78
09/01/16

उप विकास आयुक्त
07 JAN 2016
जमुई

DDC
जिला दण्डाधिकारी एवं पदाधिकारी
06 JAN 2016
जमुई

पत्रांक–संचिका सं0–12–38 / 15 4096 / क्षेत्रीय स्था0

आयुक्त कार्यालय, मुंगेर प्रमंडल, मुंगेर।

(क्षेत्रीय स्थापना शाखा)

प्रेषक,

आयुक्त के सचिव,
मुंगेर प्रमंडल, मुंगेर।

सेवा में,

सभी जिला पदाधिकारी,
मुंगेर प्रमंडल, मुंगेर।

मुंगेर, दिनांक–29 / 12 / 2015

विषयः– **Selection of Training Institutes for "suryamitra" Skill Development Program**

प्रसंगः– **Director, BREDA Patna** के पत्रांक–1352, दिनांक–13.10.2015

महाशय,

निदेशानुसार उपर्युक्त विषय के प्रसंग में बिहार रेन्युएवल एनर्जी डेवलपमेंट ऐजंन्सी, पटना के पत्रांक–1352, दिनांक–13.10.2015 की छायाप्रति अनुलग्नक सहित संलग्न की जाती है।

कृपया प्रश्नगत मामलें में अपने स्तर से बिहार रेन्युएवल एनर्जी डेवलपमेंट ऐजंन्सी पटना के पत्र में दिये गये निदेश के आलोक में सक्षम प्रशिक्षण संस्थान का नाम नामित करने की कृपा की जाय।

विश्वासभाजन,

29.12.15

आयुक्त के सचिव,
मुंगेर प्रमंडल, मुंगेर।

15

Bihar Government
Bihar Renewable Energy Development Agency
(A Govt. Agency Under Energy Department)

3rd Floor, 'Sone Bhawan'
Birchand Patel Marg, Patna-800001
Web - www.breda.in Email id:- breda@breda.in
Tel no - 0612-2507734 fax no -0612-2506572

Letter no- 1352 Dated- 13/10/2015

From,

Director,
BREDA, Patna.

To,

The Divisional Commissioner,
Munger.

Sub: Selection of Training Institutes for "Suryamitra" Skill Development Program

Dear Sir/Madam,

Ministry of New and Renewable Sources (MNRE), Government of India, intends to create 50,000 "Suryamitras" across the country, skilled in installation, commissioning and O&M in the field of renewable energy with special focus on Solar Energy. A total of 2500 no of "Suryamitras" are to be trained from the state of Bihar, for this 6 no. of training institutes is to be selected from the state. We are in the process of finalizing the institutes for training.

Detail information of the program is given in the documents attached for your kind reference.

Your guidance is solicited for nominating compatible institutions for training form your location.

Thanking You.

Yours faithfully,

Director,
BREDA, Patna.

Enclosures:

1. Letter from NISE
2. Selection of Training Institutes for Suryamitra Skill Development Program
3. Module 5
4. Check list for Infrastructure

14

राष्ट्रीय सौर ऊर्जा संस्थान
National Institute of Solar Energy

NISE

04/1/SKD-NISE/2015-16

To,
All State Nodal Agencies

Date: 14.08.2015

Sub Regarding "*Suryamitra*" Skill Development Program.

Sir,

As you are aware that MNRE intends to create 50,000 "Suryamitras" across the country skilled in installation, commissioning and O&M in the field of renewable energy with special focus on solar NISE will coordinate the program in collaboration with State Nodal Agency in each state. In this regard a progress review meeting was held at MNRE wherein the Joint Secretary directed following points to be implemented during the "Suryamitra" skill development program at each state.

(i) Every State Nodal Agency should designate a Nodal Officer for this training program. Nodal officer's name, designation and contact details should be informed to NISE and MNRE.

(ii) During selection of the participants, special emphasis to be given to Women and reservation category. SNA has to provide the category-wise information to NISE before the start of the program.

(iii) The program is only for 10+2 passed ITI/diploma holders. Candidate holding higher degree should not be allowed under any circumstances. Out of 3 month of course duration, 2 months would be in classroom and lab activity and 1 month would be industry exposure.

