**File No.: VIS (2022-23)-PL346-Q079-304-562 Dated: 20/12/2022**

**LENDER’S INDEPENDENT ENGINEERING REPORT**

**OF**

**3.7 MWp ROOF TOP SOLAR PHOTOVOLTAIC POWER PROJECT**

**TO BE SET-UP AT**

**5 LOCATIONS IN NATIONAL CAPITAL REGION**

**COMPANY/PROMOTER**

**M/S SOLAR QUEST PROJECTS FOUR PRIVATE LIMITED**

**REPORT PREPARED FOR**

**M/S SOLAR QUEST PROJECTS FOUR PRIVATE LIMITED**

**TO BE SUBMITTED AT**

**STATE BANK OF INDIA, SME BRANCH, ASAF ALI ROAD, NEW DELHI**

***\*\*Important - In case of any query/ issue or escalation you may please contact Incident Manager***

***at le@rkassociates.org. We will appreciate your feedback in order to improve our services.***

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| **ABBREVIATIONS** | |
| **SQP4 PL** | Solar Quest Projects Four Private Limited |
| **PV** | Photovoltaic |
| **RRTS** | Regional Rapid Transit System |
| **NCRTC** | National Capital Region Transport Corporation |
| **RESCO** | Renewable Energy Service Company |
| **COD** | Commercial Operation Date |

|  |  |
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| **PART A** | **REPORT SUMMARY** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name of the Project** | **:** | Roof Top Solar PV (Photovoltaic) Project with a capacity of 3.7 MWp in RESCO model. |
|  | **Project Location** | **:** | Delhi – Ghaziabad – Meerut RRTS Corridor of NCRTC |
|  | **Name of the Borrower Company/**  **Promoter** | **:** | M/s Solar Quest Projects Four Private Limited |
|  | **Prepared for Organization** | **:** | State Bank of India - SME, Asaf Ali Road, New Delhi |
|  | **LIE Consultant Firm** | **:** | M/s R.K. Associates Valuers & Techno Engineering Consultants (P) Ltd |
|  | **Date of Survey** | **:** | 4th November 2022 |
|  | **Date of Report** | **:** | 9th December 2022 |
|  | **Expected COD** | **:** | 30th June 2023 |
|  | **Details & documents provided by** | **:** | Mr. Pranjal Dhariwal  (Authorized representative of the company) |
|  | **Survey in presence of** | **:** | Mr. Shravan  (Company’s Employee) |
|  | **Report Type** | **:** | Lender’s Independent Engineer’s Report |
|  | **Purpose of the Report** | **:** | Review, evaluate & comment on project implementation & present status details to facilitate the bank to take credit decision on the Project |
|  | **Scope of the Report** | **:** | To reviewProject cost, expenditure and examine thecurrent status ofinstallation, Commissioning of the Project |
|  | **Documents produced for Perusal** | **:** | DPR |
|  | **Annexure with the Report** | **:** | 1. Power Purchase Agreement 2. Photographs 3. Letter of Acceptance 4. Notification of Commencement Date for Contract 5. Project Company Approval Letter |
|  | **Quoted Project Cost** | **:** | ₹ 3.6 Cr./ MWp x 3.7 MWp **=** **₹ 13.32 Cr.**  *(as per Letter of Acceptance)* |

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| **PART B** | **INTRODUCTION** |

1. **PROJECT NAME:** Design, Engineering, Supply, Installation, Testing, Commissioning and Comprehensive Operation & Maintenance of Roof Top Solar PV Project and Associated support structure works on RESCO Model for a period of 25 years in Delhi-Ghaziabad-Meerut RRTS Corridor of NCRTC. ***(Contract: DM/EL/COR-OF/133, Package 20)***
2. **PROJECT OVERVIEW:** SQP4 PL is a wholly owned subsidiary (Project Company) of Solar Quest LLP (SQLLP) incorporated on 06th October 2021 for the purpose of executing projects of National Capital Region Transport Corporation (NCRTC) - a joint venture company of Govt. of India and States of Delhi, Haryana, Rajasthan and U.P. The directors/signatory of the subject company are Mr. Pranjal Dhariwal and Mr. Deepak Kumar Lalith.

