

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
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Case No 20 of 2010

In the matter of
Determination of Generic Tariff under Regulation 8 of the Maharashtra Electricity
Regulatory Commission (Terms and Conditions for Determination of Renewable
Energy Tariff) Regulations, 2010

Shri V.P. Raja, Chairman
Shri S. B. Kulkarni, Member
Shri V.L. Sonavane, Member

DRAFT ORDER (SUO-MOTU)

Dated: June 21, 2010

In exercise of the powers vested under Section 61 read with Section 181 of the Electricity Act 2003 (“EA 2003”), the Commission has notified the Maharashtra Electricity Regulatory Commission (Terms and Conditions for determination of RE Tariff) Regulations, 2010, (“the RE Tariff Regulations”) on June 7, 2010. The RE Tariff Regulations provide for Terms and Conditions and the Procedure for determination of generic tariff on suo-motu basis in respect of following Renewable Energy (RE) generating stations:

- (a) Wind Power Projects;
- (b) Small Hydro Projects, Mini and Micro Hydro Projects;
- (c) Biomass Power Projects;
- (d) Qualifying and Non-Qualifying Non-fossil fuel-based co-generation Plants;
- (e) Solar Photo Voltaic (PV) Projects,
- (f) Solar Thermal Power Projects,
- (g) Solar Rooftop PV and other small Solar Power Projects.

2. The RE Tariff Regulations require the Commission to suo-motu determine the Generic Tariff for the RE technologies for which norms have been specified in the said Regulations.

3. Regulation 8.1 of the RE Tariff Regulations specifies:

“8.1 The Commission shall notify the generic preferential tariff on suo-motu basis pursuant to issuance of revised norms by Central Electricity Regulatory Commission at the beginning of each year of the Control Period for renewable energy technologies for which norms have been specified under the Regulations.

Provided that for the first year of Control Period, (i.e. FY 2010-11), the generic tariff on suo-motu basis may be determined within a period not exceeding three months from the date of notification of these Regulations.”

The Commission, in due discharge of the mandate under Regulation 8.1 of RE Tariff Regulations, proceeds to determine the generic tariff of the RE projects for the first year of the Control Period (i.e., FY 2010-11) through this Order based on the financial principles and technology specific parameters as explained in the subsequent paragraphs.

1. Common Parameters applicable for determination of Generic Tariff

This section of the Order details the applicable norms for determination of Generic Levellised Tariff, which are common to all type of renewable technologies as specified in the RE Tariff Regulations.

1.1. CONTROL PERIOD

Regulation 5 of the RE Tariff Regulations specifies that the Control Period for determination of tariff for RE projects shall be five years, starting from the date of notification of the RE Tariff Regulations till March 31, 2011. The Proviso to Regulation 5.1 stipulates that the tariff determined 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 of the RE Tariff Regulations).

Further, as stipulated under Regulation 5.2 of RE Tariff Regulations, the generic tariff determined for Solar PV projects based on the Capital Cost and other norms applicable for FY 2010-11 shall also apply for such projects to be commissioned during FY 2011-12, and the generic tariff determined for Solar thermal projects based on the Capital Cost and other norms for FY 2010-11 shall also apply for such projects to be commissioned during FY 2011-12 and FY 2012-13, provided that (i) the Power Purchase Agreements (PPA) in respect of the Solar PV projects and Solar thermal projects as mentioned in this Clause are signed on or before March 31, 2011; and (ii) the entire capacity covered by the Power Purchase Agreements is commissioned on or before March 31, 2012 in respect of Solar PV projects and on or before March 31, 2013 in respect of Solar thermal projects.

1.2. TARIFF STRUCTURE

Regulation 9.1 of the RE Tariff Regulations stipulates that the tariff for RE projects 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.

For renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based cogeneration projects, single-part tariff with two components, i.e., fixed cost component and fuel cost component, has been determined under this Order.

The relevant cost components and basis for determination of Generic Tariff in respect of each RE technology have been elaborated under technology specific sections in detail.

1.3. TARIFF DESIGN

In accordance with Regulation 10 of the RE Tariff Regulations, the Tariff Design for RE generating stations is as under:

“10.1 The generic tariff shall be determined on levellised basis for the Tariff Period.

...

10.2 *For the purpose of levellised tariff computation, the discount factor equivalent to normative weighted average cost of capital shall be considered.*

10.3 *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’.*”

1.4. LEVELLISED TARIFF

Levellised Tariff is calculated by carrying out levellisation over useful life of each technology considering the discount factor equivalent to weighted average cost of capital representing time value of money.

Discount Factor

The discount factor considered for this purpose is equal to the weighted average cost of capital on the basis of normative debt:equity ratio (70:30) specified in the Regulations, and weighted average rates for debt and equity component.

Interest Rate considered for the loan component (i.e., 70%) of Capital Cost is 13.37% (as explained later in this Order). For equity component (i.e., 30%) rate of Return on Equity (ROE) for the first ten (10) years is 19%, and for 11th year onwards till useful life of the RE project, the rate is 24%. Based on these rates, the weighted average ROE has been calculated, which is around 22% (ranging from 21.50% to 22.57% depending on useful life of RE technologies). The discount factor for each technology derived by this method is detailed in the respective technology specific sections of this Order.

1.5. SUBSIDY OR INCENTIVE BY THE CENTRAL/STATE GOVERNMENT

Regulation 22 of the RE Tariff Regulations specifies:

“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:

- a) 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.*
- b) Capitalisation of RE projects during second half of the fiscal year.*
- c) Per unit benefit shall be derived on levellised basis at discount factor equivalent to weighted average cost of capital.”*

Accordingly, for the projects availing the benefit of accelerated depreciation as per applicable Income Tax rate of 33.99% (30% IT rate + 10% surcharge + 3% Education cess) has been considered. For the purpose of determining net depreciation benefits, depreciation @ 5.28% as per straight line method (Book depreciation as per Companies Act, 1956) has been compared with depreciation as per Income Tax rate, i.e., 80% of the written down value method and depreciation for the first year has been calculated at the rate of 50% of 80%, i.e., 40%, assuming the project is capitalized during the second half of the financial year as per proviso (ii) to Regulation 22. Tax benefit has been worked out as per normal tax rate on the net depreciation benefit. Per unit levellised accelerated depreciation benefit has been computed considering the weighted average cost of capital as discounting factor. Detailed computation of benefit of accelerated depreciation in respect of each RE technology has been covered under technology specific sections.

Further, as per the second Proviso under Regulation 22.1 of RE Tariff Regulations, in case any Central Government or State Government notification specifically provides for any Generation based Incentive over and above tariff, the same shall not be factored in while determining tariff. Thus, while determining Tariffs for RE projects in this Order, no such incentives have been considered.

1.6. SHARING OF CDM BENEFITS

As per Regulation 21.1 of RE Tariff Regulations, all risks, costs and efforts associated with the availing of carbon credits shall be borne by the Generating Company. Further, the

entire proceeds of carbon credit from approved CDM project, if any, shall be retained by the Generating Company.

1.7. APPLICABILITY OF TARIFF ORDER

This Tariff Order shall be applicable for Existing RE Projects and New RE Projects to be commissioned during FY 2010-11. The applicable Tariff Rate, Tariff Structure and other terms and conditions for Existing RE Projects and New RE Projects in respect of each type of RE technology has been covered in detail under technology-specific sections.

Existing RE Project: As per Regulation 2.1 (k) of RE Tariff Regulations, Existing RE project has been defined as the renewable energy project whose date of commissioning falls prior to date of notification of RE Tariff Regulations.

New RE Project: As per Regulation 2.1 (s) of RE Tariff Regulations, New RE project has been defined as the renewable energy project whose date of commissioning is subsequent to the date of notification of RE Tariff Regulations. The following sections of the Order outline the technology-wise norms and corresponding Generic Tariff for Projects based on various renewable energy technologies.

Further, first and second proviso of Regulations 16.1 of Maharashtra Electricity Regulatory Commission (Renewable Purchase Obligation, its compliance and implementation of REC framework) Regulations, 2010 specify as under:

“Provided that the existing projects for which long term PPA are already put in place, shall be allowed to participate in REC scheme after the expiry of their existing PPA;

Provided further that prior termination of PPA shall not entitle existing renewable energy projects to participate in REC mechanism.”

2. WIND ENERGY PROJECTS

2.1. USEFUL LIFE

Regulation 2.1 (ff) of the RE Tariff Regulations defines 'useful life' in relation to a unit of a generating station (including evacuation system) to mean the duration from the date of commercial operation (COD) till such time as specified under the RE Tariff Regulations for such generation facility. Accordingly, the useful life for wind energy projects as specified under the Regulation 2.1 (ff) is 25 years from COD.

2.2. TARIFF PERIOD

Regulation 6 of the RE Tariff Regulations specifies the Tariff Period for various RE projects. Accordingly the Tariff Period for wind energy projects is 13 years, considered from the date of commercial operation of the RE project, and the tariff determined under the Regulations shall be applicable only for the duration of the Tariff Period.

2.3. CAPITAL COST

Wind energy projects located at the wind sites having minimum annual Wind Power Density (WPD) of 200 Watt/m² measured at hub height of 50 metres and using new wind turbine generators are eligible for the preferential tariff as determined under the RE Tariff Regulations. In order to determine the yearly normative Capital Cost for such eligible Wind Energy Projects over the Control Period, the RE Tariff Regulations specify an indexation mechanism to be notified on a yearly basis pursuant to issuance of such indexed Capital Cost by Central Electricity Regulatory Commission (CERC) for wind energy projects in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations. Further, Regulation 24 of MERC RE Tariff Regulations provides that the Capital Cost for wind power project shall include wind turbine generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest during Construction (IDC).

Regulation 24.2 specifies the normative Capital Cost for wind energy projects for FY 2010-11 as Rs. 467.13 Lakh/MW.

2.4. DEBT-EQUITY RATIO

Regulation 13.1 of the RE Tariff Regulations provides that the debt-equity ratio of 70:30 is to be considered for determination of generic tariff. In accordance with the debt equity ratio and the above stipulated Capital cost, the debt and equity component for wind energy projects works out to Rs. 326.99 Lakh per MW and Rs. 140.14 Lakh per MW, respectively, for FY 2010-11.

2.5. RETURN ON EQUITY

Regulation 16.2 stipulates the normative Return on Equity (RoE) as under:

- (a) Pre-tax 19% per annum for the first 10 years, and
- (b) Pre-tax 24% per annum from the 11th year onwards.

Accordingly, Return on Equity for FY 2010-11 works out as under:

Opening Equity (Rs lakh per MW)	140.14
Return on Equity for the first 10 years @ 19% (Rs lakh per MW)	26.63
Return on Equity after first 10 years @ 24% (Rs lakh per MW)	33.63

2.6. INTEREST ON LOAN

Regulation 14.1 of the RE Tariff Regulations stipulates that the loan tenure of 10 years is to be considered for the purpose of determination of generic tariff for RE projects. Regulation 14.2 provides for computation of the rate of interest on loan as under:

“The loans arrived at in the manner indicated above shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.

For the purpose of computation of tariff, the normative interest rate shall be considered as average average of State Bank Advance Rate (SBAR) prevalent during the previous year plus 150 basis points.

