

SOLAR TECHNICIAN TRAINING

(SKILL DEVELOPMENT TRAINING PROGRAM)



GUIDELINES



Tamil Nadu Energy Development Agency

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1. DISCLAIMER

All information contained in this Guideline, subsequently provided/clarified is in good interest and faith. This is not an agreement and is not an offer or invitation to enter into an agreement of any kind with any party. TEDA reserves the right to cancel this document, and/or invite afresh proposals with or without amendments to this document without liability or any obligation for such document, and without assigning any reason. TEDA reserves the right to take final decision regarding award of contract. This document is applicable to the pilot phase of “Solar Technician Training” Programme.

2. INTRODUCTION

This Guideline for Pilot Phase of “Solar Technician Training” has been developed as ready reference for all empanelled Training Providers. TEDA aims to skill youth who are in unemployed and underemployed in Renewable Energy Sector and provide them with jobs having regular monthly wages at or above the minimum wages. There is a continuum of skills that are required in renewable energy sector and there are various ways in which to acquire them. In Tamil Nadu, while higher-level skills have received some attention, the same cannot be said for skills for which formal education is not a prerequisite. This means that the underprivileged youth are doubly hit - first because of poverty and second because of poor access to formal education.

TEDA seeks to fill this gap by imparting specific set of knowledge on renewable energy, skills and attitude needed by the youth to access full time jobs with regular monthly wages and self employment with the following objectives under Skill Training on Renewable Energy and Employment (“SOLAR TECHNICIAN TRAINING”) and considering the recent growth in the field of Renewable Energy due to Government initiatives in the country and state, there is an urgent need for a comprehensive human resource development in this field;

- To integrate Skill training with Renewable energy related activities
- To assist in creating an enabling environment to attract investment in professional and skill development sector with special reference to Solar energy;
- To prepare a roadmap to provide skill development training to the youth of the State in the field of renewable energy;
- To monitor the quality of training imparted to produce targeted number of high quality skilled personnel across various strata of youth and workers, especially from amongst the disadvantaged sections of the society;
- To assist in creating an enabling environment to attract investment in professional and skill development sector;

- To train man-power with strong basics in Renewable energy, Energy conservation and sustainable energy systems.
- To provide consultancy services and R & D in new technologies for efficient harnessing of Renewable Energy.

The “Solar Technician Training” Skill Development Training Program is oriented to provide skill development to Solar Technicians for Solar PV installer and Service Provider. These Guidelines is applicable only for the pilot phase of implementation of “SOLAR TECHNICIAN TRAINING”. As the programme enters the second phase (Rollout phase) of implementation, there may be corresponding changes in the processes described herein.

3. ABOUT SOLAR TECHNICIAN TRAINING

TEDA has initiated organizing Skill Development Training in collaboration with TNSDC for the youth in the state of Tamil Nadu to acquire and upgrade their skills to get wage employment and enhance the supply of trained manpower in the Renewable Energy Industry sector. This placement linked skill development project titled as Solar Technician Training is designed to equip the youth with employable skills or to enable them to secure wage employment in the industry or other sectors. These projects offer free, intensive, short term skill training that include technical skills and soft skills to ensure sustainability in the employment of the trainee.

This scheme will be implemented on a pilot scale in the districts of Chennai, Coimbatore and Salem in the year 2017-18. The programme aims to provide quality skills training aligned with the National Skill Qualification Framework (NSQF) and responsive to industry needs. The scheme aims at employment of 70% of successful trainees through placement linked wage employment in industry. The key elements of the scheme are:

i) Scheme beneficiaries

The scheme will focus on youths of the state in the age group of 18-35 years

ii) Sector and Trade Covered under the scheme

Youths from the state will be trained in emerging green sectors such as renewable energy and energy efficiency. The Skill Council for Green Jobs (SCGJ) will be the lead to design the required Qualification Pack (QP) based curriculum.

iii) Key Stakeholders

The key stakeholders in regard to the scheme implementation process will be as follows:

- Tamil Nadu Energy Development Agency (TEDA)
- Tamil Nadu Skill Development Corporation (TNSDC)
- District Administration of Tamil Nadu
- Training Providers
- Skill Council for Green Jobs (SCGJ)
- Assessment agencies of SCVT
- Trainees
- Employers

iv) Institutional Arrangement

The institutional arrangement for implementation of the pilot phase of the scheme is laid out as below:

- Sponsoring Agency: Tamil Nadu Skill Development Corporation (TNSDC)
- Implementing Agency: Tamil Nadu Energy Development Agency (TEDA)
- Assessment Agency: SCVT/SCGJ to allot assessing agencies for post training assessment
- Certifying Agency: SCVT/SCGJ to award certificates to the successful candidates