SQP4 PL has been awarded with the above mentioned project vide Letter of Acceptance dated 19th August 2021 of the Bid no. DM/EL/COR-OF/133 for a period of 25 years @ rate of ₹ 3.89/ KWh and to execute this 3.7 MW, a dedicated project company was incorporated in lines with tender requirement. Following is the list of projects under the tender:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Name of Station** | **Tentative Roof Area**  **(in Sq. Mtr.)** | **Tentative Roof Area for Solar Installation**  **(in Sq. Mtr.)** | **Tentative Capacity**  **of Generation**  **(kWp)** |
| **Section** | | | | |
| 1 | Sahibabad Station | 5,595 | 3,545 | 283.60 |
| 2 | Ghaziabad Station | 9,381 | 5,067 | 405.36 |
| 3 | Guldhar Station | 5,422 | 3,413 | 273.04 |
| 4 | Duhai Station | 6,506 | 4,615 | 369.20 |
| **Sub-Total (Stations)** | | | | **1,331.20** |
| 5 | Duhai Depot Station | 4,272 | 2,575 | 206 |
| 6.1 | Duhai Depot Boundary wall length (in mtr.) |  | 1,980 | 475.20 |
| 6.2 | Duhai Depot | 22,542 | 18,663 | 1,652.88 |
| **Total** | | | | **3,665.28** |
| **Approx. MWp** | | | | **3.7** |

***(Source: Proposal for Solar Quest Project Four Pvt. Ltd.)***

As per the National Energy Policy which commits the Government to promote electricity generation from renewable energy resources and had set the target of 175 GW to be generated from renewable energy by 2022. However, as per the news article by The Hindu dated 23rd September 2022, India has so far installed 66% of its targeted renewable energy installation of 175 GW with only Gujarat, Rajasthan, Karnataka and Telangana meeting State-wise targets, according to a report by global energy thinktank Ember.

As per an article by the Press Information Bureau, GOI, dated 09th September 2022, the country’s vision is to achieve Net Zero Emissions by 2070, in addition to attaining the short-term targets which include:

* Increasing renewables capacity to 500 GW by 2030,
* Meeting 50% of energy requirements from renewables,

Ministry of New and Renewable Energy (MNRE), Government of India desires to implement Grid Connected Rooftop Solar PV Projects on the vacant roofs of Government Buildings/ Offices as a part of its Renewable Energy Initiatives. To pursue the above target, the MNRE introduced the PPP/RESCO model policy setting tariff rates for solar to be arrived on transparent competitive bidding model through PPP route.

*The RESCO model is one of the methods of implementing rooftop solar installations. Under the RESCO model, a renewable energy service company ("****RESCO****"), (i.e., an energy service company that provides energy to consumers from renewable energy sources), develops, installs, finances, operates and owns the rooftop solar power project ("****Project****"), and supplies power generated from the Project to the consumer on whose premises the Project is set up ("****Customer****") or to the grid through net-metering.*

*The RESCO and the Customer enters into a long-term power purchase agreement ("****PPA****") for an agreed tenure, which sets out, among others, the terms at which the power generated from the Project will be sold to the Customer and the tariff at which the power will be sold. Excess power from the Project (if any) could be sold by the Customer to the distribution utility through net metering system – the net metering regulations differ from state to state.*

*Under the PPA, the RESCO owns the Project and is responsible for its installation as well as its operation and maintenance of the Project throughout the tenure of the Project, and at the end of the PPA term, the ownership of the Project is transferred to the Customer. Thereafter, the Customer may either choose to retain the RESCO for operation and maintenance services or engage a third-party operator.*

The procurement activities in respect of the aforesaid Project on behalf of Ministry of New and Renewable Energy, Government of India has been entrusted to Solar Energy Corporation of India Limited (A Government of India Enterprise).

