REGD. **RATE CONTRACT**

From

The Director General, Supplies & Disposals, Haryana,
Bays No 3-6 , 2nd Floor Sector 2, Panchkula.
Tel. Nos. 0172-2570121-124.
E-mail: supplies@hry.nic.in

To

1. M/s Sunfeed Ecosolutions India Private Limited,
H.No.- 930, Sec-31,Gurugram, Haryana.
Email:- info.sunfeed@gmail.com

2. M/s Energenic Batteries LLP,
Flat No.- 15, A-2,Rajiv Gandhi Colony,Faridabad, Haryana.
Email:- info@energenicbatteries.com

Memo No :- 119/HR/RC/E-5/2025-26/
Dated Panchkula the:-

Subject: - **Annual Rate Contract for Supply, installation and commissioning of 20,000 Solar Street Lighting System with Remote Monitoring System with seven years' warranty of complete system required by New & Renewable Energy Department, Haryana. (Sr. No.20)**

Dear Sir,

With reference to your Tender No. & dated and this office acceptance letter No. & Dated and your letter No. and Dated given in Schedule "A", on the subject noted above, I have to inform you that your offer has been accepted for the supply of stores to the terms & conditions given in the Schedule "A" and "B".

2. I enclose herewith an agreement form in duplicate and request that the agreement may be executed on a non-judicial stamp paper of Rs.15/- signed and returned to this office within 10 days from the date of issue of this letter. One copy of the agreement will be sent to you duly executed on behalf of Governor of Haryana for your record. You may kindly send power of attorney in favour of the person/persons who is/ are authorized to signed the agreement together with/their specimen signature duly attested by a Magistrate or Oath Commissioner or Resolution of the firm authorizing the persons to sign the documents on behalf of the firm.

3. The Contract shall come into force from the date of its issue and shall remain operative **upto i.e 28.01.2027.** Government reserves the right to bring any other party on the rate contract at any subsequent stage during the pendency of this rate contract.

4. The store must confirms to the approved specification as given in Schedule "A" attached, failing which the same shall be rejected at your risk and cost.

5. The inspection of the material will be carried out by the Indenting Officers or their authorized representatives at your premises before dispatch.

6. The supply must be completed within the stipulated delivery period failing which the risk purchase will be affected against you and the excess cost thus incurred will be recovered from you. Delayed supplies shall be accepted under penalty clause of the Schedule "B" unless the delivery period is extended by the competent authority.

7. The Director, Supplies & Disposals, Haryana reserves to himself the right to obtain contracted items of stores when available from any Govt. Deptt./ approved source without prejudice to this contract.

8. Failure to execute agreement/effect supplies within the stipulated period, repeatedly offering supplies liable to rejection or without prior inspection may render your earnest money/security liable to forfeiture, debarring your firm in addition to other remedies as available under the terms of the contracts.

9. All cases, where payments are not made within time, should be referred to this office for taking necessary action against the defaulters.

10. Your attention is particularly invited to the provision of Schedule "B" regarding the compliance with requisitions, preparation and submission of bills and quarterly submission of statement of supplies.

11. **PRICE FALL CLAUSE**:- The price charged for the stores shall not exceed in any way the lowest price at which you quote/ supply the stores of identical description of stores to GeM/State Govt./Central Govt./Institutions/undertaking/ any other person during the delivery period/ currency period of the rate contracts. If at any time during the delivery/ currency period, you reduce the rate, sale price of quoted stores to any person at the price lower than the price chargeable under this supply order/ contract, you are required to inform this office and price payable under the supply order/contract for the stores supplied after the date of coming into force of such reduction of rates shall stand correspondingly reduced to that level. You shall promptly notify the reduction of rates to this office as well as to concerned Indenting Officers/ consignees. You shall also give a certificate on your bills that the rates charged by you are not in any way higher to these quoted to the GeM and other state govt. central govt. Institutions etc. during the corresponding period. The Indenting Officer shall be required to ensure that requisite certificate is given by the concerned firm on the bills before releasing their payments.

12. All disputes will be settled only within the jurisdiction of Head Quarters of the Directorate of Supplies & Disposals, Haryana, Panchkula.

Please acknowledge the receipt of this letter.

Yours faithfully,

Executive Engineer
Director General, Supplies & Disposals,
For & On behalf of Governor of Haryana

Endst. No- 119/HR/RC/E-5/2025-26/ 15124, **Dated:-** 29/01/26

A copy of Schedule 'A' showing the prices accepted along with conditions of supply (ii) Schedule "B" i.e. conditions of contract are forwarded to the the Director General, New & Renewable Energy Department Haryana & HAREDA, Akshay Urja Bhawan, Institutional Plot No. 1, Sector-17, Panchkula Email:- hareda@chd.nic.in.

1. HAREDA may indent for the requirement of the goods included in the Schedule "A" attached direct on the approved contractors under intimation to this office.

2. The security deposited by the firms would be released after two months of the termination of the contract and he is therefore, requested to send the complaints, if any, against the contractors to this office within this limit for settlement, failing which no complaint or claim will be entertained.

3. The Inspection shall be arranged by the Indenting Officer/Consignees or their authorized representatives at destination before releasing the payment of the supplies. The stores should be accepted only after satisfactory inspection and issue of proper inspection note showing the acceptance of the material as per approved specifications.

4. Please report all cases in which contractor fails to effect supply within the delivery period stipulated in the Schedule "A" after the expiry of stipulated delivery period to this office for effecting purchase at the risk and cost of the contractors failing which all responsibility will rest with Indenting Officers/Consignees for not effecting risk purchase within prescribed period.

Executive Engineer
Director General, Supplies & Disposals,
For Director General, Supplies & Disposals, Haryana

Endst. No- 119/HR/RC/E-5/2025-26/ **Dated :-**

A copy is forwarded to the following for information & necessary action:-

1. The Deputy Excise & Taxation Commissioner, Gurugram.
2. The Deputy Excise & Taxation Commissioner, Faridabad.

They are requested to ensure that the GST is paid by the firm to government against this rate contract.

