

2018

# APSERC (Draft Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018



ARUNACHAL PRADESH STATE ELECTRICITY  
REGULATORY COMMISSION  
(APSERC)  
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# **ARUNACHAL PRADESH STATE ELECTRICITY REGULATORY COMMISSION**

## **NOTIFICATION**

### **DRAFT TERMS AND CONDITIONS FOR TARIFF DETERMINATION FROM RENEWABLE ENERGY SOURCES REGULATION – 2018**

**APSERC/NOTIFICATION/...../2018:** In exercise of powers conferred under section 61 read with clause (zd) of subsection (2) of section 181 read with clause (a) of subsection (1) of section 86 of the Electricity Act, 2003 (36 of 2003) and all powers enabling it in this behalf, the **Arunachal Pradesh State Electricity Regulatory Commission**, the same having being previously published in the **Arunachal Pradesh Gazette** issue dated 9<sup>th</sup> April 2012 and duly considered, namely, the Arunachal Pradesh State Electricity Regulatory Commission (**Terms and Conditions for Tariff Determination from RE Sources**) **Regulations 2012** and as required by subsection(2) of Section 181 of the Act, the draft regulations are hereby published for the information of all the persons likely to be affected thereby; and notice is hereby given that the said draft regulations will be taken into consideration, after the expiry of thirty (30) days from the date of publication of the proposed draft in the **Arunachal Pradesh Gazette** together with any objections or suggestions which may within the aforesaid period be received in respect thereto. The objections or suggestions in this behalf should be addressed to the Secretary, Arunachal Pradesh State Electricity Regulatory Commission, 2<sup>nd</sup> Floor, OT Building, Niti Vihar Market, Itanagar- 791111 (Arunachal Pradesh). The text of the aforesaid draft regulations is also available on the website of the Commission i.e. [www.apserc.nic.in](http://www.apserc.nic.in). Comments / suggestions of the stakeholders on the above proposal are invited by 21<sup>th</sup> March 2018.

#### **1. Short title and commencement**

1. These regulations may be called the Arunachal Pradesh State Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018.
2. These Regulations shall come into force after 60 days from the date of their publication in the Official Gazette of Arunachal Pradesh.

## 2. Definitions and Interpretation

1. In these regulations, unless the context otherwise requires,
  - a) **'Act'** means the Electricity Act, 2003 (36 of 2003);
  - b) **'Auxiliary energy consumption'** or **'AUX'** in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station, and transformer losses within the generating station, expressed as a percentage of the sum of gross energy generated at the generator terminals of all the units of the generating station;
  - c) **'Capital cost'** means the capital cost as defined in regulations 12, 25, 30, 34, and 39.
  - d) **'Commission'** means the Arunachal Pradesh State Electricity Regulatory Commission referred to in sub-section (1) of section 82 of the Act;
  - e) **'Conduct of Business Regulations'** means the Arunachal Pradesh State Electricity Regulatory Commission (Conduct of Business) Regulations, 2011 as amended from time to time;
  - f) **'Control Period or Review Period'** means the period during which the norms for determination of tariff specified in these regulations shall remain valid;
  - g) **'Gross calorific value'** or **'GCV'** in relation to a fuel used in generating station means the heat produced in kCal by complete combustion of one kilogram of solid fuel or one litre of liquid fuel or one standard cubic meter of gaseous fuel, as the case may be;
  - h) **'Gross station heat rate'** or **'GHR'** means the heat energy input in kCal required to generate one kWh of electrical energy at generator terminals of a thermal generating station;
  - i) **'Installed capacity'** or **'IC'** means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals), approved by the Commission from time to time;
  - j) **'Inter-connection Point'** shall mean 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 small hydro power the inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;
- k) **‘MNRE’** means the Ministry of New and Renewable Energy of the Government of India;
- l) **‘Municipal solid waste’** or **‘MSW’** means and includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes;
- m) **‘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;
- n) **‘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;
- o) **‘Project’** means a generating station or the evacuation system upto inter-connection point, as the case may be, and in case of a small hydro generating station includes all components of generating facility such as dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;
- p) **‘Refuse derived fuel’** or **‘RDF’** means segregated combustible fraction of solid waste other than chlorinated plastics in the form of pellets or fluff produced by drying, de-stoning, shredding, dehydrating, and compacting combustible components of solid waste that can be used as fuel;
- q) **‘Renewable Energy’** means the grid quality electricity generated from renewable energy sources;
- r) **‘Renewable Energy Power Plants’** means the power plants other than the conventional power plants generating grid quality electricity from renewable energy sources;

