

## Request for Proposal for Drinking Water Solar Pumps

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### ANNEXURE 1: COVERING LETTER

#### Covering Letter

(The covering letter should be on the Letter Head of the Bidder)

Ref. No.

Date: \_\_\_\_\_

From: (Insert name and address of Bidder)

Tel.: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail address: \_\_\_\_\_

To:

Chief Engineer

Madhya Pradesh Urja Vikas Nigam Limited

(A Government of Madhya Pradesh Enterprise)

Urja Bhawan, Link Road No. 2,

Shivaji Nagar, Bhopal - 462016

Sub: Request for Proposal (RFP) for Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC, Submersible water Pumping Systems for drinking water supply, with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC). in accordance with MNRE/BIS/IEC/CE norms at various locations in the state of MP.

Dear Sir,

We, the undersigned [insert name of the Bidder] having read, examined and understood in detail the RFP for Request for Proposal (RFP) for Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC, Submersible water Pumping Systems for drinking water supply. , with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms at various locations in the state of MP, hereby submit our Bid comprising of Financial

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Bid and Technical Bid. We confirm that neither we nor any of our Affiliate has submitted Bid other than this Bid directly or indirectly in response to the aforesaid RFP.

We give our unconditional acceptance to the RFP, dated.....and RFP attached thereto, issued by Madhya Pradesh Urja Vikas Nigam Limited, as amended. As a token of our acceptance to the RFP, the same have been initiated by us and enclosed to the Bid. We shall ensure that we execute such RFP as per the provisions of the RFP and provisions of such RFP shall be binding on us.

### Bidder Details

Bidder Type	Yes /No
Company	
LLP	
Partnership Firm	
Sole Proprietor	
Consortium	

### Project categories

We are pleased to submit our bid for the following categories as mentioned in table below:

Project Category	Participation* (Yes / No)
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	

Project Category	Participation* (Yes / No)
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	

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Project Category	Participation* (Yes / No)
K	
L	
M	

Project Category	Participation* (Yes / No)
X	
Y	
Z	

*\*Note: Bidder shall mention 'Yes' corresponding to categories it wants to bid and clearly mention 'No' for categories where it does not intend to bid.*

### Bid Security

We have enclosed Bid Security in form of DD/ FDR/ Bank Guarantee for each category of amount as mentioned in this RFP, details of which are hereunder:

Project Category	Bid Security (INR Lakhs)	Participation* (Yes / No)	Bid Security Details
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
Q			
R			

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Project Category	Bid Security (INR Lakhs)	Participation* (Yes / No)	Bid Security Details
S			
T			
U			
V			
W			
X			
Y			
Z			

*\*Note: Bidder shall mention 'Yes' corresponding to categories it wants to bid and clearly mention 'No' for categories where it does not intend to bid*

OR

We have enclosed a Bid Security in form of Bank Guarantee (Bid Security Details)/ Through RTGS of cumulative amount required, subject to clause 3.15.1, as mentioned in this RFP.

We have submitted our Financial Bid strictly as per this RFP, without any deviations, conditions and without mentioning any assumptions or notes for the Financial Bid in the said format(s).

### Acceptance

We hereby unconditionally and irrevocably agree and accept that the decision made by Madhya Pradesh Urja Vikas Nigam Limited in respect of any matter regarding or arising out of the RFP shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.

We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfil our obligations with regard to execution of projects of capacity offered.

### Familiarity with Relevant Indian Laws & Regulations

We confirm that we have studied the provisions of the relevant Indian laws and regulations as required to enable us to submit this Bid and execute the RFP, in the event of our selection as Contractor. We further undertake and agree that all such factors as mentioned in RFP have been fully examined and considered while submitting the Bid.

### Contact Person

Details of the contact person are furnished as under:

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Name	
Designation	
Company	
Address	
Phone Nos.	
Fax Nos.	
E-mail address	

We are enclosing herewith the Envelope-A (Covering letter, Processing fee and Bid Security) and Envelope-B (Technical documents) containing duly signed formats, each one duly sealed separately, in one original as desired by you in the RFP for your consideration.

It is confirmed that our Bid is consistent with all the requirements of submission as stated in the RFP and subsequent communications from Madhya Pradesh UrjaVikas Nigam Limited. The information submitted in our Bid is complete, strictly as per the requirements stipulated in the RFP and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid. We confirm that all the terms and conditions of our Bid are valid for acceptance for a period of 120 days from Bid Deadline. We confirm that we have not taken any deviation so as to be deemed non-responsive.

Dated the \_\_\_\_\_ day of \_\_\_\_\_ 2020

Thanking you,

We remain,

Yours faithfully

Name, Designation and Signature of Authorized Person in whose name Power of Attorney/Board Resolution.

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### ANNEXURE 2: GENERAL PARTICULARS OF THE BIDDER

#### GENERAL PARTICULARS OF THE BIDDER

1.	Name of the Company	
2.	Type of Company	
3.	Registered Office Address	
4.	E-mail	
5.	Web site	
6.	Authorized Contact Person(s) with name, designation, Address and Mobile Phone No., E-mail address/ Fax No. to whom all references shall be made	
7.	Year of Incorporation	
8.	Have the Bidder/Company ever been debarred By any Govt. Dept. / undertaking for undertaking any work.	
9.	Reference of any documentation format/ annexures attached by the Bidder other than specified in the RFP.	
10.	Whether the Bidder wishes to form a Project Company for execution of work	Yes/No
11.	Bidder is listed in India	Yes/No
12.	TIN No.	
13.	GST	
14.	PAN No.	
15.	Service Tax (ST-2)	
16.	Certificate of Incorporation of Bidder (as applicable) enclosed	Yes/No
17.	A copy of partnership deed or LLP/ Sole Proprietor registration, as applicable enclosed	Yes/No

(Signature of Authorized Signatory)

With Stamp

Date: \_\_\_\_\_

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### ANNEXURE 3: ACKNOWLEDGEMENT OF RFP DOCUMENT

*(To be furnished on letterhead of Bidder)*

To,  
Chief Engineer,  
MP Urja Vikas Nigam Ltd., Urja Bhavan, Main Road No.2,  
Near Bus-stop No.5, BHOPAL – 462016  
PHONE # 0755-2575670, FAX # 0755 – 2553122  
E-Mail: ceuvn@mp.gov.in

Dear Sir,

We have understood the instructions and the terms and conditions mentioned in the RFP Document and have thoroughly examined the RFP Document and are fully aware of the scope of work required. We are hereby submitting our “Financial Proposal” as per prescribed format online only.

The price quoted are excluding taxes. TDS will be deducted from our payment as per the prevalent laws and rules of Government of India and Government of MP in this regard.

