

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR GREEN JOBS

### What are Occupational Standards (OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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## Introduction

### Qualifications Pack- Rooftop Solar Grid Engineer

**SECTOR:** GREEN JOBS

**SUB-SECTOR:** Renewable Energy

**OCCUPATION:** Inspection, Interconnection and Post – Commissioning Testing

**REFERENCE ID:** SGJ/Q0106

**ALIGNED TO:** NCO-2015/ NIL

Rooftop Solar Grid Engineer is specialized for pre-commissioning inspection, interconnection and post commissioning testing of grid connected Solar PV Power Plants as well as monitoring the safety and appropriate performance of the grid and has the communication & soft skills.

**Brief Job Description:** Rooftop Solar Grid Engineer checks, audits, inspects, interconnects and tests different components of the grid connected Solar PV Power Plant in compliance with all relevant codes, standards, and safety requirements.

**Personal Attributes:** This job requires the individual to concentrate on the job at hand and complete it without any accidents so diligence and hard work are desired attributes for individuals performing this role. He must also demonstrate strong work ethics, an ability to communicate courteously with co-workers.



Job Details

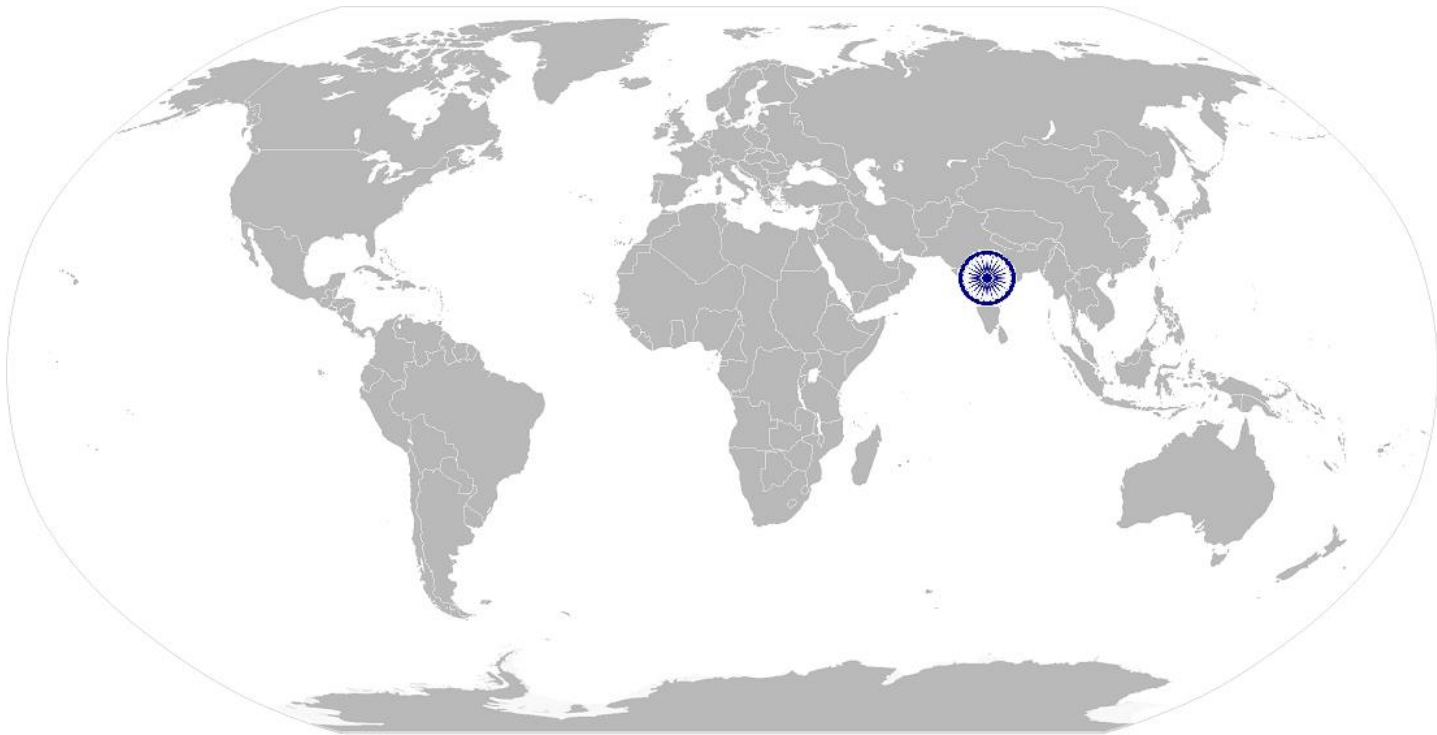
Qualifications Pack Code	SGJ/Q0106		
Job Role	Rooftop Solar Grid Engineer This job role is applicable in both national and international scenarios		
Credits(NSQF)	TBD	Version number	1.0
Sector	Green Jobs	Drafted on	14/04/2016
Sub-sector	Renewable Energy	Last reviewed on	13/06/2016
Occupation	Inspection, Interconnection and Post – Commissioning Testing	Next review date	01/06/2019
NSQC Clearance on	03/03/2017		

Job Role	ROOFTOP SOLAR GRID ENGINEER
Role Description	Rooftop Solar Grid Engineer checks, audits, inspects, commissions and tests different components of the grid connected Solar PV Power Plant in compliance with all relevant codes, standards, and safety requirements.
NSQF level	5
Minimum Educational Qualifications	Diploma (Electrical, EEE)
Maximum Educational Qualifications	N/A
Training (Suggested but not mandatory)	N/A
Minimum Job Entry Age	20 years.
Experience	N/A
Applicable National Occupational Standards (NOS)	<p><b>Compulsory:</b></p> <p><a href="#">SGJ/N0118: Pre-Commissioning Inspection of the Grid Connected Rooftop Solar PV Power Plant</a></p> <p><a href="#">SGJ/N0119: Post Commissioning Testing of the Grid Connected Rooftop Solar PV Power Plant</a></p> <p><a href="#">SGJ/N0106: Maintain Personal Health &amp; safety at project site</a></p> <p><b>Optional:</b> Not Applicable.</p>
Performance Criteria	As described in the relevant OS units.



