



वाष्कोस लिमिटेड
WAPCOS LIMITED

(भारत सरकार का उपक्रम)
जल संसाधन, नदी विकास व गंगा संरक्षण मंत्रालय
(A Government of India Undertaking)
Ministry of Water Resources, River Development & Ganga Rejuvenation

ISO 9001: 2008

- Consultancy Services
- Engineering, Procurement & Construction (EPC)

NIT No.: WAP/ENVT/H-3082/CSEZ/2018-19/32; Dated 11.02.2019

NOTICE INVITING TENDER (NIT)

for

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 650KWP GRID
TYPE SOLAR POWER PLANT AT CSEZ, KAKKANAD**

WAPCOS Limited
(A Government of India Undertaking)
Project Office, Cochin Special Economic Zone,
CSEZ Administrative Building,
Kakkanad, Cochin – 682 037
Telephone: 0484-2413544
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VOLUME– II
FINANCIAL BID

LETTER OF TRANSMITTAL FOR FINANCIAL BID

To

The Team Leader,

WAPCOS Limited CSEZ Project Office, CSEZ Admin. Building,
Kakkanad, Cochin, Kerala—682037; Phone: +91-484-2413544

**Subject: Financial Bid for the work of “Supply Installation, Testing and Commissioning of
650KWp Grid Type Solar Power Plant at CSEZ, Kakkanad”**

Sir,

With reference to your NIT document dated, I/we, having examined the Bidding Documents and understood their contents, hereby submit my/our Bid for the aforesaid Project.

The Bid is unconditional and unqualified.

1. I / We acknowledge that the WAPCOS will be relying on the information provided in the BID and the documents accompanying the BID for selection of the Contractor for the aforesaid Project, and we certify that all information provided in the Bid are true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying the BID are true copies of their respective originals.
2. The BID Price has been quoted by me / us after taking into consideration all the terms and conditions stated in the NIT, draft Agreement, our own estimates of costs and after a careful assessment of the site and all own the conditions that may affect the project cost and implementation of the project.
3. I/ We acknowledge the right of the Authority to reject our BID without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.
4. In the event of my/ our being declared as the Selected Bidder, I/we agree to enter into an Agreement in accordance with the draft that has been provided to me/us prior to the BID Due Date. We agree not to seek any changes in the aforesaid draft and agree to abide by the same.
5. I / We shall keep this offer as specified in the NIT.
6. I / We hereby submit our BID and offer a BID Price of Rs.excluding Goods and Services Tax (Rs..... in words) for undertaking the aforesaid Project in accordance with the Bidding Documents and the Agreement.

Yours faithfully,

Date:

(Signature, name and designation of the Authorized signatory)

Place:

Name and seal of Bidder

BILL OF QUANTITIES

| Sl. No | Description of Item | Qty | Unit | Rate Quoted* (Rs.) | | Amount (Rs.) |
|--------|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| | Sub Head 1:Solar Generating System (Excluding the items mentioned in other sub heads) | | | | | |
| 1 | Supplying installation, testing and commissioning of 100/50 kWp peak power grid type roof top solar power plant with Solar Photovoltaic system (in 72 cell configuration) including suitable rating mono crystalline / multi crystalline Silicon PV Modules (minimum 300Wp) having a cell efficiency of minimum 17.80 and plate efficiency of minimum 15.69% with array junction boxes, weather proof (Ip-65) of appropriate standard for100/50 KWp solar PV plant along with required protection and isolation system Surge protection, DC rated MCB, etc complete i/c space for termination of cable as per specification(From PV array to AJB), ACDB of appropriate standard for 50 KWp solar PV plant with 50kW (min),3P 50 Hz 415 Volt, 4 wire AC power conditioning unit of suitable capacity for 50 KWp solar power generation system with all protection and controlling as per specification complete etc.as per requirement with an overall efficiency of not less than 97%. etc with design & construction of array support structures on the existing structure work(under SH 2) suitable for mounting of PV modules on same, solar ON LINE monitoring with Pyrometer, Module and ambient temp sensors along with AC power voltages, generation daily /monthly /yearly, supply & laying of earthing equipment/ structures and connecting to the main ground mat as per statutory requirements, providing suitable size cable tray / UPVC pipe for wiring, any other ancilliary items required for the successful commissioning and synchronization with the grid etc. complete as required. | | | | | |

