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Jharkhand State Electricity Regulatory Commission, Ranchi

JSERC (Determination of Tariff for Procurement of Power from Solar PV Power Project and Solar Thermal Power Project) Regulations, 2015

NOTIFICATION
The 10th November, 2015

No.51--In exercise of the powers conferred by Section 86 (1) (a), (b) and (c) read with (e), Section 61(a to h), and Section 62 (1) of the Electricity Act 2003 and all other powers enabling it in this behalf, the Jharkhand State Electricity Regulatory Commission hereby makes the following Regulations.

A1: SHORT TITLE, COMMENCEMENT AND INTERPRETATION

1.1 This Regulation may be called the 'Jharkhand State Electricity Regulatory Commission (Determination of tariff for procurement of power from solar PV power project and solar thermal power project) Regulations, 2015'.

1.2 These Regulations shall extend to the whole state of Jharkhand

1.3 These Regulations shall come into force on the date of its publication in the Jharkhand Gazette and unless reviewed earlier or extended by the Commission, and shall remain in force upto 31st March, 2020.

A2: DEFINITION

2.1 In this Regulation unless the context otherwise requires:

(a) **"Act"** means the Electricity Act, 2003 and subsequent amendment thereof;

(b) **"Banking of power"** is the process under which a Generating Plant supplies power to the grid not with the intention of selling it to either a third party or to a Licensee, but with the intention of exercising its eligibility to draw back this power from the grid;

(c) **"Capital cost"** means the cost inclusive of all capital work including plant and machinery, civil work, land including leasehold land, erection and commissioning, financing and interest during construction;

(d) **"CERC"** means The Central Electricity Regulatory Commission referred to in subsection (1) of section 76;

(e) **"Control Period"** means the period during which the norms for determination of tariff specified in these regulations shall remain valid;

(f) **"Day"** means a continuous period starting at 00.00 hours and ending at 24.00 hours;

(g) **"Distribution Licensee or Discom"** means a Licensee authorised to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply;

(h) **"Extra High Voltage (EHV)"** means the voltage, which exceeds 33,000 volts subject, however, to the percentage variation allowed under the Indian Electricity Rules, 1956;

(i) **"Grid"** means interconnected network of transmission lines, distribution lines and sub-stations at EHV and HV level;

(j) **"Grid Code"** shall mean the JSERC (State Grid Code), Regulations, 2008 & its amendment from time to time;

(k) **"High Voltage (HV)"** means the voltage higher than 650 volts but which does not exceed 33,000 volts 50 cycles under normal conditions subject, however, to the percentage variation allowed under the Indian Electricity Rules, 1956;

(l) **"Infrastructure cost"** means the cost of auxiliaries, cost of land, site development charges and other civil works, transportation charges, cost of evacuation up to interconnection point;

(m) **"Inter-connection Point"** means interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be;

(i). in relation to Solar Photovoltaic Projects, inter-connection point shall be line isolator on outgoing feeder on HV side of the pooling sub-station;

(ii). in relation to Solar Thermal Power Projects the, inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;

(n) **"JSERC or Commission"** means the Jharkhand State Electricity Regulatory Commission;

(o) **"Month"** means a continuous period of one month commencing from 00.00 hours on the first day of the month and ending at 24.00 hours on last day of the month;

(p) **"MNRE"** means the Ministry of New and Renewable Energy of the Government of India;

(q) **"NLDC"** means the Centre established under sub-section (1) of Section 26 of the Act;

(r) **"Non-firm power"** means the power generated from renewable sources, the hourly variation of which is dependent upon nature's phenomenon like sun, cloud, wind, etc., that cannot be accurately predicted;

(s) **"Operation and Maintenance expenses"** or **"O&M expenses"** means the expenditure incurred on operation and maintenance of the project, or part thereof , and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

(t) **"Project"** means a generating station or the evacuation system up to interconnection point, as the case may be;

(u) **"Regional Load Despatch Centre (RLDC)"** means the Centre established under sub-section (1) of Section 27 of the Act;