Definitions	Keywords/Terms	Description
	Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
	Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
	Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
	Function	Function is an activity necessary for achieving the key purpose of the sector, occupation or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
	Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization
	OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
	Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
	NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
	Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack
	Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
	Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an ‘N’.
	Unit Title	Unit Title gives a clear overall statement about what the incumbents should be able to do.
	Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
	Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to conform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.	
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.	
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.	

# National Occupational Standard



## Overview

This unit is about Pre-commissioning inspection of the Rooftop Solar PV power plant.



SGJ/ N0118

Pre-Commissioning Inspection of the Rooftop Solar PV Power Plant

National Occupational Standard

<b>Unit Code</b>	SGJ / N0118
<b>Unit Title (Task)</b>	Pre-Commissioning Inspection of the Grid Connected Rooftop Solar PV Power Plant
<b>Description</b>	This unit is about implementation of Solar PV projects with metering service.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>Pre-Commissioning inspection parameters</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Pre-Commissioning inspection parameters</b>	<p>The User/individual on the job needs to know and understand how to:</p> <p>PC1. Identify the key regulatory parameters for interconnection and metering arrangement including power quality of the grid at the project site</p> <p>PC2. Verify the capacity of the rooftop solar pv power plant as per the relevant policy/regulation</p> <p>PC3. Identify and verify the documents required for connecting the rooftop solar PV power plant to the grid</p> <p>PC4. Verify that the inverters, panels, protection devices, etc. Are conforming to IEC standards or relevant Indian standards</p> <p>PC5. Verify and assess the safety of earthing and lightning protection of the rooftop solar PV power plant</p> <p>PC6. Ensure that the single line diagram of a rooftop solar pv power plant is as per the regulatory specifications</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context (Knowledge of the company /organization and its processes)</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The keywords and its definitions used in industry</p> <p>KA2. Diagnostic/fault finding techniques</p> <p>KA3. Environment requirements</p>
<b>B. Technical Knowledge</b>	<p>The individual on the job needs to know and understand the following aspects:</p> <p>KB1. Typical Specifications, functioning and operating principle of Rooftop Solar PV Power plant and its components including solar PV modules, inverters, charge controllers, battery, cables, junction Boxes and other accessories</p> <p>KB2. Different types of inverters and protection devices including their relevant regulations for connecting to the grid</p> <p>KB3. Types of meters, bidirectional and unidirectional such as import and export</p> <p>KB4. Types of metering arrangement including Net Metering and Gross Metering concepts and layout</p> <p>KB5. Key regulatory parameters for interconnection and metering arrangement of a Rooftop Solar PV Power Plant including power quality of the grid at the project site</p> <p>KB6. Read and Interpret a Single Line Diagram of a Rooftop Solar PV Power plant</p> <p>KB7. Different types of earthing and lightning protection</p> <p>KB8. Importance of earthing and lightning protection and its safety aspects related to Rooftop Solar PV power plant</p> <p>KB9. National technical regulations and technical standards such as CEA's 'Technical standards for connectivity of the Distributed Generation Resources' Regulations 2013, CEA's 'Installation and Operations of meters'</p>

SGJ/ N0118

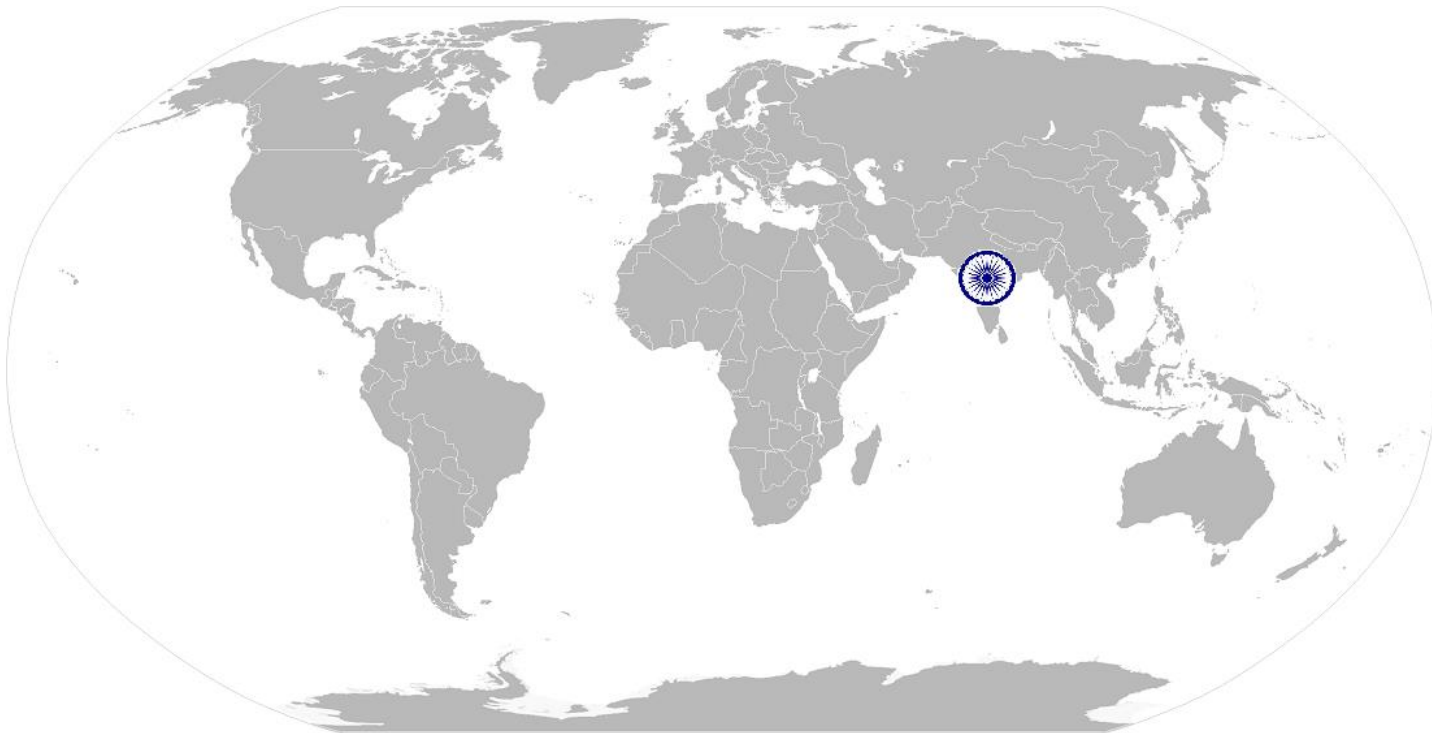
## Pre-Commissioning Inspection of the Rooftop Solar PV Power Plant