(iv) The sanctioned budget for each program is Rs 12.84 lakh. SNA has to organize the program within the sanctioned amount. The budget, in any case, will not be exceeded.

(v) The program is strictly residential, therefore the training institute proposed by SNAs should have accommodation, food facility, proper security, separate arrangements for boys & girls.

(vi) A state wise targets including number of participants, training batches is also enclosed. SNAs are requested to propose more training institutes to achieve their targets.

Enclosed: as above

Regards,

Dr. O.S. Sastry
Director General, NISE

Statewise breakup of Surya Mitra

State/UT	Number of Surya Mitra	Number of training programmes	Number of programmes per annum	Number of training institutes	Number of trainers
[illegible]	500	[illegible]	5	[illegible]	3
[illegible]	1000	33	[illegible]	[illegible]	0
[illegible]	500	17	3	[illegible]	[illegible]
[illegible]	700	23	5	[illegible]	[illegible]
[illegible]	2000	67	13	[illegible]	4
[illegible]	2500	83	17	6	12
[Madhya Pradesh]	5000	[illegible]	33	6	12
[illegible]	500	17	3	11	[illegible]
[illegible]	100	3	1	1	1
[illegible]	400	13	3	0	0
[Punjab]	2000	67	13	1	3
[Chhattisgarh]	2000	67	13	4	13
Andhra Pradesh	4000	133	27	4	13
[Telangana]	4000	133	27	9	22
[illegible]	10	0	0	9	22
[illegible]	10	[illegible]	0	0	0
[Uttar Pradesh]	4000	133	27	0	[illegible]
[illegible]	2500	83	17	[illegible]	[illegible]
[illegible]	2000	67	13	6	17
[illegible]	2500	83	17	4	13
[Puducherry]	50	2	0	9	17
[illegible]	2500	83	17	0	0
[Jharkhand]	2000	67	13	6	17
Odisha	2500	83	17	4	13
West Bengal	2500	83	17	6	17
[Sikkim]	200	7	1	5	17
[illegible]	2500	83	17	[illegible]	1
[illegible]	500	17	3	[illegible]	[illegible]
[illegible]	250	8	2	[illegible]	[illegible]
[illegible]	200	7	1	1	[illegible]
[illegible]	250	8	2	[illegible]	2
Arunachal Pradesh	200	7	1	1	2
[illegible]	200	7	1	0	1
Andaman & Nicobar	300	10	1	0	1
[illegible]	100	3	1	0	1
[illegible]	50270	1676	335	112	135

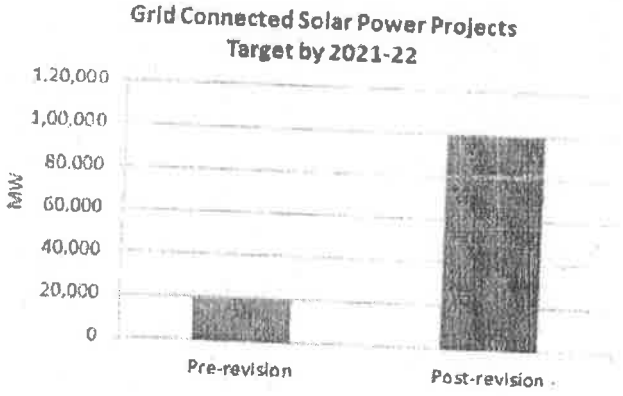
NISE

Selection of Training Institutes for "Suryamitra" Skill Development Program

Background

Govt. of India has decided to revise the National Solar Mission target of Grid Connected Solar Power Projects from 20,000 MW to 1,00,000 MW by the year 2021-22. A huge number of trained manpower is required to achieve the target.

Ministry of New and Renewable Sources (MNRE), Government of India, intends to create 50,000 numbers of "*Suryamitras*" across the country.



- *Suryamitras – trained manpower* will be skilled in – Installation, Commissioning and Operation & Maintenance in the field of renewable energy with special focus on solar energy.
- A total 2,500 numbers of *Suryamitras* are to be trained in the state of Bihar.
- 6 numbers of training institutes are to be selected for the programme from the state of Bihar.

