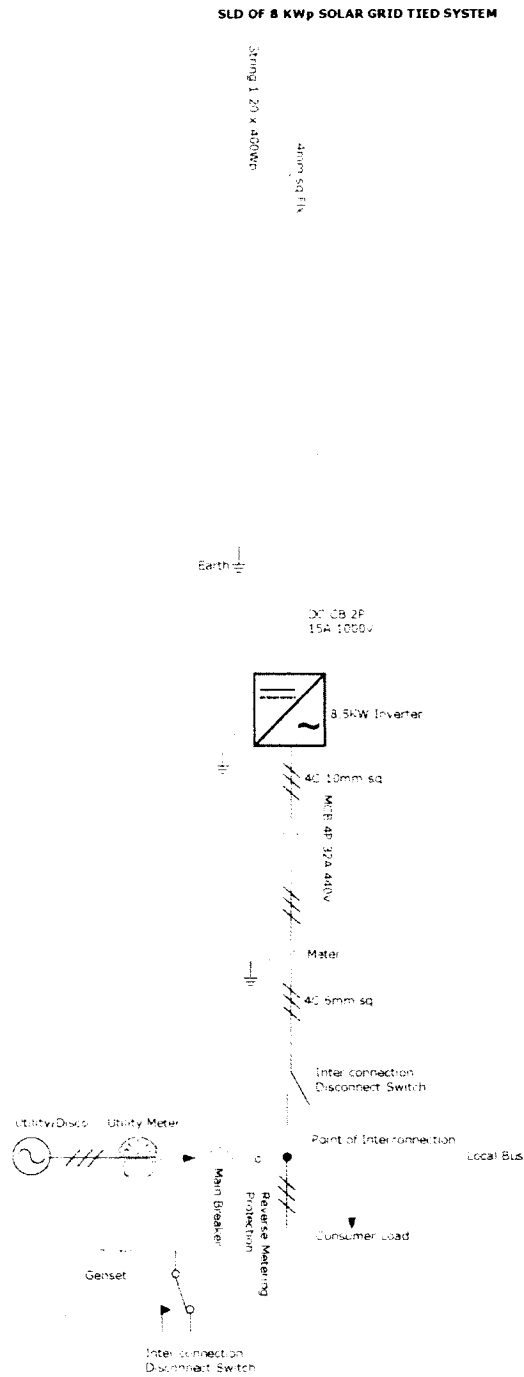
**Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar khan**

## Application for Generation License 10 MW On-grid Solar PV Plant



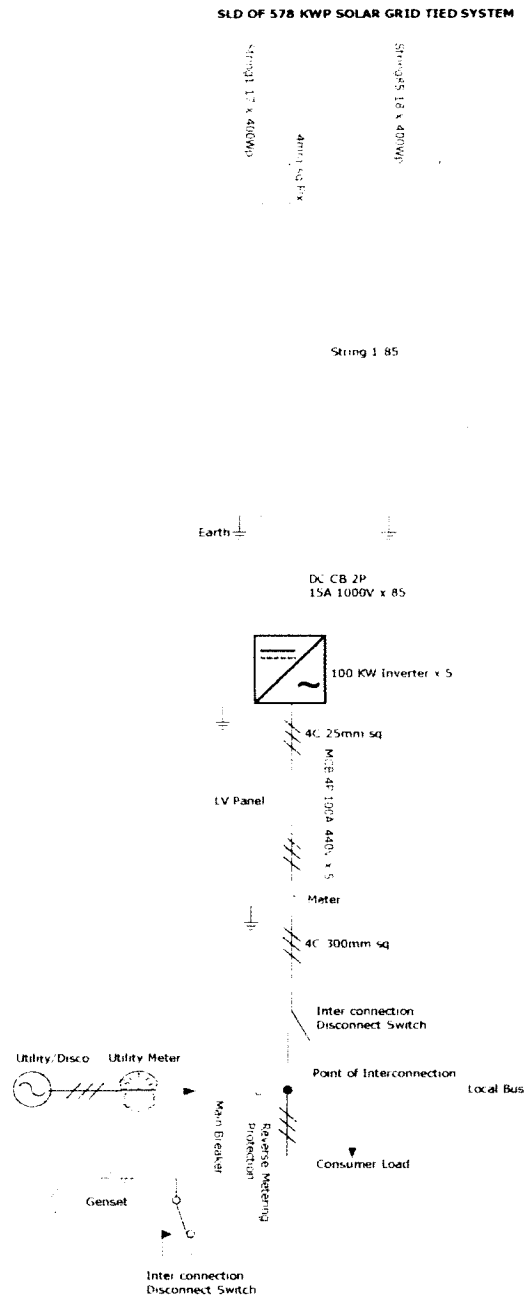
**Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



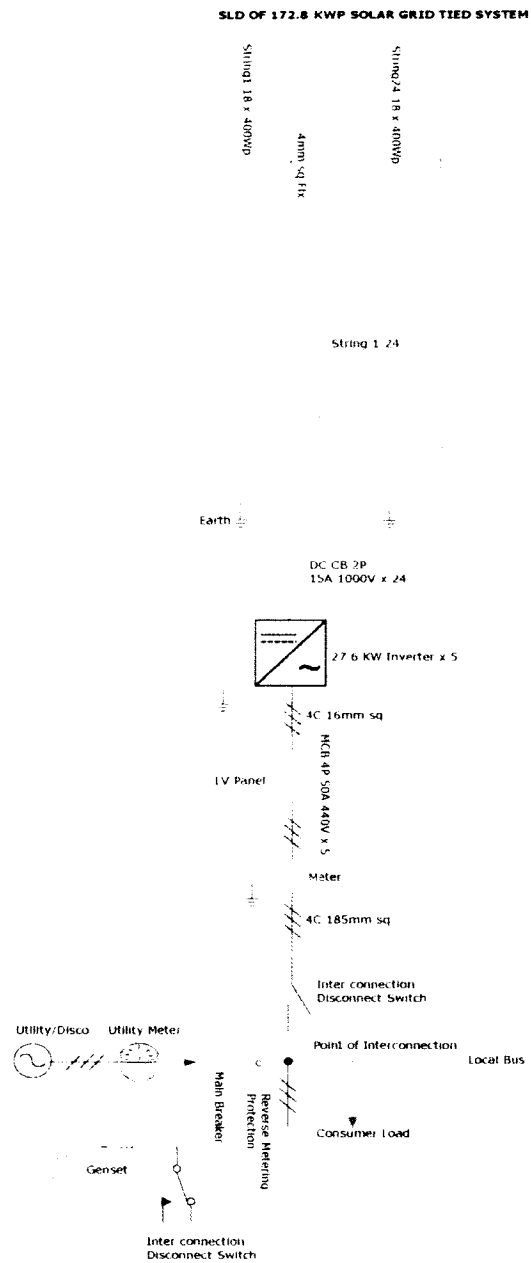
**Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



**Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.**

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.

## Project Site & Location

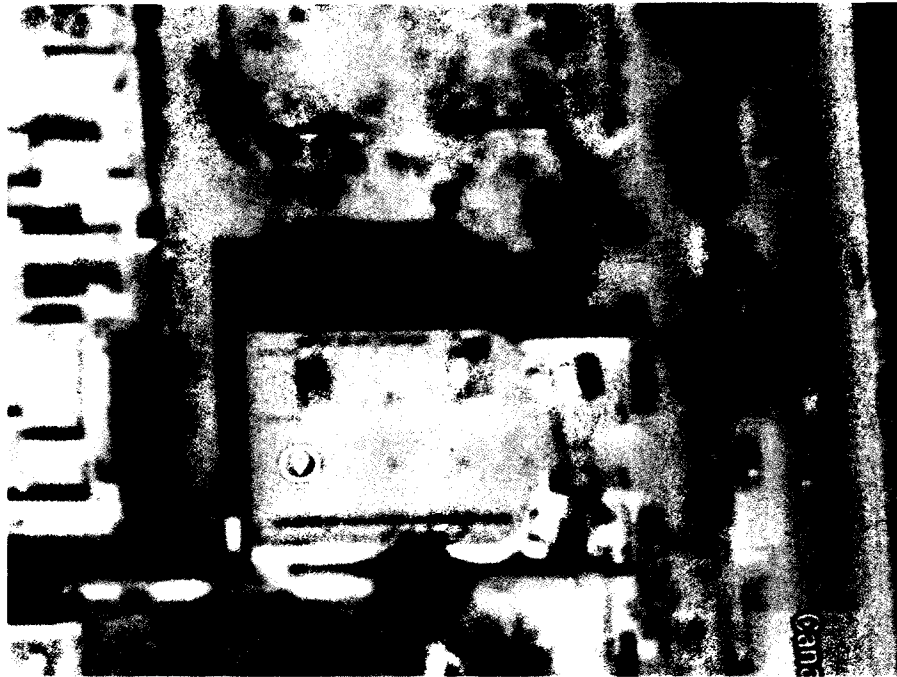
The project site is the rooftop and exact coordinates of the project site are as below:

Phase	Location	Site Coordinates
	Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.	Latitude: 30°.18 N Longitude: 71°.45 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar khan	Latitude: 28°.41 N Longitude: 70°.33" E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore	Latitude: 31°.55 N Longitude: 74°.31 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited, 1-McLeod Road, Lahore	Latitude: 31°.5612 N Longitude: 74°.31 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	Latitude: 31°.68 N Longitude: 74°.09 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	Latitude: 31°.68 N Longitude: 74°.09" E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°

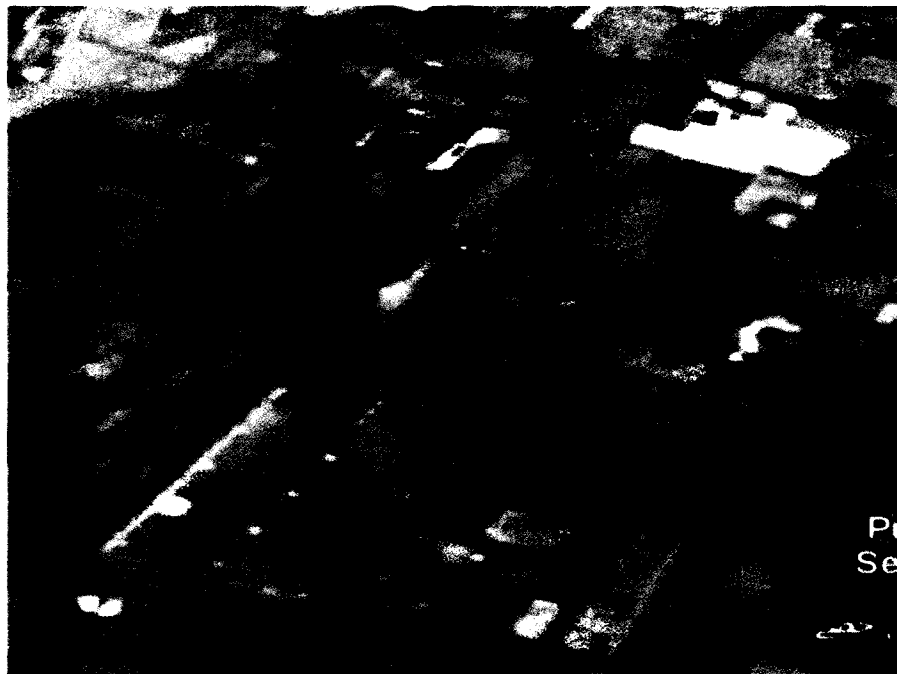
A bird's eye view of the project site is given in the figure below:



Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan.

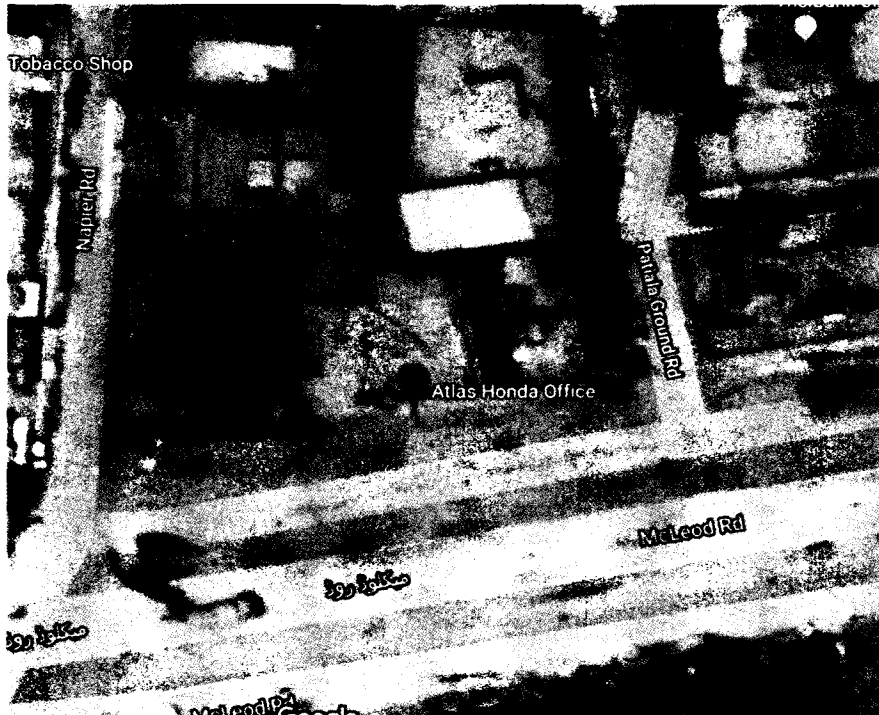


Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar Khan

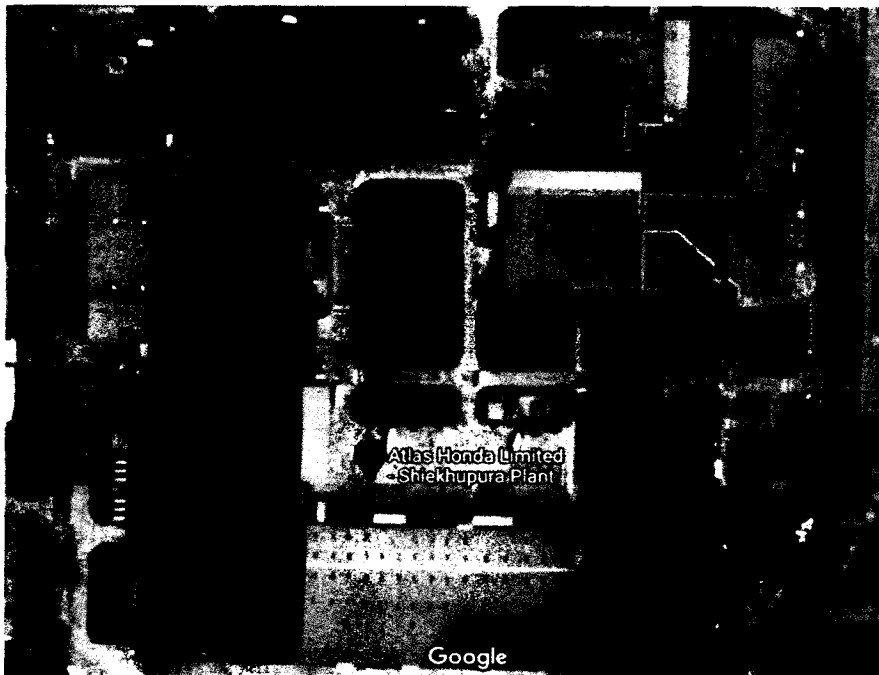


Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore



Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant



Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.

Atlas Energy Limited

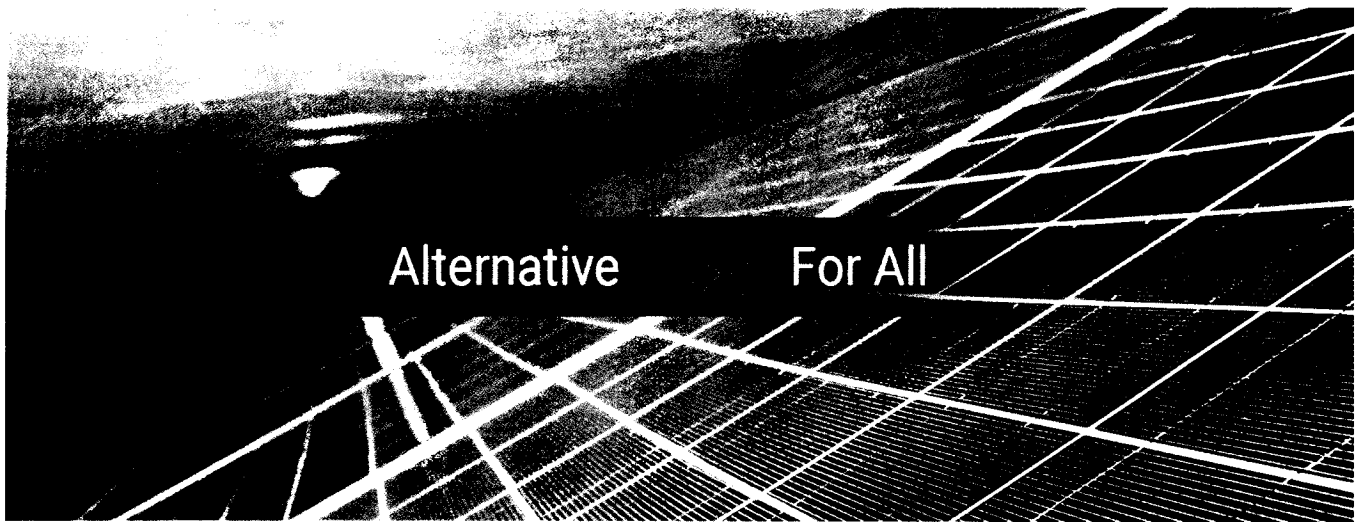
Application for Generation License 10 MW On-grid Solar PV Plant

## **Regulation # 3(5) (h): Feasibility Report**

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

# Feasibility Study Report



**Solar PV Power Project at Various Sites**  
**Atlas Energy Limited**

## Executive Summary

The feasibility study examines the costs, practicality, and likely outcome of a solar photovoltaic (PV) installation on the rooftop of various sites as below:

Phase	Location
I	Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.
	Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yarkhan
	Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore
	Atlas Honda Limited, 1-McLeod Road, Lahore
	Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura
	Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

The main outcomes of the feasibility report are given below:

**Technical Site Analysis:** The project site is suitable for a solar PV energy system. For the purpose of estimation of power generation potential, solar insolation is assumed to be "good". Panel azimuth (0 degree), panel tilt (15 degrees) and satisfactory roof condition and structure are also assumed.

**Anticipated System Information:** The projects in Phase-I will accommodate a 810 kW solar PV system with a projected annual production of 1,170,196 kWh/ year with use of a JKM400M-72H (400 wp) PV panel.

**Financial Analysis:** The project will be financed on an 80% debt & 20% equity model. The total estimated project cost is **PKR 77,943,430**.

Based on the technical and financial analysis, the installation of an 810 kW Solar PV System on the rooftop of various sites as shown in above table.

## 1. Introduction:

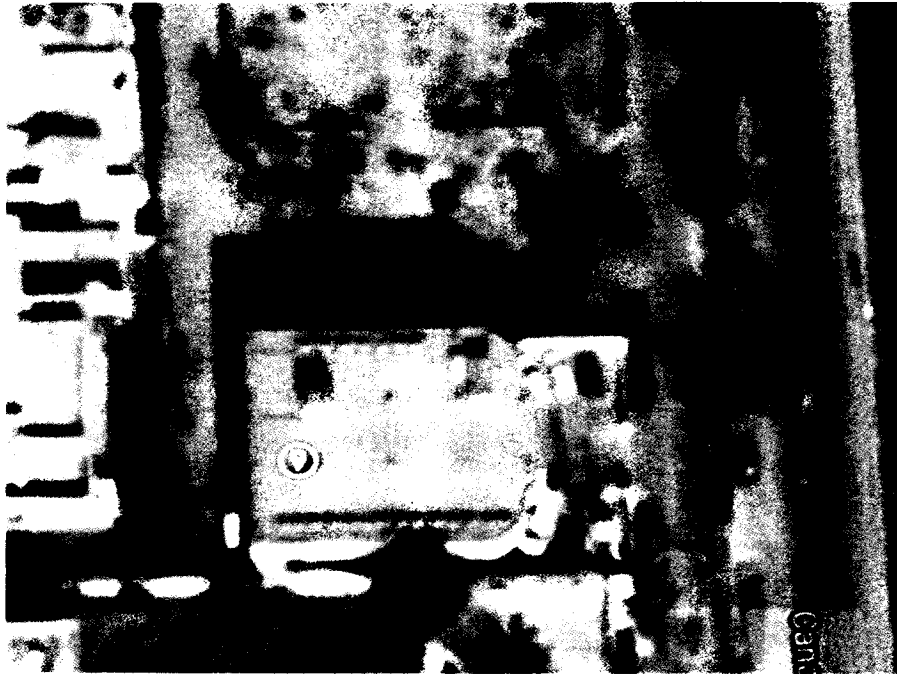
The project site is the rooftop and exact coordinates of the project site are as below:

Phase	Location	Site Coordinates
	Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.	Latitude: 30°.18 N Longitude: 71°.45 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar khan	Latitude: 28°.41 N Longitude: 70°.33" E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore	Latitude: 31°.55 N Longitude: 74°.31 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited, 1-McLeod Road, Lahore	Latitude: 31°.5612 N Longitude: 74°.31 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	Latitude: 31°.68 N Longitude: 74°.09 E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°
	Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	Latitude: 31°.68 N Longitude: 74°.09" E Field Type Fixed tilt plane Field Parameters: Tilt 15° & Azimuth 0°

A bird's eye view of the project site is given in the figure below:



Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.



Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar khan

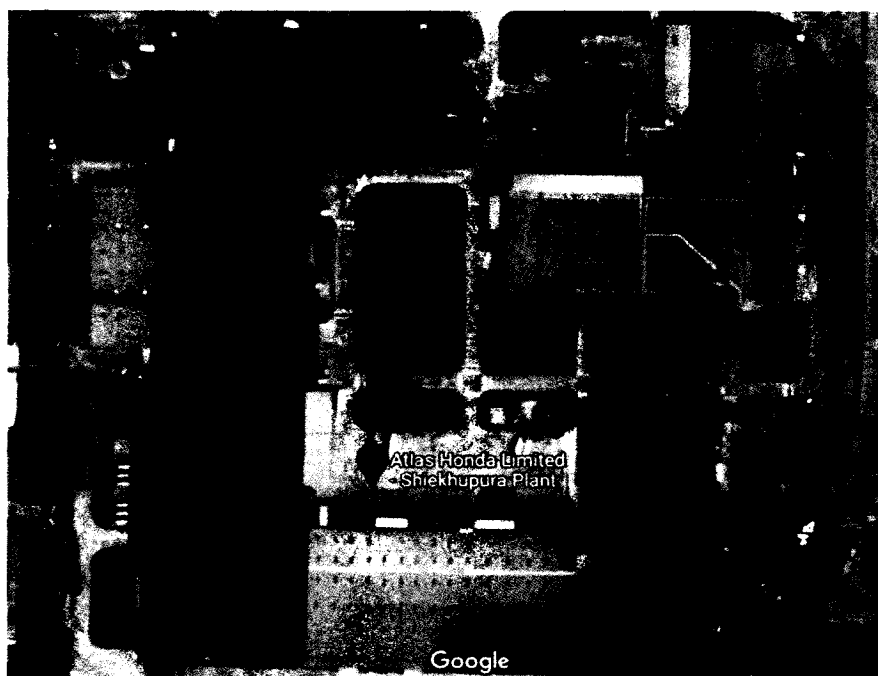


Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



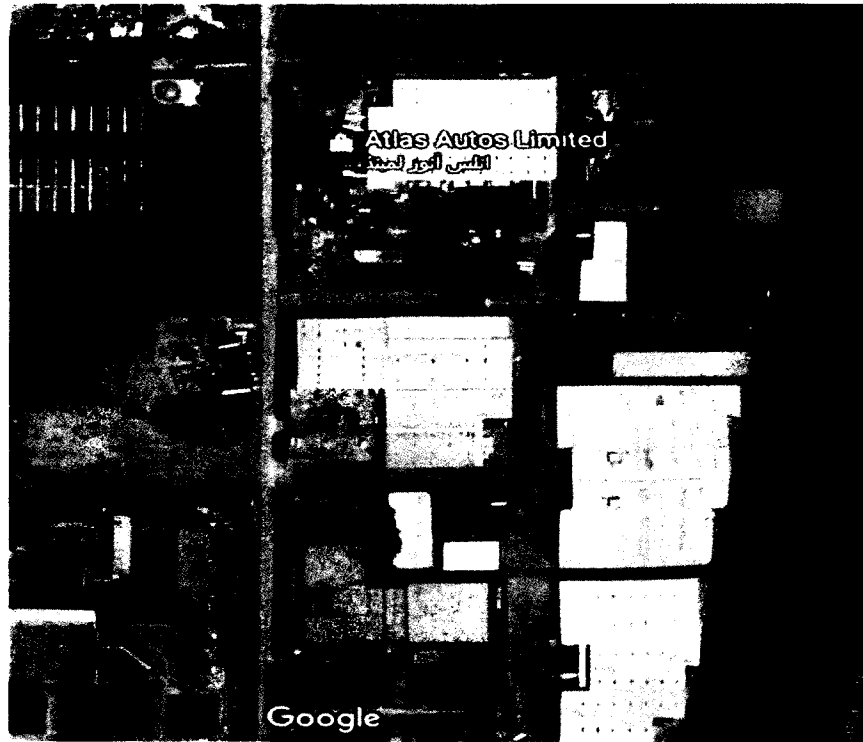
Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore



Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant



Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

## 2. Technical Analysis:

### 2.1 Site Conditions:

The following tasks were carried out:

- Global Horizontal Irradiation, annual and inter-annual variation was assessed.
- Near shading objects were taken into account for placement of PV modules.
- Area required for selected module technology was calculated. Keeping in view available area and minimum inter row shading, tilt angle and appropriate spacing was calculated from near shading objects.

### 2.2. Technology Review and Selection:

#### PV Modules:

S. No	Specification	Data
1	Type of Module	JKM400M-72H
2	Type of Cell	Mono crystalline
3	Dimensions of each module	2008×1002×40mm (79.06×39.45×1.57 inch)
4	Weight	22.5 Kg
5	No of Modules (Qty.)	Site1: 75 Site 2: 54 Site 3: 48 Site 4: 20 Site 5: 1,445 Site 6: 432
6	Module Area	2.012016 m2
7	Total Land Area Used	96.6 m2
8	Module Frame	Anodized aluminum alloy
9	Nominal Max. Power (Pmax)	400Wp
10	Opt. Operating Voltage (Vmp)	41.7V
11	Opt. Operating Current (Imp)	9.60A
12	Open Circuit Voltage (Voc)	49.8V
13	Short Circuit Current (Isc)	10.36A
14	Module Efficiency	19.88%
15	Operating Temperature	-40°C ~ +85°C
16	Max. System Voltage	1000VDC (IEC)
17	Module Fire Performance	TYPE 1(UL 1703) & (IEC 61730) (IEC 61215)

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant

**Inverters:**

Sr. No.	Specification	Data			
1	Manufacturer	ABB	ABB	ABB	ABB
2	Capacity of each Unit	20 KW	7.5 KW	100 KW	27.6 KW
3	No of Inverters (Qty.)	3	1	5	5
4	MPP Input Voltage Range	440 V to 800 V	320 V to 800	480 V to 850	500 V to 800
5	Rated Input Voltage	620V	620V	620V	620V
6	Max Input Voltage	1000 V	1000 V	1000 V	1000 V
7	Total Power	20 KW	8 KW	500 KW	138 KW
8	Max Input Current Input A/Input B	50A	30A	50A	64A
9	Max Output Current	33 A	12.5 A	145 A	45 A
10	Output Electrical System	3 Phase AC	3 Phase AC	3 Phase AC	3 Phase AC
11	AC Nominal Voltage	320 to 480 V	320 to 480 V	320 to 480 V	320 to 480 V
12	Rated Power Frequency	50 Hz	50 Hz	50 Hz	50 Hz
13	Efficiency	98.2%	98.%	98.4%	98.2%
14	Relative Humidity (Non-Condensing)	100%	100%	100%	100%
15	Noise Emission	50dB(A)	50 dB(A)	68 dB(A)	53 dB(A)
16	Degree of Protection	IP65	IP65	IP65	IP65

**Combiner Box:**

Not required with this ABB model.

**PV Mounting Structure:**

Hot Dip Galvanized Iron (75-90 Microns) Structure will be designed and used to install solar panels. The mechanical design shall bear the required level of corrosion and wind/ gusts.

S. No	Specification	Data
1	Structure	Galvanized Steel
2	Tilt of Array Frame	15°

**Foundation Pillars:**

The civil works will be required for mounting of solar arrays. The design of civil work is according to load bearing capacity of roof and to bear high wind/ gusts.

Sr. No.	Specification	Data
1	Foundation Structure	Reinforced Concrete

**Data Collecting System:**

S. No	Specification	Data
1	System Data	Continuous on-line logging and monitoring over web portal

**2.3. Solar PV Yield Estimation and Simulation of Model Site:**

The energy yield prediction provides the basis for calculating project revenues. The aim is to predict the average annual energy output for the lifetime of the proposed power plant.

To estimate accurately the energy produced from a PV power plant, information is needed on the solar resource and temperature conditions of the site. Also required are the layout and technical specifications of the plant components.

## **Atlas Energy Limited**

### **Application for Generation License 10 MW On-grid Solar PV Plant**

A number of solar energy yield prediction software packages are available in the market. These packages use time step simulation to model the performance of a project over the course of a year.

PVSyst software has been used for energy yield prediction for this site and its results are given below. Details of the simulation steps are presented in the following sections:

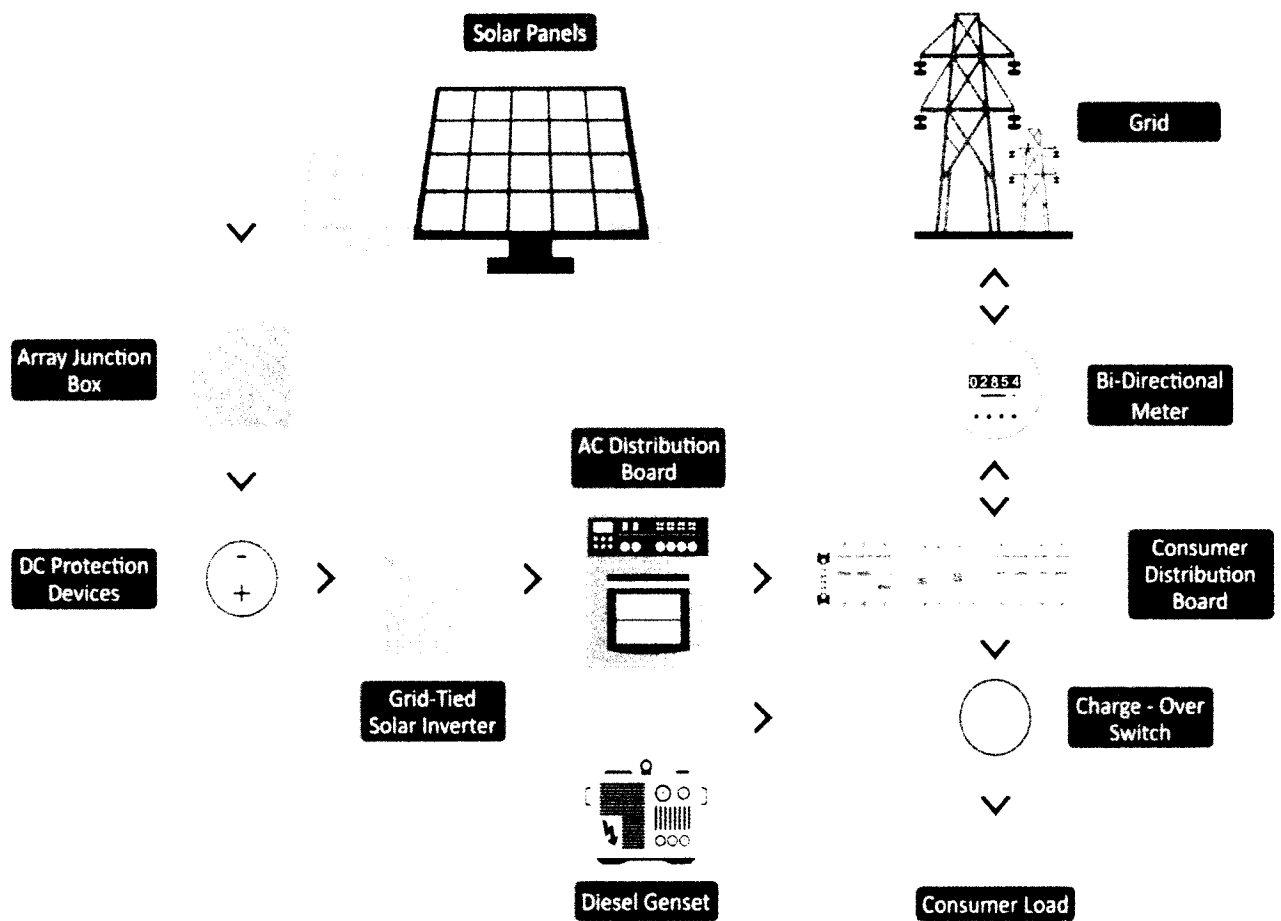
#### **2.4. Working Conditions: Zero Grid Export**

The solar system will have automatic mechanism to ensure that PV power currently generated by the inverters always matches the current power consumption of the site load. A closed loop control system of inverter AC output is implemented in reference to energy flow at grid connection point which will reduce inverter AC output of the inverter if site load will be less than the solar production.

#### **2.5. Plant Characteristics**

Generation Voltage: 230/400 V three phase four wire system Power Factor at rated power: 1 Frequency: 50 Hz Generation characteristic: Inverter has built-in features of controllable active power ramp following grid disturbance or normal connection, voltage regulation and frequency response. There are no additional control metering and instrumentations.

## 2.6. Concept Design:



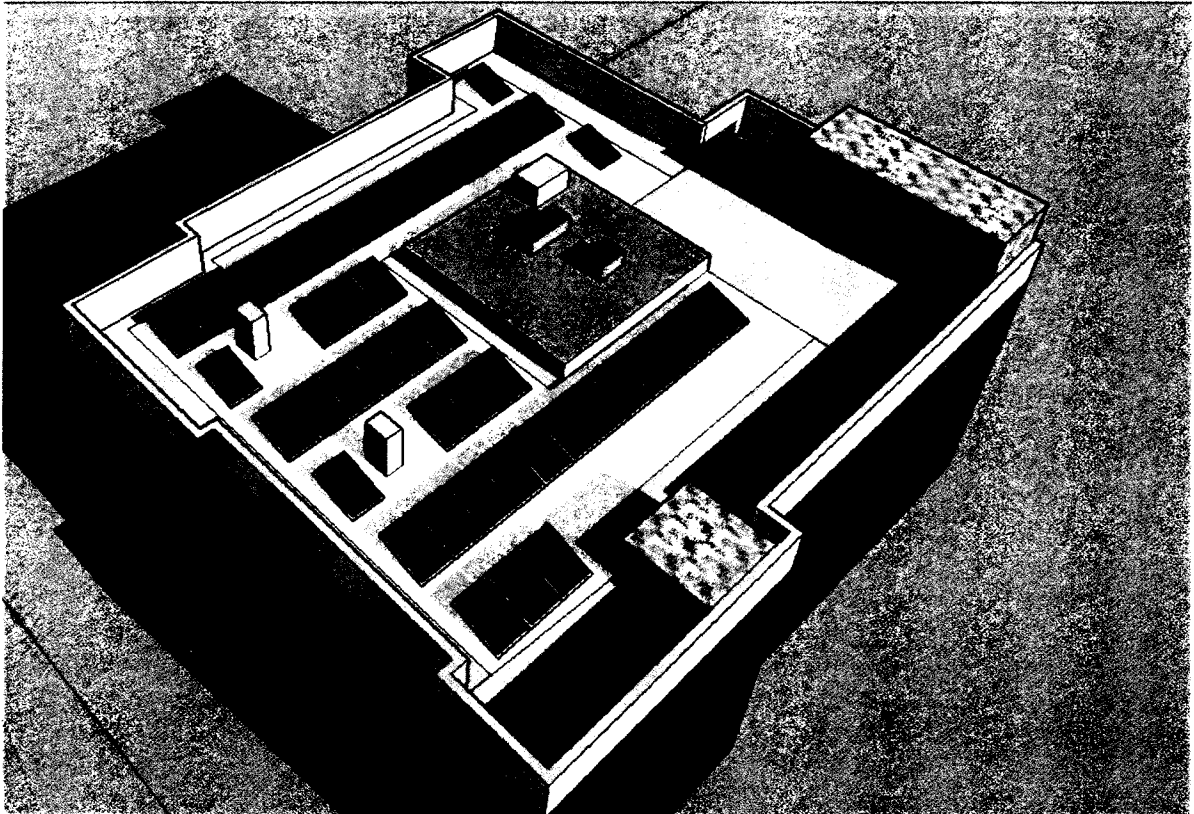
## **2.7. Design Parameters**

The following tasks were carried out for PV layout and shading.

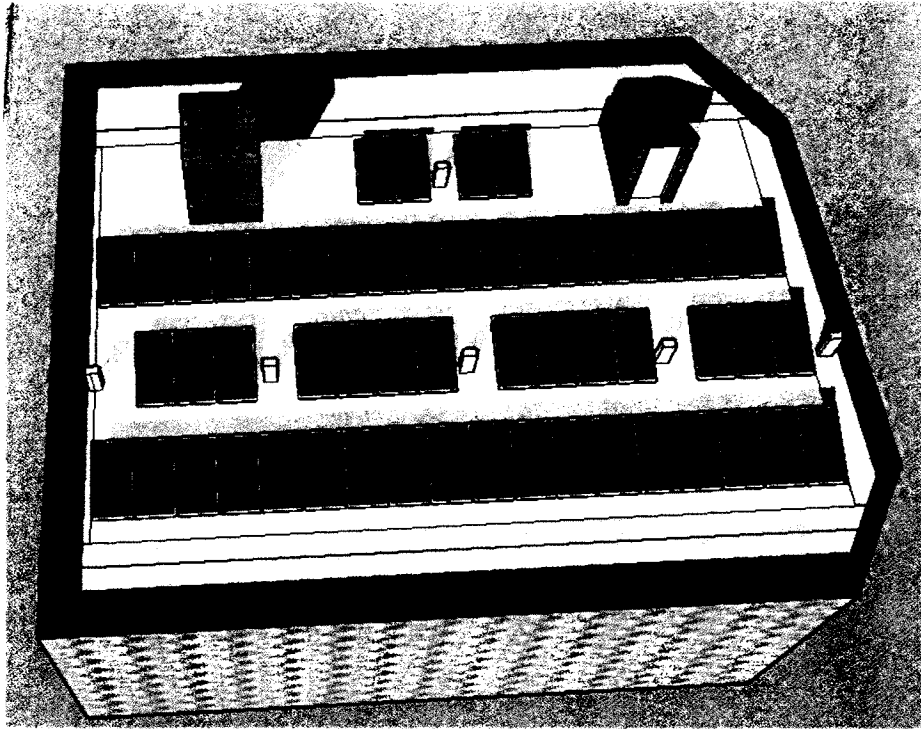
- a. Assessment of shading (horizon and nearby building).
- b. Outline layout of area suitable for PV development.
- c. Designing row spacing to reduce inter-row shading and associated shading losses.
- d. Designing the layout to minimize cable runs and associated electrical losses
- e. Creating access routes and sufficient space to allow movement for maintenance purposes.
- f. Choosing a tilt angle that optimizes the annual energy yield according to the latitude of the site and the annual distribution of solar resource.
- g. Module cleaning strategy.
- h. Simulating the annual energy losses associated with various configurations of tilt angle, orientation and row spacing. The optimized configuration and simulation results are given in section "Energy Yield Prediction"
- i. PV layouts of the site are given in view in the following section.

### 3. General Layout & Single Line Diagram

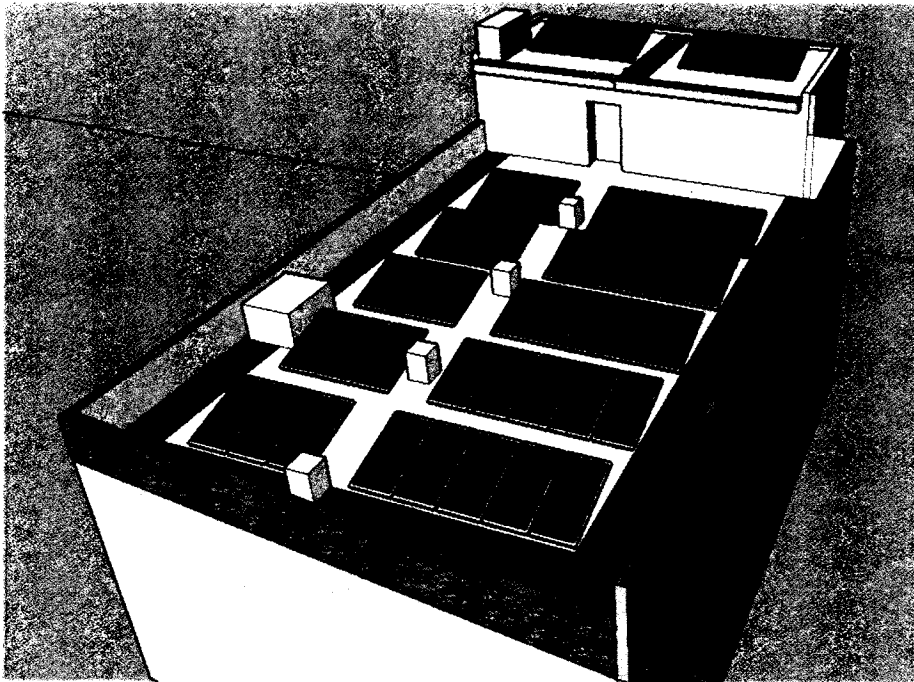
#### 3.1. Layout:



Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan.