- s) **‘Renewable Energy Sources’** means renewable sources such as small hydro, wind, solar including its integration with combined cycle, biomass, bio fuel cogeneration, urban or municipal waste and other such sources as approved by the MNRE;
- t) **‘Small Hydro’** means Hydro Power projects with a station capacity up to and including 25 MW;
- u) **‘Solar PV power’** means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic technology;
- v) **‘Tariff period’** means the period for which tariff is to be determined by the Commission on the basis of norms specified under these Regulations;
- w) **‘Useful Life’** in relation to a unit of a generating station including evacuation system shall mean the following duration from the date of commercial operation (COD) of such generation facility, namely:

Sl. No.	RE Projects	Useful Life (Years)
1.	Small Hydro Plant	35
2.	Solar PV Power Project	25
3.	Wind Power Project	25
4.	Municipal Solid Waste (MSW) and Refuse Derived Fuel (RDF) based Power Projects	20

- x) **‘Year’** means a financial year.

2. Save as aforesaid and unless repugnant to the context or if the subject- matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or the Indian Electricity Grid Code or the Arunachal Pradesh Grid Code or the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 shall have the meanings assigned to them respectively in the Act or the Indian Electricity Grid Code or the Arunachal Pradesh Grid Code or the Central Electricity Regulatory Commission (Terms and conditions of Tariff) Regulations, 2014.



### 3. Scope and extent of application

These regulations shall apply in all cases where tariff, for a generating station or a unit thereof based on renewable sources of energy, is to be determined by the Commission under Section 62 read with Section 86 of the Act.

Provided that in cases of Small Hydro Projects, Solar PV these regulations shall apply subject to the fulfilment of eligibility criteria specified in regulation 4 of these Regulations.

### 4. Eligibility Criteria

- a) **Small Hydro Project** - located at the sites approved by State Nodal Agency/ State Government using new plant and machinery, and installed power plant capacity to be lower than or equal to 25 MW at single location.
- b) **Solar PV** - Based on technologies approved by MNRE.
- c) **Wind Power Project** - using new wind turbine generators, located at the sites approved by State Nodal Agency/State Government.
- d) **Municipal Solid Waste (MSW) based power projects** - The project shall qualify to be termed as a Municipal solid waste (MSW) based power project if it is using new plant and machinery based on Rankine cycle technology and using Municipal solid waste (MSW) as fuel sources.
- e) **Refuse Derived Fuel (RDF) based power projects** - The project shall qualify to be termed as a Refuse derived fuel (RDF) based power project, if it is using new plant and machinery based on Rankine cycle technology and using Refuse derived fuel (RDF) as fuel sources.

## **Chapter 1: General Principles**

### **5. Control Period or Review Period**

The Control Period or Review Period under these Regulations shall be of three (3) years, of which the first year shall be the financial year 2018-19.

Provided further that the tariff determined as per these Regulations for the RE projects commissioned during the Control Period, shall continue to be applicable for the entire duration of the Tariff Period as specified in Regulation 6 below.

Provided also that the revision in Regulations for next Control Period shall be undertaken six months prior to the end of the first 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.

### **6. Tariff Period**

- a) The Tariff Period for Renewable Energy power projects will be same as their Useful Life as defined in Regulation 2 (1) (w).
- b) Tariff period under these Regulations shall be considered from the date of commercial operation of the renewable energy generating stations.
- c) Tariff determined as per these Regulations shall be applicable for Renewable Energy power projects, for the duration of the Tariff Period as stipulated under Clause (a) and (b).