Implementing Body

- National Institute of Solar Energy (NISE) is coordinating the programme in collaboration of State Nodal Agencies (SNA) in each state.
- Bihar Renewable Energy Development Agency (BREDA) is designated as State Nodal Agency (SNA) for Bihar.
- SNA will identify suitable institutions having necessary infrastructure.
- NISE will finalize the institute based on its background and merit.

Program

- 2,500 numbers of *Suryamitras* are to be trained from Bihar
- 6 numbers of training institutes are to be selected in Bihar
- Each training institute will organise 3 numbers of training batches per annum
- Each batch will be comprising of 30 numbers of participants
- Duration of each batch will be 3 months
- The program is strictly residential

Selection Criteria

- The programme is to be implemented in collaboration with SNA through Govt. Institutes/ Statutory Bodies/ Govt. aided institutes/ Govt. Training Partners etc.
- The institutions must have necessary infrastructure i.e. class rooms, workshops, boarding and lodging facilities, trained faculties in R.E.

- The program is strictly residential; therefore the training institute should have accommodation, food facility, proper security, separate arrangement for boys and girls.
- A detail is given in Module – V.

Necessary Infrastructure

- A class room with basic teaching aids – white board, table 6' x 3' and sitting arrangement for participants.
- A shadow free ground flat area – practical area 1200 m2, workshop 360 m2.
- Different type of PV facility for training like – Fixed, Seasonal Tilt, Horizontal axis Tracker & Dual axis Tracker
- Various type of Module like – Thin Film, Crystalline and Bifacial. (Total 10 kW).
- LCD Projector & Screen.
- Tools & equipment as per Module – V
- Demo equipment as per Module – V
- Safety & Protective Equipment as per Module – V

Instructors Qualification

- Degree in Electrical Engineering with one year experience in Solar PV Project
  OR
- Diploma in Electrical Engineering with Two years in Solar PV Projects
  OR
- NTC/NAC in Electrician trade with 5 year Experience as Solar PV Technician

Budget

- The sanctioned budget for each program is Rs. 12.84 Lakh with 600 hours of training for 30 participants. The break-up for Rs. 12.84 Lakh is as follows –
- SNA has to organise the programme within the sanctioned amount.
- The budget, in any case, will not be exceeded.

Particulars	Unit	Value
Numbers of *Suryamitras* are to be trained from Bihar	Nos.	2500
No. of Institutes	Nos.	6
No. of Participants in each Batch	Nos.	30
No. of Batches to be conducted by each institute	Nos.	14
Sanctioned budget for each program	Lakh Rs.	12.84
Approximate budget for each Institute	**Lakh Rs.**	**180**

Dispersion of Fund

- NISE shall release the funds to SNA in two instalments –
  - 1st instalment of 50 % shall be released after the commencement of the training programme.
  - 2nd instalment shall be released after providing UC in GFR 19-A for the expenditure.
- NISE shall be monitoring the training programme through their staff, SNA and provide certificate to the participants.

GENERAL INFORMATION FOR THE MODULE-5

Solar PV Installer& Service Provider (ITI Candidate)

Name Of Sector	RENEWABLE ENERGY
Name of Module	Solar PV Technician
MES Code	RNE 805
Competency as per N C O Code	
Duration of Course	600 hrs including 100 hrs of Soft & Entrepreneurship Skills
Entry Qualification of	Min. 10th Pass + ITI in Electrician/ Wireman/
Trainee	Electronics Mechanic/Fitter/Sheet Metal.
Unit Size (No of trainees)	20
Power Norms	10kW
Space Norms	Ground size:1200 Sqmtr
(Workshop and Class Room)	Work Shop: 360 Sqmtr
	Class Room: 40 Sqmtr
Instructors Qualification	
	1. Degree in Electrical Engineering with one year experience in Solar PV Project OR 2. Diploma in Electrical Engineering with Two years in Solar PV Projects OR 3. NTC/NAC in Electrician trade with 5 year Experience as Solar PV Technician