Executive Engineer
Director General, Supplies & Disposals,
For Director General, Supplies & Disposals, Haryana

Endst. No- 119/HR/RC/E-5/2025-26/ **Dated :-**

A copy is forwarded to the following for information and action:-

1. The Accountant General (Audit), Haryana, Sector-33, Chandigarh.
2. The Controller of Stores, Punjab, Chandigarh.
3. The Controller of Stores, Himachal Pradesh Nigam Vihar, Shimla.
4. The Controller of Stores/Director of Industries and Commerce, J&K, Shrinagar.
5. St. Section O/o DGS&D, Haryana.
6. Programmer O/o DGS&D, Haryana.
7. Departmental Processing Charges branch o/o DGS&D, Haryana

Executive Engineer
Director General, Supplies & Disposals,
For Director General, Supplies & Disposals, Haryana

SCHEDULE -"A"

Accepted rates of M/s Sunfeed Ecosolutions India Private Limited, H.No.- 930, Sec-31,Gurugram, Haryana, Email:- info.sunfeed@gmail.com Bid ID No. 1284908 dated 14.07.2025 and your letter dated 08.12.2025 submitted in meeting of HPPC held on 08.12.2025, and this office acceptance letter No.14318 dated 16.01.2026 & your letter No. Nil Dated :27.01.2026

	Supply, installation and commissioning of Solar Street Lighting Systems in the State of Haryana with seven years warranty of complete system (with Remote Monitoring Systems). Rates in Rs. Per No. Inclusive of GST @8.9% for destination etc.		
Sr. No	**Name of items**	**Quantity**	**Rates in Rs. per system., inclusive of all taxes/ duties, GST, FOR Destination etc**
1	Solar Street Lighting System (with RMS)	**15000 Nos.**	**Rs. 17,000/-**
	Make:-		
	Solar Module:-	i) Sun N Sand Exim ii) HR Solar Solution	
	Battery :-	Lithium Battery of M/s Fusion Power System & M/s Sunfeed Ecosolutions India Pvt. Ltd.	
	Luminaire:-	M/s GEIE Solar Products India Pvt. Ltd.& M/s Ritika systems Pvt.Ltd.	

TECHNICAL SPECIFICATIONS FOR SOLAR STREET LIGHTING SYSTEM

Sr. No.	**Components**	**Specification for Solar Street light fitting**
1	PV module	75 Wp under STC
2	Battery	Minimum 12.8V, 30AH capacity Lithium Ferro Phosphate (LiFePo4) battery.
3	Light Source	White Light Emitting Diode (W-LED) 12 Watt, W-LED Luminaire, dispersed beam, soothing to eyes with the use of proper optics and diffuser. LED Chip should be compliance to IES: LM-80 (Approved Method for Measuring Lumen Maintenance of LED Light Source and LED lumen depreciation time to L70). Test report for same should be submitted.
4	Light Out put	The luminaire must use high efficacy W-LED with minimum 135 lumens per watt (and UV free). [A certificate to be submitted by the System supplier to the Test Lab during certification] **For single Light level:** Minimum 24 Lux when measured at a point 4 meters below the light. The illumination should be uniform without dark bands or abrupt variations and soothing to

		the eye. Higher light output will be preferred. **For Multiple Light Levels:** The luminaire should have two levels of light to take care of different lighting needs during the night. Minimum 24 Lux when measured at a point 4 meters below the light (at "High" illumination level). The illumination should be uniform without dark bands or abrupt variations. Minimum 12 Lux at lower illumination level. (Higher light output will be preferred) The luminaire shall be tested for Electrical, Photometry and Color parameters as per IES LM-79:2008 or IS: 16106:2012 for following performance parameters like: 1) Total luminous flux :≥ 1500 lm. 2) Luminous efficacy (i.e. system efficacy): ≥ 125 lm/W. 3) Color Temperature: Between 5500 K to 6500K. 4) CRI ≥ 70 5) Luminous intensity distribution should follow the batwing patterns in polar curves.. 6) Require validation report using. ies file, which is generated during luminous intensity distribution test and using maintenance factor 0.9 and pole height of 4m., road width 5m and Pole span 15m. The average illuminance level and uniformity should comply with requirement as per IS 1944, wherever applicable. 7) The luminaire should be tested for all type tests as per IS 10322 Part 5 Sect 3 or IEC 60598-2-3 standards.
5	Mounting of light	Pole height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5m above the ground level.
6	Electronics Efficiency	Overall Total Efficiency of the Electronics should be Minimum 90%.
7	Duty Cycle	Dusk to dawn: First 4 hours' full light (min. 24 Lux), rest of the time at lower light (50%, min.12 Lux) level. (Higher light output will be preferred.
8	Autonomy	3 days or Minimum 36 operating hours per permissible discharge with fully charged Lithium-Ferro Phosphate Battery.
9	Ingress Protection-IP	Optical and Control gear compartment-IP 65/IP 66
10	Impact resistance of casing	≥ IK 08
11	Radiated Emission Test	As per CISPR-15
12	ESD (Electro Static Discharge) and Radiated susceptibility test	As per IEC 61547

TECHNICAL DETAILS:

PV MODULE

(i) Domestically manufactured PV Module with domestically manufactured solar PV cells should be used.

(ii) The PV modules should be made up of crystalline silicon solar cells and must have BIS certificate for IS 14286& IS 61730 (Part-I, Part II).

(iii) The efficiency of the PV modules should be minimum 19%.

(iv) PV modules must meet the latest specification of MNRE and the models and Manufacturers of PV Modules shall be included in the List of Models and Manufacturers for Solar PV Modules empanelled by MNRE as per its ALMM order (and also valid at the time of supply of material) from time to time. The PV modules used must qualify to the latest BIS standards Crystalline Silicon Solar Cell Modules. In addition, the modules must conform to IS 61730 Part-1 - requirements for construction & Part 2 - requirements for testing, for safety qualification or equivalent IS.

(v) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminium.