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.”

Accordingly, the weighted average of SBAR for FY 2009-10 (i.e., 11.87%) as shown in the Table below, plus 150 basis points, works out to an interest rate of 13.37%, which has been considered for Wind Energy Projects with a gross opening loan amount of Rs. 326.99 Lakh per MW in FY 2010-11.

Period	SBAR
1-April-2009 to 28-June-2009	12.25%
29-June-2009 to 31-March-2010	11.75%
Avg. SBAR	11.87%

Source: State Bank of India (www.statebankofindia.com)

2.7. DEPRECIATION

Regulation 15 of the RE Tariff Regulations provides that depreciation is allowed up to a maximum of 90% of the Capital Cost of the asset and the depreciation rate for the first 10 years of the Tariff Period shall be 7% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 11th year onwards.

Accordingly, for Wind Energy Projects, depreciation rate is 7% for the first 10 years, and works out to 1.33% thereafter, for the remaining useful period of 15 years for the wind energy projects.

2.8. INTEREST ON WORKING CAPITAL

Regulation 17.1 of the RE Tariff Regulations provides for computation of the working capital requirements of the wind projects as under:

- "(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 @ 15% of operation and maintenance expenses."*

Further, Regulation 17.3 specifies that Interest on Working Capital shall be computed at an interest rate equivalent to average State Bank Advance Rate (SBAR) during the previous year plus 100 basis points. Para 2.6 of this Order shows that average SBAR for

FY 2009-10 is 11.87%. Accordingly, the rate of Interest on Working Capital for wind energy projects in FY 2010-11 works out to 12.87% (11.87% + 100 basis points).

2.9. OPERATION AND MAINTENANCE EXPENSES

In accordance with Regulation 27 of RE Tariff Regulations, the normative O&M expenses for wind energy projects for FY 2010-11 is Rs 6.87 Lakh/MW, to be escalated at the rate of 5.72% per annum over the Tariff Period for determination of the levellised tariff.

2.10. CAPACITY UTILISATION FACTOR

In accordance with Regulation 26 of the RE Tariff Regulations, the norms for Capacity Utilization Factor (CUF) specified for wind energy projects are as under:

Wind Energy Projects	CUF
Annual Mean Wind Power Density (W/m^2)	
Wind zone-1 (200-250)	20%
Wind zone-2 (250-300)	23%
Wind zone-3 (300-400)	27%
Wind zone-4 (above 400)	30%

In accordance with Regulation 26.2 of the RE Tariff Regulations, the annual mean wind power density specified above is to be measured at 50 metre hub-height and as per Regulation 26.3, for the purpose of classification of wind energy project into particular wind zone class, the State-wise wind power density map prepared by Centre for Wind Energy Technology (C-WET) annexed as schedule to the RE Tariff Regulations, is to be considered.

2.11. LEVELLISED TARIFF FOR NEW WIND ENERGY PROJECTS IN FY 2010-11

Accordingly, the generic tariffs for Wind Energy Projects for FY 2010-11 has been determined as under. The discount factor for carrying out levellisation of Tariff for wind energy projects works out to 15.96%.

Tariff for New RE Projects-Wind

Particular	Tariff Period	Levellised Total Tariff (FY2010-11)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
		(Rs / kWh)	(Rs/kWh)	(Rs/kWh)
Wind Energy Projects				
Wind Zone -1 (CUF 20%)	13	5.07	(0.78)	4.29
Wind Zone -2 (CUF 23%)	13	4.41	(0.68)	3.73
Wind Zone -3 (CUF 27%)	13	3.75	(0.58)	3.18
Wind Zone -4 (CUF 30%)	13	3.38	(0.52)	2.86

Notes:

- The above Tariff shall be valid for Projects Commissioned in FY 2010-11.
- The above Tariff shall be valid for a Tariff Period of 13 years from the Commercial Operation Date (COD)

2.12. TARIFF FOR EXISTING WIND ENERGY PROJECTS IN FY 2010-11

In accordance with Regulation 3.2 of the RE Tariff Regulations, the tariff and other terms and conditions of existing RE Projects shall be governed by respective RE Tariff Orders and amendments thereof as issued from time to time by the Commission and the tariff, tariff structure and other conditions as specified under respective RE Tariff Order shall continue to be applicable for such existing RE projects over the duration of the Tariff Period as stipulated under respective RE Tariff Orders.

The Commission had issued a Tariff Order for Wind power technology dated November 24, 2003 in Case No. 17(3), 3, 4 & 5 of 2002. The validity of the Tariff Order as stipulated in the said Order was initially till March 31, 2007, which was further extended to March 31, 2010 through the RPS Order dated August 16, 2006 (Case No.6 of 2006) issued by the

Commission. The applicability of the same was subsequently extended vide Order dated March 31, 2010 (Case No. 116 of 2009) till issuance of new Tariff Orders for FY 2010-11.

In the above mentioned Tariff Order, Wind Power Projects were classified into three distinct groups, namely Group-I, Group-II and Group-III Projects based on the date of commissioning of such Projects. Wind Projects commissioned before December 27, 1999 belonged to Group-I, Projects commissioned after December 27, 1999 but on or before March 31, 2003 belonged to Group-II, and Projects commissioned from April 1, 2003 onwards belong to Group-III class of Projects.

In view of the extended applicability of the existing Tariff Order in the new Control Period (through Regulation 3.2) and on the basis of the Tariff, Tariff Structure and other conditions as stipulated in the existing Tariff Order, the Tariff for existing Wind Power Projects during FY 2010-11 shall be as under.

Tariff for Existing RE Project-Wind

Sl. No.	FY	Year	Group-I (before 27th December, 1999)	Group-II (Projects Commissioned after 27th December, 1999 but On or before 31 March, 2003)								Group-III (Projects Commissioned From 1st April, 2003) Financial Year)	
				Year	1999-00	Year	2000-01	Year	2001-02	Year	2002-03	Year	2003-04
1	1994-95	1	2.25										
2	1995-96	2	2.36										
3	1996-97	3	2.47										
4	1997-98	4	2.58										
5	1998-99	5	2.69										
6	1999-00	6	2.80	1	2.80								
7	2000-01	7	2.91	2	2.91	1	2.91						
8	2001-02	8	3.02	3	3.02	2	3.02	1	3.02				
9	2002-03	9	3.13	4	3.13	3	3.13	2	3.13	1	3.13		
10	2003-04	10	3.24	5	3.24	4	3.24	3	3.24	2	3.24	1	3.50
11	2004-05	11	3.24	6	3.35	5	3.35	4	3.35	3	3.35	2	3.65
12	2005-06	12	3.24	7	3.46	6	3.46	5	3.46	4	3.46	3	3.80
13	2006-07	13	3.24	8	3.57	7	3.57	6	3.57	5	3.57	4	3.95
14	2007-08	14	3.35	9	2.52	8	3.68	7	3.68	6	3.68	5	4.10
15	2008-09	15	3.46	10	2.52	9	2.52	8	3.79	7	3.79	6	4.25
16	2009-10	16	3.57	11	2.52	10	2.52	9	2.52	8	3.90	7	4.40
17	2010-11	17	3.68	Beyond FY 2009-10, those projects whose PPA has expired shall have option to continue with the preferential Tariff or opt for pricing under REC mechanism (Clause 16.1 of MERC (Renewable Purchase Obligation, its compliance and implementation of REC framework) Regulations, 2010 and in accordance with second proviso to Regulation 3.1 of RE Tariff Regulations.								8	4.55
18	2011-12	18	3.79									9	4.70
19	2012-13	19	3.90									10	4.85
20	2013-14	20	4.01									11	5.00
21	2014-15											12	5.15
22	2015-16											13	5.30

Group I- Tariff started with 2.25 Rs/kWh for 1994-95 and escalated at the rate of 5% (i.e., 11 paise every year) till 10th year, then remained constant for next 3 years, then again escalated from 14th year onwards till 20th year at the same rate.

Group II- Tariff started with 2.25 Rs/kWh for 1994-95 with 5% simple escalation (i.e., 11 paise every year) for 8 years.

The Commission has ruled in its Order in Case No. 89 of 2007 that the tariff on ad-interim basis for wind energy injection into the Grid by Wind Energy developers under Group-II category post expiry of their respective EPAs, shall be Rs 2.52 per unit. For FY 2010-11, in case the Wind developer chooses to sell at preferential Tariff, the Tariff of Rs 2.52/kWh shall be applicable.

Group III- Tariff started with 3.50 Rs/kWh in 2003-04 and increases at the rate of 15 paise per year for 13 years. The starting rate will be applicable from the year of Commissioning of the Wind Project.

3. SMALL HYDRO POWER PROJECTS AND MINI/MICRO HYDRO PROJECTS

3.1. USEFUL LIFE

The useful life specified for Small Hydro Projects (SHPs) and Mini/Micro Projects under the Regulation 2.1 (ff) is 35 years from COD.

3.2. TARIFF PERIOD

Regulation 6.1 of the RE Tariff Regulations specifies a Tariff Period of 13 years for Small Hydro Projects of capacities above 5 MW and lower than or equal to 25 MW.

Regulation 6.2 of the RE Tariff Regulations specifies a Tariff Period of 35 years for Mini/Micro Hydro projects and Small hydro projects upto and including 5 MW. The Tariff Period matches the useful life in case of these Projects, reflecting a longer preferential treatment for such Projects.

3.3. CAPITAL COST OF SMALL HYDRO PROJECTS

SHPs for the purpose of the RE Tariff Regulations cover those projects, which are located at the sites approved by the State Nodal Agency/State Government using new plant and machinery and with installed power plant capacity lower than or equal to 25 MW. Further, for the purpose of specifying allowable Capital Cost, SHPs have been classified into two categories based on their installed capacities, viz., a) Small Hydro Projects above 1 MW and up to and including 5 MW, and b) Small Hydro Projects of capacities above 5 MW and lower than or equal to 25 MW.

Regulation 28.1 specifies the normative Capital Cost for SHPs for FY 2010-11 as under:

Project Size	Capital Cost (FY 2010-11) (Rs. Lakh/ MW)
> 1 MW and upto and including 5 MW	498.88
> 5 MW to 25 MW	453.53

3.4. DEBT-EQUITY RATIO

In accordance with Regulation 13.1 of the RE Tariff Regulations, the debt and equity component for SHP having capacities above 1MW and up to and including 5MW works out to Rs. 349.21 Lakh and Rs. 149.66 Lakh, respectively, and for projects having capacities above 5 MW and lower than or equal to 25 MW, the debt and equity component works out to Rs. 317.47 lakh per MW and Rs. 136.06 Lakh per MW, respectively.

3.5. RETURN ON EQUITY

In accordance with the Regulation 16 of the RE Tariff Regulations, the RoE works out to be as shown in the Table below:

Particulars	> 1 MW and upto and including 5 MW	> 5 MW to 25 MW
Opening Equity (in Rs lakh per MW)	149.66	136.06
Return on Equity for the first 10 years @19% (Rs lakh per MW)	28.44	25.85
Return on Equity after first 10 years @24% (Rs lakh per MW)	35.92	32.65

3.6. INTEREST ON LOAN

In accordance with Regulation 14 of the RE Tariff Regulations, as computed above, the interest rate of 13.37% (11.87% +150 basis points) has been considered for small hydro

projects having capacities above 1MW and up to and including 5MW with a gross opening loan amount of Rs. 349.3 Lakh per MW and for projects having capacities above 5 MW and lower than or equal to 25 MW with a gross opening loan amount of Rs. 317.8 Lakh per MW.