(v) **"Regional Power Committee (RPC)"** means a Committee established by resolution by the Central Government for a specific region for facilitating the integrated operation of the power systems in that region;

(w) **"RPC Secretariat"** means the Secretariat of the RPC;

(x) **"Schedule"** denote the injection schedule in MW (in case of generator) or drawl schedule in MW (in case of consumer) provided by generator/consumer to the SLDC (in case of connected to transmission network) or to the Distribution Licensee (in case of connected to distribution network) in a manner as specified in this code;

(y) **"SERCs"** means State Electricity Regulatory Commissions;

(z) **"State Load Despatch Centre(SLDC)"** means the Centre established under subsection (1) of Section 31 of the Act;

(aa) **"State"** means the State of Jharkhand;

(bb) **"State Transmission Utility (STU)"** means the Board or the Government Company specified as such by the State Government under sub-section (1) of Section 39 of the Act;

(cc) **"Tariff period"** means the period for which tariff is to be determined by the Commission on the basis of norms specified under these Regulations;

(dd) **"Useful Life"** in relation to a unit of a generating station for a solar Photo Voltaic and solar thermal power project including evacuation system shall mean 25 years from the date of commercial operation (COD);

(ee) **"Year"** means a financial year.

2.2 All other expressions used herein although not specifically defined herein, but defined in the Act, shall have the meaning assigned to them in the Act. The other expressions used herein but not specifically defined in this Regulation or in the Act but defined under any law passed by the Parliament applicable to electricity industry in the State shall have the meaning assigned to them in such law.

A3: APPLICABILITY OF THE ORDER

3.1 These regulations shall be applicable to grid connected :

(a) Solar Photovoltaic (PV) power projects that directly convert solar energy into electricity and are based on the technologies such as crystalline silicon or thin film etc. as may be approved by MNRE.

(b) Solar thermal power projects based on Concentrated solar power (CSP) technologies such as line focusing or point focusing, as may be approved by MNRE, and uses direct sunlight, concentrating it several times to reach higher energy densities and thus higher temperatures whereby the heat generated is used to operate a conventional power cycle to generate electricity.

3.2 These regulations shall be applicable to solar PV power projects and solar thermal power projects in the State commissioned on or after the date of issue of this order and intended for sale of electricity to the Distribution Licensees within the State.

3.3 The control period will start from the date of publication of these regulations in the Official Gazette of Government of Jharkhand and will extend upto 31st March, 2020. The tariff decided in a particular control period shall apply to all projects which come up within that control period.

3.4 The revision in Regulations for next Control Period shall be undertaken at least six months prior to the end of the this Control Period and in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised Regulations subject to adjustments as per revised Regulations.

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A4: DETERMINANTS OF TARIFF

4.1 Under Section 14 of the Act, no license is required for generation and distribution of power in notified rural areas. Hence, stand-alone solar PV power project and solar thermal power project supplying to rural areas will not have their tariffs determined by the Commission.

4.2 Solar PV and solar thermal power project feeding to the grid would require tariff at which Distribution Licensees would procure power from these plants. Determination of tariff by the Commission would also facilitate signing of Power Purchase Agreement (PPA) between developers and Distribution Licensee.

4.3 The Commission shall determine the generic tariff suo-motu at least six months in advance at the beginning of each year of the Control period for solar PV and solar thermal power projects for which norms have been specified under these Regulations.

Notwithstanding anything contained in these regulations,

(a) the generic tariff determined for Solar PV projects based on the capital cost and other norms applicable for any year of the control period shall also apply for such projects during the next year; and

(b) the generic tariff determined for Solar thermal projects based on the capital cost and other norms for the any year of the control period shall also apply for such projects during the next two years;

Provided that:

(i) the Power Purchase Agreements in respect of the Solar PV projects and Solar thermal projects as mentioned in this clause are signed on or before last day of the year for which generic tariff is determined and

(ii) the entire capacity covered by the Power Purchase Agreements is commissioned on or before 31st March of the next year in respect of Solar PV projects and on or before 31st March of subsequent two years in respect of Solar thermal projects

4.4 Project specific tariff, on case to case basis, shall be determined by the Commission for Solar PV and Solar Thermal Power projects, if a project developer opts for project specific tariff.