**For and on behalf of:**

**Signature: (Authorized Signatory) Name of the Person:**

**Designation:**

### ANNEXURE 4: FORMAT FOR BANK GUARANTEE FOR BID SECURITY

*(To be on non-judicial stamp paper of INR 1000/-)*

1. Rs(IN FIGURE) (Rupees (IN WORDS)) Bank Guarantee covers from..... \_to \_.....
2. This Deed of Guarantee made on.....(Day).....of.....(Month).....of.....(Year).....Between..... (Here-in-after called the Guarantor) on the One Part / On behalf of M/s .....(Here-in-after called the Bidder), and in favour of M.P. Urja Vikas Nigam Ltd., Bhopal (Here-in-after called the MPUVN) on the following Terms, and Conditions:
3. Whereas, the **Bidder** having agreed to Deposit Security of Rs. ....(in figure).....Rupees.....(in words)\_ in favour of the **MPUVN** in the Form of Bank Guarantee, in token towards Design, Supply, Installation and Commissioning of SPV systems with 5 year's Warranty cum Comprehensive Maintenance Contract of \_\_ (\_\_\_\_year's) vide Order/RFP No \_\_\_\_\_ (dated)\_\_\_\_\_to the satisfaction of the Managing Director of the **MPUVN** for ...(Total)...Years / Months against the said Contract Agreement.
4. Whereas the **Guarantor** further agree that the Managing Director of the **MPUVN** is competent to decide whether the Execution of Rate Contract of Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC/AC, Submersible water Pumping Systems for Drinking Water Purpose etc. with provision for three times manual tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located anywhere in Madhya Pradesh.  
and/or  
Survey, Supply, Installation & Commissioning of water storage tanks with MS steel raised structure.
5. The rates once accepted shall be valid up to the Agreement Period as per Terms & Conditions of the Contract Agreement or Not. His decision shall be binding on us.
6. Whereas the **Guarantor** further agree to pay immediately the amount Guaranteed within a period of one week of the same being demanded by the **MPUVN** with intimation to the **Contractor**.
7. This Guarantee shall remain enforced and shall continue to be enforceable till \_\_\_\_and, shall be extended on receiving instructions from the **MPUVN**, with intimation to the **Contractor**. However, the Bank Guarantee shall stand automatically enforceable for a period of further six months, unless discharged by the **MPUVN**, under intimation to the **MPUVN** by the Bank immediately.
8. Whereas the **Guarantor** further agree that their liability under this Guarantee shall not be affected by



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reason if any change in the agreement or the terms and conditions between the **Contractor** and the **MPUVN** or without the consent or knowledge of the Guarantor.

9. Whereas the **Guarantor** further agrees that Managing Directors decision whether Contractor has committed any breach or non-observance of the terms and conditions of the said contract shall be final and enough for Guarantors to make payment to the **MPUVN**.
10. Whereas the **Guarantor** further agree that the amount due or amounts of damage or loss caused to or suffered by the Nigam are binding on us and undertaking to pay the amount Guaranteed hereby or part thereof as required, immediately / within one week of the demand made by the **MPUVN**.
11. Whereas the **Guarantor** hereby undertakes not to revoke this Guarantee during its currency period except with the previous consent of the **MPUVN** in writing. However, unless a demand or claim is made in writing on or before the expiry of this Guarantee as mentioned in Clause No. 4 above, the **Guarantor** shall be released and discharged from all liabilities there under.
12. Whereas the Guarantor hereby undertakes that this bank guarantee once opened, in any circumstances shall not be cancelled without written consent of the MPUVN.
13. Notwithstanding anything contained in foregoing our liability under this Guarantee is restricted to Rs .....(Rupees only) Our Guarantee shall remain in force up to six months from the date of expiry of currency / extended period of the Bank Guarantee.

**For,  
Bank,**

**(Signature / Name of Bank Officer / Seal of Authorized Signatory)**

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### ANNEXURE 5: FORMAT FOR PERFORMANCE BANK GUARANTEE

(To be on non-judicial stamp paper of Minimum Rs. 1000/-)

This Deed of Guarantee made on \_\_\_\_\_ (Day) \_\_\_\_\_ of \_\_\_\_\_ (Month)  
\_\_\_\_\_ of

\_\_\_\_\_ (Year) \_\_\_\_\_ Between \_\_\_\_\_ (Here-in-after called  
the Guarantor) on the One Part / On behalf of M/s \_\_\_\_\_

(Here- in-after called the Contractor), and in favour of M.P. Urja Vikas Nigam Ltd., Bhopal (Here-in-after called  
the MPUVN) on the following Terms, and Conditions:

In consideration of the *[Insert name of the Bidder]* (hereinafter referred to as (Contractor) submitting the  
response to RFP inter alia for selection of the Request for Proposal (RFP) for Standardization of rates and  
selection of Contractor for :

Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC/AC, Submersible water Pumping  
Systems for Drinking Water Purpose etc. with provision for three times manual tracking in a day and remote  
monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in  
accordance with MNRE/BIS/IEC/CE norms in different sites/villages located any where in Madhya Pradesh,

and/or

Survey, Supply, Installation & Commissioning of water storage tanks with MS steel raised structure,

in response to the RFP dated \_\_\_\_\_ issued by Madhya Pradesh Urja Vikas Nigam Limited  
(hereinafter referred to as Nodal Agency) and Nodal Agency considering such response to the RFP of [insert  
the name of the Contractor] (which expression shall unless repugnant to the context or meaning thereof  
include its executors, administrators, successors and assignees) and selecting the Project of the Contractor  
and issuing LICA No. \_\_ to (Insert Name of Successful Bidder) as per terms of RFP and the same having been  
accepted by the selected Project Company, M/s {a Special Purpose Vehicle (SPV) formed for this purpose}, if  
applicable]. As per the terms of the RFP, the [insert name & address of bank] hereby agrees unequivocally,  
irrevocably and unconditionally to pay to Nodal Agency at [Insert Name of the Place from the address of the  
Nodal Agency] forthwith on demand in writing from Nodal Agency, or any officer authorized by it in this behalf,  
any amount upto and not exceeding Rupees [Rupees \_\_\_\_\_ (Total Value in words)] only, on behalf of  
M/s *[Insert name of the Contractor / Project Company]*. This guarantee shall be valid and binding on this Bank  
up to and including \_\_\_\_\_ and shall not be terminable by notice or any change in  
the constitution of the Bank or the term of Agreement or by any other reasons whatsoever and our liability

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hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective Agreement.

Our liability under this Guarantee is restricted to Rupees\_\_\_\_\_ (both in numbers and words)

Our Guarantee shall remain in force until Nodal Agency shall be entitled to invoke this Guarantee till \_\_\_\_\_. The Guarantor Bank hereby agrees and acknowledges that Nodal Agency shall have a right to invoke this BANK GUARANTEE in part or in full, as it may deem fit.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand by Nodal Agency, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to Nodal Agency.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by [Insert name of the Contractor]. The Guarantor Bank shall not require Nodal Agency to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against Nodal Agency in respect of any payment made hereunder.

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Bhopal shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly Nodal Agency shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the selected Contractor / Project Company, to make any claim against or any demand on the Contractor or to give any notice to the Contractor / Project Company or to enforce any security held by Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against the Contractor / Project Company.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rupees\_\_\_\_\_ (Rupees\_\_\_\_\_ only) and it shall remain in force until we are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if Nodal Agency serves upon us a written claim or demand.

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\_\_\_\_\_  
Signature

Name

Power of Attorney No.

For

[Insert Name of the Bank] Banker's Stamp and Full Address. Dated this\_\_day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Witness:

Signature

Name and Address\_\_\_\_\_

\_\_\_\_\_  
Signature

Name and Address\_\_\_\_\_

### ANNEXURE 6: CHECK LIST FOR PBG (C-PBG/ O-PBG)

S.No.	Details of checks	YES/NO
1	Is the BG on non-judicial Stamp paper of appropriate value, as per applicable Stamp Act of the place of execution	
2	Whether date, purpose of purchase of stamp paper and name of the purchaser are indicated on the back of Stamp paper under the Signature of Stamp vendor? (The date of purchase of stamp paper should be not later than the date of execution of BG and the stamp paper should be purchased either in the name of the executing Bank or the party on whose behalf the BG has been issued. Also the Stamp Paper should not be older than six months from the date of execution of BG).	
3	Has the executing Officer of BG indicated his name, designation and Power of Attorney No./Signing Power no. on the BG?	
4	Is each page of BG duly signed / initialed by executant and whether stamp of Bank is affixed thereon? Whether the last page is signed with full particulars including two witnesses under seal of Bank as required in the prescribed Performa?	
5	Does the Performance Bank Guarantees compare verbatim with the Performa prescribed in the Bid Documents?	
6	Are the factual details such as Bid Document No. / Specification No., / LOI No. (if applicable) / Amount of BG and Validity of BG correctly mentioned in the BG	
7	Whether overwriting/cutting if any on the BG have been properly authenticated under signature & seal of executant?	