(vi) Other general requirement for the PV modules and subsystems shall be the Following:

a) The rated output power and efficiency of any supplied module should not be less than the power and efficiency defined in the bid. No negative tolerance shall be allowed.

b) The module shall be provided with a junction box with weather proof lid of sealed type and IP-65 rated.

c) I-V curves at STC shall be provided with the module.

(vii) The module should have the following minimum information laminated inside the module.

- Made in India (to be subscribed in words)
- Company name /logo
- Model number
- Serial number
- Year of make

(viii) 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 for a period of twenty-five (25) years from the date of commissioning of the system

(ii) Defects and/or failures due to manufacturing (it should indicate the voltage and rated wattage of the module)

(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 owner's 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.

Note: PV Module/s must have to be supplied as per the latest MNRE guidelines/office memorandum and specifications applicable at the time of supply.

BATTERY

i. Minimum 12.8V, 30AH capacity Lithium Ferro Phosphate Battery.
ii. Battery bank should consist of prismatic LiFePo4 cells of minimum 3.2V (nominal) 10Ah rating.
iii. Battery pack should have proper 'Battery Management System' (BMS) for cell balancing, over charge and over temperature protection.
iv. Battery should BIS certified with IS: 16046 (Part-2): 2018 from approved laboratory.

LIGHT SOURCE

i. The light source will be a white LED type.
ii. The colour temperature of white LED used in the system should be in the range of 5500^0 K.
iii. W-LEDs should not emit ultraviolet light.
iv. The light output from the white LED light source should be constant throughout the duty cycle.
v. The lamps should be housed in an assembly suitable for outdoor use.
vi. The temperature of heat sink should not increase more than 20^0 C above ambient temperature during the dusk to dawn operation.

ELECTRONICS

i. The total electronic efficiency should be at least 90%.
ii. Charge Controller should be MPPT Type.
iii. Electronics should operate at an appropriate voltage suitable for proper charging of the battery.
iv. No load current consumption should be less than 20mA.
v. The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
vi. The PCB containing the electronics should be capable for solder free installation and replacement.
vii. Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

ELECTRONIC PROTECTIONS

i. Adequate protection is to be incorporated under "No Load" conditions e.g. when the lamp is removed and the system is switched 'ON'.
ii. The system should have protection against battery overcharge and deep discharge conditions.
iii. The system should have protection against short circuit conditions.
iv. Protection for reverse flow of current through the PV module(s) should be provided.
v. Adequate protection should be provided against battery reverse polarity.
vi. Load reconnect should be provided at 80% of the battery capacity status.

MECHANICAL COMPONENT

i. A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module.
ii. The frame structure should have provision so that the module can be oriented at the suitable tilt angle.
iii. Pole should be Hot dip galvanized pipe as per IS1161 & IS4736 i.e. Class B of outer diameter of 4 inch.
iv. Pole height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5 m above the ground level.
v. The pole should have the provision to hold the luminaire.
vi. Pole should have to be grouted in concrete mortar size platform of 1.5ft x 1.5ft x 3ft so that it may bear the wind velocity of 200 Km/Hr.
vii. The battery shall be either included in the luminaire enclosure, which should be water proof (IP 65) and corrosion resistant or outside the luminaire enclosure in a vented, acid proof and corrosion resistant, hot dip galvanized metallic box (IP 65) with anti-theft locking arrangement for outdoor use.

CABLE

- mm DC cable with EN 50618 standards shall be used in the systems.

INDICATORS

- The system should have two indicators, green and red.
- The green indicator should indicate the charging under progress and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.
- Red indicator should indicate the battery "Load Cut Off" condition.

QUALITY AND WARRANTY

i. The street lighting system (including the battery) will be warranted for a period of seven years from the date of commissioning.
ii. The PV module(s) will be warranted for a minimum period of 25 years from the date of commissioning. The PV modules must be warranted for their output

peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of twenty-five (25) years.

iii. The Warranty Card to be supplied with the system must contain the details of the system.

OPERATION AND MAINTENANCE MANUAL

An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Street Lighting system. The following minimum details must be provided in the Manual:

- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on Solar Street Lighting System- its components, PV module, battery, electronics and luminaire and expected performance.
- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of W-LEDs used in the lighting system.
- About charging and significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (S) and lamp housing assembly on the pole.
- Clear instruction on regular maintenance and troubleshooting of the solar street lighting system.
- DO's and DON'T's.
- Name and address of the contact person for repair and maintenance, in case of non-functionality of the solar street lighting system.

List of BIS standards applicable for components of Solar PV Applications

#	Product (2)	Indian Standard Number (3)	Title of Indian Standard (4)
1.	Crystalline Silicon Terrestrial Photovoltaic (PV) modules (Si wafer based)	IS 14286	Crystalline Silicon Terrestrial Photovoltaic (PV) modules-Design Qualification and type approval
2	Thin Film Terrestrial Photovoltaic (PV) Modules (a-Si, CiGs and CdTe)	IS 16077	Thin-firm Terrestrial Photovoltaic (PV) Modules-Design Qualification and Type Approval
3.	PV Module (Si wafer and thin film)	IS/IEC 61730 (Part 1) IS/IEC 61730 (Part 2)	Photovoltaic (PV) Module safety Qualification Part 1 Requirements for Construction Photovoltaic (PV) Module Safety Qualification Part 2 Requirements for testing
4	Power converters for use in photovoltaic power system	IS 16221 (Part 1)	Safety of Power Converters for use in Photovoltaic Power Systems Part 1- General Requirement

		IS 16221 (Part 2)	Safety of Power converters for Use in Photovoltaic Power systems Part 2- Particular Requirements for Inverters
5	Storage batteries	IS 16270 IS16046	Secondary Cells and Batteries for solar Photovoltaic Application General- Requirements and Methods of Test Standard for Lithium ion battery
6.	LED Lights & Luminaires	IS 16101 IS 16102 IS 16103 IS 16107	General Lighting-LEDs and LED Modules-Terms and Definitions Self-Ballasted LED lamps for General Lighting services Led Modules for General Lighting Luminaires Performance

Requirements of RMS and integration with State Solar Energy Data Management Platform

1. State Nodal Agency (SNA)/Implementing Agency will have a common State Level Solar Energy Data Management platform **(SEDM)** to ensure third party performance monitoring as per Communication Architecture Guidelines.