Provided that the Commission while determining the project specific tariff for Solar PV and Solar Thermal power project shall be guided by the provisions specified in these Regulations.

4.5 A Petition for determination of project specific tariff shall be accompanied by such fee as may be determined by Regulations and shall be accompanied by:

(a) Information in forms released by the Commission as appendix to these Regulations;

(b) Detailed Project Report (DPR) outlining technical and operational details, site specific aspects, premise for capital cost and financing plan etc.

(c) A Statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined.

(d) A statement containing full details of calculation of any subsidy and incentive received, due or assumed to be due from the Central Government and/or State Government. This statement shall also include the proposed tariff calculated without consideration of the subsidy and incentive.

(e) Any other relevant information required by the Commission for the purpose of Tariff Determination;

4.6 To accelerate investment in solar power generation projects for supply to the grid in Jharkhand, an appropriate tariff mechanism is the key requirement. In this regard, the Commission views that:

(a) The tariff mechanism must meet the needs of investors as well as Distribution Licensees;

(b) Renewable power may become unviable at market determined prices. On the other hand, cost-plus tariffs would provide greater surety to investors without affecting retail tariffs significantly (as renewable energy would depend upon the RPO targets as determined by the Commission).

4.7 Solar PV power projects and solar thermal power projects are eligible to receive benefits under the Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC). In order to encourage investment in the solar power projects, the Commission has not considered CDM as one of the parameters for tariff determination.

Tariff Principle

4.8 While deciding the tariff for power purchase by Distribution Licensee from renewable sources, the Commission has considered the principles and methodologies specified by:

(a) National Electricity Policy;

(b) National Tariff Policy;

(c) Central and State Governments; and

(d) Forum of Regulators (FOR) and Central Electricity Regulatory Commission;

4.9 Energy generation from solar plant utilizes sunshine as a resource. It does not utilize any fuel for generation of electricity in case of solar PV generation whereas in case of solar thermal power plant salt is used. Hence, the tariff for solar power generation does not have a variable fuel cost component but has a significant fixed cost component. Hence the Commission has considered a single-part tariff for solar PV and solar thermal power projects.

4.10 Solar energy generation depends upon natural factor such as availability of solar density in the region where the plant is located and is inherently non-firm power. It is pertinent to ensure that the project should be viable for the project developer and at the same time the interests of utility and consumers are protected by avoiding huge cost burden on them. Though there are several approaches for tariff determination, such as front loaded, back loaded, and average tariff etc. but each of these approaches has its advantages and disadvantages. It is important to capture the time value of money in the tariff structure which is incorporated in the levellised tariff approach. The Commission has, therefore, considered a levellised tariff approach in these regulations.

4.11 For the purpose of levellised tariff computation, the discount factor equivalent to Post tax weighted average cost of capital shall be considered.

4.12 Levellisation shall be carried out for the 'useful life' of the Renewable energy project while tariff shall be specified for the period equivalent to 'Tariff Period'

Components of tariff

4.13 Tariff determination using a cost-plus approach requires assumptions on the following operational and financial parameters:

(a) Capital cost;

(b) Capacity Utilization Factor;

(c) Auxiliary consumption;

(d) Debt-equity ratio ;

(e) Term of loan and Interest on long term debt;

(f) Depreciation;

(g) Operation and Maintenance expenditure;

(h) Working capital and interest on working capital;

(i) Return on equity.

4.14 The subsequent sections detail the terms and conditions of various components set by the Commission for determination of tariff from the solar PV and solar thermal power projects.

Solar PV power projects

Capital cost

4.15 The capital cost of a solar PV power project primarily consists of the cost of Photo Voltaic modules, balance of plant equipment, power conditioning equipment, taxes and duties, cost of inter-connection, civil works, land including leasehold lands and erection & commissioning.

4.16 The normative capital cost for Solar PV projects shall be Rs 605.85 lacs/MW for FY 2015-16.

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 4.4.