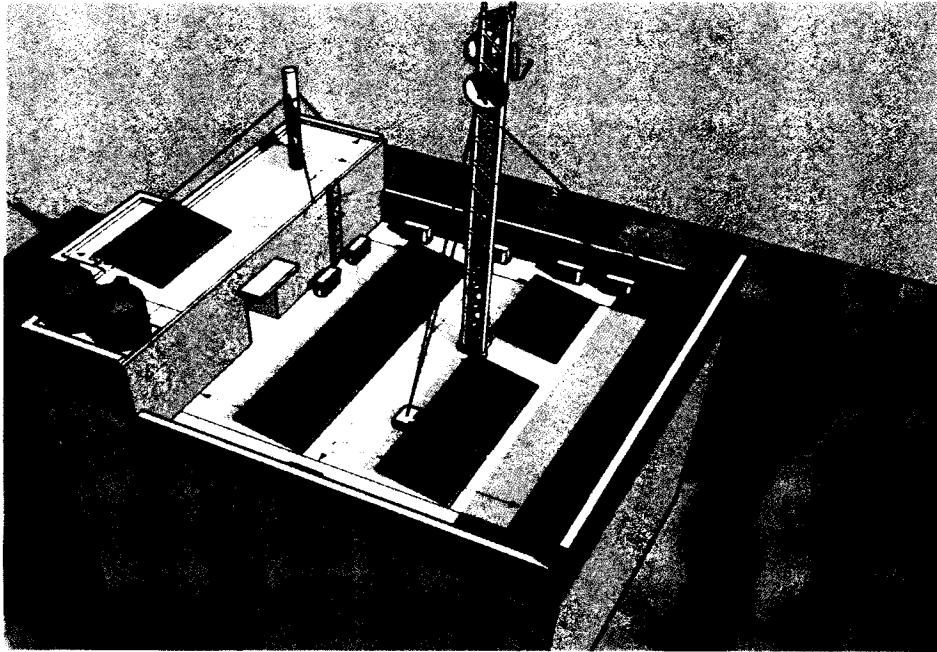


Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar Khan

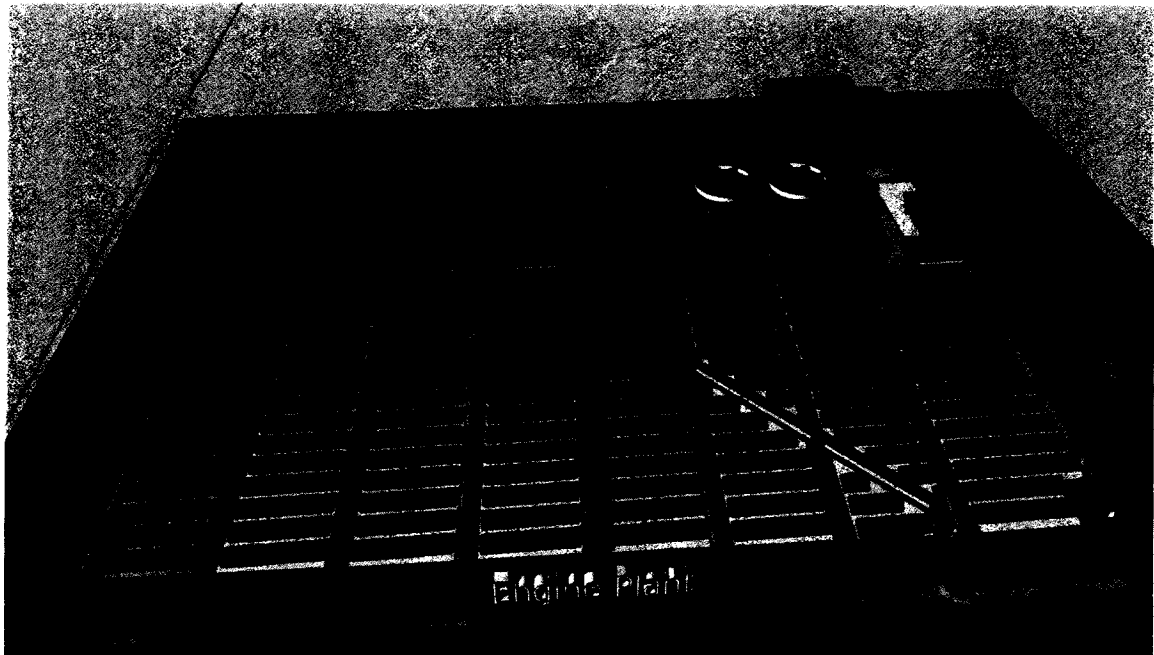


Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore

**Atlas Energy Limited**  
Application for Generation License 10 MW On-grid Solar PV Plant

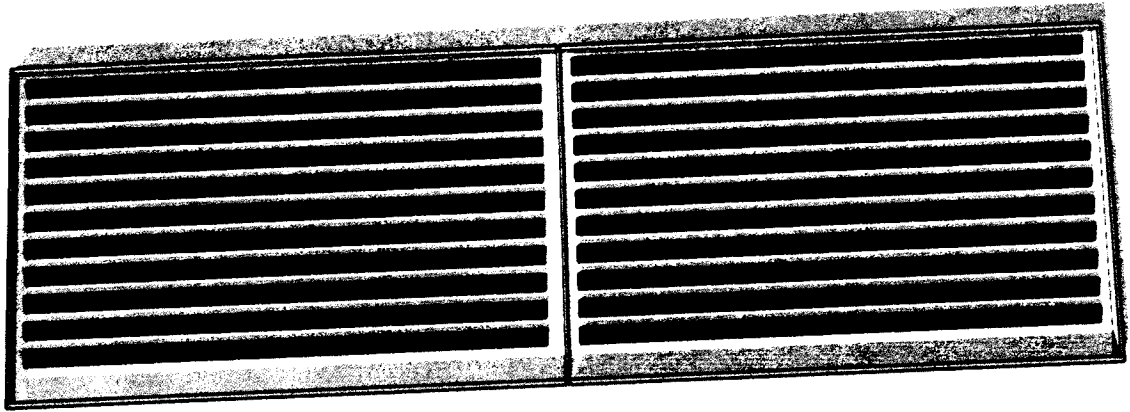


**Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore**



**Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura**

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

### **3.2. Electrical Design (Single Line Diagram):**

The electrical system comprises the following components:

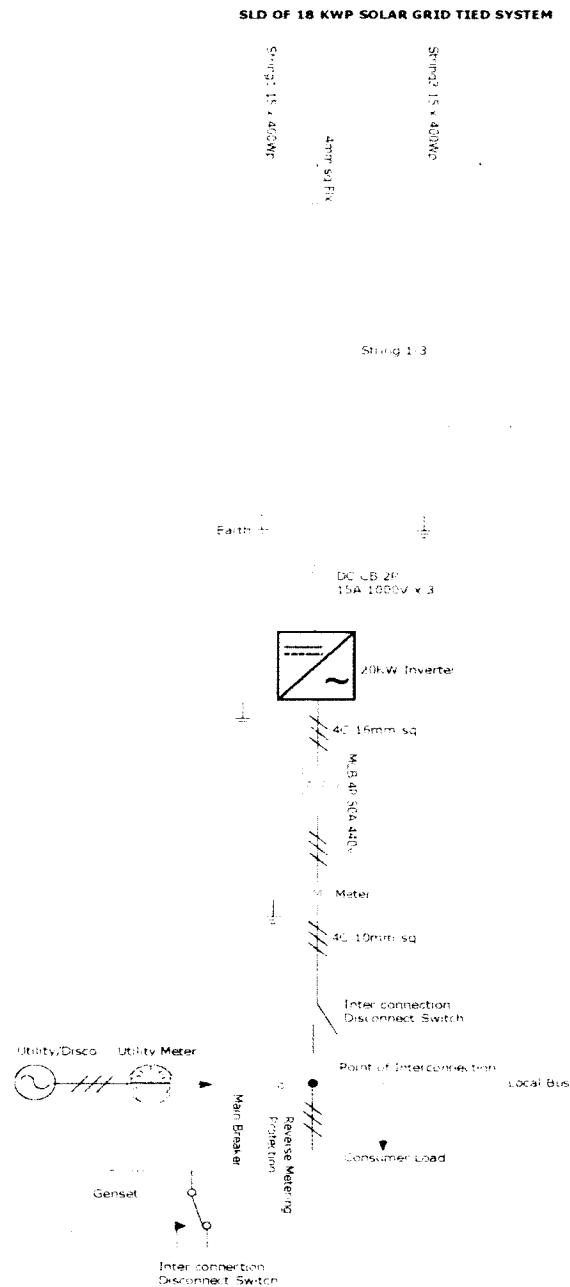
- Array(s) of PV modules
- DC/AC cabling (module, string and main cable)
- DC connectors (plugs and sockets)
- Junction boxes and combiners
- Disconnects/switches
- Protection devices e.g. fuses, surge protective devices, breakers
- Energy Metering
- Earthing

The single line diagrams of DC and AC sides are given below. The single line diagram includes the protection devices that will be used for safe and smooth operation of the system.

**Protections DC Side:** String Fuses, Surge Protective Device and DC Disconnect Switches

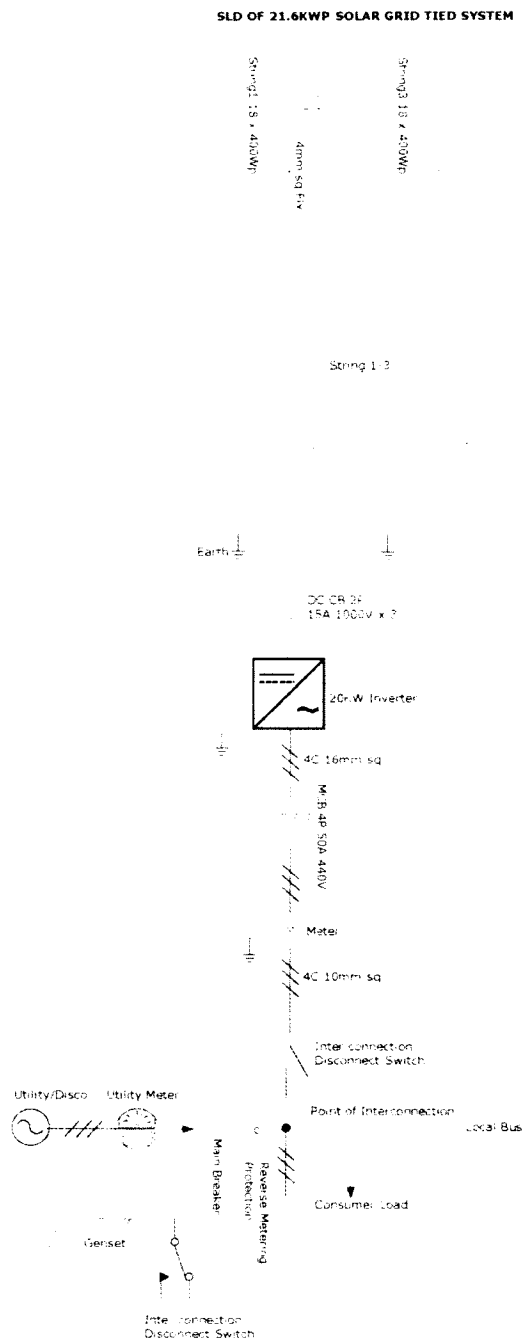
**Protections AC Side:** MCBs, Main Breaker

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



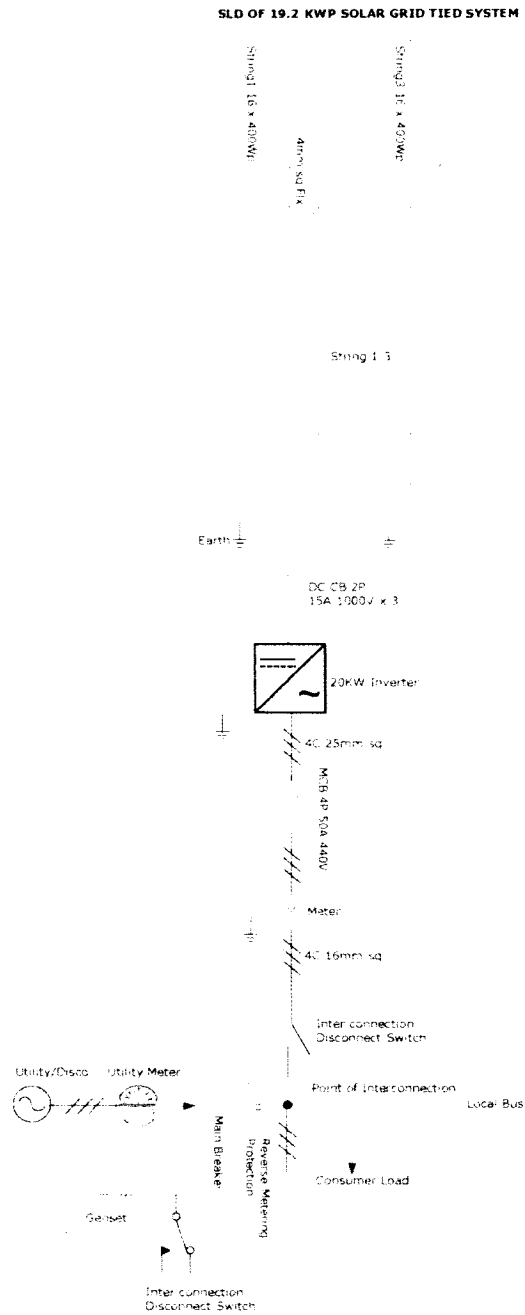
**Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



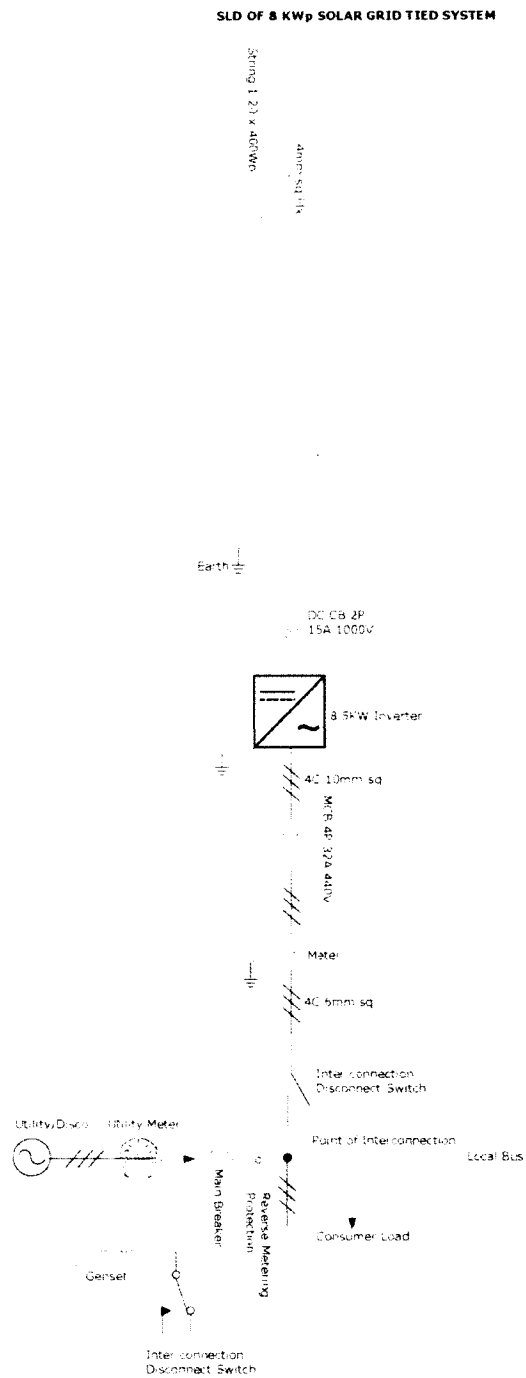
**Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar Khan**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



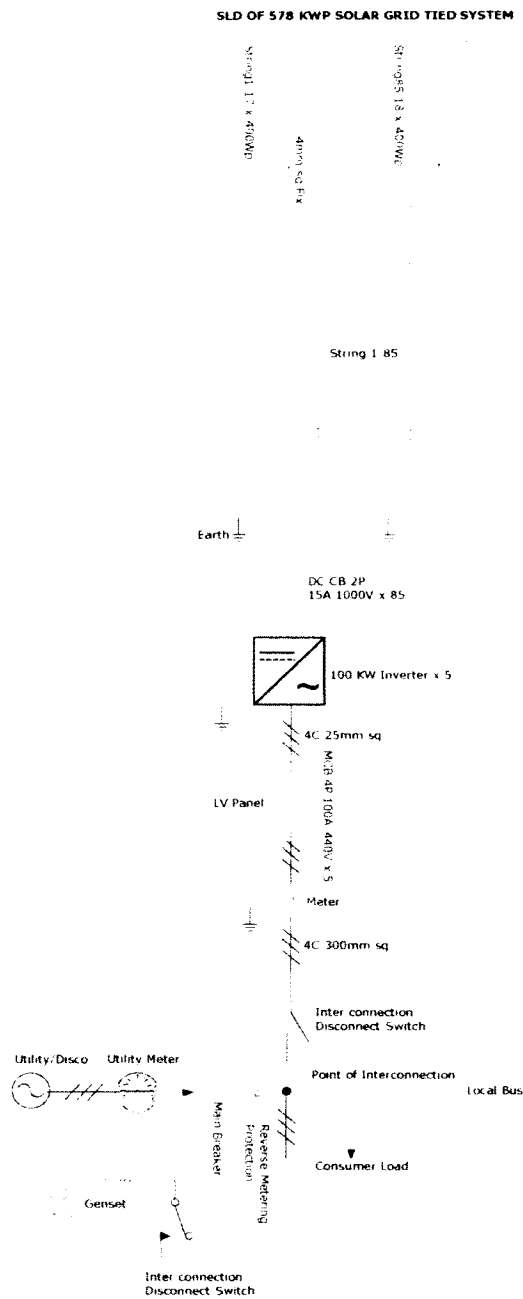
**Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



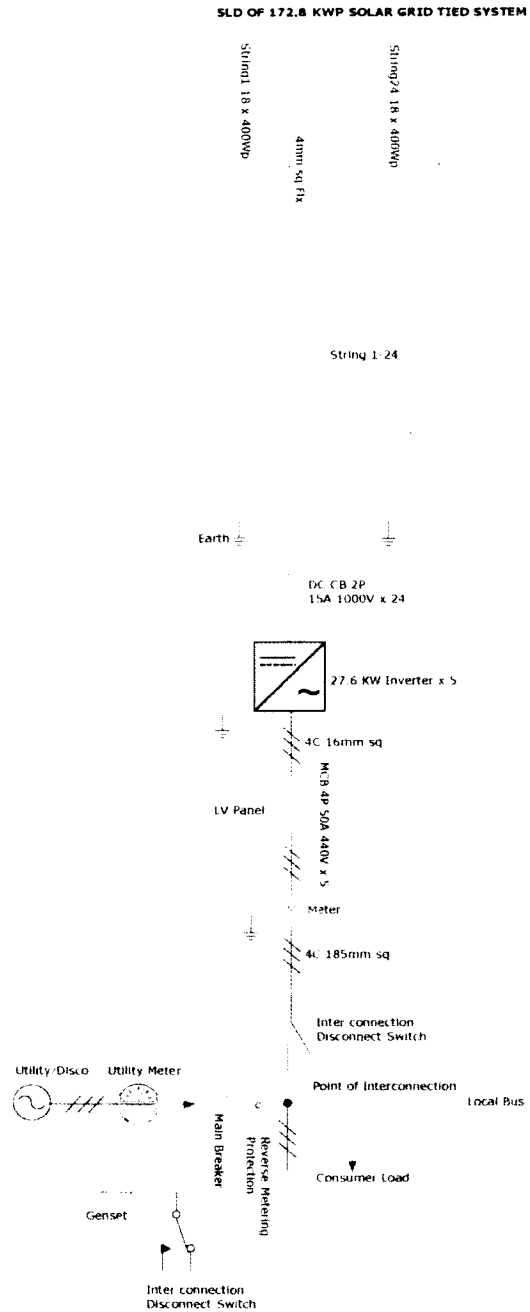
**Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



**Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.**

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.