3.7. DEPRECIATION

In accordance with Regulation 15 of the RE Tariff Regulations, the depreciation will be charged at 7% for the first 10 years, and at 0.80% thereafter for the remaining useful period of 25 years for SHPs.

3.8. INTEREST ON WORKING CAPITAL

Regulation 17 of the RE Tariff Regulations provides for computation of the working capital requirements of the SHPs as under:

- "(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 @ 15% of operation and maintenance expenses"*

Further, in accordance with Regulation 17.3, the Interest on Working Capital for small hydro projects in FY 2010-11 works out to 12.87% (11.87% + 100 basis points).

3.9. OPERATION AND MAINTENANCE EXPENSES

Regulation 32 of the RE Tariff Regulations provide for the normative O&M expenses for small hydro projects for FY 2010-11, to be escalated at the rate of 5.72% per annum over the Tariff Period for determination of the levellised tariff. The table below presents the normative O&M expenses considered by the Commission for small hydro power for FY 2010-11:

Project Size	O&M expenses (Rs Lakh/MW)
> 1 MW and up to and including 5 MW	17.97
5 MW to 25 MW	12.69

3.10. CAPACITY UTILISATION FACTOR (CUF)

In accordance with Regulation 30 of the RE Tariff Regulations, a CUF of 30% has been considered for determination of Tariff for SHPs.

3.11. AUXILIARY POWER CONSUMPTION

In accordance with Regulation 31 of the RE Tariff Regulations, the Normative Auxiliary Consumption of 1.0% has been considered for determination of tariff of SHPs.

3.12. LEVELLISED TARIFF FOR NEW SMALL HYDRO PROJECTS IN FY 2010-11

In light of the above parameters and the discount factor worked out as 16.13% for levellisation of tariff for SHPs, the generic tariffs for Small Hydro Projects for FY 2010-11 have been determined as under:

Tariff for New RE Projects-Small Hydro Projects, Mini and Micro Hydro Projects

Particulars		Tariff period	Levelling Total Tariff (FY2010-11)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
		years	(Rs / kWh)	(Rs/kWh)	(Rs/kWh)
Small Hydro Project					
Mini and Micro Hydro Projects	1 MW & below	35	4.76	(0.56)	4.20
	above 1 MW & upto and including 5MW	35	4.26	(0.57)	3.70
Other Small Hydro Projects	above 5 MW & upto and including 25 MW	13	3.65	(0.51)	3.14

- The above Tariff shall be valid for Projects commissioned in FY 2010-11.
- The above Tariff shall be valid for a tariff period of 35 years from their Commercial Operation Date (COD) for Projects less than and including 5 MW, and for 13 years for Projects with installed capacity greater than 5 MW and upto and including 25 MW

3.13. LEVELLISED TARIFF FOR MINI/MICRO HYDRO PROJECTS IN FY 2010-11

Regulation 33 of RE Tariff Regulations specifies that the tariff for Mini/Micro Hydro Projects shall be higher by Rs 0.50/kWh over and above the tariff applicable for Small

Hydro Projects with installed capacity more than 1 MW but upto and including 5 MW. Accordingly, the Levellised Tariff for Mini/Micro Hydro Projects in FY 2010-11 with capacity less than 1 MW shall be Rs 4.76 / kWh (Rs 4.26/kWh + Rs 0.50/kWh) and Rs 4.20/kWh (Rs 3.70/kWh + Rs 0.50/kWh) in case benefit of accelerated depreciation are availed.

3.14. TARIFF FOR EXISTING SMALL HYDRO PROJECTS IN FY 2010-11

In accordance with Regulation 3.2 of the RE Tariff Regulations, the tariff and other terms and conditions of existing RE Projects, shall be governed by respective RE Tariff Orders and amendments thereof as issued from time to time by the Commission, and shall continue to be applicable for such existing RE projects over the duration of the Tariff Period as stipulated under respective RE Tariff Orders.

The Commission had issued a Tariff Order for Small Hydro Projects dated November 9, 2005 in Case No. 25 of 2004. The Commission, in the Tariff Order had stipulated that the Commission would review the tariff rate and structure after 5 years from the date of applicability of the SHP policy notified by the Government of Maharashtra or on commissioning of 200 MW of SHPs in the State, whichever is earlier. Validity of this Tariff was further extended to March 31, 2010 through the RPS Order (Case No.6 of 2006) issued by the Commission. The applicability of the same was subsequently extended till issuance of new Tariff Orders for the next Control Period (FY 2010-11 to FY 2014-15) through an Order dated March 31, 2010 in Case No. 116 of 2009.

In view of the extended applicability of the existing Tariff Order in the new Control Period (through Regulation 3.2) and on the basis of the Tariff, Tariff Structure and other conditions as stipulated in the existing Tariff Order, the Tariff for existing Small Hydro Projects during FY 2010-11 shall be as follows:

Tariff for Existing RE Projects-Small Hydro Projects

Sl. No.	Financial year	Existing Projects		Sl. No.	Financial year	Existing Projects	
		Year of Operation	2005-06			Year of Operation	2005-06
1	2005-06	1	2.84	11	2015-16	11	3.11
2	2006-07	2	2.87	12	2016-17	12	3.11
3	2007-08	3	2.90	13	2017-18	13	3.11
4	2008-09	4	2.93	14	2018-19	14	3.11
5	2009-10	5	2.96	15	2019-20	15	3.11
6	2010-11	6	2.99	16	2020-21	16	3.14
7	2011-12	7	3.02	17	2021-22	17	3.17
8	2012-13	8	3.05	18	2022-23	18	3.20
9	2013-14	9	3.08	19	2023-24	19	3.23
10	2014-15	10	3.11	20	2024-25	20	3.26

Tariff in the first year of the project is Rs 2.84/unit, and increases by Rs.0.03/unit every year till the debt repayment is over i.e., in the 10th year. The tariff shall remain constant at Rs 3.11/unit between the 10th year and the 15th year after which it again increases annually at a constant rate of Re 0.03/unit.

4. BIOMASS POWER PROJECTS

4.1. KEY PROVISIONS OF RE TARIFF REGULATIONS

In accordance with RE Tariff Regulations, 2010, the applicable Tariff and terms and conditions of Tariff for new as well as existing Biomass Power Projects as specified under existing RE Tariff Order shall continue to be applicable for the first three years of the new Control Period (i.e., FY 2010-11, FY 2011-12, and FY 2012-13). The relevant extract of the RE Tariff Regulations, namely, Regulation 3.3 is reproduced as under:

“3.3 For existing and new projects based on renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based co-generation projects, the tariff, tariff structure and other conditions as specified under respective RE Tariff Order shall continue to be applicable for first three years of the Control Period, i.e., FY 2010-11, FY 2011-12 and FY 2012-13”.

Further, Chapter 5 of the RE Tariff Regulations provides technology specific norms for determination of tariff for Biomass Power Projects and the same shall be applicable to new Biomass Projects only from fourth year of the Control Period, i.e., from FY 2013-14. The relevant Regulations specifying the applicability of such norms is reproduced as under:

- "35.1 The capital cost and performance norms as specified under Regulation 36 to Regulation 40 shall be applicable only for new biomass power projects with effect from April 1, 2013.*
- 35.2 The fuel related aspects specified under Regulation 41 to Regulation 47 shall be applicable for existing and new biomass power projects with effect from April 1, 2013:*
- Provided that norms in respect of Station Heat Rate, Gross Calorific Value and Auxiliary Consumption factor for existing biomass power projects shall be as stipulated under the respective RE tariff Order as referred under Regulation 3.2."*

In addition, the Regulations also specify that the fuel price for each year of operation, of both existing and new Biomass Project shall be adjusted based on an indexation mechanism with effect from April 1, 2013. The relevant extract of the Regulations is reproduced as under:

- "47.1 In case of (existing and new) biomass power projects, the following indexing mechanism for adjustment of fuel prices for each year of operation, from April 1, 2013, will be applicable for determination of applicable variable charge component of tariff:*

The indexed Biomass Fuel Price (P_n) in case of Biomass Power projects for each year (n) of the Control Period shall be notified pursuant to notification of such indexed Biomass Fuel Price norm as applicable for Biomass Power projects within Maharashtra by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

Where,

P (n) = Price per ton of biomass for the nth year to be considered for tariff determination"

From the above mentioned provisions of RE Tariff Regulations, the Tariff for existing and new Biomass Power Projects in FY 2010-11 shall be as per the Biomass Tariff Order already issued by the Commission.

4.2. RELEVANT BIOMASS TARIFF ORDERS

The Commission has issued several Orders for determination of Tariff of Biomass Power Projects as well as for revising the variable component of the Tariffs to factor in the increase in biomass price over the years. The Orders issued by the Commission in respect of Tariff for Biomass Projects and their applicability are as under:

- a) Order dated August 8, 2005 in Case No. 37 of 2003 for determination of tariff and dispensation of related issues in respect of procurement of power from biomass based power projects.
- b) The Order was applicable to all biomass based power generation projects in Maharashtra using the Rankine cycle based technology applications and commissioned by March 31, 2010, or until installed plant capacity based on biomass reaches 250 MW, whichever is earlier.
- c) This Order was applicable only to those Projects harnessing biomass potential in Maharashtra and commissioned in the State, and intended for sale of electricity to Licensees within Maharashtra.
- d) Subsequently, the Commission issued Orders for revision of Variable Charge component of Tariff on March 25, 2009 and thereafter on December 14, 2009 (Case No. 83 of 2008) upon scrutiny of submissions of few operational biomass power projects. As stipulated in the Order dated December 14, 2009, the revised variable charge component was applicable till March 31, 2010.
- e) The applicability of the tariffs as determined through the above Orders was subsequently extended till the issuance of new Tariff Orders for the next Control Period (FY 2010-11 to FY 2014-15) through an Order dated March 31, 2010 in Case No. 116 of 2009.

In accordance with Regulation 3.3 of the RE Tariff Regulations, and on the basis of the Tariff, Tariff Structure and other conditions as stipulated in the existing Tariff Order, the Tariff for existing and new Biomass Power Projects during FY 2010-11 shall be as elaborated in the following section.

4.3. TARIFF FOR EXISTING AND NEW BIOMASS POWER PROJECTS

Tariff for Existing and New Biomass Power Projects

Financial Year	Fixed Charge (Rs/kWh)	Variable Charge (Rs/kWh)	Tariff (Rs/kWh)
2010-11	1.70	3.28	4.98

The Tariff Rate comprises two parts, viz., (i) fixed charge component, and (ii) variable charge component and shall be applicable for sale of power by rankine cycle based biomass power project to distribution licensees within Maharashtra during FY 2010-11.