4.17 It is important to note that with the advancement in the technology of the solar PV based installations and associated economies of scale, the capital cost for Solar PV installations would also decrease in the near future. Therefore the benchmark capital cost of Solar PV projects may be reviewed annually by the Commission.

Capacity utilization factor

4.18 Capacity utilization factor (CUF) of a solar PV project is defined as the ratio of actual energy generated by the project to the equivalent energy output at its rated capacity over the year. The energy generation for a solar PV project is dependent on solar radiation, and number of clear sunny days. Thus the capacity utilization factor depends upon site specific parameters like insolation, ambient conditions and conversion efficiencies of PV cell.

4.19 The CUF norm for Solar PV projects during this control period shall be 19%

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 4.4.

Life of plant

4.20 The life of plant for Solar PV project whose commercial operation date falls within the control period of these Regulations shall be 25 years.

Debt equity ratio

4.21 Clause 5.3(b) of the National Tariff Policy stipulates a debt-equity ratio of 70:30 for financing of power projects. JSERC (Terms and Conditions for determination of Generation Tariff), Regulations 2015 notified by the Commission also provide a normative debt-equity ratio of 70:30 for Generating Company.

4.22 Accordingly, for generic tariff, to be determined suo-motu, the debt equity ratio shall be 70:30.

4.23 For Project specific tariff, the following provisions shall apply:-

If the equity actually employed is more than 30%, the amount of equity for the purpose for determining the tariff will be limited to 30% only. Provided that, in case the equity employed is less than 30%, the actual equity employed is to be considered.

Term of loan and Interest on long term debt

4.24 For the purpose of determination of tariff, loan tenure of 12 years shall be considered.

4.25 Notwithstanding any moratorium period availed for the solar power project, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

4.26 For the purpose of computation of tariff the normative interest rate on long term loan shall be considered as average State Bank of India (SBI) Base rate prevalent during the first six months of the previous year plus 300 basis points.

Depreciation

4.27 The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.

4.28 Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan period beyond loan tenure over useful life computed on Straight Line Method'. The depreciation rate for the first 12 years of the Tariff Period shall be 5.83% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 13th year onwards.

4.29 Depreciation shall be chargeable from the first year of commercial operation.

Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis

Operation and Maintenance expenses

4.30 Operation and Maintenance expenses consist of employee expenses, administrative and general expenses, repairs and maintenance expenses, cost of spares and insurance expenses.

4.31 O&M expenses shall be Rs 11.88 Lacs/MW for the 1st year of Control Period. Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 5.72% per annum.

Working capital requirement and interest on working capital

4.32 The Working Capital requirement in respect of Solar PV projects shall be computed in accordance with the following::

(a) Operation & Maintenance expenses for one month;

(b) Receivables equivalent to 2 (Two) months of energy charges for sale of electricity calculated on the normative CUF;

(c) Maintenance spares @ 15% of Operation and Maintenance expenses.

4.33 Interest on Working Capital shall be at interest rate equivalent to the average State Bank of India Base Rate prevalent during the first six months of the previous year plus 350 basis points.

Return on equity

4.34 The National Tariff Policy envisages that the appropriate Commission may determine preferential tariff for procurement of power by Distribution Licensee from non-conventional energy sources.

4.35 The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination as determined under Regulation 4.23).

4.36 The return on equity considered by the Commission in these regulations shall be:

(a) 20% per annum for the first 10 years.

(b) 24% per annum 11th years onwards.

Solar thermal power projects

Capital cost

4.37 The capital cost of a solar thermal power plant primarily consists of plant and machinery, civil works, commissioning work, land acquisition, land including leasehold lands and evacuation facilities upto inter-connection point etc.

4.38 Accordingly, the Commission has considered capital cost of Rs1200 lacs/MW for FY 2015-16 in line with the capital cost as considered by CERC.

4.39 The normative capital cost for Solar Thermal power projects shall be Rs 1200 lacs/MW for FY 2015-16.

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 4.4.

Provided that the benchmark capital cost of Solar thermal projects may be reviewed annually by the Commission.

Capacity utilization factor

4.40 The CUF norm for Solar thermal projects during this control period shall be 23%

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 4.4.