### **3.3. Energy Yield Estimation (PV Syst. Report):**

The energy yield prediction provides the basis for calculating project revenues. The aim is to predict the average annual energy output for the lifetime of the proposed power plant.

To estimate accurately the energy produced from a PV power plant, information is needed on the solar resource and temperature conditions of the site. Also required are the layout and technical specifications of the plant components.

A number of solar energy yield prediction software packages are available in the market. These Packages use time step simulation to model the performance of a project over the course of a year. PV Syst software has been used for energy yield prediction for this site and its results are given below.

Details of the simulation steps are presented in the following sections:

#### 4. Financial Analysis:

Sr. #	Location	System Size (KWp)	Total Project Cost (PKR)	Total Project Cost (USD)	Cost/Watt (USD)	Debt : Equity
1	Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.	30	2,888,226	20,831	0.7	80% Debt (SBP Green Financing)
2	Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yarkhan	20	1,925,484	13,887	0.7	
3	Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore	19	1,848,465	13,332	0.7	
4	Atlas Honda Limited, 1-McLeod Road, Lahore	8	770,194	5,555	0.7	
5	Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	580	55,877,552	403,012	0.7	
6	Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	152	14,633,680	105,544	0.7	

#### 5. Environmental Aspects:

Every energy generation and transmission method affects the environment. Conventional generating options can damage air, climate, water, land & wildlife, landscape as well as raise the levels of harmful radiation. PV technology is substantially safer offering a solution to many environmental and social problems associated with fossil and nuclear fuels. Solar PV energy technology provides obvious environmental advantages in comparison to the conventional

## **Atlas Energy Limited**

### **Application for Generation License 10 MW On-grid Solar PV Plant**

energy sources thus contributing to the sustainable development of human activities. Not counting the depletion of the exhausted natural resources, their main advantage is related to the reduced CO<sub>2</sub> emissions and normally absence of any air emissions or waste products during their operations.

The use of solar power has additional positive implications such as:

- Reduction of the emissions of the greenhouse gases (mainly CO<sub>2</sub>, NO<sub>x</sub>) and prevention of toxic gas emissions (SO<sub>2</sub>, particulates)
- Reduction of the required transmission lines of the electricity grids.

## **6. Socio-Economic Aspects:**

In regard to the socio-economic viewpoint, the benefits of exploitation of solar PV system comprise of:

- Increase of the regional/national energy independency
- Provision of significant work opportunities
- Support of the deregulation of energy market
- Diversification of the deregulation of energy markets

## **7. Safety & Emergency Plans:**

- Only qualified and authorized electricians will be allowed to undertake servicing or maintenance tasks.
- The authorized personnel will wear appropriate equipment, including a safety harness to restrain from falling off the roof, sturdy shoes that will have thick rubber soles to provide electrical insulation and good grip and appropriate clothing for personal protection, including a hat, sunglasses, gloves and long pants and sleeves.
- Lock out and tag out procedures will be used before commencement of maintenance tasks.
- On-going operation and maintenance concerns for solar power systems will be addressed properly. These systems are exposed to outdoor weather conditions that enhance the aging process, and the infrastructure needs to be in place for the on-going maintenance of these systems to assure their safe operation.
- Properly grounded or double insulated power tools will be used for maintenance tasks. Tools will be maintained in good condition.
- Working on electrical equipment and circuits will be carried out in de-energized state.
- Proper pathways will be available for operation, maintenance and firefighting.
- Fire protection and suppression will be placed at site.

## **8. Training and Capacity Development:**

Trained and qualified personnel will be available at site 24/7 with proper safety and fire-fighting training. Training program will focus on but not limited to Solar Resource Assessment, Site Survey, Technology, Engineering Design, Regulation, Policy, Metering & Billing, and project Management of Rooftop Solar System.

The following components will include in training & development program.

- Collection of Resource Data
- Variability and uncertainty of resource data
- Site evaluation
- Crystalline and thin film technology comparison
- Rooftop solar system components
- Module mounting structure selection
- Inverter selection
- Design of PV Array
- Shadow Analysis
- DC Cable Layout
- DC Cable Sizing
- Protection and Metering
- Installation and Testing standards for solar PV plants
- Solar Module testing standards
- Economy of Roof top Solar System
- Detailed Project Report
- Operation and maintenance of rooftop solar system
- Safety and fire-fighting training

## **9. Conclusion:**

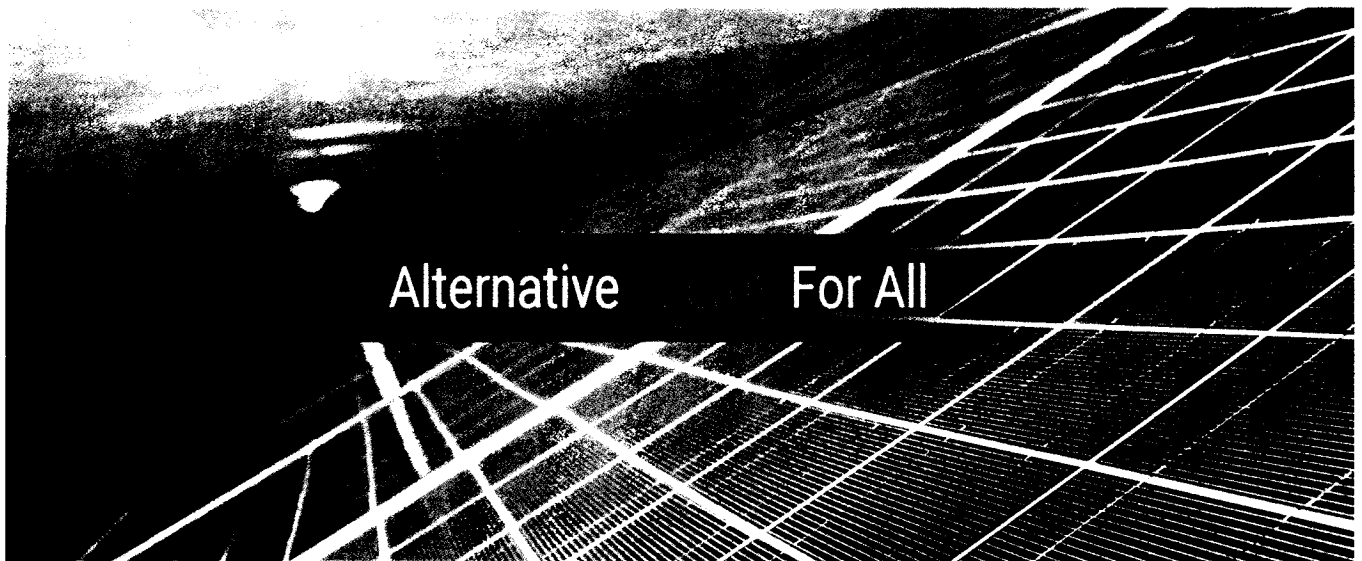
This feasibility study is conducted to ascertain the technical feasibility and commercial viability of installation of 810 kW in Phase-I on rooftop at various sites in said phase.

Installation of the PV system will result in annual power generation of approx. 1,170,196 kWh/Year. The results of the financial analysis indicate that the project is feasible. Based on the outcomes of both the technical and financial analysis, the project is deemed to be viable.

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

# Company Prospectus



**Solar PV Power Project at Various Sites**  
**Atlas Energy Limited**



**Atlas Energy Limited**

Application for Generation License 10 MW On-grid Solar PV Plant

## **Company Prospectus:**

### **1. Introduction**

**Atlas Energy Limited** was incorporated as an unquoted - public limited company in Pakistan on 18 May 2016, under the Companies Ordinance, 1984.

The registered office of the Company is situated at 26-27 km, Lahore - Sheikhpura Road, Sheikhpura.

The Company was incorporated to provide cost effective tailored solar solutions for industrial and commercial consumer through sale of power, Engineering, Procurement and construction (EPC), operation and Maintenance and giving attractive return to investors.

The Applicant Company has financial strength to meet with the requirements of the Projects through its parent Company **Atlas Power Limited** - parent company held 100% ordinary shares of the Company.

### **Atlas Power Limited**

**Atlas Power Limited** (the Company) was incorporated as an unquoted - public limited company in Pakistan on 05 January 2007, under the Companies Ordinance, 1984.

The registered office of the Company is situated at 26-27 KM Lahore - Sheikhpura Road, Sheikhpura.

The Company has been established to build, operate and own a power plant of 213.856 Mega Watts for net generation of electricity and onward sale to National Transmission and Despatch Company Limited (NTDC). The Company has commenced its commercial operations on 18 December 2009. The power plant is situated at 26-27 KM Lahore - Sheikhpura Road, Sheikhpura.

**Shirazi Investments (Private) Limited** - parent company held 84.6 % (2017: 84.6%) ordinary shares of the Company.

### **Shirazi Investments (Pvt.) Limited**

**Shirazi Investments (Pvt) Limited (SIL)**, the parent company of the Atlas Group, started operations in 1962. It is engaged in capital market, fund management, under-writing, real estate and venture capital investments. The Company plays a key role in sponsoring the acquisition of Group projects.

#### **Atlas Energy Limited**

Application for Generation License 10 MW On-grid Solar PV Plant

Atlas Autos (now Atlas Honda) was the first company sponsored by SIL in 1963. Subsequently, Atlas Battery was sponsored in 1966 and Shirazi Trading Company (Pvt) Limited in 1973. SIL acquired Muslim Insurance (now Atlas Insurance) in 1980 and Allwin Engineering (now Atlas Engineering) in 1981.

In 1992, the Company sponsored Honda Atlas Cars in coordination with Honda Motor Co. to manufacture Honda Cars. The association was further strengthened by the establishment of Honda Atlas Power Product in 1997.

SIL entered into another joint venture in 1997 with Total Raffinage Distribution, one of the world's major oil marketing and refinery companies for marketing petroleum products by establishing Total Atlas Lubricants Pakistan (Pvt) Limited.

In 2002, the Company sponsored Atlas Asset Management Company Limited to float mutual and pension funds. In 2007, SIL sponsored Atlas Power Limited to set up a 225 MW power plant near Lahore and also established Atlas World Wide General Trading in Dubai, UAE.

Atlas Warehousing- an Atlas Group Company incorporated in 1979 was merged with SIL in 2001. The Company now owns and manages godowns in Karachi and Sheikhpura, and offers warehouse facilities to the Group companies as well as other clients.

Besides its important roles as the Parent Company, Shirazi Investments, as the principal Shareholder advises, guides and directs the Group policies.

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant

Financial Highlights

Financial Information (as on June 30, 2018)	In US Dollars . <u>Figures in Billion</u>
Shareholders' Equity	2
Total Assets	2
Sales	3
Direct Employment (numbers)	13,098

List of Atlas Group Companies

	<u>Year of Establishment</u>
Shirazi Investments (Pvt.) Limited	1962
Engineering	
Atlas Honda Limited	1962
Atlas Battery Limited	1966
Atlas Engineering Industries Ltd.	1981
Honda Atlas Cars (Pakistan) Ltd.	1992
Atlas Auto Parts Pvt. Limited	2011
Atlas Hitec	2012
Atlas Metals	2012
Atlas Aluminum	2016
Atlas Die casting	2016

**Atlas Energy Limited**

Application for Generation License 10 MW On-grid Solar PV Plant

**Power**

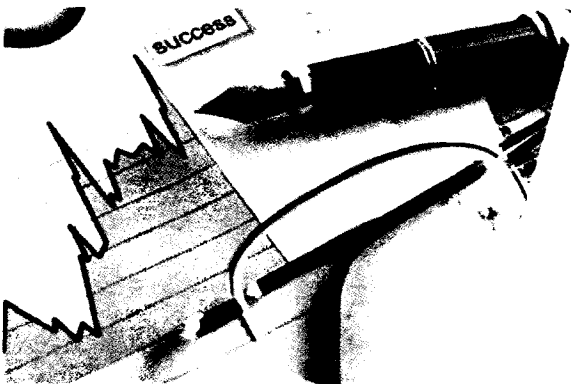
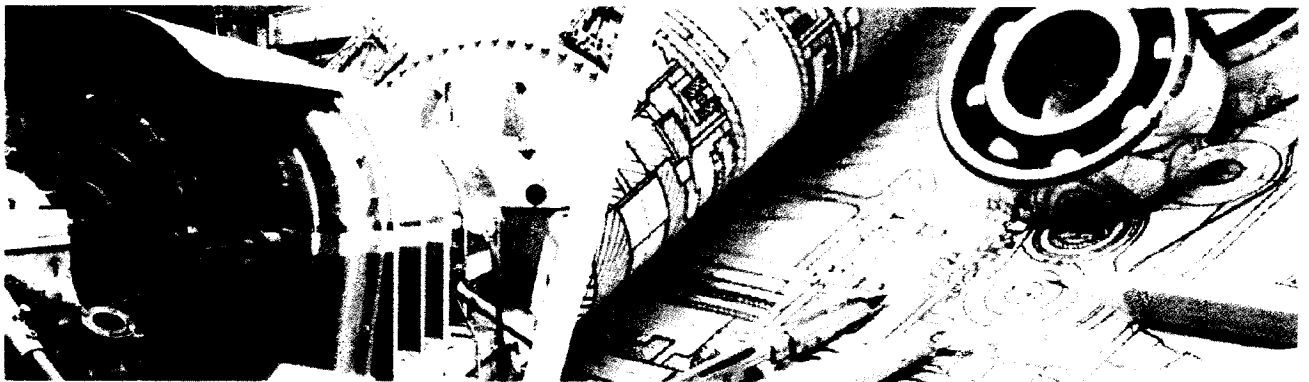
<b>Atlas Power Limited</b>	<b>2007</b>
<b>Atlas Energy Limited</b>	<b>2016</b>

**Trading**

<b>Shirazi Trading Co. Pvt. Ltd.</b>	<b>1975</b>
<b>Honda Atlas Power Products (Pvt.) Ltd.</b>	<b>1997</b>
<b>Atlas Global</b>	<b>2015</b>
<b>Atlas World Wide</b>	<b>2007</b>
<b>Atlas Venture</b>	<b>2008</b>
<b>Atlas Venture China Office</b>	<b>2011</b>

**Finance**

<b>Atlas Insurance Limited</b>	<b>1980</b>
<b>Atlas Asset Management</b>	<b>2002</b>



Corporate Profile



## Chairman's Message

Pakistan's 50th birthday celebrations are a time for reflection and vision. We are proud to have achieved a number of significant milestones in the past half-century.

As the Chairman of Pakistans First Bank, I am proud to have led the bank through its growth and development. I am also proud to have led the bank through its challenges and setbacks.

My journey with Pakistans First Bank has been a journey of growth and development. I have led the bank through its challenges and setbacks. I have led the bank through its growth and development. I have led the bank through its challenges and setbacks.

As the Chairman of Pakistans First Bank, I am proud to have led the bank through its growth and development. I am also proud to have led the bank through its challenges and setbacks. I have led the bank through its growth and development. I have led the bank through its challenges and setbacks.

As the Chairman of Pakistans First Bank, I am proud to have led the bank through its growth and development. I am also proud to have led the bank through its challenges and setbacks. I have led the bank through its growth and development. I have led the bank through its challenges and setbacks.

### فونڈل سے کمکاری کے بغیر کام

As the Chairman of Pakistans First Bank, I am proud to have led the bank through its growth and development. I am also proud to have led the bank through its challenges and setbacks.

# The Atlas Heritage

## Vision

*A leading group in all aspects of financial services, offering a wide range of products, services, and solutions, with a focus on providing high quality services and achieving the highest return on investment for our customers in the highest esteem and maintaining a strong commitment to social responsibility.*

The Group's Financial Services Division, headed by Mr. Qasim Ali, is the largest and most established of the Group's divisions. It provides a complete range of financial services, including insurance, banking, investment, and financial planning. The Atlas Group's Financial Services Division is a leading provider of financial services in Pakistan, with a strong focus on providing high quality services and achieving the highest return on investment for our customers in the highest esteem and maintaining a strong commitment to social responsibility.

The Atlas Group's Financial Services Division is a leading provider of financial services in Pakistan, with a strong focus on providing high quality services and achieving the highest return on investment for our customers in the highest esteem and maintaining a strong commitment to social responsibility. The Atlas Group's Financial Services Division is a leading provider of financial services in Pakistan, with a strong focus on providing high quality services and achieving the highest return on investment for our customers in the highest esteem and maintaining a strong commitment to social responsibility.

The Atlas Group's Financial Services Division is a leading provider of financial services in Pakistan, with a strong focus on providing high quality services and achieving the highest return on investment for our customers in the highest esteem and maintaining a strong commitment to social responsibility. The Atlas Group's Financial Services Division is a leading provider of financial services in Pakistan, with a strong focus on providing high quality services and achieving the highest return on investment for our customers in the highest esteem and maintaining a strong commitment to social responsibility.

## Group Performance

Fig. 1: Sales (PKR bn)

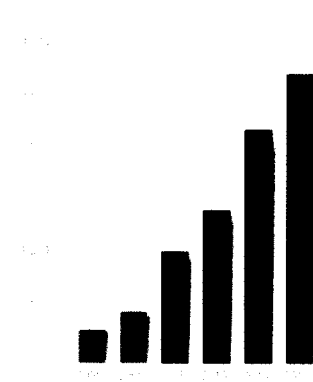


Fig. 2: Profit (PKR bn)

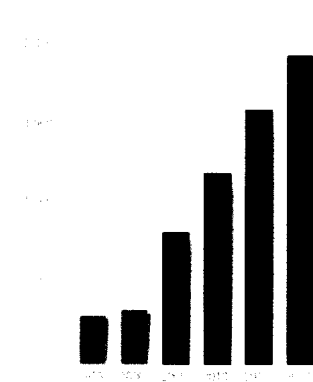
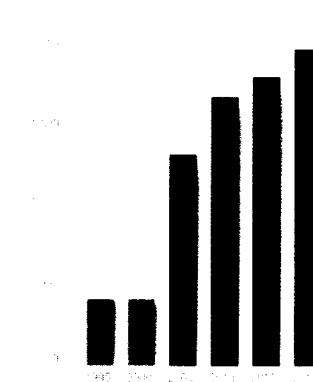


Fig. 3: Assets (PKR bn)



# International Expertise

Atlas has harnessed international expertise into a powerful marketing system, making it a true success story. Its close alliances with leading brands from around the world. The constant communication of global know-how and experience, which has made it an Atlas as a leader in all the industries where it operates and operates in.

- Team in business with Honda Motor Co., Ltd.
- The only joint venture partner of GS YUASA
- Joint venture partner of Denso
- Strategic alliance with world renowned corporations such as MAN, GE, Canon, Pitney Bowes, Bosch, FCO, Philips and TDK.



**HONDA**

**GS YUASA**

**DENSO**



**Canon**

**Pitney Bowes**

**SHOWA**



**KEIHIN**



## Professional Development

The Group's commitment to professional development is reflected in its various programs.

Respect for the individual and the organization is a key element of the Group's professional development programs, which are designed to help employees reach their full potential.

The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential.

The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential.

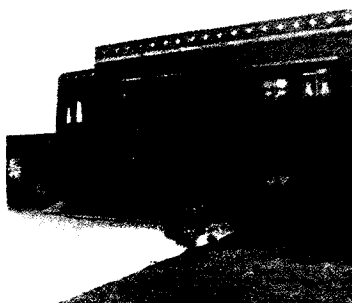
The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential.

The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential.

The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to professional development is reflected in its various programs, which are designed to help employees reach their full potential.





















## Community Development



The Group's commitment to community development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to community development is reflected in its various programs, which are designed to help employees reach their full potential.

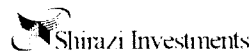
The Group's commitment to community development is reflected in its various programs, which are designed to help employees reach their full potential. The Group's commitment to community development is reflected in its various programs, which are designed to help employees reach their full potential.