### **7. Project Specific tariff**

- a) Project specific tariff, on case to case basis, shall be determined by the Commission for the following types of projects:
  - i. Small Hydro Project (1 MW and upto 25 MW);
  - ii. The renewable energy projects which have been commissioned before the 31<sup>st</sup> march 2017 but for which no power purchase agreement has been signed till the 31<sup>st</sup> march 2017, for such Project Tariff shall be determined on annual basis.
  - iii. Solar PV
  - iv. Wind Energy

- v. Municipal Solid Waste and Refuse Derived Fuel based projects with Rankine cycle technology;
  - vi. Other hybrid projects include renewable–renewable or renewable– conventional sources, for which renewable technology is approved by MNRE;
  - vii. Any other new renewable energy technologies approved by MNRE.
- b) Determination of Project specific tariff for generation of electricity from such renewable energy sources shall be in accordance with such terms and conditions as stipulated under relevant Orders of the Commission.
- c) No annual generic tariff shall be determined for the technologies mentioned in Clause (a) of this Regulation. Financial and Operational norms as may be specified would be the ceiling norms while determining the project specific tariff.

Provided that the financial norms as specified under Chapter-2 of these Regulations, except for capital cost, shall be ceiling norms while determining the project specific tariff.

## **8. Petition and proceedings for determination of tariff**

1. The Commission shall determine the generic tariff on the basis of suo-motu petition six months in advance at the beginning of each year of the Control period for renewable energy technologies for which norms have been specified under the Regulations.
2. Notwithstanding anything contained in these regulation,  
The entire capacity covered by the Power Purchase Agreement is commissioned on or before 31<sup>st</sup> March of the next year in respect of Solar PV projects.
3. 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 1.1, 1.2, 2.1 and 2.2 as the case may be, and as appended in these regulations;
  - b) Detailed project report 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 information that the Commission requires the petitioner to submit.
- 4. The proceedings for determination of tariff shall be in accordance with the Conduct of Business Regulations.

## **9. Tariff Structure**

The tariff for renewable energy technologies shall be single part tariff consisting of the following fixed cost components:

- a) Return on equity;
- b) Interest on loan capital
- c) Depreciation;
- d) Interest on working capital;
- e) Operation and maintenance expenses;

Provided that for renewable energy technologies having fuel cost component, like Municipal solid waste (MSW) and Refuse Derived Fuel (RDF) based power projects single part tariff with two components, fixed cost component and fuel cost component, shall be determined.

## **10. Tariff Design**

- 1. The generic tariff shall be determined considering the year of commissioning of the project, on levelled basis for the Tariff Period.

Provided that for renewable energy technologies having single part tariff with two components, tariff shall be determined on levelled basis considering the year of commissioning of the project for fixed cost component while the fuel cost component shall be specified on year of operation basis.

- 2. For the purpose of levelled tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered.
- 3. Levellisation shall be carried out for the 'useful life' of the Renewable Energy project.
- 4. The above principles shall also apply for project specific tariff.

## **11. Despatch Principles for Electricity Generated from Renewable Energy Sources:**

1. All renewable energy power plants shall be treated as ‘MUST RUN’ power plants and shall not be subjected to ‘merit order despatch’ principles.
2. Scheduling of wind and solar energy shall be governed as per the aforesaid provisions of Arunachal Pradesh State Electricity Grid Code and Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Third Amendment) Regulations, 2015 and Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015 as amended from time to time.

## Chapter 2: Financial Principles

### 12. Capital Cost

The norms for the Capital cost as specified in the subsequent technology specific chapters shall be inclusive of all capital work including plant and machinery, civil work, hydro mechanical work, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to inter-connection point.

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost item wise along with its petition in the manner specified under Regulation 8.

### 13. Debt Equity Ratio

1. For generic tariff to be determined based on suo-motu petition, the debt equity ratio shall be 70:30.
2. For Project specific tariff, the following provisions shall apply: -

If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff.

Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

### 14. Loan and Finance Charges

1. Loan Tenure for the purpose of determination of tariff, loan tenure of 13 years shall be considered.
2. Interest Rate
  - a) The loans arrived at in the manner indicated in Regulation 13 shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on April 1<sup>st</sup> of every year shall be worked out by deducting the cumulative repayment up to March 31<sup>st</sup> of previous year from the gross normative loan.
  - b) For the purpose of computation of tariff, normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based

Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months shall be considered.

- c) Notwithstanding any moratorium period availed by the generating company, 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.

## 15. Depreciation

1. 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.
2. Depreciation rate of 5.28% per annum for first 13 years and remaining depreciation to be spread during remaining useful life of the RE projects considering the salvage value of the project as 10% of project cost shall be considered.
3. 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.

## 16. Return on Equity

1. 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 13.
2. The normative Return on Equity shall be 14%, to be grossed up by prevailing Minimum Alternate Tax (MAT) as on 1st April of previous year for the entire useful life of the project.

## 17. Interest on Working Capital

1. The Working Capital requirement in respect of Wind energy projects, Small Hydro Power, 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 Capacity Utilisation Factor (CUF);
  - c) Maintenance spare @ 15% of operation and maintenance expenses
2. The Working Capital requirement in respect of Municipal Solid Waste and Refuse Derived Fuel projects shall be computed in accordance with the following clause:
  - a) Fuel costs for four months equivalent to normative Plant Load Factor (PLF);

- b) Operation & Maintenance expense for one month;
  - c) Receivables equivalent to 2 (Two) months of fixed and variable charges for sale of electricity calculated on the target PLF;
  - d) Maintenance spare @ 15% of operation and maintenance expenses.
3. Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff.

## **18. Calculation of CUF/PLF:**

The number of hours for calculation of CUF/PLF (wherever applicable) for various RE technologies shall be 8766.

## **19. Operation and Maintenance Expenses**

1. 'Operation and Maintenance or O&M expenses' shall comprise repair and maintenance (R&M), establishment including employee expenses, and administrative and general expenses.
2. Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission subsequently in these Regulations for the first Year of Control Period.
3. Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2018-19) under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period.

## **20. Rebate**

1. For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed.
2. Where payments are made other than through letter of credit within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.

## **21. Late payment surcharge**

In case the payment of any bill for charges payable under these regulations is delayed beyond a period of 60 days from the date of billing, a late payment surcharge at the rate of 1.25% per month shall be levied by the generating company.



## **22. Sharing of CDM Benefits**

The proceeds of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely-

- 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.

## **23. Subsidy or incentive by the Central / State Government**

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 weighted average cost of capital.

## **24. Taxes and Duties**

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 appropriate Government shall be allowed as pass through on actual incurred basis.

## Chapter 3: Technology specific parameters for Small Hydro Project

### 25. Capital Cost

The normative capital cost for small hydro projects during first year of Control Period (FY 2018-19) shall be as follows:

Region	Project Size	Capital Cost (Rs. Lakh/ MW)
<b>Arunachal Pradesh</b>	Below 1 MW	1200

### 26. Capital Cost Indexation Mechanism

The Capital Cost for SHP as specified for first year of control period will remain valid for the entire duration of the control period (2018-2021) unless reviewed earlier by the Commission based on market information.

### 27. Capacity Utilization Factor

CUF for the small hydro projects shall be 55 %.

**Explanation:** For the purpose of this Regulation, normative CUF is net of free power to the home state if any, and any quantum of free power if committed by the developer over and above the normative CUF shall not be factored into the tariff.

### 28. Auxiliary Consumption

Normative Auxiliary Consumption for the small hydro projects shall be 1.0%.

### 29. Operation and Maintenance Expenses

1. Normative O&M expenses for the first year of the Control period (i.e. FY 2017-18) shall be as follows.

Region	Project Size	O&M Expense (Rs. Lakh/ MW)
<b>Arunachal Pradesh</b>	Below 1 MW	36

2. Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 5.72% per annum for the Tariff Period for the purpose of determination of levellised tariff.