Auxiliary consumption

4.41 The auxiliary consumption of a solar thermal power plant is dependent on the configuration and mode of operation of the power plant. The auxiliary system includes the use of auxiliary heater to ensure that the salt used to store heat is maintained in a molten state during non-sunny days.

4.42 In the absence of specific details on this aspect, the Commission has considered auxiliary consumption as 10% for the determination of the tariff as per CERC norms.

Operation & Maintenance expenses

4.43 O&M expenses shall be Rs 17.16 Lacs/MW for the 1st year of Control Period. Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 5.72% per annum.

4.44 The value of parameters mentioned as under for determination of tariff for Solar Thermal Power project shall be as specified for the solar PV project:

(i).Life of plant;

(ii).Debt equity Ratio;

(iii).Term of loan and interest on long term debt;

(iv).Depreciation;

(v).Working capital requirement and Interest on working capital;

(vi).Return on equity.

4.45 The cost parameters under these Regulations for determination of tariff for power generated from solar PV power projects and solar thermal power projects are summarized in the table below:

Table 1: Cost parameters considered by Commission for tariff determination

Parameters	Solar PV project	Solar Thermal project
Capital cost (Rs Lacs/MW)	605.85	1200
Capacity Utilization Factor	19%	23%
Auxiliary consumption	-	10%
Useful life /Life of the machine	25 years	25 years
Debt: equity ratio	70:30	70:30
Loan repayment period	12 yrs	12 yrs
Interest on loan	Average SBI Base Rate during first 6 months of previous years + 3%	Average SBI Base Rate during first 6 months of previous years + 3%
Interest on Working Capital	Average SBI Base Rate during first 6 months of previous years + 3.5%	Average SBI Base Rate during first 6 months of previous years + 3.5%

Parameters	Solar PV project	Solar Thermal project
O&M expenses	Rs 11.88 Lakhs/MW with annual escalation of 5.72 %	Rs 17.16 Lakhs MW with annual escalation of 5.72 %
Depreciation	1 to 12 yrs – 5.83% Remaining depreciation spread over useful life	1 to 12 yrs – 5.83% Remaining depreciation spread over useful life
Residual value	10% of capital cost	10% of capital cost
Return on equity (pre-tax)	20% - for first 10 years, 24% - from11th year to 25th year	20% - for first 10 years, 24% - from11th year to 25th year

A5: OTHER TERMS AND CONDITIONS

Wheeling

5.1 To promote investment in solar PV and solar thermal power projects and encourage third party sale and Captive Power Plants, a 50% discount on wheeling charges and other surcharge on wheeling charges applicable to conventional form of generation shall be applicable for solar PV and solar thermal power projects in Jharkhand.

Scheduling

5.2 The solar PV and solar thermal power projects with installed capacity of 10 MW and above shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order despatch' principles.

5.3 Solar generating plants with capacity of 5 MW and above and connected at the connection point of 33 KV level and above shall be subjected to scheduling and despatch code as specified under Indian Electricity Grid Code (IEGC) -2010, as amended from time to time.

5.4 However, System operator may instruct the solar generator to back down generation on consideration of grid security or safety of any equipment or personnel is endangered and solar generator shall comply with the same. For this, Data Acquisition System facility shall be provided for transfer of information to concerned SLDC and RLDC.

5.5 The schedule of solar generation shall be given by the solar generator based on availability of the generator, weather forecasting, solar insolation, season and normal solar generation curve and shall be vetted by the RLDC in which the generator is located and incorporated in the inter-state schedule. If RLDC is of the opinion that the schedule is not realistic, it may ask the solar generator to modify the schedule.

5.6 Concerned RLDC and SLDC shall maintain the record of schedule from renewable power generating stations based on solar from the point of view of grid security. While scheduling generating stations in a region, system operator shall aim at utilizing available solar energy fully.

5.7 The despatch principles for electricity generated from Solar generation plants shall be as per the provisions of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010, as amended from time to time, except where specific provision has been made under the Jharkhand State Electricity Regulatory Commission (State Grid Code) Regulations, 2008.