As per the letter of ‘Notification of Commencement Date for Contract’ dated 08th February 2022, the commencement date for the subject project was notified as 15th February 2022.

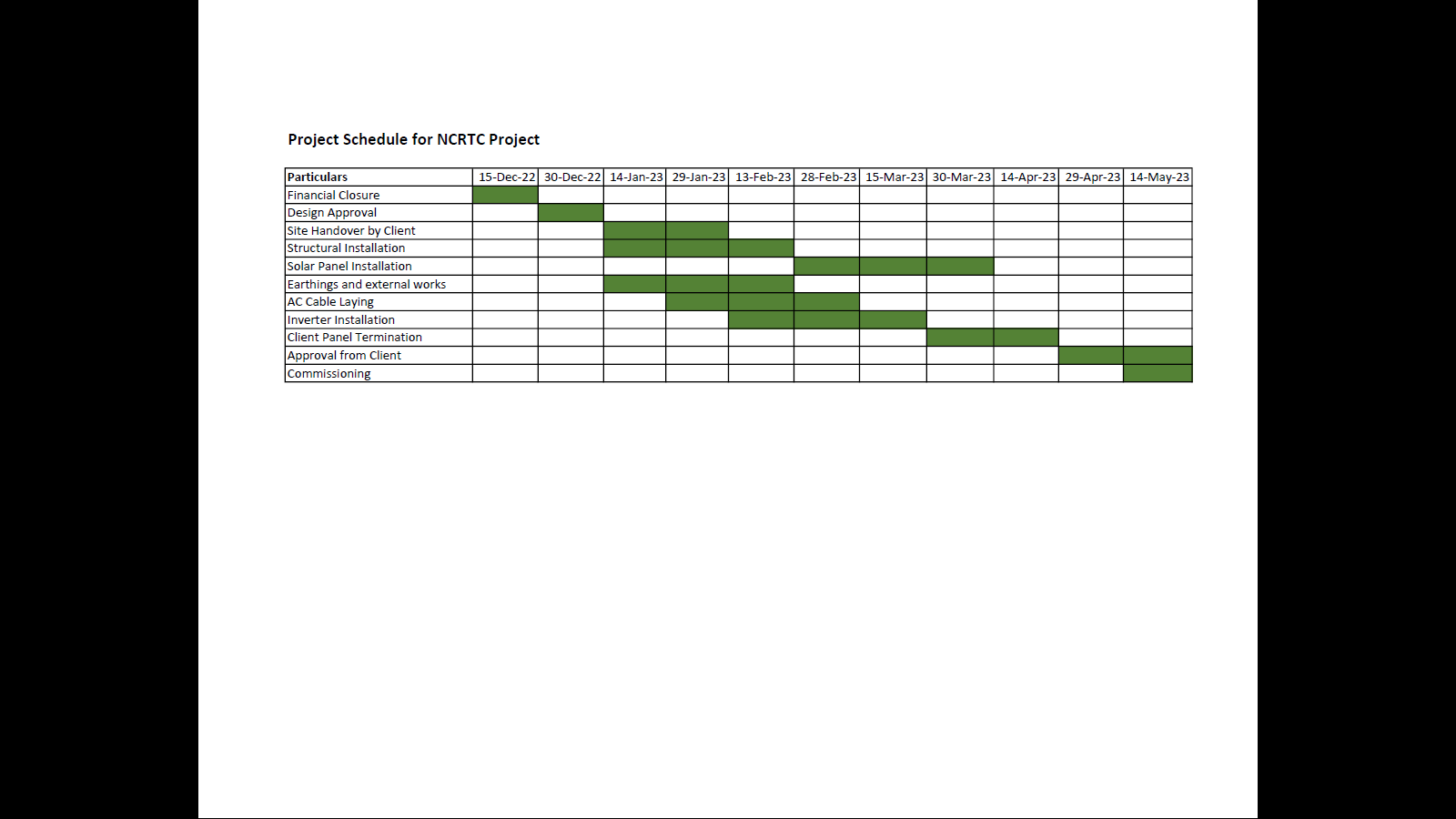
1. **SCOPE OF THE REPORT:** To verify the Project cost, expenditures and examine the commissioning, installation status of Solar Power Plant set-up/ proposed by M/s Solar Quest Projects Four Private Limited.

