

Guidelines for Implementation of Net Metering Rooftop Solar PV Grid Interactive Systems

Dated: 23.11.2016

Sl. No.	Description	Summary									
1.	Operative Period	N.A.									
2.	Eligibility	<p>1. Eligible Consumer is a consumer of electricity in the area of supply of the DISCOM, who uses or proposes to use a Rooftop Solar PV System, which can be self-owned or a third party owned to offset a part or all of the consumer's own electrical requirement including a consumer catering to a common load such as common services in a Housing Society.</p> <p>2. The land will be Own or be in legal possession of the premises including the rooftop or terrace or elevated areas on land, building or infrastructure or part or combination thereof on which the Rooftop Solar PV System is proposed to be installed.</p> <p>3. An Eligible Consumer shall be in three phase service, a single phase consumer is also eligible for net metering upto 5 KW.</p> <p>4. An Eligible Consumer intending to install a Rooftop Solar PV System having capacity in excess of 75 kW and up to 1 MW can connect to 11 kV or 33 kV feeder from which the feeder of an Eligible Consumer is availing of supply of power.</p> <p>5. The maximum Rooftop Solar PV System capacity to be installed at any Eligible Consumer's premises shall be as under:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Sl. No.</th> <th style="text-align: center;">Type of Consumer</th> <th style="text-align: center;">Maximum allowable Rooftop Solar PV System Capacity to be installed</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td style="text-align: center;">Residential and Government</td> <td style="text-align: center;">100% of the consumer's sanctioned load</td> </tr> <tr> <td style="text-align: center;">2.</td> <td style="text-align: center;">Industrial, Commercial and other Consumer's</td> <td style="text-align: center;">80% of the consumer's sanctioned load</td> </tr> </tbody> </table> <p>Rooftop Solar PV System installed capacity shall not be less than 1 kWp and shall not exceed 1 MWp.</p>	Sl. No.	Type of Consumer	Maximum allowable Rooftop Solar PV System Capacity to be installed	1.	Residential and Government	100% of the consumer's sanctioned load	2.	Industrial, Commercial and other Consumer's	80% of the consumer's sanctioned load
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4.	Capacity limits of Distribution Transformer, 11 kV and 33 kV Feeder level	The concerned ADE (Operation) Or DE (Operation) shall ensure the following capacity limits before issue of technical feasibility for Net metering arrangement to an Eligible Consumer:									

		Sl. No.	Consumer Voltage level	DTR 11 kV or 33 kV feeder	Maximum allowable cumulative capacity of all the Rooftop Solar PV systems permitted of its rated capacity/ max load	Maximum allowable cumulative capacity in kW/MW
		1.	Low Tension (LT)	DTR	50%	50% of existing DTR capacity *0.9 p.f.
		2.	High Tension (11 kV/33 kV)	11 kV or 33 kV feeder	50%	1.125 MW (11 kV) 4.5 MW (33 kV)
		<ul style="list-style-type: none"> the Net Metering connectivity exceeding 50% of such rated capacity may allow upon consideration of a detailed load study carried out duly taking prior approval from Chief General Manager/Commercial. 				
5.	Synchronization with the Distribution Network/Grid: Standards and Safety	<ol style="list-style-type: none"> The Eligible Consumer shall submit work completion report and shall make a request for inspection. Variation in the rated capacity of the system within a range of five percent (5%) shall be allowed. The connectivity levels at which a Rooftop PV Solar System shall be connected with the grid are as specified below: 				
		Sl. No.	Connected load of Eligible Consumer		Connectivity Level	
		1.	Upto 5 kW		240-V Single Phase	
		2.	Above 5 kW and upto 75 kW		415-V Three Phase	
		3.	Above 75 kW / kVA		High Tension (HT)	
		<p>➤ The tests shall be done as per the standards and in accordance with the Discom's standards of the Commission to ensure the quality of power generated from the Rooftop Solar PV Systems :-</p> <ol style="list-style-type: none"> DC Power injection: Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions duly complying <ul style="list-style-type: none"> IEC 61727, 2nd Ed. (2004) CEA's (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013 Harmonic Injection: <ul style="list-style-type: none"> CEA's (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013. IEEE 519 (2014) Flicker: Operation of Photovoltaic system shouldn't cause voltage flicker in excess of the limits stated in the relevant sections of IEC 61000 series 				