### ANNEXURE 7: POWER OF ATTORNEY

(To be on non-judicial stamp paper of Minimum Rs. 1000/-)

Power of Attorney to be provided by the Bidder in favour of its representative as evidence of authorized signatory's authority.

Know all men by these presents, We (name and address of the registered office of the Bidder as applicable) do hereby constitute, appoint and authorize Mr./Ms. (name & residential address) who is presently employed with us and holding the position of \_\_\_\_\_ as our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid for Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC/AC, Submersible water Pumping Systems for, drinking water supply with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located anywhere in Madhya Pradesh. in response to the RFP Dated: \_\_\_\_\_ issued by Nodal Agency including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the Nodal Agency may require us to submit. The aforesaid Attorney is further authorized for making representations to the Madhya Pradesh Urja Vikas Nigam Limited and providing information / responses to Nodal Agency representing us in all matters before Nodal Agency and generally dealing with Nodal Agency in all matters in connection with Bid till the completion of the bidding process as per the terms of the above mentioned in RFP.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP.

\_\_\_\_\_  
Signed by the within named (Insert the name of the executants company)

Through the hand of Mr \_\_\_\_\_ duly authorized by the Board to issue

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such Power of Attorney Dated this \_\_\_\_ day of \_\_

Accepted

\_\_\_\_\_

Signature of Attorney

(Name, designation and address of the Attorney) Attested

\_\_\_\_\_

(Signature of the executant)

(Name, designation and address of the executant)

\_\_\_\_\_

Signature and stamp of Notary of the place of execution

Common seal of \_\_\_\_\_ has been affixed in my/our presence pursuant to Board of

Director's Resolution dated

WITNESS

\_\_\_\_\_

(Signature)

Name \_\_\_\_\_

Designation \_\_\_\_\_

## Request for Proposal for Drinking Water Solar Pumps

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\_\_\_\_\_  
(Signature)

Name \_\_\_\_\_

Designation \_\_\_\_\_



## Request for Proposal for Drinking Water Solar Pumps

### ANNEXURE 8: TECHNICAL ELIGIBILITY CRITERIA REQUIREMENT

(To be submitted on the letterhead of Bidder)

To,  
Chief Engineer,  
Madhya Pradesh Urja Vikas Nigam Limited,  
Bhopal

Dear Sir,

Sub: Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC/AC, Submersible water Pumping Systems for, drinking water supply etc., with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located anywhere in Madhya Pradesh in response to the RFP No:\_\_\_\_\_Dated:

We submit our Bid for which details of Technical Eligibility Criteria Requirements are as follows:

#### Supply, installation, commissioning experience of Solar Photovoltaic Water Pumping System

S.No.	Name & Address of Client	Order no. & date	Value of order	Capacity-wise (in HP terms) commissioned	Year of Installation & commissioning

Details of cumulative experience in executing contracts on/off-grid solar photovoltaic systems/power plants (installed & commissioned) (including the systems installed for solar water pumping applications)

S.No.	Name & Address of Client	Order no. & date	Value of order	Capacity Installed and commissioned	Year of Installation & commissioning

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S.No.	Name & Address of Client	Order no. & date	Value of order	Capacity Installed and commissioned	Year of Installation & commissioning

OR

Details of Cumulative Manufacturing Experience and supply of motor-pump set/solar pump controller/inverter (tested & certified by MNRE accredited lab)

S.No.	Name & Address of Client	Order no. & date	Value of order	Supplied quantity	Year of supply/ Installation

OR

Details of Cumulative Manufacturing Experience and supply of RMPE water storage tanks (tested & certified by MNRE/BIS accredited lab)

S.No.	Name & Address of Client	Order no. & date	Value of order	Supplied quantity	Year of supply/ Installation

Based on above projects, we undertake to submit our bid for following Category(ies) clause 2.2 of this RFP:

Project Category	Participation* (Yes / No)
A	
B	
C	
D	

Project Category	Participation* (Yes / No)
N	
O	
P	
Q	

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Project Category	Participation* (Yes / No)
E	
F	
G	
H	
I	
J	
K	
L	
M	

Project Category	Participation* (Yes / No)
R	
S	
T	
U	
V	
W	
X	
Y	
Z	

*\*Note: Bidder shall mention 'Yes' corresponding to categories it wants to bid and clearly mention 'No' for categories where it does not intend to bid. This should be in concurrence with Covering Letter.*

Yours faithfully

\_\_\_\_\_

(Signature and stamp of Authorized Signatory of Bidder) Name:\_\_

Date:\_\_\_\_\_Place: \_\_\_\_\_

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### ANNEXURE 9: FINANCIAL ELIGIBILITY CRITERIA REQUIREMENT

(To be submitted on the letterhead of Bidder)

To,  
Chief Engineer,  
Madhya Pradesh Urja Vikas Nigam Limited  
Bhopal, M.P.

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Sub: Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC/AC, Submersible water Pumping Systems for drinking water supply etc., with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located anywhere in Madhya Pradesh in response to the RFP No: \_\_\_\_\_ Dated: .....

We submit our Bid for which details of our Financial Eligibility Criteria Requirements are as follows.

Average annual turnover of Rupees.....Lakhs computed as per instructions provided in this RFP based on unconsolidated audited annual accounts. The relevant financial statement for respective years shall be enclosed, duly signed by authorised signatory.

Name of Entity being evaluated	Financial Year	Financial Criteria (fill as applicable) to be met as per Clause 3.8.3
		Turnover (INR Lakh)

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Yours faithfully

\_\_\_\_\_

(Signature and stamp of Authorized Signatory of Bidder) Name: \_\_

\_\_\_\_\_  
Date: \_\_\_\_\_ Place: \_\_\_\_\_

(Signature and stamp (on each page) of Chartered Accountant/Statutory Auditors of Bidder. Name: \_\_\_\_\_

Date: \_\_\_\_\_ Place: \_\_\_\_\_

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### ANNEXURE 10-A: CERTIFICATE OF RELATIONSHIP OF AFFILIATE WITH THE BIDDER

To,

Chief Engineer,

MP Urja Vikas Nigam Limited,

Bhopal

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Dear Sir,

Sub: Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC, Submersible water Pumping Systems for drinking water supply with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located anywhere in Madhya Pradesh in response to the RFP No:

\_\_\_\_\_ Dated: \_\_\_\_\_

We hereby certify that M/s\_\_\_\_\_,M/s\_\_\_\_\_,M/s\_\_\_\_\_are the Affiliate(s) of the Bidder as per the definition of Affiliate as provided in this RFP and based on details of the control of voting shares as on seven (7) days prior to the Bid Deadline.