*All the assessment carried out for the project is done based on the documents and information provided to us and its correlation by the Engineering team through physical and virtual site inspection and various other discussions with the project proponents and thus forming an opinion out of it.*

*Component wise verification is not carried out but Project installation & commissioning has been verified as a whole.*

*Any kind of technical & economic feasibility of the Project is out-of-scope of this Report. This report is only limited & related to the verification and examination of what has already been setup.*

1. **PURPOSE OF THE REPORT:**  To provide fair detailed analysis report based on the “in-scope points” mentioned above for facilitating them to take appropriate business decision on the Project.
2. **METHADOLOGY ADOPTED:**
3. To gather relevant data/ information/ documents related to Project planning, execution, current status.
4. Study of Project Planning documents/ LoA/ Sanction Letter to know the scope of work of the company.
5. Study and analysis of the documents and information obtained from the company.
6. Virtual site inspection of the sites for ascertaining the status of work and shadow analysis.
7. Research about the Project/ sector from the sources in the public domain.
8. Correlation of the provided information against Industry/ sector benchmarks/ trend.
9. Information compilation, analysis and reporting.
10. **PERFORMANCE SECURITY:** The successful bidder shall furnish the Performance Security for the allocated capacity in accordance with the Clause 17 of GCC of Section 7 for an amount of Rs. 40.00 Lakhs, the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.
11. **PROJECT SCHEDULE FOR COMPLETION OF THE PROJECT:**