	<p>Regulations 2007 and CEA's 'Measures of Safety and Electricity Supply Regulation,2010'</p> <p>KB10.IEEE 1547/IEC 62116 technical standards for utility interconnected photovoltaic inverter for unintentional islanding or any relevant Indian Standards</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. Fill up documentation applicable to one's role
	<b>Reading Skills</b>
	The user/individual on the job needs to know and understand how to: SA2. Read english and/or vernacular language SA3. Read and understand manuals, health and safety instructions and other company documents SA4. Ability to read from different sources- books screens in machines and signage
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/individual on the job needs to know and understand how to: SA5. Express statements or information clearly so that others can hear and understand SA6. Participate in and understand the main points of simple discussions SA7. Respond appropriately to any queries
	<b>B. Professional Skills</b>
<b>Decision Making</b>	
The user/individual on the job needs to know and understand how to: SB1. Follow organization rule-based decision making process SB2. Take decision with systematic course of actions and/or response	
<b>Plan and Organize</b>	
N.A	
<b>Customer Centricity</b>	
The user/individual on the job needs to know and understand how to: SB3. Follow code of conduct SB4. Manage relationships with customers with intent on satisfying its requirements for service delivery	
<b>Problem Solving</b>	
The user/individual on the job needs to know and understand how to: SB5. Recognize problems and search for solutions SB6. Choose best methods to complete assigned tasks SB7. Approach relevant authority when required	
<b>Analytical Thinking</b>	
N.A	
<b>Critical Thinking</b>	
The user/individual on the job needs to know and understand how to: SB8. Critically evaluate information obtained from customers, supervisor and co-workers to perform day to day activities SB9. Ask questions for better understanding	

**SGJ/ N0118      Pre-Commissioning Inspection of the Rooftop Solar PV Power Plant**

**NOS Version Control**

NOS Code	SGJ/N0118		
Credits (NSQF)	TBD	Version number	1.0
Industry Sector	Green Jobs	Drafted on	14/04/2016
Industry Sub-sector	Renewable Energy	Last reviewed on	13/06/2016
Occupation	Inspection and Testing	Next review date	01/06/2019

