



Request for Proposal (RFP)

For

**Implementation of Rooftop Solar Projects of approx. 995 kWp
at NALCO's Refinery complex at Damanjodi and 100 kWp at
NALCO's Port Facility at Vizag**

RFP Document No: NALCO/CORP/P&T/T&C/2021-22/09 dt. 15.03.2022

National Aluminium Company Ltd.(NALCO)

Nalco Bhawan, P/1, Nayapalli,

Bhubaneswar

To

M/s

Sub: Implementation of Rooftop Solar Projects of approx. 995 kWp at NALCO's Refinery complex at Damanjodi and 100 kWp at NALCO's Port Facility at Vizag

Dear Sir,

We are enclosing herewith the **REQUEST FOR PROPOSAL (RFP)** document for the aforesaid work as detailed in enclosed specifications. The scope of services is also explained therein.

1. Digitally signed LTE Two Part Bids in prescribed format are invited from financially sound and qualified agencies possessing relevant experience in the field of the work.
2. The Salient features of the Tender are as detailed in **PROPOSAL DETAILS**.
3. The entire set of RFP/Tender document along with all desired documents need to be uploaded in e-procurement site of CPP Portal (www.eprocure.gov.in) before the scheduled time of bid submission. Bids will be received up to last date and time specified or extended subsequently, as the case may be, through e-tendering at **www.eprocure.gov.in**. NALCO shall not be responsible for any expenses incurred by the bidders in bidding process in connection with the preparation & submission or any other expenses for their bids. The bidder should go through **INSTRUCTIONS TO BIDDERS** enclosed at **Annexure-2** prior to bidding.
4. The Bid shall be evaluated based on documents uploaded without any further reference to bidder. So bidder must ensure that all relevant documents are uploaded at the time of submission of offer. If Nalco desires, the successful bidders may be asked to submit hard copies as uploaded by them for verification.
5. Bidders are required to submit hard copy/original in a sealed envelope for the following and same should reach at the address indicated at **Sl. No. 14 of PROPOSAL DETAIL** by Speed Post or through a reputed courier as mentioned at **Page-5**. Particulars to be enclosed are, **Power of Attorney, a Cancelled Cheque in original, all duly filled, signed & sealed Declarations, Undertakings & affidavits in Original as per the formats enclosed at Annexure-8**.
6. Amendments and/or Clarifications, hosted subsequently before last due date for uploading on website at **www.eprocure.gov.in** and **www.livetenders.nalcoindia.co.in** for RFP/NIT shall also form part of the Tender Documents. Bidders are requested to visit these websites regularly to view/download notifications on Amendments and/or Clarifications before submission of their bids. NALCO shall not be responsible, for any omission or ignorance by any bidder in seeing the notifications on Amendments and/or Clarifications in the process of submission of their bid.
7. Clarifications if any, regarding this tender can be obtained from following persons.
 - i. Mr. Ashok Mishra, GM (Mech.) T&C, Email: ashok.mishra@nalcoindia.co.in,
 - ii. Mr. Shyam Niranjana, DGM(Mech.),BD, Email: shyam.niranjana@nalcoindia.co.in
8. Scrutiny of offers will be one strictly in-line with the facilities available in Portal www.eprocure.gov.in i.e. based on documents uploaded by the bidder. In case of non-compliance to the Tender requirement, bidders may be given only one chance to upload / e mail the attested short fall documents, if any.

**GM (Mech),T&C, Corporate Office
National Aluminium Company Ltd**

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PROPOSAL DETAILS

1	NAME OF THE WORK/ SERVICE:	IMPLEMENTATION OF ROOFTOP SOLAR PROJECTS OF APPROX. 995 KWP AT NALCO'S REFINERY COMPLEX AT DAMANJODI AND 100 KWP AT NALCO'S PORT FACILITY AT VIZAG.
2	RFP/NIT REFERENCE NUMBER	NALCO/CORP/P&T/T&C/2021-22/09 DATED 15.03.2022
3	MODE OF TENDERING (E TENDERING)	LTE(TWO PART)
4	LOCATION OF THE WORK	DAMANJODI, KORAPUT AND PORT FACILITY AT VIZAG
5	TYPE OF WORK/SERVICE	ONE TIME
6	NO OF AGENCY REQUIRED	ONE
7	CONTRACT DURATION	TOTAL CONTRACT PERIOD : 5 YEARS AND 9 MONTHS. a. DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING : NINE (09) MONTHS b. OPERATION & MAINTENANCE (FOR A PERIOD OF 5 YEARS).
8	DEFECT LIABILITY PERIOD (DLP)	Ref. Clause no 1.12 of Annexure-2 and 8.4 of SCC (Annexure-4)
9	MINIMUM WORKABLE OFFER (PLEASE SEE CLAUSE 1.10 OF ANNEXURE -2)	NOT APPLICABLE
10	PRE-BID MEETING:	NOT APPLICABLE
11	LAST DATE AND TIME OF SUBMISSION OF ORIGINAL EMD AND OTHER PARTICULARS IN HARD COPY TO BE SUBMITTED	05/ 04 /2022, AT 04:00 PM
12	LAST DATE AND TIME OF SUBMISSION OF BID/PROPOSAL AT CPP PORTAL	05/ 04 /2022, AT 04:00 PM
13	DATE AND TIME OF BID OPENING	06/ 04 /2022, AT 04:00 PM
14	ADDRESS FOR ALL COMMUNICATIONS AND VENUE FOR TECHNO-COMMERCIAL / PRICE BID OPENING/ PRE-BID MEETING ETC.	T&C DEPARTMENT, CORPORATE OFFICE NATIONAL ALUMINIUM COMPANY LIMITED NALCO BHAWAN, P/1, NAYAPALLI, BHUBANESWAR-751013
15	VALIDITY OF OFFER	04 (FOUR) MONTHS FROM THE DATE OF OPENING THE BID.
16	EMD	APPLICABLE (Rs 3,50,000)
17	BANK GUARANTEE REQUIRED	APPLICABLE FOR SDBG
18	MINIMUM LABOURS REQUIREMENT FROM DIFFERENT CATEGORIES ENVISAGED FOR THE JOB	NOT APPLICABLE
19	INTEGRITY PACT	APPLICABLE
20	TAXES & DUTIES.	THE RATES INCLUDES ALL TAXES AND DUTIES EXCEPT GST. GST WILL BE PAID EXTRA AS PER

		APPLICABILITY.
21	HRD CLEARANCE	NOT APPLICABLE.
22	PRICE VARIATION FOR LABOUR ESCALATION	NOT APPLICABLE
23	PRICE VARIATION FOR DIESEL ESCALATION	NOT APPLICABLE
24	SPLITTING OF WORK	NOT APPLICABLE
25	MOBILIZATION ADVANCE	NOT APPLICABLE
26	JOINT VENTURE/CONSORTIUM	NOT APPLICABLE
27	MINIMUM WORKABLE RATE	NOT APPLICABLE

1.0 ADDITIONAL DOCUMENTS TO BE UPLOADED/SUBMITTED BY BIDDER

- i. All the prescribed Formats enclosed at Annexure-8 including Bid security declaration (Annexure-8A), Affidavit of no litigation(Annexure-8B).
- ii. Signed and stamped NIT, GCC, Annexure -7(For no deviation statement), Annexure - 9 and 10.
- iii. The bidder's GST registration certificates.
- iv. The party should also possess PAN in the name of the firm or sole proprietor. In case of PAN is in the name of sole proprietor, the proof of ownership of their firm along with the offer should be submitted.
- v. The bidder or its Proprietor/Partner(s)/Director(s) of the firm should not have been convicted by a court of Law for an offence involving moral turpitude in relation to business dealings during past seven years for acceptance of the offer. The affidavit must be affirmed before the competent judiciary authority or duly notarized by Notary. The bidder has to enclosed/upload Affidavit as per Format enclosed at Annexure-8(B).
(All documents given at Annexure-8 to be submitted along with other documents as hard copy with the address given above before the due date of submission as indicated at proposal detail.)
- vi. Bidder should not be under liquidation, court receivership or similar proceeding and the Bidder shall submit SOLVENCY CERTIFICATE for the same.
- vii. NALCO at its discretion may revise the technical/commercial conditions and other related issues for the assignment, before acceptance of final bid. In that case all bidders have to submit their revised proposal within stipulated time frame.
- viii. The bidder is required to give the names of other firms / agencies / partnership firm / wholly owned or partly owned subsidiary etc. where they are having financial / professional stakes and also give a certificate if any such firm / agency are participating in the subject tender.
- ix. If any information in this schedule is found to be incorrect or concealed, qualification application will summarily be rejected.

ANNEXURE-1

- **PRE-QUALIFYING CRITERIA NOT APPLICABLE.**
- However, the documents listed at Page-5 of NIT shall be verified in Technical Bid. After satisfying the requirement listed at Page-5 of NIT, Price Bid shall be opened.