# Continuing the Journey of Excellence

1962	 <b>Shirazi Investments</b>	Investment management
1963	 <b>Atlas Honda</b>	Manufacturer of cars, trucks, motorcycles, power equipment, and other vehicles
1964	 <b>Atlas Battery</b>	Manufacturer of lead acid batteries for automotive and industrial applications
1965	 <b>Shirazi Trading</b>	General trading company dealing in a wide range of commodities and services
1966	 <b>Atlas Insurance</b>	Insurance company providing life, health, and property insurance
1967	 <b>Atlas Engineering</b>	Engineering and construction services
1968	<b>HONDA</b> <b>Honda Atlas Cars</b>	Manufacturer of cars, trucks, and motorcycles
1969	<b>HONDA</b> <b>Honda Atlas Power Product</b>	Manufacturer of power equipment and tools
1970	 <b>Atlas Asset Management</b>	Asset management and investment services
1971	 <b>Atlas Power</b>	Manufacturer of power equipment and tools
1972	 <b>Atlas World Wide</b>	Manufacturer of power equipment and tools
1973	 <b>Atlas Venture</b>	Investment management and venture capital services
1974	 <b>Atlas Autos</b>	Manufacturer of cars, trucks, and motorcycles
1975	 <b>Atlas Venture China Office</b>	Investment management and venture capital services
1976	 <b>Atlas Hitec</b>	Manufacturer of power equipment and tools
1977	 <b>Atlas Metals</b>	Manufacturer of metal products and services
1978	 <b>Atlas Global</b>	Manufacturer of power equipment and tools
1979	 <b>Atlas Aluminium</b>	Manufacturer of aluminium products and services
1980	 <b>Atlas Die Casting</b>	Manufacturer of die cast metal parts and services
1981	 <b>Atlas Foundation</b>	Non-profit organization for social and economic development



Atlas Offices is a leading provider of office space solutions, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



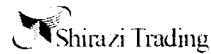
Shirazi Investments is a leading provider of investment services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



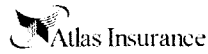
Atlas Honda is a leading provider of Honda vehicles, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



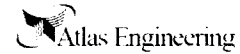
Atlas Battery is a leading provider of battery services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Shirazi Trading is a leading provider of trading services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Insurance is a leading provider of insurance services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Engineering is a leading provider of engineering services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Honda Atlas Cars is a leading provider of Honda vehicles, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



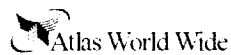
Honda Atlas Power Product is a leading provider of power products, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



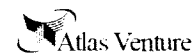
Atlas Asset Management is a leading provider of asset management services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Power is a leading provider of power services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



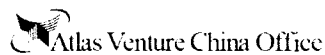
Atlas World Wide is a leading provider of world-wide services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Venture is a leading provider of venture services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Autos is a leading provider of auto services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Venture China Office is a leading provider of China office services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Hitec is a leading provider of hitec services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Metals is a leading provider of metal services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Global is a leading provider of global services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Aluminium is a leading provider of aluminium services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Die Casting is a leading provider of die casting services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.



Atlas Foundation is a leading provider of foundation services, offering a wide range of services to meet the needs of businesses of all sizes. Our experienced team provides expert advice and support throughout the entire process, from initial consultation to final move-in.

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

## 2. Project Brief:

Atlas Energy intends to install upto 10 MW captive Solar Power Plants in five phases at various sites of owner premises to provide electricity under EPA mode. The installed capacity of plants is proposed by critically analyzing the current load and future load projections of site.

Site details of phase-I is as below:

Phase	Location
I	Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.
	Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yarkhan
	Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore
	Atlas Honda Limited, 1-McLeod Road, Lahore
	Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura
	Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

### 3. Project Rationale:

It is a commonly knowledge that availability of electricity in any country that has direct effect on its economy and social factors and therefore, in order to measure the affluence of a society, the per capita energy consumption is used as index.

An economy's production and consumption of electricity are basic indicators of its size and level of development. Although a few countries export electric power, most production is for domestic consumption. Expanding the supply of electricity to meet the growing demand of increasingly urbanized and industrialized economies without incurring unacceptable social, economic, and environmental costs is one of the great challenges facing developing countries.

Modern societies are becoming increasing dependent on reliable and secure electricity supplies to underpin economic growth and community prosperity. This reliance is set to grow as more efficient and less carbon intensive forms of power are developed and deployed to help decarbonize economies. Maintaining reliable and secure electricity services while seeking to rapidly decarbonize power systems is a key challenge for countries throughout the world. In developing economies growth in energy use is closely related to growth in the modern sectors - industry, motorized transport, and urban areas - but energy use also reflects climatic, geographic, and economic factors (such as the relative price of energy). Energy use has been growing rapidly in low- and middle-income economies, but high-income economies still use almost five times as much energy on a per capita basis. Governments in many countries are increasingly aware of the urgent need to make better use of the world's energy resources. Improved energy efficiency is often the most economic and readily available means of improving energy security and reducing greenhouse gas emissions. Pakistan's per capita energy consumption of Pakistan

Generation of electricity in Pakistan is largely on furnace oil whose substantial quantity is imported, prices whereof adversely affect the generation in the country. Although natural gas is a cheaper fuel however its reserves are depleting rapidly. In these circumstances, the use of solar power in Pakistan appears to be quite an attractive mode of generation of electric power. Further, its use does not require refining, transporting and conveying fuels and power over long distances. Moreover, solar power does not create pollution.

Naturally, Pakistan is located in the Sunny Belt and can take advantage of its ideal situation for utilization of solar energy. The country potential for solar generation is beyond doubt as it has high solar irradiation and enough space for installation of generation system those are ideal for PV and other solar energy applications.

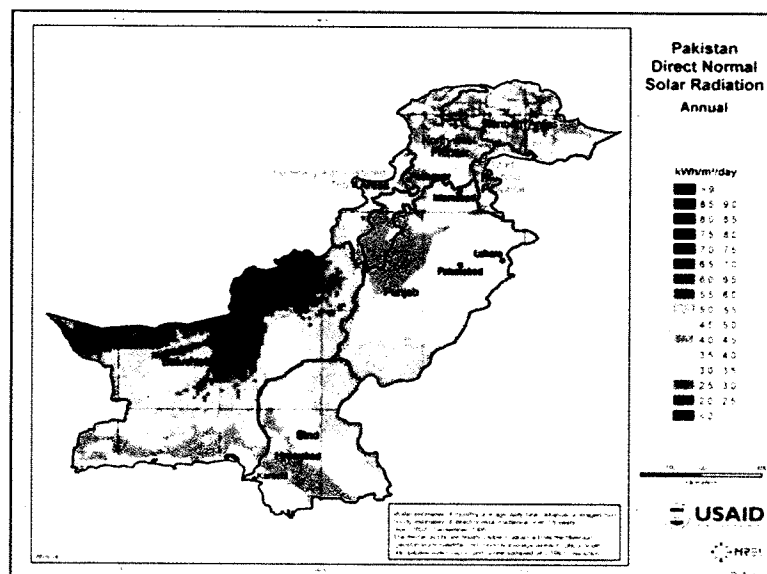
Villages and other areas which are away from grid or distribution system of utilities can also benefit from solar power generation which will also save the extra cost of laying the system

and the losses.

Solar energy, on the other hand, has excellent potential in areas of Pakistan that receive high levels of solar radiation throughout the year. Every day, for example, the country receives an average of about 19 Mega Joules per square meter of solar energy. Pakistan being in the Sun Belt is ideally located to take advantage of solar energy technologies. This energy source is widely distributed and abundantly available in the country. The mean global irradiation falling on horizontal surface is about 200-250 watt per sq.m in a day. This amounts to about 2500-3000 sun shine hours and 1.9 - 2.3 MWh per sq. meter in a year. It has an average daily global isolation of 19 to 20 MJ/sq. meter per day with annual mean sunshine duration of 8 to 8.5 hours (6-7hrs in cold and 10-12 hrs. in hot season) and these values are among the highest in the world. For daily global radiation up to 23MJ/m<sup>2</sup>, 24 (80%) consecutive days are available in this area for solar energy. Such conditions are ideal for solar thermal applications.

Pakistan receives about 15.5x10<sup>14</sup> kWh of solar irradiance each year with most regions receiving approximately 8 to 10 sunlight hours per day. The installed capacity of solar photovoltaic power is estimated to be 1600 GW per year, providing approximately 3.5 PWh of electricity (a figure approximately 41 times that of current power generation in the country).

To summarize, the sun shines for 250-300 days per years in Pakistan with average sun shine hours of 8- 10 per day. This gives huge amount of energy to be used for electricity generation by solar photovoltaic and solar thermal power plants. A quick idea for the potential of solar energy in Pakistan can be obtained from the satellite map of solar radiation released by National Renewable Energy Lab (NREL) of USA.



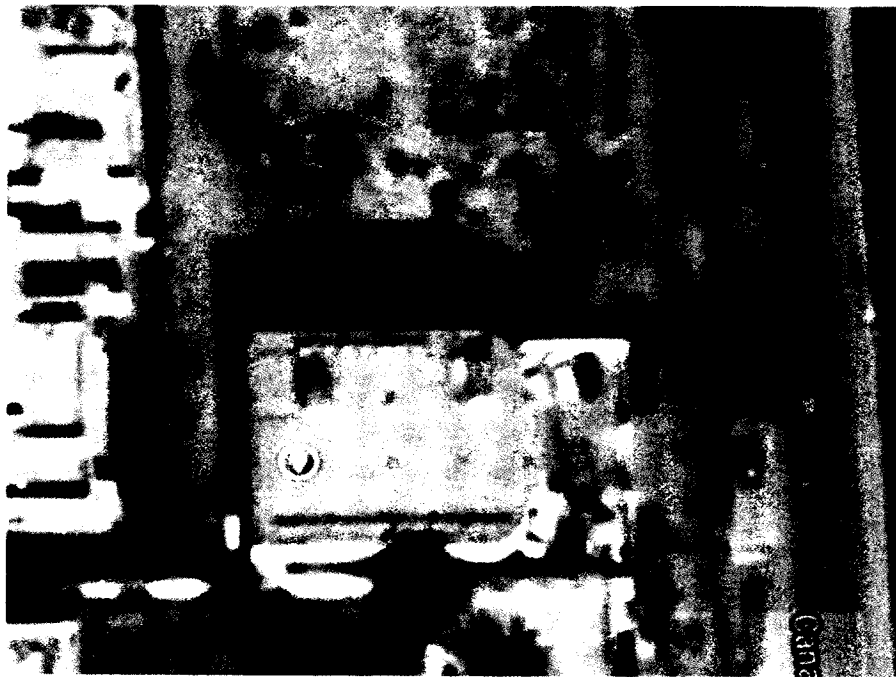
Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

A bird's eye view of the project site is given in the figure below:



Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.

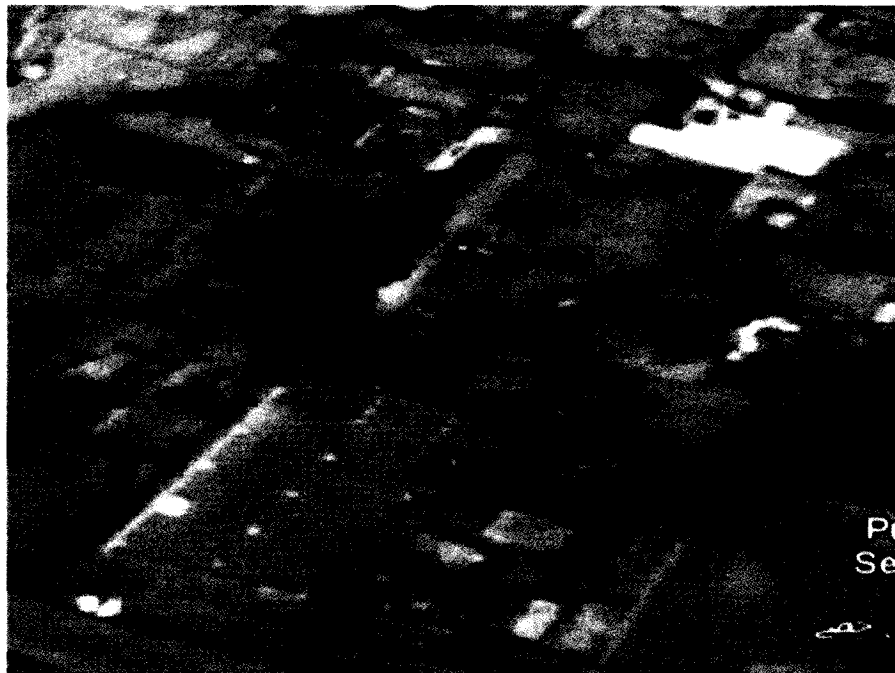


Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar Khan

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



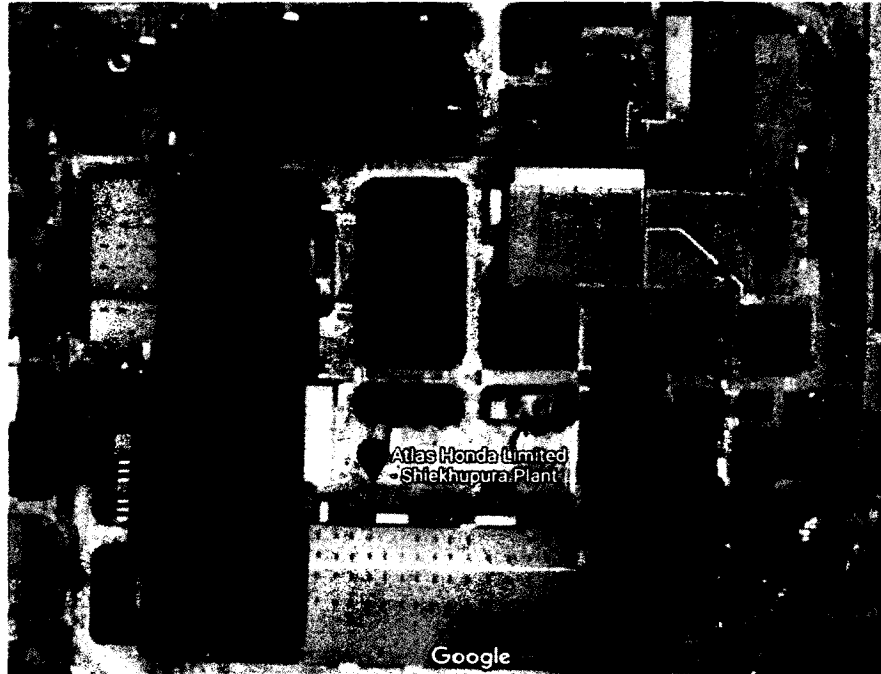
Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore



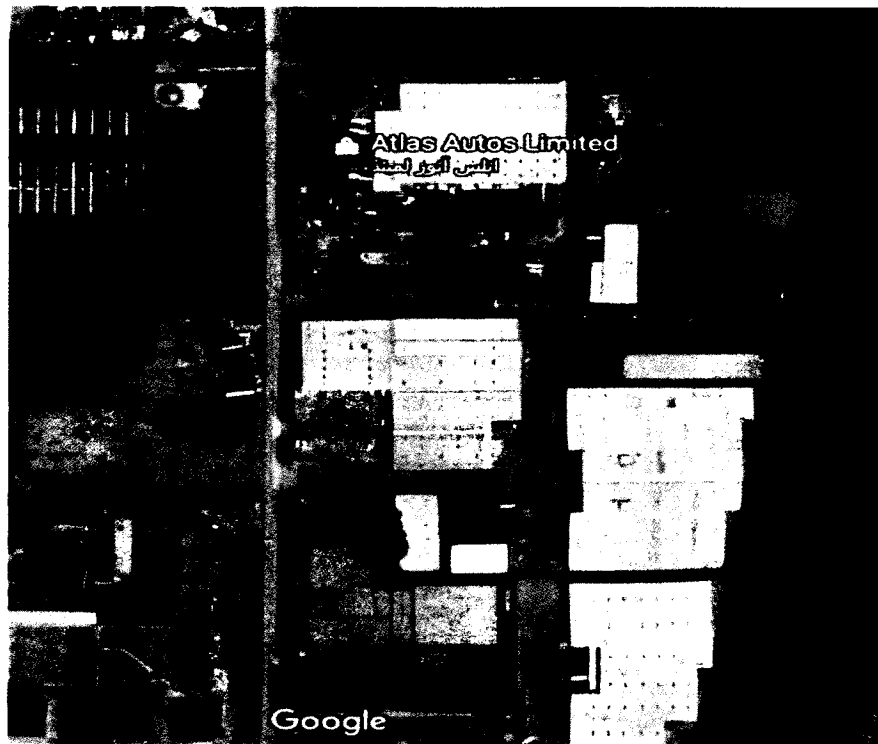
Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant



Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.



Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

## 5. Technical Analysis:

### Site Conditions:

The following tasks were carried out:

- Global Horizontal Irradiation, annual and inter-annual variation was assessed.
- Near shading objects were taken into account for placement of PV modules.
- Area required for selected module technology was calculated. Keeping in view available area and minimum inter row shading, tilt angle and appropriate spacing was calculated from near shading objects.

### Technology Review and Selection:

#### PV Modules:

S. No	Specification	Data
1	Type of Module	JKM400M-72H
2	Type of Cell	Mono crystalline
3	Dimensions of each module	2008×1002×40mm (79.06×39.45×1.57 inch)
4	Weight	22.5 Kg
5	No of Modules (Qty.)	Site1: 75 Site 2: 54 Site 3: 48 Site 4: 20 Site 5: 1,445 Site 6: 432
6	Module Area	2.012016 m <sup>2</sup>
7	Total Land Area Used	96.6 m <sup>2</sup>
8	Module Frame	Anodized aluminum alloy
9	Nominal Max. Power (Pmax)	400Wp
10	Opt. Operating Voltage (Vmp)	41.7V
11	Opt. Operating Current (Imp)	9.60A
12	Open Circuit Voltage (Voc)	49.8V
13	Short Circuit Current (Isc)	10.36A
14	Module Efficiency	19.88%
15	Operating Temperature	-40°C ~ +85°C
16	Max. System Voltage	1000VDC (IEC)
17	Module Fire Performance	TYPE 1(UL 1703) & (IEC 61730) (IEC 61215)

**Atlas Energy Limited**  
Application for Generation License 10 MW On-grid Solar PV Plant

**Inverters:**

Sr. No.	Specification	Data			
1	Manufacturer	ABB	ABB	ABB	ABB
2	Capacity of each Unit	20 KW	7.5 KW	100 KW	27.6 KW
3	No of Inverters (Qty.)	3	1	5	5
4	MPP Input Voltage Range	440 V to 800 V	320 V to 800	480 V to 850	500 V to 800
5	Rated Input Voltage	620V	620V	620V	620V
6	Max Input Voltage	1000 V	1000 V	1000 V	1000 V
7	Total Power	20 KW	8 KW	500 KW	138 KW
8	Max Input Current Input A/Input B	50A	30A	50A	64A
9	Max Output Current	33 A	12.5 A	145 A	45 A
10	Output Electrical System	3 Phase AC	3 Phase AC	3 Phase AC	3 Phase AC
11	AC Nominal Voltage	320 to 480 V	320 to 480 V	320 to 480 V	320 to 480 V
12	Rated Power Frequency	50 Hz	50 Hz	50 Hz	50 Hz
13	Efficiency	98.2%	98.4%	98.4%	98.2%
14	Relative Humidity (Non-Condensing)	100%	100%	100%	100%
15	Noise Emission	50dB(A)	50 dB(A)	68 dB(A)	53 dB(A)
16	Degree of Protection	IP65	IP65	IP65	IP65

**Combiner Box:**

Not required with this ABB model.

**Atlas Energy Limited**  
Application for Generation License 10 MW On-grid Solar PV Plant

**PV Mounting Structure:**

Hot Dip Galvanized Iron (75-90 Microns) Structure will be designed and used to install solar panels. The mechanical design shall bear the required level of corrosion and wind/ gusts.

S. No	Specification	Data
1	Structure	Galvanized Steel
2	Tilt of Array Frame	15°

**Foundation Pillars:**

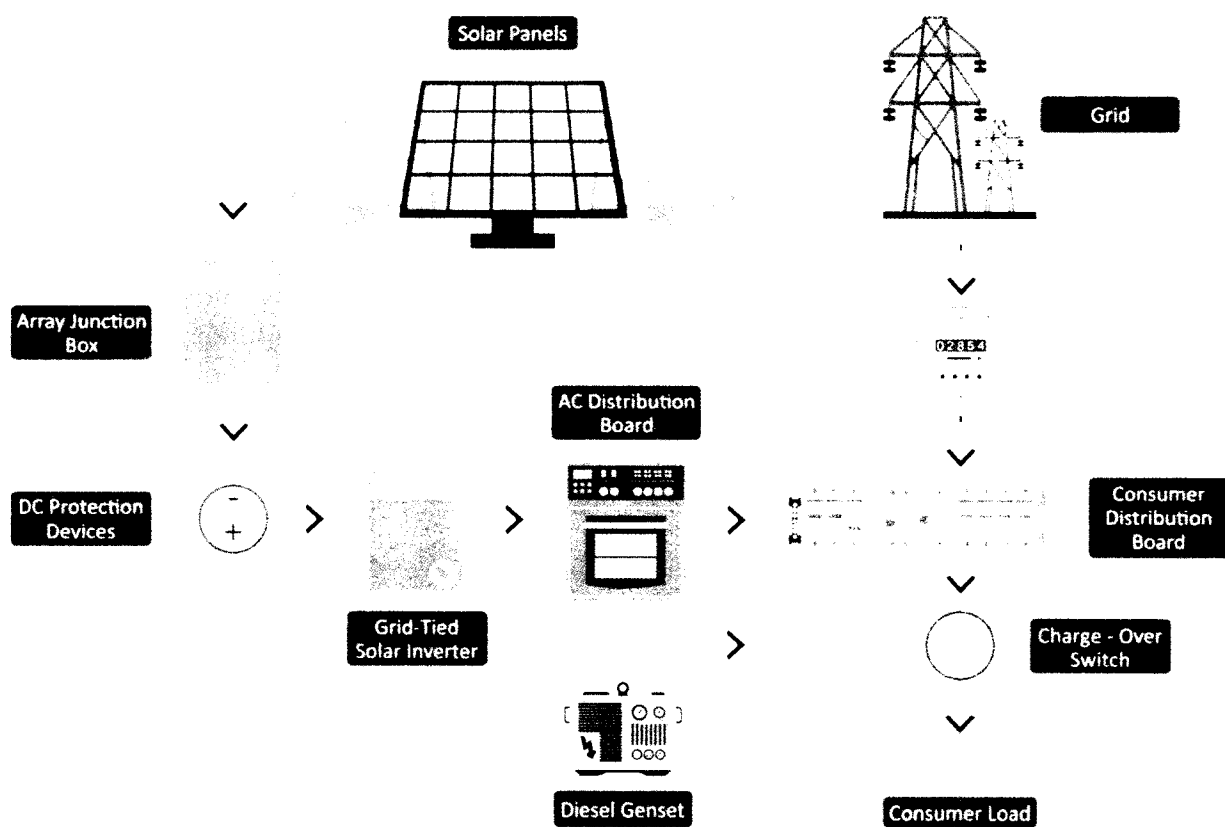
The civil works will be required for mounting of solar arrays. The design of civil work is according to load bearing capacity of roof and to bear high wind/ gusts.