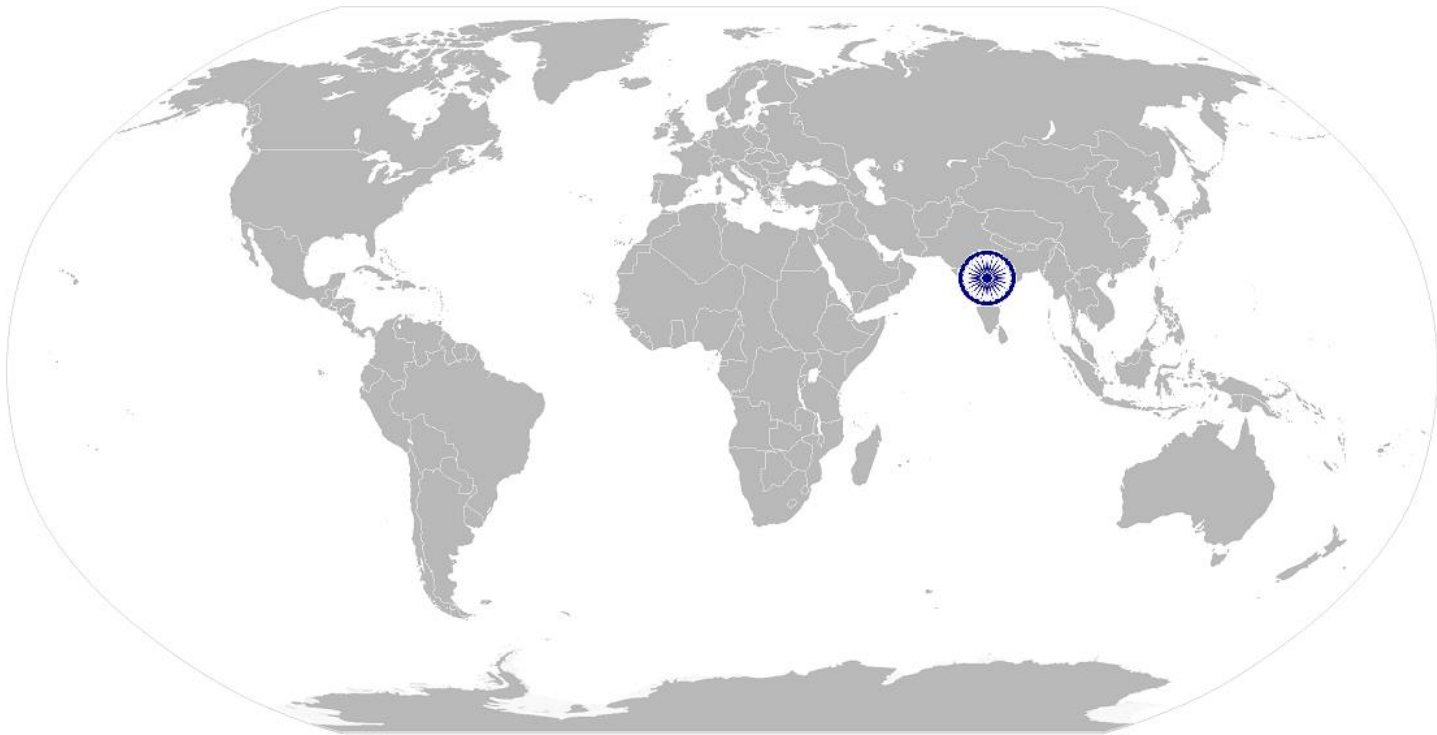


SGJ/ N0119

Post Commissioning Testing of Rooftop Solar PV Power Plant

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# National Occupational Standard



## Overview

This unit is about inspection, testing and auditing of grid connectivity post commissioning of Rooftop Solar PV Power Plant.



SGJ/ N0119

## Post Commissioning Testing of Rooftop Solar PV Power Plant

National Occupational Standard

<b>Unit Code</b>	SGJ / N0119
<b>Unit Title (Task)</b>	Post Commissioning Testing of Grid Connected Rooftop Solar PV Power Plant
<b>Description</b>	This unit is about inspection and auditing of grid connectivity to Solar PV system.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>Post commissioning testing parameters</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Post commissioning testing parameters</b>	<p>The user/individual on the job needs to know and understand how to:</p> <p>PC1. Verify the operation of the installed Solar metering system including import and export of energy</p> <p>PC2. Test and verify the inverter operation including anti-islanding functionality, overload, etc.</p> <p>PC3. Verify the operation of the disconnect protections/isolation devices</p> <p>PC4. Test, record and verify the power quality of rooftop PV power plant at time of interconnection including harmonics, current, voltage etc.</p> <p>PC5. Test and verify the power factor</p> <p>PC6. Test and verify the Rooftop Solar PV power plant for any phase imbalance</p> <p>PC7. Test and verify the overall safety of the Grid Connected Rooftop Solar PV power plant</p> <p>PC8. Prepare and complete the relevant documentation</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context (Knowledge of the company /organization and its processes)</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Company's policies on: incentives, personnel management</p> <p>KA2. Company's code of conduct</p> <p>KA3. Importance of individual's role in the work flow</p> <p>KA4. Organisation culture</p>
<b>B. Technical Knowledge</b>	<p>The individual on the job needs to know and understand the following aspects:</p> <p>KB1. Effect of harmonic current injection, flicker and DC injection into AC grid on quality of power</p> <p>KB2. Inverter response to abnormal conditions like over voltage and under voltage trip function, over and under frequency trip functions and unintentional islanding function</p> <p>KB3. Know-how of Tools &amp; Tackles required for inspection and commissioning of the plant</p> <p>KB4. Do's and don'ts of DC wiring and installation of other electrical components</p> <p>KB5. Testing and commissioning activities and its interpretation - visual inspection, continuity of wiring, earthing, polarity check, insulation, voltage drop etc.</p> <p>KB6. Typical faults, their causes and resolution for all system components</p> <p>KB7. Connection of the Solar Power Plant to the distribution box/ LT Panel and switchover along with precautions based on different types of plants Current Indian regulation on harmonics, flicker, frequency range and voltage range</p>