## Chapter 4: Technology specific parameters for Wind Energy

### 30. Capital Cost

The Commission shall determine only project specific capital cost and tariff based on prevailing market trends for wind energy project.

### 31. Capacity Utilization Factor (CUF)

- CUF norms for this control period shall be as follows:

Annual Mean Wind Power Density (W/m <sup>2</sup> )	CUF
<b>Up to 220</b>	22%
<b>221-275</b>	24%
<b>276-330</b>	28%
<b>331-440</b>	33%
<b>&gt; 440</b>	35%

- The annual mean wind power density specified in sub-regulation (1) above shall be measured at 100-meter hub-height.
- For the purpose of classification of wind energy project into particular wind zone class, as per MNRE guidelines for wind measurement, wind mast either put-up by NIWE or a private developer and validated by NIWE, would be normally extended 10 km from the mast point in all directions for uniform terrain and limited to appropriate distance in complex terrain with regard to complexity of the site. Based on such validation by NIWE, state nodal agency should certify zoning of the proposed wind farm complex.

### 32. Operation and Maintenance (O & M) Expenses

The Commission shall determine only Project Specific O&M Expenses based on the prevailing market information.

## **Chapter 5: Technology specific parameters for Solar PV Power Project**

### **33. Technology Aspects**

Norms for Solar Photovoltaic (PV) power projects under these Regulations shall be applicable for grid connected PV systems that directly convert solar energy into electricity and are based on technologies such as crystalline silicon or thin film etc. as may be approved by MNRE.

### **34. Capital Cost**

The Commission shall determine only project specific capital cost and tariff based on prevailing market trends for Solar PV projects.

### **35. Capacity Utilization Factor**

The CUF for Solar PV project shall be 19%.

Provided that the Commission may deviate from above norm in case of project specific tariff determination in pursuance of Regulation 7 and Regulation 8.

### **36. Operation and Maintenance Expenses**

The Commission shall determine only project specific O&M expenses based on prevailing market trends for Solar PV project.

### **37. Auxiliary Consumption**

The auxiliary consumption factor shall be 0.25% of gross generation.

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 7 and Regulation 8.

## Chapter 6: Technology Specific Parameters for Power Projects Using Municipal Solid Waste / Refuse Derived Fuel and Based On Rankine Cycle Technology

### 38. Technology Aspect

The norms for tariff determination specified hereunder are for power projects which use municipal solid waste (MSW) and refuse derived fuel (RDF) and are based on Rankine cycle technology application, combustion or incineration, Bio-methanation, Pyrolysis and High-end gasifier technologies.

### 39. Capital Cost

The Commission shall determine only project specific capital cost and tariff based on prevailing market trends for MSW/RDF projects.

### 40. Plant Load Factor

1. Threshold PLF for determining fixed charge component of tariff for the power projects which use MSW and RDF shall be:

	PLF	MSW	RDF
<b>a</b>	During Stabilisation	65%	65%
<b>b</b>	During the remaining period of the first year(after stabilization)	65%	65%
<b>c</b>	From 2nd year onwards	75%	80%

2. The stabilisation period shall not be more than 6 months from the date of commissioning of the project.

### 41. Auxiliary Consumption

The auxiliary power consumption for MSW/RDF based power projects shall be 15%.

### 42. Station Heat Rate

The Station Heat Rate for MSW/RDF based power projects shall be 4200 kcal/kWh.

#### **43. Operation and Maintenance Expenses**

The Commission shall determine only project specific O&M expenses based on prevailing market trends for MSW/RDF projects.

#### **44. Calorific Value**

The Calorific Value of the RDF fuel used for the purpose of determination of tariff shall be at 2500 kcal/kg.

#### **45. Fuel Cost**

RDF price during FY 2018-19 shall be Rs 1,800 per MT and shall be escalated at 5% to arrive at the base price for subsequent years of the Control Period, unless specifically reviewed by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 5% per annum shall be applicable. No fuel cost shall be considered for determination of tariff for the power projects using MSW.