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| | | | | In Figures | In Words | |
| 1.1 | 100 kWp peak power grid type roof top solar power plant | 6 | Each | | | |
| 1.2 | 50 kWp peak power grid type roof top solar power plant | 1 | Each | | | |
| | Sub Head 2 :Extra Civil Works (not included in the item No.1 of SH1 for erecting solar panel) | | | | | |
| 2 | Earth work in surface excavation not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including getting out and disposal of excavated earth upto 50 m and lift upto 1.5 m, as directed by Engineer-in-Charge All kinds of soil | 209 | Cum | | | |
| 3 | Demolishing stone rubble masonry manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge : | 23 | Cum | | | |
| 4 | Back filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m. | 105 | Cum | | | |
| 5 | Centering and shuttering including strutting, propping etc. and removal of form work for Foundations, footings, bases for columns. | 335 | Sqm | | | |
| 6 | Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size) | 9 | cum | | | |

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|--------|--|-------|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| 7 | Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge.“(Note :- Cement content considered in this item is @ 330 kg/cum. “Excess/ less cement used as per design mix is payable/recoverable separately). | 78 | Cum | | | |
| 8 | Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level. | 2700 | Kg | | | |
| 9 | GI work in built up tubular (round, square or rect angular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete | 31300 | kg | | | |
| 10 | Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete | 1130 | Sqm | | | |
| 11 | 12 mm cement plaster of mix in CM1:4 (1 cement: 4 fine sand) , as directed by Engineer-in-Charge | 535 | Sqm | | | |

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|--------|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| | Sub Head 3: 11 KV USS and Cables | | | | | |
| 12 | Supply, Installation, Testing, Commissioning of outdoor, all-weather proof, Non-Walk-in type Compact Secondary Substation of robust construction, vermin & dust proof, capable of withstanding thermal & mechanical stresses as per the max Short Circuit rating at 11KV, 50 HZ, The prefabricated enclosure is to be fabricated out of suitable GI sheet steel & complying to protection degree of IP54 (LT & HT switchgear compartment) & IP23 (for transformer), with suitable MS base Channel framework for rigidity, necessary covers & doors with safety interlocking, Earthing arrangement, ventilation arrangement, Internal light points & fittings, polyurethane painting, etc.complete as per KSEB requirements and as per CPWD specifications wherever applicable, including Supplying & Installation of the following in separate compartments in the above CSS as required.(Make : AAB/Schneider/Intrans/Megawin) | | | | | |
| | a) 630Amps 350 MVA 11kV,21kA for 3 sec. SF6 Gas insulated Non-Extensible three panel type Compact switchgear consisting of Two number motorized Load break switch and One number motorized Vacuum circuit breakers in SF6 insulated Stainless steel enclosure with self powered series trip microprocessor based numerical over current & earth fault relay (IDMTL + Inst.) for protection with CTs complete with suitable capacity battery, battery charger, RS port for SCADA compactabilty and provide 1 number HT metering module with suitable size CT & PT, phase indication lamps, voltmeter, ammeter, selector switches and TOD meter etc complete as required (Make : AAB/L&T/Schneider/Siemens) - 1 Set | | | | | |