1. **POWER PURCHASE AGREEMENT:**

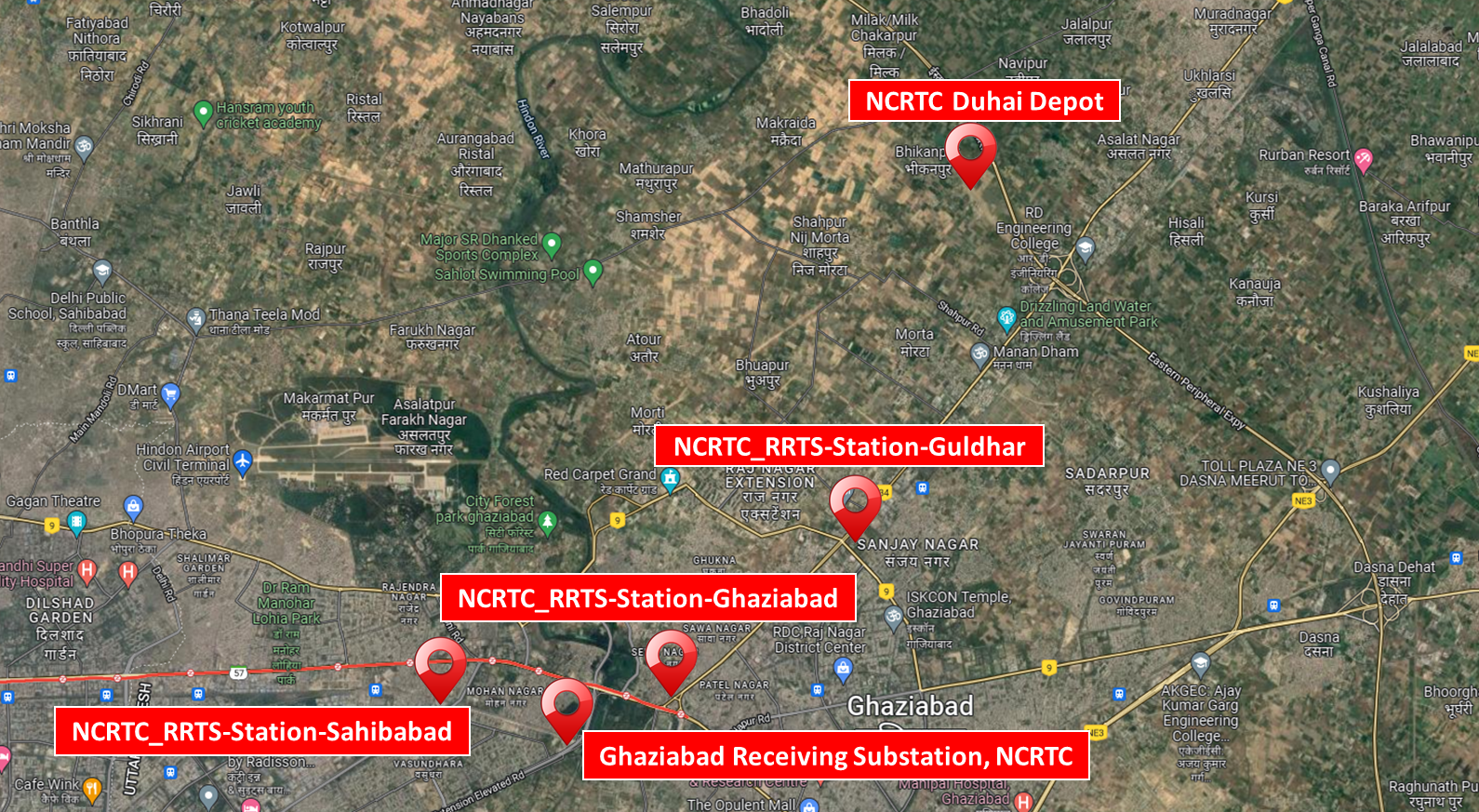
|  |  |  |
| --- | --- | --- |
| **S. No.** | **Particular** | **Description** |
| **1** | **Power Producer** | M/s Solar Quest Projects Four Private Limited |
| **2** | **Purchaser** | National Capital Region Transport Corporation |
| **3** | **Date of PPA** | 1st February 2022 |
| **Various Clauses of the PPA** | | |
| **F** | The power producer herein/project company has agreed to install and operate a solar photovoltaic power plant of 3.7 MWp capacity at the premises as defined in Bid document and supply the entire Solar Power of the Project to the Employer on the terms and conditions contained in the agreement. | |
| **H** | The purchaser has agreed to purchase the entire solar power of the project on the terms and conditions contained in the agreement. | |
|  | **Term and Termination** | |
| **3.1** | **Term** | The term of the Agreement shall commence on the Effective date and shall continue for 25 years from the COD, unless and until terminated earlier pursuant to the provisions of the Agreement. After the Term, the ownership of the system shall be transferred to the Purchaser free of cost. |

***#Copy of the complete PPA has been annexed below***

|  |  |
| --- | --- |
| **PART C** | **PROJECT LOCATIONS, CAPACITY AND SPECIFICATIONS** |

As per the information shared by the company, the subject company has planned to set up roof top Solar PV Plant at the location tabulated below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Site Name / Roof Name** | **Estimated Modules** | **Module Capacity (W)** | **DC Capacity (kWp)** | **Probability distribution (MWh)** | | |
| **P50** | **P75** | **P90** |
| 1 | Duhai Depot | | | | | | |
| a | Admin-Building | 86 | 340 | 29.24 | 1,199.40 | 1,151.80 | 1,108.90 |
| b | ETU-Shed | 170 | 340 | 57.80 |
| c | Pit-Wheel-Lathe | 80 | 340 | 27.20 |
| d | Workshop | 1,410 | 340 | 479.40 |
| e | ETU-RCC | 56 | 340 | 19.04 |
| f | P-Way-RCC | 87 | 340 | 29.58 |
| g | NCRTC Duhai-Depot-Station | 516 | 340 | 175.44 |
| h | Main-Store | 134 | 340 | 45.56 |
| 2 | Ghaziabad | | | | | | |
| a | RSS-Building | 54 | 380 | 20.52 | 1,257.80 | 1,242.50 | 1,228.80 |
| b | NCRTC\_RRTS-Station | 2,584 | 340 | 878.56 |
| 3 | NCRTC\_RRTS-Station-Guldhar | 1,473 | 340 | 500.82 | 699.40 | 690.90 | 683.30 |
| 4 | NCRTC\_RRTS-Station-Sahibabad | 1,473 | 340 | 500.82 | 700.30 | 691.80 | 684.10 |
| 5 | NCRTC\_RRTS-Station-Duhai | 1,820 | 340 | 618.80 | 865.20 | 854.70 | 845.20 |