4. ACTIVITIES OF THE TRAINING PROVIDER

4.1 *Target Beneficiaries*

“SOLAR TECHNICIAN TRAINING” scheme is applicable to any candidate of Tamil Nadu who

- Is an unemployed youth in the age group of 18-35 years.
- Essential Qualification: The candidate should be min 10th pass +ITI/Diploma (Electrical, Electronics, Civil, Mechanical, Instrumentation, and welder).
- Possess an Aadhar card and bank account
- Has a verifiable alternate ID such as PAN card/Voter ID/Ration Card
- Proof of community for candidates belonging to SC/ST, OBC, Person with Disabilities(PWD) and minority
- Any other criteria, as defined by the TNSDC and SCGJ for the respective job roles

4.2 *Mobilization of Trainees*

The Training Provider is responsible for mobilization of candidates, verification process and selection of candidates for the proposed sector training. The quality of candidates mobilized has a significant impact on retention during training as well as in the jobs they are placed in as well career progression. The Training Provider has a crucial role in sensitizing local communities and areas so as to improve the effectiveness and quality of the mobilization process. The mobilization process can be done from one of the following approaches: awareness building through different media, roadshows, banners, distribution of pamphlets and through the Collectorate of the district and other

government offices. The Training Provider can identify the participant in allocated District to implement the project. The steps followed should be transparent and there should be a feeling in the community that the process was fair.

The willingness of the candidate identified after mobilization to undergo the training programme has to be ascertained. The selection process for identifying the trainees has to be transparent and open to all stakeholders. There is a fine balance to be maintained between aspiration, eligibility and aptitude. Proper records have to be maintained that show that aptitude tests did not indicate a match between aspiration and potential or the aspirant was not eligible.

- a) The Training Provider has the responsibility of identifying and selecting the right trainee for implementing the programme.
- b) The Training provider may devise its own plan to make trainees aware of the programme and use various methods to mobilize candidates.
- c) Final selection of the trainees must be done by the Training Provider and may use various screening methods to judge and select the potential trainee.
- d) The following will be considered as valid proof of identity: Aadhar card, Ration card, Driving License, Voter ID card, class 10th marksheet/pass certificate or any other valid proof issued by Government
- e) The following will be considered as valid proof of address: Aadhar card, Ration card, Driving License, Voter ID card, class 10th marksheet/pass certificate or any other valid proof issued by Government
- f) During mobilization of trainees, it shall be the Training Provider's responsibility to provide counseling to the trainees and their families on the nature of the job opportunities, expected wage and entitlements, growth prospects and risks involved.

4.3 Training Target Allocation

The district wise targets allocated for pilot phase have been proposed as Chennai-200, Coimbatore-200 & Salem-100.

The final selection of the trainees for the program shall be made by empanelled Training Providers and the details of the selected participants must be communicated to TEDA .The same will be evaluated and the approval will be accorded on first cum first basis to the empanelled Training Providers for respective batches along with allocated batch size by TEDA.

If more than one empanelled Training Provider submits the list of the selected participants on the same day the approval would be decided on the quality of infrastructure available, training capacity, self-owned or franchisee centre, past performance, geographic location and other relevant parameters.

The methodology for allocation may change depending upon the scheme requirements.

- a) A training batch shall consist of not less than 25 and not more than 35 trainees.
- b) The Training provider shall maintain a reserve of 10 trainees. These trainees in the reserve list may not attend the training programme unless they are included in the batch at the time of Batch Freezing. It is the responsibility of the Training Provider to ensure that the reserve trainees, if initiated into the batch at the time of Batch Freezing, are given proper appropriate classes/training to make up for the lost training duration.

4.4 Duration of the Programme

All programmes will be non-residential in nature. The duration of the TEDA - “SOLAR TECHNICIAN TRAINING” will be three hundred hours or 38 days including soft skills. All trainees should be taught on soft skills and values.

- g) The training duration will be for a minimum of 8 hours per day.
- h) The training sessions will be organized on all weekdays, Monday through Saturday except on Sundays and other declared Government and local holidays.