2. SEDM should have following minimum features or modules:
   a. Solar System Performance: Energy Generation
   b. Streetlight Performance: Running Hours, Full Brightness Hours, Half Brightness Hours
   c. Remote Monitoring System Performance: %Device Connectivity, %Data Availability etc.
   d. Events and Notifications: Faults related to Solar generation, Battery, Luminary
   e. Asset Management: Ratings, Serial Number, Make, Model Number of Luminary, Panel and Controller etc.
   f. Complaint and Ticket Management
   g. Field Mobile Application: Generation, Running Hours, Complaint logging

3. Remote Monitoring System (RMS) provided by all bidders should connect to State Level Solar Energy Data Management platform. Till the SEDM portal is developed, the data shall be monitored on RMS service provider vendor.

4. Communication Architecture between SEDM and RMS should be as per following:
   a. Communication Connectivity:
      i. Solar Streetlight Controller Connectivity: Communication between Remote Monitoring System and Controller should be on RS485 MODBUS RTU protocol/ UART to ensure interoperability irrespective of make and manufacturer
      ii. Remote Connectivity: Communication between Remote monitoring system and SEDM should be using GSM/GPRS/2G/3G/4Gcellular connectivity through SIM Card, cost of SIM card has to be borne by bidder in entire duration of the contract.

iii. Local Connectivity: Ethernet/Bluetooth/Wi-Fi connectivity to configure parameters, notifications, communication interval, set points etc. or to retrieve locally stored data

b. Communication Modes:
   i. Push Data on Event/Notification
      1. Luminary Status Change: On/Off
      2. Fault: Solar Module, Battery, Luminary
   ii. Push Data Periodically: important parameters (as mentioned in tender) should be pushed to state server on configurable interval
      1. Instantaneous Parameters: Voltage, Current, Power, Brightness Level, Battery Charge Level
   iii. Pull On demand: If required, central server can fetch data from device on user demand or request
      1. Update Status of latest values and parameters at control room on request instead of waiting for 2 Hours
   iv. Command On Demand:
      1. Activate or deactivate Astronomical Mode
      2. Send Command to switch on or off Streetlight in case of environmental issues or patrolling or testing
   v. Configuration Update:
      1. Update schedule for brightness level operation hours
      2. Push Data periodically need to be updated from the Central Server.
      3. Provision to update configuration like: firmware update, timing of the street light, update RMS user name and password, URL etc. at Central Server.

c. Communication Protocol:
   i. RMS should provide data on scalable IoT communication protocols preferably MQTT or as required by respective SNA to establish communication with thousands of systems.
   ii. There should have provision to Switch ON/OFF, Single/ Multiple/ Whole Lights under the Network Centrally.

d. Security:
   i. Communication between RMS and Server should be secured and encrypted using TLS/SSL/X.509 certificate etc.
   ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism

e. Message Format:
   i. RMS should provide data in a JSON message format as required by respective SNA

f. Data Storage:
   i. In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server

The RMS dashboard are as follows:

1) Battery Parameters:
   a) Battery Voltage (BV)
   b) Battery Current (BI)
   c) Battery Power (BP)
2) Solar PV Parameters:
   a) Solar PV Voltage (SV)
   b) Solar PV Current (SI)
   c) Solar PV Power (SP)
3) Load Parameters:
   a) Load Voltage (LV)
   b) Load Current (LI)
   c) Load Power (LP)
   d) Load ON/OFF condition
4) System shutdown due to fault (even fault should be recorded)

1. Illustrative Parameters to be displayed in the district level dashboard of the RMS software (GUI)/web user interface: -

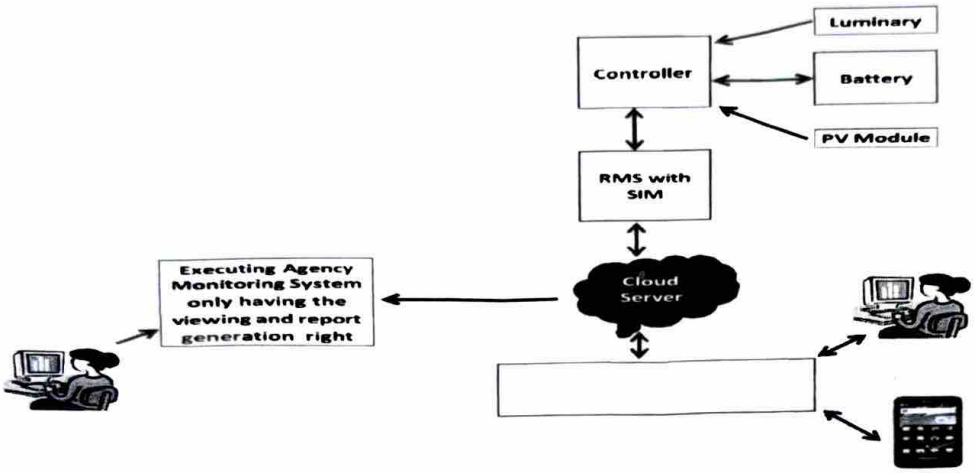
Sr. No.	Parameters to be monitored
1	Device ID-IMEI
2	Serial no. of Light
3	Battery Voltage
4	Solar Module Voltage
5	Solar Module Power
6	Luminary Power
7	Battery fault
8	Module fault
9	Luminary fault
10	Luminary ON time
11	Luminary OFF time
12	Fault time date
13	Fault rectification date

NOTE 1: The communication node/ module (RMS-Hardware) compatible with charge controller has to be supplied by the successful bidder to ensure compatibility with CMS (Remote Monitoring Server & Software) of HAREDA. All related data /service charges for the same shall be in the scope of successful bidder.

NOTE 2: The successful Bidders have to coordinate with the selected CMS vendor to ensure compatibility and uninterrupted Remote Monitoring features availability as per this DNIT.