ANNEXURE -2

INSTRUCTIONS TO BIDDERS.**1.0 MODE, SUBMISSION, RECEIPT AND OPENING OF TENDER:**

- 1.1 All critical parameters of the contracts are indicated at **PROPOSAL DETAILS** i.e. refer **INDEX OF NIT**. Information at Proposal Detail supersede all other information otherwise stated anywhere in the NIT.
- 1.2 Tenders are to be uploaded in the e-procure web site (**www.eprocure.gov.in**) on or before time & date specified at PROPOSAL DETAIL. The bids shall be opened at the time & date specified at Proposal details.
- 1.3 No deviation to the tender is acceptable and the tender has to be accepted *in Toto*. Bids with deviations may be disqualified/rejected by NALCO. All covering letters & information are to be included in the offer. The tender should be uploaded online superscripting clearly the name of the work.
- 1.4 The Bidders also have to fill up all the prescribed Formats enclosed at **Annexure-8** and upload along with the bid documents. Bidder also has to send prescribed Formats enclosed at **Annexure-8** to Place/ Address of submission indicated at Proposal detail, in hard copy.
- 1.5 Appendices as downloaded from EPROCURE Web site along with Undertaking on downloaded tender documents as given at **Annexure-8**, duly filled in and with no deviations to the specific requirements, terms & conditions and digitally signed on the bottom of each page with official seal along with a forwarding letter should be sent to the address **GM(Mech.), T&C Department, Corporate Office, NALCO BHAWAN, NALCO, Bhubaneswar, Odisha, PIN-751013**.
- 1.6 All the supporting documents uploaded with the offer should be attested by a Gazetted Officer or Notary Public and are required to be signed on each page by the bidder or by their authorized representative.
- 1.7 NALCO reserves the right to defer the date of tender opening in case the response is considered inadequate or due to any other reasons. In such event, the bidders shall be intimated the next date of opening subsequently.
- 1.8 The bidder shall ensure submission of complete information / documents in the first instance itself. NALCO reserves the right to evaluate the offer based on the details furnished by the bidders on the scheduled date of tender submission without seeking any subsequent additional information.
- 1.9 NALCO reserves the right to reject or accept any or all the offers in full or part, split the work, reduce or increase the quantity.

1.10 INSTRUCTIONS TO THE BIDDERS FOR THE E-SUBMISSION OF THE BIDS

- i.** Bidder should do the registration in the tender site <http://eprocure.gov.in> using the option available. Then the Digital Signature registration has to be done with the e-token, after logging into the site.
- ii.** Bidder then login to the site through giving user id / password chosen during registration. The **e-token** that is registered should be used by the bidder and should not be misused by others.
- iii.** Please go to the CPP portal. Search for the e-procurement tender required
- iv.** The Bidders can update well in advance, the documents such as certificates, work order details etc., under **My Documents** option and these can be selected as per tender requirements and then send along with bid documents during bid submission.
- v.** After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as per requirement else the bid may be rejected.
- vi.** If there are any clarifications, this may be obtained online through the tender site, or through the contact details. Bidder should take into account of the corrigendum/addendum published before submitting the bids online.
- vii.** Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender schedule and they should be in PDF/xls/rar/dwf formats. If there is more than one document, they can be clubbed together.
- viii.** The bidder reads the terms & conditions and accepts the same to proceed further to submit the bids
- ix.** The bidder has to submit the tender document online e-tendering system to the **Tender Inviting Authority (TIA)** well before the bid submission end date & time (**as per Server System Clock**) to avoid any delay or problem during the submission process. The tender Inviting Authority (**TIA**) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders.
- x.** After the bid submission, the acknowledgement number, given by the e-tendering system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender.
- xi.** The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected.
- xii.** The time settings fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time during bid submission.
- xiii.** The bidder should logout of the tendering system using the normal logout option available at the top right hand corner and not by selecting the (X) option in the browser.

- xiv. All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening. Overall, the submitted tender documents become readable only after the tender opening by the authorized individual. The confidentiality of the bids is maintained since the secured Socket Layer 128 bit encryption technology is used. Data storage encryption of sensitive fields is done.
- xv. If the bidder submits the bid in manual form (if permitted categorically in the tender), he should have already registered in the tender site and he has to inform the registration ID in the bid submitted otherwise his tender may not be considered.
- xvi. **PART-II:** Part-II comprises of price bid. Bidders shall quote rate in the XLS format for price bid provided on website only. Bidders shall not send hard copies of price bids or should upload any copy with other documents. The priced part shall be unconditional and conditions (if any) shall be un-solicited, which shall be ignored.
- xvii. The tenderer are advised to submit the tender based strictly on the Terms and Conditions and Specifications contained in the tender documents including amendments, if any, issued prior to submission of offer. For amendment if any, with financial implications, issued after submission of offer, the tenderer shall be entitled to amend his price, however, no price implication shall be entitled due to any amendment prior to submission of offer.
- xviii. The tender shall be complete in all respects with all their attachments/enclosures. All the technical documents, annexure and forms filled in with respect to the tender document should be duly signed and stamped by the bidder.
- xix. **RECEIPT OF TENDER DOCUMENTS AND CREDENTIALS:**
All tender documents and credential documents, as stipulated will be received at the following address by Registered Post/Courier/submitting the same in person before date and time indicated at Pg-4. NALCO is no way responsible for late delivery of the document.

Mr. Ashok Mishra, GM (Mech), T&C
T&C Dept. Nalco Bhawan, P/1 Nayapalli
Bhubaneswar-751013, Odisha.

- xx. In the event of the office remaining closed on the Bid opening date, tenders will be opened on the next working day as per the convenience of the concerned officials.
- xxi. The validity period of the offers submitted by the bidders shall be as indicated page-4 from the date of opening of Tender (Part-I bid in case of Two/Three part tender). However, NALCO reserves the right to defer the date of tender opening in case the response is

considered to be inadequate or due to any other reasons. In such event, the bidders shall have to visit the site www.eprocure.gov.in to see the next tender opening date. In such case, validity period of the offer shall be reckoned from the date of actual tender opening. The price bids of technically qualified bidders shall only be opened on a later date. The date & time of opening of price bid shall be intimated to the qualified bidders. The price bids shall also be opened ON LINE.

- xxii.** The tenderer shall ensure submission of complete information / documents in the first instant itself. Nalco reserves the right to evaluate the offer based on the details furnished by the bidders on the scheduled date of tender submission without seeking any subsequent additional information.

1.11 QUANTITY VARIATION:

- i. The Quantities mentioned in the schedule are approximate in nature and may vary by a wide margin within the contract value for which the contractor shall have no option but to execute the works, as per direction of the Manager-in-charge at the same rates, terms & conditions of the order. Payment shall be released to the contractor for the actual executed quantity only.
- ii. LUMP SUM (CAPITAL): In case of Lump sum, no adjustment in the contract value shall be made unless there is written instruction by the Manager-in-charge to change the scope of contract due to addition/deletion of items. Adjustment to the contract value due to such change in scope of work shall be governed by the provisions of GCC.

1.12 DEFECT LIABILITY PERIOD (DLP): Ref. Clause no 8.4 of SCC (Annexure-4)

- a. DLP shall be 1 year for erection, commissioning and Project performance evaluation of the Project (After 9 months of Project Timeline, Ref. Annexure-5).
- b. DLP shall be Nil for the O&P contract period of five year for erection, commissioning and Project performance evaluation of the Project (After 9 months of Project Timeline, Ref. Annexure-5).

1.13 ACCEPTANCE OF TENDER:

- i. Bidders may note that, Brief Order / Letter of Intent / Fax of Intent / Work Order placed, is in acceptance of their offer by NALCO and shall be binding on them. However, the bidder has to return a copy of LOI / FOI / Work Order duly signed by them or their authorized representative as a token of receipt of the same within fifteen days of issue of the same for our records. In case of no communication of the same is received within the stipulated time from their end, it will be presumed that the party has received the Brief Order / Letter of Intent / Fax of Intent / Work Order.

- ii. Any communication such as Letter, BO, LOI, FOI, WO etc shall be communicated to the Bidder through Registered post/ Speed post/ Fax/ Hand delivery. Any communication through any one or more of above modes shall be valid and binding on the Bidder.

2.0 GENERAL INSTRUCTIONS TO BIDDER FOR SUBMISSION OF THEIR PROPOSAL

2.1 VARIATIONS IN CONSULTANT'S SCOPE OF WORK

- i. NALCO shall have the right to request Agency in writing any changes/modifications/deletions/additions to Agency's Scope of Work and Agency shall carry out such changes/modifications/deletions/additions for due completion of the project/assignment. If however, such changes/modifications/ deletions/additions would jeopardize fulfilment of any of Agency's obligations under this Contract, Agency shall bring the same to the notice of NALCO and carry out such changes after mutual agreement and compensation (if any for both positive and negative) shall be mutually agreed.
- ii. Also refer GCC for other details for variations in Agency/contractor's scope during execution of contract.

2.2 The tenderers must quote their most reasonable rate. Overall total evaluated price for all items of schedule of quantities shall be the basis for determining the reasonableness of price and gradations of the tenders.

2.3 Merely, issue/download of tender documents to the intending bidders or submission of tenders by the bidders does not make them eligible for award of work. The offers from such bidders who have been debarred / banned/ black listed / de-listed by any unit of NALCO or Govt. Departments/Quasi Govt. organisations or other PSUs are liable for rejection irrespective of offers from such bidders satisfying the qualifying criteria. Bidders are requested to carefully study the terms & conditions and eligibility criteria before submitting the offers.

2.4 Each proposed bidder must conduct its own analysis of the information contained in this NIT or to correct any inaccuracies therein that may be in this NIT and is advised to carry out its own investigation into the proposed assignment.

2.5 The information in this NIT has been prepared in good faith. The information contained in this NIT is selective. It does not, and does not purport to, contain all the information that a proposed bidder may require. Neither NALCO, nor any of its officers or employees, nor any of their advisers nor companies/agencies undertake to provide any proposed bidder with access to any additional information or to update the information in this NIT and accept any liability or responsibility for the accuracy, reasonableness or completeness of, or for any errors, omissions or misstatements, negligent or otherwise, relating to the proposed

assignment or makes any representation or warranty, express or implied, with respect to the information contained in this NIT or on which this NIT is based or with respect to any written or oral information made or to be made available to any of the recipients or their professional advisers and, so far as permitted by law and except in the case of fraudulent misrepresentation by the party concerned, and liability therefore is hereby expressly disclaimed.