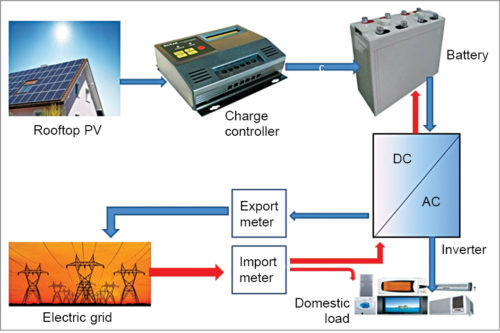
**Brief description of a Solar Plant:**

A photovoltaic (PV) system with its electricity-generating solar panels positioned on the roof of a residential or office building or structure is known as a rooftop solar power system, sometimes known as a rooftop PV system.

India commenced its solar energy journey in the year 2008 with the launch of the Government of India's National Action Plan on Climate Change (NAPCC). The Jawaharlal Nehru National Solar Mission (the Solar Mission) was launched under the NAPCC to significantly increase the share of solar energy in India's energy mix.

Under the Solar Mission, India set a target of 100 GW solar installations by 2022. Out of this, 40 GW was set as a target for rooftop solar sector. After a more modest start, rooftop solar capacity additions too, have increased over the years, growing at an annual rate of 80 percent in 2017 to reach 1.8 GW of installed capacity.

**Process Flow Diagram:**



|  |  |
| --- | --- |
| **PART D** | **CURRENT STATUS OF WORK** |

For the subject project a PPA has been signed between NCRTC and the subject company M/s SQP4 PL. The rooftops on which the subject power plant is to be installed are under construction and it shall be installed after the construction of the related structures gets completed.

**Therefore, as of now, the work related to the subject project is yet to start.**

|  |  |
| --- | --- |
| **PART E** | **PROJECT COST & EXPENDITURE** |

1. **Means of Finance:** As per the details provided by the client the total expected project cost shall be Rs.16.00 Cr. Means of for the same has been tabulated below:

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Particulars** | **Amount**  **(in Rs. Cr.)** |
| 1 | Equity in form of CCD | 5.00 |
| 2 | Debt (TL 15 Years) | 11.00 |
| **Total** | | **16.00** |

1. **COST ASSESSMENT:** As persecondary market research conducted by team of RKA, the benchmark cost for setting up a rooftop photovoltaic system varies from Rs. 39,080/- to Rs. 51,100/- per kW. However, this cost may vary depending upon the location, size of the project, type of installation etc. the project as per Benchmark Cost defined by Ministry of New & Renewable Energy, Government of India is tabulated below:-
2. *The project cost provided to us appears to be in line as per the benchmark cost of Grid Connected Rooftop Solar Photo Voltaic system of Ministry of New & Renewable Energy (MNRE).*

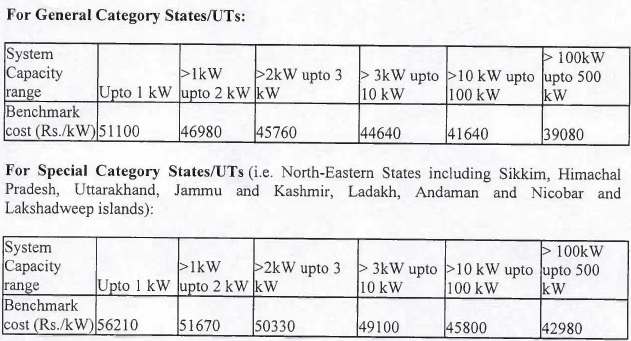
[*https://solarrooftop.gov.in/rooftop\_calculator*](https://solarrooftop.gov.in/rooftop_calculator)