4.5 Selection of participants

For selection of participants to “SOLAR TECHNICIAN TRAINING”, following essential and preferable qualifications are required:

- a) The target groups for “SOLAR TECHNICIAN TRAINING” are unemployed youth in the age group of 18-35 years.
- b) Essential Qualification: The candidate should be min 10th pass + ITI/Diploma (Electrical, Electronics, Civil, Mechanical, Instrumentation, and welder).
- c) The Training Provider will advertise about the batches of the program including dates and the venue of the training through media, Collectorate & local cable TV and advertisements through Banner, Poster, Pamphlets, etc....
- d) The final selection of the trainees for the program shall be made by the Training Provider and the details of the proposed participants must be communicated to TEDA before the commencement of the program.
- e) After obtaining batch commencement approval from TEDA, the Training Provider should login to the TNSDC web portal (<https://www.tnskill.tn.gov.in>) and upload the training details for batch creation before the commencement of training.
- f) The Training Provider should furnish the list of trainees per batch and the same should be hosted in the TNSDC web portal and the respective Training Provider website.
- g) Aadhar Number for trainee is mandatory for enrollment in TNSDC portal.
- h) During the selection of trainees, special emphasis to be given to the trainees coming from Underprivileged, Interested, unemployed, women trainees, Person with Disabilities (PWD) and SC/ST candidates.

4.6 Training Centre Physical Infrastructure

- a) The training centre must strictly maintain separate rooms for classroom and practical laboratory for the domain that is being taught.
- b) The training provider must meet all the minimum requirements of the training centre physical infrastructure before the start of the batch.
- c) The physical infrastructure in every training centre should be duly verified by TEDA as per the due diligence form attached. No batch at the training centre will be allowed to start without an authorization from TEDA.
- d) Every centre should display of board with TEDA & TNSDC logo's and name which should prominently be displayed as back drop for the stage.

4.7 Teaching and Practical Work

- a) Training curriculum should be based on the relevant National Occupational Standards (NOS) and Qualification Packs (QPs) developed by Skill Council of Green Jobs, Qualification Pack Name of SGJ/Q0101 which is also attached with the Guidelines. The Training Provider must ensure that the curriculum is vetted and approved by the concerned Sector Skill Council (SCGJ) prior to the initiation of training
- b) The day-wise session plan should be prominently displayed on the Notice Board and classrooms at the training centre.
- c) The practical hours may be utilized for hands on exercise in the lab sites, Experiments, class room exercises, software simulations if any, and to conduct the regular quizzes/class test.
- d) Motivational sessions (1 hr. duration each) shall be conducted once in every week.
- e) Study kit (Study materials, Note book, Pen, Pencil etc) and other instructional materials should be supplied to the Trainees by empanelled Training Provider.
- f) Each participant/group shall be given an access to proper toolkits for working in the lab/site.
- g) Each module of a session guides the trainer to prepare the materials for that particular session. The trainer is free to opt for any references and, training methodology/slides, provided the objectives in the sessions are covered in full length.
- h) The preferred medium of instruction would be in the vernacular i.e., Tamil, but English may also be preferred depending on the demand from the class.

- i) Training Providers should be given a training manual for reference preferably in Tamil but though English may also be preferred depending on trainees' willingness.
- j) The trainer/institute may also conduct a class test/quiz at the end of each session as a part of continuous assessment. The criteria/pattern of conducting these quizzes and tests can be decided by the trainer. Also, each day may preferably start with the recap of the previous day's sessions.
- k) Trainers are requested to give sufficient home works to the participants during the weekend.

4.8 Trainers

The quality of trainers is an important driver for the success of the “SOLAR TECHNICIAN TRAINING” program. The Training Providers should therefore invest considerable energy and resources to ensure that trainers deployed by them have the requisite knowledge, skills and attitude to deliver quality training programs that result in quality placements and high retention.

- a) A training coordinator/Center Manager should be nominated by the Training Provider for coordinating the entire training programme.
- b) The Training Providers should deploy trainers trained and certified by SCGJ in centres offering SSC courses. Trainers not certified by SSC will have to attend the Training of Trainers (TOT) organized by the SSC and obtain certification before commencement of the training programmes. The recommended qualification of a trainer is given below and should be ensured by the Training Provider to comply as per the requirements of the SCGJ.

Sl. No.	Name of Course	Course Code	Trainer Qualification
1	Solar PV Installer (Suryamita)	SCJ/Q0101	1) ITI /Diploma Electrical, Electronics, Civil, Mechanical, Fitter, Instrumentation – Minimum 3 years relevant industry experience OR 2) B.Tech (Civil/Mechanical /Electrical/ Instrumentation / Electronics / Electrical and Electronics Eng.) or MSc Physics – Minimum 2 years relevant industry experience.

4.9 Training Methods

Training Providers have to ensure that training is delivered in an innovative and trainee friendly manner with adequate audio visual tools and participatory methods keeping in mind that “SOLAR TECHNICIAN TRAINING” programme targets people from Unemployed and underemployed youth.