MODULE-5		
1.	Name of the Module	: Solar PV Technician
2.	Sector	: Renewable Energy
3.	Code	: RNE 805
4.	Entry Qualification	: 10th + ITI in Electrician, Electronics Mechanic,
5.		Fitter, Turner, Machinist, sheet metal or welder.
6.	Age	: 18 Years and above
7.	Terminal Competency	: After completion of Course Trainees may be able to:
		d. Know the basics of Electricity & solar Electricity
		e. Operate Solar System & Maintain them
		f. Work for execution project
		g. Plan & Install Solar PV Electrical System
		h. Testing and Commissioning of Solar plant
		i. Check all equipment and part with safety
8.	Duration	: 600 hrs including 100 hrs of Soft & Entrepreneurship Skills
9.	Contents:	

Sr. No.	Underpinning Knowledge (Theory)	Practical Competencies
1.	a. Electrical Safety Electrical safety Rules, Simple First Aid , General safety of tools and equipment PPEs , Fire extinguishers, Type of fire extinguishers b. Electricity Basics c. Introduction to Conventional & Nonconventional source of energy	Introduction of Institute, Display Room Visit, solar training yard visit, Demonstration of energy sources Tools Introduction & type of tools:- 1. Safety tools 2. Marking tools 3. Measuring tools 4. Testing tools 5. Working tools
2.	a. Fundamental of Earthling system b. PV module, Fundamental types of modules and its applications, PV components and Configuration etc. c. System components & inspection d. Site selection , suitability & Planning e. Basic understanding of protection system such as fuse, circuit breaker, relay etc. f. Basic understanding of CT, PT, LA, Switchgear, isolator, ABT meter etc.	Study of Solar photovoltaic cell & solar photovoltaic module, type and size 1 Solar Photovoltaic system 2 Types of solar photovoltaic systems 3 Grid connected Solar PV system, 4 Grid connected with battery back-up solar PV system 5 Off Grid connected Solar PV system 6 Standalone Solar PV
3.	a. Handling and Storage of DC components	Safe handling practices
4.	Reading of drawing and Specifications for the followings a. Civil Foundation or Ramming b. Structure Erection and Module Mounting c. Cabling from Module to Inverter Room d. Inverter and Transformer Installation and	Structure member, cable, cable laying, Types of cable laying-: 1. Open area cable laying 2. Underground cable laying a. Direct laying b. Laying in pipe

	Connection e. Reading of Single Line Diagram (SLD)	c. Solid method Installation of inverter, LT panel Transformer, types of Transformer a. Power Transformer b. Distribution Transformer c. Auto Transformer d. Instrumentation transformer PV module Series & parallel connection & testing
5.	a. Basic knowledge about Tools & Tackles required b. for PV plant installation c. Performance analysis and troubleshooting monitoring of generation per string incoming & outgoing power at junction box & Inverter level. d. Requirement & Uses of Tools & Tackles. Basic knowledge of Ammeter Voltmeter, clamp meter, tong tester, Irradiance sensor, temperature sensors.	Use of tools and tackles and safe application practices a. Voltmeter b. Amp meter c. MultiMate d. Tong tester (AC/DC side testing)
6.	Preparation of work statement & documents for the followings: a. Foundation- P&M, Tools & Tackles b. Structure Erection- P&M, Tools & Tackles c. Module Mounting- Module Sorting, Tools & d. Tackles e. Cable Trenching & Conduit Laying- P&M, Tools & f. Tackles g. Cable Laying & Termination- Tools & Tackles, Pre h. Requisite i. Cable tray & cable laying j. SCADA & Control System k. End termination of power cable (LT/ HT) l. Junction box Installation- Basic knowledge m. Inverter Erection- Tools & Tackles n. Battery installation& maintenance o. Installation of AC Equipment	Dismantle of Module mounting structure and fixing of the same. Proper alignment and tightening. Fixing of module and its connection. Installation of balance equipment and End termination Power cable. Cable Gland- Types of Cable Gland a. Single compression Cable Gland b. Double compression Cable Gland c. Installation of Junction String testing DC Side box
7.	Inspection, Testing & Commissioning Purpose for Inspection & testing Tools / Instruments Required Procedure and Work Method	Installation of electrical substation Pole Erection, Types of pole Grid Fundamental AC & DC Working AC Side Testing DC Side Testing Cable tray , types of cable tray & Cable tray Erection Battery, types of battery, Installation of battery Installation of HT & LT Control panels,
8.	Study of work method & document for the followings a. String Testing- Pre-checks	Fundamental of earthing system, types of earthing, Installation of earthing & earthing testing