Sr. No.	Specification	Data
1	Foundation Structure	Reinforced Concrete

**Data Collecting System:**

S. No	Specification	Data
1	System Data	Continuous on-line logging and monitoring over web portal

## 6. Concept Design:

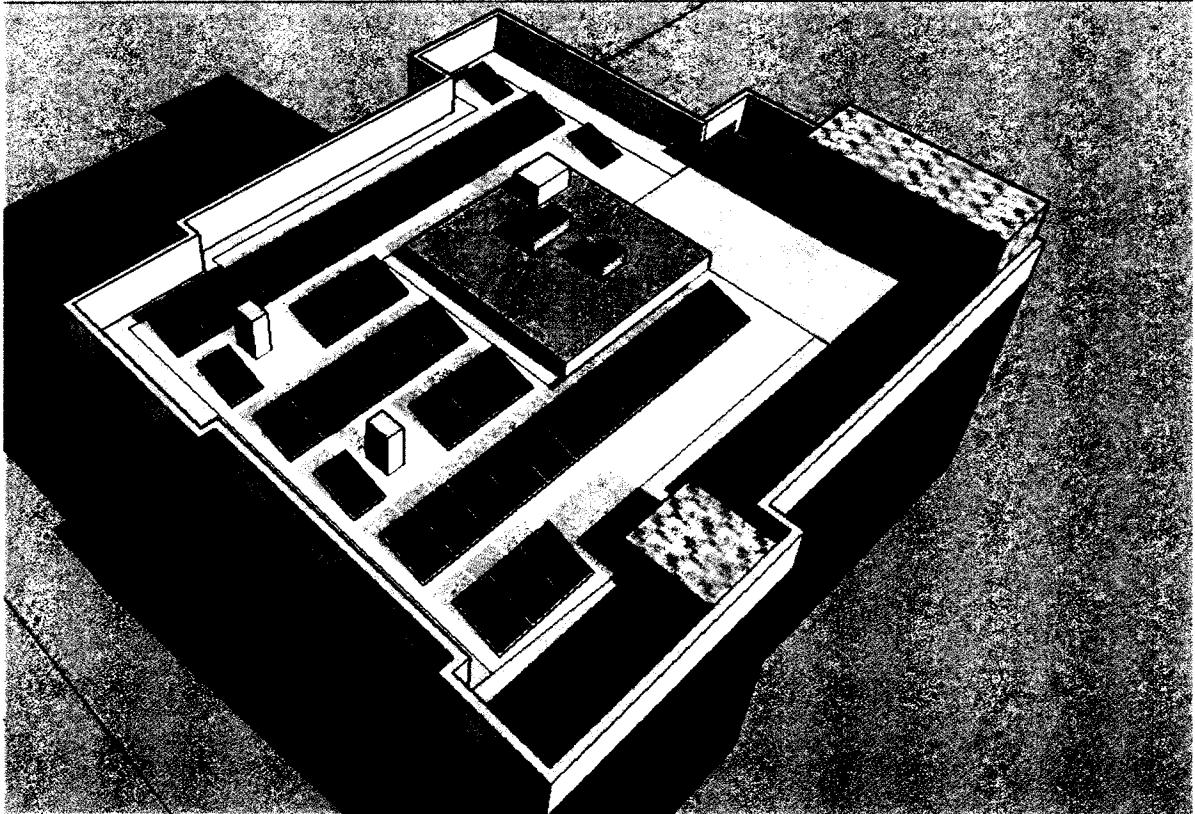


Atlas Energy Limited

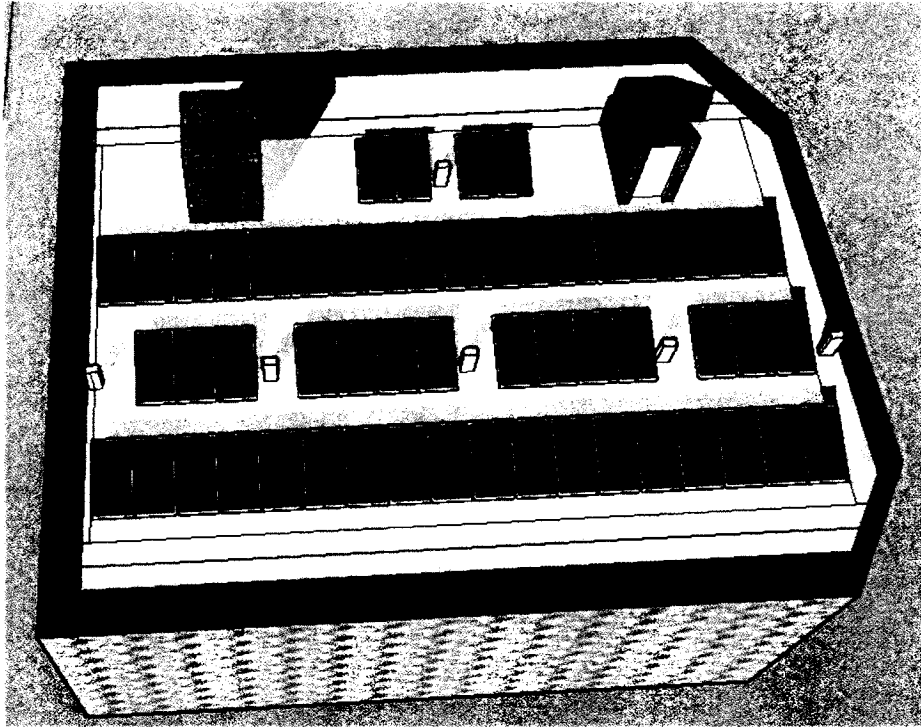
Application for Generation License 10 MW On-grid Solar PV Plant

## 7. General Layout & Single Line Diagram

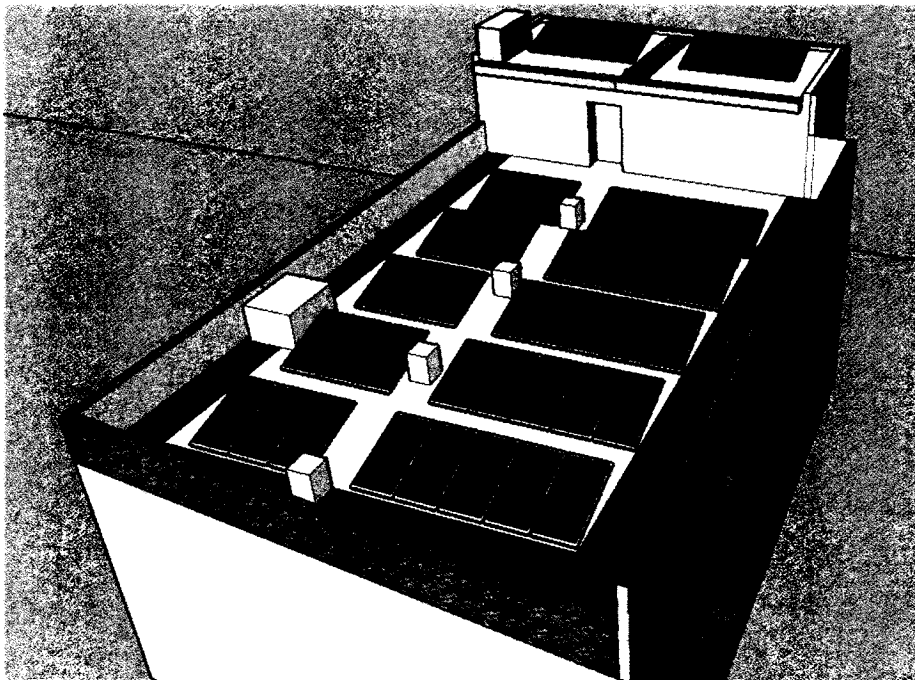
Layout:



Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan.

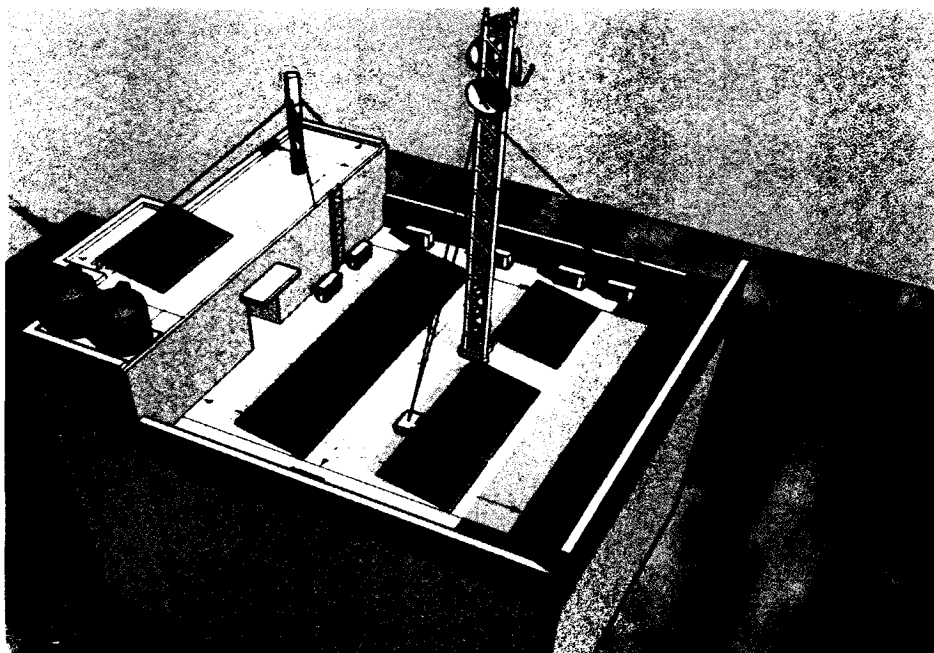


Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar Khan

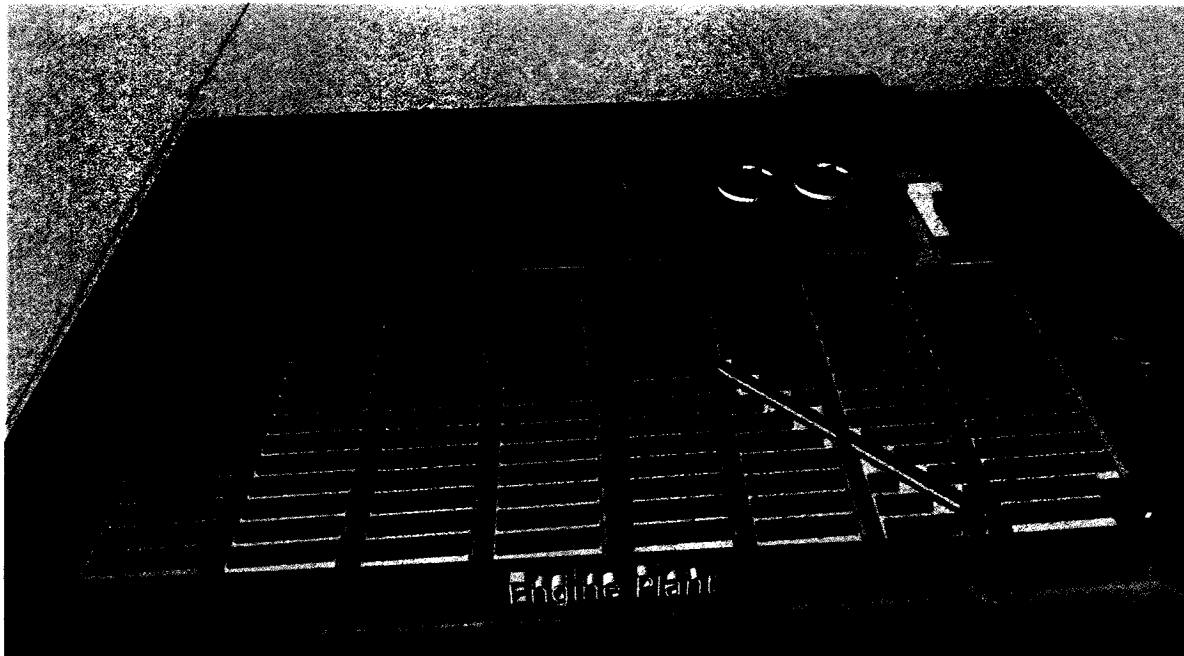


Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



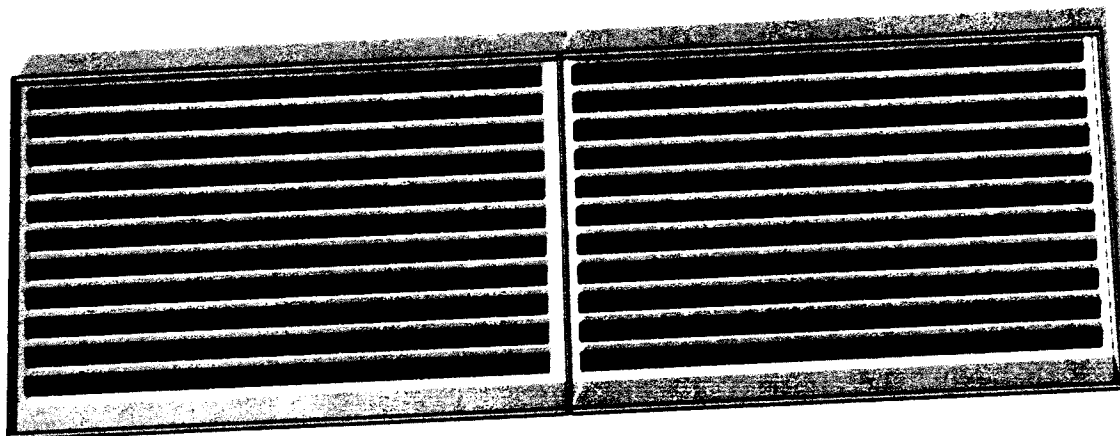
Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore



Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura

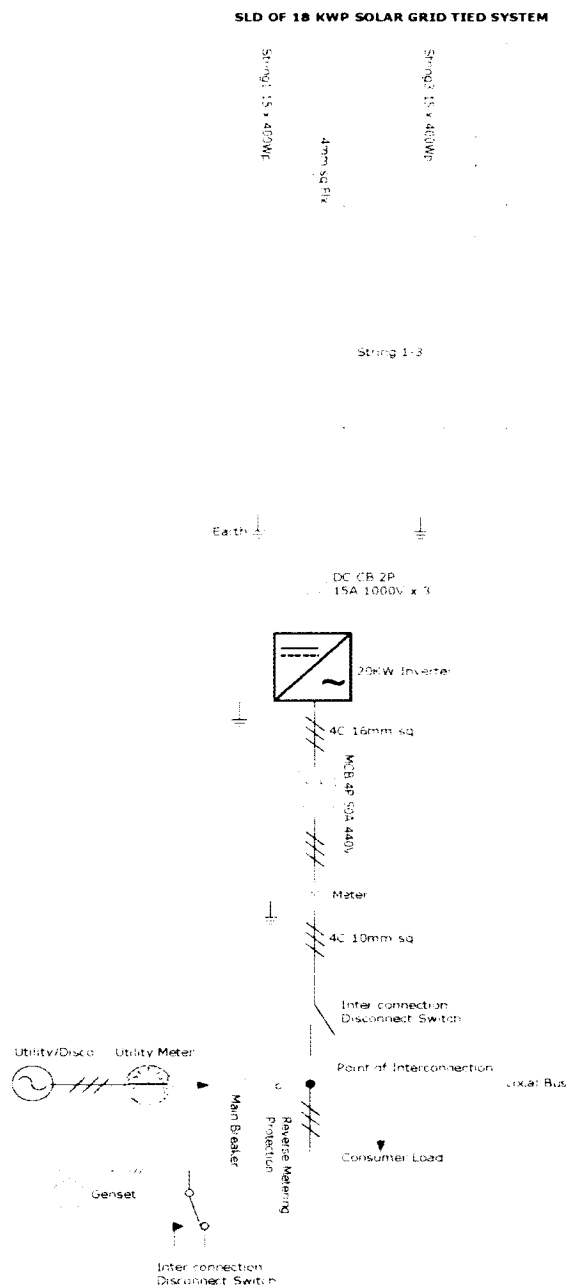
**Atlas Energy Limited**

**Application for Generation License 10 MW On-grid Solar PV Plant**



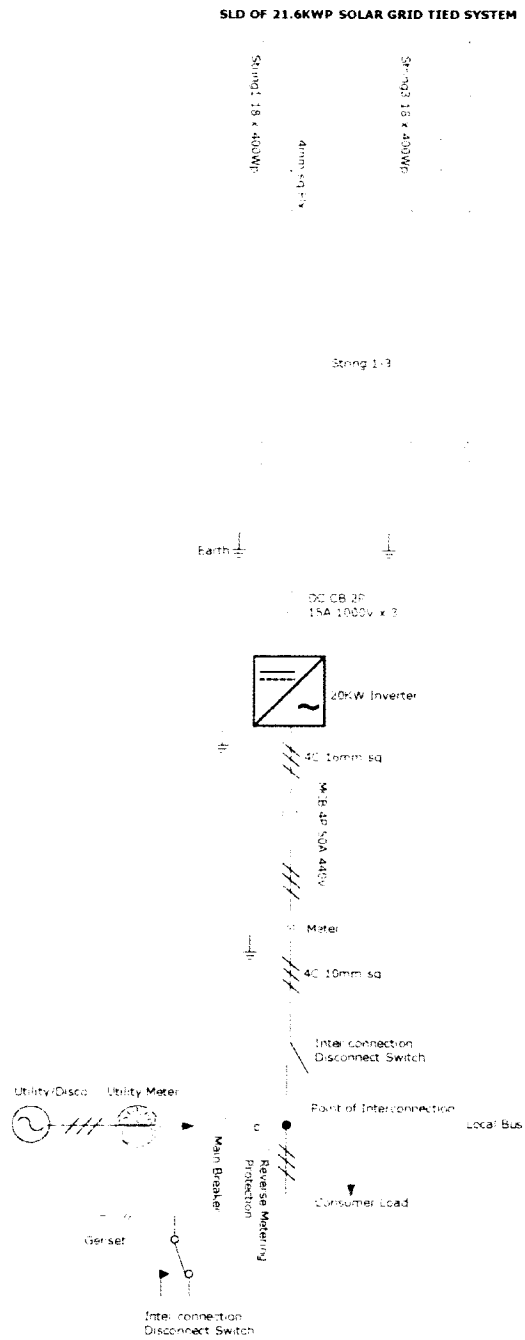
**Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura**