4.10 Attendance

- a) Attendance of both trainees as well as trainers/instructors shall be recorded through a manual process and, through a bio-metric device. The training should be started after the installation of bio-metric device to record the attendance of trainees and instructors.
- b) An attendance register for both trainees and trainers/instructors shall be maintained at the respective training centres.
- c) Every teaching/practical staff member handling a classroom session will take attendance till the last instruction day of the training program and the records will be kept with the organizing institution.
- d) The trainees are normally expected to attend 100% theory and practical classes/workshop practices. However, no participants shall be allowed to be awarded certificate at the end of training unless he/she has 85% attendance in total.
- e) The biometric attendance sheet of trainees and trainers every 15 days (as in [annexure – 3 & 4](#)) from the date of Batch Freezing will have to be submitted by email along with a signed and sealed copy to TEDA

4.11 Franchising Arrangements

Each Training Provider would be responsible for its entire franchisee network and the infrastructure of training centres. Only first level of franchising is permitted under “SOLAR TECHNICIAN TRAINING”. The first level of franchising is defined as an agreement between a franchisor and franchisee, where the franchisee does not enter into an arrangement with another party to sublet its training targets.

Suitable amount of due diligence is must be done by franchisee and franchisor before entering into any arrangement. A legal agreement must govern all franchisee and franchisor arrangements. TEDA shall not interfere in operational or personal disputes arising as a result of conflict between the two parties; however, the Training Provider is supposed to produce the legal agreement with relevant supporting documents to TEDA in the specified format, as and when requested for.

4.12 Placement

While every effort is to be made to ensure that trainees get jobs that match their aspirations and aptitude, a minimum placement of 70% of trained candidates is a non-negotiable in this project. The complete placement details like occupation, salary, name and address of the employer should be furnished for tracking purposes.

Placement for this purpose is defined as continuous employment for a minimum of three months. The period of continuous employment need not be with the first employer. However the trainee

should have worked and received payment for three continuous months, proof of which can either be in the form of a salary slip or a certificate indicating salary paid signed by the employer and salary received by the person placed along with a bank statement.

- a) Training Provider should ensure a minimum of 70% placement of candidates trained by them. The complete placement details like occupation, salary, name and address of the employer should be furnished for tracking purposes.

5. FEE STRUCTURE

- a) No fee will be charged from the trainees. However, the trainees will make their own arrangement for joining the training and going back. Any amount collected as security deposit must be refunded at the end of the course and need to be in the proper records of the Training Provider.
- b) The transport cost shall be payable to the trainees at Rs.100/- per day per candidate for 38 days or 300 hrs of training duration, whichever comes earlier, which shall be payable directly into the bank account of the candidate.

6. Payment Terms:

- a) Training Provider will be provided 25% of the training cost of every batch once the admission is completed and details received from Training Provider.
- b) Another 25% of the training cost on completion of 50% of training period of the batch commenced training.
- c) Further 30% of the training cost on completion of 100% training period of the batch.
- d) Balance 20% of the training cost will be paid on production of 70% placement and confirmation from the Employer about the placement and joining of the trainees.
- e) Training Providers should submit Utilization Certificate for all payments received.
- f) This training fee shall be inclusive of all cost components such as: Mobilization and Selection of trainees, Training delivery, Post-placement tracking/monitoring, Curriculum design and distribution, Placement expenses, Trainers' training, Equipment, Amortization of Infrastructure Costs/Utilities, Teaching Aids, Raw material, Salary of trainers
- g) The outcome envisaged in context of the fourth installment is wage employment of atleast 70% of successfully certified trainees within three months of completion of the training programme.
 - Wage employment shall imply placement in organized/unorganized sector for a monthly remuneration not below the minimum wages of skilled workers in Tamil Nadu in which the trainee is placed, or minimum wages of contractual skilled workers of Tamil Nadu, whichever is more.

- Placement of a trainee shall be recognized only after receipt of monthly pay slips (or equivalent valid proof) showing that the trainee has been employed for at least 3 months. Such placements may be claimed/shown within 6 months from the date on which the trainee completed the training programme.
 - The Training Provider shall not receive any amount under the fourth installment if less than 50% of certified trainees are able to obtain wage employment as defined above.
 - The Training Provider shall be paid on pro rata basis on achievement of 50-69% placement of those who have been certified.
- h) TEDA reserves the right to suspend/stop disbursement of funds or recover previous disbursed funds in case of
- Breach by the Training Provider in complying of the terms and conditions of this guideline including non-utilization of funds for the purpose for which the same was granted and or diverting funds towards any purpose other than the project requirement as specified herein
 - Extraordinary circumstances which in the opinion of TEDA are likely to preclude or seriously jeopardize the implementation, operation, or purpose of the project.
 - In the event of any breach or non-compliance as mentioned above, TEDA may issue a written notice of suspension for the Training Provider to remedy the breach within 30 days of receipt of such notice. The decision of CMD, TEDA will be final in this regard.