Outage planning

5.8 Annual outage plan shall be prepared in advance for the financial year by the RPC Secretariat in consultation with NLDC and RLDC and reviewed during the year on quarterly and Monthly basis. The outage planning of solar power plant and its associated evacuation network shall be planned to extract maximum power from these renewable sources of energy. Outage of solar power plant should be planned, if required during the rainy season.

Reactive power supply

5.9 The charges applicable for reactive power supply to solar PV and solar thermal power project shall be as per JSERC (Open Access in Intra-State Transmission and Distribution) Regulations, 2005 and subsequent amendments thereof.

Metering and billing

5.10 The metering and communication arrangements shall be provided in accordance with the JSERC (Open Access in Intra-State Transmission and Distribution) Regulations, 2005 and subsequent amendments thereof, Grid Code and Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 in consultation with Distribution Licensee/State Transmission Utility. The periodicity of testing, checking, calibration etc., will be governed by the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 and regulations issued by the Commission from time to time in this regard.

5.11 Main and Check Meters shall have facility to communicate its reading to State Load Dispatch Centre on real time basis or otherwise as may be specified by the Commission.

5.12 Meter reading shall be taken as per the procedure devised by the Distribution Licensee/State Load Despatch Centre. The term 'Meter' shall include Current transformers, voltage/potential transformers, wiring between them and meter box/panel etc.

5.13 Billing of the metered energy shall be carried out on a monthly basis.

Payment mechanism

5.14 The Commission prescribes a settlement period of 60 days from the date of presentation of the bill for the net energy sold after deducting the charges for start up power and reactive power to the concerned Distribution Licensee where the power is injected, in order to ensure that the generating company has an assurance of cash inflow for the energy delivered to the grid.

5.15 In case of delay beyond the 60 days payment period, the Distribution Licensee shall pay a late payment surcharge at the rate of 1.25% per month to the generating company.

5.16 In case the Distribution Licensee makes the payment other than through letter of credit within 30 days from the date of presentation of bills by the generating company, a rebate of 1% billed amount shall be allowed by the generating company.

5.17 In case where payments of bills of the generating company are made through letter of credit within 1 month of presentation of bill, a rebate of 2% shall be allowed to the Distribution Licensee.

Third party sale

5.18 In case of default in payment for more than three months continuously by the Distribution Licensee, the generating company can sell power to the third party.

5.19 In those cases where the developer has an existing arrangement for third party supply or for captive consumption and in case the generating company desires to terminate the agreement with third party and to supply to the Distribution Licensee, the Distribution Licensee with the prior permission of the Commission, shall purchase the power at the rate as determined by the Commission in these regulations.

Start-up power

5.20 The solar PV and solar thermal power generator shall be entitled to draw start up power from the Distribution Licensee's network. The drawal of energy by the generator during the start up from the Distribution Licensee shall be adjusted against the generated energy.

Drawing of power during shut down

5.21 The solar PV and solar thermal power generator shall be entitled to draw power from the Distribution Licensee's network during shutdown period of its plant or other emergencies. The energy consumed shall be billed at the temporary rate applicable to HT Industrial category. The drawal by the solar PV and solar thermal power generator shall not normally exceed 11.5 % of the MW capacity it delivers to the Distribution Licensee.

Banking

5.22 Banking of 100% energy shall be permitted for all Captive and Open Access/Scheduled Consumers during all 12 months of the year. Banking charges shall be adjusted in kind @2% of the energy delivered at the point of drawal. The banking year shall be from April to March.

5.23 Drawals from banked energy shall not be permitted during five (5) month period from 1st April to 30th June and 1st February to 31st March of each financial year. In addition, drawls of banked energy during the Time of the Day (ToD) applicable during the peak hours, as specified in the respective Retail Supply Tariff Order, shall also not be permitted throughout the year. However, the provisions on banking pertaining to drawal restrictions shall be reviewed based on the power supply position in the state.

5.24 Energy injected into the grid from date of synchronization to Commercial Operation Date (COD) will be considered as deemed energy banking.

The unutilized banked energy shall be considered as deemed purchase by Discom(s) at the pooled power purchase cost as determined by the JSERC for the applicable year. Energy settlement shall be done on monthly basis.