The details of equity holdings of the Affiliate /Bidder or vice versa as on seven (7) days prior to the Bid Deadline are given as below:

Name of Company/ LLP/ Partnership Firm/ Sole – Proprietor	Name of the Affiliate	Percentage of equity holdings of Affiliate in the Bidding Company or vice versa

Yours Faithfully

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(Insert Name and Signature of Statutory Auditor or practicing Company Secretary of the Bidder

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### ANNEXURE 10-B: UNDERTAKING FORM

#### Undertaking from Affiliate

Name: \_\_\_\_\_

Full Address: \_\_\_\_\_

Telephone No.: E-mail address: Fax/No.: \_\_\_\_\_ To,

\_\_\_\_\_

Subject: Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC, Submersible water Pumping Systems for, drinking water supply., with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located anywhere in Madhya Pradesh in response to the RFP No:

\_\_\_\_\_ Dated: \_\_\_\_\_

Dear Sir,

We have carefully read and examined in detail the RFP regarding submission of an undertaking, as per the prescribed annexure of the RFP.

We confirm that M/s (Insert name of Bidder) has been authorized by us to use our financial capability for meeting the Financial Eligibility as specified in the RFP referred to above in terms of Turnover **(strike out the one which is not applicable)**.

We have also noted the amount of the Performance Guarantees and Bid Security required to be submitted as per the RFP by (Insert the name of the Bidder) in the event of it being selected as the Successful Bidder”.

In view of the above, we hereby undertake to you and confirm that in the event of failure of (Insert name of the Bidder) to submit the Performance Guarantees and Bid Security in full or in part at any stage, as specified in the RFP, we shall submit the Performance Guarantee and Bid Security not submitted by (Insert name of the Bidder)”.

We also undertake that we shall maintain our ownership, directly or indirectly, by controlling more than 50% of the voting share in M/s \_\_\_\_\_ (insert

## Request for Proposal for Drinking Water Solar Pumps

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name of bidder) for period of 1 year from the date of Commissioning of awarded capacity, subject to provisions of Clause 3.8.3(b).

We have attached hereto certified true copy of the Board Resolution, whereby the Board of Directors of our Company has approved issue of this Undertaking by the Company.

All the terms used herein but not defined, shall have the meaning as ascribed to the said terms under the RFP.

\_\_\_\_\_

Signature of Chief Executive Officer/Managing Director

Common seal of \_\_\_\_\_ has been affixed in my/our presence pursuant to Board of Director's Resolution dated \_\_\_\_\_

WITNESS

\_\_\_\_\_

(Signature)

Name \_\_\_\_\_ Designation \_\_\_\_\_

\_\_\_\_\_

(Signature)

Name \_\_\_\_\_ Designation \_\_\_\_\_



## Request for Proposal for Drinking Water Solar Pumps

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### ANNEXURE 11: UNDERTAKING FOR COMBINED O-PBG

(On the Letter Head of the Contractor)

To,

Madhya Pradesh Urja Vikas Nigam Limited,

Urja Bhawan, Link Road No. 2,

Shivaji Nagar, Bhopal – 462016

Dear Sir,

We refer to the work order Nos.

1. \_\_\_\_\_ dated

2. \_\_\_\_\_ dated

3. \_\_\_\_\_ dated

4. \_\_\_\_\_ dated

For Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC, Submersible water Pumping Systems for drinking water supply along-with 5 years warranty & Comprehensive Maintenance Contract (CMC) in accordance with MNRE norms, with provision for manual three times tracking in a day and remote monitoring of the pump at various locations in the State of Madhya Pradesh

Hereby, we are submitting O-PBG for INR (\_\_\_\_\_) valid for \_\_\_\_\_ as \_\_\_\_\_ per requirement of RFP No: \_\_\_\_\_ Dated: \_\_\_\_\_, its amendments and subsequent Agreement between MPUVNL and \_\_\_\_\_ (name of Contractor) dated \_\_\_\_\_. This O-PBG is being furnished against the work orders mentioned above.

\_\_\_\_\_  
Name, designation & signature of authorized signatory Seal of the company/ Firm

Date

## Request for Proposal for Drinking Water Solar Pumps

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### ANNEXURE 12: FORMAT FOR AGREEMENT

This agreement is signed on this \_\_\_\_ (day) \_\_\_\_ of (month) \_\_\_\_ of \_\_\_\_ (year) \_\_\_\_ At Bhopal between M/s \_\_\_\_ (here-in-after called as “Party No. 1”) and Madhya Pradesh Urja Vikas Nigam M/s \_\_\_\_ (here-in-after called as “Party No. 2”) on the following terms and conditions.

That, the “Party No.1” has agreed to Execute Work as per Scope / Specifications mentioned in Notice for RFP No. MPUVN / Solar Pump/ 2020-21/ \_\_\_\_ Dated \_\_\_\_ issued by “Party No.2”.

That, the “Party No.1” has also agreed to Rate Contract of Survey, Design, Supply, installation & Commissioning, of

- A. Solar Water Pumping Systems (A solar photovoltaic (SPV) water pumping system consists of SPV panel (array) of various capacities/ heads, with or without handpump, should be mounted on a suitable structure with a provision of three times manual tracking, AC/DC, submersible Motor pump set with a suitable inverter/controller with a provision of remote monitoring of the pump, electronics(MPPT, Electronics Protections), interconnected cables, on-off switch, G.I./RMPE riser Pipe / suction pipe & all required accessories, fittings) along-with 5 years (including man power) warranty & Comprehensive Maintenance Contract (CMC);

and/or

- B. Survey, Supply, Installation & Commissioning of water storage tanks with MS steel raised structure; in different villages located all over state of Madhya Pradesh in accordance with MNRE specification & as per scope / specifications mentioned in Notice for RFP No. MPUVN / Solar Pump/ 2020-21/ \_\_\_\_ Dated – \_\_\_\_ issued by “Party No.2”, on the rates already accepted / agreed upon as mentioned in the annexed “Rate sheet”.

That, the Rates shown in the Rate Sheet(s) enclosed are valid up to the Agreement Period, and in case of additional requirements of works as per same Scope / Specifications mentioned in Notice for RFP No. MPUVN / Solar Pump/ 2020-21/ \_\_\_\_ Dated - \_\_\_\_ issued by “Party No.2” same Rates shall be applicable up to the Agreement Period, if there is no change is suggested in the Specifications / Guidelines of MNRE .

## Request for Proposal for Drinking Water Solar Pumps

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That, all terms and conditions, scope of work / specifications mentioned in Notice for RFP No. MPUVN/ Solar Pump/ 2020-21/\_\_\_\_\_ Dated - \_\_\_\_\_ issued by "Party No.2", which have been agreed upon and also the Condition (s) contained in the Correspondence (s) made in this matter will also form part of this Agreement.

That, in the event of any dispute or difference whatsoever arising under this Contract Agreement, the same shall be referred to Arbitrator which shall be as per the provisions of the Indian Arbitration Act, 1996 and the Rule(s) there under. All the proceedings under arbitration will take place in Bhopal. The award in such arbitration shall be final and binding on both the parties. In this case, the arbitrator shall be secretary, New and Renewable Energy Department, Govt. of Madhya Pradesh / Managing Director, M.P. Urja Vikas Nigam Ltd., Bhopal.

The agreement will be valid up to ..... The validity period may be extended further with the Mutual Consent on unchanged Terms & Condition(s), Specification(s) and Rate(s) up to one year.

For, the matter(s) of any dispute between the "Party No.1" and "Party No.2" shall be subjected to Bhopal jurisdiction.