Draft Schematic Layout of Centralized Monitoring System (CMS)

(Remote Monitoring System for Solar Street Lighting under scheme on 'SPV Street Lighting in Rural Area')



(Details specifications as per DNIT & sample submitted by you and approved by this office)

TERMS & CONDITIONS

1- **F.O.R.:-** The above rates are for destination anywhere in Haryana at supplier's risk.

2- **G.S.T. :-** Inclusive in above rates.

3- **Delivery period (includes supply, installation & commissioning):-** The delivery period will be three months from the date of placement of work order.

4- **Payment :-**

i. 60% payment will be released within one month time on submission of material receipt of physical delivery of inspected/ accepted goods in physically good condition at consignee go down on submission of bill of material supported by material receipt duly signed by PO/APO of the department/ office.

ii. 30% will be released within one month time after satisfactory installation / working of the items on submission of joint commissioning report (JCR) along with photograph of the system in the attached format duly signed by the user & PO/APO of the consignee department/ office with countersignature of head of the office (ADC-cum-CPO).

iii. 10% payment will be released on completion of 07years from the date of commissioning of the systems on submission of satisfactory performance report of the systems duly certified by the concerned PO/APO OR said amount may be released against submission of bank guarantee of equal amount valid for seven years from the date of commissioning of the system.

The Indenting Departments would have option to release payments in RTGS/ Electronics mode also.

Delay in payments to the suppliers beyond the stipulated credit period indicated in the supply order, unless supported by cogent reasons and approved by a higher authority, will attract penal interest on the defaulting amount @ Rs.25/- per rupees one lakh per day of delay beyond the stipulated credit period. Non provision of adequate budget will be no ground for delay in payments to the supplier.

5. **Warranty:** - Seven years from the date of commissioning (including batteries) and PV module(s) will be warranted for a minimum period of 25 years from the date of supply. PV modules used in Solar Lighting system must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.

6. **INSPECTION**: - The inspection of the material will be carried out by the committee constituted by Indenting Department or their authorized representatives at the premises of the supplier before dispatch.
In case, the material offered for inspection by the firm fails to meet the specifications stipulated in NIT/Order/Contract and the samples are rejected by the Inspecting Committee, the Indenting Department will have the right to levy a penalty at 0.1% of the total order value. In case, the material offered for inspection fails during the 2nd inspection also, the Indenting Department will have the right to increase the penalty to 0.25% of the total order value. In case, the material offered fails during the 3rd and final inspection also, the firm will be liable for penal action including forfeiture of EMD, risk purchase, debarring/ blacklisting in future, and no further opportunity for inspection would be provided to the supplier firm.

7. **Penalty clause:** In case of any complaint in the working of the items during the warranty period, the firm shall attend the same within 24 hours from the time of logging of first complaint / call by the consignee and the items must be repaired within three days thereafter. The complaints would be logged by the Department officers by e-mail/ fax in order to keep the proper delivery records. Further in case of failure to do so, penalty @ 0.1 % of the system cost per day (subject to max. 10% of the cost) after expiry of 72 hours shall be imposed. If the firm does not attend the complaint within the max penalty period, then the system may be got repaired/ replaced from the performance security amount. In case whole performance security amount is utilized and complaint/s are still pending then an online / registered notice will be sent to the firm to attend the complaint and if failed to attend the complaint within 7 days then firm may be blacklisted and a legal proceeding may be initiated against the firm for breach the agreement

(OTHER TERMS & CONDITIONS WILL BE AS PER DNIT AND SCHEDULE-B ATTACHED).

Encls.a/

Executive Engineer,
Director General Supplies & Disposals, Haryana,
For & On behalf of Governor of Haryana.

SCHEDULE -"A"

Accepted rates of M/s Energenic Batteries LLP, Flat No.- 15, A-2,Rajiv Gandhi Colony,Faridabad, Haryana. Email:- info@energenicbatteries.com Bid ID No. 1283499 dated 14.07.2025 and your letter dated 08.12.2025 submitted in meeting of HPPC held on 08.12.2025, and this office acceptance letter No.14320 dated 16.01.2026 & your letter ref No. EB/HAREDA/25-26/063 dated 22.01.2026

	Supply, installation and commissioning of Solar Street Lighting Systems in the State of Haryana with seven years warranty of complete system (with Remote Monitoring Systems). Rates in Rs. Per No. Inclusive of GST @8.9% for destination etc.		
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	Make:-		
	Solar Module:-	i) Sun N Sand Exim	
	Battery :-	Lithium Battery Packs of Ms Energenic Batteries LLP	
	Luminaire:-	Energenic Batteries LLP	

TECHNICAL SPECIFICATIONS FOR SOLAR STREET LIGHTING SYSTEM

Sr. No.	**Components**	**Specification for Solar Street light fitting**
1	PV module	75 Wp under STC
2	Battery	Minimum 12.8V, 30AH capacity Lithium Ferro Phosphate (LiFePo4) battery.
3	Light Source	White Light Emitting Diode (W-LED) 12 Watt, W-LED Luminaire, dispersed beam, soothing to eyes with the use of proper optics and diffuser. LED Chip should be compliance to IES: LM-80 (Approved Method for Measuring Lumen Maintenance of LED Light Source and LED lumen depreciation time to L70). Test report for same should be submitted.
4	Light Out put	The luminaire must use high efficacy W-LED with minimum 135 lumens per watt (and UV free). [A certificate to be submitted by the System supplier to the Test Lab during certification] **For single Light level:** Minimum 24 Lux when measured at a point 4 meters below the light. The illumination should be uniform without dark bands or abrupt variations and soothing to the eye. Higher light output will be preferred.