7. ASSESSMENT AND CERTIFICATION OF TRAINEES:

Independent certification and assessment by third party agencies of both curriculum and the skill, knowledge and attitude level of each trainee as acceptable to the industry or employer is mandatory. This is to ensure that “SOLAR TECHNICIAN TRAINING” programme pass outs are of a high standard and are eagerly sought after by employers.

- a) The Training Provider is primarily responsible for facilitating the internal and external assessments of trainees in the training centre.
- b) Only trainees with a minimum of 85% attendance may be permitted to appear the assessment process.
- c) The Training Provider is responsible for facilitating the external assessment by SCGJ/SCVT. The external assessment should be done in the last 10 days of training programme. SCGJ/SCVT protocols will have to be strictly followed for organizing such programmes.
- d) Training Provider has to conduct both internal and external assessment of the trainee. The Training Provider should ensure that all the trainees appear for external assessment and atleast 80% of the

trainees clear the assessment test and become eligible for certification by SCGJ/SCVT. Attendance in the internal assessment tests is compulsory.

- e) Two fortnightly internal tests after completion of 15 days and 30 days from the date of Batch Freezing may be organized. In addition surprise quizzes and test may be held for continuous assessment and feedback.
- f) The final examination consisting of written test, practical examination shall be conducted at the end of the training program by the Skill Council for Green Jobs or SCVT strictly. Assessment criteria will be strictly as per the job roles.
- g) If a trainee fails in the assessment, he/she may undergo gap training from the same training provider, given that expenses for the same shall be borne by the Training Provider. The cost of re-assessment or revaluation will be borne by the trainee or the Training Provider, as mutually agreed between them.
- h) SCGJ/SCVT shall ensure that certificates of each successful trainee are sent to the Training Provider via email (with a copy marked to TEDA). Training Provider then will take a coloured printout (on thick laminated paper) of the certificates and distribute it to the trainees.

8. EMPLOYMENT ASPECTS

At the end of the Training, the Training institute may arrange for placement of the Training Partner by inviting, solar PV industries, EPC companies, marketing companies, large contractors working with Transco, Discoms etc. Maximum number of the participants must be provided employment at the end of the program. Training Provider may coordinate with potential employer companies for the placement of the trainees.

9. MONITORING AND EVALUATION

Monitoring is a continuous measurement of progress while the project is on-going. This involves checking and measuring progress, analyzing the situation and reacting to new events, opportunities and issues. The key objectives of monitoring the “SOLAR TECHNICIAN TRAINING” programme are to:

- a) Keep track of performance against “SOLAR TECHNICIAN TRAINING” overall goals
- b) Use the knowledge gained to ensure informed decision-making
- c) Identify any course correction needed at Head Office, district or Training Provider level to improve outcomes
- d) Inform stakeholders of future strategy, policy and sector choices

The project implementing agency TEDA may involve third party agency to monitor the “SOLAR TECHNICIAN TRAINING” project. During the pilot phase of the implementation TEDA officials will be monitoring the progress of the project. Bi-monthly inspection of training centres will be undertaken by TEDA officials.

Evaluation of “SOLAR TECHNICIAN TRAINING” programme will be taken up either in-house or through any reputed evaluation agency.

10. PROGRAMME COMPLETION

The programme will be deemed complete after the submission of MIS reports and verification of closure report submitted by each Training Provider. Upon review and validation of the documents TEDA will issue a letter of completion to the training provider.

11. MANAGEMENT INFORMATION SYSTEM (MIS)

The management of the quality of the programme requires information to be constantly assessed and built upon. This can be ensured only through regular tracking and follow up. Therefore incorporating a robust internet-enabled workflow driven MIS is critical for the success of the programme.

An online reporting system and website www.teda.in / (<https://www.tnskill.tn.gov.in>) has been developed. The Training Providers will have to maintain trainee specific information and meet all applicable reporting requirements. The regularity and quality of entry of information will be supervised by the training provider.