That, this agreement executed between the parties who affix their signatures at Bhopal, in witness whereof the parties hereto have signed the agreement :

### Witnesses;

- |    |            |
|----|------------|
| 1. | Party No.1 |
| 2. | Party No.2 |

## Request for Proposal for Drinking Water Solar Pumps

### ANNEXURE 13: SUMMARY TABLE FOR TEST REPORTS

Please fill up the values in cells for the category participated in:

System category	Water output in Liters per day as per test Report	MNRE Model number as described in SBD	Water Output in Liters per day Under MNRE-STC
A and F (1 HP)		DC-Submersible-Model-III, IV, V	Model-III: 20000 for 30m; shut off dynamic head 45m; Model-IV: 10000 for 60 m, shut off dynamic head 90m; Model-V: 5000 for 90m, shut off dynamic head 120m
B and G (1 HP)		DC- Submersible-Model-I	45600 for 30 m; shut off dynamic head 45 m
C and H (2 HP)		DC Submersible- Model II	68,400 for 30m; shut off dynamic head 45m.
D, I and O (3 HP)		DC submersible Model III, IV, V	114,000 for 30m; shut off dynamic head 45m, 69,000 for 50m; shut-off dynamic head 70 m, 45000 for 70m; shut off dynamic head 100m,
E, J and P (5 HP)		DC submersible model VI, VII, VIII	110,400 for 50m; shut-off dynamic head 70m. 72,000 for 70m; shut-off dynamic head 100m. 50,400 for 100m; shut-off dynamic head 150m.
K and Q (7.5 HP)		DC submersible model IX, X, XI	155,250 for 50m; shut-off dynamic head 70m. 1,01,250 for 70m; shut-off dynamic head 100m. 70,875 for 100m; shut-off dynamic head 150m.
L and R (7.5 HP)		AC submersible model IX, X, XI	1,41,750 for 50m; shut-off dynamic head 70m. 94,500 for 70m; shut-off dynamic head 100m. 60,750 for 100m; shut-off dynamic head 150m.
M and S (10 HP)		DC submersible model XII, XIII, XIV	2,07,000 for 50m; shut-off dynamic head 70m. 1,35,000 for 70m; shut-off dynamic head

## Request for Proposal for Drinking Water Solar Pumps

			100m. 94,500 for 100m; shut-off dynamic head 150m.
NT (10 HP)		AC submersible model XII, XIII, XIV	1,89,000 for 50m; shut-off dynamic head 70m. 1,26,000 for 70m; shut-off dynamic head 100m. 81,000 for 100m; shut-off dynamic head 150m.

### Note:

1. Please enclose test reports of the corresponding Models of pump declared above.
2. Please enclose valid test reports SPV Module(s) compliant to IEC 61215 & IEC 61730 part- I & II (IEC-International Electro technical commission).
3. For Categories in which more than one model is mentioned, the rates for piping works should be on average basis

## Request for Proposal for Drinking Water Solar Pumps

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### ANNEXURE 14: FORMAT FOR UNDERTAKING BY EQUIPMENT SUPPLIER

<To be given on Supplier's letterhead and duly notarized>

To,

The Managing Director,

M.P. Urja Vikas Nigam,

Main road #2, Shivaji Nagar

Bhopal – 462006

Subject: Undertaking regarding regular supply of solar panels/Solar Photovoltaic (SPV) pump sets/pumps/controller.

Reference: RFP \_\_\_\_\_ for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic AC/DC Submersible water Pumping system of various capacities/heads, with or without handpump, for drinking water purposes, conforming to MNRE's latest specifications for solar water pumping systems along with 5 years warranty & Comprehensive Maintenance Contract (CMC).

Dear Sir,

We are manufacturer and regular supplier of solar panels/Solar Photovoltaic (SPV) pump sets/pumps/controller and have national/international qualification and certifications for the same. As per the requirement of the vendor, we supply pump sets which are duly tested by MNRE testing centres.

We hereby undertake and ensure that we will supply the required number of pump sets as mentioned below with desired specifications as specified in RFP, in the event of <Bidder name and address> being selected as Contractor regularly within the time schedule.

We hereby extend our full guarantee and warrantee as per Terms & Conditions of this RFP for supplied pump sets. We also confirm to provide the spares for at least five years from the date of commissioning to Contractor.

Project Category	Participation* (Yes / No)	Quantity
A		
B		

## Request for Proposal for Drinking Water Solar Pumps

Project Category	Participation* (Yes / No)	Quantity
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		

*\*Note: Bidder shall mention 'Yes' corresponding to categories it wants to bid and clearly mention 'No' for*

## Request for Proposal for Drinking Water Solar Pumps

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*categories where it does not intend to bid.*

Thank you Yours sincerely,

<Name and signature of authorized signatory of supplier>

<Supplier seal> Seal with Date

Note: The Supplier should attach copy of authorisation from Competent Authority for authorisation of Authorised Signatory.



**ANNEXURE 15: UNDERTAKING FOR DEDUCTION**

**(On the Letter head of the Bidder Company)**

I \_\_\_\_\_ S/o Shri \_\_\_\_\_ resident

of \_\_\_\_\_ being Director / Proprietor of  
M/s

\_\_\_\_\_ whose Sales Tax (TIN) Registration No. is

\_\_\_\_\_ GST Registration no. is \_\_\_\_\_ Income Tax  
PAN no. is \_\_\_\_\_ and Service Tax No. is \_\_\_\_\_. Hereby,  
give consent to The Madhya Pradesh Urja Vikas Nigam Ltd. Bhopal to deduct from our Bills whatever Amount  
is Payable by us on account of the CT / Service Tax / VAT and IT dues etc., if any, demanded by the concerned  
Department(s).

For and on behalf of the Bidder Company,

Place:

Date:

Signature:

Name: \_\_\_\_\_ Post : Director / Proprietor

Seal :

## Request for Proposal for Drinking Water Solar Pumps

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### ANNEXURE 16: CERTIFICATE OF HALF YEARLY VISITS

**(To be filled during 5 years' warranty & CMC period)**

(from \_\_\_\_\_ to \_\_\_\_\_ -

This is to certify that M/s has extended preventive / routine maintenance and breakdown corrective maintenance services at the beneficiary's place at \_\_\_\_\_ District for the systems installed against the work order no \_\_\_\_\_ Dated \_\_\_\_\_ and commissioned on \_\_\_\_\_, and that the preventive / routine maintenance and breakdown corrective maintenance work during the (from\_to ) of the year has been done properly to ensure functionality of the systems as specified in the RFP and Agreement. This is also to certify that all the systems are working satisfactorily. The record of preventive / routine maintenance and breakdown / corrective maintenance work carried out by the contractor is kept in the DREO office.

Date

Place

Signature, Name, designation and seal of contractor

Signature, Name, designation and seal of DREO

## Request for Proposal for Drinking Water Solar Pumps

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### ANNEXURE 17: DECLARATION

#### (On Original Letter head of Bidder)

I / we have carefully read and understood the enclosed Terms and Conditions of the RFP and amendments are agree to abide by them / by me / us would be liable for summarily rejection, and Proposal would be considered on Terms and Conditions finalized by Nigam.

I / we also declare that, we are:

☐ Manufacturer of Mono/Multi crystalline silicon Solar Photovoltaic (SPV) Modules of capacity 330Wp (Watt Peak) or more

OR

☐ Manufacturer of AC/DC, submersible pumps, suitable for SPV water pumping systems.

OR

☐ Manufacturer of solar pumps controller/Inverter

OR

☐ A Solar PV System Integrator.

OR

☐ Manufacturer of RMPE water storage tanks.

AND

☐ I / we have got service centers at our works for the quoted System(s).

AND

I/We undertake to set up service centers as per the terms and conditions of this RFP

I / we declare that we have not been Black listed or otherwise Debarred for any Supply of Goods / Services / Works by any Ministry / Department / PSU of Central Government / Any of the State Government(s), anytime / anywhere in the Country.

I / we solemnly undertake that the responsibility of execution of the Work as per the terms and conditions of the RFP/ Contract Agreement shall be entirely ours.