- 2.6 EARNEST MONEY DEPOSIT (EMD): NOT APPLICABLE. However the filled up Bid security declaration format attached in RFP need to be submitted by each bidder**
- 2.7** NALCO reserves the right to award the work in parts between two or more agencies if considered expedient. The quoted rates shall hold good for such an eventuality.
- 2.8** The Bidders are expected to examine carefully the contents of all the documents provided and Bidder has made complete and careful examinations of requirements and other information set forth in this RFP and received all such relevant information as it has requested from NALCO. Failure to comply with the requirements of RFP will be at the Bidder's own risk.
- 2.9** Before submission of the bid, the bidders are requested to make themselves fully conversant with Nalco's General Conditions of Contract (GCC) along with all other terms & conditions of RFP/NIT. The tenderer is advised to go through the GCC either in the office of the DGM(Elect) T&C Dept Corporate Office during office hours to seek clarification if any, or may refer to NALCO web site at which Nalco's General Conditions of Contract (GCC) is uploaded and get themselves satisfied before quoting the rates. It will be taken for granted by NALCO that tenderer has seen and gone through the terms and conditions of GCC and shall abide by this.
- 2.10** The Bidder may seek clarification regarding the bidding document provisions, bidding process and / or rejection of his bid. However such queries shall be responded within a reasonable time. Clarification, if any, can be obtained from I/c of the T&C Dept through E-Mail: ashok.mishra@nalcoindia.co.in. The Bidder may note that by mere submission of the proposal shall not entitle his automatic qualification in the selection process.
- 2.11 CONFIDENTIAL AGREEMENT: Not applicable.**
- 2.12** Interested bidder have to bear all expenses for bidding process including the costs associated with the preparation, submission of proposal, participating in discussions etc. including costs and expenses related with visits to NALCO offices. NALCO will not be responsible nor in any way liable for such costs, regardless of the conduct or outcome of the bidding process. NALCO shall not be liable for any mistake or error or neglect by the Bidder in respect of the above.
- 2.13** However, NALCO reserves its right to call for original documents submitted as part of offer for verification if so deemed fit and also cross-check any details as furnished by the bidder from their previous clients etc. Bidder shall have no objection whatsoever in this regard.

- NALCO reserves the right to make use of available in-house data and those available in public domain for evaluation of the proposal that have been submitted against this request.
- 2.14** NALCO will examine the proposal for its completeness. **Incomplete proposals are liable for rejection.** Canvassing in any form by the bidder or by any other agency on their behalf may lead to disqualification of their bids. Any effort by a Bidder to influence the OWNER / client in their decisions, in respect of evaluation, will result in the rejection of their proposal.
- 2.15** NALCO reserves the right to accept or reject any proposal and to annul the evaluation process at any time without thereby incurring any liability to the affected participant.
- 2.16** NALCO reserves the right to reject any Proposal if:
- 2.16.1** At any point of time, material misrepresentation is made or uncovered for a bidder
- 2.16.2** The Bidder does not respond promptly and thoroughly to requests for supplemental information required for the evaluation of the Proposal.
- 2.17** Bidder should not be under liquidation, court receivership or similar proceeding and shall submit self-declaration for the same.
- 2.18** The bidder is required to give the names of other firms / agencies / partnership firm / wholly owned or partly owned subsidiary etc. where they are having financial / professional stakes and also give a certificate if any such firm / agency are participating in the subject tender.
- 2.19** The bidder or its proprietor /partner(s)/director(s) of the firm should not have been convicted by court of law for an offence involving moral turpitude in relation to the business dealing during past seven years for acceptance of the offer. The bidder shall give affidavit to this effect. The affidavit must be affirmed before the competent judiciary authority or duly notarized by Notary.
- 2.20** **Telex/ Telegraphic/ Fax/ E-mail bids shall not be accepted if same is not intended in the RFP/NIT.**
- 2.21** **EVALUATION OF BIDS:** The price bids shall be evaluated and lowest quoted bidders will be considered for award of work subject to acceptance of NALCO. The bids shall be evaluated as per the footnote of "Quantity & Rate Schedule" in Excel format available in the e-procure web site/ Annexure-5 as a sample copy.
- 2.22** Financial implications of the agreed deviation as per assessment of NALCO will be loaded on the price quoted by the bidder. Deviation not accepted by NALCO will have to be withdrawn by the bidder otherwise such bids may be disqualified/rejected.
- 2.23** **SIGNING OF THE CONTRACT:**
- i. The successful tenderer shall be required to execute an agreement with the Owner in the proforma attached with tender document within **1 days** of the receipt by him of the notification of acceptance of the tender. In the event of failure on the part of the successful tenderer to sign the agreement within the above stipulated period, ~~the earnest money~~ or his initial security deposit will be forfeited and the acceptance of the tender shall be considered as cancelled.

- ii. The 'Contract' shall mean the agreement between the Owner and the contractor for the execution of the works including therein all documents such as the invitation to tender, instructions to Tenders, General Conditions of Contract, Special Conditions of Contract, Job Specifications, General Requirements, Time Schedule of Completion of Job, Drawings, Letter of Intent awarding the work, Agreed variations, if any etc.
- iii. No bill shall be payable unless the agreement is signed, if signing of agreement is applicable.

2.24 In case there is a tie in L-1 position,

- (i) The concerned bidders may be called to offer maximum possible discount on their quoted rates offline in order to decide the L-1 bidder among the considered bids.
- (ii) In case "tie" of price bids, even after application of clause (i) above, the following criteria shall prevail in the given order.
 - (a) Bidder having highest average turnover during last three years shall be preferred.
 - (b) The contractor executing the same contract satisfactorily will be preferred.
 - (c) The contractor of the previous contract, who has executed the same work satisfactorily will be preferred.

Note: Average Annual Turnover shall be decided on the basis of audited profit and loss account submitted by the bidder for the last three financial years.

2.25 BANK GUARANTEES:-

- i. The party may submit Bank Guarantee against SDBG as applicable and indicated in NIT.
- ii. The party's shall submit a Bank Guarantee in NALCO's approved format from NALCO's approved bankers only. (Refer Annexure-9A). The party may submit Bank Guarantee against CPBG/SDBG as applicable and indicated in NIT.
- iii. The party's shall submit a Bank Guarantee in NALCO's approved format and issued from a NALCO's approved bankers only. (Refer Annexure-9 for list of NALCO's approved bankers & Nalco's approved format for each type of BG.
- iv. Through Registered/Speed Post with AD, the original BG should be sent by the Bank directly to NALCO Corporate Office Finance Dept. Issuing Bank also should send a forwarding letter indicating address, Phone, Fax no. and email ID of the issuing Bank. The bank is required to send the original BG in confirmation directly to the beneficiary.
- v. In case original BG is carried by the party for onward transmission to NALCO, it must accompany the forwarding letter of the Bank. Besides, the Bank has to send an unstamped duplicate copy of the BG and forwarding letter directly to NALCO Finance Dept. through Regd. /Speed Post with AD.
- vi. The BG will not carry any interest.
- vii. The SDBG shall remain valid three months beyond the purpose for which it has been submitted. For reason of non-fulfilment of any contractual obligation and owner required to invoke the BG, the BG value should be inclusive of GST.

- viii. For successful bidder EMD BG will be returned subject to acceptance of CPBG/SDBG by Nalco.
- ix. The issuing Bank must agree that the issued Guarantee shall be invocable Bhubaneswar i.e. NALCO place of business. Accordingly issued Bank must intimate detail address of their branch at Bhubaneswar, Odisha.
- x. BG amount to be submitted should be inclusive of/SDBG amount and corresponding applicable GST amount. The list of NALCO's approved bankers & Nalco's approved format for each type of BG is enclosed at Annexure-9.

2.26 SECURITY DEPOSIT

- i. A sum of 3% of the accepted value of the tender or actual value of the work done whichever is higher for contracts shall have to be deposited by the person/ persons (hereinafter called as contractor) as security deposit with the owner until the expiry of defect liability period.
- ii. This may be deposited initially at 2.50 % of the value of the contract (referred as initial Security deposit) within 21 days of receipt by him of the notification of acceptance of tender and the balance will be recovered in instalments through the deduction @ 3 % of the gross value of the each running account bill till total security deposit is collected. No further deduction from the bills will be made on this account subject to clause 4.27(vii) below.
- iii. Alternatively the contractor may at his option to deposit the full amount percentage as mentioned 4.27(i) above towards deposit within 10 days of issue of notification accepting his tender. This amount will have to be suitably enhanced to the tune of above percentage of the executed value.
- iv. The earnest money deposited with the tender shall be adjusted towards security deposit.
- v. Contractor can furnish the initial or total security deposit amount (a) in Demand Draft or (b) through a Bank Guarantee from any Scheduled bank in NALCO's prescribed proforma.
- vi. If the contractor /sub-contractor or their employees damages, breaks, deface or destroy the property belonging to the owner or other during the execution of the contract, the same shall be made good by the contractor at his own expense and in default thereof; the Engineer-in-Charge may cause the same to be made good by other agencies and recover expenses from the contractor (for which the certificate of Engineer-in-Charge shall be final).
- vii. All compensation or other sums of money payable by the contractor to the Owner or recoveries to be made under terms of this contract may be deducted from or paid by the sale of a sufficient part of his security deposit or from any sums which may be due or may become due to the contractor by the Owner on any account whatsoever. In the event of his security being reduced by reasons of any such deduction or sale, the contractor shall within ten days thereafter make good in cash, bank drafts, any sum or sums which may have fallen

short or Security deposit amount or any part thereof. No interest shall be payable by the Owner for sum deposited as security deposit.

viii. The security deposit will be refunded after the expiry of the period of liability as stipulated in the contract.

ix. **The contractor need to deposit the Security Deposit along with the applicable GST.**

x. **PENALTY FOR LATE SUBMISSION OF SECURITY DEPOSIT:**

In case the successful bidder fails to submit the ISD /SD as stipulated under CI 19 of GCC, with in a period of 21 days from the date of issue of work order/ FOA/ LOA, the ISD amount along with a simple interest @8% per annum as penalty, applicable from the date of issue of work order till the date of submission of ISD or submission of 1st RA bill, shall be recovered starting from 1st RA bill.

xi. **FORFEITURE OF SECURITY DEPOSIT:**

Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the contract, the Owner shall be entitled to recover such sum by appropriating in part or whole the security deposit of the contractor, and to sell any Government securities etc. forming whole or part of such security deposit. In the event of security being insufficient or if no security has been taken from the contractor, then the balance or the total sum recoverable as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the contractor. The contractor shall pay to the Owner on demand any balance remaining due.