## **Chapter 7: Miscellaneous**

### **46. Deviation from norms**

Tariff for sale of electricity generated from a generating station based on renewable energy sources, may also be agreed between a generating company and a licensee, in deviation from the norms specified in these regulations subject to the conditions that the levellised tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levellised tariff calculated on the basis of the norms specified in these regulations.

### **47. Guidelines of Competent Authority**

Policy/guidelines issued by the Ministry of Power, Government of India, MNRE, State Government and any other competent authority in this regard from time to time shall prevail.

### **48. Power to Relax**

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, may relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

### **49. Saving of inherent power of the Commission.**

Nothing in these Regulations shall bar the commission from adopting a procedure which is at variance with any of the provisions of these regulation, if the Commission, in view of the special circumstances of the matter or class of matters and for reason to be recorded in writing, deems it necessary or expedient to depart from the procedure prescribed in the Regulations.

### **50. Power to remove difficulties**

If any difficulty arises in giving effect to any of the provisions of these regulations the Commission may, by general or special order, do anything, not being inconsistent with the provisions of the Act, which appears to it to be necessary or expedient for the purpose of removing the difficulties.

## **51. Power to Amend**

The Commission may, at any time, vary, alter, modify or amend any provisions of these regulations on its own or on any application made before it by an interested person.

## **52. Repeal and savings**

Save as otherwise provided in these regulations, Arunachal Pradesh Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012 read with its amendments are hereby repealed.

**Sd/-  
(Rakesh Kumar)  
Secretary**



## ANNEXURES

### 53. Form - 1.1: Form Template for (Small Hydro Project or Solar PV or Wind Power)

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Arunachal Pradesh upto 1 MW
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Capacity Utilization Factor	%	
			Auxiliary Consumption	%	
			Useful Life	Years	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	
3	Period		Tariff Period	Years	
4	Sources of Fund	Debt: Equity	Debt	%	
			Equity	%	
			Total Debt Amount	Rs Lacs	
			Total Equity Amount	Rs Lacs	
		Debt Component	Loan Amount	Rs Lacs	
			Moratorium Period	years	
			Repayment Period(include Moratorium)	years	
			Interest Rate	%	
		Equity Component	Equity amount	Rs Lacs	
			Return on Equity for first Project Life	% p.a	
			Discount Rate		
5	Financial Assumptions	Fiscal Assumption	Income Tax	%	
		Depreciation	Allowed Depreciation	%	
			Depreciation Rate for first 13 years	%	
			Depreciation Rate 14th year onwards	%	
		Incentive	Generation based incentive if any	Rs Lakh	
			Period for GBI	Years	
6	Working Capital	For Fixed Charges			
		O&M Charges		Months	
		Maintenance Spare	(% of O&M expenses)		
		Receivables for Debtors		Months	
		Interest On Working Capital		%	
7	Operation & Maintenance	O&M Expenses (2017-18)		Rs Lacs	
		Total O & M Expenses Escalation		%	
8	Generation and Sale Of Energy			Hrs	
		Total No. of Hours			