If this Declaration is found to be incorrect or if any RFP Condition is found violated by us, then without prejudice to any other action our Earnest money / Security Deposit may be forfeited in full and the Proposal to the Extent of Acceptance / anytime during Execution of Work may be cancelled. The signature of our Authorized Representative in Madhya Pradesh is attested below.

## Request for Proposal for Drinking Water Solar Pumps

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Signature of Authorized Representative

Name:

Address:\_\_\_\_\_ Attested by

Authorized Signatory

Seal of the Bidder Company **Date:**

### ANNEXURE 18: FORMAT FOR BANK GUARANTEE FOR MOBILISATION ADVANCE

(To be on non-judicial stamp paper of Minimum Rs. 1000/-)

In consideration of the *[Insert name of the Bidder]* (hereinafter referred to as (Contractor) submitting the response to RFP inter alia for selection of the Request for Proposal (RFP) for “Standardization of rates and selection of Contractor for Survey, Supply, Installation & Commissioning of Solar Photo Voltaic DC, Submersible water Pumping Systems for , drinking water supply., with provision for manual three times tracking in a day and remote monitoring of the pump along with 5 years warranty & Comprehensive Maintenance Contract (CMC) etc. and /or water storage system in accordance with MNRE/BIS/IEC/CE norms in different sites/villages located in Madhya Pradesh in response to the RFP dated\_\_\_\_\_issued by Madhya Pradesh Urja Vikas Nigam Limited (hereinafter referred to as Nodal Agency) and Nodal Agency considering such response to the RFP of *[insert the name of the Contractor]* (which expression shall unless repugnant to the context or meaning thereof include its executors, administrators, successors and assignees) and selecting the Project of the Contractor and issuing LICA No.

\_\_\_\_to (Insert Name of Successful Bidder) as per terms of RFP and the same having been accepted by the selected Project Company, M/s {a Special Purpose Vehicle (SPV) formed for this purpose}, if applicable]. As per the terms of the RFP, the *[insert name & address of bank]* hereby agrees unequivocally, irrevocably and unconditionally to pay to Nodal Agency at *[Insert Name of the Place from the address of the Nodal Agency]* forthwith on demand in writing from Nodal Agency, or any officer authorized by it in this behalf, any amount upto and not exceeding Rupees\_\_\_\_*[Rupees\_\_\_\_\_ (Total Value in words)]* only, on behalf of M/s *[Insert name of the Contractor / Project Company]*. This guarantee shall be valid and binding on this Bank up to and including\_\_\_\_\_and shall not be terminable by notice or any change in the constitution of the Bank or the term of Agreement or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective Agreement.

Our liability under this Guarantee is restricted to Rupees \_\_\_\_\_(b  
oth in numbers and words)

Our Guarantee shall remain in force until Nodal Agency shall be entitled to invoke this Guarantee till\_\_\_\_.  
The Guarantor Bank hereby agrees and acknowledges that

## Request for Proposal for Drinking Water Solar Pumps

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Nodal Agency shall have a right to invoke this BANK GUARANTEE in part or in full, as it may deem fit.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand by Nodal Agency, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to Nodal Agency.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by [Insert name of the Contractor]. The Guarantor Bank shall not require Nodal Agency to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against Nodal Agency in respect of any payment made hereunder.

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Bhopal shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly Nodal Agency shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the selected Contractor / Project Company, to make any claim against or any demand on the Contractor or to give any notice to the Contractor / Project Company or to enforce any security held by Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against the Contractor

/ Project Company.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rupees \_\_\_\_\_ (Rupees \_\_\_\_\_ only) and it shall remain in force until we are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if Nodal Agency serves upon us a written claim or demand.

\_\_\_\_\_

**Request for Proposal for Drinking Water Solar Pumps**

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Signature

Name

Power of Attorney No.

For

[Insert Name of the Bank] Banker's Stamp and Full Address. Dated this\_\_day of \_\_\_\_\_, 20\_\_\_\_

Witness:

\_\_\_\_\_

Signature

Name and Address\_\_\_\_\_

\_\_\_\_\_

Signature

Name and Address\_\_\_\_\_

### ANNEXURE 19: TECHNICAL SPECIFICATIONS

#### TECHNICAL SPECIFICATION SOLAR PHOTO VOLTAIC AC/DC, SUBMERSIBLE WATER PUMPING SYSTEMS

##### MINIMAL TECHNICAL REQUIREMENTS / STANDARDS

##### A. DEFINITION:

A solar photovoltaic (SPV) water pumping system consists of

- a) Solar PV Modules
- b) Solar pump controller/Inverter
- c) Solar Motor-Pump Set
- d) Module Mounting structure with manual tracking system
- e) Suction/delivery pipe (RMPE/GI)
- f) Cable as per requirement
- g) Earthing
- h) Lightning Arrester
- i) Remote monitoring system
- j) Installation & commissioning

SPV panel (array), should be mounted on a suitable structure with a provision of three times manual tracking, AC/DC, submersible Motor pump set with a suitable inverter/controller with a provision of remote monitoring of the pump, electronics (MPPT, Inverter, Electronics Protections), interconnected cables, on-off switch, G.I./RMPE riser Pipe / suction pipe & all required accessories, fittings.

Storage batteries will not constitute a part of the SPV Water Pumping System.

Components and parts used in the SPV water pumping system including the PV modules, pumps, metallic structures, cables, junction box, switch, Electronics could include Maximum Power Point Tracker (MPPT), Inverter and Electronic Protection etc. should confirm to the MNRE/BIS / IEC / international specifications, wherever such specifications are available and applicable.

##### B. GENERAL:

- Option for variable operating head from 10-100m.
- Solar panels will be connected to submersible/ AC/DC pumps directly.
- The system should be suitable for 100mm and above/onward bore size.
- Riser Pipe / Suction pipe shall have G.I./RMPE pipe confirming to IS 1239 / IS4984 standard.



## Request for Proposal for Drinking Water Solar Pumps

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- Cable should be as per IS 694 duly ISI marked.
- Junction Boxes/Enclosures, as per IP 54 (for outdoor)/IP21 (for indoor) specifications
- Protections required
  - a) Dry run protection
  - b) Over and under voltage protection
  - c) Overload Protection
  - d) Temperature Protection

### A. Introduction:

These specification covers design qualifications and performance specifications for Centrifugal Solar Photo Voltaic (SPV) Water Pumping Systems to be installed on a suitable bore-well, open well, water reservoir, water stream, etc., and specifies the minimum standards.

### B. PV ARRAY

- a) The SPV water pumping system should be operated with a PV array capacity in the range of 200 watt peak to 10000 watt peak, measured under Standard Test Conditions (STC). Sufficient number of modules in series and parallel could be used to obtain the required PV array power output. The power output of individual PV module used in the PV array, under STC, should be a minimum of 200 watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.
- b) Solar PV module (s) containing mono/multi crystalline silicon solar cells with following features should be used in the PV array for the SPV Water Pumping systems:
- c) Modules supplied with the SPV water pumping systems should have certificate as per IS14286/ IEC 61215 specifications or equivalent National or International Standards . STC performance data supplied with the modules shall not be more than one year old.
- d) Modules must qualify to IEC 61730 Part I and II for safety qualification testing.
- e) The efficiency of the PV modules should be minimum 14% and fill factor should be more than 70%.
- f) Modules must qualify to IEC TS 62804-1:2015 for the detection of potential-induced degradation - Part 1: Crystalline silicon (Mandatory in case the SPV array voltage is more than 600 V DC).
- g) Module to Module wattage mismatch in the SPV array mismatch shall be within  $\pm 3$  percent.
- h) Variation in overall SPV array wattage from the specified wattages shall be within zero percent to +10 percent.