In the event of any breach by the contractor or any loss or damage occasioned to the owner which in the opinion of the owner has arises, the decision where of shall be final and binding on the contractor or in the event of the termination of the contract for any such breach, the security deposit is liable to be forfeited. The decision of forfeiture by the Owner shall be final and binding on the contractor.

GST is applicable in forfeiting Security Deposit. Hence while forfeiting Security Deposit applicable GST amount will also be forfeited at applicable rate.

2.27 SECURITY DEPOSIT BANK GUARANTEE (SDBG):

i. As a Contract security, the successful Bidder, to whom the work will be awarded, shall be required to furnish SDBG in the Proforma attached herewith in favour of the Owner within 14 days from the issue of Letter of Acceptance (LOA or Brief Order, whichever is earlier).

ii. **PENALTY FOR LATE SUBMISSION OF SDBG: In case the successful bidder fails to submit the SDBG, within a period of 14 days from the date of issue of work order/ LOA, the SDBG amount along with a simple interest @ 8 % per annum as penalty (i.e. SBI MCLR rate, which 7% as of April 21 + 1%), applicable from the date of issue of work order till the date of submission of SDBG or submission of 1st bill from which recovery shall start.**

- iii. The guarantee amount shall be equal to **Three percent (3 %) of the total Contract Price plus applicable GST** and it shall guarantee the faithful performance of the contract in accordance with the terms and conditions specified in the documents and specifications.
- iv. The guarantee shall be valid for the entire period of the Contract, namely till the end of Guarantee period plus three months. The guarantee amount shall be payable without demur on demand to the Owner either in US Dollars in the case of foreign bidders and in Rupees, in the case of Indian Bidders without any condition whatsoever. In the case of Joint bidding by foreign party along with Indian party, the performance bank guarantee shall be submitted by the Party having unit responsibility from an Indian Nationalised Bank.
- v. If the Bank Guarantee stated in clause (iii) above gets reduced/deducted for reasons of non-fulfilment of any contractual obligation before commencement of guarantee period, the Contractor shall immediately take action to increase the value of Bank Guarantee to as applicable i.e. **three percent (3 %) plus applicable GST** of the contract price, to cover his warranties as stated in (ii) above.
- vi. The SDBG will be returned to the Contractor without any interest subject to fulfilment of all contractual obligations by the Contractor after completion of contract period.

2.28 GUARANTEES, LIABILITIES & PENALTY

- i. **CARE AND DILIGENCE:** The contractor shall exercise all reasonable skill, care and diligence in the discharge of the services agreed to be performed by him. If in the performance of his services, the contractor has discretion exercisable as between the Client and any third party, the contractor shall exercise his discretion fairly.
- ii. The contractor shall guarantee that the work and services as specified and described in the Contract shall be executed in accordance with sound and established engineering practices, using international standards, Indian codes and regulations, wherever applicable.
- iii. **DAMAGES FOR DELAY IN COMPLETION:** The time allowed for execution of the work(s) or the extended time, if any extension is given by the Client in accordance with these conditions shall be the essence of the contract. In case the CONTRACTOR fails to complete the work(s) on or before the agreed date of completion of work(s), he shall be liable without prejudice to any other right or remedy available to the Client, on account of such delay to make a payment calculated @ $\frac{1}{2}$ % (**half percent**) of the total fees per week or part there of the delay, provided that the total amount of compensation with for delay to be paid under this condition shall not exceed 5 % (**Five percent**) of the total fees **plus applicable GST** payable to the Contractor. Please refer **SCC** for details.
- iv. **CONSEQUENTIAL LOSSES:** Neither party shall have liability for indirect damages or consequential loss including loss of profit and / or production or revenue sustained by the other. Please refer **GCC** for details.

- v. LIABILITY: The CONTRACTOR shall be liable to pay for any compensation/damages consequent of lapses/errors/omissions arising from the negligence on his part or on the part of his employee. Refer GCC for details.

2.29 TAXES & DUTIES :

- i. Rate variation in Taxes and any new promulgated taxes after last date of the submission of price bid only on the goods and/or services applicable to invoices raised on NALCO within the contractual delivery date /period (including extension approved if any) shall be on NALCO's Account against submission of documentary evidence.
- ii. Further, in case of delay in delivery of goods and/or services, any upward rate variation in Taxes and any new promulgated taxes imposed after the contractual delivery date shall be to the Contractor's Account.
- iii. It would be the responsibility of the contractor to get the registration with the respective Tax authorities under provision of GST. Any taxes being charged by the Contractors would be claimed by issuing proper TAX Invoice in a GSTN (Goods & Services Tax Network) acceptable format indicating details elements of all taxes charged and necessary requirements as prescribed under the respective tax laws and also to mention his correct and valid GSTIN along with NALCO's GSTIN as applicable for particular supply on all invoices raised on NALCO under GST Regime.
- iv. The contractor would be liable to reimburse or make good of any loss/claim by NALCO towards tax credit rejected /disallowed by any tax authorities due to non-deposit of taxes or non-updating of the data in GSTIN network or non-filing of returns or noncompliance of tax laws by the Contractor by issuance of suitable credit note to NALCO. In case, contractor does not issues credit note to NALCO, NALCO would be constrained to recover the amount including interest payable along with statutory levy/Tax, if any, payable on such recovery.
- v. Tax element on any Debit Note / Supplementary invoice, raised by the contractor will be reimbursed by NALCO as long as the same is within the permissible time limit as per the respective taxation laws and also permissible under the Contract terms and conditions. Contractors to ensure that such debit Notes are uploaded while filing the statutory returns as may be prescribed from time to time.
- vi. The contractor will be under obligation for quoting/charging correct rate of tax as prescribed under the respective Tax Laws. Further the Contractor shall avail and pass on benefits of all exemptions/concessions/benefits/waiver or any other benefits of similar nature or kind available under the Tax Laws. In no case, differential Tax Claims due to wrong classification of goods and/or services or understanding of law or rules or regulations or any other reasons of similar nature shall be entertained by NALCO.
- vii. In case, NALCO's Input Tax Credit (ITC) is rejected on account of wrong levy of tax i.e. payment of Integrated Tax in place of Central Tax+ State/Union Territory Tax or vice versa, the contractor is liable to make good the loss suffered by NALCO by issuance of suitable

credit note to NALCO. In case, contractor does not issue credit note to NALCO, NALCO would be constrained to recover the amount including interest payable along with statutory levy, if any, payable on such recovery.

- viii. NALCO shall reimburse GST levied as per invoice issued by the Contractor as prescribed under section 46 of the CGST Rules 2017 and respective states Act and Rules.
- ix. To enable NALCO to avail ITC, the contractor/supplier shall furnish/submit any and all certificates, documents and declarations as are required by NALCO to avail of the ITC with respect to GST reimbursed by NALCO on materials sold to NALCO
- x. The HSN Code under which the goods/service will fall should be clearly mentioned along with the Rate at the time of submission of invoice for releasing payment.
- xi. In case, NALCO is not able to take Input Tax Credit due to any noncompliance/default/negligence of the seller, the same shall be recovered from the pending bills/dues (including security deposit, BG etc.
- xii. Seller shall be responsible to indemnify NALCO for any loss, direct or implied, accrued to NALCO on account of supplier's failure to discharge his statutory liabilities like paying taxes on time, filling appropriate returns within the prescribed time etc.
- xiii. Any benefit by way of reduction in rate of tax or increase in input tax credit arising due to introduction of GST shall be passed on to NALCO through reduction in supply value by way of commensurate reduction in Bill value.
- xiv. Any deductions/penalties/compensations levied on contractors as per the terms of the contract shall attract GST and the contractor is liable to pay the same at applicable rate along with the penalty/deduction amount.
- xv. Payment of GST is subject to reflection of Party's invoice in GSTR 2A /Anx-2 (GST New Return) of NALCO.
- xvi. Vendor to ensure that GSTR1/Anx-1(GST new return) is filed before the due date.

(B) Tax Deduction at Source under GST

- i. As per section 51 of CGST Act 2017, Nalco shall deduct at source @ 9% CGST & @ 9% SGST for intra state transaction and @18% IGST in the case of interstate transaction from the payment made or credited to the supplier of taxable goods and/or services, provided if the contract value is more that Rs.2,50,000/-. This provisions is applicable w.e.f. 01.10.2018.This clause is not applicable to PSU and Govt. suppliers.
- ii. However, no deduction shall be made if the location of the supplier & the place of supply is in a state or union territory, which is different from the recipient's registration state

2.30 DEDUCTION OF INCOME TAX & ANY OTHER TAX :

- i. Notwithstanding anything contained elsewhere in the contract, NALCO shall deduct at source from the payment due to the contractor, the taxes as required or as amended from time to time or under any statute. The amount so deducted shall be deposited by NALCO with the appropriate Authorities as per Law. It is for the contractor to deal with the appropriate

Authorities directly in respect of any claim or refund relating to the above deductions and NALCO shall not be liable or responsible for any claims or payments or reimbursement in this regard.