Annexures	Title	Periodicity/Phase
Annexure -1	Batch Summary – Total Candidates break up during	Pre-training
Annexure – 2	List of candidates in a batch	Pre-training
Annexure - 3	Attendance Register for candidates	Training
Annexure - 4	Attendance Register for Trainers	Training
Annexure - 5	Checklist of entitlements	Training
Annexure - 6	Summary of evaluation and assessment	Training
Annexure - 7	Training Certificate Distribution	Post Training
Annexure - 8	Student Entitlement Summary	Post Training
Annexure - 9	List of Students after completion of batch	Post Training
Annexure -10	Batch Summary – Completion of Training	Post Training
Annexure -11	Master Tracksheet	Training
Annexure – 12	Course Module - Solar PV Technician (MES)	
Annexure – 13	List of Tools & Equipment	

Annexure – 1 Batch Summary – Total Candidates break up during Commencement/Batch freeze

Training start date:						Training end date:							
Training Centre Name	Batch No	Trade	Training Start Date	Expected End Date	No. of candidates in the batch	Gender wise			Category wise			PWD	No of candidates Dropped out
						Male	Female	Transgender	SC/ST	Others	Minorities		

Annexure – 2 - List of candidates in a batch

Sl. No.	Candidate name	Father or husband name	Address District State	Date of birth	Aadhar No.	Category (SC/ST)	Minority	PWD	Gender	Mobile	Email id

Annexure – 3 - Attendance Register for candidates

Sl. No.	Candidate name	Candidate ID no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total present	Total days

Annexure – 4 - Attendance Register for Trainers

Sl. No.	Trainer name	Trade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total present	Total days

Annexure – 5 - Checklist of entitlements

Candidate name	Candidate ID no.	ID Card	Uniform	Course Materials	Training plan & Time table	List of contacts	Signature of students

Annexure – 6 - Summary of evaluation and assessment

Month	Subject	Type of Test (Monthly/ Fortnightly/Surprise/ Pre-final)	Date of test	Test scores	Maximum Score

Annexure – 7 - Training Certificate Distribution

Sl. No.	Candidate name	Candidate ID no.	Date of receiving	Signature
1.				

Annexure – 8 - Student Entitlement Summary

Sl.No.	Name of the Student	Amount Paid to the student in Rs.	Date of Payment [dd/mm/yyyy]	Signature of student
1				

Annexure – 9 - List of Students after completion of batch

Sl.	No.	Candidate	ID	Candidate name	Attendance	Percentage	Training Status	(completed/ drop)	Assessment Status	Assessment Date	Assessment Result	Placement Status	Name of Company	Designation	Date of Joining	Salary

Annexure – 10 - Batch Summary – Completion of Training

Training Centre Name	Batch No	Trade	Training Start Date	Training End Date	No. of candidates completed training	No. of candidates completed training								No of candidates Dropped out		
						Gender wise			Category wise				PWD			
						Male	Female	Transgender	SC	ST	Others	Minorities				

Annexure – 11 - Master Tracksheet

Sno	Project State	District	Sector	Trade	Training Start Date	Batch Freeze Date	Expected Batch Complete Date	Batch Code	

Candidate No. on local MIS (if any)	Candidate Name	Candidate's Father's Name	Candidate Age	Gender	Category	Candidate Religion	Persons With Disability PWD Details (Yes/No)	If Yes Type	Years of previous formal education

Candidate Parliamentary Constituency	Candidate Assembly Constituency	Candidate Mobile no.	Candidate email	Candidate Address (Door No, Street, Locality)	Gram Panchayat	Block	Pin Code	Nearest Police station	

Ration Card BPL or APL	Ration Card Number	Does the candidate have an Aadhar no.?	Aadhar number	Does the candidate have a MGNREGA job card no.?	MGNREGA job card number

Name of the bank with candidate account	Branch Name	Candidate Bank Account Number	IFSC Code	Address of the Bank	Bank Telephone Number

Assessment Status	Name of 3rd Party Assessment Agency	Assessment Date	Assessment Result	Marks Obtained (%)	Assessment Status

Date of Joining Work	Placement location type	State/Country in which employed	District in which employed	Employer name	Address of the place of Employment	Contact Number of the place of employment	Designation	Salary	Sector of employment

Annexure – 12 - Course Module - Solar Technician Training (MES)