## Request for Proposal for Drinking Water Solar Pumps

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- i) The PV Modules must be warranted for output wattage, which should not be less than 90% of the rated wattage at the end of 10 years and 80% of the rated wattage at the end of 25 years.
- j) The terminal box on the module should have a provision for “Opening” for replacing the cable, if required.
- k) There should be a name plate, conform the IS14286/IEC61215 , fixed inside the module which will give:
  - 1) Name of the manufacturer or distinctive logo.
  - 2) Model number
  - 3) Serial number
  - 4) Year of manufacture

C. Motor pump set (submersible):

DC motor pump set (with brushes or brushless DC)

OR

A.C. induction motor pump set with a suitable inverter.

- a) The pump and all external parts of motor used in submersible pump which are in contact with water, should be of stainless steel of grade 304 or higher as required. The motor- pump set should have a 5 years warranty and therefore, it is essential that the construction of the motor and pump should be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years of operation after installation.
- b) The suction/ delivery pipe shall be of HDPE or uPVC column pipes of appropriate size, electric cables, floating assembly, civil work and other fittings required to install the Motor Pump set. In case of HDPE pipes the minimum pressure rating of 8 kg/sqcm-PE100 grade for pumps up to 3 HP, 10 kg/sqcm-PE100 grade for 5 HP pumps and further higher minimum pressure rating for above 5 HP as appropriate shall be used.

D. Electronics:

- a) Maximum power point tracker (MPPT)
- b) Inverter for A.C. motor (appropriate electronic controller in case of B.L.D.C.) Electronic protections.
- c) Interconnect cables and
- d) “on/off “switch.

### E. **PERFORMANCE SPECIFICATIONS AND REQUIREMENTS**

- 1) Solar PV water pumps with PV module capacity in the range of 900 watt to 10 KWp may be installed on a suitable bore-well/open well/water reservoir/water stream etc.
- 2) Under the “Average daily solar radiation” condition of 7.15KWh/sq.m. on the of PV array (i.e. coplanar with the PV Modules), the minimum water output from a solar water pumping system at different “Total dynamic heads” should be as specified below:

- **For D.C. Motor Pump Set with Brushes or Brush less D.C.(B.L.D.C.)**

- a. 110 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 metres (Suction head, if applicable, minimum of 7 metres) and with the shut off head being at least 12 metres.
- b. 55 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 metres (Suction head, if applicable, up to a maximum of 7 metres) and with the shut off head being at least 25metres.
- c. 38 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 metres and the shut off head being at least 45metres.
- d. 23 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 metres and the shut off head being at least 70metres.
- e. 15 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 metres and the shut off head being at least 100metres.
- f. 10.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 metres and the shut off head being at least 150metres.

- **For A.C. Induction Motor Pump Set with a suitable inverter**

- a. 99 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 metres (Suction head, if applicable, minimum of 7 metres) and with the shut off head being at least 12 metres.
- b. 49 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 metres (Suction head, if applicable, up to a maximum of 7 metres) and with the shut off head being at least 25metres.
- c. 35 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 metres and the shut off head being at least 45metres.
- d. 21 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 metres and the shut off head being at least 70metres.
- e. 14 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 metres and the shut off head being at least 100metres.
- f. 9 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 metres and the

shut off head being at least 150metres.

- i. The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.
- ii. Indicative performance specifications for the shallow and deep well SPV water pumping systems are given in the the tables at XIII and XIV.

### F. **MOTOR PUMP SET**

- i. The SPV water pumping systems may use any of the following types of motor pump set:
  - a. Submersible motor pumpset
  - b. Floating motor pumpset
  - c. Any other type of motor pump set after approval from Test centers of the Ministry.
- ii. The “motor pump set” should have a capacity in the range of 1 hp to 10 hp and should have the following features:
  - a. Submersible pumps with D.C. Motor Pump Set with Brushes or Brush less D.C.(B.L.D.C.)/ With A.C. Induction Motor Pump Set and a suitable Inverter according to the dynamic head of the site at which the pump is to be used.
  - b. The motor of the capacity ranging from 1 hp to 10 hp should be AC, PMDC or BLDC type. The suction and delivery head will depend on the site specific condition of the field.
- iii. The manufacturers of the pumps should self certify that the pump and all external parts of the motor used in submersible pump which are in contact with water, are of stainless steel. The pump used for solar application should have a 5 years warranty so it essential that the construction of the pump be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years.
- iv. Provision for remote monitoring of the installed pumps must be made in the controller or the inverters either through an integral arrangement or through an externally fitted arrangement. It should be possible to ascertain the daily water output, the power generated by the PV array, the “UP TIME” of the pump during the year, number of the days the pump was unused or under breakdown/repairs.
- v. The following details should be marked indelibly on the motor pumpset
  - a. Name of the Manufacture or Distinctive Logo.
  - b. Model Number.
  - c. Serial Number.
- vi. The suction /delivery pipe (GI/RMPE), electric cables floating assembly, civil work and other fittings required to install the motor pump set.

### **G. MOUNTING STRUCTURES AND TRACKING SYSTEM**

- i. PV array should be mounted on a suitable structure with a provision of tracking the sun.
- ii. The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The raw material used and process for manufacturing of module mounting structure including welding of joints should conform to applicable IS. The module mounting structure should be hot dip galvanized according to IS 4759. Zinc content in working area of the hot dip galvanizing bath should not be less than 99.5% by mass.
- iii. To enhance the performance of SPV water pumping systems arrangement for seasonal tilt angle adjustment and three times manual tracking in a day should be provided. In order to make structure rigid, the gap between Telescopic pattern supports should be minimal, further, for bearing of center load of whole structure only pins should be used instead of threaded bolts.
- iv. The general hardware for structure fitment should be either SS 304 or 8.8 grade. Modules should be locked with anti theft bolts of SS 304 Grade. Foundation should be as per the site condition, based on the properties of Soil. Foundation can be done either with the help of 'J Bolt' (refer IS 5624 for foundation hardware) or direct pilling, it should be decided as per the site and relevant IS i.e. IS 6403 / 456 / 4091 / 875 should be referred for foundation design
- v. Please, refer MNRE guidelines of year 2019 published in July , for Specifications of Dual Axis Manual Tracking Type Module Mounting Structure (MMS) for Solar Pumping System.

### **I. ELECTRONICS AND PROTECTIONS:**

- i. Maximum Power Point Tracker (MPPT) should be included to optimally use the Solar panel and maximize the water discharge.
- ii. Inverter could be used, if required, to operate an A.C. pump. The inverter must have IP 65 protection or must be housed in a cabinet having IP 65 protection.
- iii. Controller for BLDC motor driven pumps, if required be used. The controller must have IP 65 protection or must be housed in a cabinet having at least IP 65 protection.
- iv. Adequate protections shall be provided in the SPV Controller to protect the solar powered pump set against the following:
  - a. Dry running;