- ii. Income Tax as applicable at the prevailing rate on the gross amount billed shall be deducted from the contractor's bills

2.31 STATUTORY PROVISIONS:

- i. The contractor shall abide by various statutory provisions to the satisfaction of Central/State Government Authorities. The contractor has to comply with provisions made in various statutes such as The contractor shall abide by the provision of The Orissa Shops and Commercial Establishments Act, 1956, Employee's Compensation Act 1923, Contract Labour (Regulation and Abolition) Act 1970, Employees PF & Miscellaneous Provisions Act 1952, Employee's State Insurance Act 1948, Minimum Wages Act 1948, Payment of Wages Act 1936, Payment of Bonus 1965, Child Labour (Prohibition & Regulation) Act 1986, Building & Construction Workers Welfare Cess Act 1996, Industrial Dispute Act 1948 and other applicable labour laws/ rules/notification issued by the appropriate Authority from time to time and all the rules made there under at his own cost. The contractor should pay bonus/ex-gratia minimum @8.33% of wages before Durga puja every year or at the time of full and final settlement if it is a part of the financial year to all his workmen as per the provisions of the payment of Bonus Act 1965. In case, the contractor has to engage 20 or more workmen at a time on a day, such contractor has to get his establishment registered under the Contract Labor (R&A) Act 1970 and he has to obtain license from the Office of the Assistant Labor Commissioner (Central) Bhubaneswar in time. The contractor will be given order to work only after he produces labor license as above. In case of failure of the contractor to comply with any statutory provisions, NALCO as principal employer, shall have the right to withhold the bills and/or security deposit of the contractor and/or take such action as it may be deemed fit.
- ii. The contractor shall ensure that the workers employed by him should not carry excessive weight as per Orissa Factory Rule No.57. No person shall unaided by another person, lift, carry or move by hand or on head any materials, article, tool or appliance exceeding the maximum limit in weight i.e. for Adult Male 55 Kg and for Adult Female 30 Kg.
- iii. The contractor should not engage persons, male or female below 18 years of age and above 60 years of age for the execution of the work awarded to him.
- iv. In case of electrical contracts, the tenderer should have possessed valid electrical contractor's license of MV/HV/EHV as the case may be, issued by licensing authority of government of Odisha, a copy of which shall be enclosed along with the offer.
- v. **PF ACCOUNT AND ESI CODE** : Not applicable

2.32 CIRCUMSTANCES OF BLACKLISTING / SUSPENSION / BANNING OF BUSINESS:

BLACKLISTING / SUSPENSION / BANNING OF BUSINESS of any agency/ firm/ contractor working with the Company may be resorted to in following cases:

- a. If the Proprietor or Partner or Director of the Firm is convicted by a Court of Law, following prosecution under the normal process of Law for an offence involving moral turpitude in relations to business dealings;
- b. If security considerations including the question of loyalty to the State warrant as per recommendations of Ministry of Home Affairs.
- c. If there is justification for believing that the Proprietor or Partner or Director (or Employee) of the Firm has been guilty of malpractices such as bribery, corruption, cheating, fraud, substitution of bid or theft or any other illegal activities while carrying out the work etc.
- d. If the Firm refuses/fails to return the Company's dues without adequate cause;
- e. If the Firm is blacklisted by any Department of the Central Government/ State Government.
- f. If the Firm is a confirmed evader of Central / State taxes/duties for which NALCO has received notice from the concerned department of Central / State Govt.
- g. Misbehavior/ threatening of departmental supervisory staff during work execution.
- h. Constant non-achievement of milestones on insufficient and imaginary grounds and non-adherence to quality specifications despite being pointed out.
- i. Persistent & intentional violation of important conditions of contract.
- j. Submission of false/ fabricated/ forged documents for consideration of a bid.
- k. If declared bankrupt or insolvent.

2.33 INTEGRITY PACT: APPLICABLE

Bidders are required to unconditionally accept the "Integrity Pact (IP)" (executed on plain paper), as per format attached as Annexure-8 in the NIT, and submit the same duly signed on all pages by the Bidder's Authorized Signatory along with the offer proposal. Bidder and its Subsidiary (IES) and/or Holding Company and/or Subsidiary (IES) of its Holding Company / Consortium members if permitted as per NIT, shall individually sign Integrity Pact (IP) and shall be submitted in a separate sealed envelope before stipulated Project Proposal submission time at the address specified in Data Sheet. Bidder's failure to comply with the aforesaid requirement regarding submission of Integrity Pact (IP)' shall lead to outright rejection of Project Proposal as being non-responsive.

In case of selected bidder being a Consortium, in addition to above, after incorporation of Joint Venture Company, Integrity Pact shall be signed by the Joint Venture Company along with Project Agreement.

➤ Independent External Monitor (IEM):

- i. In respect of this Tender, the Independent External Monitors (IEM) would be monitoring the Bidding Process and execution of Project Agreement to oversee implementation and effectiveness of the Integrity Pact Program.
- ii. At present, the following three Independent External Monitor(s) (IEMs) are there in NALCO.

A. Dr. Sanjay Kumar Panda IAS (Retd.)
Sidheswar Sahi, Cuttack City
Cuttack, Odisha-753008
Cell no: +91-8527661800
e-mail: sanjy panda iasgmail.com

B. Sri Janak Digal IAS (Retd.)
Plot No. 113/2, Sector-11, CDA Market Nagar
Cuttack, Odisha-753015
Cell no: +91-9971116084
e-mail: janakdigal85Tgmail.com

C. Ms Archana Ranjan IRS (Retd.)
A 4/1, Vasant Vihar
New Delhi- 110057
Cell no: +91-9810004465
E-mail: ran] an. Archanacqmailcom

- iii. Out of the above, The following Independent External Monitor (IEM) have been designated as "Nominated IEM" for the subject tender by NALCO, in terms of Integrity Pact (IP) which forms part of the NALCO Tenders/Contracts:

<p>Sri Janak Digal, IAS (Retd.) Plot No. 1B/2, Sector -11, CDA, Markat Nagar, Cuttack – 753015, Odisha E-mail: janakdigal85@gmail.com (M)- 9971116084</p>	<p>"Only representation in respect of Integrity Pact need to be addressed to the IEMs and no query regarding tender terms and conditions should be address to the IEMs".</p>
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iv.

<p>"Any clarification regarding the tender details and terms & conditions should be addressed to NALCO's officials, as per details given below "</p>
<p>i. Mr. Ashok Mishra, GM (Mech.) T&C, P&T Dept. NALCO Corporate Office, Bhubaneswar Email: ashok.mishra@nalcoindia.co.in,</p> <p>ii. Mr. Shyam Niranjana, DGM(Mech.),BD Dept. NALCO Corporate Office, Bhubaneswar. Email: shyam.niranjana@nalcoindia.co.in</p>

- v. IEM is authorized to examine /consider all references made to it under this tender. The bidder(s), in case of any dispute(s) / complaint(s) pertaining to this package may raise the issue either with the designated 'Nodal Officer' in NALCO or directly with the IEMs at above Address:

- vi. The Independent External Monitors (IEMs) have the right to access without restriction to all

Project documentations of the NALCO including that provided by the Bidder. The Bidder will also grant the Monitor, upon its request and demonstration of a valid interest, unrestricted and unconditional access to its Project Documentations. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder/Subsidiary (IES) and/or Holding Company and/or Subsidiary (IES) of its Holding Company / Consortium members/Sub Contractors with confidentiality.

- vii. Tender Inviting Authority is the Nodal Officer for necessary coordination in this regard:
- viii. If the Employer has terminated the Contract pursuant to Section-3 of the Integrity Pact (IP), NALCO shall en-cash the Contract Performance Bank Guarantee/Performance Guarantees, in accordance with Section 6 of Integrity Pact.'
- ix. The Earnest Money Deposit shall be valid for six months beyond validity period of offer. In case of security deposit, same should be valid till the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and the OWNER, including warranty period
- x. In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the OWNER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

2.34 Different important provisions of GCC and its availability in GCC.

Following clauses of General Conditions of Contract to be noted by bidders. Accordingly, bidder has to go through the GCC and also amendment to GCC enclosed with GCC at the end.		
01.	Description of Important Provisions of GCC.	Index
02	Execution of agreement:	Clause no 13, Section III
03	Interpretation of Contract documents	Clause no 16, Section IV.
04	Security deposit:	Clause no 19, Section IV
05	Forfeiture of security deposit	Clause no 20, Section IV
06	Compensation for delay	Clause no 24, Section IV
07	Failure by the contractor to comply with provision of the contract	Clause no 25, Section IV
08	Contractor's sub-ordinate staff and their conduct	Clause no 33, Section IV
09	Sub-Letting work	Clause no 34, Section IV
10	Contractor's responsibility with other agency	Clause no 36, Section IV
11	Performance of work	Section - V
12	Schedule of rate and Payments	Clause no 69, Section VI
13	Completion certification	Clause no 76, Section VI
14	Taxes and Insurance	Section – VII and &SI no 14 of the amendment to GCC.
15	Labour Laws	Clause no 83, 84, 85 and 86

		Section VIII &SI no 12 of the amendment to GCC.
16	Arbitration	Clause no 87, Section VIII
17	Termination of contract	Clause no 25.1, Section IV
18	Jurisdiction/ governing laws:	SI no 13 of the amendment to GCC.