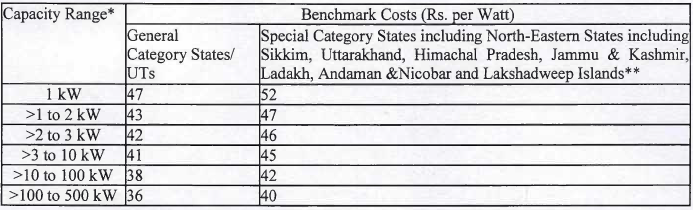
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Particulars** | **Benchmark Cost**  **(In Rs./kW)** | **Project Capacity**  **(In kW)** | **Total Project Cost**  **(Excluding GST)**  **(In Rs.)** | **Total Project Cost**  **(Including 12% GST)**  **(In Rs.)** |
| 1 | As per Ministry of New & Renewable Energy | 39,080 | 3,665.28 | 14,32,39,142 | 16,04,27,839 |
| **Or say** | | | **3.7 MWp** |  | **Rs.16.00 Cr.** |

Note:

1. Project cost is analyzed based on lumsum cost only and not item wise.
2. Project cost is assessed for the current date only and due to price fluctuations it may vary at the time of actual purchase or installation.

***Since, the current Project is in RESCO Model so cost of the Project doesn’t matter much.***

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| **PART F** | **DISCLAIMER** |

* + - 1. No employee or member of R.K Associates has any direct/ indirect interest in the Project.
      2. This report is prepared based on the copies of the documents/ information which the Bank/ Company has provided to us out of the standard checklist of documents sought from them and further based on our assumptions and limiting conditions. All such information provided to us has been relied upon in good faith and we have assumed that it is true and correct in all respect. Verification or cross checking of the documents provided to us has not been done at our end from the originals. If at any time in future, it is found or came to our knowledge that misrepresentation of facts or incomplete or distorted information has been provided to us then this report shall automatically become null & void.
      3. This report is a general analysis of the project based on the scope mentioned in the report. This is not an Audit report, Design document, DPR or Techno-financial feasibility study. All the information gathered is based on the facts seen on the site during survey, verbal discussion & documentary evidence provided by the client and is believed that information given by the company is true best of their knowledge.
      4. All observations mentioned in the report is only based on the visual observation and the documents/ data/ information provided by the client. No mechanical/ technical tests, measurements or any design review have been performed or carried out from our side during Project assessment.
      5. Bank/FII should ONLY take this report as an Advisory document from the Financial/ Chartered Engineering firm and it’s specifically advised to the creditor to cross verify the original documents for the facts mentioned in the report which can be availed from the borrowing company directly.
      6. In case of any default in loans or the credit facility extended to the borrowing company, R.K Associates shall not be held responsible for whatsoever reason may be and any request for seeking any explanation from the employee/s of R.K Associates will not be entertained at any instance or situation.
      7. This Report is prepared by our competent technical team which includes Engineers and financial experts & analysts.
      8. This is just an opinion report and doesn’t hold any binding on anyone. It is requested from the concerned Financial Institution which is using this report for taking financial decision on the project that they should consider all the different associated relevant & related factors also before taking any business decision based on the content of this report.
      9. All Pages of the report including annexures are signed and stamped from our office. In case any paper in the report is without stamp & signature then this should not be considered a valid paper issued from this office.
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Place : Noida **FOR INTERNAL USE**

Date : 20.12.2022 ***SURVEYED BY: Harshit Mayank***

Note : This report contains 16 pages ***PREPARED BY: Adil Afaque***

***REVIEWED BY: MA***

**For R.K Associates Valuers & Techno**

**Engineering Consultants Pvt. Ltd.**

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