SGJ/ N0119

Post Commissioning Testing of Rooftop Solar PV Power Plant

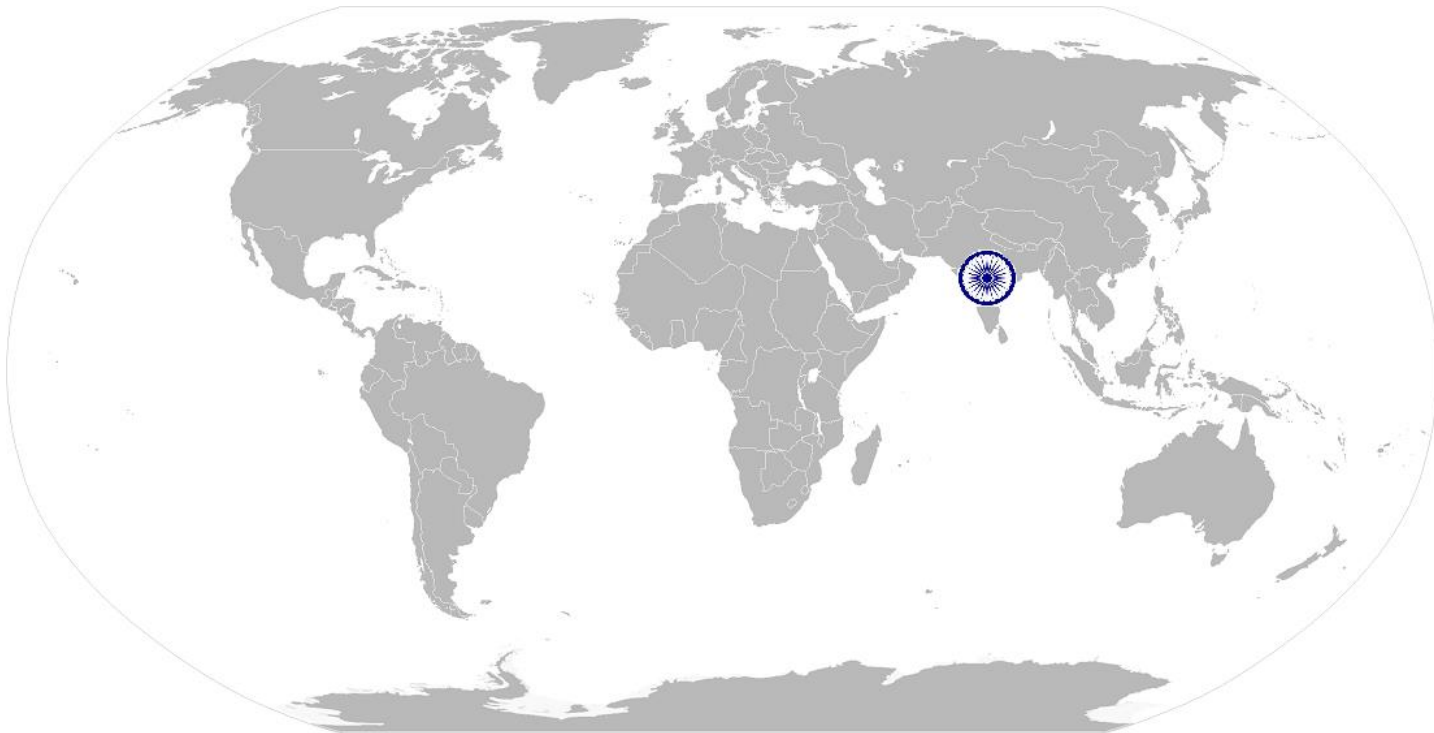
Skills	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. How to be able to fill in job completion form after inspection and auditing is completed
	<b>Reading Skills</b>
	The user/individual on the job needs to know and understand how to: SA2. Read and understand manuals, health and safety instructions, memos, other company documents SA3. Ability to read from different sources- books screens in machines and signage SA4. Understand the various color codes, as per standard electrical, mechanical and civil nomenclature
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/individual on the job needs to know and understand how to: SA5. Express statements or information clearly so that others can hear and understand SA6. Participate in and understand the main points of simple discussions SA7. Respond appropriately to any queries SA8. Communicate with supervisor
	<b>B. Professional Skills</b>
	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to: SB1. Follow organization rule-based decision making process SB2. Take decision with systematic course of actions and/or response
	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand how to : SB3. Planning and organization of work to meet deadlines SB4. Work constructively and collaboratively with others
	<b>Customer Centricity</b>
	The user/individual on the job needs to know and understand how to: SB1. Follow code of conduct.
	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to: SB5. Recognize problems and search for solutions SB6. Choose best methods to complete assigned tasks SB7. Approach relevant authority when required
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB8. Apply domain knowledge, observations and data to select course of action to perform tasks related to Solar Photovoltaic Systems
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB9. Critically evaluate information obtained from customers, supervisor and co-workers to perform day to day activities SB10. Ask questions for better understanding

**SGJ/ N0119**

**Post Commissioning Testing of Rooftop Solar PV Power Plant**

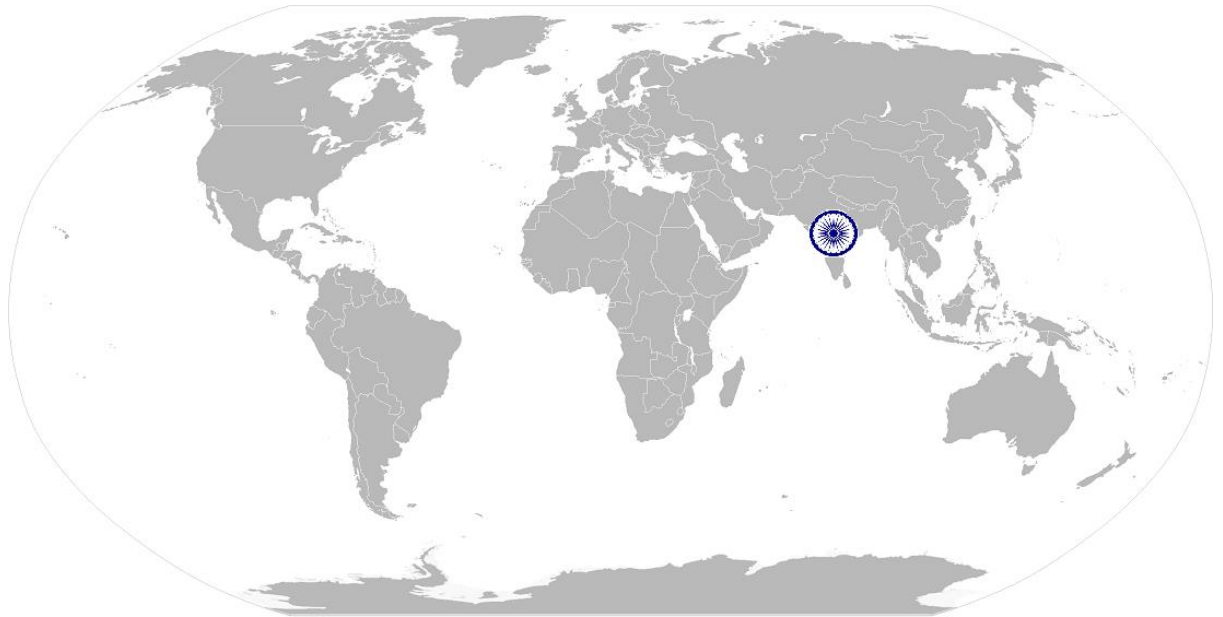
## **NOS Version Control**

<b>NOS Code</b>	<b>SGJ/N0119</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry Sector</b>	<b>Green Jobs</b>	<b>Drafted on</b>	<b>14/04/2016</b>
<b>Industry Sub-sector</b>	<b>Renewable Energy</b>	<b>Last reviewed on</b>	<b>13/06/2016</b>
<b>Occupation</b>	<b>Inspection and Testing</b>	<b>Next review date</b>	<b>01/06/2019</b>



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# National Occupational Standard



## Overview

This unit is about maintaining Personal Health & Safety at project site.