ANNEXURE-3

SCOPE OF WORK

Name of Work : Implementation of Rooftop Solar Projects of approx. 995 kWp at NALCO's Refinery complex at Damanjodi and 100 kWp at NALCO's Port Facility at Vizag

A. SCOPE OF WORK & TECHNICAL SPECIFICATIONS:

The Scope of the Work would essentially cover, but not limited to Identification and Site Survey of Roof Tops, Site Visit, Solar Potential Assessment, Preparation of Feasibility Report for Identified Locations, Design, Engineering, Manufacture, Supply, Storage, Civil Works, Erection, Testing, Commissioning, Ensuring net metering as per the concerned State Policies, Quality Control of the Grid Connected Solar PV Rooftop Project including Operation and Maintenance (O & M) of the Project for a period of 05 (Five) Years after Commissioning of Project.

The bidders are requested to visit sites i.e. Refinery complex, Damanjodi and Port Facility, Vizag before submission of bids.

The proposed projects shall be implemented as per the technical specifications given below, which is similar to SECI RfS No. SECI / C&P / RfS / MNRE / 97.5 MW / GCRT / R1 / IND / 082019 dated 29.08.2019 for implementation of 97.5 MWp grid connected Roof Top Solar PV System Scheme for Government Buildings.

1. DEFINITION

A Grid Tied Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables, Junction boxes, Distribution boxes and switches. PV Array is mounted on a suitable structure. Grid tied SPV system is without battery and should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable. Solar PV system shall consist of following equipments/components.

- Solar PV modules consisting of required number of Crystalline PV cells.
- Grid interactive Power Conditioning Unit with Remote Monitoring System
- Mounting structures
- Junction Boxes.
- Earthing and lightning protections.
- IR/UV protected PVC Cables, pipes and accessories

1.1 SOLAR PHOTOVOLTAIC MODULES:

1.1.1 The PV modules used should be made in India.

1.1.2 The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-1 - requirements for construction & Part 2 - requirements for testing, for safety qualification or equivalent IS.

- a) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.
- b) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 300 Wp and above wattage.
Module capacity less than minimum 300 watts shall not be accepted
- c) Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
- d) PV modules must be tested and approved by one of the IEC authorized test centres.
- e) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminium.
- f) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid. NALCO shall allow only minor changes at the time of execution.
- g) Other general requirement for the PV modules and subsystems shall be the following:
 - I. The rated output power of any supplied module shall have positive tolerance in range of 5 watt.
 - II. The peak-power point voltage and the peak-power point current of any supplied module and / or any module string (series connected modules) shall not vary by

more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

- III. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of bypass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.
- IV. I-V curves at STC should be provided by bidder.

Solar PV modules

1.1.3 Modules deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each modules. This should be inside the laminate only.

- a) Name of the manufacturer of the PV module
- b) Name of the manufacturer of Solar Cells.
- c) Month & year of the manufacture (separate for solar cells and modules)
- d) Country of origin (separately for solar cells and module)
- e) I-V curve for the module Wattage, I_m , V_m and FF for the module
- f) Unique Serial No and Model No of the module
- g) Date and year of obtaining IEC PV module qualification certificate.
- h) Name of the test lab issuing IEC certificate.
- i) Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001

1.1.4 Warranties:

- a) Material Warranty:
 - i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of sale to the original customer ("Customer")
 - ii. Defects and/or failures due to manufacturing
 - iii. Defects and/or failures due to quality of materials
 - iv. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option
- b) Performance Warranty:

- i. The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

1.2 ARRAY STRUCTURE

- a) Hot dip galvanized MS mounting structures may be used for mounting the modules / panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.
- b) The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed (like Delhi-wind speed of 150 km/ hour). It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to NALCO. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
- c) The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Protection towards rusting need to be provided either by coating or anodization.
- e) The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels
- f) Regarding civil structures the bidder need to take care of the load bearing capacity of the roof and need arrange suitable structures based on the quality of roof.
- g) The minimum clearance of the structure from the roof level should be 300 mm, for RCC type roof,

1.3 JUNCTION BOXES (JBs)

- a) The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All

wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.

- b) Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands. Provision of earthings. It should be placed at 5 feet height or above for ease of accessibility.
- c) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.
- d) Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
- e) All fuses shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

1.4 DC DISTRIBUTION BOARD:

- a) DC Distribution panel to receive the DC output from the array field.
- b) DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65 protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

1.5 AC DISTRIBUTION PANEL BOARD:

- a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
- b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- c) The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- d) All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz
- e) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.

- f) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- g) Should conform to Indian Electricity Act and rules (till last amendment).
- h) All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

Variation in supply voltage +/- 10%

Variation in supply frequency +/- 10%

1.6 PCU / ARRAY SIZE RATIO:

- a) The combined wattage of all inverters should not be less than rated capacity of power plant under STC.
- b) Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

1.7 PCU/ Inverter:

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit (PCU)". In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter should also be DG set interactive. If necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

Switching devices IGBT/MOSFET

Control Microprocessor /DSP

Nominal AC output voltage and frequency 415V, 3 Phase, 50Hz (In case single phase inverters are offered, suitable arrangement for balancing the phases must be made.)

Output frequency 50 Hz

Grid Frequency Synchronization range +/- 5 Hz

Ambient temperature considered -20o C to 50o C

Humidity 95 % Non-condensing

Protection of Enclosure IP-20(Minimum) for indoor.

IP-65(Minimum) for outdoor.

Grid Frequency Tolerance range +/- 5 Hz

Grid Voltage tolerance -0.20.15

No-load losses Less than 1% of rated power

Inverter efficiency(minimum) >93% (In case of 10 kW or above with in-built galvanic isolation)

>97% (In case of 10 KW or above without in- built galvanic isolation)

Inverter efficiency (minimum) > 90% (In case of less than 10 kW)

THD < 3%

PF > 0.9

- a) Three phase PCU/ inverter shall be used with each power plant system (10kW and/or above) but in case of less than 10kW single phase inverter can be used.
- b) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- c) The output of power factor of PCU inverter is suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- d) Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- e) Anti-islanding (Protection against Islanding of grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.
- f) Successful Bidders shall be responsible for limiting dc injection into the grid and load as per the CEA/state regulations.
- g) The PCU/ inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.
- h) The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std.

- i) The MPPT units environmental testing should qualify IEC 60068-2 (1, 2, 14, 30)/ Equivalent BIS std. The junction boxes/ enclosures should be IP 65 (for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
- j) The PCU/ inverters should be tested from the MNRE approved test centres/ NABL/ BIS/ IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

2 INTEGRATION OF PV POWER WITH GRID:

The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set comes into service, PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/ DG power connection need to be provided.

3 DATA ACQUISITION SYSTEM / PLANT MONITORING:

- i. Data Acquisition System shall be provided for each of the solar PV plant
- ii. Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.
- iii. Solar Irradiance: An integrating Pyranometer / Solar cell based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.
- iv. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system
- v. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
 - a. AC Voltage.
 - b. AC Output current.
 - c. Output Power
 - d. Power factor.

- e. DC Input Voltage.
 - f. DC Input Current.
 - g. Time Active.
 - h. Time disabled.
 - i. Time Idle.
 - j. Power produced
 - k. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage.
- vi. All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
 - vii. PV array energy production: Digital Tri Vector Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. TVM Energy meter along with CT/PT should be of 0.5 accuracy class.
 - viii. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
 - ix. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
 - x. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
 - xi. The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
 - xii. All instantaneous data shall be shown on the computer screen.
 - xiii. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
 - xiv. Provision for instantaneous Internet monitoring and download of historical data shall be also incorporated.

- xv. Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.
- xvi. Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.
- xvii. Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.
- xviii. Remote Monitoring and data acquisition through Remote Monitoring System software at NALCO location with latest software/hardware configuration and service connectivity for online / real time data monitoring / control complete to be supplied and operation and maintenance / control to be ensured by the bidder.
- xix. The bidders shall be obligated to push real-time plant monitoring data on a specified intervals (say 15 minute) through open protocol at receiver location (cloud server) in XML/JSON format, preferably. Suitable provision in this regard will be intimated to the bidders.

4. TRANSFORMER "IF REQUIRED" & METERING:

- a) Dry/oil type relevant kVA, 11kV/415V, 50 Hz Step up along with all protections, switchgears, Vacuum circuit breakers, cables etc. along with required civil work, as per applicable IS or IEC Standard.
- b) The bidirectional electronic energy meter (0.5 S class) shall be installed for the measurement of import/Export of energy.
- c) The bidder must take approval/NOC from the Concerned DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to NALCO before commissioning of SPV plant.
- d) Reverse power relay shall be provided by bidder (if necessary), as per the local DISCOM requirement.

5. POWER CONSUMPTION:

- a) Regarding the generated power consumption, priority need to give for internal consumption first and thereafter any excess power can be exported to grid. Decisions of appropriate authority like DISCOM, state regulator may be followed.

6. PROTECTIONS:

The system should be provided with all necessary protections like earthing, Lightning and grid islanding as follows:

6.1 LIGHTNING PROTECTION:

a) The SPV power plants shall be provided with lightning & overvoltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per NFC 17-102:2011 standard. The protection against induced high-voltages shall be provided by the use of SPD type II and suitable earthing such that induced transients find an alternate route to earth.

6.2 SURGE PROTECTION:

a) Internal surge protection shall consist of three SPD type II, surge-arrestors connected from +ve and -ve terminals to earth (via Y arrangement).