Minimum purchase requirement

5.25 Under the provisions of the National Tariff Policy, the Commission is required to fix a minimum percentage for purchase of energy from renewable sources. The target set under the Renewable Purchase Obligation (RPO) helps boost the confidence of investors as it offers an assured market for renewable energy.

5.26 Ideally, there should be technology wise procurement target so that all renewable energy technologies get an equal opportunity to grow. As in the present circumstances renewable energy technologies cannot compete with other technologies, due to higher cost of generation. It is important in the given context that all renewable energy technologies are assigned with some procurement target offering a level playing field.

5.27 The Commission has accordingly specified the procurement target for solar PV and solar thermal power in this control period as specified in the Jharkhand State Electricity Regulatory Commission (Renewable purchase obligation and its compliance) Regulations, 2010 and as amended from time to time.

Evacuation Infrastructure

5.28 The power generated from a Solar Power Project shall be injected at an appropriate voltage at the substation and/or interconnection point of the State Transco/Discom(s). Transco/Discom shall bear the entire cost of construction of power evacuation facilities from the project's generator switchyard to the interconnection point (injection point), up to a maximum length of 10 KM. State govt. shall reimburse such cost to the concerned Transco/Discom provided the project capacity is 2MW or more. Beyond 10 KM, the cost shall be borne by the project developer.

Sharing of CDM benefits

5.29 The proceeds of carbon credit from the approved CDM projects shall be shared between the generating company and concerned beneficiaries in the following manner:

(a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station ;

(b) In the second year, the share of the beneficiaries 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 generating company and the beneficiaries.

Incentive by Central / State government

5.30 The Government of Jharkhand has notified the Jharkhand Industrial Policy 2012 and Jharkhand State Solar Power Policy 2015.

5.31 The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants while determining the tariff under these Regulations.

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, if availed, for the purpose of tariff determination:

i. Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate as per relevant provisions under Income Tax Act and corporate income tax rate.

ii. Capitalization of RE projects during second half of the fiscal year. Per unit benefit shall be derived on levellised basis at discount factor equivalent to Post Tax weighted average cost of capital.

Taxes and Duties

5.32 Tariff determined under these Regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government:

Provided that the taxes and duties levied by the government shall be allowed to pass through on actual incurred basis

Financial Benefits

5.33 The Department of Industries, Government of Jharkhand notified the Industrial Policy in the year 2012. The policy states that thrust will be given to develop renewable and environment friendly sources of energy. A renewable based power plant with commercial operation after the effective date of implementation of the policy, shall be deemed to be a new industrial unit and will be entitled to all the incentives under the prevailing Industrial Policy.

Provided the financial benefits (if any) as per the Jharkhand State Solar Power Policy 2015 shall also be available for the developer and shall be considered at the time of determination of tariff.

Single Window Clearance

5.34 The developers shall be granted approvals and clearances in line with the Jharkhand State Solar Power Policy 2015 and State Industrial Policy 2012.

Tariff period

5.35 The Commission has considered the useful life of a Solar PV power plant as 25 years. The tariff determined under these Regulations shall be applicable for twenty five (25) years for the projects having Commercial Operation Date (COD) up to 31st March, 2020.

5.36 The Commission has considered the useful life of a Solar Thermal power plant as 25 years. The tariff determined under these Regulations shall be applicable for twenty five 25 years for the projects having Commercial Operation Date (COD) upto 31st March, 2020.

A6: POWER TO REMOVE DIFFICULTIES

6.1 In case of any difficulty in giving effect to any of the provisions of this Regulation, the Commission may by general or special order, issue appropriate directions to Generators, Transmission Licensee(s), Distribution Licensee(s) etc., to take suitable action, not being inconsistent with the provisions of the Act, which appear to the Commission to be necessary or expedient for the purpose of removing the difficulty.

6.2 The generators, Licensees may make an application to the Commission and seek suitable orders to remove any difficulties that may arise in implementation of these regulations.

A7: POWER TO AMEND

7.1 The Commission may from time to time add, vary, alter, suspend, modify, amend or repeal any provisions of this Regulation.