SGJ/ N 0106

Maintain Personal Health & Safety at Project Site

National Occupational Standard

<b>Unit Code</b>	SGJ / N0106
<b>Unit Title (Task)</b>	Maintain Personal Health & Safety at Project Site
<b>Description</b>	This unit is about maintaining Work Safety for Solar Photovoltaic Power Plants.
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Establish and follow safe work procedure</li> <li>Use and maintain personal protective equipment</li> <li>Identify and mitigate safety hazards</li> <li>Demonstrate safe and proper use of required tools and equipment</li> <li>Identify work safety procedures and instructions for working at height</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Establish and Follow safe work procedure</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Identify corporate policies required for workplace safety</p> <p>PC2. Identify requirements for safe work area and create a safe work environment</p> <p>PC3. Identify contact person when workplace safety policies are violated</p> <p>PC4. Provide information about incident/violation</p> <p>PC5. Identify the location of first aid materials and administer first aid</p>
<b>Use and maintain personal protective equipment</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC6. Identify the personal protection equipment required for specific locations on-site</p> <p>PC7. Identify expiry dates and wear &amp; tear issues of specified equipment</p> <p>PC8. Demonstrate safe and accepted practices for personal protection</p>
<b>Identify and mitigate safety hazards</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC9. Identify environmental hazards associated with photovoltaic installations</p> <p>PC10. Identify electrical hazards</p> <p>PC11. Identify personal safety hazards or work site hazards and mitigate hazards</p>
<b>Demonstrate safe and proper use of required tools and equipment</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC12. Select tools, equipment and testing devices needed to carry out the work</p> <p>PC13. Demonstrate safe and proper use of required tools and equipment</p>
<b>Identify work safety procedures and instructions for working at height.</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC14. Check access from ground to work area to ensure it is safe and in accordance with requirements</p> <p>PC15. Reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations</p> <p>PC16. Inspect/install fall protection and perimeter protection equipment ensuring adequacy for work and conformance to regulatory requirements</p> <p>PC17. Identify approved methods of moving tools and equipment to work area and minimize potential hazards associated with tools at heights</p> <p>PC18. Select and install appropriate signs and barricades</p> <p>PC19. Place tools and materials to eliminate or minimize the risk of items being knocked down</p> <p>PC20. Dismantle safety power plant in accordance with sequence and remove from worksite to clear work area</p>

SGJ/ N 0106

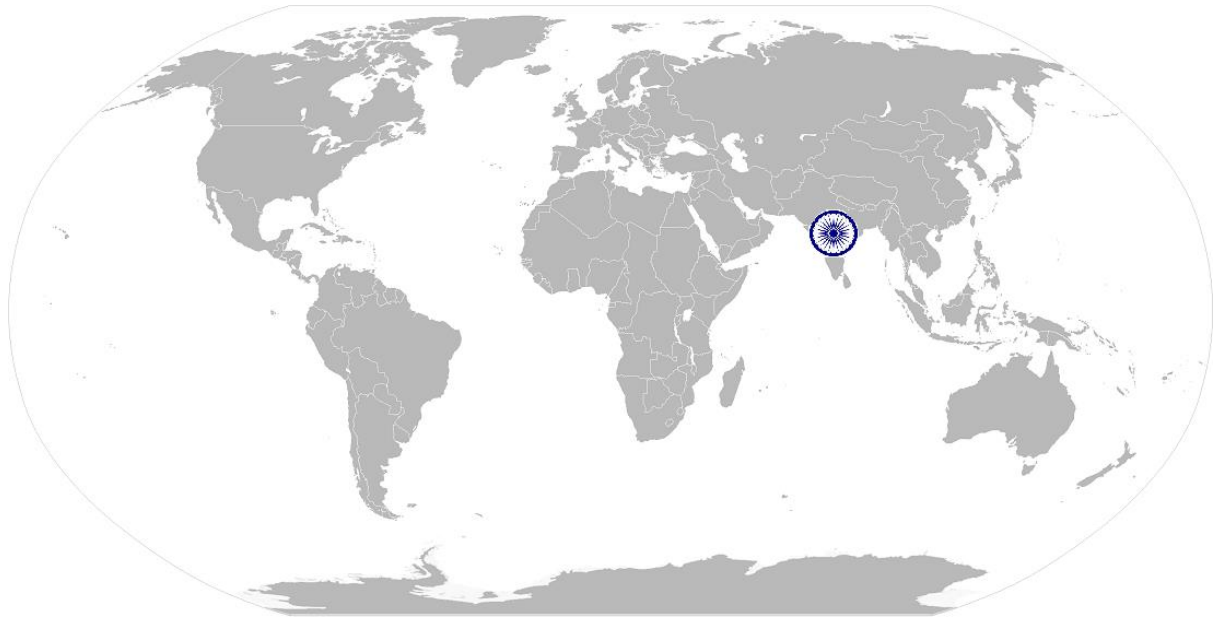
Maintain Personal Health & Safety at Project Site