6.3 EARTHING PROTECTION:

a) Each array structure of the PV yard should be grounded/ earthed properly as per IS: 3043- 1987. In addition the lightning arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Department/NALCO as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.

b) Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

6.4 GRID ISLANDING:

a) In the event of a power failure on the electric grid, it is required that any independent power- producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as "Islands." Powered Islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

b) A manual disconnect 4-pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

7 CABLES:

Cables of appropriate size to be used in the system shall have the following characteristics:

- i. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- ii. Temp. Range: -10°C to $+80^{\circ}\text{C}$
- iii. Voltage rating 660/1000V
- iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- v. Flexible
- vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%)
- vii. For the DC cabling, XLPE or, XLPO insulated and sheathed, UV-stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.
- viii. For the AC cabling, PVC or, XLPE insulated and PVC sheathed single or, multi-core multi-stranded flexible copper/Aluminium cables shall be used; Outdoor AC cables shall have a UV-stabilized outer sheath.
- ix. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use. Outer sheath of cables shall be electron beam cross-linked XLPO type and black in colour.
- x. The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.
- xi. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers
- xii. All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm² copper; the minimum AC cable size shall be 4.0 mm² copper. In three phase systems, the size of the neutral wire size shall be equal or half to the size of the phase wires.

- xiii. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified. In addition, cable drum no. / Batch no. to be embossed/ printed at every one meter.
- xiv. Cable Jacket should also be electron beam cross-linked XLPO, flame retardant, UV resistant and black in colour.
- xv. All cables and connectors for use for installation of solar field must be of solar grade which can withstand harsh environment conditions including High temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall be solar grade copper (Cu) with XLPO insulation and rated for 1.1kV as per relevant standards only.
- xvi. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant shall be provided by the bidder. Any change in cabling sizes if desired by the bidder shall be approved after citing appropriate reasons. All cable schedules/ layout drawings shall be approved prior to installation.
- xvii. Multi Strand, Annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS Standards as specified below: BoS item / component Standard Description Standard Number
Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V, UV resistant for outdoor installation IS /IEC 69947.
- xviii. The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%.
- xix. The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%.

8. CONNECTIVITY:

The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code of the State and amended from time to time. Following criteria have been suggested for selection of voltage level in the distribution system for ready reference.

Plant Capacity Connecting voltage

Above 100 kW At HT/EHT level (11 kV/ 33 kV/ 66 kV) as per DISCOM rules

- a) Utilities may have voltage levels other than above, DISCOMS may be consulted before finalization of the voltage level and specification be made accordingly.
- b) For large PV system (Above 100 kW) for commercial installation having large load, the solar power can be generated at low voltage levels and stepped up to 11 kV level through the step up transformer. The transformers and associated switchgear would require to be provided by the SPV bidders.

9. TOOLS & TACKLES AND SPARES:

- a) After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the bidder for maintenance purpose. List of tools and tackles to be supplied by the bidder for approval of specifications and make from NALCO.
- b) A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MOVs / arrestors, MCCBs etc. along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished.

10. DANGER BOARDS AND SIGNAGES:

- a) Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be provided one each at battery –cum- control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with NALCO.

11. FIRE EXTINGUISHERS:

The firefighting system for the proposed power plant for fire protection shall be consisting of:

- a) Portable fire extinguishers in the control room for fire caused by electrical short circuits
- b) Sand buckets in the control room
- c) The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.

12. DRAWINGS & MANUALS:

- a) Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
- b) Approved ISI and reputed makes for equipment be used.
- c) For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to NALCO before progressing with the installation work

13. PLANNING AND DESIGNING:

- a) The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labour. The bidder should submit the array layout drawings along with Shadow Analysis Report to NALCO for approval.
- b) NALCO reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/requirements.
- c) The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any. The bidder submit three sets and soft copy in CD of final drawing for formal approval to proceed with construction work.

14. DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT:

- a) The Contractor shall furnish the following drawings Award/Intent and obtain approval
- b) General arrangement and dimensioned layout
- c) Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
- d) Structural drawing along with foundation details for the structure.
- e) Itemized bill of material for complete SV plant covering all the components and associated accessories.
- f) Layout of solar Power Array
- g) Shadow analysis of the roof

15. SOLAR PV SYSTEM ON THE ROOFTOP FOR MEETING THE ANNUAL ENERGY REQUIREMENT:

The Solar PV system on the rooftop of the selected buildings will be installed for meeting up to 90% of the annual energy requirements depending upon the area of rooftop available and the remaining energy requirement of the office buildings will be met by drawing power from grid at commercial tariff of DISCOMs.

16. SAFETY MEASURES:

The bidder shall take entire responsibility for electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc.

17. DISPLAY BOARD:

The bidder has to display a board at the project site mentioning the following:

- a. Plant Name, Capacity, Location, Date of commissioning, estimated Power generation.
- b. The size and type of board and display shall be approved by Manager-in-charge (MIC) before site inspection.

ANNEXURE-4**Special Conditions of Contracts**

1. Special Conditions of Contract (SCC):

- The following two Rooftop Solar Projects have been envisaged and two separate LOAs would be placed for the solar projects to be set up at Refinery Complex, Damanjodi and at Port Facility, Vizag respectively. The final capacity would be decided based on the feasibility study of the successful bidder:
 - i. Rooftop solar project at Refinery Complex, Damanjodi :
Proposed Capacity : 995 kWp (Tentative).
 - ii. Rooftop solar project at Port Facility, Vishakhapatnam (Vizag) :
Proposed Capacity : 100 kWp (Tentative).
- LOA shall be placed on the bidder quoting 'Lowest Unit rate (kWp)' and execution shall be as per the capacity finalized after the feasibility report(s).
- Work shall be awarded to one developer for both the project(s) at Refinery Complex, Damanjodi and at Port Facility, Vizag. However, LOAs shall be placed separately for each project to avail GST credit benefit, smooth execution & payment(s) from the site independently through individual MIC(s) for each project.
- The following SOW shall be independently applicable to the above mentioned projects separately and Security Deposit, BGs etc. shall be based on the value(s) corresponding to the 995 kWp & 100 kWp project capacities respectively:-

2. Scope of work:

The Scope of work include feasibility of installation in identified rooftop of buildings for 25 years, Obtaining No Objection Certificate (NOC) from Distribution Company (DISCOM) for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of the grid connected rooftop solar PV project including Operation and Maintenance (O & M) of the project for a period of 5 years after commissioning of the projects as per NALCO's acceptance.

3. PROJECT COST:

- 3.1 The Project cost shall include all the costs related to above Scope of Work. Bidder shall quote for the entire facilities on a "single responsibility" basis such that the total

Bid Price covers all the obligations mentioned in the Bidding Documents in respect of Design, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance (for a period of 5 years), goods and services including spares required if any during O&M period. The successful bidder has to take all permits, approvals and licenses, Insurance etc., provide training and such other items and services required to complete the scope of work mentioned above. The project cost should be quoted while accounting for the cost of grid-connectivity and net metering application / security deposit etc. All costs associated with net-metering will have to be borne by the successful bidder.

- 3.2 The Project cost is on lump sum turnkey basis and the successful bidder is responsible for the total Scope of work described above.
- 3.3 The Project cost shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work irrespective of his actual cost of execution of the project. No escalation will be granted on any reason whatsoever. The successful bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons whatsoever.
- 3.4 The Project cost shall be inclusive of all duties and taxes, insurance etc. The prices quoted by the firm shall be complete in all respect. However, statutory variation of taxes and duties may be paid by NALCO.
- 3.5 The Operation & Maintenance of Solar Photovoltaic Power Plant would include wear, tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors/ Power Conditioning Unit (PCU), spares, consumables & other parts for a period of 5 years.
4. INSURANCE:
 - 4.1 The successful bidder /Contractor/consultant shall be responsible and shall take an Insurance Policy for transit-cum-storage-cum- erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The Contractor shall also take appropriate insurance including watch and ward during O&M period.
 - 4.2 The successful bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract. Before commencement of the work, the successful bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss,

injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of successful bidder.

5. **WARANTIES AND GUARANTEES:**

The successful bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The successful bidder shall provide warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of 5 years from the date of commissioning. The successful bidder has to transfer all the Guarantees/ Warrantees of the different components to NALCO of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/ Settlement of issues arising out of said clauses shall be joint responsibility of the successful bidder and NALCO.

6. **TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP:**

6.1 The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/ Indian Standards as detailed in the Technical specifications of the bid document. Where appropriate Indian Standards and Codes are not available, other suitable standards and codes as approved by the MNRE shall be used.

6.2 The specifications of the components should meet the technical specifications mentioned.

6.3 Any supplies which have not been specifically mentioned in this Contract but which are necessary for the design, engineering, manufacture, supply & performance or completeness of the project shall be provided by the successful Bidder without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the SPV plant.

7. **OPERATION & MAINTENANCE (O & M) GUIDELINES TO BE MANDATORILY FOLLOWED BY SUCCESSFUL BIDDER:**

7.1 The successful bidder/contractor shall be responsible for all the required activities for successful operation and maintenance of the Rooftop Solar PV system for a period of 5 years for projects from the date of commissioning of the plant.