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|--------|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| | b) 800 kVA, 11KV/433V DYn11 Oil filled fully hermetically sealed copper wounded transformer (Manufactured as per IS 1180 with efficiency level 2)) with corrugated wall design & Top Bushings for LT with Off load tap switch of rating +5% to -5% in steps of 2.5%. % Impedance and Temp Rise of Oil/Winding and shall be as per IS 1180 Part-1 2014. Transformer shall be fitted with i) Oil Temperature Indicator - Sensing and tripping ii) Winding Temperature Indicator - Sensing and tripping iii) Buchholtz Protection relay with all accessories and control wiring (Both alarm & Tripping) (Make : AAB/Schneider/Intrans/Megawin/Kotson) | | | | | |
| | c) LT Indoor panel 433V with Aluminium busbars suitable for 1600 Amps, Fabrication using 1.5 MM CRCA sheet steel , Ingress protection IP4X , complete with internal wiring consisting of (a) 1No 1250Amps , 4P, 65KA at 415 Volt Electrically operated fixed type ACB with microprocessor based release for overcurrent, short circuit and earth fault, R-Y-B Phase and On/OFF TRIP Indications (as incomer), (b) 8 Nos 250A, 4P, 36KA 415v MCCB with microprocessor release as outgoings (Make:ABB/L&T/Schneider/Siemens) - 1 Set | | | | | |
| | d) Interconnection Between HT switchgear & Transformer using not less than 1Cx3x240Sq.mm XLPE Single core Aluminium conductor cable & Interconnection between Transformer & LT switchgear using Copper busbars. Earthing by using not less than 50x5 mm Copper Strips. Control cabling between WTI/ OTI of Transformer and HT panel - 1 Lot | 1 | Each | | | |

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|-----------|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| 13 | Supplying of 11 KV (earthed) Stranded Compact Circular Aluminium Conductor, Conductor Screen With Extruded Semi Conducting Compound, XLPE Insulated, Insulation Screening With Extruded Semi Conducting Compound In Combination With Copper Tape, Cores Laid Up, Inner sheath Of PVC, Galvanised Steel Flat Strip Armoured And Overall PVC Sheathed Cable Conforming To IS 7098 / (Part-II) 1985 With The Latest Amendments with latest amendment of following size etc., as required. | | | | | |
| | a) 3 x 240 Sq.mm | 100 | mtr | | | |
| 14 | Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size direct in ground including excavation ,excluding sand cushioning, protective covering and refilling the trench etc as required. | | | | | |
| | a) 240 Sq.mm | 75 | mtr | | | |
| 15 | Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size in the existing RCC/ HUME/ METAL / DWC pipe as required. | | | | | |
| | a) 3 x 240 Sq.mm | 10 | mtr | | | |
| 16 | Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size in the existing masonry open duct as required. | | | | | |
| | a) 3 x 240 Sq.mm | 15 | mtr | | | |

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|--------|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| 17 | Supply and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) of 60 cm x 60 cm at the bottom and 50 cm x 50 cm at the top with a thickness of 10 cm including inscription duly engraved as required | 3 | Each | | | |
| 18 | Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required : | | | | | |
| | a) 3 x 240 Sq.mm | 2 | Each | | | |
| 19 | Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enamelled white on both sides, and with inscription in signal red colour on front side as required. | 8 | Each | | | |
| 20 | Providing and fixing H.T. danger notice plate of 250 mm X 200 mm, made of mild steel, at least 2 mm thick, and vitreous enamelled white on both sides, and with inscription in signal red colour on front side as required. | 3 | Each | | | |
| | Sub Head 4 :LT Cabling | | | | | |
| 21 | Supplying of XLPE insulated, PVC sheathed armoured aluminium conductor power cable of 1.1 KV grade conforming to IS: 7098 (Part-1) with latest amendments of following size as required. | | | | | |
| | a) 3.5 x 95 Sq.mm | 150 | mtr | | | |
| | b) 3.5 x 185 Sq.mm | 500 | mtr | | | |