Knowledge and Understanding (K)	
<b>A. Organizational Context (Knowledge of the company / organization and its processes)</b>	The user/individual on the job needs to know and understand: KA1. Company's installation policy KA2. Company's work safety policy KA3. Company's customer support policy KA4. Company's documentation policy KA5. Obtain authorization from specified field safety officer and supervisor KA6. Company's reporting structure and organization culture KA7. Company's different department and concerned authority
<b>B. Technical Knowledge</b>	The individual on the job needs to know and understand the following aspects: KB1. Relevant personal protective equipment's required for installation KB2. Relevant standards and regulations for installation of solar photovoltaic power plant in India KB3. Occupational Health and Safety (OHS) standards for installation of solar photovoltaic power plant KB4. Risk identification and mitigation procedure for safe installation of solar photovoltaic power plant KB5. Knowhow of tools & tackles required to carry out the work
Skills	
<b>A. Core Skills/ Generic Skills</b>	<p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Fill up documentation applicable to one's role</p> <p><b>Reading Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA2. Read english and/or vernacular language SA3. Read and understand manuals, health and safety instructions, memos, other company documents SA4. Ability to read from different sources- books screens in machines and signage SA5. Understand the various color codes, as per standard electrical, mechanical and civil nomenclature</p> <p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. Express statements or information clearly so that others can hear and understand SA7. Participate in and understand the main points of simple discussions. SA8. Respond appropriately to any queries SA9. Communicate with supervisor</p>
<b>B. Professional Skills</b>	<p><b>Decision Making</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. Follow organization rule-based decision making process SB3. Take decision with systematic course of actions and/or response</p> <p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to :</p> <p>SB4. Planning and organization of work to meet deadlines SB5. Work constructively and collaboratively with others</p> <p><b>Customer Centricity</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. Follow code of conduct. SB7. Manage relationships with customers with intent on satisfying its requirements for service delivery.</p>

SGJ/ N 0106

Maintain Personal Health & Safety at Project Site

	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to: SB8. Recognize problems and search for solutions SB9. Choose best methods to complete assigned tasks SB10. Approach relevant authority when required
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB11. Apply domain knowledge, observations and data to select course of action to perform tasks related to solar photovoltaic systems
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB12. Critically evaluate information obtained from customers, supervisor and co-workers to perform day to day activities SB13. Ask questions for better understanding

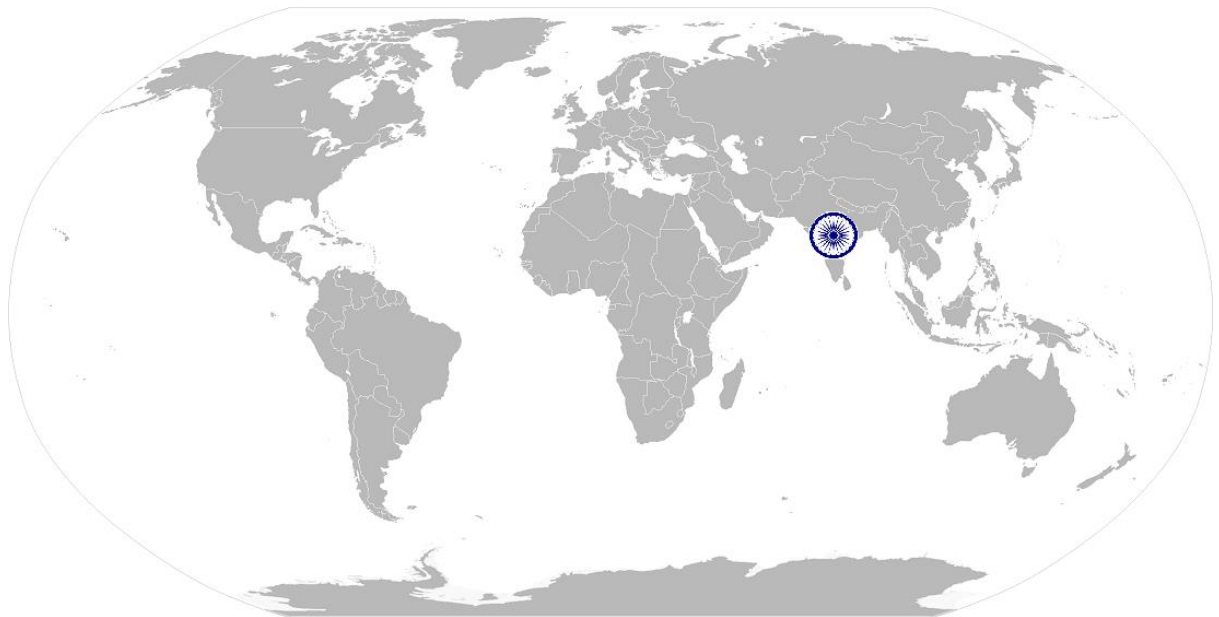


SGJ/ N 0106

Maintain Personal Health & Safety at Project Site

**NOS Version Control**

NOS Code	SGJ/N0106		
Credits (NSQF)	TBD	Version number	1.0
Industry Sector	Green Jobs	Drafted on	26/06/2015
Industry Sub-sector	Renewable Energy	Last reviewed on	21/10/2015
Occupation	Health & Safety	Next review date	01/10/2018



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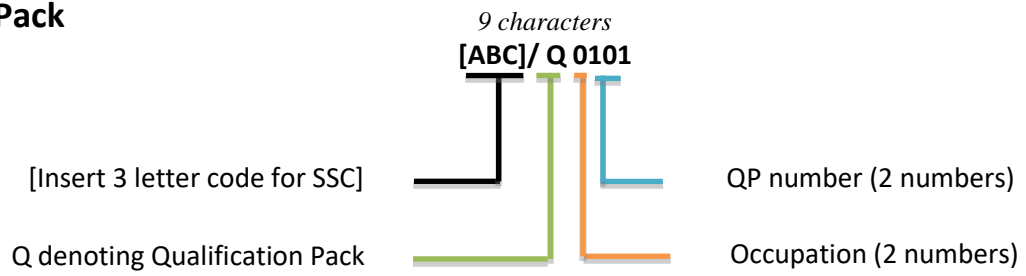
SGJ/Q0106

Qualification Pack for “Rooftop Solar Grid Engineer”