A8: SAVINGS

8.1 Nothing in these Regulations shall be deemed to limit or otherwise affect the inherent power of the Commission to make such orders as may be necessary to meet the ends of justice or to prevent abuses of the process of the Commission.

8.2 Nothing in this Regulations shall bar the Commission from adopting in conformity with the provisions of the Act a procedure, which is at variance with any of the provisions of these Regulations, if the Commission, in view of the special circumstances of a matter or class of matters and for reasons to be recorded in writing, deems it necessary or expedient for dealing with such a matter or class of matters.

8.3 Nothing in these Regulations shall, expressly or impliedly, bar the Commission dealing with any matter or exercising any power under the Act for which no Regulations or Regulations have been framed, and the Commission may deal with such matters, powers and functions in a manner it thinks fit.

(By order of the Commission)
(A.K. Mehta)

Secretary

Jharkhand State Electricity Regulatory Commission

Appendix

Form 1.1 Form Template for Solar PV/ Solar Thermal

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Amount
1	**Power Generation**				
		Capacity			
			Installed Power Generation Capacity	MW	
			Capacity Utilization Factor	%	
			Auxiliary consumption	%	
			Useful Life	Years	
2	**Project Cost**		Normative Capital Cost	Rs Lacs	
		Capital Cost/MW	Capital Cost	Rs Lacs	
		-	Capital subsidy (if any)	Rs Lacs	
		-	Net capital cost	Rs Lacs	
3	**Sources of Fund**				
			Tariff Period	Years	
		Debt: Equity			
			Debt	%	
			Equity	%	
			Total Debt Amount	Rs Lacs	
			Total Equity Amout	Rs Lacs	
		Debt Component			
			Loan Amount	Rs Lacs	
			Moratorium Period	years	
			Repayment Period(incld Moratorium)	years	
			Interest Rate	%	
		Equity Component			
			Equity amount	Rs Lacs	
			Return on Equity for first 10 years	% p.a	
			RoE Period	Year	
			Return on Equity 11th year onwards	% p.a	
			Weighted average of ROE	%	
			Discount Rate (WACC)	%	
4	**Financial Assumptions**				
		Fiscal Assumptions			
			Income Tax	%	
			MAT Rate (for first 10 years)	%	
			80 IA benefits	Yes/No	
		Depreciation			
			Depreciation Rate for first 12	%	

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Amount
			years		
			Depreciation Rate 13th year onwards	%	
			Years for 5.83% rate	Years	
			Salvage value	%	
5	**Working Capital**				
		O&M Charges		Months	
		Maintenance Spare	(% of O&M exepenses)	%	
		Receivables for Debtors		Months	
		on energy charges			
		Interest On Working Capital		%	
6	**Operation & Maintenance**				
		Normative O&M Expenses		Rs Lakh	
		O&M Expenses Per Annum			
		Escalation Factor		%	
7	**Incentives (if any)**				
		GBI		Rs Lakh p.a.	
		Period for GBI		Years	

Form 1.2 Form Template for Solar PV/ Solar Thermal – Determination of Tariff

Units Generation	Unit	Year--->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW																										
Gross/Net Generation	MU																										

Tariff Components (Fixed Charge)	Unit	Year--->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh																										
Depreciation	Rs Lakh																										
Interest on term loan	Rs Lakh																										
Interest on working Capital	Rs Lakh																										
Return on Equity	Rs Lakh																										
Total Fixed Cost	**Rs Lakh**																										

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M expn	Rs/kWh																										
Depreciation	Rs/kWh																										
Int. on term loan	Rs/kWh																										
Int. on working capital	Rs/kWh																										
RoE	Rs/kWh																										
Total COG per unit	**Rs/kWh**																										

Per Unit Cost of Generation	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Discount Factor																											
Discounted Tariff Components	Rs/kWh																										
Levellised Tariff		Rs Lakhs																									
Levellised Tariff		Rs/Unit																									

By order of the Commission
(A.K. Mehta)
Secretary Jharkhand State Electricity Regulatory Commission