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| | | | | In Figures | In Words | |
| 22 | Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, excluding sand cushioning, protective covering and refilling the trench etc as required. | | | | | |
| | a) 3.5 x 95 Sq.mm | 100 | mtr | | | |
| | b) 3.5 x 185 Sq.mm | 200 | mtr | | | |
| 23 | Laying of one number PVC insulated and PVC sheathed/ XLPE cable of 1.1 KV grade of following size in the existing RCC/ HUME/ Stone ware/Metal /DWC pipe as required. | | | | | |
| | a) 3.5 x 95 Sq.mm | 10 | mtr | | | |
| | b) 3.5 x 185 Sq.mm | 50 | mtr | | | |
| 24 | Laying of one number PVC insulated and PVC sheathed/ XLPE cable of 1.1 KV grade of following size in the existing masonry open duct as required. | | | | | |
| | a) 3.5 x 95 Sq.mm | 40 | mtr | | | |
| | b) 3.5 x 185 Sq.mm | 250 | mtr | | | |
| 25 | Supplying and making end termination with brass compression gland and aluminium lugs for the following size of PVC insulated and PVC sheathed /XLPE aluminium conductor cable of 1.1 KV grade as required. | | | | | |
| | a) 3.5 x 95 Sq.mm | 2 | Sets | | | |
| | b) 3.5 x 185 Sq.mm | 12 | Sets | | | |
| 26 | Providing and laying in position cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) in foundation of Compact substation etc including form work etc as required. | 20 | Cum | | | |

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|-------------------------------------|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| 27 | Supply and laying of one number medium class GI pipe of following size for underground cable including cutting the wall/excavation refilling etc for underground cable as required. | | | | | |
| | a)80mm | 60 | mtr | | | |
| 28 | Providing 15mm thick cement plaster of mix 1:4 (1 cement : 4 fine sand) at all levels. | 15 | Sqm | | | |
| Sub Head 5 :Earthing for USS | | | | | | |
| 29 | Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. (but without charcoal/ coke and salt) as required. | 4 | Sets | | | |
| 30 | Extra for using Grounding mineral compound (80 Kg) to reduce the soil resistivity in rocky area for above plate earth electrodes etc complete as required. (Make: Excel/JMV/Gravin) | 4 | Sets | | | |
| 31 | Providing and fixing 25mm x 5mm tinned copper in 40mm dia G.I.pipe from earth electrode including connection with brass nuts, bolt, spring washer, excavation and refilling etc as required. | 30 | mtr | | | |
| 32 | Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm) | 30 | mtr | | | |

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|---|--|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| 33 | Supply and Laying Electric insulated rubber mat, non-skid type with fluted top and plain bottom or top with chequered finish of 2000mm standard length , 1000 mm nominal width and 2.50 mm thickness (approximately) to withstand 11 KV (dielectric strength) and as per IS: 15652-2006 etc. complete as required. | 4 | Each | | | |
| 34 | Supplying and fixing of as per IE-Rules First-aid chart on the existing wall including mounting accessories etc. as required. | 3 | Each | | | |
| 35 | Supplying of Electrical resistant 15 KV grade rubber hand gloves pair of 15" size as per IS 47701991 | 1 | Pair | | | |
| SH 6 :Works for Cleaning of Solar Panels | | | | | | |
| 36 | Supplying and fixing suitable size PVC flush box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required. | 30 | Each | | | |
| 37 | Wiring for circuit/ sub main wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required. | | | | | |
| | (a) 2 X 4 sq. mm + 1 X 4 sq. mm earth wire | 700 | mtr | | | |
| 38 | Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge | | | | | |

| Sl. No | Description of Item | Qty | Unit | Rate Quoted* (Rs.) | | Amount (Rs.) |
|---------------------------|---|-----|------|--------------------|----------|--------------|
| | | | | In Figures | In Words | |
| | 50 mm nominal outer dia Pipes | 540 | mtr | | | |
| 39 | Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and weighing not less than 690 gms.(In each 15 m interval). | | | | | |
| | 15 mm nominal bore | 36 | nos. | | | |
| 39 | Providing and fixing of 150mm Polyvinyl Chloride (PVC) pipes(4 kg/cm ²) & and filling plain cement concrete (PCC) 1:1½:3 (1 Cement: 1½ coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size).upto 1 feet and fixing bib cock as per direction of Engineer in Charge | 36 | Nos | | | |
| TOTAL AMOUNT (Rs.) | | | | | | |

***Rates quoted should be exclusive of GST, CSEZ Authority, being a developer is exempted from payment of GST.**