		For Multiple Light Levels: The luminaire should have two levels of light to take care of different lighting needs during the night. Minimum 24 Lux when measured at a point 4 meters below the light (at "High" illumination level). The illumination should be uniform without dark bands or abrupt variations. Minimum 12 Lux at lower illumination level. (Higher light output will be preferred) The luminaire shall be tested for Electrical, Photometry and Color parameters as per IES LM-79:2008 or IS: 16106:2012 for following performance parameters like: 1) Total luminous flux :≥ 1500 lm. 2) Luminous efficacy (i.e. system efficacy): ≥ 125 lm/W. 3) Color Temperature: Between 5500 K to 6500K. 4) CRI ≥ 70 5) Luminous intensity distribution should follow the batwing patterns in polar curves. 6) Require validation report using. ies file, which is generated during luminous intensity distribution test and using maintenance factor 0.9 and pole height of 4m., road width 5m and Pole span 15m. The average illuminance level and uniformity should comply with requirement as per IS 1944, wherever applicable. 7) The luminaire should be tested for all type tests as per IS 10322 Part 5 Sect 3 or IEC 60598-2-3 standards.
5	Mounting of light	Pole height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5m above the ground level.
6	Electronics Efficiency	Overall Total Efficiency of the Electronics should be Minimum 90%.
7	Duty Cycle	Dusk to dawn: First 4 hours' full light (min. 24 Lux), rest of the time at lower light (50%, min.12 Lux) level. (Higher light output will be preferred.
8	Autonomy	3 days or Minimum 36 operating hours per permissible discharge with fully charged Lithium-Ferro Phosphate Battery.
9	Ingress Protection-IP	Optical and Control gear compartment-IP 65/IP 66
10	Impact resistance of casing	≥ IK 08
11	Radiated Emission Test	As per CISPR-15
12	ESD (Electro Static Discharge) and Radiated susceptibility test	As per IEC 61547

TECHNICAL DETAILS:

PV MODULE

(i) Domestically manufactured PV Module with domestically manufactured solar PV cells should be used.

(ii) The PV modules should be made up of crystalline silicon solar cells and must have BIS certificate for IS 14286& IS 61730 (Part-I, Part II).

(iii) The efficiency of the PV modules should be minimum 19%.

(iv) PV modules must meet the latest specification of MNRE and the models and Manufacturers of PV Modules shall be included in the List of Models and Manufacturers for Solar PV Modules empanelled by MNRE as per its ALMM order (and also valid at the time of supply of material) from time to time. The PV modules used must qualify to the latest BIS standards Crystalline Silicon Solar Cell Modules. In addition, the modules must conform to IS 61730 Part-1 - requirements for construction & Part 2 - requirements for testing, for safety qualification or equivalent IS.

(v) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminium.

(vi) Other general requirement for the PV modules and subsystems shall be the Following:

a) The rated output power and efficiency of any supplied module should not be less than the power and efficiency defined in the bid. No negative tolerance shall be allowed.

b) The module shall be provided with a junction box with weather proof lid of sealed type and IP-65 rated.

c) I-V curves at STC shall be provided with the module.

(vii) The module should have the following minimum information laminated inside the module.

- Made in India (to be subscribed in words)
- Company name /logo
- Model number
- Serial number
- Year of make

(viii) 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 for a period of twenty-five (25) years from the date of commissioning of the system

(ii) Defects and/or failures due to manufacturing (it should indicate the voltage and rated wattage of the module)

(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 owner's 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.

Note: PV Module/s must have to be supplied as per the latest MNRE guidelines/office memorandum and specifications applicable at the time of supply.

BATTERY

i. Minimum 12.8V, 30AH capacity Lithium Ferro Phosphate Battery.
ii. Battery bank should consist of prismatic LiFePo4 cells of minimum 3.2V (nominal) 10Ah rating.
iii. Battery pack should have proper 'Battery Management System' (BMS) for cell balancing, over charge and over temperature protection.
iv. Battery should BIS certified with IS: 16046 (Part-2): 2018 from approved laboratory.

LIGHT SOURCE

i. The light source will be a white LED type.
ii. The colour temperature of white LED used in the system should be in the range of 5500^0 K.
iii. W-LEDs should not emit ultraviolet light.
iv. The light output from the white LED light source should be constant throughout the duty cycle.
v. The lamps should be housed in an assembly suitable for outdoor use.
vi. The temperature of heat sink should not increase more than 20^0 C above ambient temperature during the dusk to dawn operation.

ELECTRONICS

i. The total electronic efficiency should be at least 90%.
ii. Charge Controller should be MPPT Type.
iii. Electronics should operate at an appropriate voltage suitable for proper charging of the battery.
iv. No load current consumption should be less than 20mA.
v. The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
vi. The PCB containing the electronics should be capable for solder free installation and replacement.
vii. Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

ELECTRONIC PROTECTIONS

i. Adequate protection is to be incorporated under "No Load" conditions e.g. when the lamp is removed and the system is switched 'ON'.
ii. The system should have protection against battery overcharge and deep discharge conditions.
iii. The system should have protection against short circuit conditions.
iv. Protection for reverse flow of current through the PV module(s) should be provided.
v. Adequate protection should be provided against battery reverse polarity.
vi. Load reconnect should be provided at 80% of the battery capacity status.

MECHANICAL COMPONENT

i. A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module.
ii. The frame structure should have provision so that the module can be oriented at the suitable tilt angle.
iii. Pole should be Hot dip galvanized pipe as per IS1161 & IS4736 i.e. Class B of outer diameter of 4 inch.
iv. Pole height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5 m above the ground level.
v. The pole should have the provision to hold the luminaire.
vi. Pole should have to be grouted in concrete mortar size platform of 1.5ft x 1.5ft x 3ft so that it may bear the wind velocity of 200 Km/Hr.
vii. The battery shall be either included in the luminaire enclosure, which should be water proof (IP 65) and corrosion resistant or outside the luminaire enclosure in a vented, acid proof and corrosion resistant, hot dip galvanized metallic box (IP 65) with anti-theft locking arrangement for outdoor use.

CABLE

2.00 mm DC cable with EN 50618 standards shall be used in the systems.

INDICATORS

- The system should have two indicators, green and red.
- The green indicator should indicate the charging under progress and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.
- Red indicator should indicate the battery "Load Cut Off" condition.

QUALITY AND WARRANTY

i. The street lighting system (including the battery) will be warranted for a period of seven years from the date of commissioning.
ii. The PV module(s) will be warranted for a minimum period of 25 years from the date of commissioning. The PV modules must be warranted for their output

peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of twenty-five (25) years.

iii. The Warranty Card to be supplied with the system must contain the details of the system.