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant  
Single Line Diagram



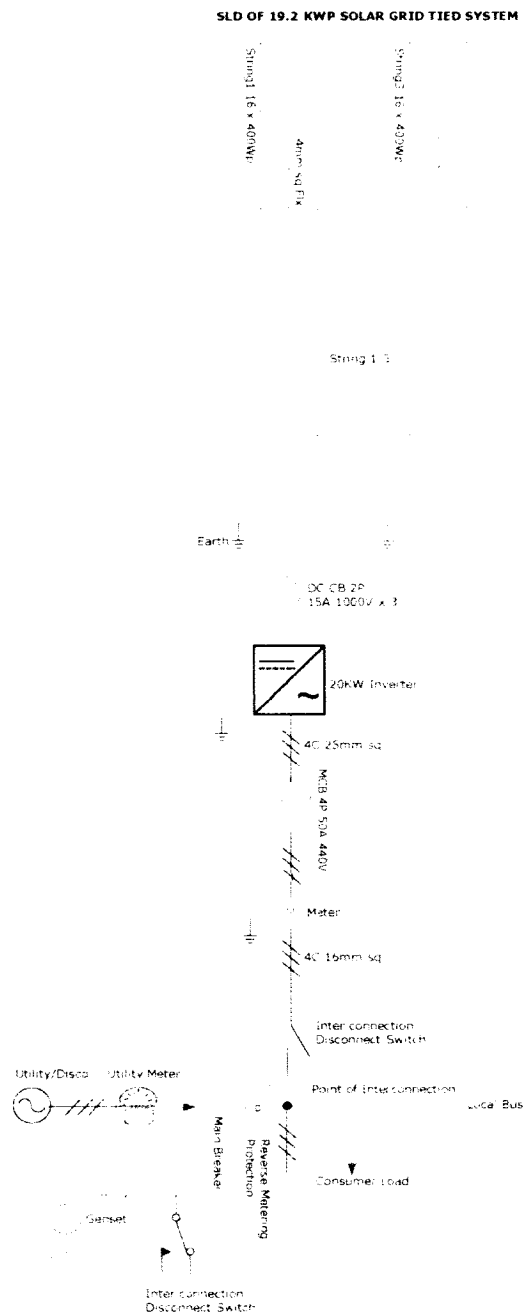
**Site (1): Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road,  
Multan**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



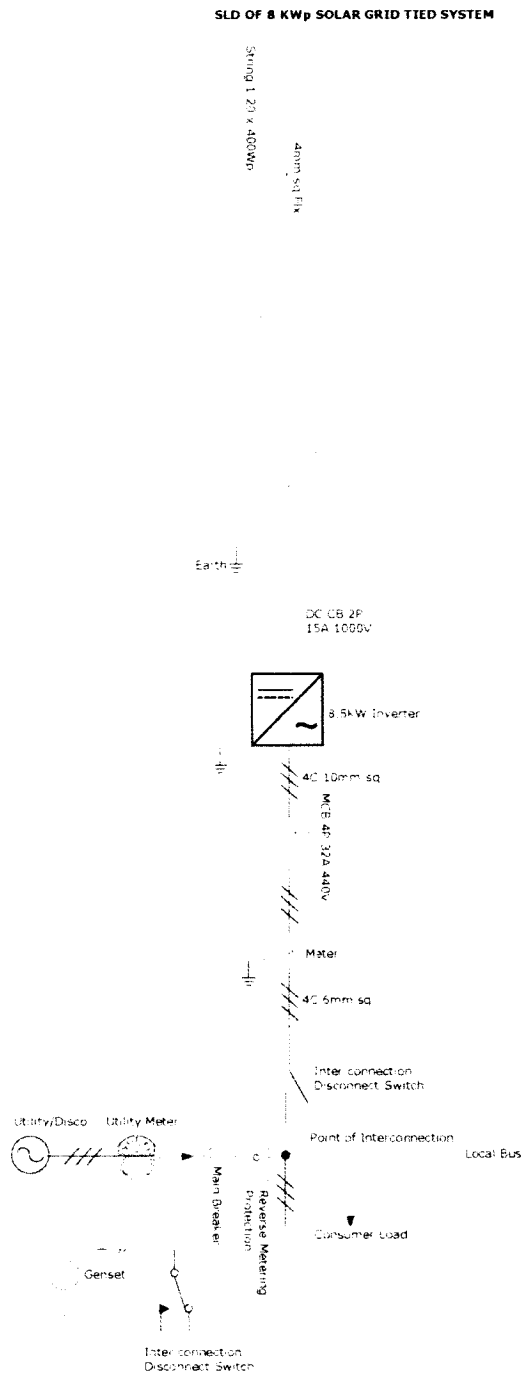
**Site (2): Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yar Khan**

## Application for Generation License 10 MW On-grid Solar PV Plant



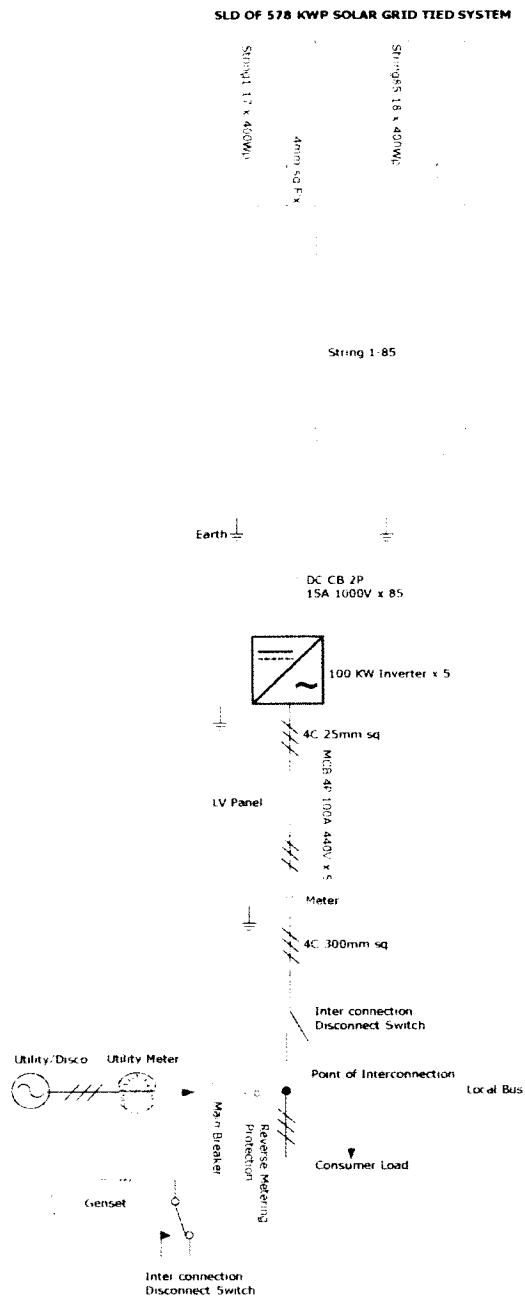
**Site (3): Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore**

Atlas Energy Limited  
Application for Generation License 10 MW On-grid Solar PV Plant



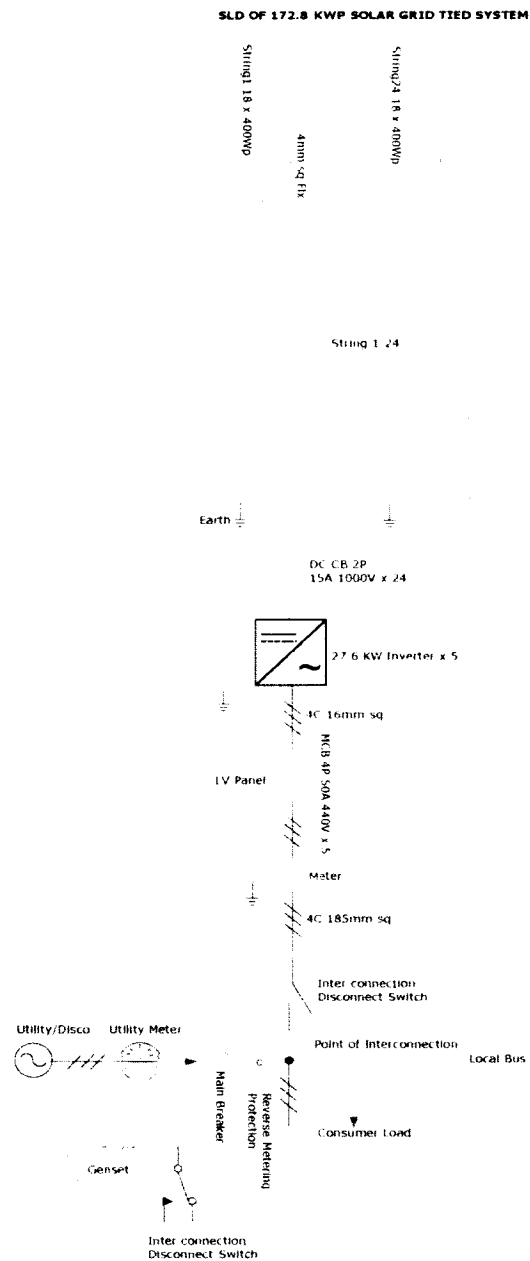
Site (4): Atlas Honda Limited, 1-McLeod Road, Lahore

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



**Site (5): Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road,  
Sheikhupura.**

**Atlas Energy Limited**  
**Application for Generation License 10 MW On-grid Solar PV Plant**



**Site (6): Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura.**

## **8. Environmental Aspects:**

Every energy generation and transmission method affects the environment. Conventional generating options can damage air, climate, water, land & wildlife, landscape as well as raise the levels of harmful radiation. PV technology is substantially safer offering a solution to many environmental and social problems associated with fossil and nuclear fuels. Solar PV energy technology provides obvious environmental advantages in comparison to the conventional energy sources thus contributing to the sustainable development of human activities. Not counting the depletion of the exhausted natural resources, their main advantage is related to the reduced CO2 emissions and normally absence of any air emissions or waste products during their operations.

The use of solar power has additional positive implications such as:

- Reduction of the emissions of the greenhouse gases (mainly CO<sub>2</sub>, NO<sub>x</sub>) and prevention of toxic gas emissions (SO<sub>2</sub>, particulates)
- Reduction of the required transmission lines of the electricity grids.
- Plant will require a low amount of water.
- Total land identified for the project is in premises of factories. So no Land acquisition is anticipated as this will be on private land.

## **9. Socio-Economic Aspects:**

In regard to the socio-economic viewpoint, the benefits of exploitation of solar PV system comprise of:

- Increase of the regional/national energy independency
- Provision of significant work opportunities
- Support of the deregulation of energy market
- Diversification of the deregulation of energy markets

## **10. Safety & Emergency Plans:**

- Only qualified and authorized electricians will be allowed to undertake servicing or maintenance tasks.
- The authorized personnel will wear appropriate equipment, including a safety harness to restrain from falling off the roof, sturdy shoes that will have thick rubber soles to

provide electrical insulation and good grip and appropriate clothing for personal protection, including a hat, sunglasses, gloves and long pants and sleeves.

- Lock out and tag out procedures will be used before commencement of maintenance tasks.
- On-going operation and maintenance concerns for solar power systems will be addressed properly. These systems are exposed to outdoor weather conditions that enhance the aging process, and the infrastructure needs to be in place for the on-going maintenance of these systems to assure their safe operation.
- Properly grounded or double insulated power tools will be used for maintenance tasks. Tools will be maintained in good condition.
- Working on electrical equipment and circuits will be carried out in de-energized state.
- Proper pathways will be available for operation, maintenance and firefighting.
- Fire protection and suppression will be placed at site.

## **11. Training and Capacity Development:**

Trained and qualified personnel will be available at site 24/7 with proper safety and fire-fighting training. Training program will focus on but not limited to Solar Resource Assessment, Site Survey, Technology, Engineering Design, Regulation, Policy, Metering & Billing, and project Management of Rooftop Solar System.

The following components will include in training & development program.

- Collection of Resource Data
- Variability and uncertainty of resource data
- Site evaluation
- Crystalline and thin film technology comparison
- Rooftop solar system components
- Module mounting structure selection
- Inverter selection
- Design of PV Array
- Shadow Analysis
- DC Cable Layout
- DC Cable Sizing
- Protection and Metering
- Installation and Testing standards for solar PV plants
- Solar Module testing standards
- Economy of Roof top Solar System
- Detailed Project Report
- Operation and maintenance of rooftop solar system
- Safety and fire-fighting training

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**6. Interconnection with National Grid Co. distance and name of nearest grid, voltage level (single line diagram)**

**Atlas Energy Limited**

**Application for Generation License 10 MW On-grid Solar PV Plant**

Not Applicable: Power Generated through Soar system will be consumed by the relevant Office/  
Plant.

**Atlas Energy Limited**

Application for Generation License 10 MW On-grid Solar PV Plant

## **7. Infrastructure: roads, rail, staff colony, amenities**

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

Not Applicable

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

**8. Project cost, information regarding sources and amounts of equity, debt.**

### Financial Overview:

### 1.1. Capital Cost:

**1.1.1.1.** The Capital cost shall include the cost borne by the Applicant Company on feasibility studies, planning, designing, material, construction and installation of the Generation Facilities.

**1.1.2.** The cost of land, step-up transformer, interconnection with distribution system of utility are not included being not required.

**1.1.3.** The Applicant Company aims to provide the Generation Facilities up to 10 MW in a period of about 2 years, under five phases which will be implemented stepwise. The estimated cost on per Watt basis is worked out by the Applicant Company as below:

**1.1.4.** The Applicant shall arrange the required funding through 20% Equity, 80% Debt. Debt may be availed under SBP Green Financing Scheme.

Sr. #	Location	System Size (KWp)	Total Project Cost (PKR)	Total Project Cost (USD)	Cost/Watt (USD)	Debt : Equity
1	Atlas Honda Limited Branch Office & Customer Care Centre Azmat Wasti Road, Multan.	30	2,888,226	20,831	0.7	80:20 (Debt from SBP Green Financing)
2	Atlas Honda Limited Branch Office & Customer Care Centre Rahim Yarkhan	20	1,925,484	13,887	0.7	
3	Atlas Honda Limited Branch Office & Customer Care Centre 1st Floor, 28-Mozang Road, Lahore	19	1,848,465	13,332	0.7	
4	Atlas Honda Limited, 1-McLeod Road, Lahore	8	770,194	5,555	0.7	
5	Atlas Honda Limited (Engine Plant Roof) 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	580	55,877,552	403,012	0.7	
6	Atlas Autos Limited 26/27 km, Lahore-Sheikhupura Road, Sheikhupura	152	14,633,680	105,544	0.7	

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

## **9. Project commencement and completion schedule with milestones**

ID	Task Mode	Task Name	Duration	Start	Finish	16 Dec '18			13 Jan '19			10 Feb '19			10 Mar '19			07 Apr
						S	W	S	T	M	F	T	S	W	S	T	M	
1	✦	Atlas Power-1017 KWp	109 days	Thu 20-12-18	Sun 07-04-19													
2	✦	Project Initiation	3 days	Thu 20-12-18	Sat 22-12-18													
3	✦	Project Awarded	1 day	Thu 20-12-18	Thu 20-12-18													
4	✦	Kick-off meeting	1 day	Fri 21-12-18	Fri 21-12-18													
5	✦	Site Survey	2 days	Fri 21-12-18	Sat 22-12-18													
6	✦	System Drawings	5 days	Sun	Thu													
7	✦	Pile Pull Out Test	2 days	Sun 23-12-18	Mon 24-12-1													
8	✦	Report of pull out test	1 day	Tue 25-12-18	Tue 25-12-18													
9	✦	Site Layout	1 day	Sun 23-12-18	Sun 23-12-18													
10	✦	Strucutre Drawing	1 day	Mon 24-12-1	Mon 24-12-1													
11	✦	Single Line Diagram	1 day	Mon 24-12-1	Mon 24-12-1													
12	✦	Plant monitoring detai	1 day	Tue 25-12-18	Tue 25-12-18													
13	✦	Earthing & Lighteing	1 day	Tue 25-12-18	Tue 25-12-18													
14	✦	Cable Schedule	1 day	Wed 26-12-1	Wed 26-12-1													
15	✦	Deatiled BOQ	1 day	Wed 26-12-1	Wed 26-12-1													
16	✦	Submission to client	1 day	Thu 27-12-18	Thu 27-12-18													
17	✦	Procurement	80 days	Sat 22-12-18	Mon 11-03-1													
18	✦	Solar Panel ordering	1 day	Sat 22-12-18	Sat 22-12-18													
19	✦	Solar Panel delivery	1 day	Fri 08-03-19	Fri 08-03-19													
20	✦	Inverter Ordering	1 day	Sat 22-12-18	Sat 22-12-18													
21	✦	Inverter Delivery	1 day	Mon 11-03-1	Mon 11-03-1													
22	✦	Mounting Structure	1 day	Sat 22-12-18	Sat 22-12-18													
23	✦	Mounting Structure	1 day	Fri 01-02-19	Fri 01-02-19													
24	✦	Cables &	1 day	Sat 22-12-18	Sat 22-12-18													
25	✦	Cables Delivery	1 day	Fri 01-02-19	Fri 01-02-19													

Project: New Microsoft Project Do Date: Fri 09-11-18	Task	Inactive Task	Start-only	L
	Split	Inactive Milestone	Finish-only	J
	Milestone	Inactive Summary	Deadline	
	Summary	Manual Task	Progress	
	Project Summary	Duration-only	Manual Progress	
	External Tasks	Manual Summary Rollup		
	External Milestone	Manual Summary		

ID	Task Mode	Task Name	Duration	Start	Finish	16 Dec '1813 Jan '1910 Feb '1910 Mar '1907 Apr													
						S	W	S	T	M	F	T	S	W	S	T	M		
26	✦	Site Execution	85 days	Tue 01-01-19	Tue 26-03-19														
27	✦	Civil Works	22 days	Tue 01-01-19	Tue 22-01-19														
28	✦	Demarcation	5 days	Thu 03-01-19	Mon 07-01-19														
29	✦	Foundation piling	15 days	Tue 08-01-19	Tue 22-01-19														
30	✦	Mechanical Works	50 days	Sat 02-02-19	Sat 23-03-19														
31	✦	Mounting frames	15 days	Sat 02-02-19	Sat 16-02-19														
32	✦	Mounting Solar	15 days	Sat 09-03-19	Sat 23-03-19														
33	✦	Electrical Works	15 days	Sat 09-03-19	Sat 23-03-19														
34	✦	DC Cable Laying	7 days	Mon	Sun														
35	✦	AC Cable Laying	5 days	Mon	Fri 22-03-19														
36	✦	Grounding Cable	5 days	Sat 16-03-19	Wed														
37	✦	Earthing mesh	5 days	Mon	Fri 22-03-19														
38	✦	Inverter and LV	5 days	Fri 15-03-19	Tue														
39	✦	DC Cable	3 days	Wed	Fri 22-03-19														
40	✦	AC Cable	3 days	Thu	Sat 23-03-19														
41	✦	Communication	2 days	Thu 21-03-19	Fri 22-03-19														
42	✦	Commissioning/Start	6 days	Sat 23-03-19	Thu 28-03-19														
43	✦	Precommissioning	3 days	Sat 23-03-19	Mon 25-03-19														
44	✦	Clients witness of	1 day	Tue	Tue														
45	✦	Commissioning and	2 days	Wed	Thu														
46	✦	Handing Over	10 days	Fri 29-03-19	Sun 07-04-19														
47	✦	Functional test	7 days	Fri 29-03-19	Thu 04-04-19														
48	✦	Functional test report	1 day	Fri 05-04-19	Fri 05-04-19														
49	✦	Project Sign Off/	2 days	Sat 06-04-19	Sun														

Project: New Microsoft Project Do  
Date: Fri 09-11-18

Task	Inactive Task	Start-only	L
Split	Inactive Milestone	Finish-only	J
Milestone	Inactive Summary	Deadline	
Summary	Manual Task	Progress	
Project Summary	Duration-only	Manual Progress	
External Tasks	Manual Summary Rollup		
External Milestone	Manual Summary		

Atlas Energy Limited

Application for Generation License 10 MW On-grid Solar PV Plant

## **10. ESSA (Environmental and Social Soundness Assessment)**

# **ESSA (Environment & Social Soundness Assessment)**

## **1. Introduction:**

Extensive fossil fuel consumption in almost all human activities has led to some undesirable phenomena such as atmospheric and environmental pollutions, which have not been experienced before in known human history. Consequently, global warming, green house affect, climate change, ozone layer depletion, and acid rain terminologies started to appear in the literature frequently. Since 1970, it has been understood scientifically by experiments and researches that these phenomena are closely related to fossil fuel uses because they emit greenhouse gases such as carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), which hinder the long-wave terrestrial radiation escape into space, and, consequently, the earth troposphere becomes warmer. In order to avoid further impacts of these phenomena, the two concentrative alternatives are either to improve the fossil fuel quality with reductions in their harmful emissions into the atmosphere or, more significantly, to replace fossil fuel usage as much as possible with environmentally friendly, clean, and renewable energy sources. Among these sources, solar energy comes at the top of the list due to its abundance and more even distribution in nature than any other renewable energy type, such as wind, geothermal, hydro, wave, and tidal energies. Solar energy technologies are essential components of a sustainable energy future. Energy from fossil fuels may be inexpensive and assurances may have been given of the plentiful supplies of petroleum and other fossil fuels, but these fuels are finite in nature and a major source of greenhouse gas emissions.

## **2. Rationale**

It is a commonly knowledge that availability of electricity in any country that has direct effect on its economy and social factors and therefore, in order to measure the affluence of a society, the per capita energy consumption is used as index.