Sr. No.	Module	Key Learning Outcomes	Equipment Required	Theory Duration	Practical Duration	Corresponding NOS
1	Introduction to Solar PV	Demonstrate general Discipline in the class room and during the training		3	3	SGJ/N0101
	Installer (Suryamitra)	Understand the role of Solar PV program Installer and job opportunities;				
	Course	Understand the advantages of doing this course;				
		Acquire basic skills of communication;				
		Acquire basic reading capabilities to enable reading of signs, notices and/or cautions at site.				
2	Basics of Solar energy	Understand Ohm's Law;	Pyranometer,	6	6	SGJ/N0101

	and Electrical concepts.	Understand the basics of electricity and electrical concepts;	Multimeter, Clamp meter,			
		Perform simple calculations to derive power and energy				
		Explain and understand DNI, GHI and Diffused Irradiance & Irradiation;				
		Assess the movement of the sun and its effect on the performance of the plant;				
3	Basics of Solar	Understand Terminology used in the Solar Industry;	Pyranometer, Multimeter, Clamp meter,	24	24	SGJ/N0101, SGJ/N0102
	Photovoltaic systems	Identify the different components of a Solar PV system and its basic operation;	1 kWp Solar PV system with 2 number of solar batteries			
	and its components .	Identify and understand the working of different types of Solar PV systems				
		Understand and acquire know-how of different Types, sizes and specifications of , Modules, Solar Inverters, Charge Controllers, Cables, Conduits, Junction Boxes, Solar Batteries and allied accessories				
		Read and Interpret the manufacturing data specification sheets of different Types, sizes and specifications of, Modules, Solar Inverters, Charge				

		Controllers, Cables, Conduits, Junction Boxes, Solar Batteries and allied accessories				
		Understand and acquire know-how of different Types, sizes and specifications of foundations/ footings;				
		Select the right footing/foundation as per site location including suitability of roof condition or suitability of soil				
4	Identification and Use of different tools and tackles used for installation of solar PV system	Identify and acquire the know-how of the different tools & tackles used for specific purpose in an installation of Solar PV system	Tool kit, Double ended flat spanner,	4	8	SGJ/NQ0103, SGJ/Q0104
			Double ended ring spanner, Combination pliers, Side cutting pliers, Nose pliers, Hack saw ,frame with blade, Screw driver, Water level Measuring tape, Centre punch,			
			Standard wire gauge, Vanier calliper, Line Dori, Chisel, Drill m/c,			

			Plumb bob, Sprit level, Flat file, Round file, Triangle file, Hand saw, PVC mallet, Ball pin, hammer, Safety helmet, Safety souse, Safety belt, Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Safety Gloves			
5	Site Survey for	Understand how to observe Sun path diagram and shading analysis;	Tool kit,	10	14	SGJ/N0101, ELE/N5903
	Installation of Solar PV	Understand and assess the site conditions for safe installation of Solar PV system;	Measuring tape,			
	System and asses the	Identify the load to be connected to the Solar PV system;	wire gauge, Line Dori Water testing instrument (TDS meter),			
	customer's Solar PV	Prepare load profile				
		Engage with customers for any specific requirement and budget constraints;				
	Requiremen t.	Calculate size of the system with basic mathematical tools;				
6	Interpretati	Read and Interpret the	1 kW Solar PV	9	9	SGJ/N0102

	on of	Single Line Diagram, Layout Diagrams,	system			
	Drawings , Material	Civil/Mechanical and Electrical Drawings	and tool kit			
	Handling and storage of	Understand the DO's and Don'ts of material handling;				
	components on-site	Read and interpret the Bill of Material				
		to verify with the delivery of components on-site.				
7	Installation and mounting structure and	Understand and acquire know-how of installing the mounting structure along with structural supports and accessories for safe & weatherproof installation as per site conditions;	Tool kit, 1kWp Solar PV system, Double ended flat spanner, Double ended ring spanner,	9	21	SGJ/N0103
	photovoltaic modules, battery stand and inverter stand as per drawings	Identify Tools & Tackles used for civil/mechanical installation	Combination pliers, Side cutting pliers, Nose pliers, Hack saw ,frame with blade, Screw driver, Water level Measuring tape, Centre punch, Standard wire gauge, Vanier calliper, Line Dori, Chisel, Drill m/c, Plumb bob, Sprit level, Flat file, Round file, Triangle file, Hand saw,			

			PVC mallet, Ball pin, hammer, Safety helmet, Safety souse, Safety belt, Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Safety Gloves			
8	Installation of Electrical	Understand and acquire the know-how of installing the electrical components including inverter, batteries, junction boxes, energy meters, cables and conduits other electrical components	Tool kit, 1kWp Solar	12	30	SGJ/N0104
	components of a Solar	Understand the Do's and Don'ts of DC wiring;	PV system, Side cutting pliers, Nose pliers, Wire stripper,			
	PV System.	Identify Tools & tackles used for cable and conduit installation	Electrician knife, Hand crimping tools, Cable cutter , Screw driver, Water level Measuring tape, Centre punch, Standard wire gauge,			
		Identify and acquire knowledge of different	Vanier calliper, Line Dori, Fuse			