OPERATION AND MAINTENANCE MANUAL

An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Street Lighting system. The following minimum details must be provided in the Manual:

- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on Solar Street Lighting System- its components, PV module, battery, electronics and luminaire and expected performance.
- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of W-LEDs used in the lighting system.
- About charging and significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (S) and lamp housing assembly on the pole.
- Clear instruction on regular maintenance and troubleshooting of the solar street lighting system.
- DO's and DON'T's.
- Name and address of the contact person for repair and maintenance, in case of non-functionality of the solar street lighting system.

List of BIS standards applicable for components of Solar PV Applications

#	Product (2)	Indian Standard Number (3)	Title of Indian Standard (4)
1.	Crystalline Silicon Terrestrial Photovoltaic (PV) modules (Si wafer based)	IS 14286	Crystalline Silicon Terrestrial Photovoltaic (PV) modules-Design Qualification and type approval
2	Thin Film Terrestrial Photovoltaic (PV) Modules (a-Si, CiGs and CdTe)	IS 16077	Thin-firm Terrestrial Photovoltaic (PV) Modules-Design Qualification and Type Approval
3.	PV Module (Si wafer and thin film)	IS/IEC 61730 (Part 1) IS/IEC 61730 (Part 2)	Photovoltaic (PV) Module safety Qualification Part 1 Requirements for Construction Photovoltaic (PV) Module Safety Qualification Part 2 Requirements for testing
4	Power converters for use in photovoltaic power system	IS 16221 (Part 1)	Safety of Power Converters for use in Photovoltaic Power Systems Part 1- General Requirement

		IS 16221 (Part 2)	Safety of Power converters for Use in Photovoltaic Power systems Part 2- Particular Requirements for Inverters
5	Storage batteries	IS 16270 IS16046	Secondary Cells and Batteries for solar Photovoltaic Application General- Requirements and Methods of Test Standard for Lithium ion battery
6.	LED Lights & Luminaires	IS 16101 IS 16102 IS 16103 IS 16107	General Lighting-LEDs and LED Modules-Terms and Definitions Self-Ballasted LED lamps for General Lighting services Led Modules for General Lighting Luminaires Performance

Requirements of RMS and integration with State Solar Energy Data Management Platform

1. State Nodal Agency (SNA)/Implementing Agency will have a common State Level Solar Energy Data Management platform **(SEDM)** to ensure third party performance monitoring as per Communication Architecture Guidelines.

2. SEDM should have following minimum features or modules:
   a. Solar System Performance: Energy Generation
   b. Streetlight Performance: Running Hours, Full Brightness Hours, Half Brightness Hours
   c. Remote Monitoring System Performance: %Device Connectivity, %Data Availability etc.
   d. Events and Notifications: Faults related to Solar generation, Battery, Luminary
   e. Asset Management: Ratings, Serial Number, Make, Model Number of Luminary, Panel and Controller etc.
   f. Complaint and Ticket Management
   g. Field Mobile Application: Generation, Running Hours, Complaint logging

3. Remote Monitoring System (RMS) provided by all bidders should connect to State Level Solar Energy Data Management platform. Till the SEDM portal is developed, the data shall be monitored on RMS service provider vendor.

4. Communication Architecture between SEDM and RMS should be as per following:
   a. Communication Connectivity:
      i. Solar Streetlight Controller Connectivity: Communication between Remote Monitoring System and Controller should be on RS485 MODBUS RTU protocol/ UART to ensure interoperability irrespective of make and manufacturer
      ii. Remote Connectivity: Communication between Remote monitoring system and SEDM should be using

GSM/GPRS/2G/3G/4Gcellular connectivity through SIM Card, cost of SIM card has to be borne by bidder in entire duration of the contract.

iii. Local Connectivity: Ethernet/Bluetooth/Wi-Fi connectivity to configure parameters, notifications, communication interval, set points etc. or to retrieve locally stored data

b. Communication Modes:
   i. Push Data on Event/Notification
      1. Luminary Status Change: On/Off
      2. Fault: Solar Module, Battery, Luminary
   ii. Push Data Periodically: important parameters (as mentioned in tender) should be pushed to state server on configurable interval
      1. Instantaneous Parameters: Voltage, Current, Power, Brightness Level, Battery Charge Level
   iii. Pull On demand: If required, central server can fetch data from device on user demand or request
      1. Update Status of latest values and parameters at control room on request instead of waiting for 2 Hours
   iv. Command On Demand:
      1. Activate or deactivate Astronomical Mode
      2. Send Command to switch on or off Streetlight in case of environmental issues or patrolling or testing
   v. Configuration Update:
      1. Update schedule for brightness level operation hours
      2. Push Data periodically need to be updated from the Central Server.
      3. Provision to update configuration like: firmware update, timing of the street light, update RMS user name and password, URL etc. at Central Server.

c. Communication Protocol:
   i. RMS should provide data on scalable IoT communication protocols preferably MQTT or as required by respective SNA to establish communication with thousands of systems.
   ii. There should have provision to Switch ON/OFF, Single/ Multiple/ Whole Lights under the Network Centrally.

d. Security:
   i. Communication between RMS and Server should be secured and encrypted using TLS/SSL/X.509 certificate etc.
   ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism

e. Message Format:
   i. RMS should provide data in a JSON message format as required by respective SNA

f. Data Storage:

i. In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server

The RMS dashboard are as follows:

1) Battery Parameters:
   a) Battery Voltage (BV)
   b) Battery Current (BI)
   c) Battery Power (BP)
2) Solar PV Parameters:
   a) Solar PV Voltage (SV)
   b) Solar PV Current (SI)
   c) Solar PV Power (SP)
3) Load Parameters:
   a) Load Voltage (LV)
   b) Load Current (LI)
   c) Load Power (LP)
   d) Load ON/OFF condition
4) System shutdown due to fault (even fault should be recorded)

1. Illustrative Parameters to be displayed in the district level dashboard of the RMS software (GUI)/web user interface: -