- b. Open circuit;
    - c. Accidental output short circuit;
    - d. Under voltage;
    - e. Reverse polarity;
    - f. SPD to arrest high current surge; and
    - g. Lightening arrestor.
    - h. Temperature Protection
  - vi. Adequate protection should be incorporated against lighting and hails and storms.
  - vii. A good reliable DC Circuit Breaker as per IS/IEC 60947-2 suitable for switching DC power ON and OFF shall be provided in the SPV Controller. It Should be in between Solar panels and controller.
  - viii. All cables used shall be as per IS 694. Suitable size of cable shall be used in sufficient length for inter-connection between the SPV array to SPV Controller and the SPV Controller to solar powered pump set. Selection of the cable shall be as per IS 14536.
  - ix. Controller shall be integrated with GSM/GPRS Gateway with Geo tagging. GSM/ GPRS Charges to be included in the Costing till the end of Warranty period of the Pump set.
  - x. Controller must have LCD Display. All Parameters and Faults/Protections should be clearly indicated on Display such as if controller shutdown with short circuit, it must clearly indicate on display as "Short Circuit" (No short cuts such as F1, F2 or any other indications). Below parameters must be appear on Display ON/OFF Status –
    - a. Solar DC Voltage in Volts
    - b. Solar DC Current in Amps
    - c. DC Energy in Kwh
    - d. Output Currents in Amps (minimum 2-Phases)
    - e. Rotating Frequency in Hz
    - f. All Faults/Protection Status
    - g. Cumulative Total Water Output in litres
    - h. Pump On/Off Status
  - xi. All parameters (as detailed above) from the Controller shall be pushed to Bidder's cloud/web server for every 15 minutes and the same to be maintained for the entire warranty Period. The access of this server shall be provided to MPUVN.
- K. ON/OFFSWITCH:
- A good reliable switch suitable for DC use is to be provided. Sufficient length of cable should be provided for inter connection of the PV array, controller/inverter and the motor pump set.

L. Earthing Arrangement:

- a) Earthing of the motor shall be done as per IS 9283 in accordance with the relevant provisions of IS 3043. Separate earthing shall be provided for Controller, pump and SPV array.
- b) For safety purpose, it shall be ensured during installation that the earthing is capable of taking care of leakage current.
- c) In case of uPVC/HDPE pipes used as discharge pipe, a separate non-corrosive, low resistance conductor from motor earth terminal to control panel earth terminal shall be provided for earthing.
- d) A lightning arrestor shall be provided with every SPV Water Pumping System.

M. **WARRANTY**

The PV modules used in solar pumping systems must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. The whole system including submersible/ pumps shall be warranted for 5 years.

N. **Operation and Maintenance Manual**

An Operation and Maintenance Manual, in English and the local language, should be provided with the solar PV pumping system. The manual should have information about solar energy, photovoltaic, modules DC/AC motor pump set, tracking system, mounting structures, electronics and switches. It should also have clear instructions about mounting of PV module, DO's and DONT's and on regular maintenance and trouble shooting of the pumping system. Name and address of the person or centre to be contacted in case of failure or complaint should also be provided. A warranty card for the modules and the motor pump set should also be provided to the beneficiary.

**Notes**

- 1) Wherever the "water table" or the level of the water in the reservoir or the water source (e.g. Diggee) from which the water is to be pumped, is within 10 metres depth, ' motor pump sets "should be preferred.
- 2) The type of pump set used must match the total dynamic head requirement of the site (i.e. the location at which it is installed). Moreover, it should be appropriately tested and certified by the authorized test centres of the ministry to meet the performance and water discharge norms specified in section II above.
- 3) There should not be any compulsion to use only one or the other type of motor pump set. The beneficiary may select an appropriate model (i.e. capacity of PV array and type of motor pump set) as per site requirement.

## Request for Proposal for Drinking Water Solar Pumps

### *Indicative Technical Specifications of Solar Deep well (submersible) Pumping Systems, with D.C. Motor Pump Set with Brushes or Brush less D.C.(B.L.D.C.)*

Description	PV array	Motor, Capacity	Shut off dynamic head	Water Output*
Model I	1200 Wp	1 H.P. Submersible with controller	45 Metres	45,600 Litres per day from a total head of 30 mtrs
Model II	1800 Wp	2 H.P. Submersible with controller	45 metres	68,400 litres per day from a total head of 30 mtrs
Model III	3000 Wp	3 H.P. Submersible with controller	45 Metres	114,000 litres per day from a total head of 30 mtrs
Model IV	3000 Wp	3 H.P. Submersible with controller	70 Metres	69,000 litres per day from a total head of 50 mtrs
Model – V	3000 Wp	3 H.P. Submersible with controller	100 Metres	45,000 Litres per day from a total head of 70 mtrs
Model- VI	4800 Wp	5 H.P. Submersible with controller	70 metres	110,400 litres per day from a total head of 50 mtrs
Model-VII	4800 Wp	5 H.P. Submersible with controller	100 Metres	72,000 litres per day from a total head of 70 mtrs
Model-VIII	4800 Wp	5 H.P. Submersible with controller	150 Metres	50,400 litres per day from a total head of 100 mtrs
Model- IX	6750Wp	7.5 H.P. Submersible with controller	70 metres	1,55,250 litres per day from a total head of 50



## Request for Proposal for Drinking Water Solar Pumps

Description	PV array	Motor, Capacity	Shut off dynamic head	Water Output*
				metres
Model- X	6750Wp	7.5 H.P. Submersible with controller	100 metres	1,01,250 litres per day from a total head of 70 metres
Model-XI	6750Wp	7.5 H.P. Submersible with controller	150 metres	70,875 litres per day from a total head of 100 metres
Model-XII	9000Wp	10 H.P. Submersible with controller	70 metres	2,07,000 litres per day from a total head of 50 metres
Model-XIII	9000Wp	10 H.P. Submersible with controller	100 metres	1,35,,000 litres per day from a total head of 70 metres
Model- XIV	9000Wp	10 H.P. Submersible with controller	150 metres	94,500 litres per day from a total head of 100 metres

\* Water output figures are on a clear sunny day with three times tracking of SPV panel, under the “Average Daily Solar Radiation” condition of **7.15 KWh/ sq.m. on the of PV array (i.e. coplanar with the PV Modules)**.

Notes:

- 1) For higher or lower head/PV capacity or in between various models, water output could be decided as per performance specifications and requirement specified earlier.
- 2) If pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified.
- 3) Mounting structure shall be MS hot dipped galvanized, with a facility of manual tracking at least three times a day.

***Indicative Technical Specifications of Solar Deep well (submersible) Pumping Systems With A.C. Induction Motor Pump Set and a suitable Inverter***

## Request for Proposal for Drinking Water Solar Pumps

Description	PV array	Motor Capacity	Shutoff dynamic head	Water Output*
Model I	1200 Wp	1 H.P. Submersible with controller	45 Metres	42,000 Litres per day from a total head of 30 mtrs
Model II	1800 Wp	2 H.P. Submersible with controller	45 metres	63,000 litres per day from a total head of 30 mtrs
Model III	3000 Wp	3 H.P. Submersible with controller	45 Metres	1,05,000 litres per day from a total head of 30 mtrs
Model IV	3000 Wp	3 H.P. Submersible with controller	70 Metres	63,000 litres per day from a total head of 50 mtrs
Model – V	3000 Wp	3 H.P. Submersible with controller	100 Metres	42,000 Litres per day from a total head of 70 mtrs
Model- VI	4800 Wp	5 H.P. Submersible with controller	70 metres	1,00,800 litres per day from a total head of 50 mtrs
Model-VII	4800 Wp	5 H.P. Submersible with controller	100 Metres	67,200 litres per day from a total head of 70 mtrs
Model-VIII	4800 Wp	5 H.P. Submersible with controller	150 Metres	43,200 litres per day from a total head of 100 mtrs
Model- IX	6750Wp	7.5 H.P. Submersible with controller	70 metres	1,41,750 litres per day from a total head of 50 metres
Model- X	6750Wp	7.5 H.P. Submersible with controller	100 metres	94,500 litres per day from a total head of 70 metres
Model-XI	6750Wp	7.5 H.P. Submersible	150 metres	60,750 litres per day