An economy's production and consumption of electricity are basic indicators of its size and level of development. Although a few countries export electric power, most production is for domestic consumption. Expanding the supply of electricity to meet the growing demand of increasingly urbanized and industrialized economies without incurring unacceptable social, economic, and environmental costs is one of the great challenges facing developing countries.

Modern societies are becoming increasingly dependent on reliable and secure electricity supplies to underpin economic growth and community prosperity. This reliance is set to grow as more efficient and less carbon intensive forms of power are developed and deployed to help decarbonize economies. Maintaining reliable and secure electricity services while seeking to rapidly decarbonize power systems is a key challenge for countries throughout the world. In developing economies growth in energy use is closely related to growth in the modern sectors - industry, motorized transport, and urban areas - but energy use also reflects climatic, geographic, and economic factors (such as the relative price of energy). Energy use has been growing rapidly in low- and middle-income economies, but high-income economies still use almost five times as much energy on a per capita basis. Governments in many countries are increasingly aware of the urgent need to make better use of the world's energy resources. Improved energy efficiency is often the most economic and readily available means of improving energy security and reducing greenhouse gas emissions. Pakistan's per capita energy consumption of Pakistan

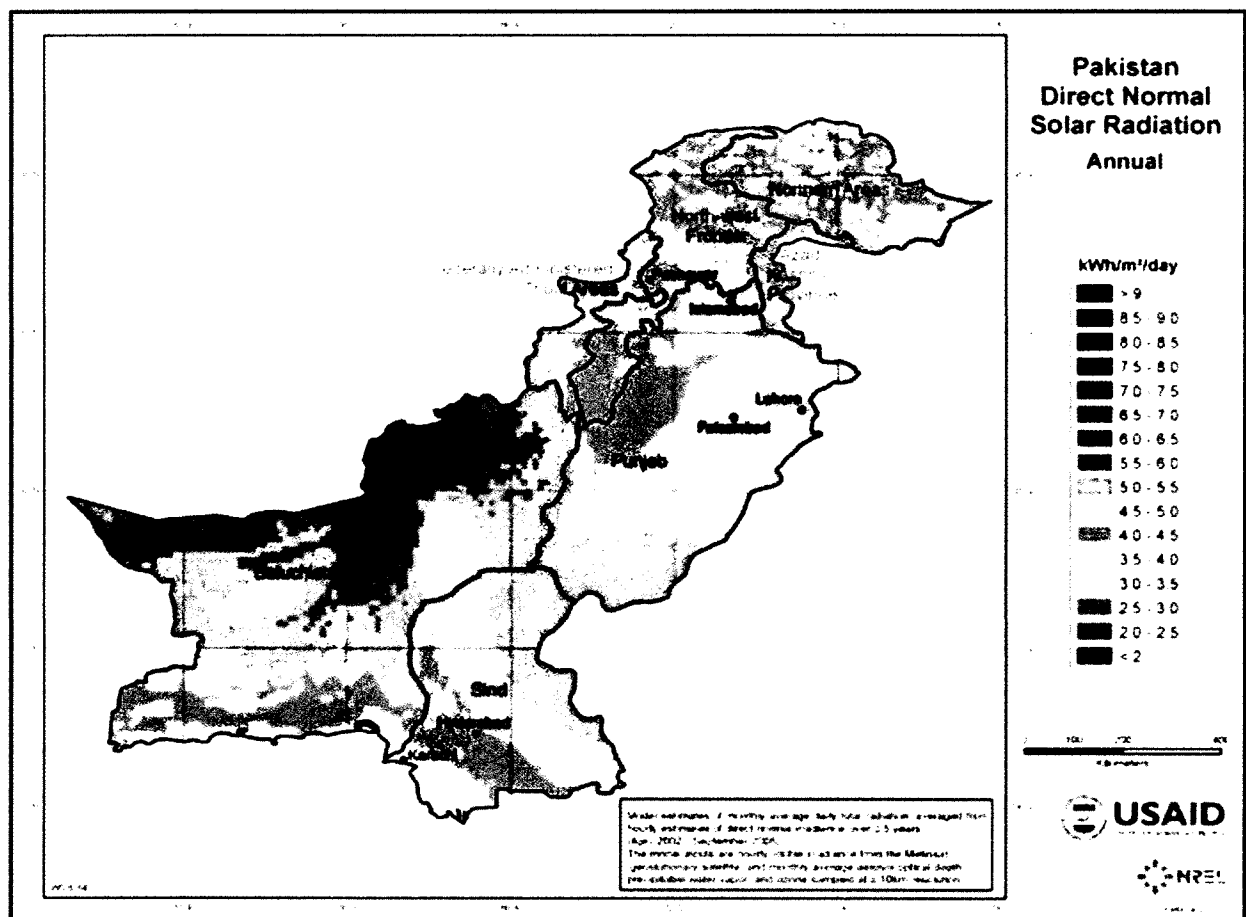
Generation of electricity in Pakistan is largely on furnace oil whose substantial quantity is imported, prices whereof adversely affect the generation in the country. Although natural gas is a cheaper fuel however its reserves are depleting rapidly. In these circumstances, the use of solar power in Pakistan appears to be quite an attractive mode of generation of electric power. Further, its use does not require refining, transporting and conveying fuels and power over long distances. Moreover, solar power does not create pollution.

Naturally, Pakistan is located in the Sunny Belt and can take advantage of its ideal situation for utilization of solar energy. The country potential for solar generation is beyond doubt as it has high solar irradiation and enough space for installation of generation system those are ideal for PV and other solar energy applications.

Villages and other areas which are away from grid or distribution system of utilities can also benefit from solar power generation which will also save the extra cost of laying the system and the losses.

Solar energy, on the other hand, has excellent potential in areas of Pakistan that receive high levels of solar radiation throughout the year. Every day, for example, the country receives an average of about 19 Mega Joules per square meter of solar energy Pakistan being in the Sun Belt is ideally located to take advantage of solar energy technologies. This energy source is widely distributed and abundantly available in the country. The mean global irradiation falling on horizontal surface is about 200-250 watt per sq.m in a day. This amounts to about 2500-3000 sun shine hours and 1.9 - 2.3 MWh per sq. meter in a year. It has an average daily global isolation of 19 to 20 MJ/sq. meter per day with annual mean sunshine duration of 8 to 8.5 hours (6-7hrs in cold and 10-12 hrs. in hot season) and these values are among the highest in the world. For daily global radiation up to 23MJ/m<sup>2</sup>, 24 (80%) consecutive days are available in this area for solar energy. Such conditions are ideal for solar thermal applications.

To summarize, the sun shines for 250-300 days per years in Pakistan with average sun shine hours of 8- 10 per day. This gives huge amount of energy to be used for electricity generation by solar photovoltaic and solar thermal power plants. A quick idea for the potential of solar energy in Pakistan can be obtained from the satellite map of solar radiation released by National Renewable Energy Lab (NREL) of USA.



**Fig 1.1: NREL Map of Pakistan**

### 3. Environmental Assessment Report:

The sites are allocated in private land (Roof Top) within the premises of Customer, and the applicant has carried out a detailed environment assessment of the sites in preparation of the Solar PV Plant.

The assessment of the Project has been considered for both positive and negative effects. The proposed photovoltaic Power Project has been located as per international guidelines. Adoption of green power generation with no emission and effluent discharge with have least impact on the ambient environment and on the host community. However, in the long term the project and related activities in areas may bring about slight change in ambient air quality of area.

The importance of the sustainable development concept has increased in the whole world. As a result, some new regulations enforce that all development projects should be compatible with the environmental criterions. An environmental impact assessment should be carried out to make sure that projects are compatible with the environmental criterions. Environmental Impact Assessment (EIA) can be defined as a process of environmental management, planning, and decision-making with a purpose of keeping and improving the quality of the environment. The main goal is to develop environmentally friendly industrialization. With this kind of environmentally friendly industrialization, "sustainable development" can be a possibility in the future by keeping the usage/protection balance between economic development and the environmental protection.

Every energy generation and transmission method affects the environment. Conventional generating options can damage air, climate, water, land & wildlife, landscape as well as raise the levels of harmful radiation. PV technology is substantially safer offering a solution to many environmental and social problems associated with fossil and nuclear fuels. Solar PV energy technology provides obvious environmental advantages in comparison to the conventional energy sources thus contributing to the sustainable development of human activities. Not counting the depletion of the exhausted natural resources, their main advantage is related to the reduced CO<sub>2</sub> emissions and normally absence of any air emissions or waste products during their operations.

The use of solar power has additional positive implications such as:

- Reduction of the emissions of the greenhouse gases (mainly CO<sub>2</sub>, NO<sub>x</sub>) and prevention of toxic gas emissions (SO<sub>2</sub>, particulates)

- Reduction of the required transmission lines of the electricity grids.

#### 4. Study Area:

Pakistan is geographically situated approximately between 24-37 °N latitudes and 62-75 °E longitudes in the western zone of south Asia. The distribution of rainfall in Pakistan varies on wide ranges, mostly associated with the monsoon winds and the western disturbances, but the rainfall does not occur throughout the year. Like, Khyber Pukhtonkhuwa (northern mountains) and Balochistan provinces receive maximum rainfall in the months of December to March while in Punjab and Sindh receive 50-75% of rainfall during monsoon season (Kazi et al, 1951; FAO, 1987; Khan, 1993 & 2002; Kureshy, 1998; Luo and Lin, 1999). The precipitation received in the country can be divided into two main seasons, summer or monsoon and winter precipitation. The monsoon rainfall enters Pakistan from east and north east during the month of July to September. During this duration a good amount of rainfall is received in the north and northeastern areas of the country. Winter precipitation (December to March) are mainly received from western disturbances entering from Iran and Afghanistan. The weather systems entering from Afghanistan are called the primary western disturbances and cover only the north and north western parts of the country, whereas those approaching from the Iran are secondary and cover a large area of the Country including Balochistan, Punjab, Khyber Pukhtonkhuwa, Kashmir and northern areas and sometimes Sindh province. A large amount of snowfall is received in the northern areas, upper Khyber Pukhtonkhuwa, Kashmir and northern Balochistan and is the main source of water supply for water reservoirs of the country in dry season. This water received from the snow melt and from the seasonal rains plays an important role in the agricultural and socioeconomic activities of the country. Agriculture of Pakistan is mainly climate dependent and every area has its own crops and fruits according to its climate. The country's most important crops and fruits are grown in winter season in different areas according to its climate conditions. If there is any abnormality in the usual climate condition the nation suffers for the whole year and there is also a huge loss to the economy.

#### 5. Zonal Classification of the Study Area:

Detection of rainfall trend is subject to limitations: there is no clear altitudinal trend of rainfall. Therefore, for analysis, a dataset spreads over a period of 30 years (1976-2005) covering the whole country i.e. 30 stations from extreme north to south and east to west have been selected. The stations included in this study were selected on the basis of their latitudinal position, elevation from sea level, length of record, completeness and reliability of data so that a synoptic view of the entire country could be obtained. Further the selected

stations have been divided into five different microclimatic zones. These zones were named A, B, C, D and E as shown in Figure 1, along with their latitudinal extent.

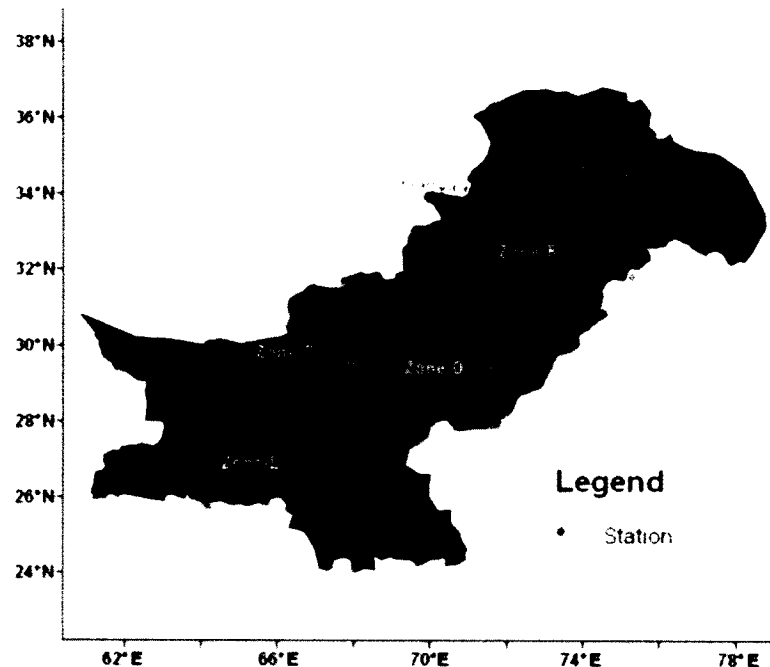


Figure 1: Map showing the climatic zones of the study area

#### Zone A

Zone A comprises those stations having cold climate and high mountains, situated in the north of Pakistan. These stations are Chitral, Gilgit, Muzaffarabad, Said-u- Sharif, Skardu, Astor, Dir, Chilas Parachinar and Kakul. These are mostly hill stations located between 34 N to 38 N in the Himalaya, Hindukash and Koh-e- Sufaid mountain ranges.

#### Zone B

This zone has mild cold climate and Sub Mountains, located between 31N to 34 N. The stations are Sialkot, D.I.Khan, Islamabad, Peshawar, Cherat and **Lahore**.

#### Zone C

Climate is cold in winters and hot in summers. Most of them are mountainous stations with high elevations from mean sea level and cover an area between 27 N to 32N and 64 E to 70 E. Stations included in this zone are Quetta, Zhob, Kalat and Khuzdar.

#### **Zone D**

This is the hottest and dry zone of the country where highest maximum temperatures are recorded in stations of Sibbi and Jacobabad. The area is almost plain with some area included in Thar Desert. Stations included are Sibbi, Jacobabad, **Bahawalpure**, Khanpur, **Multan** and Rohri.

#### **Zone E**

Zone E is a big zone having many stations and coastal cities, near to Arabian Sea. The coastal Part comprises only a small part of this region and climate above coastal parts in Balochistan as well as in Sindh province is mostly arid to hyper arid. The selected stations from this zone are Hyderabad, Karachi, Nawabshah and Jewani.

### **6. Project Environmental Impacts & Mitigation Measures:**

This Section discusses the potential environmental impacts, assesses the significance, recommends mitigation measure to minimize the adverse effect and identifies the residual impacts associated with the proposed activities of the project during the construction and operation phase of the proposed project at the proposed site and of secondary actions like potable, raw water and waste water lines.

Solar energy is a lot cleaner when compared with conventional energy sources. Solar energy systems have many significant advantages, like being cheaper and not producing any pollutants during operation, and being almost an infinite energy source when compared with fossil fuels. Nevertheless, solar energy systems have some certain negative impacts on the environment just like any other energy system. Some of these impacts will be summarized in this section.

#### **Identification of Potential Impacts:**

- a) Discharge of Pollutants
- b) Visual Impacts
- c) Impact on Natural Resources
- d) Air Pollution
- e) Noise Intrusion
- f) Impact on Air
- g) Impact on Ground Water/ Surface Water
- h) Impact on Solid Waste
- i) Impact on Soil
- j) Impact on Natural Resources

▪ **Discharge of Pollutants:**

Solar cells do not emit any pollutants during their operations. But solar cell modules contain some toxic substances, and there is a potential risk of releasing these chemicals to the environment during a fire. Necessary precautions should be taken for emergency situations like fire. The possibility of an accidental release of the chemicals of the solar cell modules to soil and groundwater poses a great threat for the environment.

▪ **Visual Impacts:**

There will be some visual impacts depending on the type of the scheme and the surroundings of the solar cells. Especially for applications on the buildings, solar cells can be used as a cladding material that could be integrated into the building during the construction phase. Solar cell applications after the construction phase of the buildings might cause negative visual impacts. Solar cell utilization should be planned at the architectural phase and fitted to the building to minimize visual pollution. For the other application areas, proper sitting and design are important factors, especially for large solar cell applications. Another important factor about the control of the visual impacts is the use of color. Enough care should be taken for the usage of proper colors while assembling the solar cell modules.

▪ **Impacts on Natural Resources:**

Despite being a benign energy system during operation, solar cells have some negative impacts on the environment during their production phase like many other systems. The energy needed for the production of solar energy systems is still produced in conventional methods today. Some toxic chemical substances used during the production phase are produced as a by-product. Especially, the solar cell batteries pose a threat on natural resources by having a short lifespan and containing heavy metals such as cadmium.

▪ **Air Pollution:**

Solar cells do not emit any substances to the air during operation. But there could be some emissions during manufacturing and transport. The emissions associated with the transport of the modules are insignificant when compared with the emissions associated with the manufacture. Transport emissions are 0.1–1% of the manufacturing emissions.

▪ **Noise Intrusion**

Solar cells do not make a noise during operation. But during the construction phase, there will be a little noise as usual in other construction activities.

- **Impact on Air:**

There would be no hazardous emissions at site as well as during construction phase except Motor Vehicle and Crane. Moreover there are no objectionable odors as well as alternation of air temperature.

- **Impact on Ground Water/ Surface Water:**

There would be no use of water during design phase except curing of civil pads during construction, which have no negative impact on environment.

- **Impact on Solid Waste:**

It may only Create litter and trash waste which is recyclable and may be cleared from site after construction.

- **Impact on Soil:**

No impacts as all installed systems are roof top.

- **Impact on Natural Resources:**

There won't be any increase in the rate of usage of any natural resource like any minerals, additional fuel other than vehicles. But there would be increase in the amount of usage of Paper for mapping, enlisting items etc.

However paper may be recycles by throwing it in ordinary dustbin, further ensure the maximum usage of electronic system e.g. emails.

## 5. Socio-Economic Aspects:

In regard to the socio-economic viewpoint, the benefits of exploitation of solar PV system comprise of:

- Increase of the regional/national energy independency.
- Provision of significant work opportunities.
- Support of the deregulation of energy market.
- Diversification of the deregulation of energy markets.

## 6. Accidental Risk:

There may be Accidental risk like as falling or slippage which may cause cut or injury, however this can be mitigate through usage of Protection Gadgets and trained workers must be hired in order to perform the task efficiently.

## **7. Safety & Emergency Plans:**

- Only qualified and authorized electricians will be allowed to undertake servicing or maintenance tasks.
- The authorized personnel will wear appropriate equipment, including a safety harness to restrain from falling off the roof, sturdy shoes that will have thick rubber soles to provide electrical insulation and good grip and appropriate clothing for personal protection, including a hat, sunglasses, gloves and long pants and sleeves.
- Lock out and tag out procedures will be used before commencement of maintenance tasks.
- On-going operation and maintenance concerns for solar power systems will be addressed properly. These systems are exposed to outdoor weather conditions that enhance the aging process, and the infrastructure needs to be in place for the on-going maintenance of these systems to assure their safe operation.
- Properly grounded or double insulated power tools will be used for maintenance tasks. Tools will be maintained in good condition.
- Working on electrical equipment and circuits will be carried out in de-energized state.
- Proper pathways will be available for operation, maintenance and firefighting.
- Fire protection and suppression will be placed at site.

## **8. Training and Capacity Development:**

Trained and qualified personnel will be available at site 24/7 with proper safety and fire-fighting training. Training program will focus on but not limited to Solar Resource Assessment, Site Survey, Technology, Engineering Design, Regulation, Policy, Metering & Billing, and project Management of Rooftop Solar System.

The following components will include in training & development program.

- Collection of Resource Data
- Variability and uncertainty of resource data
- Site evaluation
- Crystalline and thin film technology comparison
- Rooftop solar system components
- Module mounting structure selection
- Inverter selection
- Design of PV Array
- Shadow Analysis
- DC Cable Layout
- DC Cable Sizing

## **Atlas Energy Limited**

### **Application for Generation License 10 MW On-grid Solar PV Plant**

- Protection and Metering
- Installation and Testing standards for solar PV plants
- Solar Module testing standards
- Economy of Roof top Solar System
- Detailed Project Report
- Operation and maintenance of rooftop solar system
- Safety and fire-fighting training

## **9. Conclusions and Recommendations:**

Solar energy is increasing in importance as an alternative energy source. It has become indispensable today due to being an environmentally friendly and infinite energy source but solar energy systems have some impacts on the environment. These potential impacts depend on the size and nature of the project and are site specific. Most of these burdens are associated with loss of amenity. Negative impacts of the solar energy systems could be minimized with appropriate measures. First, site choosing should be done carefully before application. Roofs are the best areas for little buildings, and solar cell modules are good alternatives for glass cover on the sides of larger buildings, like skyscrapers. In order not to cause visual burdens, solar modules should be used as construction material during the construction phase; and they should be applied totally integrated with the buildings. An EIA analysis should be done especially for central solar energy systems. There are miscellaneous precautions that could be taken to minimize the environmental impacts of the solar energy systems. Because of the toxic substances used in the solar cell modules, it will be wise to increase the module efficiency and lifespan, and research the possibilities of recycling.