## Annexure

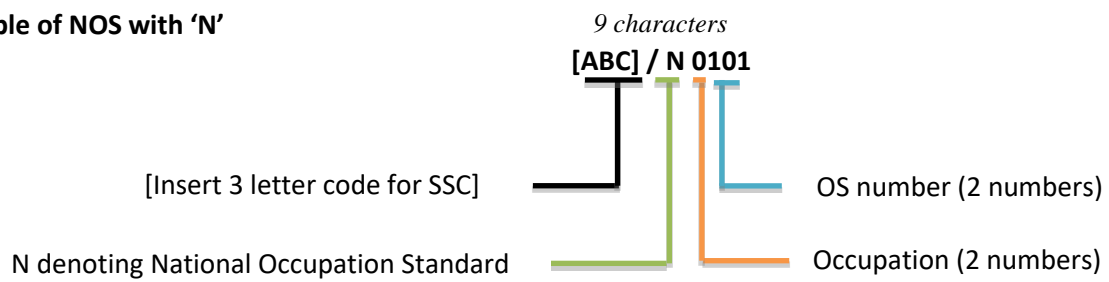
### Nomenclature for QP and NOS

#### Qualifications Pack



#### Occupational Standard

##### An example of NOS with ‘N’



SGJ/Q0106

Qualification Pack for “Rooftop Solar Grid Engineer”

The following acronyms/codes have been used in the nomenclature above:

Sub-sector		Range of Occupation numbers
Renewables (01-35)	Solar Photovoltaic	01-05
	Solar Thermal	06-10
	Wind	11-15
	Hydro	16-20
	Biomass	21-25
	Geothermal	26-30
	All Renewables (Cross-cutting/ Enabling Activities)	31-35
Green Transportation (36 - 40)	Alternative Fuel Transportation	36-40
	Bio-fuels and Farming	40-45
	Other Green Transportation	46-50
Green Construction (51- 60)	Green Buildings	51-55
	Energy Efficiency	56-60
Waste Management (61- 65)	Waste Management	61-65
Water Management ( 66-70)	Water and Wastewater Management	66-70
Co- Generation (71 - 75)	Co-generation	71-75
Other Green Jobs (76- 99)	Carbon Sinks	76-80
	Environmental Compliance and Sustainability Planning	81-85
	Other Green Jobs	85-99

Sequence	Description	Example
Three letters	Industry name	SGJ
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

SGJ/ Q 0106

## Qualification Pack for “Rooftop Solar Grid Engineer”

### CRITERIA FOR ASSESSMENT OF TRAINEES

**Job Role** Rooftop Solar Grid Engineer

**Qualification Pack** SGJ/Q0106

**Sector Skill Council** Green Jobs

#### Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

NOS	Performance Criteria	Marks Allocation			
		Total Mark	Out Of	Theor y	Skills Practical
SGJ/N0118: Pre-Commissioning Inspection of the Grid Connected Rooftop Solar PV Power Plant.	PC1. Identify the key regulatory parameters for interconnection and metering arrangement including power quality of the grid at the project site.	60	9	4	5
	PC2. Verify the capacity of the Rooftop Solar PV Power plant as per the relevant policy/ regulation		9	4	5
	PC3. Identify and verify the documents required for connecting the Rooftop Solar PV Power plant to the grid.		12	5	7
	PC4. Verify that the inverters, panels, Protection devices, etc. are conforming to IEC standards or relevant Indian standards.		8	4	4
	PC5. Verify and assess the safety of earthing and lightning protection of the Rooftop Solar PV Power Plant		11	5	6
	PC6. Ensure that the single line diagram of a rooftop Solar PV Power Plant is as per the regulatory specifications.		11	5	6
		TOTAL	60	27	33
SGJ/N0119: Post Commissioning Testing of Grid Connected Rooftop Solar PV Power Plant	PC1. Verify the operation of the installed Solar metering system including import and export of energy.	90	14	4	10
	PC2. Test and verify the inverter operation including anti-islanding functionality, overload, etc.		12	6	6
	PC3. Verify the operation of the disconnect protections/isolation devices.		10	4	6
	PC4. Test, record and verify the power quality of rooftop PV power plant at time of interconnection including harmonics, current, voltage etc.		10	4	6
	PC5. Test and verify power factor.		10	3	7
	PC6. Test and Verify the Rooftop Solar PV power plant for any phase imbalance.		12	4	12
	PC7. Test and Verify the Rooftop Solar PV power plant.		16	3	13



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	PC8. Prepare and complete the relevant documentation.		6	2	4
		TOTAL	90	30	60
SGJ/N0106 Maintain Personal Health & safety at project site	PC1. Identify corporate policies required for workplace safety.	50	2	1	1
	PC2. Identify requirements for safe work area and create a safe work environment.		3	2	1
	PC3. Identify contact person when workplace safety policies are violated.		1	1	0
	PC4. Provide information about incident/violation.		1	1	0
	PC5. Identify the location of First Aid materials and administer first aid		2	1	1
	PC6. Identify the personal protection equipment required for specific locations on-site		3	2	1
	PC7. Identify expiry dates and wear & tear issues of specified equipment.		2	1	1
	PC8. Demonstrate safe and accepted practices for personal protection.		3	2	1
	PC9. Identify environmental hazards associated with photovoltaic installations.		2	1	1
	PC10. Identify electrical hazards.		4	2	2
	PC11. Identify personal safety hazards or work site hazards and Mitigate hazards.		4	2	2
	PC12. Select tools, equipment and testing devices needed to carry out the work.		4	2	2
	PC13. Demonstrate safe and proper use of required tools and equipment.		4	2	2
	PC14. Check access from ground to work area to ensure it is safe and in accordance with requirements.		2	1	1
	PC15. Reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations.		2	2	0
	PC16. Inspect/install fall protection and perimeter protection equipment ensuring adequacy for work and conformance to regulatory requirements.		4	2	2
	PC17. Identify approved methods of moving tools and equipment to work area and minimize potential hazards associated with tools at heights		2	1	1
	PC18. Select and install appropriate signs and barricades		2	1	1
	PC19. Place tools and materials to eliminate or minimize the risk of items being knocked down.		1	1	
	PC20. Dismantle safety Power Plant in accordance with sequence and remove from worksite to clear work area.		2	1	1
		TOTAL	50	29	21
		TOTAL	200	86	114