	b. Short Circuit Test- Work Method c. Inverter Testing- Work Method d. Check list preparation e. Pre -requirement of installation of sub-station equipment f. Basics and erection of transformers, pole erection and stringing	
9.	Quality: Introduction, quality Management systems requirement	Site selection, suitability & planning, Fundament of site survey direction shadow effect.
10.	Operation & Maintenance a. Introduction and Over view of PV System b. Equipment's under AC Side & DC Side and regular maintenance c. General Safety Guidelines for O&M d. Soft & Entrepreneurship skills	Solar PV module cleaning & testing Inverter testing, Battery testing, Cell voltage testing, HT&LT Panel testing, earthing testing Cable testing, Transformer condition monitoring.

Infrastructure

1. A Class room with basic teaching aids- white board, table 6'x3' and sitting arrangement.
2. A shadow free ground flat area, practical area 1200 sqmtr, workshop 360 sqmtr
3. Different type of PV facility for training like Fixed, Seasonal Tilt, Horizontal axis Tracker & Dual axis Tracker
4. Various type of Module like Thin Film, Crystalline and Bifacial. Total 10 kW.
5. LCD Projector& Screen.

List of Tools& Equipment for a batch of 20 trainees:

Sr. No.	Name of Tools & Instruments	Quantity (Nos.)
1.	Tool kit	As per requirements
2.	Double ended flat spanner	2 set
3.	Double ended ring spanner	2 set
4.	Combination pliers	4
5.	Side cutting pliers	4
6.	Nose pliers	4
7.	Wire stripper	4
8.	Electrician knife	10
9.	Hack saw frame with blade	4
10.	Hand crimping tools	2
11.	Cable cutter	1
12.	Screw driver	4
13.	Water level	5
14.	Measuring tape	1
15.	Centre punch	1
16.	Standard wire gauge	1
17.	Vanier calliper	1
18.	Line dori	2
19.	Chisel	1
20.	Drill m/c	2
21.	Plumb bob	2
22.	Sprit level	2
23.	Flat file	2
24.	Round file	2
25.	Triangle file	2
26.	Hand saw	2
27.	PVC mallet	2
28.	Ball pin hammer	4
29.	Fuse puller	1
30.	Safety helmet	As per requirement
31.	Safety souse	4
32.	Safety belt	As per requirement
33.	Nose mask	5
34.	Safety goggles	As per requirement
35.	Ear plug	2
36.	PVC hand glove	10
37.	Cotton hand glove	10
38.	Reflective jacket	5
39.	Tong tester AC/DC	2
40.	MULTIMETER	2
41.	Megger	2
42.	Earth tester	2
43.	Water testing instrument (TDS meter)	1
44.	Earthing Rod	1
45.	Soldering Iron & Flux	5
46.	Phase Sequence Meter	2

Demo Equipment

Sr. No.	Name of Tool & Instrument
1.	Tool kit
2.	Double ended ring spanner
3.	Combination pliers
4.	Side cutting pliers
5.	Nose pliers
6.	Wire stripper
7.	Electrician knife
8.	Hack saw frame with blade
9.	Hand crimping tools
10.	Cable cutter
11.	Screw driver
12.	Water level
13.	Measuring tape
14.	Centre punch
15.	Standard wire gauge
16.	Vanier calipash
17.	Line dori
18.	Chisel
19.	Drill m/c
20.	Plumb bob
21.	Sprit level
22.	Flat file
23.	Round file
24.	Triangle file
25.	Hand saw
26.	Pvc mallet
27.	Ball pin hammer
28.	Fuse puller
29.	Safety helmet
30.	Safety souse
31.	Safety belt
32.	Nose mask
33.	Safety goggles
34.	Ear plug
35.	PVC hand glove
36.	Cotton hand glove
37.	Reflective jacket
38.	Tong tester AC/DC
39.	MULTIMETER
40.	Megger
41.	Erath tester
42.	End termination of power cable
43.	Cable tray Erection
44.	Structure with module mounting