7.2 O&M of Solar Power Plant shall be compliant with grid requirements to achieve energy generation.

7.3 Deputation of qualified and experienced engineer/ technicians till the O&M period at project site.

- 7.4 Periodic cleaning of solar modules. The modules shall be cleaned with a periodic interval of 15 days or as and when required as per actual site conditions. It's the responsibility of the successful bidder to get the modules cleaned during O & M Period so as to achieve guaranteed CUF.
- 7.5 Periodic checks of the Modules, PCUs and BoS shall be carried out as a part of routine preventive and breakdown maintenance.
- 7.6 Immediate replacement of defective Modules, Invertors / PCUs and other equipment as and when required.
- 7.7 Supply of all spares, consumables and fixtures as required. Such stock shall be maintained for all associated equipments and materials as per manufacturer's / supplier's recommendations.
- 7.8 All the testing instruments required for Testing, Commissioning and O&M for the healthy operation of the Plant shall be maintained by the contractor. The testing equipments must be calibrated once in a year from NABL accredited labs and the certificate of calibration must be kept for reference as required.
- 7.9 If negligence/ mal-operation on part of the successful Bidder's operator results in failure of equipment, such equipment should be repaired/ replaced by the successful Bidder free of cost.
- 7.10 Co-ordination with NALCO / DISCOM / CEIG as per the requirement for Joint Metering Report (JMR). The person in charge present at site from successful bidder's side shall take a joint meter reading in the presence of NALCO on a monthly basis. Furnishing generation data (JMR) each month to NALCO positively by 1st week of every month for the previous month.
- 7.11 Online Performance Monitoring, controlling, troubleshooting, maintaining of logs & records. A maintenance record register is to be maintained by the operator with effect from Commissioning to record the daily generation, regular maintenance work carried out as well as any preventive and breakdown maintenance along with the date of maintenance, reasons for the breakdown, duration of the breakdown, steps taken to attend the breakdown, etc.
- 7.12 For any issues related to operation & maintenance, a toll-free number shall be made available to resolve within 72 hours.
- 7.13 If any jobs covered in O&M Scope as per RfS are not carried out by the contractor/ successful Bidder during the O&M period, the Manager-In-Charge shall take appropriate action as deemed fit. NALCO reserves the right to make surprise checks/ inspection visits at its own or through authorized representative to verify the O&M

activities being carried out by the successful Bidder. Failure to adhere to above guidelines will result in penal action.

8. **METERING AND GRID CONNECTIVITY:**

Metering and grid connectivity of the roof top solar PV system would be the responsibility of the contractor/ successful bidder in accordance with the prevailing guidelines of the concerned DISCOM and / or CEA (if available). SNA could facilitate connectivity; however, the entire responsibility lies with successful bidder only.

9. **PLANT PERFORMANCE EVALUATION:**

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance. Minimum CUF of 15% should be maintained for a period of 5 years for fulfilling one of the condition for release of PBG. The successful bidder should send the periodic plant output details to NALCO for ensuring the CUF. The PR will be measured at Inverter output level during good radiation conditions.

9.1 **PROGRESS REPORT:**

The contractor/ successful bidder shall submit the progress report monthly to NALCO in Prescribed Performa. NALCO will have the right to depute its representatives to ascertain the progress of contract at the premises of works of the successful bidder.

9.2 **Submission of Project Completion Report (PCR):**

The contractor/ successful bidder shall submit the Project Completion Report (both in editable soft copy and signed hard copy) after commissioning of the project. Non-submission of the report shall be considered as "Breach of Contract" and shall attract punitive actions. However, the decision of Manager - in - charge shall be final in this regard.

9.3 **Submission of O & M Report (OMR):**

The contractor/ successful bidder shall submit the Monthly O&M Report mandatorily to NALCO. Non-submission of the report shall be considered as "Breach of Contract" and shall attract punitive actions. However, the decision of Manager - in - charge shall be final in this regard.

9.4 **Defect Liability Period (DLP):**

a. DLP shall be 1 year for erection, commissioning and Project performance evaluation of the Project (After 9 months of Project Timeline, Ref. Annexure-5).

- b. DLP shall be Nil for the O&P contract period of five year for erection, commissioning and Project performance evaluation of the Project (After 9 months of Project Timeline, Ref. Annexure-5).
10. LIQUIDATED DAMAGES:
The Successful bidder / contractor shall complete the erection, commissioning and Project performance evaluation of the Project (Ref. Project Timeline, sl. No. 1 to 6 at Annexure-5), within 09 (Nine) months from the date of issue of Letter of Award (LOA). If they fail to commission the project within specified time, Liquidated Damages (LD), shall be applicable as per GCC clause of NALCO.
11. PROJECT INSPECTION:
The project progress will be monitored by NALCO and the projects will be inspected for quality at any time during commissioning or after the completion of the project either by officer(s) from NALCO or any agency/ experts designated / authorised by NALCO. Third party verification, monitoring of system installed to oversee, the implementation as per required standards and also to visit the manufacturer's facilities to check the quality of products as well as to visit the system integrators to assess their technical capabilities as and when required. The cost of Inspection to be carried out by NALCO shall be borne by NALCO.
12. PERFORMANCE SECURITY (PBG): As per Clause 2.25 and 2.27 of NIT and as per GCC.
- i. The PBG shall be encashed by NALCO without prejudice to its right for any further consequential loss or damage incurred to as mentioned below:
- a. If the Contractor fails to commission the project to the satisfaction of NALCO, hundred percent (100%) PBG amount furnished by the Contractor.
- b. If the Contractor fails to maintain minimum CUF of 15% during O&M period the PBG will be encashed.
13. JURISDICTION:
All causes of action arising out of this contract/consultancy will be exclusively within the territorial jurisdiction of courts in Bhubaneswar only. In case of higher courts, the Hon'ble High Court of Odisha shall have the exclusive jurisdiction.
14. OTHER CONDITIONS:
- 14.1 The Contractor shall not transfer, assign or sublet the work under this contract or any substantial part thereof to any other party without the prior consent of NALCO in writing.

- 14.2 The Contractor or its subcontractors shall not make any other use of any of the documents or information of this contract, except for the purposes of performing the contract.
- 14.3 The owner will not be bound by any Power of Attorney granted/issued by the Contractor or its subcontractors or by any change in the composition of the firm made during or subsequent to the execution of the contract. However recognition to such Power of Attorney and change (if any) may be given by owner after obtaining proper legal advice, the cost of which will be chargeable to the supplier concerned.
15. CORRESPONDENCE:
- 15.1 Contractor requiring any technical clarification of the contract may contact in writing or by e mail to
Shyam Niranjana, DGM (BD),
Nalco Corporate Office, Bhubaneswar 751013
Email: shyam.niranjana@nalcoindia.co.in
- 15.2 Verbal clarifications and information given by the owner or its employees or its Representatives shall not be in any way entertained

ANNEXURE-5

PAYMENT TERMS

The Payment shall be disbursed as follows.

- a. 10% of the Project Cost after survey, acceptance of design layout and drawings for the project by NALCO
- b. 40% of the Project Cost will be released on pro rata basis after receipt and inspection of material at site by NALCO
- c. 30% of the Project Cost will be released after successful commissioning and acceptance of the whole project by NALCO
- d. 10% of the Project Cost will be released after meeting minimum Performance Ratio (PR) of 75%.
- e. Final 10% of the Project Cost will be released @2% of the Project Cost after completion of each year of AMC, total for five years.

CONTRACT TIMELINES:

Sl. No.	Activity	Time
1	Issue of Letter of Award/Work Order	Zero Date
2	Site study, survey and design and drawing submission and approval	Within 2 months from Zero Date
3	Civil and mechanical Work at the site	Within 4 months from the Zero Date
4	Supply and erection of all the equipments at the site	Within 6 months from the Zero Date
5	Commissioning of the total project	Within 8 months of the Zero Date
6	Project performance evaluation	Within 9 months from the Zero date.
7	O&M of the Solar Plant for 5 Years	60 months after commissioning & Project Performance Evaluation

ANNEXURE-6

“BILL OF QUANTITY” OR “SCHEDULE OF RATES”

Item No.	Description Of The Item	Uom	Quantity	Unit Rate (In Rs)	Amount exclusive of GST
1.1	Supply of equipments i.e. Solar PV Modules, Module mounting structure, Power Conditioning Unit consisting of Maximum Power Point Tracker, Inverter, Transformer, Balance equipment, material and associated electrical work complete in all respects, Erection, Testing, Commissioning including net metering , Operation and Maintenance of the plant for 5 years after final commissioning of the projects including all spares, consumables as detailed in Scope of work and Special Conditions of Contract.(For 995 kWp (tentative) at Refinery Complex, Damanjodi and 100 kWp (tentative) at Port Facility, Vizag.)	kWp	1095		
	Total				

This is a sample BoQ. Bidders are not to quote here. A separate Excel Format has been uploaded in the CPP Portal for submission of Price Bids by the Bidders.

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

1. The maximum ceiling price to quote is Rs 35,886/ kWp excluding GST. The price includes cost of Solar PV panels, Inverter, Balance of system, mounting structure, earthing, lightening arrester, civil works, installation and commissioning, O&M for 5 years, transportation, insurance etc. If bidders quote above Rs 35,886/kWp exclusive of GST, their offer will not be evaluated any further. GST amount shall be paid extra.
2. The prices mentioned at this page shall be taken into consideration for evaluation of bids. Selection of bidder shall be on lowest price quoted per kWp basis. However, separate LOAs would be placed for Refinery Complex, Damanjodi and for Port Facility, Vizag Solar Projects.
3. The ordered price by NALCO will remain firm during tenure of the contract i.e. Firm Priced Contract.
4. The bidders have to quote their price for installation of solar systems per kWp basis and payment will be released based on capacity of solar systems installed in kWp basis. The

subsequent price break up for each solar systems shall be finalised jointly by Nalco and successful bidder.

5. LOA shall be placed on the bidder quoting 'Lowest Unit rate (kWp)' and execution shall be as per the capacity finalized after the feasibility report(s).
6. Work shall be awarded to one developer for both the project(s) at Refinery Complex, Damanjodi and at Port Facility, Vizag. However, LOAs shall be placed separately for each project to avail GST credit benefit, smooth execution & payment(s) from the site independently through individual MIC(s) for each project.

(Signature of the Contractor with seal)

ANNEXURE-7**EXCEPTION / DEVIATION STATEMENT TO THE TENDER TERMS & CONDITIONS**

Sl. No	Reference of Tender Document			Subject	Deviation / Exception
	Page No.	Clause No.	Para No.		
	NIL DEVIATION				

Note: The Bidders shall not take any deviation to the Terms & conditions of this NIT/RFP.

Signature of the Bidder
& Seal of bidder.