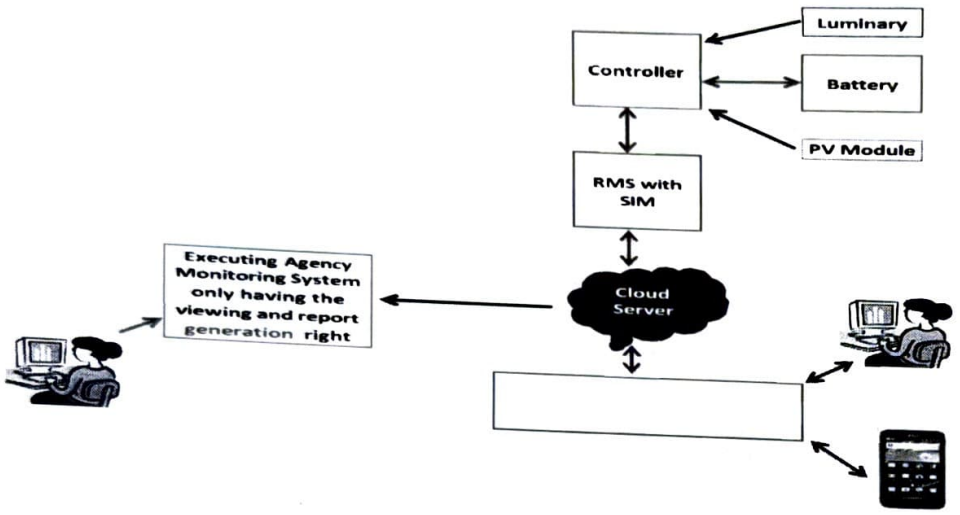
Sr. No.	Parameters to be monitored
1	Device ID-IMEI
2	Serial no. of Light
3	Battery Voltage
4	Solar Module Voltage
5	Solar Module Power
6	Luminary Power
7	Battery fault
8	Module fault
9	Luminary fault
10	Luminary ON time
11	Luminary OFF time
12	Fault time date
13	Fault rectification date

NOTE 1: The communication node/ module (RMS-Hardware) compatible with charge controller has to be supplied by the successful bidder to ensure compatibility with CMS (Remote Monitoring Server & Software) of HAREDA. All related data /service charges for the same shall be in the scope of successful bidder.

NOTE 2: The successful Bidders have to coordinate with the selected CMS vendor to ensure compatibility and uninterrupted Remote Monitoring features availability as per this DNIT.

Draft Schematic Layout of Centralized Monitoring System (CMS)

(Remote Monitoring System for Solar Street Lighting under scheme on 'SPV Street Lighting in Rural Area')



(Details specifications as per DNIT & sample submitted by you and approved by this office)

TERMS & CONDITIONS

1- **F.O.R.:-** The above rates are for destination anywhere in Haryana at supplier's risk.

2- **G.S.T. :-** Inclusive in above rates.

3- **Delivery period (includes supply, installation & commissioning):-** The delivery period will be three months from the date of placement of work order.

4- **Payment :-**

a. 60% payment will be released within one month time on submission of material receipt of physical delivery of inspected/ accepted goods in physically good condition at consignee go down on submission of bill of material supported by material receipt duly signed by PO/APO of the department/ office.

b. 30% will be released within one month time after satisfactory installation / working of the items on submission of joint commissioning report (JCR) along with photograph of the system in the attached format duly signed by the user & PO/APO of the consignee department/ office with countersignature of head of the office (ADC-cum-CPO).

c. 10% payment will be released on completion of 07years from the date of commissioning of the systems on submission of satisfactory performance report of the systems duly certified by the concerned PO/APO OR said amount may be released against submission of bank guarantee of equal amount valid for seven years from the date of commissioning of the system.

The Indenting Departments would have option to release payments in RTGS/ Electronics mode also.

Delay in payments to the suppliers beyond the stipulated credit period indicated in the supply order, unless supported by cogent reasons and approved by a higher authority, will attract penal interest on the defaulting amount @ Rs.25/- per rupees one lakh per day of delay beyond the stipulated credit period. Non provision of adequate budget will be no ground for delay in payments to the supplier.

5. **Warranty:** - Seven years from the date of commissioning (including batteries) and PV module(s) will be warranted for a minimum period of 25 years from the date of supply. PV modules used in Solar Lighting system must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.

6. **INSPECTION**:-The inspection of the material will be carried out by the committee constituted by Indenting Department or their authorized representatives at the premises of the supplier before dispatch.
In case, the material offered for inspection by the firm fails to meet the specifications stipulated in NIT/Order/Contract and the samples are rejected by the Inspecting Committee, the Indenting Department will have the right to levy a penalty at 0.1% of the total order value. In case, the material offered for inspection fails during the 2nd inspection also, the Indenting Department will have the right to increase the penalty to 0.25% of the total order value. In case, the material offered fails during the 3rd and final inspection also, the firm will be liable for penal action including forfeiture of EMD, risk purchase, debarring/ blacklisting in future, and no further opportunity for inspection would be provided to the supplier firm.

8. **Penalty clause:** In case of any complaint in the working of the items during the warranty period, the firm shall attend the same within 24 hours from the time of logging of first complaint / call by the consignee and the items must be repaired within three days thereafter. The complaints would be logged by the Department officers by e-mail/ fax in order to keep the proper delivery records. Further in case of failure to do so, penalty @ 0.1 % of the system cost per day (subject to max. 10% of the cost) after expiry of 72 hours shall be imposed. If the firm does not attend the complaint within the max penalty period, then the system may be got repaired/ replaced from the performance security amount. In case whole performance security amount is utilized and complaint/s are still pending then an online / registered notice will be sent to the firm to attend the complaint and if

failed to attend the complaint within 7 days then firm may be blacklisted and a legal proceeding may be initiated against the firm for breach the agreement.

(OTHER TERMS & CONDITIONS WILL BE AS PER DNIT AND SCHEDULE-B ATTACHED).

Encls.a/

Executive Engineer
Director General Supplies & Disposals, Haryana,
For & On behalf of Governor of Haryana.