		types of Earthing and its installation;	puller, Safety helmet, Safety shoe, Safety belt, Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Clamp meter,			
		Understand significance and types of earth faults as per standards	MULTIMETER, Megger, Earth tester, Earthing Rod, Sequence Meter, Soldering Iron & Flux, Phase , Safety Gloves, Pyranometer.			
9	Test and Commission	Describe and conduct the testing of	Tool kit, 1kWp Solar PV system, Side	8	16	SGJ/N0105
	Solar PV system	all the solar components of the Solar PV system including fault finding and analysis including continuity checks, polarity check and other commissioning activities;				
			cutting pliers, Nose pliers, Wire stripper, Electrician knife, Hand crimping tools, Cable cutter , Screw driver, Water level Measuring tape, Centre punch,			

			Standard wire gauge, Vanier calliper, Line Dori, Fuse puller, Safety helmet, Safety shoe, Safety belt,			
		Understand Regulations & Standards for interconnection;	Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Clamp meter, MULTIMETER, Megger, Earth tester, Earthing Rod, Soldering Iron & Flux, Phase ,Sequence Meter, Safety Gloves, Pyranometer.			
		Describe the Commissioning process for the Solar PV System				
10	Maintain Solar Photovoltaic System	Carry out maintenance activities required for each component;	Tool kit, 1kWp Solar PV system, Side cutting pliers, Nose pliers, Wire stripper, Hand crimping tools, Cable cutter , Screw driver, Water level Measuring	18	36	ELE/N6001

			tape, Centre punch, Standard wire gauge, Vanier calliper, Line Dori, Fuse puller, Safety helmet, Safety shoe, Safety belt, Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Clamp meter, MULTIMETER, Megger, Earth tester, Earthing Rod, Soldering Iron & Flux, Phase ,Sequence Meter, Safety Gloves, Pyranometer.			
		Prepare and execute Preventive maintenance schedule and reactive maintenance activities;				
		Understand the Typical faults, their causes and resolution for all components;				
11	Maintain Personal	• Identify the requirements for safe work area;	Safety helmet, Safety	6	6	SGJ/N0106
	Health &	Administer first aid;	souse, Safety			

	Safety at project site	Identify the personal protective equipment used for the specific purpose;	belt, , Ear plug, PVC hand glove, Reflective jacket, Safety Gloves			
		Identify the hazards associated with photovoltaic installations;				
		Identify work safety procedures and instructions for working at height;				
		Understand Occupational health & Safety standards and regulations for installation of Solar PV system				
12	Completion and Handover	Understand and prepare the Checklist for handover of the plant;		6	12	SGJ/N0107
		Prepare complete and final documentation including commissioning forms and operation procedure;				
	Documentation	Acquire a thorough understanding of Start up and shutdown procedure of a Solar PV system;-				
				115	185	

Annexure – 13 - List of Tools & Equipment

Sl. No.	Name of Tools & Instruments	Quantity (Nos.)
1	Tool kit	As per requirement
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 resistance tester	2
43	water testing instruments (TDS Meter)	1
44	Earthing Rod	1
45	Soldering Iron & Flux	5
46	Phase Sequence meter	2

Demo Equipment

Sl. No.	Name of Tools & Instruments	Quantity (Nos.)
1	Tool kit	1
2	Double ended flat spanner	1
3	Double ended ring spanner	1
4	Combination pliers	1
5	Side cutting pliers	1
6	Nose pliers	1
7	Wire stripper	1
8	Electrician knife	1
9	Hack saw frame with blade	1
10	Hand crimping tools	1
11	Cable cutter	1
12	Screw driver	1
13	Water level	1
14	Measuring tape	1
15	Centre punch	1
16	Standard wire gauge	1
17	Vanier calipash	1
18	Line dori	1
19	Chisel	1
20	Drill m/c	1
21	Plumb bob	1
22	Sprit level	1
23	Flat file	1
24	Round file	1
25	Triangle file	1

26	Hand saw	1
27	Pvc mallet	1
28	Ball pin hammer	1
29	Fuse puller	1
30	Safety helmet	1
31	Safety souse	1
32	Safety belt	1
33	Nose mask	1
34	Safety goggles	1
35	Ear plug	1
36	Pvc hand glove	1
37	Cotton hand glove	1
38	Reflective jacket	1
39	Tong tester AC/DC	1
40	MULTIMETER	1
41	Megger	1
42	Erath tester	1
43	End termination of power cable	2
44	Cable tray Erection	1
45	Structure with module mounting	1

Safety & Protective Equipment

Sl. 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