## 54. Form - 1.2: Form Template for (Municipal Solid Waste and RDF Power Projects)

S. No.	Assumption Sheet	Sub-Head	Sub-Head(2)	Unit	Assumption
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Auxiliary Consumption factor	%	
			PLF(during Stabilisation for 6 month)	%	
			PLF(During First Year after Stabilisation)	%	
			PLF(Second Year Onwards)	%	
			Commercial Operation Date	mm/yyyy	
2	Project Cost	Capital Cost/MW	Useful Life	Years	
			Normative Capital cost	Rs Lakh/MW	
			capital cost	Rs Lakh	
			Capital subsidy, if any,	Rs Lakh	
			Net capital Cost	Rs Lakh	
3	Financial Assumptions	Debt Equity	Tariff Period	Years	
			Debt	%	
			Equity	%	
			Total Debt Amount	Rs Lakh	
			Total Equity Amount	Rs Lakh	
		Debt Component	Loan Amount	Rs Lakh	
			Moratorium Period	Years	
			Repayment Period(Include Moratorium)	Years	
			Interest rate	%	
		Equity Component	Equity Amount	Rs Lakh	
			Return on Equity for first Project Life	% p.a.	
			Discount Rate (Equivalent to WACC)	%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	
		Depreciation	Depreciation Rate (Power Plant)	%	
			Depreciation Rate 13th Year Onwards	%	
		Incentive	Generation Based Incentive , if any	Rs Lakh	
			Period for GBI	years	
5	Working Capital	For Fixed Charges	(% of O&M Expenses)		
		O&M Charges		Month	
		Maintenance Spares			
		Receivables for Debtors		Months	
		For Variable Charges			
		RDF Stock		Months	
		Interest on Working Capital		%	
6	Operation & Maintenance	O&M Expenses		Rs Lakh	
		O&M Expenses Escalation		%	
7	Generation and sale of Energy	Total No. of Hours		Hrs.	
8	Fuel Related Assumptions	Heat Rate	During Stabilisation Period	Kcal/Kwh	
			After Stabilisation Period	Kcal/Kwh	
		RDF	Municipal Solid Waste Fuel	%	
			RDF	%	
			GCV of Municipal Solid Waste Fuel		
			GCV of RDF		
			Municipal Solid Waste Fuel Price /yr-1	Rs/MT	
			RDF Price/yr-1	Rs/MT	
			Fuel Price Escalation Factor	% p.a.	



## 55. Form - 2.1: Form Template for (Small Hydro Project or Solar PV or Wind Power); Determination of Tariff

RE Tariff ( Small Hydro Project, Solar PV, Wind Power)																																						
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	26	27	28	29	30	31	32	33	34	35	
Installed Capacity	MW																																					
Gross Generation	MU																																					
Auxiliary Consumption	MU																																					
Net Generation	MU																																					
Fixed Cost	Unit	Year--->																																				
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																																					
Per Unit Cost of Generation	Unit	Year--->																																				
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	Rs/kWh																																					
Discount Factor																																						
Discounted Tariff																																						
Levelling Tariff	Rs/Unit																																					

## 56. Form-2.2: Form Template for (MSW/RDF); Determination of Tariff

Re Tariff (MSW/RDF)																											
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																										
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																										
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>																										
Tariff Components (Variable 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
Biomass fuel type -1	Rs Lakh																										
Biomass fuel type -2	Rs Lakh																										
Fossil fuel (coal)	Rs Lakh																										
Municipal Solid Waste	Rs Lakh																										
Refuse Derived Fuel	Rs Lakh																										
<b>Sub-total (Fuel Costs)</b>	<b>Rs Lakh</b>																										
Fuel cost allocable to power	%																										
<b>Total Fuel Costs</b>	<b>Rs Lakh</b>																										
Per Unit Tariff components (fixed)	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
P U O& M Expenses	Rs/kWh																										
P U Depreciation	Rs/kWh																										
P U Interest on term loan	Rs/kWh																										
P U Interest on working Capital	Rs/kWh																										
P U Return on Equity	Rs/kWh																										
<b>PU Tariff Components (Fixed)</b>	<b>Rs/kW h</b>																										
<b>PU Tariff Components (Variable)</b>	<b>Rs/kW h</b>																										
<b>PU Tariff Components (Total)</b>	<b>Rs/kW h</b>																										
Levellers Tariff	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
Discount Factors																											
Discounted Tariff components (fixed)	Rs/kWh																										
Discounted Tariff components (variable)	Rs/kWh																										
Discounted Tariff components (total)	Rs/kWh																										
<b>Levellers Tariff (fixed)</b>	<b>Rs/kW h</b>																										
<b>Levellers Tariff (variable)</b>	<b>Rs/kW h</b>																										
<b>Levellers Tariff (total)</b>	<b>Rs/kW h</b>																										