		<p>4. Power Factor: While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate duly complying</p> <ul style="list-style-type: none"> • IEC 61215. 2nd Ed, (2005-04) • IEC 61646. 2nd Ed, (2008-05) • IEC 62108. 1st Ed, (2007-12) • IEC 61730-1, Ed. 1.2 (2013-03) • IEC 61730-2, Ed. 1.1 (2012-11) <p>➤ IEC 61727, 2nd Ed. (2004) & IEC 62116, 2nd Ed. (2014-02) shall be followed to test the island prevention measure for the grid connected photovoltaic inverters.</p> <p>➤ Protective functions to sense the abnormal conditions:</p> <p>➤ Over and under voltage trip functions if voltage reaches above 110% or below 80% respectively with a clearing time upto two (2) seconds</p> <p>➤ Over and under frequency trip functions, if frequency reaches 50.3 Hz or below 49.2 Hz with a clearing time upto 0.2 seconds</p> <p>➤ Paralleling device of the Rooftop Solar PV System shall be capable of withstanding 220% of the nominal voltage at the interconnection point</p> <p>➤ Every time the Rooftop Solar PV System of the Eligible Consumer is synchronized with the distribution system, it shall not cause the voltage fluctuation greater than $\pm 5\%$ at the point of inter connection.</p>
6.	Net Metering arrangement	<p>➤ The bi-directional meter should have the following characteristics:</p> <ol style="list-style-type: none"> 1. kVAr, kWh, kVA , kVAh measuring registers for capacity above 10 kW. 2. Advanced Metering Infrastructure (AMI) facility with RS232 (or higher) communication port. 3. Class 1 accuracy meters for Rooftop Solar PV Systems up to 10 kW, 0.5 accuracy class meters for Rooftop Solar PV Systems above 10 kW and 0.2 class accuracy meters for High Tension (HT) systems (56 kW and above). 4. Current Transformer (CT) functionality meters for the Rooftop Solar PV Systems above 56 kW. <p>➤ Where the Eligible Consumer is within the ambit of Time-of-Day (ToD) Tariff, the Net Meter installed shall be capable of recording ToD consumption and generation.</p> <p>➤ If everything found in line with the guidelines, the concerned officials should synchronize the Solar Rooftop PV System to the grid and sign the Synchronization report/Test report and forward the Synchronization report/Test report to the concerned Circle Office Or Electricity Revenue Office for billing purpose duly updating the same in CSC login.</p>
7.	Energy Accounting and Settlement	<p>➤ The accounting of electricity exported and imported by the Eligible Consumer shall become effective from the date of connectivity of the Rooftop Solar PV System with the distribution Network.</p> <p>➤ For each Billing Period, the following parameters shall show separately:-</p>

		<ol style="list-style-type: none"> 1. The quantum of electricity Units exported and imported by the Eligible Consumer; 2. The net quantum of electricity Units billed for payment by the Eligible Consumer; 3. The net quantum of electricity Units carried over to the next Billing Period; 4. There shall be no deemed generation charges payable to the Eligible Consumer or the third party owner of the PV solar rooftop system. <ul style="list-style-type: none"> ➤ The unadjusted net credited Units of electricity shall be settled twice in a year viz., in June and December. ➤ When an Eligible Consumer cancels the Net metering Agreement entered into with the DISCOM after giving a month's notice, then, unused electricity credits shall be paid at a rate of Rs 0.50/kWh by the DISCOM or at a rate as notified by the Commission from time to time and ceases to be an Eligible Consumer thereafter.
8.	Applicability of other charges and incentives	<ol style="list-style-type: none"> 1. The Rooftop Solar PV System under the net metering arrangement, whether self-owned or third party owned installed on the Eligible Consumer's premises, shall be exempted from Transmission Charge Transmission Loss, Wheeling Charge, Wheeling Loss, Cross Subsidy Surcharge and Additional Surcharge. 2. An Eligible Consumer or a vendor of the Rooftop Solar PV system on authorization from an Eligible Consumer shall produce the latest net metering bills for two months raised by a DISCOM for the release of the subsidy or incentive. These bills shall be counter signed by the concerned Divisional Engineer (Operation) and the District Manager of the State Nodal Agency (TSREDCO). The Nodal Agency shall make the payment of subsidy or incentive within thirty (30) working days of the receipt of claim of subsidy/incentive.
9.	Inspection by DISCOM Officials	The Eligible Consumer shall install any additional equipment or additional Solar panels after obtaining prior permission in writing from the DISCOM, failing which, the Discom Officials may cancel the Net Metering Agreement after giving an opportunity in writing.
10.	Sharing of Clean Development Mechanism (CDM) benefits	The Eligible Consumer shall retain the entire proceeds of CDM benefits in the first year after the date of commercial operation of the generating station. In the second year, the share of the Distribution Licensees shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after, the proceeds shall be shared in equal proportion by the Eligible Consumer and the DISCOM.
11.	Energy Accounting during Meter defects	In case of failure of the meter recording export of energy, the meter shall be replaced within fifteen (15) days of the notice of the failure.
12.	Compensation	In case of failure of the net metering arrangement, compensation shall be payable as per the provisions of the Telangana State Electricity Regulatory Commission (Licensees' Standards of Performance) Regulation, 2016 as amended from time to time.