5. NON-FOSSIL FUEL BASED CO-GENERATION PROJECT

5.1. KEY PROVISIONS OF RE TARIFF REGULATIONS

In accordance with RE Tariff Regulations, the applicable Tariff and terms and conditions of Tariff for new as well as existing non-fossil fuel based co-generation projects as specified under existing RE Tariff Order shall continue to be applicable for first three years of the new Control Period (i.e., FY 2010-11, FY 2011-12, and FY 2012-13). The relevant extract of the RE Tariff Regulations, namely, Regulation 3.3 is reproduced as under:

“3.3 For existing and new projects based on renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based co-generation projects, the tariff, tariff structure and other conditions as specified under respective RE Tariff Order shall continue to be applicable for first three years of the Control Period, i.e., FY 2010-11, FY 2011-12 and FY 2012-13”.

Further, Chapter 6 of the RE Tariff Regulations provides technology specific norms for determination of tariff for non-fossil fuel based co-generation projects and the same are applicable to existing and new non-fossil fuel based co-generation projects only from fourth year of the Control Period, i.e., from FY 2013-14. The relevant Regulations specifying the applicability of such norms is reproduced as under.

"49.1 The capital cost and performance norms as specified under Regulation 50 to Regulation 54 and Regulation 62 shall be applicable only for new non-fossil fuel based co-generation projects with effect from April 1, 2013.

49.2 The fuel related aspects specified under Regulation 55 to Regulation 61 shall be applicable for existing and new biomass power projects with effect from April 1, 2013:

Provided that norms in respect of specific fuel consumption, Gross Calorific Value and Auxiliary Consumption factor for existing non-fossil fuel based co-generation projects shall be as stipulated under the respective RE tariff Order as referred under Regulation 3.2."

In addition, the Regulations also specify that the fuel price for each year of operation, of both existing and new non-fossil fuel based co-generation projects shall be adjusted based on an indexation mechanism with effect from April 1, 2013. The relevant extract of the Regulations is as reproduced as under:

"56.1 In case of (existing and new) non-fossil fuel based co-generation projects, the following indexing mechanism for adjustment of fuel prices for each year of operation, from April 1, 2013, will be applicable for determination of applicable variable charge component of tariff:

The indexed Bagasse Fuel Price (P_n) in case of Non-fossil fuel based Co-generation projects for each year (n) of the Control Period shall be notified pursuant to notification of such indexed Bagasse Fuel Price norm as applicable for Non-fossil fuel based Co-generation projects within Maharashtra by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

Where,

P (n) = Price per ton of Bagasse for the nth year to be considered for tariff determination"

Thus, the Tariff for existing and new non-fossil fuel based co-generation projects in FY 2010-11 shall be as per the relevant Tariff Order for non-fossil fuel based co-generation projects as already issued by the Commission.

5.2. RELEVANT TARIFF ORDERS FOR NON-FOSSIL FUEL BASED CO-GENERATION

The Commission has issued Orders for determination of Tariff of non-fossil fuel based co-generation projects as well as for revising the variable cost component of Tariffs to factor in the fuel price increase over the years, as under:

- a) Order dated August 16, 2002 in Case No. 8/9/10/15/17/18/19/20/21 of 2001 for purchase of power from non-fossil fuel based co-generation projects and in the matter of aiding the State Government in formulation of the Policy.
- b) The Tariff Rate and tariff structure, as approved, was valid till March 31, 2007 or 300 MW of capacity addition whichever is earlier. Subsequently, through RPS Order (Case No. 6 of 2006), the Commission extended the validity of the Tariff Rate, tariff structure and other conditions of said Order for co-generation projects to be commissioned upto March 31, 2010.
- c) The Commission issued a Clarificatory Order dated November 21, 2003 specifying the qualification criteria for co-generation projects and outlining the measurement and verification protocol for compliance monitoring.
- d) Subsequently, the Commission issued an Interim Order for review of tariff rate and tariff structure for non-fossil fuel based grid connected Cogeneration projects on January 11, 2010 (Case No. 123 of 2008) upon scrutiny of submissions made by Cogeneration Association of India.

In accordance with Regulation 3.3 of the RE Tariff Regulations, and on the basis of the Tariff, Tariff Structure and other conditions as stipulated in the existing Tariff Order, the Tariff for existing and new non-fossil fuel based co-generation projects during FY 2010-11 shall be as elaborated in the following section.

5.3. TARIFF FOR EXISTING AND NEW NON-FOSSIL FUEL BASED CO-GENERATION PROJECTS

Tariff for Existing and New Non-Fossil based Bagasse Cogen Power Projects

Financial Year	Fixed Charge (Rs/kWh)	Variable Charge (Rs/kWh)	Tariff (Rs/kWh)
2010-11	2.26	2.53	4.79

The Tariff Rate comprises of two parts, viz., (i) fixed charge component, and (ii) variable charge component and shall be applicable for sale of power by non-fossil fuel based co-generation project to distribution licensees within Maharashtra during FY 2010-11.

5.4. TARIFF FOR NON-QUALIFYING NON-FOSSIL FUEL-BASED CO-GENERATION PLANTS

In accordance with RE Tariff Regulations, the applicable Tariff and terms and conditions of Tariff for new as well as existing non-qualifying non-fossil fuel based co-generation projects as specified under existing RE Tariff Order shall continue to be applicable for first three years of the new Control Period (i.e., FY 2010-11, FY 2011-12, and FY 2012-13). The relevant extract of the RE Tariff Regulations, namely, Regulation 3.3, is reproduced as under:

“3.3 For existing and new projects based on renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based co-generation projects, the tariff, tariff structure and other conditions as specified under respective RE Tariff Order shall continue to be applicable for first three years of the Control Period, i.e., FY 2010-11, FY 2011-12 and FY 2012-13”.

In this context, the Commission has determined the Tariff for non-qualifying non-fossil fuel based co-generation (NQNFCC) projects as Rs 1.94/kWh with escalation of 2% per annum on compounded basis under its Order (Case 26 of 2004) dated May 25, 2005.

Accordingly, the Tariff Rate for existing non-qualifying non-fossil fuel based co-generation projects for FY 2010-11 works out to Rs 2.14/kWh.

Hence, the Commission hereby rules that the Tariff Rate for Non-Qualifying non-fossil fuel based Co-generation projects (existing and new) shall be Rs 2.14/kWh.

6. SOLAR PHOTOVOLTAIC (PV) PROJECTS

6.1. USEFUL LIFE

Regulation 2.1 (ff) of the RE Tariff Regulations defines 'useful life' in relation to a unit of a generating station (including evacuation system) to mean the duration from the date of commercial operation (COD) till such time as specified under the RE Tariff Regulations for such generation facility. Accordingly, as per Regulation 2.1 (ff), the useful life specified for Solar PV Projects shall be 25 years.

6.2. CONTROL PERIOD

The generic tariff determined for Solar PV projects based on the Capital Cost and other norms applicable for FY 2010-11 shall also apply for such projects during FY 2011-12, provided that (i) the Power Purchase Agreements (PPA) in respect of the Solar PV projects as mentioned in this Clause are signed on or before March 31, 2011; and (ii) the entire capacity covered by the Power Purchase Agreements is commissioned on or before March 31, 2012 in respect of Solar PV projects.

6.3. TARIFF PERIOD

Regulation 6 of the RE Tariff Regulations specifies the Tariff Period for Solar PV projects as 25 years. In terms of Regulation 6.4 and 6.5 of the RE Tariff Regulations, the Tariff Period specified shall be reckoned from the date of commercial operation of the RE projects and the tariff determined under the Regulations shall be applicable only for the duration of the Tariff Period.

6.4. CAPITAL COST OF SOLAR PV PROJECTS

Regulation 66 of the RE Tariff Regulations has specified the normative Capital Cost for Solar PV power projects as Rs.1690 Lakh/MW for FY 2010-11.

6.5. DEBT-EQUITY RATIO

In accordance with Regulation 13.1 of the RE Tariff Regulations, the normative debt and equity component for Solar PV Projects shall be Rs. 1183 Lakh per MW and Rs. 507 Lakh per MW, respectively.

6.6. RETURN ON EQUITY

In accordance with Regulation 16.1 of the RE Tariff Regulations, the RoE for Solar PV Projects works out as shown in the Table below:

Particulars	Solar PV
Opening Equity (in Rs lakh per MW)	507.00
Return on Equity for the first 10 years @ 19% (in Rs lakh per MW)	96.33
Return on Equity after first 10 years @24% (in Rs lakh per MW)	121.68

6.7. INTEREST ON LOAN

In accordance with Regulation 14 of the RE Tariff Regulations and as computed earlier, the interest rate of 13.37% (11.87% + 150 basis points) has been considered for Solar PV Projects with a gross opening loan amount of Rs. 1183 Lakh per MW in FY 2010-11.

6.8. DEPRECIATION

In accordance with Regulation 15 of the RE Tariff Regulations, the depreciation will be charged at 7% for the first 10 years and at 1.33% thereafter for the remaining useful period of 15 years for Solar PV projects.

6.9. INTEREST ON WORKING CAPITAL

Regulation 17.1 of the RE Tariff Regulations provides for computation of the working capital requirements for Solar PV Projects as under:

"(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 @ 15% of operation and maintenance expenses"*

In accordance with Regulation 17.3, the Interest on Working Capital for Solar PV Projects for FY 2010-11 works out to 12.87%.

6.10. OPERATION AND MAINTENANCE EXPENSES

Regulation 68 of the RE Tariff Regulations provides the normative O&M expenses for small Solar PV projects for FY 2010-11 as Rs. 9.51 Lakh/MW, which is to be escalated at the rate of 5.72% per annum over the Tariff Period, for determination of the levelled tariff.

6.11. CAPACITY UTILISATION FACTOR

In accordance with Regulation 67 of the RE Tariff Regulations, the CUF of 19% has been considered for determination of Tariff for Solar PV power projects in FY 2010-11.

6.12. LEVELLED TARIFF FOR SOLAR PV POWER PROJECTS IN FY 2010-11

In light of the parameters discussed in the preceding paragraphs and with respect to the discount factor of 15.96% derived based on the methodology stipulated in Section 1.4 of this Order, the generic tariffs for Solar PV Projects for FY 2010-11 have been determined as under:

Tariff for New RE Projects-Solar Power Projects

Particular	Tariff period	Levelled Tariff (FY2010-11)	Benefit of Accelerated Depreciation (if availed)	Net Levelled Tariff (upon adjusting for Accelerated Depreciation)
	years	(Rs / kWh)	(Rs/kWh)	(Rs/kWh)
		Solar Power Projects		
Solar PV Projects	25	17.91	(2.96)	14.95

The Tariff specified for Solar PV Projects shall be valid for Projects Commissioned in FY 2010-11 and FY 2011-12 as well, and shall be valid for a tariff period of 25 years from the Commercial Operation Date (COD).

6.13. LEVELLISED TARIFF FOR SOLAR ROOFTOP PV AND OTHER SMALL SOLAR PROJECTS IN FY 2010-11

Regulation 68 of the RE Tariff Regulations specifies that the tariff for Solar Rooftop PV projects and other small solar projects will be Rs 0.50 /kWh higher than the Tariff specified for Solar PV projects in the Regulations. Accordingly, the Tariff for such Projects in FY 2010-11 shall be as follows:

Tariff for New RE Projects-Solar Power Projects [refer Regulation 68.1 of MERC (Terms and conditions of RE tariff) Regulations, 2010]				
Particular	Tariff period	Levellised Tariff (FY2010-11)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation)
	years	(Rs / kWh)	(Rs/kWh)	(Rs/kWh)
Solar Power Projects				
Solar rooftop PV and other small solar power Projects	25	18.41	(2.96)	15.45

The Tariff specified for Solar rooftop PV and Other Small Solar Power Projects shall be valid for projects Commissioned in FY 2010-11 and FY 2011-12 as well, and shall be valid for a tariff period of 25 years from the Commercial Operation Date (COD).

7. SOLAR THERMAL PROJECTS

7.1. USEFUL LIFE

Regulation 2.1 (ff) of the RE Tariff Regulations defines ‘useful life’ in relation to a unit of a generating station (including evacuation system) to mean the duration from the date of commercial operation (COD) till such time as specified under the RE Tariff Regulations for such generation facility. Accordingly, as per Regulation 2.1 (ff), the useful life specified for Solar thermal projects shall be 25 years.

7.2. CONTROL PERIOD

As stipulated under Regulation 5.2 of RE Tariff Regulations, the generic tariff determined for Solar thermal projects based on the Capital Cost and other norms for FY 2010-11 shall also apply for such projects to be commissioned during FY 2011-12 and FY 2012-13, provided that (i) the Power Purchase Agreements (PPA) in respect of Solar thermal projects as mentioned in this Clause are signed on or before March 31, 2011; and (ii) the entire capacity covered by the Power Purchase Agreements is commissioned on or before March 31, 2013 in respect of such Solar thermal projects.

7.3. TARIFF PERIOD

Regulation 6 of the RE Tariff Regulations specifies the Tariff Period for Solar thermal projects as 25 years. In terms of Regulations 6.4 and 6.5 of the RE Tariff Regulations, the Tariff Period specified shall be reckoned from the date of commercial operation of the RE projects and the tariff determined under the Regulations shall be applicable only for the duration of the Tariff Period.

7.4. CAPITAL COST OF SOLAR THERMAL PROJECTS

Regulation 70 specifies the normative Capital Cost for Solar thermal projects as Rs.1530 Lakh/MW for FY 2010-11.

7.5. DEBT-EQUITY RATIO

In accordance with Regulation 13.1 of the RE Tariff Regulations, the normative debt and equity component for Solar thermal projects shall be Rs. 1071 Lakh per MW and Rs. 459 Lakh per MW, respectively.

7.6. RETURN ON EQUITY

In accordance with the Regulation 16.1 of the RE Tariff Regulations, the RoE for Solar thermal projects works out as shown in the table below.

Particulars	Solar PV
Opening Equity (in Rs lakh per MW)	459.00
Return on Equity for the first 10 years @19% (in Rs lakh per MW)	87.21
Return on Equity after first 10 years @24% (in Rs lakh per MW)	110.16

7.7. INTEREST ON LOAN

In accordance with Regulation 14 of the RE Tariff Regulations, the interest rate of 13.37% (11.87% + 150 basis points) has been considered for determination of Tariff for Solar thermal projects with a gross opening loan amount of Rs. 1071 Lakh per MW in FY 2010-11.

7.8. DEPRECIATION

In accordance with Regulation 15 of the RE Tariff Regulations, the depreciation will be charged at 7% for the first 10 years, and at 1.33% thereafter for the remaining useful period of 15 years for Solar thermal projects.

7.9. INTEREST ON WORKING CAPITAL

Regulation 17.1 of the RE Tariff Regulations provides for computation of the working capital requirements of the Solar thermal projects as under:

- "(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 @ 15% of operation and maintenance expenses"

Further, Regulation 17.3 specifies that Interest on Working Capital shall be computed at an interest rate equivalent to average State Bank Advance Rate (SBAR) during the previous year plus 100 basis points.

Accordingly, the Interest on Working Capital for Solar thermal projects for FY 2010-11 works out to 12.87%.

7.10. OPERATION AND MAINTENANCE EXPENSES

Regulation 73 of the RE Tariff Regulations provides the normative O&M expenses for solar thermal power projects for FY 2010-11 as Rs. 13.74 Lakh/MW, to be escalated at the rate of 5.72% per annum over the Tariff Period for determination of the levelled tariff.

7.11. CAPACITY UTILISATION FACTOR

In accordance with Regulation 72 of the RE Tariff Regulations, the CUF of 23% is considered for determination of tariff for solar thermal projects.

7.12. AUXILIARY POWER CONSUMPTION

In accordance with Regulation 74 of the RE Tariff Regulations, the auxiliary power consumption factor for determination of tariff of solar thermal power projects is 10.00%.

7.13. LEVELLED TARIFF FOR SOLAR THERMAL PROJECTS IN FY 2010-11

In light of the parameters discussed in the preceding paragraphs and with respect to the discount factor of 15.96% derived based on the methodology stipulated in Section 1.4 of this Order, the generic tariff for Solar Thermal Projects for FY 2010-11 has been determined as under:

Tariff for New RE Projects-Solar Power Projects				
Particular	Tariff period	Levelling Tariff (FY2010-11)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation)
	years	(Rs / kWh)	(Rs/kWh)	(Rs/kWh)
Solar Power Projects				
Solar Thermal	25	15.31	(2.46)	12.85

The Tariff specified for Solar Thermal Power Projects shall be valid for Projects Commissioned in FY 2010-11, FY 2011-12 and FY 2012-13 as well, and shall be valid for a tariff period of 25 years from the Commercial Operation Date (COD).

8. The detailed computations of the generic tariff for various RE technologies have been annexed with this Order, as per the details given hereunder:

S No	Renewable Energy Projects	Annexure
A	Wind Power Projects	
	Wind Zone-I	Annexure 1A
	Wind Zone-II	Annexure 1B
	Wind Zone III	Annexure 1C
	Wind Zone IV	Annexure 1D
B	Small Hydro Power Projects	
	SHP Projects Less than 5 MW	Annexure 2A
	SHP Projects between 5 MW and 25 MW	Annexure 2B
C	Solar Projects	
	Solar PV Projects	Annexure 3
	Solar Thermal Projects	Annexure 4

9. This suo-motu Draft Order is issued to invite comments and suggestions from stakeholders including RE Developers, Distribution Licensees, Maharashtra Energy Development Agency (MEDA), consumers, etc. All stakeholders may submit their views, comments and suggestions on the suo-motu Draft Order within two weeks from

issuance of this Draft Order. The Commission shall finalize the Order after taking a view on the submissions received from the stakeholders on the draft Order.

(V. L. Sonavane)
Member

(S.B. Kulkarni)
Member

(V. P. Raja)
Chairman

(K. N. Khawarey)
Secretary, MERC

**Annexure – 1A
(Wind Zone-1)**

Form 1.1 Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Base Case Wind Zone 1	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	20%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	467.13	
3	Sources of Fund		Tariff Period	Years	13	
			<u>Debt: Equity</u>			
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	326.99	
			Total Equity Amout	Rs Lacs	140.14	
			<u>Debt Component</u>			
			Loan Amount	Rs Lacs	326.99	
			Moratorium Period	years	0	
			Repayment Period(incld Moratorium)	years	10	
			Interest Rate	%	13.37%	
			<u>Equity Component</u>			
			Equity amount	Rs Lacs	140	
Return on Equity for first 10 years	% p.a	19.00%				
RoE Period	Year	10				
Return on Equity 11th year onwards	% p.a	24.00%				
Weighted average of ROE		22.00%				
Discount Rate		15.96%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	33.99%	
			MAT Rate (for first 10 years)	%	16.995%	
			80 IA benefits	Yes/No	Yes	
					0.0%	
			Depreciation Rate for first 10 years	%	7.00%	
			Depreciation Rate 11th year onwards	%	1.33%	
		10				
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>			
			Interest On Working Capital	%	12.87%	
6	Operation & Maintenance		power plant (FY10-11)		6.87	
			<u>Total O & M Expenses Escalation</u>	%	5.72%	

Form 1.2 Form Template for (Wind Power Projects under Zone - 1) : Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross/Net Generation	MU		1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75

Fixed Cost	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		6.87	7.26	7.68	8.12	8.58	9.07	9.59	10.14	10.72	11.33	11.98	12.67	13.39	14.16	14.97	15.82	16.73	17.69	18.70	19.77	20.90	22.09	23.36	24.69	26.11
Depreciation	Rs Lakh		32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23
Interest on term loan	Rs Lakh		41.54	37.17	32.79	28.42	24.05	19.68	15.30	10.93	6.56	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.57	2.50	2.42	2.35	2.28	2.21	2.14	2.07	2.01	1.94	1.50	1.54	1.58	1.62	1.66	1.71	1.75	1.80	1.86	1.91	1.97	2.04	2.10	2.17	2.25
Return on Equity	Rs Lakh		26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63
Total Fixed Cost	Rs Lakh		110.31	106.25	102.22	98.22	94.24	90.28	86.36	82.47	78.61	74.79	53.35	54.07	54.83	55.64	56.49	57.39	58.35	59.35	60.42	61.54	62.73	63.99	65.32	66.73	68.21

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillise	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		0.39	0.41	0.44	0.46	0.49	0.52	0.55	0.58	0.61	0.65	0.68	0.72	0.76	0.81	0.85	0.90	0.95	1.01	1.07	1.13	1.19	1.26	1.33	1.41	1.49
Depreciation	Rs/kWh		1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Int. on term loan	Rs/kWh		2.37	2.12	1.87	1.62	1.37	1.12	0.87	0.62	0.37	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.15	0.14	0.14	0.13	0.13	0.13	0.12	0.12	0.11	0.11	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.13
RoE	Rs/kWh		1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92
Total COG	Rs/kWh		6.30	6.06	5.83	5.61	5.38	5.15	4.93	4.71	4.49	4.27	3.04	3.09	3.13	3.18	3.22	3.28	3.33	3.39	3.45	3.51	3.58	3.65	3.73	3.81	3.89

Discount Factor			1	0.862	0.744	0.641	0.553	0.477	0.411	0.355	0.306	0.264	0.227	0.196	0.169	0.146	0.126	0.108	0.094	0.081	0.070	0.060	0.052	0.045	0.038	0.033	0.029
Levillised Tariff	5.07	Rs/Unit																									

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	467.13

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00

Accelerated Depreciation																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	186.85	224.22	44.84	8.97	1.79	0.36	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	174.52	199.56	20.18	-15.70	-22.87	-24.31	-24.59	-24.65	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-13.45	0.00	0.00
Tax Benefit	Rs Lakh	59.32	67.83	6.86	-5.33	-7.77	-8.26	-8.36	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-4.57	0.00	0.00
Energy generation	MU	0.88	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
Discounting Factor		1.00	0.93	0.80	0.69	0.60	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.14	0.12	0.10	0.09	0.07	0.06

Levellised benefit	0.78	Rs/Unit
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**Annexure – 1B
(Wind Zone-2)**

Form 1.1 Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Base Case Wind Zone 2
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	23%
			Deration Factor	%	0.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	467.13
3	Sources of Fund		Tariff Period	Years	13
			<u>Debt: Equity</u>		
			Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	326.99
			Total Equity Amount	Rs Lacs	140.14
			<u>Debt Component</u>		
			Loan Amount	Rs Lacs	326.99
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	10
			Interest Rate	%	13.37%
			<u>Equity Component</u>		
			Equity amount	Rs Lacs	140
Return on Equity for first 10 years	% p.a	19.00%			
RoE Period	Year	10			
Return on Equity 11th year onwards	% p.a	24.00%			
Weighted average of ROE		22.00%			
Discount Rate		15.96%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	33.99%
			MAT Rate (for first 10 years)	%	16.995%
			80 IA benefits	Yes/No	Yes
			<u>Depreciation</u>		
			Depreciation Rate for first 10 years	%	7.00%
			Depreciation Rate 11th year onwards	%	1.33%
Years for 7% rate		10			
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
			Receivables for Debtors	Months	2
			<u>For Variable Charges</u>		
			Interest On Working Capital	%	12.87%
6	Operation & Maintenance		power plant (FY10-11)		6.87
			Total O & M Expenses Escalation	%	5.72%

Form 1.2 Form Template for (Wind Power Projects under Zone - 2) : Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross/Net Generation	MU		2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01

Fixed Cost	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		6.87	7.26	7.68	8.12	8.58	9.07	9.59	10.14	10.72	11.33	11.98	12.67	13.39	14.16	14.97	15.82	16.73	17.69	18.70	19.77	20.90	22.09	23.36	24.69	26.11
Depreciation	Rs Lakh		32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23
Interest on term loan	Rs Lakh		41.54	37.17	32.79	28.42	24.05	19.68	15.30	10.93	6.56	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.57	2.50	2.42	2.35	2.28	2.21	2.14	2.07	2.01	1.94	1.50	1.54	1.58	1.62	1.66	1.71	1.75	1.80	1.86	1.91	1.97	2.04	2.10	2.17	2.25
Return on Equity	Rs Lakh		26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63
Total Fixed Cost	Rs Lakh		110.31	106.25	102.22	98.22	94.24	90.28	86.36	82.47	78.61	74.79	53.35	54.07	54.83	55.64	56.49	57.39	58.35	59.35	60.42	61.54	62.73	63.99	65.32	66.73	68.21

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levellise	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		0.34	0.36	0.38	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30
Depreciation	Rs/kWh		1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Int. on term loan	Rs/kWh		2.06	1.84	1.63	1.41	1.19	0.98	0.76	0.54	0.33	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.07	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11
RoE	Rs/kWh		1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
Total COG	Rs/kWh		5.47	5.27	5.07	4.87	4.68	4.48	4.29	4.09	3.90	3.71	2.65	2.68	2.72	2.76	2.80	2.85	2.90	2.95	3.00	3.05	3.11	3.18	3.24	3.31	3.39

Discount Factor			1	0.862	0.744	0.641	0.553	0.477	0.411	0.355	0.306	0.264	0.227	0.196	0.169	0.146	0.126	0.108	0.094	0.081	0.070	0.060	0.052	0.045	0.038	0.033	0.029
Levellised Tariff	4.41	Rs/Unit																									

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	467.13

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	186.85	224.22	44.84	8.97	1.79	0.36	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	174.52	199.56	20.18	-15.70	-22.87	-24.31	-24.59	-24.65	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-13.45	0.00	0.00	
Tax Benefit	Rs Lakh	59.32	67.83	6.86	-5.33	-7.77	-8.26	-8.36	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-4.57	0.00	0.00
Energy generation	MU	1.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
Discounting Factor		1.00	0.93	0.80	0.69	0.60	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.14	0.12	0.10	0.09	0.07	0.06		

Levellised benefit	0.68	Rs/Unit
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**Annexure – 1C
(Wind Zone-3)**

Form 1.1 Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Base Case Wind Zone 3
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	27%
			Deration Factor	%	0.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	467.13
3	Sources of Fund		Tariff Period	Years	13
			<u>Debt: Equity</u>		
			Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	326.99
			Total Equity Amout	Rs Lacs	140.14
			<u>Debt Component</u>		
			Loan Amount	Rs Lacs	326.99
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	10
			Interest Rate	%	13.37%
			<u>Equity Component</u>		
			Equity amount	Rs Lacs	140
Return on Equity for first 10 years	% p.a	19.00%			
RoE Period	Year	10			
Return on Equity 11th year onwards	% p.a	24.00%			
Weighted average of ROE		22.00%			
Discount Rate		15.96%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	33.99%
			MAT Rate (for first 10 years)	%	16.995%
			80 IA benefits	Yes/No	Yes
			<u>Depreciation</u>		
			Depreciation Rate for first 10 years	%	7.00%
			Depreciation Rate 11th year onwards	%	1.33%
Years for 7% rate		10			
5	Working Capital		<u>For Fixed Charges</u>		
			O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
			Receivables for Debtors	Months	2
			<u>For Variable Charges</u>		
Interest On Working Capital	%	12.87%			
6	Operation & Maintenance		power plant (FY10-11)		6.87
			<u>Total O & M Expenses Escalation</u>	%	5.72%

Form 1.2 Form Template for (Wind Power Projects under Zone - 3) : Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross/Net Generation	MU		2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37

Fixed Cost	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		6.87	7.26	7.68	8.12	8.58	9.07	9.59	10.14	10.72	11.33	11.98	12.67	13.39	14.16	14.97	15.82	16.73	17.69	18.70	19.77	20.90	22.09	23.36	24.69	26.11	
Depreciation	Rs Lakh		32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23
Interest on term loan	Rs Lakh		41.54	37.17	32.79	28.42	24.05	19.68	15.30	10.93	6.56	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.57	2.50	2.42	2.35	2.28	2.21	2.14	2.07	2.01	1.94	1.50	1.54	1.58	1.62	1.66	1.71	1.75	1.80	1.86	1.91	1.97	2.04	2.10	2.17	2.25	
Return on Equity	Rs Lakh		26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63
Total Fixed Cost	Rs Lakh		110.31	106.25	102.22	98.22	94.24	90.28	86.36	82.47	78.61	74.79	53.35	54.07	54.83	55.64	56.49	57.39	58.35	59.35	60.42	61.54	62.73	63.99	65.32	66.73	68.21	

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillised	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		0.29	0.31	0.32	0.34	0.36	0.38	0.41	0.43	0.45	0.48	0.51	0.54	0.57	0.60	0.63	0.67	0.71	0.75	0.79	0.84	0.88	0.93	0.99	1.04	1.10	
Depreciation	Rs/kWh		1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Int. on term loan	Rs/kWh		1.76	1.57	1.39	1.20	1.02	0.83	0.65	0.46	0.28	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.08	0.08	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.10	
RoE	Rs/kWh		1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	
Total COG	Rs/kWh		4.66	4.49	4.32	4.15	3.98	3.82	3.65	3.49	3.32	3.16	2.26	2.29	2.32	2.35	2.39	2.43	2.47	2.51	2.55	2.60	2.65	2.71	2.76	2.82	2.88	

Discount Factor			1	0.862	0.744	0.641	0.553	0.477	0.411	0.355	0.306	0.264	0.227	0.196	0.169	0.146	0.126	0.108	0.094	0.081	0.070	0.060	0.052	0.045	0.038	0.033	0.029
Levillised Tariff	3.75	Rs/Unit																									

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	467.13

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00

Accelerated Depreciation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	186.85	224.22	44.84	8.97	1.79	0.36	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	174.52	199.56	20.18	-15.70	-22.87	-24.31	-24.59	-24.65	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-13.45	0.00	0.00
Tax Benefit	Rs Lakh	59.32	67.83	6.86	-5.33	-7.77	-8.26	-8.36	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-4.57	0.00	0.00
Energy generation	MU	1.18	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
Discounting Factor		1.00	0.93	0.80	0.69	0.60	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.14	0.12	0.10	0.09	0.07	0.06

Levillised benefit	0.58	Rs/Unit
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**Annexure – 1D
(Wind Zone-4)**

Form 1.1 Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Base Case Wind Zone 4	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	30%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	467.13	
3	Sources of Fund		Tariff Period	Years	13	
			<u>Debt: Equity</u>			
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	326.99	
			Total Equity Amount	Rs Lacs	140.14	
			<u>Debt Component</u>			
			Loan Amount	Rs Lacs	326.99	
			Moratorium Period	years	0	
			Repayment Period(incl Moratorium)	years	10	
			Interest Rate	%	13.37%	
			<u>Equity Component</u>			
			Equity amount	Rs Lacs	140	
Return on Equity for first 10 years	% p.a	19.00%				
RoE Period	Year	10				
Return on Equity 11th year onwards	% p.a	24.00%				
Weighted average of ROE		22.00%				
Discount Rate		15.96%				
4	Financial Assumptions		<u>Fiscal Assumptions</u>			
			Income Tax	%	33.99%	
			MAT Rate (for first 10 years)	%	16.995%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>			
			Depreciation Rate for first 10 years	%	7.00%	
Depreciation Rate 11th year onwards	%	1.33%				
Years for 7% rate		10				
5	Working Capital		<u>For Fixed Charges</u>			
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>			
Interest On Working Capital	%	12.87%				
6	Operation & Maintenance		power plant (FY10-11)		6.87	
			<u>Total O & M Expenses Escalation</u>	%	5.72%	

Form 1.2 Form Template for (Wind Power Projects under Zone - 4) : Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross/Net Generation	MU		2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63

Fixed Cost	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		6.87	7.26	7.68	8.12	8.58	9.07	9.59	10.14	10.72	11.33	11.98	12.67	13.39	14.16	14.97	15.82	16.73	17.69	18.70	19.77	20.90	22.09	23.36	24.69	26.11
Depreciation	Rs Lakh		32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	32.70	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23
Interest on term loan	Rs Lakh		41.54	37.17	32.79	28.42	24.05	19.68	15.30	10.93	6.56	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		2.57	2.50	2.42	2.35	2.28	2.21	2.14	2.07	2.01	1.94	1.50	1.54	1.58	1.62	1.66	1.71	1.75	1.80	1.86	1.91	1.97	2.04	2.10	2.17	2.25
Return on Equity	Rs Lakh		26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	26.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63	33.63
Total Fixed Cost	Rs Lakh		110.31	106.25	102.22	98.22	94.24	90.28	86.36	82.47	78.61	74.79	53.35	54.07	54.83	55.64	56.49	57.39	58.35	59.35	60.42	61.54	62.73	63.99	65.32	66.73	68.21

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillise	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		0.26	0.28	0.29	0.31	0.33	0.35	0.36	0.39	0.41	0.43	0.46	0.48	0.51	0.54	0.57	0.60	0.64	0.67	0.71	0.75	0.80	0.84	0.89	0.94	0.99
Depreciation	Rs/kWh		1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Int. on term loan	Rs/kWh		1.58	1.41	1.25	1.08	0.92	0.75	0.58	0.42	0.25	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.10	0.10	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09
RoE	Rs/kWh		1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Total COG	Rs/kWh		4.20	4.04	3.89	3.74	3.59	3.44	3.29	3.14	2.99	2.85	2.03	2.06	2.09	2.12	2.15	2.18	2.22	2.26	2.30	2.34	2.39	2.43	2.49	2.54	2.60

Discount Factor			1	0.862	0.744	0.641	0.553	0.477	0.411	0.355	0.306	0.264	0.227	0.196	0.169	0.146	0.126	0.108	0.094	0.081	0.070	0.060	0.052	0.045	0.038	0.033	0.029
Levillised Tariff	3.38	Rs/Unit																									

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	467.13

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	186.85	224.22	44.84	8.97	1.79	0.36	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	174.52	199.56	20.18	-15.70	-22.87	-24.31	-24.59	-24.65	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-24.66	-13.45	0.00	0.00
Tax Benefit	Rs Lakh	59.32	67.83	6.86	-5.33	-7.77	-8.26	-8.36	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-8.38	-4.57	0.00	0.00
Energy generation	MU	1.31	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63
Discounting Factor		1.00	0.93	0.80	0.69	0.60	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.14	0.12	0.10	0.09	0.07	0.06	0.06

Levellised benefit	0.52	Rs/Unit
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Annexure – 2A
(SHP above 1 MW and upto and including 5 MW)

1.1 Form Template for (above 5 MW to 25 MW) Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Maharashtra
					>1 MW up to and including 5 MW
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Auxiliary Consumption Deration Factor Useful Life	MW % % % Years	1 30% 1% 0.00% 35
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	498.88
3	Financial Assumption	<u>Debt: Equity</u> <u>Debt Component</u> <u>Equity Component</u>	Tariff Period Debt Equity Total Debt Amount Total Equity Amount Loan Amount Moratorium Period Repayment Period(incl Moratorium) Intrest Rate Equity amount Return on Equity for first 10 years RoE Period Return on Equity 11th year onwards Weighted average of ROE Discount Rate (equiv. to WACC) 11th year onwards	Years % % Rs Lacs Rs Lacs Rs Lacs years years % Rs Lacs % p.a Year % p.a % %	35 70% 30% 349 150 349 0 10 13.37% 149.66 19% 10 24.00% 22.57% 16.13%
4	Financial Assumptions	<u>Fiscal Assumptions</u> <u>Depreciation</u>	Income Tax MAT Rate (for first 10 years) 80 IA benefits Depreciation Rate for first 10 years Depreciation Rate 11th year onwards Years for 7% rate	% % Yes/No % % %	33.99% 16.995% Yes 0.0% 7.00% 0.80% 10
5	Working Capital	<u>For Fixed Charges</u> O&M Charges Maintenance Spare Receivables for Debtors <u>For Variable Charges</u> Intrest On Working Capital	(% of O&M exepenses)	Months Months %	1 15% 2 12.87%
6	Operation & Maintenance	power plant (FY 10-11) Total O & M Expenses Escalation			17.97 5.72%

Form 1.2 Form Template for (>1 MW up to and including 5 MW) : Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Net Generation	MU		2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60

Fixed Cost	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	
O&M Expenses	Rs Lakh		17.97	19.00	20.08	21.23	22.45	23.73	25.09	26.52	28.04	29.65	31.34	33.13	35.03	37.03	39.15	41.39	43.76	46.26	48.91	51.71	54.66	57.79	61.09	64.59	68.28	72.19	76.32	80.68	85.30	90.18	95.34	100.79	106.56	112.65	119.09	
Depreciation	Rs Lakh		34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92	34.92
Interest on term loan	Rs Lakh		44.36	39.69	35.02	30.35	25.68	21.01	16.34	11.67	7.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		3.31	3.26	3.21	3.17	3.13	3.10	3.07	3.04	3.02	3.00	2.92	2.82	2.72	2.62	2.53	2.45	2.38	2.31	2.25	2.19	2.14	2.09	2.04	1.99	1.94	1.89	1.84	1.79	1.74	1.69	1.64	1.59	1.54	1.49	1.44	1.39
Return on Equity	Rs Lakh		28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44	28.44
Total Fixed Cost	Rs Lakh		129.00	125.31	121.68	118.12	114.62	111.20	107.86	104.60	101.42	98.34	95.37	92.50	89.72	87.03	84.43	81.91	79.48	77.14	74.89	72.73	70.65	68.65	66.72	64.86	63.06	61.32	59.64	58.02	56.45	54.93	53.46	52.03	50.64	49.29	47.98	

Levelised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levelised	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	
O&M expn	RskWh		0.69	0.73	0.77	0.82	0.86	0.91	0.96	1.02	1.08	1.14	1.20	1.27	1.35	1.42	1.50	1.59	1.68	1.78	1.88	1.99	2.10	2.22	2.35	2.48	2.62	2.77	2.93	3.10	3.28	3.47	3.66	3.87	4.10	4.33	4.58	
Depreciation	RskWh		1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34
Int. on term loan	RskWh		1.71	1.53	1.35	1.17	0.99	0.81	0.63	0.45	0.27	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	RskWh		0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	
RoE	RskWh		1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38
Total COG	RskWh	4.26	4.96	4.82	4.68	4.54	4.41	4.27	4.15	4.02	3.90	3.78	3.66	3.54	3.42	3.31	3.20	3.10	3.00	2.90	2.80	2.70	2.60	2.50	2.40	2.30	2.20	2.10	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	
Discount Factor			1	0.861	0.741	0.638	0.550	0.473	0.408	0.351	0.302	0.260	0.224	0.193	0.166	0.143	0.123	0.106	0.091	0.079	0.068	0.058	0.050	0.043	0.037	0.032	0.028	0.024	0.020	0.018	0.015	0.013	0.011	0.010	0.008	0.007	0.006	
Levelised Tariff	Rs/Unit	4.26																																				

Determination of Accelerated Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	17.00%
Income Tax (Normal Rates)	33.99%
Capital Cost	498.9

Years ----->	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	26	27	28	29	30	31	32	33	34	35
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	13.17	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	26.34	14.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	199.55	239.46	47.89	9.58	1.92	0.38	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	186.38	213.12	21.55	-16.76	-24.43	-25.96	-26.26	-26.33	-26.34	-26.34	-26.34	-26.34	-26.34	-26.34	-26.34	-26.34	-26.34	-14.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	63.35	72.44	7.33	-5.70	-8.30	-8.82	-8.93	-8.95	-8.95	-8.95	-8.95	-8.95	-8.95	-8.95	-8.95	-8.95	-8.95	-4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	1.30	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Discounting Factor		1.00	0.93	0.80	0.69	0.59	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.15	0.13	0.11	0.10	0.08	0.07	0.06	0.05	0.05	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01

Levelised benefit 0.57 Rs/Unit

Annexure – 2B
(above 5 MW to 25 MW)

1.1 Form Template for (above 5 MW to 25 MW) Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Maharashtra
					above 5 MW to 25 MW
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Auxiliary Consumption Deration Factor Useful Life	MW % % % Years	1 30% 1% 0.00% 35
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	453.53
3	Financial Assumption	Debt: Equity Debt Component Equity Component	Tariff Period Debt Equity Total Debt Amount Total Equity Amount Loan Amount Moratorium Period Repayment Period(incld Moratorium) Intrest Rate Equity amount Return on Equity for first 10 years RoE Period Return on Equity 11th year onwards Weighted average of ROE Discount Rate (equiv. to WACC) 11th year onwards	Years % % Rs Lacs Rs Lacs Rs Lacs years years % Rs Lacs % p.a Year % p.a % 16.13%	13 70% 30% 317 136 317 0 10 13.37% 136.06 19% 10 24.00% 22.57% 16.13%
4	Financial Assumptions	Fiscal Assumptions Depreciation	Income Tax MAT Rate (for first 10 years) 80 IA benefits Depreciation Rate for first 10 years Depreciation Rate 11th year onwards Years for 7% rate	% % Yes/No % % %	33.99% 16.995% Yes 0.0% 7.00% 0.80% 10
5	Working Capital	For Fixed Charges O&M Charges Maintenance Spare Receivables for Debtors For Variable Charges Intrest On Working Capital	(% of O&M exepenses)	Months Months %	1 15% 2 12.87%
6	Operation & Maintenance	power plant (FY 10-11) Total O & M Expenses Escalation			12.69 5.72%

Form 1.2 Form Template for (>5 MW to 25 MW) : Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60

Fixed Cost	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
O&M Expenses	Rs Lakh		12.69	13.42	14.18	14.99	15.85	16.76	17.72	18.73	19.80	20.94	22.13	23.40	24.74	26.15	27.65	29.23	30.90	32.67	34.54	36.51	38.60	40.81	43.14	45.61	48.22	50.98	53.89	56.98	60.24	63.68	67.32	71.18	75.25	79.55	84.10
Depreciation	Rs Lakh		31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75	31.75
Interest on term loan	Rs Lakh		40.33	36.08	31.84	27.59	23.35	19.10	14.86	10.61	6.37	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.81	2.78	2.71	2.66	2.61	2.56	2.52	2.48	2.44	2.41	1.96	2.03	2.10	2.17	2.25	2.33	2.42	2.51	2.61	2.72	2.83	2.94	3.07	3.20	3.33	3.48	3.63	3.79	3.96	4.15	4.34	4.54	4.75	4.98	5.22
Return on Equity	Rs Lakh		25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85	25.85
Total Fixed Cost	Rs Lakh		113.43	109.86	106.33	102.84	99.41	96.02	92.69	89.42	86.21	83.07	80.00	77.00	74.12	71.35	68.68	66.11	63.63	61.24	58.93	56.70	54.55	52.48	50.48	48.55	46.69	44.90	43.18	41.53	39.95	38.44	36.99	35.60	34.27	32.99	

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillised	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	
O&M expn	Rs/kWh		0.49	0.52	0.55	0.58	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.90	0.95	1.01	1.06	1.12	1.19	1.26	1.33	1.40	1.48	1.57	1.66	1.75	1.85	1.96	2.07	2.19	2.32	2.45	2.59	2.74	2.89	3.06	3.23	
Depreciation	Rs/kWh		1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	
Int. on term loan	Rs/kWh		1.55	1.39	1.22	1.06	0.90	0.73	0.57	0.41	0.24	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital	Rs/kWh		0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.15	0.16	0.17	0.17	0.18	0.19	0.20	0.21	0.22
RoE	Rs/kWh		0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	
Total CDG	Rs/kWh	3.65	4.36	4.22	4.09	3.95	3.82	3.69	3.56	3.44	3.31	3.19	3.07	2.95	2.83	2.71	2.60	2.49	2.38	2.27	2.17	2.07	1.97	1.87	1.77	1.67	1.57	1.47	1.37	1.27	1.17	1.07	0.97	0.87	0.77	0.67		

Discount Factor			1	0.861	0.741	0.638	0.550	0.473	0.408	0.351	0.302	0.260	0.224	0.193	0.166	0.143	0.123	0.106	0.091	0.079	0.068	0.058	0.050	0.043	0.037	0.032	0.028	0.024	0.020	0.018	0.015	0.013	0.011	0.010	0.008	0.007	0.006	
Levillised Tariff	3.65	Rs/Unit																																				

Determination of Accelerated Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	17.00%
Income Tax (Normal Rates)	33.99%
Capital Cost	453.5

Years ----->	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	26	27	28	29	30	31	32	33	34	35
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	11.97	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	23.95	13.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	181.41	217.69	43.54	8.71	1.74	0.35	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	169.44	193.75	19.59	-15.24	-22.20	-23.60	-23.88	-23.93	-23.94	-23.95	-23.95	-23.95	-23.95	-23.95	-23.95	-23.95	-23.95	-13.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.59	65.85	6.66	-5.18	-7.55	-8.02	-8.12	-8.13	-8.14	-8.14	-8.14	-8.14	-8.14	-8.14	-8.14	-8.14	-8.14	-4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	1.30	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Discounting Factor		1.00	0.93	0.80	0.69	0.59	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.15	0.13	0.11	0.10	0.08	0.07	0.06	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	

Levelised benefit 0.51 Rs/Unit

**Annexure – 3
(Solar PV)**

Form 1.1 Form Template for (Solar PV Power Projects) Parameters Assumptions

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Asumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	19.0%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	1690
3	Financial Assumptions		Tariff Period	Years	25
		<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	1183
			Total Equity Amount	Rs Lacs	507
		<u>Debt Component</u>	Loan Amount	Rs Lacs	1183.00
			Moratorium Period	years	0
			Repayment Period(incl Moratorium)	years	10
			Interest Rate	%	13.38%
		<u>Equity Component</u>	Equity amount	Rs Lacs	507.00
			Return on Equity for first 10 years	% p.a	19.00%
			RoE Period	Year	10
			Return on Equity 11th year onwards	% p.a	24.00%
	Weighted average of ROE		22.00%		
		Discount Rate		15.97%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	33.99%
			MAT Rate (for first 10 years)	%	16.995%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate for first 10 years	%	7.00%
			Depreciation Rate 11th year onwards	%	1.33%
		Years for 7% rate		10	
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges	(% of O&M expenses)	Months	1
		Maintenance Spare			15%
		Receivables for Debtors		Months	2
		<u>For Variable Charges</u>			
	Interest On Working Capital		%	12.88%	
7	Operation & Maintenance	power plant (FY 10-11)		Rs Lacs	9.51
		<u>Total O & M Expenses Escalation</u>		%	5.72%

Form 1.2 Form Template for (Solar PV) - Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66

Fixed Cost	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		9.51	10.05	10.63	11.24	11.88	12.56	13.28	14.04	14.84	15.69	16.59	17.54	18.54	19.60	20.72	21.90	23.16	24.48	25.88	27.36	28.93	30.58	32.33	34.18	36.14
Depreciation	Rs Lakh		118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30	118.30
Interest on term loan	Rs Lakh		150.42	134.59	118.75	102.92	87.09	71.25	55.42	39.58	23.75	7.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		8.51	8.19	7.88	7.56	7.25	6.94	6.63	6.32	6.01	5.71	5.40	5.09	4.78	4.47	4.16	3.85	3.54	3.23	2.92	2.61	2.30	1.99	1.68	1.37	1.06
Return on Equity	Rs Lakh		96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33	96.33
Total Fixed Cost	Rs Lakh		383.07	367.47	351.89	336.35	320.84	305.38	289.95	274.57	259.23	243.95	164.84	165.84	166.89	168.01	169.19	170.44	171.76	173.15	174.62	176.18	177.83	179.57	181.41	183.36	185.42

Levellised COG

Per Unit Cost of Generat	Unit	Levellise	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		0.57	0.60	0.64	0.68	0.71	0.75	0.80	0.84	0.89	0.94	1.00	1.05	1.11	1.18	1.24	1.32	1.39	1.47	1.56	1.64	1.74	1.84	1.94	2.05	2.17
Depreciation	Rs/kWh		7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Int. on term loan	Rs/kWh		9.04	8.09	7.13	6.18	5.23	4.28	3.33	2.38	1.43	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.51	0.49	0.47	0.45	0.44	0.42	0.40	0.38	0.36	0.34	0.24	0.25	0.25	0.25	0.26	0.26	0.26	0.27	0.27	0.28	0.28	0.29	0.29	0.30	0.30
RoE	Rs/kWh		5.79	5.79	5.79	5.79	5.79	5.79	5.79	5.79	5.79	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31	7.31
Total COG	Rs/kWh		17.91	23.02	22.08	21.14	20.21	19.28	18.35	17.42	16.50	15.58	14.66	9.90	9.96	10.03	10.09	10.17	10.24	10.32	10.40	10.49	10.59	10.68	10.79	10.90	11.02

Discount Factor			1	0.862	0.744	0.641	0.553	0.477	0.411	0.354	0.306	0.264	0.227	0.196	0.169	0.146	0.126	0.108	0.093	0.081	0.069	0.060	0.052	0.045	0.038	0.033	0.029
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Levellised Tariff	17.91	Rs/Unit
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Determination of Accelerated Depreciation Benefit for Solar PV Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	1690.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Book Depreciation		2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	
Book Depreciation	Rs Lakh	44.62	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	89.23	48.67	0.00	0.00

Accelerated Depreciation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	676.00	811.20	162.24	32.45	6.49	1.30	0.26	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	631.38	721.97	73.01	-56.78	-82.74	-87.93	-88.97	-89.18	-89.22	-89.23	-89.23	-89.23	-89.23	-89.23	-89.23	-89.23	-89.23	-89.23	-89.23	-48.67	0.00	0.00
Tax Benefit	Rs Lakh	214.61	245.40	24.82	-19.30	-28.12	-29.89	-30.24	-30.31	-30.33	-30.33	-30.33	-30.33	-30.33	-30.33	-30.33	-30.33	-30.33	-30.33	-30.33	-16.54	0.00	0.00
Energy generation	MU	0.83	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Discounting Factor		1.00	0.93	0.80	0.69	0.60	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.14	0.12	0.10	0.09	0.07	0.06		

Levellised benefit	2.96	Rs/Unit
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**Annexure – 4
(Solar thermal)**

Form 1.1 Form Template for (Solar Thermal Power Projects) Parameters Assumptions

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	23.0%
			Auxiliary Consumption Factor	%	10.0%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	1530
3	Sources of Fund		Tariff Period	Years	25
			<u>Debt: Equity</u>		
			Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	1071
			Total Equity Amount	Rs Lacs	459
			<u>Debt Component</u>		
			Loan Amount	Rs Lacs	1071.00
			Moratorium Period	years	0
			Repayment Period(inclد Moratorium)	years	10
			Interest Rate	%	13.38%
			<u>Equity Component</u>		
			Equity amount	Rs Lacs	459.00
Return on Equity for first 10 years	% p.a	19.00%			
RoE Period	Year	10			
Return on Equity 11th year onwards	% p.a	24.00%			
Weighted average of ROE		22.00%			
Discount Rate		15.97%			
4	Financial Assumptions		<u>Fiscal Assumptions</u>		
			Income Tax	%	33.99%
			MAT Rate (for first 10 years)	%	16.995%
			80 IA benefits	Yes/No	Yes
			<u>Depreciation</u>		
			Depreciation Rate for first 10 years	%	7.00%
Depreciation Rate 11th year onwards	%	1.33%			
Years for 7% rate		10			
5	Working Capital		<u>For Fixed Charges</u>		
			O&M Charges	Months	1
			Maintenance Spare	(% of O&M expenses)	15%
			Receivables for Debtors	Months	2
			<u>For Variable Charges</u>		
Interest On Working Capital	%	12.88%			
7	Operation & Maintenance		power plant (FY10-11)	Rs Lacs	13.74
			Total O & M Expenses Escalation	%	5.72%

Form 1.2 Form Template for (Solar Thermal) - Determination of Tariff Component

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		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81

Fixed Cost	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		13.74	14.53	15.36	16.24	17.16	18.15	19.18	20.28	21.44	22.67	23.96	25.33	26.78	28.32	29.94	31.65	33.46	35.37	37.40	39.53	41.80	44.19	46.71	49.39	52.21	
Depreciation	Rs Lakh		107.10	107.10	107.10	107.10	107.10	107.10	107.10	107.10	107.10	107.10	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40
Interest on term loan	Rs Lakh		136.18	121.85	107.51	93.18	78.84	64.51	50.17	35.84	21.50	7.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		7.98	7.70	7.43	7.16	6.90	6.64	6.38	6.12	5.87	5.62	4.13	4.20	4.28	4.36	4.44	4.53	4.63	4.73	4.83	4.95	5.07	5.19	5.33	5.47	5.62	
Return on Equity	Rs Lakh		87.21	87.21	87.21	87.21	87.21	87.21	87.21	87.21	87.21	87.21	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	110.16	
Total Fixed Cost	Rs Lakh		352.21	338.38	324.61	310.89	297.21	283.60	270.04	256.55	243.12	229.76	158.65	160.09	161.62	163.23	164.94	166.74	168.65	170.66	172.79	175.04	177.42	179.94	182.60	185.41	188.39	

Levelised COG

Per Unit Cost of Generation	Unit	Levelised	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		0.76	0.80	0.85	0.90	0.95	1.00	1.06	1.12	1.18	1.25	1.32	1.40	1.48	1.56	1.65	1.75	1.85	1.95	2.06	2.18	2.30	2.44	2.58	2.72	2.88
Depreciation	Rs/kWh		5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Int. on term loan	Rs/kWh		7.51	6.72	5.93	5.14	4.35	3.56	2.77	1.98	1.19	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.44	0.42	0.41	0.40	0.38	0.37	0.35	0.34	0.32	0.31	0.23	0.23	0.24	0.24	0.24	0.25	0.26	0.26	0.26	0.27	0.27	0.28	0.29	0.29	0.31
RoE	Rs/kWh		4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08
Total COG	Rs/kWh	15.31	19.42	18.66	17.90	17.14	16.39	15.64	14.89	14.15	13.41	12.67	8.75	8.83	8.91	9.00	9.10	9.20	9.30	9.41	9.53	9.65	9.78	9.92	10.07	10.23	10.39

Levelised Tariff	15.31	Rs/Unit
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Determination of Accelerated Depreciation Benefit for Solar Thermal Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	1530.0

Years	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
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	40.39	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	80.78	44.06	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation	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
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
Accelerated Deprn.	Rs Lakh	612.00	734.40	146.88	29.38	5.88	1.18	0.24	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Net Depreciation Benefit	Rs Lakh	571.61	653.62	66.10	-51.41	-74.91	-79.61	-80.55	-80.74	-80.77	-80.78	-80.78	-80.78	-80.78	-80.78	-80.78	-80.78	-80.78	-80.78	-44.06	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	194.29	222.16	22.47	-17.47	-25.46	-27.06	-27.38	-27.44	-27.46	-27.46	-27.46	-27.46	-27.46	-27.46	-27.46	-27.46	-27.46	-27.46	-14.98	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	0.91	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	
Discounting Factor		1.00	0.93	0.80	0.69	0.60	0.51	0.44	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.14	0.12	0.10	0.09	0.07	0.06	0.06	0.05	0.04	0.04	

Levelised benefit	2.46	Rs/Unit
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