Safety & Protective Equipment

Sr. No.	Name of Tools & instruments	Quantity (Nos.)
1.	Safety helmet	As per requirement
2.	Safety souse	As per requirement
3.	Safety belt	As per requirement
4.	Nose mask	As per requirement
5.	Safety goggles	As per requirement
6.	Ear plug	As per requirement
7.	PVC hand glove	As per requirement
8.	Cotton hand glove	As per requirement
9.	Reflective jacket	As per requirement
10.	First aid kit	As per requirement
11.	Gum boots	As per requirement

Course Module

Solar PV Technician

Sr. No.	Date		Theory (No. of Days)	Course Module	Module Number	Practical (No. of Days)	Period Hours	
	From	To					Theory	Period Hours
1.			2	Electrical Safety Electrical safety Rules, Simple First Aid , General safety of tools and equipment PPEs, Fire extinguishers, Type of fire extinguishers	S-1	2	1	7
2.			3	Electricity Basics	S-2	3	1	7
3.			2	Fundamental of earthing system	S-3	2	1	7
4.			5	PV module Fundamentals types of modules and its applications, PV components and configuration etc.	S-4	5	1	7
5.			2	Introduction to Solar Photovoltaic. , Basic Principle of Photovoltaic Tech.	S-5	2	1	7
6.			3	PV System Sizing series & parallel Fundamental, temperature coefficients of current, voltage and power fundamental	S-6	3	1	7
7.			3	Performance analysis and troubleshooting monitoring of generation per string incoming & outgoing power at junction box & Inverter level.	S-7	3	1	7
8.			3	Requirement & Uses of Tools & Tackles. Basic	S-8	3	1	7

				knowledge of Ammeter Voltmeter, clamp onmeter tong tester Irradiance sensor temperature sensors				
9.			2	Cable tray & cable laying	S-9	2	1	7
10.			2	SCADA & Control System	S-10	2	1	7
11.			5	End termination of power cable (LT/ HT)	S-11	5	1	7
12.			5	Commissioning & testing	S-12	5	1	7
13.			4	Structure erection	S-13	4	1	7
14.			3	Battery installation& maintenance	S-14	3	1	7
15.			2	Check list preparation	S-15	2	1	7
16.			2	Pre -requirement of installation of sub-station equipment	S-16	2	1	7
17.			5	Basics and erection of transformers, pole erection and stringing	S-17	5	1	7
18.			5	Foundation-reinforcement& shutting	S-18	5	1	7
19.			5	Operation & Maintenance	S-19	5	1	7
20.			12	Soft & Entrepreneurship Skills	S-20	12	1	7

Check List for Infrastructure

Please mark a tick in Available/ Not-available column against the facilities and specification as per availability or non-availability in your institute.

Facilities	Specification	Available	Not-available
Class Room with Basic teaching aids	Class Room of size 40 m^2		
	Sitting arrangement for 30 participants		
	Table 6' x 3'		
	White Board		
	LCD Projector& Screen		
Shadow free ground area	practical area 1200 m^2, workshop 360 m^2		
Different type of PV facility for training	Fixed		
	Seasonal Tilt		
	Horizontal axis Tracker		
	Dual axis Tracker		
Various type of Module (Total 10 kW))	Thin Film		
	Crystalline		
	Bifacial		
Tools & equipment as per Module - V			
Demo equipment as per Module - V			
Safety & Protective Equipment as per Module - V			
Instructors trained in Renewable Energy Technology	Degree in Electrical Engineering with 1 year experience in Solar PV Project		
	Diploma in Electrical Engineering with 2 years' experience in Solar PV Projects		
	NTC/NAC in Electrician trade with 5 years' Experience as Solar PV Technician		
Boarding & Lodging	Accommodation		
	Food facility		
	Proper security		
	Separate arrangement for boys and girls		

I confirm that the information provided is true in best of my knowledge.

Date:

(Signature)
Head of the Institute

Name & Address of the Institute: