JOINT ELECTRICITY REGULATORY COMMISSION FOR MANIPUR & MIZORAM

Petition No. SM/1/2014 (Suo-Motu)

Coram: Shri A.Chhawnmawia, Member

Date of Order: 5th January, 2015

IN THE MATTER OF

Determination of generic levellised generation tariff for the FY 2014-15 under Regulation 8 of the Joint Electricity Regulatory Commission for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 and under the Joint Electricity Regulatory Commission for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) (First Amendment) Regulations, 2014.

ORDER

1. The Commission has notified the Joint Electricity Regulatory Commission for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010 (hereinafter referred to as "the RE Tariff Regulations"), on 31.05.2010 and the Joint Electricity Regulatory Commission for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) (First Amendment) Regulations, 2014 (hereinafter referred to as "the RE Tariff (First Amendment) Regulations", on 05.08.2014. These regulations provide for terms and conditions and the procedure including various technical norms for determination of tariff of the following categories of Renewable Energy (RE) generating stations:

    (a) Wind Power Project;

    (b) Small Hydro Projects;

    (c) Biomass Power Projects with Rankine Cycle technology;

    (d) Non-fossil fuel-based co-generation Plants;

    (e) Solar Photo voltaic (PV);

    (f) Solar Thermal Power Projects;

    (g) Biomass Gasifier based Power Projects; and

(h) Biogas based Power Project.

2. Clause (1) of Regulation 8 of the RE Tariff Regulations provides that "the Commission shall determine the generic tariff on the basis of *suo-motu* petition at least six months in advance at the beginning of each year of the Control period for renewable energy technologies for which norms have been specified under the Regulations". Generic Tariff is different from the project specific tariff for which a project developer has to file petition before the Commission as per the format provided in the RE Tariff Regulations. The Commission, however, did not determine the generic tariff as per RE Tariff Regulations in the past for want of various detail technical norms.

3. The Commission issued Order proposing "Determination of generic levellised generation tariff for the FY2014-15 under Regulation 8 of the Joint Electricity Regulatory Commission for Manipur & Mizoram (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2010" (Petition No. SM/1/2014) dated 2nd December, 2014 for inviting comments/suggestions from the stakeholders. A Public Notice was issued on the same day for inviting comments/suggestions/objections. Last date of submission of comments/suggestions was kept on 18th December, 2014.

4. In response to the same, written comments /suggestions have been received from following stakeholders:

(i). M/s Eternity Partners LLP

(ii). Mr. Ginzalala, Bawngkawn, Aizawl.

5. The commission has analyzed the views/comments/suggestions of the stakeholders and the Commission's decisions are as below:

Comments received from M/s Eternity Partners LLP

(i) It is requested to consider a higher tariff for solar and small hydro projects.

(ii) It is requested to allow preferential tariff for renewable power projects to

incentivize development and capacity addition.

(iii) It is requested to consider cost escalation of 10-15% in view of increase of prises.

Comments received from Mr. Ginzalala,Bawngkawn, Aizawl

(i) It is suggested to consider the difference in Global Horizontal Irradiation from the national level or CERC reference for determining tariff for energy generated from SPV technologies in order to attract investment in this sector.

(ii) It is requested to consider 250 days per annum for calculation of energy generation from SPV technologies.

(iii) It is requested to work out a separate Cost Index for Mizoram .

Analysis and Decision

The above comments/suggestions have been noted. These comments/suggestions on normative parameters specified in the RE Tariff Regulations, 2010 and it amendment are not the subject matter of present regulatory process which has been initiated for determination of generic tariff for FY 2014-15. However, in respect of Capital Cost indexation mechanism, the latest data available on monthly wholesale price Index for Electrical Machinery and Steel from the site of Office of Economic Adviser are considered for capital cost indexation for various renewable energy technologies.

THE GENERIC LEVELLISED GENERATION TARIFF FOR VARIOUS RENEWABLE ENERGY TECHNOLOGIES, FOR FY 2014-15

6. The generic levellised generation tariff for various renewable energy technologies, for FY 2014-15 are discussed below:

USEFUL LIFE

7. Clause (aa) of sub-Regulation (1) of Regulation 2 of the RE Tariff (First Amendment) Regulations defines 'useful life' in relation to a unit of a generating station (including evacuation system) to mean the following duration from the date of commercial operation (COD) of such generation facility:

Renewable Energy Projects	Years
Wind energy	25
Small Hydro	35
Biomass power project with Rankine Cycle technology	20
Non-fossil fuel based co-generation	20
Solar PV	25
Solar Thermal	25
Biomass Gasifier	20
Biogas	20

CONTROL PERIOD

8. Regulation 5 of the RE Tariff Regulations and subsequent amendment provides that the control period for determination of tariff for renewable energy projects (RE projects) shall be of five years. The first year of the control period was from FY 2012-13. The Provision to the said regulation 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.

TARIFF PERIOD

9. In terms of Regulation 6 of the RE Tariff Regulations, the tariff period in respect of the RE projects is as under:

Renewable Energy Projects	Years
Wind energy	13
Small Hydro below 5 MW	35
Small Hydro (5 MW -25 MW)	13
Biomass	13
Non-fossil fuel co-generation	13
Solar PV and Solar Thermal	25
Biomass Gasifier and Biogas	20*

* The useful life provided in the RE Tariff (First Amendment) Regulations is considered for the purpose of generic tariff determination.

In terms of clauses (4) and (5) of the said regulation, the tariff period specified above shall be reckoned from the date of commercial operation of the RE projects and the tariff determined under the regulations shall be applicable for the duration of the tariff period.

TARIFF STRUCTURE

10. Clause (1) of Regulation 9 of the RE 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, single part tariff with two components, fixed cost component and fuel cost component, is to be determined.

TARIFF DESIGN

11. In terms of Regulation 10 of the RE Tariff Regulations, the tariff design for renewable energy generating stations is as under:

"(1) The generic tariff shall be determined on levellised basis for the Tariff Period.

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

(2) For the purpose of levellised tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered.

(3) Levellisation shall be carried out for the 'useful life' of the Renewable

Energy project while Tariff shall be specified for the period equivalent to 'Tariff Period."

LEVELLISED TARIFF

12. Levellised Tariff is calculated by carrying out levellisation for 'useful life' of each technology considering the discount factor for time value of money.

DISCOUNT FACTOR

13. The discount factor considered for this purpose is equal to the Post Tax weighted average cost of the capital on the basis of normative debt: equity ratio (70:30) specified in the Regulations. Considering the normative debt equity ratio and weighted average of the post tax rates for interest and equity component, the discount factor is calculated. Interest Rate considered for the loan component (i.e.70%) of Capital Cost is 12.70% (as explained later). For equity component (i.e. 30%) rate of Return on Equity (ROE) considered at Post Tax ROE of 16% considered. The discount factor derived by this method for all technology is 10.67% i.e ((12.70% × 0.70 × (1 – 33.99%)) + (16.0% × 0.30)).

CAPITAL COST

14. Regulation 12 of the RE Tariff Regulations stipulates that the norms for the capital cost as specified in the technology specific chapter shall be inclusive of all capital works like plant and machinery, civil works, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to inter-connection point. The Commission has specified the normative capital cost, applicable for the first year of control period i.e. FY 2012-13, for various RE technologies viz. Wind Energy, Small Hydro Power, Biomass Power, Non-Fossil Fuel based Cogeneration, Solar PV, Solar Thermal, Biomass Gasifier and Biogas based power projects.

15. In order to determine the normative capital cost for the remaining years of the control period, the regulations stipulate the indexation mechanism, Wind Energy, Small Hydro Power, Biomass Power, Non-Fossil Fuel based Cogeneration, Biomass Gasifier and Biogas based power projects. However, the Capital Cost norms for Solar PV and Solar Thermal Power Projects shall be reviewed on annual basis. The

indexation mechanism shall take into account adjustments in capital cost with the changes in Wholesale Price Index of Steel and Wholesale Price Index of Electrical Machinery as per formulation stipulated under the RE Tariff Regulations, which is reproduced below.

$CC_{(n)} = P\&M_{(n)} * (1+F_1+F_2+F_3)$

$P\&M_{(n)} = P\&M_{(0)} * (1+d_{(n)})$

$d_{(n)} = [a*\{(SI_{(n-1)}/SI_{(0)}) - 1\} + b*\{(EI_{(n-1)}/EI_{(0)}) - 1\}]/(a+b)$

Where,

$CC_{(n)}$ = Capital Cost for n^{th} year

$P\&M_{(n)}$ = Plant and Machinery Cost for n^{th} year

$P\&M_{(0)}$ = Plant and Machinery Cost for the base year

Note: P&M (0) is to be computed by dividing the base capital cost (for the first year of the control period) by (1+F1+F2+F3). Factors F1, F2, F3 for each RE technology has been specified separately, as summarized in following table.

$d_{(n)}$ = Capital Cost escalation factor for year (n) of Control Period

$SI_{(n-1)}$ = Average WPI Steel Index prevalent for calendar year (n-1) of the Control Period $SI_{(0)}$ = Average WPI Steel Index prevalent for calendar year (0) at the beginning of the Control Period

$EI_{(n-1)}$ = Average WPI Electrical Machinery Index prevalent for calendar year (n-1) of the Control Period

$EI_{(0)}$ = Average WPI Electrical Machinery Index prevalent for calendar year (0) at the beginning of the Control Period

a = Constant to be determined by Commission from time to time, (for weightage to Steel Index)

b = Constant to be determined by Commission from time to time, (for weightage to Electrical Machinery Index)

F_1 = Factor for Land and Civil Works

F_2 = Factor for Erection and Commissioning

F_3 = Factor for IDC and Financing Cost

The default values of the factors for various RE technologies as stipulated under the said RE Regulations, is summarized in the table below,

Parameters	Wind Energy	Small Hydro Projects	Biomass based Rankine cycle Power plant, Non-Fossil Fuel Based Cogeneration Biomass Gasifier and Biogas based projects
a	0.60	0.60	0.70
b	0.40	0.40	0.30
F1	0.08	0.16	0.10
F2	0.07	0.10	0.09
F3	0.10	0.14	0.14

The Commission has relied on the following sources for relevant information on various indices:

- Source for WPI (electrical & machinery and iron and steel), WPI (all commodities), WPI (Price of HSD): Office of Economic Advisor, Ministry of Commerce & Industry (www.eaindustry.nic.in)
- Source for IRC (Average Annual Inflation rate for indexed energy charge component in case of captive coal mine source): CERC (www.cercind.gov.in)

Technology specific capital cost of RE projects is discussed here in under:

Technology specific capital cost of RE projects is discussed herein under:

(A) Capital Cost of Wind Energy for FY 2014-15

16. Regulation 24 provides that the capital cost for wind energy 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 IDC.

17. The Commission under amended Regulation 24 (2) has specified the normative capital cost for wind energy projects as ` 575 Lakh/MW for FY 2012-13 which shall be linked to the indexation mechanism specified under Regulation 25 of the RE Tariff (First Amendment) Regulations. In accordance with the above referred Regulation, the normative capital cost of the Wind energy Projects shall be ` 603.929 Lakh/MW for FY 2014-15. The detailed computations of the indexation mechanism and determination of the capital cost for FY 2014-15 thereof, has been enclosed as **Appendix-1** of this Order.

(B) Capital cost of Small Hydro Projects for FY 2014-15

18. Small Hydro Projects for the purpose of the RE Tariff Regulations cover those projects which are located at the sites approved by the State Nodal Agencies/State Governments using new plant and machinery and with installed power plant capacity lower than or equal to 25 MW.

19. The Commission under amended Regulation 28 (1) has specified the normative capital cost for small hydro projects for FY 2012-13 as under:

Sl. No	Project Size	Capital Cost (` in Lakh/MW)
1	Below 5 MW	770
2	5 MW to 25 MW	700

20. In line with the indexation mechanism, specified in Regulation 29 of the RE Tariff (First Amendment) Regulations, the normative capital cost for FY 2014-15 for Small Hydro Projects shall be as under,

Sl. No	Project Size	Capital Cost (FY 2014-15) (` in Lakh/MW)
1	Below 5 MW	808.739
2	5 MW to 25 MW	735.217

The detailed computations of the indexation mechanism and the determination of the capital cost for FY 2014-15 thereof, has been enclosed as **Appendix-2** of this Order.

(C) Capital Cost of Biomass based Power Projects for FY 2014-15

21. The Commission under Regulation 34 of the RE Tariff (First Amendment) Regulations has specified the normative capital cost for the biomass power projects based on Rankine cycle technology application for FY 2013-14 as under:

a. ` 540 lakh/MW for project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser;

b. ` 580 lakh/MW for Project [other than rice straw and Juliflora (plantation) based

project] with air cooled condenser;

c. ` 590 lakh/MW for rice straw and Juliflora (plantation) based project with water cooled condenser;

d. ` 630 lakh/MW for rice straw and Juliflora (plantation) based project with air cooled condenser.

22. In line with the indexation mechanism, specified in Regulation 35 of the RE Tariff (First Amendment) Regulations, the normative capital cost for FY 2014-15 for Biomass Projects determined considering capital cost specified in the RE Tariff (First Amendment) Regulations for FY 2013-14 as base year capital cost. Average WPI Steel Index and average Electrical Machinery Index prevalent for calendar year 2013 considered for $SI_{(n-1)}$ and $EI_{(n-1)}$ respectively. Average WPI Steel Index and average WPI Electrical Machinery Index prevalent for year 2012 for $SI_{(0)}$ and $EI_{(0)}$ respectively. Accordingly, the normative capital cost for FY 2014-15 for Biomass Projects shall be as under,

Biomass Rankine Cycle Projects	**Capital Cost (FY 2014-15)** (` Lakh/ MW)
Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser	544.187
Project [other than rice straw and Juliflora(plantation) based project] with air cooled condenser	584.497
For rice straw and juliflora (plantation) based project with water cooled condenser	594.575
For rice straw and juliflora (plantation) based project with air cooled condenser	634.885

23. The detailed computations of the indexation mechanism and the determination of the capital cost for FY 2014-15 thereof, has been enclosed as **Appendix-3** of this Order.

(D) Capital Cost of Non-fossil fuel based Cogeneration Projects for FY 2014-15

24. Non-fossil based cogeneration has been defined as the process in which more than one form of energy is produced in a sequential manner by using biomass. As per Regulation 4(4) of the RE Tariff Regulations, a project to qualify as the non-fossil based co- generation project must be using new plant and machinery with topping cycle mode of operation which uses the non-fossil fuel input for power

generation and utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously, and where the sum of useful power output and half of useful thermal output is greater than 45% of the plant's energy consumption during the season.

25. The Commission under amended Regulation 47 has specified the normative capital cost for the Non-Fossil Fuel Based Cogeneration Projects as ` 420 Lakh/MW for FY 2012-13 which shall be linked to the indexation mechanism specified under amended Regulation 48 of the RE Tariff Regulations. In accordance to the above referred Regulation, the normative capital cost of Non-Fossil Fuel based Cogeneration power projects shall be ` 440.708 Lakh/MW for FY 2014-15.The detailed computations of the indexation mechanism and determination of the capital cost for FY 2014-15 thereof, has been enclosed as **Appendix-4** of this Order.

(E) Capital Cost of Solar PV based Power Projects for FY 2014-15

26. Solar Photo Voltaic (PV) power projects which directly convert solar energy into electricity using the crystalline silicon or thin film technology or any other technology as approved by the Ministry of New and Renewable Energy and are connected to the grid, qualify for the purpose of tariff determination under the RE Tariff Regulations as amended from time to time.

27. The Commission under amended Regulation 57 specified the normative capital cost for the Solar PV power projects as ` 1000 Lakh/MW for the FY 2012-13.

28. The CERC vides its *suo-motu* Order (Petition No. SM/353/2013) dated 15/5/2014 determined the normative capital cost for the Solar PV power projects as ` 691 Lakh/MW for the FY 2014-15 which is considered by the Commission for determination of generic tariff.

(F) Capital Cost of Solar Thermal based Power Projects for FY 2014-15

29. In order to qualify for tariff determination under the RE Tariff Regulations, Solar Thermal Power Project shall be based on concentrated solar power technologies with line focusing or point focusing as may be approved by the Ministry of New and

Renewable Energy and which uses direct sunlight to generate sufficient heat to operate a conventional power cycle to generate electricity.

30. The Commission under amended Regulation 61 has specified the normative capital cost for the Solar Thermal power projects as ` 1300 Lakh/MW for the FY 2012-13.

31. The CERC vides its *suo-motu* Order (Petition No. SM/353/2013) dated 15/5/2014 determined the normative capital cost for the Solar Thermal power projects as ` 1200 Lakh/MW for the FY 2014-15 which is considered by the Commission for determination of generic tariff.

(G) Capital Cost of Biomass Gasifier Power Projects for FY 2014-15

32. The Commission under amended Regulation 66 has specified the normative capital cost for the Biomass Gasifier power projects based on Rankine cycle as ` 550.00 Lakh/MW for the FY 2012-13 and after taking into account of capital subsidy of ` 150.00 Lakh/MW, net project cost shall be ` 400.00 Lakh/MW for the FY 2012-13 which shall be linked to the indexation mechanism specified under Regulation 67 of the RE Tariff (First Amendment) Regulations. In accordance to the above referred Regulation, the normative capital cost of Biomass gasifier power projects shall be ` 577.118 Lakh/MW for FY 2014-15. After taking into account of capital subsidy of ` 150.00 Lakh/MW, net project cost shall be ` 427.118 Lakh/MW for the FY 2014-15. The detailed computations of the indexation mechanism and determination of the capital cost for FY 2014-15 thereof, has been enclosed as **Appendix-5** of this Order.

(H) Capital Cost of Biogas based Power Projects for FY 2014-15

33. In order to qualify for tariff determination under the RE Tariff (First Amendment) Regulations, grid connected biogas based power projects that uses 100% Biogas fired engine, coupled with Biogas technology for co-digesting agriculture residues, manure and other bio waste as may be approved by the Ministry of New and Renewable Energy shall be considered.

34. The Commission under amended Regulation 76 has specified the normative capital cost for the Biogas based power projects as ` 1100.00 Lakh/MW for the FY 2012-13

and after taking into account of capital subsidy of ` 300.00 Lakh/MW, net project cost shall be ` 800.00 Lakh/MW for the FY 2012-13 which shall be linked to the indexation mechanism specified under Regulation 77 of the RE Tariff (First Amendment) Regulations. In accordance to the above referred Regulation, the normative capital cost of Biogas based power projects shall be `1154.236 Lakh/MW for FY 2014-15. After taking into account of capital subsidy of ` 300.00 Lakh/MW, net project cost shall be ` 854.236 Lakh/MW for the FY 2014-15. The detailed computations of the indexation mechanism and determination of the capital cost for FY 2014-15 thereof, has been enclosed as **Appendix-6** of this Order.

35. The capital cost for the second year (i.e. FY 2014-15) of the control period in respect of the renewable energy power generating stations is summarized as under:

Renewable Energy Projects	**Capital Cost Norm for FY 2014-15 (` Lakh/MW)**
(1)Wind Energy Projects	603.929
(2)Small Hydro Projects	
(a) Less than 5 MW	808.739
(b) 5MW to 25 MW	735.217
(3) Biomass Power Projects	
(a) project [other than rice straw and juliflora (plantation) based project] with water cooled condenser	544.187
(b) Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	584.497
(c) Rice straw and juliflora (plantation) based	594.575
(d) Rice straw and juliflora (plantation) based project with air cooled condenser	634.885
(4) Non-fossil fuel based co-generation Power Projects	440.708
(5) Solar PV Power Projects	691.000
(6) Solar Thermal Power Projects	1200.00
(7) Biomass Gasifier Power Projects	427.118
(8) Biogas Power Projects	854.236

DEBT-EQUITY RATIO

36. Sub-Regulation (1) of Regulation 13 of the RE Tariff Regulations provides that the debt- equity ratio of 70:30 is to be considered for determination of generic tariff based on *suo-motu* petition.

37. Based on the debt equity ratio of 70:30, the debt and equity components of the normative capital cost for determination of tariff for the RE projects have been worked out as under:

Renewable Energy Projects	**Debt (` Lakh)**	**Equity (` Lakh)**
(1) Wind Energy (for all zones)	422.750	181.179
(2) Small Hydro		
(a) Below 5 MW	566.117	242.622
(b) 5 MW to 25 MW	514.652	220.565
(3) Biomass		
(a) project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser	380.931	163.256
(b) Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	409.148	175.349
(c) Rice straw and Juliflora (plantation) based project with water cooled condenser	416.202	178.372
(d) Rice straw and Juliflora (plantation) based project with air cooled condenser	444.419	190.465
(4) Non-fossil fuel co-generation	308.496	132.212
(5) Solar PV	483.70	207.30
(6) Solar Thermal	840.000	360.000
(7) Biomass Gasifier based Power Projects	298.983	128.135
(8) Biogas based Power Projects	597.965	256.271

RETURN ON EQUITY

38. Sub-Regulation (1) of amended Regulation 16 of the RE Tariff Regulations provides that the value base for the equity shall be 30% of the capital cost for generic tariff determination. Sub-Regulation (2) of the said Regulation stipulates the normative return on equity (ROE) as under:

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

(b) 24% per annum from the 11th year onwards.

INTEREST ON LOAN

39. Sub-Regulation (1) of Regulation 14 of the RE Tariff (First Amendment) Regulations provides that the loan tenure of 12 years is to be considered for the purpose of determination of tariff for RE projects. Sub-Regulation (2) of the Regulations provides for computation of the rate of interest on loan as under:

> *"(a) The loans arrived at in the manner indicated in the Regulation 13 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.*
>
> *(b) For the purpose of computation of tariff, the normative interest rate shall be considered as average State Bank of India (SBI) Base rate prevalent during the first six months of the previous year plus 300 basis points.*
>
> *(c) Notwithstanding any moratorium period availed by the generating company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed".*

40. The weighted average State Bank of India (SBI) Base rate prevalent during the first six months has been considered for the determination of tariff, as shown in the table below:

Period from	Period to	Base rate
1/4/2013	30/9/2013	09.70%
Average Base rate for first six months of FY 13-14		**09.70%**

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

41. In terms of the above, the computations of interest on loan carried out for determination of tariff in respect of the RE projects treating the value base of loan as 70% of the capital cost and the weighted average of Base rate prevalent during the first six months i.e. 9.70% plus 300 basis points (equivalent to interest rate of 12.70%).

DEPRECIATION

42. Regulation 15 of the RE Tariff Regulations with its amendment provides for computation of depreciation in the following manner:

> *"(1) The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.*
>
> *(2) Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan period beyond loan tenure over useful life computed on 'Straight Line Method'. The depreciation rate for the first 12 years of the Tariff Period shall be 5.83% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 13th year onwards.*
>
> *(3) Depreciation shall be chargeable from the first year of commercial operation. Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis".*

43. In accordance with the above, the rate of depreciation for the first 12 years has been considered as 5.83% and the rate of depreciation from the 13th year onwards has been spread over the balance useful life of the RE project as under:

Details	Wind Energy	Small Hydro	Biomass	Non-fossil fuel co-generation	Solar PV	Solar Thermal	Biomass Gasifier	Biogas
Useful Life (in years)	25	35	20	20	25	25	20	20
Rate of depreciation for 12 years (%)	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83
Rate of depreciation after first 12 years (%)	1.54	0.87	2.51	2.51	1.54	1.54	2.51	2.51

INTEREST ON WORKING CAPITAL

44. Regulation 17 of the RE Tariff Regulations with its amendment provides for the working capital requirements of the RE projects as under:

"(1) The Working Capital requirement in respect of wind energy projects, Small Hydro Power, Solar PV and Solar thermal power projects shall be computed in accordance with the following:

Wind Energy / Small Hydro Power /Solar PV / Solar thermal

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 spare @ 15% of operation and maintenance expenses

(2) The Working Capital requirement in respect of biomass power projects and non-fossil fuel based co-generation projects shall be computed in accordance with the following clause:

Biomass Power and Non- fossil fuel Co-generation

a) Fuel costs for four months equivalent to normative PLF;

b) Operation & Maintenance expense for one month;

c) Receivables equivalent to 2 (Two) months of fixed and variable charges for sale of electricity calculated on the target PLF;

d) Maintenance spare @ 15% of operation and maintenance expenses

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

45. Receivables equivalent to two months of actual fixed cost and variable cost, (as applicable for biomass power and non-fossil fuel based co-generation) have been considered. As mentioned in the Para No. 36, interest rate considered as weighted average of State Bank of India Base Rate prevalent during the first six months of the previous year plus 350 basis points (equivalent to interest rate of 13.20%). The interest on working capital has been worked out as specified below for determination of tariff of the RE projects:

Details	Wind Energy	Small Hydro	Biomass, Biomass Gasifier and Biogas	Non-fossil fuel co-generation	Solar PV	Solar Thermal
(A) For Fixed charges						
(i) O&M expenses (month)	1	1	1	1	1	1
(ii) Maintenance spares (%) of O&M expenses	15	15	15	15	15	15
(iii) Receivables (months)	2	2	2	2	2	2
(B) For Variable Charges						
Biomass/Bagasse stock (months)	-	-	4	4	-	-
(C) Interest On Working Capital (%)	13.20%	13.20%	13.20%	13.20%	13.20%	13.20%

Source for SBI Base Rate: State Bank of India (www.statebankofindia.com)

OPERATION AND MAINTENANCE EXPENSES

46. Regulation 18 of the RE Tariff Regulations with its amendment provides for Operation and Maintenance Expenses (O&M expenses) in respect of RE projects as under:

(1) 'Operation and Maintenance or O&M expenses' shall comprise repair and maintenance (R&M), establishment including employee expenses and administrative & general expenses.

(2) Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission subsequently in these Regulations for the first Year of Control Period.

(3) Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2012-13) under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period".

47. The normative O&M expenses for various RE technologies specified under the relevant provisions of the RE Tariff Regulations with its amendment are as under:

(a) Wind Energy: Regulation 27 of RE Tariff Regulations with its amendment provides that the normative O&M expenses for the first year of the control period (i.e. 2012-13) as ` 9 lakh per MW and shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, the Commission has considered O&M cost norm for wind energy as ` 10.05 Lakh/MW for FY 2014-15.

(b) Small Hydro: Regulation 32 of RE Regulations with its amendment provides the normative O& M expenses for small hydro projects for the year 2012-13 which shall 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 2012-13;

Project Size	**O&M expenses (` Lakh/MW)**
Below 5 MW	25
5 MW to 25 MW	18

Accordingly, the table below presents the normative O&M Expenses considered by the Commission for small hydro power for FY 2014-15,

Project Size	**O&M expenses (` Lakh/MW)**
Below 5 MW	27.94
5 MW to 25 MW	20.12

(c) Biomass: Regulation 39 of RE Tariff (First Amendment) Regulations provides that the normative O& M expenses for biomass based projects for the year 2013-14 shall be ` 40 Lakh per MW and which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, the Commission has considered O&M cost norm for biomass power as ` 42.29Lakh/MW for FY 2014-15.

(d) Non-fossil fuel co-generation: As per Regulation 55 of RE Tariff (First Amendment) Regulations, the normative O&M Expenses for non-fossil fuel co-generation projects for the year 2012-13 has been specified as ` 16 Lakh per MW which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, the Commission has considered O&M cost norm for non-fossil fuel based co-generation as ` 17.89 Lakh/MW for FY 2014-15.

(e) Solar PV: Regulation 59 of RE Tariff Regulations provides that the normative O&M expenses for solar PV projects for the year 2012-13 shall be ` 11 Lakh per MW which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, O&M expense norm for solar PV power project as ` 12.30 Lakh/MW for FY 2014-15 has been considered.

(f) Solar Thermal: Regulation 63 of the RE Tariff Regulations specified the normative O&M expenses for solar thermal power projects shall be `15 Lakh/MW for the first year of operation, which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, O&M expense norm for solar thermal power project as ` 16.77 Lakh/MW for FY 2014-15, has been considered.

(g) Biomass Gasifier: Regulation 71 of the RE Tariff (First Amendment) Regulations specified the normative O&M expenses for solar thermal power projects shall be ` 40 Lakh/MW for the first year of operation, which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, the Commission has considered O&M cost norm for biomass gasifier based power plant as ` 44.71 Lakh/MW for FY 2014-15.

(h) Biogas: Regulation 80 of the RE Tariff (First Amendment) Regulations specified the normative O&M expenses for solar thermal power projects shall be ` 40 Lakh/MW for the first year of operation, which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, the Commission has considered O&M cost norm for biogas based power plant as ` 44.71 Lakh/MW for FY 2014-15.

48. The normative O&M expenses have been worked out as specified above for determination of tariff for the renewable energy generating stations.

CAPACITY UTILISATION FACTOR

49. Regulations 26, 30, 58 and 62 of the RE Tariff Regulations with its amendment specify the norms for Capacity Utilization Factor (CUF)/Plant Load Factor (PLF) in respect of the Wind Energy, Small Hydro, Solar PV and Solar Thermal based power generating stations as per the details given in the table below which has been considered for determination of tariff.

Renewable Energy Projects	**CUF**
A) Wind Energy Annual Mean Wind Power Density (W/m2) Wind zone - 1 (Upto 200) Wind zone - 2 (201 - 250) Wind zone - 3 (251 - 300) Wind zone - 4 (301 - 400) Wind zone - 5 (Above 400)	 20 % 22 % 25 % 30 % 32 %
(B) Small Hydro	45 %
(C) Solar PV	19 %
(D) Solar Thermal	23 %

PLANT LOAD FACTOR (PLF)

50. Regulations 36, 68 and 78 of the RE Tariff Regulations with its amendment specify the plant load factor for Biomass, Biomass Gasifier and Biogas based renewable energy generating stations as given in the table below which has been considered for determination of fixed charges component of tariff.

51. Regulation 49 of the RE Tariff Regulations stipulates the plant load factor for Non-fossil Fuel based Co-generation projects as under, computed on the basis of plant availability for number of operating days considering the operations during crushing season and off-season and load factor of 92%. The number of operating days as specified in the Regulation 49(2) is as under:

Operating days	PLF
150 days (crushing) + 60 days (off-season) = 210 days	53 %

AUXILIARY POWER CONSUMPTION

52. Regulations 31, 37, 50, 64, 69 and 79 of the RE Tariff Regulations with its amendment stipulate the auxiliary power consumption factor as under which has been considered for determination of tariff of the RE projects :

Renewable Energy Projects	Auxiliary Consumption Factor
Small Hydro	1 %
Biomass	
a) the project using water cooled condenser	i. During first year of operation: 11%; ii. From 2nd year onwards: 10%.
b) project using air cooled condenser	i. During first year of operation: 13%; ii. From 2nd year onwards: 12%.
Non-fossil fuel co-generation	8.5 %
Solar Thermal	10 %
Biomass Gasifier	10 %
Biogas	12 %

STATION HEAT RATE

53. The Station Heat Rates (SHR) specified under Regulations 38 and 51 of the RE Tariff Regulations with its amendment for biomass and non-fossil fuel based co-generation projects are as under:

Renewable Energy Projects	SHR (kCal / kWh)
Biomass	a. 4200 : for project using travelling grate boilers; b. 4125 : for project using AFBC boilers.
Non-fossil fuel co-generation (for power component)	3600

FUEL

(a) Fuel Mix

54. Sub-Regulation (1) of Regulation 40 of the RE Tariff Regulations stipulates that the Biomass based power generating stations are to be designed in a way that it uses different types of non-fossil fuels available within the vicinity of biomass power project such as crop residues, agro-industrial residues, forest residues etc. and other biomass fuels as may be approved by the Ministry of Non-Renewable Energy (MNRE). Sub-Regulation (2) of the said Regulations stipulates that the biomass power generating companies are to ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.

55. Regulation 70 of the RE Tariff (First Amendment) Regulations stipulates that the normative specific fuel consumption shall be 1.25 kg per kWh for Biomass Gasifier based power generating stations.

56. Regulation 81 of the RE Tariff (First Amendment) Regulations stipulates that the normative specific fuel consumption shall be 3 kg of substrate mix per kWh for Biogas based power generating stations.

(b) Use of fossil fuel

57. As per Regulation 41 of the RE Tariff (First Amendment) Regulations, the use of fossil fuel is not allowed.

(c) Calorific value

58. Regulation 43 of the RE Tariff (First Amendment) Regulations, provides the calorific value of biomass fuel used for determination of tariff shall be at 3100 kCal/kg.

59. Regulation 52 of the of the RE Tariff Regulations provides the gross calorific value for bagasse to be considered in case of non-fossil fuel co-generation projects is 2250 kCal/kg and for the use of biomass fuels other than bagasse, the calorific value as specified above shall be applicable.

(d) Fuel cost

60. The Commission, in terms of Regulation 44 of the RE Tariff (First Amendment)

Regulations, has specified the biomass fuel price applicable during the period 2012-13 as `2476/- per tonne and has specified fuel price indexation mechanism, in case developer wishes to opt for the remaining years of the control period. The data for Pd and WPI, as per regulations, latest figures for April, 2013 and April, 2012 corresponding to n^{th} and $(n-1)^{th}$ year has been considered while calculating the fuel price indexation for biomass and also non-fossil fuel based co- generation power projects. The detailed computations of the fuel price indexation mechanism and the determination of the biomass fuel prices for FY 2014-15 thereof, has been enclosed as **Appendix-7** to this order. Accordingly, the biomass fuel price applicable for FY 2014-15 is ` 2942.54 per tonne.

61. The Commission, in terms of Regulation 53 of the RE Tariff (First Amendment) Regulations, has specified the price of bagasse applicable during the period 2012-13 and has specified fuel price indexation mechanism, in case developer wishes to opt, for the remaining years of the control period. The detailed computations of the fuel price indexation mechanism and the determination of the bagasse fuel prices for FY 2014-15 thereof, has been enclosed as **Appendix-8** of this Order. The price of bagasse (for non-fossil fuel based co- generation projects) applicable for FY 2014-15 shall be ` 1881.27 per tonne.

62. The Commission, in terms of Regulation 73 of the RE Tariff (First Amendment) Regulations, has specified the biomass fuel price during first year of the Control Period (i.e. FY 2012-13) and as per amended Regulation 45 it has specified fuel price indexation mechanism for the Biomass Gasifier project developer. Accordingly, the biomass fuel price for the Biomass gasifier based power project applicable for FY 2014-15 shall be the same as for the biomass based power project (Rankine cycle) as mentioned above. The detailed computations of the fuel price indexation mechanism and the determination of the biomass fuel prices for FY 2014-15 thereof, has been enclosed as **Appendix-9** of this Order.

63. The Commission, in terms of Regulation 82 of the RE Tariff (First Amendment) Regulations, has specified the feed stock price during first year of the Control Period (i.e. FY 2012-13) at ` 990/MT (net of any cost recovery from digester effluent) and has

specified fuel price indexation mechanism for the Biogas project developer. The detailed computations of the fuel price indexation mechanism and the determination of the bagasse fuel prices for FY 2014-15 thereof, has been enclosed as **Appendix-10** of this Order. The price of fuel applicable for the biogas based power plant for FY 2014-15 shall be at ` 1176.54/MT (net of any cost recovery from digester effluent).

64. In case of Biomass Power Projects, non-fossil fuel based co-generation projects, Biomass Gasifier based power Projects and Biogas based power projects, variable component of tariff is calculated based on the fuel cost for FY 2014-15. This variable component will change each year based on whether a Renewable Energy Power Project developer opts for fuel price indexation or escalation factor of 5%. Hence, while calculating the total applicable tariff for Biomass Power Projects, non-fossil fuel based co-generation projects, Biomass Gasifier based power Projects and Biogas based power projects, levellisation of only fixed component is considered and the variable component for the first year of operation (i.e. 2014-15) is specified.

Subsidy or incentive by the Central / State Government

65. Regulation 22 of the RE Tariff Regulations provides as under:

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

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

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

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

66. In terms of the above regulation, for the projects availing the benefit of

accelerated depreciation as per applicable Income tax rate @ 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. Moreover, additional 20% depreciation in the initial year is proposed to be extended to new assets acquired by power generation companies vide amendment in the section 32, sub-section (1) clause (iia) of the Income Tax Act.

67. Depreciation for the first year has been calculated at the rate of 50% of accelerated depreciation 80% and 50% of additional depreciation 20% (as project is capitalized during the second half of the financial year as per proviso (2) to Regulation 22). Income tax benefits of accelerated depreciation and additional depreciation, 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 post-tax weighted average cost of capital as discount factor.

68. In the light of the discussion made in the preceding paragraphs, the generic tariffs of the following RE projects for the financial year 2014-15 have been determined as under:

Generic Tariff for RE Technologies for FY 2014-15

Particular	Levellised Total Tariff (FY 2014-15)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
	(` / kWh)	(`/kWh)	(`/kWh)
Wind Energy			
Wind Zone -1 (CUF 20%)	6.34	0.68	5.66
Wind Zone -2 (CUF 22%)	5.76	0.62	5.14
Wind Zone -3 (CUF 25%)	5.07	0.55	4.52
Wind Zone -4 (CUF 30%)	4.23	0.46	3.77
Wind Zone -5 (CUF 32%)	3.96	0.43	3.53
Small Hydro Power Project			

Below 5MW	4.46	0.36	4.10
5 MW to 25 MW	3.80	0.33	3.47

Levellised Fixed Cost	Variable Cost (FY 2014-15)	Applicable Tariff Rate (FY 2014-15)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
(`/kWh)	(`/kWh)	(`/kWh)	(`/kWh)	(`/kWh)
Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and using Travelling Grate boiler				
2.94	4.48	7.42	0.17	7.25
Bagasse Based Co-generation Project				
2.65	3.29	5.94	0.21	5.73

Solar PV and Solar Thermal			
Particular	**Levellised Total Tariff (FY 2014-15)**	**Benefit of Accelerated Depreciation (if availed)**	**Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)**
	(`/kWh)	(`/kWh)	(`/kWh)
Solar PV	7.72	0.77	6.95
Solar Thermal	11.88	1.23	10.65

Levellised Fixed Cost	Variable Cost (FY 2014-15)	Applicable Tariff Rate (FY 2014-15)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
(`/kWh)	(`/kWh)	(`/kWh)	(`/kWh)	(`/kWh)
Biomass Gasifier Power Project				

2.47	4.09	6.55	0.13	6.42
Biogas based Generation				
3.39	4.01	7.40	0.24	7.16

69. The detailed computations for the generic tariff for various RE technologies have been enclosed to 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
Wind Zone V		Annexure 1E
B	**Small Hydro Power Projects**	**Annexure**
Projects less than 5 MW		Annexure 2A
Projects between 5 MW and 25 MW		Annexure 2B
C	**Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and using Travelling Grate boiler**	Annexure 3
D	**Non-Fossil Fuel Based Cogeneration**	Annexure 4
E	**Solar Projects**	
	Solar PV Projects	Annexure 5A
	Solar Thermal Projects	Annexure 5B
F	**Biomass Gasifier Power Projects**	Annexure 6
G	**Biogas based Power Projects**	Annexure 7

Sd/- A.CHHAWNMAWIA

Member

Dated Aizawl

the 5th January, 2015

Appendix-1

Capital cost of Indexation for Wind Power Projects (FY 2014-15)

Indexation Formulation

$CC_{(n)} = P\&M_{(n)} * [1 + F1 + F2 + F3]$

$d_{(n)} = (a * (SI_{(n-1)}/SI_{(0)})-1) + b* (EI_{(n-1)}/EI_{(0)})-1)) / (a+b)$

$P\&M_{(n)} = P\&M_{(0)}*(1+ d_{(n)})$

Variable	Description	Value
a	Weightage for Steel Index	0.60
b	Weightage for Electrical Machinery Index	0.40
F1	Factor for Land and Civil Work	0.08
F2	Factor for Erection and Commissioning	0.07
F3	Factor for IDC and Financing	0.10

	Electrical Machinery		Steel	
Month/Year	2013	2011	2013	2011
January	133.900	125.100	126.200	118.600
February	133.800	125.100	126.200	113.000
March	134.100	126.400	126.200	113.000
April	134.500	127.200	126.200	113.000
May	135.500	127.600	126.200	113.000
June	135.600	128.000	126.200	119.600
July	135.600	128.700	126.200	126.200
August	135.700	129.200	126.200	126.200
September	136.300	130.900	126.200	126.200
October	137.100	130.600	126.200	126.200
November	137.500	130.800	126.200	126.200
December	137.800	131.000	126.200	126.200
Average	135.617	128.383	126.200	120.617

Parameters	Description	Value
$CC_{(0)}$(₹ L/MW)	Capital Cost for the Base Year	575.000
$P\&M_{(0)}$ (₹ L/MW)	Plant & Machinery Cost for the Base Year	460.000
$d_{(n)}$	Capital Cost escalation Factor	5.031%
$P\&M_{(n)}$ (₹ L/MW)	Plant & Machinery Cost for the nth Year (FY 2014-	483.143
$CC_{(n)}$ (₹ L/MW)	Capital Cost for the nth Year (FY 2014-15)	603.929

Source of WPI (Steel and Electrical Machinery): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in)

Appendix-2

Capital cost of Indexation for Small Hydro Power Projects (FY 2014-15)

Indexation Formulation

$CC_{(n)} = P\&M_{(n)} * [1 + F1 + F2 + F3]$

$d_{(n)} = (a * (SI_{(n-1)}/SI_{(0)})-1) + b* (EI_{(n-1)}/EI_{(0)})-1)) / (a+b)$

$P\&M_{(n)} = P\&M_{(0)}*(1+ d_{(n)})$

Variable	Description	Value
a	Weightage for Steel Index	0.60
b	Weightage for Electrical Machinery Index	0.40
F1	Factor for Land and Civil Work	0.16
F2	Factor for Erection and Commissioning	0.10
F3	Factor for IDC and Financing	0.14

	Electrical		Steel	
Month/Year	2013	2011	2013	2011
January	133.900	125.100	126.200	118.600
February	133.800	125.100	126.200	113.000
March	134.100	126.400	126.200	113.000
April	134.500	127.200	126.200	113.000
May	135.500	127.600	126.200	113.000
June	135.600	128.000	126.200	119.600
July	135.600	128.700	126.200	126.200
August	135.700	129.200	126.200	126.200
September	136.300	130.900	126.200	126.200
October	137.100	130.600	126.200	126.200
November	137.500	130.800	126.200	126.200
December	137.800	131.000	126.200	126.200
Average	135.617	128.383	126.200	120.617

Parameters	Description	SHP <5 MW	5MW-25 MW
$CC_{(0)}$(₹ L/MW)	Capital Cost for the Base Year	770.000	700.000
$P\&M_{(0)}$ (₹ L/MW)	Plant & Machinery Cost for the Base Year	550.000	500.000
$d_{(n)}$	Capital Cost escalation Factor	5.031%	5.031%
$P\&M_{(n)}$ (₹ L/MW)	Plant & Machinery Cost for the nth Year (FY 14-15)	577.671	525.155
$CC_{(n)}$ (₹ L/MW)	Capital Cost for the nth Year (FY 2014-15)	808.739	735.217

Source of WPI (Steel and Electrical Machinery): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in)

Appendix-3

Capital cost of Indexation for Biomass Power Projects (FY 2014-15)

Indexation Formulation

$CC_{(n)} = P\&M_{(n)} * [1 + F1 + F2 + F3]$

$d_{(n)} = (a * (SI_{(n-1)}/SI_{(0)})-1) + b* (EI_{(n-1)}/EI_{(0)})-1)) / (a+b)$

$P\&M_{(n)} = P\&M_{(0)}*(1+ d_{(n)})$

Variable	Description	Value
a	Weightage for Steel Index	0.7
b	Weightage for Electrical Machinery Index	0.3
F1	Factor for Land and Civil Work	0.10
F2	Factor for Erection and Commissioning	0.09
F3	Factor for IDC and Financing	0.14

	Electrical Machinery		Steel	
Month/Year	2013	2012	2013	2012
January	133.900	130.900	126.200	126.200
February	133.800	130.900	126.200	126.200
March	134.100	130.900	126.200	126.200
April	134.500	130.700	126.200	126.200
May	135.500	131.200	126.200	126.200
June	135.600	132.200	126.200	126.200
July	135.600	133.000	126.200	126.200
August	135.700	133.200	126.200	126.200
September	136.300	133.100	126.200	126.200
October	137.100	133.100	126.200	126.200
November	137.500	133.600	126.200	126.200
December	137.800	133.600	126.200	126.200
Average	135.617	132.200	126.200	126.200

Parameters	Description	Biomass Power Projects (Rankine Cycle)			
		a*	b*	c*	d*
$CC_{(0)}$(₹ L/MW)	Capital Cost for the Base Year : (FY 13-14)	540.000	580.000	590.000	630.000
$P\&M_{(0)}$ (₹	Plant & Machinery Cost for the Base Year: (FY 13-14)	406.015	436.090	443.609	473.684
$d_{(n)}$	Capital Cost escalation Factor	0.775%	0.775%	0.775%	0.775%
$P\&M_{(n)}$ (₹	Plant & Machinery Cost for the nth Year (FY 14-15)	409.163	439.471	447.049	477.357
$CC_{(n)}$ (₹ L/MW)	Capital Cost for the nth Year (FY 2014-15)	544.187	584.497	594.575	634.885

Source of WPI (Steel and Electrical Machinery): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in)

* a. Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser;

b. Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser;

c. For rice straw and juliflora (plantation) based project with water cooled condenser;

d. For rice straw and juliflora (plantation) based project with air cooled condenser.

Appendix-4

Capital cost of Indexation for Non-fossil fuel based Cogeneration Power Projects (FY 14-15)

Indexation Formulation

$CC_{(n)} = P\&M_{(n)} * [1 + F1 + F2 + F3]$

$d_{(n)} = (a * (SI_{(n-1)}/SI_{(0)})-1) + b* (EI_{(n-1)}/EI_{(0)})-1)) / (a+b)$

$P\&M_{(n)} = P\&M_{(0)}*(1+ d_{(n)})$

Variable	Description	Value
a	Weightage for Steel Index	0.7
b	Weightage for Electrical Machinery Index	0.3
F1	Factor for Land and Civil Work	0.1
F2	Factor for Erection and Commissioning	0.09
F3	Factor for IDC and Financing	0.14

	Electrical Machinery		Steel	
Month/Year	2013	2011	2013	2011
January	133.900	125.100	126.200	118.600
February	133.800	125.100	126.200	113.000
March	134.100	126.400	126.200	113.000
April	134.500	127.200	126.200	113.000
May	135.500	127.600	126.200	113.000
June	135.600	128.000	126.200	119.600
July	135.600	128.700	126.200	126.200
August	135.700	129.200	126.200	126.200
September	136.300	130.900	126.200	126.200
October	137.100	130.600	126.200	126.200
November	137.500	130.800	126.200	126.200
December	137.800	131.000	126.200	126.200
Average	135.617	128.383	126.200	120.617

Parameters	Description	Value
$CC_{(0)}$(₹ L/MW)	Capital Cost for the Base Year	420.000
$P\&M_{(0)}$ (₹ L/MW)	Plant & Machinery Cost for the Base Year	315.789
$d_{(n)}$	Capital Cost escalation Factor	4.931%
$P\&M_{(n)}$ (₹ L/MW)	Plant & Machinery Cost for the nth Year (FY 2014-15)	331.360
$CC_{(n)}$ (₹ L/MW)	Capital Cost for the nth Year (FY2014-15)	440.708

Source of WPI (Steel and Electrical Machinery): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in)

Appendix-5

Capital cost of Indexation for Biomass Gasifier Power Projects (FY 2014-15)

Indexation Formulation

$CC_{(n)} = P\&M_{(n)} * [1 + F1 + F2 + F3]$

$d_{(n)} = (a * (SI_{(n-1)}/SI_{(0)})-1) + b* (EI_{(n-1)}/EI_{(0)})-1)) / (a+b)$

$P\&M_{(n)} = P\&M_{(0)}*(1+ d_{(n)})$

Variable	Description	Value
a	Weightage for Steel Index	0.7
b	Weightage for Electrical Machinery Index	0.3
F1	Factor for Land and Civil Work	0.1
F2	Factor for Erection and Commissioning	0.09
F3	Factor for IDC and Financing	0.14

	Electrical & Machinery		Iron & Steel	
Month/Year	2013	2011	2013	2011
January	133.900	125.100	126.200	118.600
February	133.800	125.100	126.200	113.000
March	134.100	126.400	126.200	113.000
April	134.500	127.200	126.200	113.000
May	135.500	127.600	126.200	113.000
June	135.600	128.000	126.200	119.600
July	135.600	128.700	126.200	126.200
August	135.700	129.200	126.200	126.200
September	136.300	130.900	126.200	126.200
October	137.100	130.600	126.200	126.200
November	137.500	130.800	126.200	126.200
December	137.800	131.000	126.200	126.200
Average	135.617	128.383	126.200	120.617

Parameters	Description	Value
$CC_{(0)}$(₹ L/MW)	Capital Cost for the Base Year	550.000
$P\&M_{(0)}$ (₹ L/MW)	Plant & Machinery Cost for the Base Year	413.534
$d_{(n)}$	Capital Cost escalation Factor	4.931%
$P\&M_{(n)}$ (₹ L/MW)	Plant & Machinery Cost for the nth Year (FY 2014-15)	433.923
$CC_{(n)}$ (₹ L/MW)	Capital Cost for the nth Year (FY2014-15)	577.118

Source of WPI (Steel and Electrical Machinery): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in)

Appendix-6

Capital cost of Indexation for Biogas based Power Projects (FY 2014-15)

Indexation Formulation

$CC_{(n)} = P\&M_{(n)} * [1 + F1 + F2 + F3]$

$d_{(n)} = (a * (SI_{(n-1)}/SI_{(0)})-1) + b* (EI_{(n-1)}/EI_{(0)})-1)) / (a+b)$

$P\&M_{(n)} = P\&M_{(0)}*(1+ d_{(n)})$

Variable	Description	Value
A	Weightage for Steel Index	0.7
B	Weightage for Electrical Machinery Index	0.3
F1	Factor for Land and Civil Work	0.1
F2	Factor for Erection and Commissioning	0.09
F3	Factor for IDC and Financing	0.14

	Electrical Machinery		Steel	
Month/Year	2013	2011	2013	2011
January	133.900	125.100	126.200	118.600
February	133.800	125.100	126.200	113.000
March	134.100	126.400	126.200	113.000
April	134.500	127.200	126.200	113.000
May	135.500	127.600	126.200	113.000
June	135.600	128.000	126.200	119.600
July	135.600	128.700	126.200	126.200
August	135.700	129.200	126.200	126.200
September	136.300	130.900	126.200	126.200
October	137.100	130.600	126.200	126.200
November	137.500	130.800	126.200	126.200
December	137.800	131.000	126.200	126.200
Average	135.617	128.383	126.200	120.617

Parameters	Description	Value
$CC_{(0)}$(₹ L/MW)	Capital Cost for the Base Year	1100.000
$P\&M_{(0)}$ ₹ /MW)	Plant & Machinery Cost for the Base Year	827.068
$d_{(n)}$	Capital Cost escalation Factor	4.931%
$P\&M_{(n)}$ (₹ L/MW)	Plant & Machinery Cost for the nth Year (FY 2014-15)	867.847
$CC_{(n)}$ (₹ L/MW)	Capital Cost for the nth Year (FY2014-15)	1154.236

Source of WPI (Steel and Electrical Machinery): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in)

Appendix-7

Biomass Fuel Price across States for FY 2014-15

As per fuel price Index Mechanism outlined under Regulation 45 and the availability of required information

Fuel Price indexation for Biomass Power Projects (FY2014-15)

Indexation Formulation

$$P_{(n)} = P_{(n-1)}*\{a*(WPI_{(n)}/WPI_{(n-1)}+b*(1+IRC_{(n-1)}+c*(Pd_{(n)}/Pd_{(n-1)})\}$$

Parameter	Value
WPI n-1	**163.500**
WPI n	**171.300**
IRC n-1	**9.81%**
Pd n-1	**175.242**
Pd n	**210.908**
A	**0.20**
B	**0.60**
C	**0.20**

	Biomass price (₹ /MT) (2013-14)	Biomass price (₹ /MT) (2014-15)
Manipur & Mizoram	2653.07	2942.54

Note:

1. The Calculation of WPI (n) and WPI (n-1) is based on the figures available on April 2013 andApril 2012 respectively.

2. The Calculation of Pd (n) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2013 to December 2013.

3. The Calculation of Pd (n-1) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2012 to December 2012.

4. The Calculation of Pd (n) and Pd (n-1) are shown as under:

WPI (Price of HSD)

Month	2013	2012
Jan	198.800	167.800
Feb	202.700	167.800
Mar	201.700	167.800
Apr	202.300	167.800
May	203.400	167.800
Jun	207.000	167.800
Jul	212.000	167.800
Aug	215.400	168.600
Sep	219.800	182.800
Oct	220.400	192.300
Nov	222.400	192.300
Dec	225.000	192.300
Average	Pd (n) :210.908	Pd (n-1) : 175.242

Source of WPI and WPI (Price of HSD): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in),

From	To	IRC	Days	Average IRC
01-04-2013	30-09-2013	9.82%	183	9.81%
01-10-2013	31-03-2014	9.80%	182	
Total			365	

Source of IRC: CERC (www.cercind.gov.in)

Appendix-8

Bagasse Fuel Price across States for FY 2014-15

As per fuel price Index Mechanism outlined under Regulation 54 and the availability of required information

Fuel Price indexation for Bagasse Power Projects (FY2014-14)

Indexation Formulation
$P_{(n)} = P_{(n-1)}*\{a*(WPI_{(n)}/WPI_{(n-1)}+b*(1+IRC_{(n-1)}+c*(Pd_{(n)}/Pd_{(n-1)})\}$

Parameter	Value
$WPI_{(n-1)}$	**163.500**
$WPI_{(n)}$	**171.300**
$IRC_{(n-1)}$	**9.81%**
$Pd_{(n-1)}$	**175.242**
$Pd_{(n)}$	**210.908**
A	**0.20**
B	**0.60**
C	**0.20**

	Bagasse price (₹/MT) (2013-14)	**Bagasse price (₹/MT) (2014-15)**
Manipur & Mizoram	1696.20	1881.27

Note:

1. The Calculation of WPI (n) and WPI (n-1) is based on the figures available on April 2013 and April 2012 respectively.

2. The Calculation of Pd (n) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2013 to December 2013.

3. The Calculation of Pd (n-1) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2012 to December 2012.

4. The Calculation of Pd (n) and Pd (n-1) are shown as under:

WPI (Price of HSD)

Month	**2013**	**2012**
Jan	198.800	167.800
Feb	202.700	167.800
Mar	201.700	167.800
Apr	202.300	167.800
May	203.400	167.800
Jun	207.000	167.800
Jul	212.000	167.800
Aug	215.400	168.600
Sep	219.800	182.800
Oct	220.400	192.300
Nov	222.400	192.300
Dec	225.000	192.300
Averag	Pd (n) :210.908	Pd (n-1) : 175.242

Source of WPI and WPI (Price of HSD): Office of Economic Advisor, Ministry of Commerce and Industry (www.eaindustry.nic.in),

From	To	IRC	Days	Average IRC
01-04-2013	30-09-2013	9.82%	183	9.81%
01-10-2013	31-03-2014	9.81%	182	
Total	365			

Source of IRC: CERC (www.cercind.gov.in)

Appendix-9

Biomass Gasifier Fuel Price across States for FY 2014-15

As per fuel price Index Mechanism outlined under Regulation 74 and the availability of required information

Fuel Price indexation for Biomass gasifier Power Projects (FY2014-15)

Indexation Formulation

$$P_{(n)} = P_{(n-1)}*\{a*(WPI_{(n)}/WPI_{(n-1)}+b*(1+IRC_{(n-1)}+c*(Pd_{(n)}/Pd_{(n-1)})\}$$

Parameter	Value
$WPI_{(n-1)}$	**163.500**
$WPI_{(n)}$	**171.300**
$IRC_{(n-1)}$	**9.81%**
$Pd_{(n-1)}$	**175.242**
$Pd_{(n)}$	**210.908**
A	**0.20**
B	**0.60**
C	**0.20**

	Biomass price (₹ /MT) (2013-14)	Biomass price (₹ /MT) (2014-15)
Manipur & Mizoram	2653.07	2942.54

Note:

1. The Calculation of WPI (n) and WPI (n-1) is based on the figures available on April 2013 and April 2012 respectively.

2. The Calculation of Pd (n) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2013 to December 2013.

3. The Calculation of Pd (n-1) is based on the weighted average of the WPI (Price of HSD)
figures available for the months from January 2012 to December 2012.

4. The Calculation of Pd (n) and Pd (n-1) are shown as under:

WPI (Price of HSD)

Month	2013	2012
Jan	198.800	167.800
Feb	202.700	167.800
Mar	201.700	167.800
Apr	202.300	167.800
May	203.400	167.800
Jun	207.000	167.800
Jul	212.000	167.800
Aug	215.400	168.600
Sep	219.800	182.800
Oct	220.400	192.300
Nov	222.400	192.300
Dec	225.000	192.300
Average	Pd (n) :210.908	Pd (n-1) : 175.242

Source of WPI and WPI (Price of HSD): Office of Economic Advisor, Ministry of Commerce and

Industry (www.eaindustry.nic.in),

From	To	IRC	Days	Average IRC
01-04-2013	30-09-2013	9.82%	183	
01-10-2013	31-03-2014	9.81%	182	9.81%
Total			365	

Source of IRC: CERC (www.cercind.gov.in)

Appendix-10

Fuel Price for biogas based power plant for FY 2014-15

As per fuel price Index Mechanism outlined under Regulation 83 and the availability of required information

Fuel Price indexation for Biogas based power projects (FY2014-15)

Indexation Formulation

$$P_{(n)} = P_{(n-1)} * \{a*(WPI_{(n)}/WPI_{(n-1)}+b*(1+IRC_{(n-1)}+c*(Pd_{(n)}/Pd_{(n-1)})\}$$

Parameter	Value
$WPI_{(n-1)}$	**163.500**
$WPI_{(n)}$	**171.300**
$IRC_{(n-1)}$	**9.81%**
$Pd_{(n-1)}$	**175.242**
$Pd_{(n)}$	**210.908**
A	**0.20**
B	**0.60**
C	**0.20**

Fuel price (₹ /MT) (2013-14)	**Fuel price (₹ /MT) (2014-15)**
1060.80	1176.54

Note:

1. The Calculation of WPI (n) and WPI (n-1) is based on the figures available on April 2013 and April 2012 respectively.

2. The Calculation of Pd (n) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2013 to December 2013.

3. The Calculation of Pd (n-1) is based on the weighted average of the WPI (Price of HSD) figures available for the months from January 2012 to December 2012.

4. The Calculation of Pd (n) and Pd (n-1) are shown as under:

WPI (Price of HSD)

Month	**2013**	**2012**
Jan	198.800	167.800
Feb	202.700	167.800
Mar	201.700	167.800
Apr	202.300	167.800
May	203.400	167.800
Jun	207.000	167.800
Jul	212.000	167.800
Aug	215.400	168.600
Sep	219.800	182.800
Oct	220.400	192.300
Nov	222.400	192.300
Dec	225.000	192.300
Average	Pd (n) :210.908	Pd (n-1) : 175.242

Source of WPI and WPI (Price of HSD): Office of Economic Advisor, Ministry of Commerce and

Industry (www.eaindustry.nic.in),

From	To	IRC	Days	Average IRC
01-04-2013	30-09-2013	9.82%	183	
01-10-2013	31-03-2014	9.81%	182	9.81%
Total			365	

Source of IRC: CERC (www.cercind.gov.in)

Annexure-1A

ASSUMPTION FOR WIND ENERGY PROJECTS PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Wind Zone 1
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption	%	0.00%
			Capacity Utilization Factor	%	20.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	603.929
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	422.750
			Total Equity Amount	Rs. Lacs	181.179
		Debt component	Loan Amount	Rs. Lacs	422.750
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	181.179
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	10.05
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	9.51

Determination of Tariff Component:Wind Power projects

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		1.75	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
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		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	38.20
Depreciation	Rs Lakh		35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Interest on term loan	Rs Lakh		51.45	46.98	42.50	38.03	33.56	29.08	24.61	20.13	15.66	11.19	6.71	2.24	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 C	Rs Lakh		3.31	3.24	3.17	3.10	3.04	2.98	2.92	2.86	2.81	2.75	2.87	2.82	2.25	2.31	2.37	2.44	2.51	2.58	2.66	2.75	2.84	2.93	3.03	3.14	3.25
Return on Equity	Rs Lakh		36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48
Total Fixed Cost	**Rs Lakh**		**136.26**	**132.29**	**128.35**	**124.46**	**120.61**	**116.78**	**113.01**	**109.28**	**105.60**	**101.97**	**105.81**	**102.29**	**74.63**	**75.81**	**77.06**	**78.38**	**79.78**	**81.25**	**82.81**	**84.46**	**86.21**	**88.05**	**89.99**	**92.06**	**94.24**

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	**Unit**	**Levellis**	**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	**0.92**	0.57	0.61	0.64	0.68	0.72	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
Depreciation	Rs/kWh	**1.66**	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Int. on term loan	Rs/kWh	**1.40**	2.94	2.68	2.43	2.17	1.92	1.66	1.40	1.15	0.89	0.64	0.38	0.13	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 capita	Rs/kWh	**0.17**	0.19	0.18	0.18	0.18	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.19
RoE	Rs/kWh	**2.20**	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48
Total COG	**Rs/kWh**	**6.34**	**7.78**	**7.55**	**7.33**	**7.10**	**6.88**	**6.67**	**6.45**	**6.24**	**6.03**	**5.82**	**6.04**	**5.84**	**4.26**	**4.33**	**4.40**	**4.47**	**4.55**	**4.64**	**4.73**	**4.82**	**4.92**	**5.03**	**5.14**	**5.25**	**5.38**

Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146	0.132	0.119	0.107	0.097	0.088
Levellised Tariff	**Rs/Unit**	**6.34**																									

Determination of Accelerated Depreciation for Wind Power projects																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	603.93																				
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	15.94	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	17.39	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50.00%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Accelrated Deprn.	Rs Lakh	301.96	271.77	24.16	4.83	0.97	0.19	0.04	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	286.02	239.88	-7.73	-27.06	-30.92	-31.69	-31.85	-31.88	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-17.39	0.00	0.00
Tax Benefit	Rs Lakh	97.22	81.54	-2.63	-9.20	-10.51	-10.77	-10.83	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-5.91	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
Per unit benefit	Rs/Unit	11.10	4.65	-0.15	-0.52	-0.60	-0.61	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62	-0.34	0.00	0.00
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154
Tax Benefit Levellised	Rs Lakh	11.34																			
Electricity Generation (Levellised)	MU	1.66																			
Levellised benefit	**Rs/Unit**	**0.68**																			

Annexure-1B

ASSUMPTION FOR WIND ENERGY PROJECTS PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Wind Zone 2
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption	%	0.00%
			Capacity Utilization Factor	%	22.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	603.929
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	422.750
			Total Equity Amount	Rs. Lacs	181.179
		Debt component	Loan Amount	Rs. Lacs	422.750
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	181.179
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	10.05
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	9.51

Determination of Tariff Component:Wind Power projects

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		1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Net Generation	MU		1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93

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		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	38.20
Depreciation	Rs Lakh		35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Interest on term loan	Rs Lakh		51.45	46.98	42.50	38.03	33.56	29.08	24.61	20.13	15.66	11.19	6.71	2.24	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 C	Rs Lakh		3.31	3.24	3.17	3.10	3.04	2.98	2.92	2.86	2.81	2.75	2.87	2.82	2.25	2.31	2.37	2.44	2.51	2.58	2.66	2.75	2.84	2.93	3.03	3.14	3.25
Return on Equity	Rs Lakh		36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48
Total Fixed Cost	**Rs Lakh**		**136.26**	**132.29**	**128.35**	**124.46**	**120.61**	**116.78**	**113.01**	**109.28**	**105.60**	**101.97**	**105.81**	**102.29**	**74.63**	**75.81**	**77.06**	**78.38**	**79.78**	**81.25**	**82.81**	**84.46**	**86.21**	**88.05**	**89.99**	**92.06**	**94.24**

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	**Unit**	**Levellis**	**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	**0.83**	0.52	0.55	0.58	0.62	0.65	0.69	0.73	0.77	0.81	0.86	0.91	0.96	1.02	1.08	1.14	1.20	1.27	1.34	1.42	1.50	1.59	1.68	1.77	1.88	1.98
Depreciation	Rs/kWh	**1.51**	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Int. on term loan	Rs/kWh	**1.27**	2.67	2.44	2.21	1.97	1.74	1.51	1.28	1.04	0.81	0.58	0.35	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
Int. on working capita	Rs/kWh	**0.15**	0.17	0.17	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.14	0.15	0.15	0.12	0.12	0.12	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16	0.17
RoE	Rs/kWh	**2.00**	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26
Total COG	**Rs/kWh**	**5.76**	**7.07**	**6.86**	**6.66**	**6.46**	**6.26**	**6.06**	**5.86**	**5.67**	**5.48**	**5.29**	**5.49**	**5.31**	**3.87**	**3.93**	**4.00**	**4.07**	**4.14**	**4.22**	**4.30**	**4.38**	**4.47**	**4.57**	**4.67**	**4.78**	**4.89**

Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146	0.132	0.119	0.107	0.097	0.088
Levellised Tariff	**Rs/Unit**	**5.76**																									

Determination of Accelerated Depreciation for Wind Power projects																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	603.93																				
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	15.94	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	17.39	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50.00%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Accelrated Deprn.	Rs Lakh	301.96	271.77	24.16	4.83	0.97	0.19	0.04	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	286.02	239.88	-7.73	-27.06	-30.92	-31.69	-31.85	-31.88	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-17.39	0.00	0.00
Tax Benefit	Rs Lakh	97.22	81.54	-2.63	-9.20	-10.51	-10.77	-10.83	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-5.91	0.00	0.00
Energy generation	MU	0.96	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Per unit benefit	Rs/Unit	10.09	4.23	-0.14	-0.48	-0.55	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.56	-0.31	0.00	0.00
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154
Tax Benefit Levellised	Rs Lakh	11.34																			
Electricity Generation (Levellised)	MU	1.82																			
Levellised benefit	**Rs/Unit**	**0.62**																			

Annexure-1C

ASSUMPTION FOR WIND ENERGY PROJECTS PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Wind Zone 3
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption	%	0.00%
			Capacity Utilization Factor	%	25.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	603.929
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	422.750
			Total Equity Amount	Rs. Lacs	181.179
		Debt component	Loan Amount	Rs. Lacs	422.750
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	181.179
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	10.05
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	9.51

Determination of Tariff Component:Wind Power projects

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		2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
Net Generation	MU		2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19

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		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	38.20
Depreciation	Rs Lakh		35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Interest on term loan	Rs Lakh		51.45	46.98	42.50	38.03	33.56	29.08	24.61	20.13	15.66	11.19	6.71	2.24	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 C	Rs Lakh		3.31	3.24	3.17	3.10	3.04	2.98	2.92	2.86	2.81	2.75	2.87	2.82	2.25	2.31	2.37	2.44	2.51	2.58	2.66	2.75	2.84	2.93	3.03	3.14	3.25
Return on Equity	Rs Lakh		36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48
Total Fixed Cost	**Rs Lakh**		**136.26**	**132.29**	**128.35**	**124.46**	**120.61**	**116.78**	**113.01**	**109.28**	**105.60**	**101.97**	**105.81**	**102.29**	**74.63**	**75.81**	**77.06**	**78.38**	**79.78**	**81.25**	**82.81**	**84.46**	**86.21**	**88.05**	**89.99**	**92.06**	**94.24**

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	**Unit**	**Levellised**	**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	**0.73**	0.46	0.49	0.51	0.54	0.57	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.89	0.95	1.00	1.06	1.12	1.18	1.25	1.32	1.40	1.48	1.56	1.65	1.74
Depreciation	Rs/kWh	**1.33**	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Int. on term loan	Rs/kWh	**1.12**	2.35	2.15	1.94	1.74	1.53	1.33	1.12	0.92	0.72	0.51	0.31	0.10	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 capita	Rs/kWh	**0.13**	0.15	0.15	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.10	0.11	0.11	0.11	0.11	0.12	0.12	0.13	0.13	0.13	0.14	0.14	0.15
RoE	Rs/kWh	**1.76**	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
Total COG	**Rs/kWh**	**5.07**	**6.22**	**6.04**	**5.86**	**5.68**	**5.51**	**5.33**	**5.16**	**4.99**	**4.82**	**4.66**	**4.83**	**4.67**	**3.41**	**3.46**	**3.52**	**3.58**	**3.64**	**3.71**	**3.78**	**3.86**	**3.94**	**4.02**	**4.11**	**4.20**	**4.30**

Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146	0.132	0.119	0.107	0.097	0.088
Levellised Tariff	**Rs/Unit**	**5.07**																									

Determination of Accelerated Depreciation for Wind Power projects																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	603.93																				
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	15.94	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	17.39	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50.00%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Accelrated Deprn.	Rs Lakh	301.96	271.77	24.16	4.83	0.97	0.19	0.04	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	286.02	239.88	-7.73	-27.06	-30.92	-31.69	-31.85	-31.88	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-17.39	0.00	0.00
Tax Benefit	Rs Lakh	97.22	81.54	-2.63	-9.20	-10.51	-10.77	-10.83	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-5.91	0.00	0.00
Energy generation	MU	1.10	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
Per unit benefit	Rs/Unit	8.88	3.72	-0.12	-0.42	-0.48	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.49	-0.27	0.00	0.00
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154
Tax Benefit Levellised	Rs Lakh	11.34																			
Electricity Generation (Levellised)	MU	2.07																			
Levellised benefit	**Rs/Unit**	**0.55**																			

Annexure-1D

ASSUMPTION FOR WIND ENERGY PROJECTS PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Wind Zone 4
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption	%	0.00%
			Capacity Utilization Factor	%	30.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	603.929
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	422.750
			Total Equity Amount	Rs. Lacs	181.179
		Debt component	Loan Amount	Rs. Lacs	422.750
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	181.179
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	10.05
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	9.51

Determination of Tariff Component:Wind Power projects

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		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
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		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	38.20
Depreciation	Rs Lakh		35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Interest on term loan	Rs Lakh		51.45	46.98	42.50	38.03	33.56	29.08	24.61	20.13	15.66	11.19	6.71	2.24	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 C	Rs Lakh		3.31	3.24	3.17	3.10	3.04	2.98	2.92	2.86	2.81	2.75	2.87	2.82	2.25	2.31	2.37	2.44	2.51	2.58	2.66	2.75	2.84	2.93	3.03	3.14	3.25
Return on Equity	Rs Lakh		36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48
Total Fixed Cost	**Rs Lakh**		**136.26**	**132.29**	**128.35**	**124.46**	**120.61**	**116.78**	**113.01**	**109.28**	**105.60**	**101.97**	**105.81**	**102.29**	**74.63**	**75.81**	**77.06**	**78.38**	**79.78**	**81.25**	**82.81**	**84.46**	**86.21**	**88.05**	**89.99**	**92.06**	**94.24**

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	**Unit**	**Levellised**	**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	**0.61**	0.38	0.40	0.43	0.45	0.48	0.51	0.53	0.56	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.38	1.45
Depreciation	Rs/kWh	**1.11**	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Int. on term loan	Rs/kWh	**0.93**	1.96	1.79	1.62	1.45	1.28	1.11	0.94	0.77	0.60	0.43	0.26	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
Int. on working capita	Rs/kWh	**0.11**	0.13	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.10	0.11	0.11	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.11	0.11	0.12	0.12	0.12
RoE	Rs/kWh	**1.46**	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Total COG	**Rs/kWh**	**4.23**	**5.18**	**5.03**	**4.88**	**4.74**	**4.59**	**4.44**	**4.30**	**4.16**	**4.02**	**3.88**	**4.03**	**3.89**	**2.84**	**2.88**	**2.93**	**2.98**	**3.04**	**3.09**	**3.15**	**3.21**	**3.28**	**3.35**	**3.42**	**3.50**	**3.59**

Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146	0.132	0.119	0.107	0.097	0.088
Levellised Tariff	**Rs/Unit**	**4.23**																									

Determination of Accelerated Depreciation for Wind Power projects																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	603.93																				
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	15.94	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	17.39	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50.00%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Accelrated Deprn.	Rs Lakh	301.96	271.77	24.16	4.83	0.97	0.19	0.04	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	286.02	239.88	-7.73	-27.06	-30.92	-31.69	-31.85	-31.88	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-17.39	0.00	0.00
Tax Benefit	Rs Lakh	97.22	81.54	-2.63	-9.20	-10.51	-10.77	-10.83	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-5.91	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
Per unit benefit	Rs/Unit	7.40	3.10	-0.10	-0.35	-0.40	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	-0.22	0.00	0.00
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154
Tax Benefit Levellised	Rs Lakh	11.34																			
Electricity Generation (Levellised)	MU	2.49																			
Levellised benefit	**Rs/Unit**	**0.46**																			

Annexure-1E

ASSUMPTION FOR WIND ENERGY PROJECTS PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Wind Zone 5
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption	%	0.00%
			Capacity Utilization Factor	%	32.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	603.929
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	422.750
			Total Equity Amount	Rs. Lacs	181.179
		Debt component	Loan Amount	Rs. Lacs	422.750
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	181.179
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	10.05
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	9.51

Determination of Tariff Component:Wind Power projects

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		2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Net Generation	MU		2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
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		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	38.20
Depreciation	Rs Lakh		35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Interest on term loan	Rs Lakh		51.45	46.98	42.50	38.03	33.56	29.08	24.61	20.13	15.66	11.19	6.71	2.24	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 C	Rs Lakh		3.31	3.24	3.17	3.10	3.04	2.98	2.92	2.86	2.81	2.75	2.87	2.82	2.25	2.31	2.37	2.44	2.51	2.58	2.66	2.75	2.84	2.93	3.03	3.14	3.25
Return on Equity	Rs Lakh		36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	36.24	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48	43.48
Total Fixed Cost	**Rs Lakh**		**136.26**	**132.29**	**128.35**	**124.46**	**120.61**	**116.78**	**113.01**	**109.28**	**105.60**	**101.97**	**105.81**	**102.29**	**74.63**	**75.81**	**77.06**	**78.38**	**79.78**	**81.25**	**82.81**	**84.46**	**86.21**	**88.05**	**89.99**	**92.06**	**94.24**
Levallised tariff corresponding to Useful life																											
Per Unit Cost of Generation	**Unit**	**Levellised**	**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**	0.36	0.38	0.40	0.42	0.45	0.47	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.87	0.92	0.98	1.03	1.09	1.15	1.22	1.29	1.36
Depreciation	Rs/kWh	**1.04**	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Int. on term loan	Rs/kWh	**0.88**	1.84	1.68	1.52	1.36	1.20	1.04	0.88	0.72	0.56	0.40	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
Int. on working capita	Rs/kWh	**0.10**	0.12	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.12
RoE	Rs/kWh	**1.37**	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
Total COG	**Rs/kWh**	**3.96**	**4.86**	**4.72**	**4.58**	**4.44**	**4.30**	**4.17**	**4.03**	**3.90**	**3.77**	**3.64**	**3.77**	**3.65**	**2.66**	**2.70**	**2.75**	**2.80**	**2.85**	**2.90**	**2.95**	**3.01**	**3.08**	**3.14**	**3.21**	**3.28**	**3.36**
Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146	0.132	0.119	0.107	0.097	0.088
Levellised Tariff	**Rs/Unit**	**3.96**																									

Determination of Accelerated Depreciation for Wind Power projects																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	603.93																				
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	15.94	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	31.89	17.39	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50.00%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Accelrated Deprn.	Rs Lakh	301.96	271.77	24.16	4.83	0.97	0.19	0.04	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	286.02	239.88	-7.73	-27.06	-30.92	-31.69	-31.85	-31.88	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-31.89	-17.39	0.00	0.00
Tax Benefit	Rs Lakh	97.22	81.54	-2.63	-9.20	-10.51	-10.77	-10.83	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-10.84	-5.91	0.00	0.00
Energy generation	MU	1.40	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Per unit benefit	Rs/Unit	6.94	2.91	-0.09	-0.33	-0.37	-0.38	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.21	0.00	0.00
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154
Tax Benefit Levellised	Rs Lakh	11.34																			
Electricity Generation (Levellised)	MU	2.65																			
Levellised benefit	**Rs/Unit**	**0.43**																			

Annexure-2A

Small Hydro: Assumptions Parameters

Sl No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Less than 5 MW
1	**Power Generation**	Capacity			
			Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	45%
			Auxiliary Consumption	% Years	1%
			Useful Life		35
2	**Project Cost**	Capital Cost/MW	Power Plant Cost	Rs Lacs	808.739
3	**Sources of Fund**		Tariff Period	Years	35
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	566.117
			Total Equity Amout	Rs Lacs	242.622
		Debt Component	Loan Amount	Rs Lacs	566.12
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Intrest Rate	%	12.70%
		Equity Component	Equity amount	Rs Lacs	242.62
			Normative ROE (Post-tax)		16%
			Return on Equity for first 10 years	% p.a	20%
			Return on Equity 11th year onwards	% p.a	24.00%
			Weighted average of ROE		22.86%
			Discount Rate		10.67%
4	**Financial Assumptions**				
		Tax	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th year onwards	%	0.87%
5	**Working Capital**	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		Intrest On Working Capital		%	13.20%
6	**Operation & Maintenance**				
		O&M Expenses (2014-15)		Rs Lacs	27.94
		Total O & M Expenses Escalation		%	5.72%
		O&M Expenses (2013-14)			26.43

Determination of Tariff Component: Small Hydro < 5MW

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		3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
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		27.94	29.54	31.23	33.02	34.91	36.91	39.02	41.25	43.61	46.10	48.74	51.53	54.48	57.60	60.89	64.37	68.05	71.94	76.05	80.40	85.00	89.86	95.00	100.43	106.17	112.24	118.66	125.45	132.63	140.22	148.24	156.72	165.68	175.16	185.18
Depreciation	Rs Lakh		47.15	47.15	47.15	47.15	47.15	47.15	47.15	47.15	47.15	47.15	47.15	47.15	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04	7.04
Interest on term loan	Rs Lakh		68.90	62.91	56.92	50.93	44.94	38.94	32.95	26.96	20.97	14.98	8.99	3.00	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 C	Rs Lakh		5.21	5.16	5.12	5.08	5.05	5.02	5.00	4.99	4.98	4.98	5.20	5.22	4.41	4.58	4.76	4.94	5.14	5.35	5.57	5.81	6.06	6.32	6.60	6.89	7.20	7.53	7.87	8.24	8.63	9.04	9.47	9.93	10.41	10.92	11.47
Return on Equity	Rs Lakh		48.52	48.52	48.52	48.52	48.52	48.52	48.52	48.52	48.52	48.52	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23	58.23
Total Fixed Cost	**Rs Lakh**		**197.73**	**193.29**	**188.94**	**184.70**	**180.57**	**176.55**	**172.65**	**168.87**	**165.23**	**161.73**	**168.31**	**165.12**	**124.16**	**127.45**	**130.91**	**134.58**	**138.46**	**142.56**	**146.89**	**151.48**	**156.33**	**161.45**	**166.87**	**172.59**	**178.64**	**185.04**	**191.80**	**198.96**	**206.53**	**214.53**	**222.98**	**231.92**	**241.36**	**251.35**	**261.91**

Levallised tariff corresponding to Useful life

Per Unit Cost of Gen	Unit	Levellised	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	**1.27**	0.72	0.76	0.80	0.85	0.89	0.95	1.00	1.06	1.12	1.18	1.25	1.32	1.40	1.48	1.56	1.65	1.74	1.84	1.95	2.06	2.18	2.30	2.43	2.57	2.72	2.88	3.04	3.21	3.40	3.59	3.80	4.02	4.25	4.49	4.75
Depreciation	Rs/kWh	**0.93**	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	**0.80**	1.77	1.61	1.46	1.30	1.15	1.00	0.84	0.69	0.54	0.38	0.23	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
Int. on working capital	Rs/kWh	**0.14**	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.27	0.28	0.29
RoE	Rs/kWh	**1.33**	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
Total COG	**Rs/kWh**	**4.46**	**5.07**	**4.95**	**4.84**	**4.73**	**4.63**	**4.52**	**4.42**	**4.33**	**4.23**	**4.14**	**4.31**	**4.23**	**3.18**	**3.27**	**3.35**	**3.45**	**3.55**	**3.65**	**3.76**	**3.88**	**4.01**	**4.14**	**4.28**	**4.42**	**4.58**	**4.74**	**4.91**	**5.10**	**5.29**	**5.50**	**5.71**	**5.94**	**6.18**	**6.44**	**6.71**
Discount Factor			1.000	0.904	0.817	0.738	0.667	0.603	0.545	0.492	0.445	0.402	0.363	0.328	0.296	0.267	0.241	0.218	0.197	0.178	0.161	0.145	0.131	0.118	0.107	0.097	0.088	0.08	0.072	0.065	0.059	0.053	0.048	0.043	0.039	0.035	0.032
Levellised Tariff	**Rs/Unit**	**4.46**																																			

Determination of Accelerated Depreciation for Small Hydro <5 MW

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Additional depriciation	20.00%
Income Tax (Normal Rates)	33.99%
Capital Cost (Rs lakh)	808.74

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	21.35	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	42.70	23.29	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%	50.00%	5.00%	1.00%	0.20%	0.04%	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%	0.00%	0.00%	0.00%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%	0.00%	0.00%	0.00%
Closing	%	50%	5%	1%	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%	0%
Accelrated Deprn.	Rs Lakh	404.37	363.93	32.35	6.47	1.29	0.26	0.05	0.01	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
Net Depreciation Benefit	Rs Lakh	383.02	321.23	-10.35	-36.23	-41.41	-42.44	-42.65	-42.69	-42.70	-42.70	-42.70	-42.70	-42.70	-42.70	-42.70	-42.70	-42.70	-23.29	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
Tax Benefit	Rs Lakh	130.19	109.19	-3.52	-12.32	-14.07	-14.43	-14.50	-14.51	-14.51	-14.51	-14.51	-14.51	-14.51	-14.51	-14.51	-14.51	-14.51	-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	0.00	0.00
Energy generation	MU	1.95	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Per unit benefit	Rs/Unit	6.67	2.80	-0.09	-0.32	-0.36	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.37	-0.20	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
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154	0.139	0.126	0.114	0.103	0.093	0.084	0.076	0.069	0.062	0.056	0.051	0.046	0.042	0.038	0.034

Tax Benefit Levellised	Rs Lakh	13.56
Electricity Generation (Levellised)	MU	3.72
Levellised benefit	**Rs/Unit**	**0.36**

Annexure-2B

Small Hydro: Assumptions Parameters

Sl No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	5 MW to 25 MW
1	**Power Generation**	Capacity			
			Installed Power Generation Capacity	MW	6
			Capacity Utilization Factor	%	45%
			Auxiliary Consumption	% Years	1%
			Useful Life		35
2	**Project Cost**	Capital Cost/MW	Power Plant Cost	Rs Lacs	4411.30
3	**Sources of Fund**		Tariff Period	Years	13
		Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	3087.91
			Total Equity Amout	Rs Lacs	1323.39
		Debt Component	Loan Amount	Rs Lacs	3087.91
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Intrest Rate	%	12.70%
		Equity Component	Equity amount	Rs Lacs	1323.39
			Normative ROE (Post-tax)		16%
			Return on Equity for first 10 years	% p.a	20%
			Return on Equity 11th year onwards	% p.a	24.00%
			Weighted average of ROE		22.86%
			Discount Rate		10.67%
4	**Financial Assumptions**				
		Tax	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th year onwards	%	0.87%
5	**Working Capital**	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		Intrest On Working Capital		%	13.20%
6	**Operation & Maintenance**				
		O&M Expenses (2014-15)		Rs Lacs	120.71
		Total O & M Expenses Escalation		%	5.72%
		O&M Expenses (2013-14)			114.18

Determination of Tariff Component: Small Hydro >5MW

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		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Net Generation	MU		23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42

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		120.71	127.61	134.91	142.63	150.79	159.42	168.54	178.18	188.37	199.14	210.53	222.57	235.30	248.76	262.99	278.03	293.93	310.74	328.51	347.30	367.17	388.17	410.37	433.84	458.66	484.90	512.64	541.96	572.96	605.73	640.38	677.01	715.73	756.67	799.95
Depreciation	Rs Lakh		257.18	257.18	257.18	257.18	257.18	257.18	257.18	257.18	257.18	257.18	257.18	257.18	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38	38.38
Interest on term loan	Rs Lakh		375.82	343.14	310.46	277.78	245.10	212.42	179.74	147.06	114.38	81.70	49.02	16.34	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 C	Rs Lakh		26.71	26.35	26.01	25.69	25.39	25.12	24.88	24.67	24.48	24.33	25.40	25.31	20.71	21.44	22.21	23.02	23.88	24.78	25.74	26.76	27.83	28.96	30.16	31.43	32.77	34.19	35.68	37.27	38.94	40.71	42.58	44.56	46.65	48.86	51.20
Return on Equity	Rs Lakh		264.68	264.68	264.68	264.68	264.68	264.68	264.68	264.68	264.68	264.68	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61	317.61
Total Fixed Cost	**Rs Lakh**		**1045.10**	**1018.96**	**993.24**	**967.96**	**943.14**	**918.82**	**895.02**	**871.77**	**849.09**	**827.03**	**859.74**	**839.02**	**612.00**	**626.19**	**641.19**	**657.04**	**673.80**	**691.52**	**710.25**	**730.05**	**750.99**	**773.13**	**796.53**	**821.26**	**847.42**	**875.08**	**904.32**	**935.22**	**967.89**	**1002.43**	**1038.95**	**1077.56**	**1118.37**	**1161.52**	**1207.14**

Levallised tariff corresponding to Useful life

Per Unit Cost of Gen	Unit	Levellised	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	**0.91**	0.52	0.54	0.58	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.90	0.95	1.00	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	2.31	2.45	2.59	2.73	2.89	3.06	3.23	3.42
Depreciation	Rs/kWh	**0.84**	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Int. on term loan	Rs/kWh	**0.73**	1.61	1.47	1.33	1.19	1.05	0.91	0.77	0.63	0.49	0.35	0.21	0.07	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 capita	Rs/kWh	**0.11**	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.11	0.11	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.20	0.21	0.22
RoE	Rs/kWh	**1.21**	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Total COG	**Rs/kWh**	**3.80**	**4.46**	**4.35**	**4.24**	**4.13**	**4.03**	**3.92**	**3.82**	**3.72**	**3.63**	**3.53**	**3.67**	**3.58**	**2.61**	**2.67**	**2.74**	**2.81**	**2.88**	**2.95**	**3.03**	**3.12**	**3.21**	**3.30**	**3.40**	**3.51**	**3.62**	**3.74**	**3.86**	**3.99**	**4.13**	**4.28**	**4.44**	**4.60**	**4.78**	**4.96**	**5.16**

Discount Factor			1.000	0.904	0.817	0.738	0.667	0.603	0.545	0.492	0.445	0.402	0.363	0.328	0.296	0.267	0.241	0.218	0.197	0.178	0.161	0.145	0.131	0.118	0.107	0.097	0.088	0.08	0.072	0.065	0.059	0.053	0.048	0.043	0.039	0.035	0.032
Levellised Tariff	**Rs/Unit**	**3.80**																																			

Determination of Accelerated Depreciation for Small Hydro > 5MW

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Additional depriciation	20.00%
Income Tax (Normal Rates)	33.99%
Capital Cost	4411.30

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	116.46	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	232.92	127.05	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%	50.00%	5.00%	1.00%	0.20%	0.04%	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%	0.00%	0.00%	0.00%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%	0.00%	0.00%	0.00%
Closing	%	50%	5%	1%	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%	0%
Accelrated Deprn.	Rs Lakh	2205.65	1985.09	176.45	35.29	7.06	1.41	0.28	0.06	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
Net Depreciation Benefit	Rs Lakh	2089.19	1752.17	-56.46	-197.63	-225.86	-231.51	-232.63	-232.86	-232.92	-232.92	-232.92	-232.92	-232.92	-232.92	-232.92	-232.92	-232.92	-127.05	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
Tax Benefit	Rs Lakh	710.12	595.56	-19.19	-67.17	-76.77	-78.69	-79.07	-79.15	-79.17	-79.17	-79.17	-79.17	-79.17	-79.17	-79.17	-79.17	-79.17	-43.18	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	MU	11.71	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42	23.42
Per unit benefit	Rs/Unit	6.07	2.54	-0.08	-0.29	-0.33	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.18	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
Discounting Factor		1.00	0.951	0.859	0.776	0.701	0.633	0.572	0.517	0.467	0.422	0.381	0.344	0.311	0.281	0.254	0.230	0.208	0.188	0.170	0.154	0.139	0.126	0.114	0.103	0.093	0.084	0.076	0.069	0.062	0.056	0.051	0.046	0.042	0.038	0.034

Tax Benefit Levellised	Rs Lakh	73.97
Electricity Generation	MU	22.31
Levellised benefit	**Rs/Unit**	**0.33**

Annexure-3

ASSUMPTION FOR BIOMASS POWER PROJECT PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Assumptn
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption during stability	%	11%
			Auxiliary consumption after stability	%	10%
			PLF(Stability for 6 months)	%	60%
			PLF(during first year after stability)	%	70%
			PLF(secondary year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	544.187
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	380.931
			Total Equity Amount	Rs. Lacs	163.256
		Debt component	Loan Amount	Rs. Lacs	380.931
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	163.256
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.00%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptior	Income Tax	%	33.99%
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th years onwards	%	2.51%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spar	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Biomass Stock		Months	4
		Interest On Working Capital		%	13.20%
6	Fuel Related Assumptions	Heat Rate	After Stabilization period	Kcal/kwh	4200
			During Stabilization Period	Kcal/kwh	4200
		Biomass	Base Price	Rs/T	2942.54
			GCV – Biomass	Kcal/kg	3100
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	42.29
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	40

Determination of Tariff Component: Biomass Power Projects																						
Units Generation	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01
Net Generation	MU		5.07	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Variable Cost	**Unit**	**Year-->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Biomass Cost	Rs lakh		227.00	293.35	308.02	323.42	339.59	356.57	374.40	393.12	412.77	433.41	455.08	477.84	501.73	526.81	553.16	580.81	609.85	640.35	672.36	705.98
Fixed Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
O&M Expenses	Rs Lakh		42.29	44.71	47.27	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.14	92.12	97.39	102.96	108.85	115.08	121.66
Depreciation	Rs Lakh		31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	13.66	13.66	13.66	13.66	13.66	13.66	13.66	13.66
Interest on term loan	Rs Lakh		46.36	42.33	38.30	34.27	30.24	26.20	22.17	18.14	14.11	10.08	6.05	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working C	Rs Lakh		20.09	24.61	25.65	26.74	27.90	29.12	30.40	31.76	33.18	34.69	36.42	38.10	39.50	41.45	43.49	45.64	47.90	50.28	52.78	55.40
Return on Equity	Rs Lakh		32.65	32.65	32.65	32.65	32.65	32.65	32.65	32.65	32.65	32.65	39.18	39.18	39.18	39.18	39.18	39.18	39.18	39.18	39.18	39.18
Total Fixed Cost	**Rs Lakh**		**173.12**	**176.03**	**175.60**	**175.36**	**175.35**	**175.55**	**175.99**	**176.70**	**177.66**	**178.91**	**187.13**	**189.00**	**174.77**	**181.43**	**188.45**	**195.87**	**203.70**	**211.97**	**220.70**	**229.90**
Levallised tariff corresponding to Useful life																						
Per Unit Cost of Generation	**Unit**	**Levellised**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Variable COG	Rs/kWh	**6.25**	4.48	4.65	4.88	5.13	5.38	5.65	5.94	6.23	6.54	6.87	7.22	7.58	7.95	8.35	8.77	9.21	9.67	10.15	10.66	11.19
O&M expn	Rs/kWh	**1.02**	0.83	0.71	0.75	0.79	0.84	0.89	0.94	0.99	1.05	1.11	1.17	1.24	1.31	1.38	1.46	1.54	1.63	1.73	1.82	1.93
Depreciation	Rs/kWh	**0.46**	0.63	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Int. on term loan	Rs/kWh	**0.39**	0.91	0.67	0.61	0.54	0.48	0.42	0.35	0.29	0.22	0.16	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capita	Rs/kWh	**0.51**	0.40	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.58	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.84	0.88
RoE	Rs/kWh	**0.56**	0.64	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Total COG	**Rs/kWh**	**9.19**	**7.90**	**7.44**	**7.67**	**7.91**	**8.16**	**8.44**	**8.73**	**9.03**	**9.36**	**9.71**	**10.18**	**10.57**	**10.73**	**11.23**	**11.76**	**12.31**	**12.90**	**13.51**	**14.16**	**14.84**
Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146
Variable Cost(FY 2014-15)	Rs/Unit	4.48																				
Levellised FixedTariff	Rs/Unit	2.94																				
Applicable Tariff(FY2014-15)	**Rs/Unit**	**7.42**																				

Determination of Accelerated Depreciation for Biomass Power Project																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	544.187																				
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	14.37	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	28.73	15.67	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Accelrated Deprn.	Rs Lakh	272.09	244.88	21.77	4.35	0.87	0.17	0.03	0.01	0	0	0	0	0	0	0	0	0	0	0	0
Net Depreciation Benefit	Rs Lakh	257.73	216.15	-6.97	-24.38	-27.86	-28.56	-28.70	-28.73	-28.73	-28.73	-28.73	-28.73	-28.73	-28.73	-28.73	-28.73	-28.73	-15.67	0.00	0.00
Tax Benefit	Rs Lakh	87.60	73.47	-2.37	-8.29	-9.47	-9.71	-9.75	-9.76	-9.77	-9.77	-9.77	-9.77	-9.77	-9.77	-9.77	-9.77	-9.77	-5.33	0.00	0.00
Energy generation	MU	2.53	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	3.46	1.16	-0.04	-0.13	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.08	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.63	0.57	0.52	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.23	0.21	0.19	0.17	0.15
Tax Benefit Levellised	Rs Lakh	10.23																			
Electricity Generation (Levellised)	MU	5.91																			
Levellised benefit	**Rs/Unit**	**0.17**																			

Annexure-4

ASSUMPTION FOR NON-FOSSIL FUEL BASED CO-GENERATION PROJECT PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Assumptn
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption during stability	%	8.50%
			Auxiliary consumption after stability	%	8.50%
			PLF(Stability for 6 months)	%	53%
			PLF(during first year after stability)	%	53%
			PLF(secondary year onwards)	%	53%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	440.708
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	308.496
			Total Equity Amount	Rs. Lacs	132.212
		Debt component	Loan Amount	Rs. Lacs	308.496
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	132.212
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.00%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptior	Income Tax	%	33.99%
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th years onwards	%	2.51%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spar	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Biomass Stock		Months	4
		Interest On Working Capital		%	13.20%
6	Fuel Related Assumptions	Heat Rate	After Stabilization period	Kcal/kwh	3600
			During Stabilization Period	Kcal/kwh	3600
		Bagasse	Base Price	Rs/T	1881.27
			GCV – Bagasse	Kcal/kg	2250
			Bagasse Price Escalation Factor		5.00%
7	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	17.89
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	16.92

Determination of Tariff Component: Non-fossil fuel based co-generation projects																						
Units Generation	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64
Net Generation	MU		4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Variable Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Bagasse price	Rs lakh		139.75	146.74	154.08	161.78	169.87	178.36	187.28	196.65	206.48	216.80	227.64	239.02	250.98	263.52	276.70	290.54	305.06	320.32	336.33	353.15
Fixed Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
O&M Expenses	Rs Lakh		17.89	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.51	31.20	32.98	34.87	36.86	38.97	41.20	43.56	46.05	48.68	51.46
Depreciation	Rs Lakh		25.69	25.69	25.69	25.69	25.69	25.69	25.69	25.69	25.69	25.69	25.69	25.69	11.06	11.06	11.06	11.06	11.06	11.06	11.06	11.06
Interest on term loan	Rs Lakh		37.55	34.28	31.02	27.75	24.49	21.22	17.96	14.69	11.43	8.16	4.90	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working C	Rs Lakh		12.41	12.87	13.35	13.86	14.39	14.96	15.56	16.20	16.87	17.58	18.45	19.24	19.78	20.74	21.74	22.79	23.90	25.07	26.29	27.57
Return on Equity	Rs Lakh		26.44	26.44	26.44	26.44	26.44	26.44	26.44	26.44	26.44	26.44	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73	31.73
Total Fixed Cost	**Rs Lakh**		**119.98**	**118.19**	**116.49**	**114.87**	**113.35**	**111.93**	**110.62**	**109.42**	**108.34**	**107.38**	**111.97**	**111.27**	**97.44**	**100.39**	**103.50**	**106.78**	**110.25**	**113.91**	**117.76**	**121.82**
Levallised tariff corresponding to Useful life																						
Per Unit Cost of Generation	**Unit**	**Levellised**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Variable COG	Rs/kWh	**4.64**	3.29	3.45	3.63	3.81	4.00	4.20	4.41	4.63	4.86	5.10	5.36	5.63	5.91	6.20	6.51	6.84	7.18	7.54	7.92	8.31
O&M expn	Rs/kWh	**0.63**	0.42	0.45	0.47	0.50	0.53	0.56	0.59	0.62	0.66	0.69	0.73	0.78	0.82	0.87	0.92	0.97	1.03	1.08	1.15	1.21
Depreciation	Rs/kWh	**0.54**	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Int. on term loan	Rs/kWh	**0.45**	0.88	0.81	0.73	0.65	0.58	0.50	0.42	0.35	0.27	0.19	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capita	Rs/kWh	**0.38**	0.29	0.30	0.31	0.33	0.34	0.35	0.37	0.38	0.40	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.65
RoE	Rs/kWh	**0.66**	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Total COG	**Rs/kWh**	**7.29**	**6.11**	**6.24**	**6.37**	**6.51**	**6.67**	**6.83**	**7.01**	**7.20**	**7.41**	**7.63**	**7.99**	**8.25**	**8.20**	**8.57**	**8.95**	**9.35**	**9.78**	**10.22**	**10.69**	**11.18**
Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146
Variable Cost(FY 2014-15)	Rs/Unit	3.29																				
Levellised FixedTariff	Rs/Unit	2.65																				
Applicable Tariff(FY2014-15)	**Rs/Unit**	**5.94**																				

Determination of Accelerated Depreciation for Non-fossil fuel based co-generation Project																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	440.708																				
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	11.63	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	23.27	12.69	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Accelrated Deprn.	Rs Lakh	220.35	198.32	17.63	3.53	0.71	0.14	0.03	0.01	0	0	0	0	0	0	0	0	0	0	0	0
Net Depreciation Benefit	Rs Lakh	208.72	175.05	-5.64	-19.74	-22.56	-23.13	-23.24	-23.26	-23.27	-23.27	-23.27	-23.27	-23.27	-23.27	-23.27	-23.27	-23.27	-12.69	0.00	0.00
Tax Benefit	Rs Lakh	70.94	59.50	-1.92	-6.71	-7.67	-7.86	-7.90	-7.91	-7.91	-7.91	-7.91	-7.91	-7.91	-7.91	-7.91	-7.91	-7.91	-4.31	0.00	0.00
Energy generation	MU	2.12	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Per unit benefit	Rs/Unit	3.34	1.40	-0.05	-0.16	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.10	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.63	0.57	0.52	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.23	0.21	0.19	0.17	0.15
Tax Benefit Levellised	Rs Lakh	8.29																			
Electricity Generation (Levellised)	MU	4.02																			
Levellised benefit	**Rs/Unit**	**0.21**																			

Annexure-5A

ASSUMPTION FOR SOLAR PV PROJECT PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Assumptn
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption during stability	%	0.00%
			Capacity Utilization Factor	%	19.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	691
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	483.700
			Total Equity Amount	Rs. Lacs	207.300
		Debt component	Loan Amount	Rs. Lacs	483.700
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	207.300
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptior	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spar	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	12.30
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	11.63

Determination of Tariff Component: Solar PV power projects

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
Net 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		12.30	13.00	13.74	14.53	15.36	16.24	17.17	18.15	19.19	20.29	21.45	22.68	23.98	25.35	26.80	28.33	29.95	31.66	33.47	35.38	37.40	39.54	41.80	44.19	46.72
Depreciation	Rs Lakh		40.29	40.29	40.29	40.29	40.29	40.29	40.29	40.29	40.29	40.29	40.29	40.29	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64
Interest on term loan	Rs Lakh		58.87	53.75	48.63	43.51	38.39	33.27	28.16	23.04	17.92	12.80	7.68	2.56	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		3.83	3.75	3.67	3.60	3.53	3.46	3.40	3.34	3.28	3.22	3.36	3.31	2.65	2.73	2.81	2.89	2.98	3.07	3.17	3.27	3.38	3.49	3.62	3.74	3.88
Return on Equity	Rs Lakh		41.46	41.46	41.46	41.46	41.46	41.46	41.46	41.46	41.46	41.46	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75
Total Fixed Cost	**Rs Lakh**		**156.75**	**152.25**	**147.79**	**143.39**	**139.03**	**134.72**	**130.48**	**126.28**	**122.14**	**118.06**	**122.53**	**118.59**	**87.02**	**88.47**	**90.00**	**91.61**	**93.32**	**95.12**	**97.03**	**99.04**	**101.17**	**103.42**	**105.81**	**108.32**	**110.99**

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levellis	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	**1.18**	0.74	0.78	0.83	0.87	0.92	0.98	1.03	1.09	1.15	1.22	1.29	1.36	1.44	1.52	1.61	1.70	1.80	1.90	2.01	2.13	2.25	2.38	2.51	2.66	2.81
Depreciation	Rs/kWh	**2.00**	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Int. on term loan	Rs/kWh	**1.69**	3.54	3.23	2.92	2.61	2.31	2.00	1.69	1.38	1.08	0.77	0.46	0.15	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 capita	Rs/kWh	**0.21**	0.23	0.23	0.22	0.22	0.21	0.21	0.20	0.20	0.20	0.19	0.20	0.20	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.20	0.20	0.21	0.22	0.22	0.23
RoE	Rs/kWh	**2.64**	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
Total COG	**Rs/kWh**	**7.72**	**9.42**	**9.15**	**8.88**	**8.62**	**8.35**	**8.09**	**7.84**	**7.59**	**7.34**	**7.09**	**7.36**	**7.13**	**5.23**	**5.32**	**5.41**	**5.50**	**5.61**	**5.72**	**5.83**	**5.95**	**6.08**	**6.21**	**6.36**	**6.51**	**6.67**

Discount Factor			1.000	0.904	0.817	0.738	0.667	0.603	0.545	0.492	0.445	0.402	0.363	0.328	0.296	0.267	0.241	0.218	0.197	0.178	0.16	0.145	0.131	0.118	0.107	0.097	0.088
Levellised FixedTariff	**Rs/Unit**	**7.72**																									

Determination of Accelerated Depreciation for Solar PV power projects																											
Depreciation amount	90%																										
Book Depreciation rate	5.28%																										
Tax Depreciation rate	80%																										
Additional depriciation	20.00%																										
Income Tax (Normal Rates)	33.99%																										
Capital Cost	691.000																										
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	18.24	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	36.48	19.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																											
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Accelrated Deprn.	Rs Lakh	345.50	310.95	27.64	5.53	1.11	0.22	0.04	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Depreciation Benefit	Rs Lakh	327.26	274.47	-8.84	-30.96	-35.38	-36.26	-36.44	-36.48	-36.48	-36.48	-36.48	-36.48	-36.48	-36.48	-36.48	-36.48	-36.48	-19.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	111.23	93.29	-3.01	-10.52	-12.03	-12.33	-12.39	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40	-12.40	-6.76	0.00	0.00	0.00	0.00	0.00	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	1.66	1.66	1.66
Per unit benefit	Rs/Unit	13.37	5.61	-0.18	-0.63	-0.72	-0.74	-0.74	-0.74	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.63	0.57	0.52	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.10
Tax Benefit Levellised	Rs Lakh	12.21																									
Electricity Generation (Levellised)	MU	1.58																									
Levellised benefit	**Rs/Unit**	**0.77**																									

Annexure-5B

ASSUMPTION FOR SOLAR THERMAL POWER PROJECTS PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Assumptn
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption during stability	%	10.00%
			Capacity Utilization Factor	%	23.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs. Lacs/MW	1200
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	840.000
			Total Equity Amount	Rs. Lacs	360.000
		Debt component	Loan Amount	Rs. Lacs	840.000
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	360.000
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.40%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate for first 12 years	%	5.83%
			Depreciation Rate 13th years onwards	%	1.54%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Interest On Working Capital		%	13.20%
6	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	16.77
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	15.86

Determination of Tariff Component:Solar thermal power projects

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		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
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		16.77	17.73	18.74	19.81	20.94	22.14	23.41	24.75	26.17	27.67	29.25	30.92	32.69	34.56	36.54	38.63	40.84	43.18	45.65	48.26	51.02	53.94	57.03	60.29	63.74
Depreciation	Rs Lakh		69.96	69.96	69.96	69.96	69.96	69.96	69.96	69.96	69.96	69.96	69.96	69.96	18.48	18.48	18.48	18.48	18.48	18.48	18.48	18.48	18.48	18.48	18.48	18.48	18.48
Interest on term loan	Rs Lakh		102.24	93.35	84.46	75.57	66.68	57.79	48.90	40.01	31.12	22.23	13.34	4.45	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 C	Rs Lakh		6.40	6.25	6.11	5.96	5.82	5.69	5.56	5.43	5.31	5.19	5.40	5.29	4.12	4.23	4.33	4.44	4.56	4.69	4.82	4.96	5.11	5.27	5.44	5.61	5.80
Return on Equity	Rs Lakh		72.00	72.00	72.00	72.00	72.00	72.00	72.00	72.00	72.00	72.00	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40	86.40
Total Fixed Cost	**Rs Lakh**		**267.37**	**259.29**	**251.27**	**243.30**	**235.40**	**227.58**	**219.83**	**212.15**	**204.56**	**197.05**	**204.35**	**197.02**	**141.69**	**143.67**	**145.75**	**147.95**	**150.28**	**152.75**	**155.35**	**158.10**	**161.01**	**164.09**	**167.35**	**170.78**	**174.42**

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	**Unit**	**Levellised**	**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	**1.48**	0.92	0.98	1.03	1.09	1.15	1.22	1.29	1.36	1.44	1.53	1.61	1.71	1.80	1.91	2.02	2.13	2.25	2.38	2.52	2.66	2.81	2.97	3.15	3.32	3.52
Depreciation	Rs/kWh	**3.19**	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Int. on term loan	Rs/kWh	**2.69**	5.64	5.15	4.66	4.17	3.68	3.19	2.70	2.21	1.72	1.23	0.74	0.25	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 capita	Rs/kWh	**0.31**	0.35	0.34	0.34	0.33	0.32	0.31	0.31	0.30	0.29	0.29	0.30	0.29	0.23	0.23	0.24	0.24	0.25	0.26	0.27	0.27	0.28	0.29	0.30	0.31	0.32
RoE	Rs/kWh	**4.22**	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	3.97	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76	4.76
Total COG	**Rs/kWh**	**11.88**	**14.74**	**14.30**	**13.86**	**13.42**	**12.98**	**12.55**	**12.12**	**11.70**	**11.28**	**10.87**	**11.27**	**10.87**	**7.81**	**7.92**	**8.04**	**8.16**	**8.29**	**8.42**	**8.57**	**8.72**	**8.88**	**9.05**	**9.23**	**9.42**	**9.62**

Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146	0.132	0.119	0.107	0.097	0.088
Levellised Tariff	**Rs/Unit**	**11.88**																									

Determination of Accelerated Depreciation for Solar thermal power projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Additional depriciation	20.00%
Income Tax (Normal Rates)	33.99%
Capital Cost	1200.00

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	31.68	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	63.36	34.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Accelrated Deprn.	Rs Lakh	600.00	540.00	48.00	9.60	1.92	0.38	0.08	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Depreciation Benefit	Rs Lakh	568.32	476.64	-15.36	-53.76	-61.44	-62.98	-63.28	-63.34	-63.36	-63.36	-63.36	-63.36	-63.36	-63.36	-63.36	-63.36	-63.36	-34.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	193.17	162.01	-5.22	-18.27	-20.88	-21.41	-21.51	-21.53	-21.54	-21.54	-21.54	-21.54	-21.54	-21.54	-21.54	-21.54	-21.54	-11.75	0.00	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	1.81
Per unit benefit	Rs/Unit	21.31	8.93	-0.29	-1.01	-1.15	-1.18	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.63	0.57	0.52	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.10

Tax Benefit Levellised	Rs Lakh	21.21
Electricity Generation (Levellised)	MU	1.72
Levellised benefit	**Rs/Unit**	**1.23**

Annexure-6

ASSUMPTION FOR BIOMASS GASIFIER POWER PROJECT PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Assumptn
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption during stability	%	10%
			Auxiliary consumption after stability	%	10%
			PLF(Stability for 6 months)	%	85%
			PLF(during first year after stability)	%	85%
			PLF(secondary year onwards)	%	85%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost		
			1)Before subsidy	Rs. Lacs/MW	577.118
			2)After subsidy		427.118
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	298.983
			Total Equity Amount	Rs. Lacs	128.135
		Debt component	Loan Amount	Rs. Lacs	298.983
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	128.135
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.00%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th years onwards	%	2.51%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Biomass Stock		Months	4
		Interest On Working Capital		%	13.20%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	Kg/kwh	1.25
			Base Price	Rs/T	2942.54
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	44.71
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	42.29

Determination of Tariff Component:Biomass Gasifier Power Projects																						
Units Generation	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Variable Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Biomass Cost	Rs lakh		273.88	287.57	301.95	317.05	332.90	349.54	367.02	385.37	404.64	424.87	446.12	468.42	491.84	516.43	542.26	569.37	597.84	627.73	659.12	692.07
Fixed Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
O&M Expenses	Rs Lakh		44.71	47.27	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.14	92.12	97.39	102.96	108.85	115.08	121.66	128.62
Depreciation	Rs Lakh		24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	24.90	10.72	10.72	10.72	10.72	10.72	10.72	10.72	10.72
Interest on term loan	Rs Lakh		36.39	33.22	30.06	26.90	23.73	20.57	17.40	14.24	11.07	7.91	4.75	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working C	Rs Lakh		22.85	23.84	24.89	25.99	27.15	28.38	29.67	31.03	32.46	33.97	35.67	37.35	38.83	40.76	42.78	44.92	47.15	49.51	51.98	54.58
Return on Equity	Rs Lakh		25.63	25.63	25.63	25.63	25.63	25.63	25.63	25.63	25.63	25.63	30.75	30.75	30.75	30.75	30.75	30.75	30.75	30.75	30.75	30.75
Total Fixed Cost	**Rs Lakh**		**154.48**	**154.86**	**155.45**	**156.25**	**157.26**	**158.52**	**160.02**	**161.79**	**163.82**	**166.16**	**174.04**	**177.01**	**167.44**	**174.35**	**181.64**	**189.35**	**197.47**	**206.06**	**215.11**	**224.67**
Levallised tariff corresponding to Useful life																						
Per Unit Cost of Generation	**Unit**	**Levellised**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Variable COG	Rs/kWh	**5.76**	4.09	4.29	4.51	4.73	4.97	5.22	5.48	5.75	6.04	6.34	6.66	6.99	7.34	7.71	8.09	8.50	8.92	9.37	9.84	10.33
O&M expn	Rs/kWh	**0.99**	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72	1.82	1.92
Depreciation	Rs/kWh	**0.33**	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Int. on term loan	Rs/kWh	**0.27**	0.54	0.50	0.45	0.40	0.35	0.31	0.26	0.21	0.17	0.12	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capita	Rs/kWh	**0.47**	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.51	0.53	0.56	0.58	0.61	0.64	0.67	0.70	0.74	0.78	0.81
RoE	Rs/kWh	**0.40**	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Total COG	**Rs/kWh**	**8.23**	**6.39**	**6.60**	**6.83**	**7.06**	**7.31**	**7.58**	**7.86**	**8.16**	**8.48**	**8.82**	**9.25**	**9.63**	**9.84**	**10.31**	**10.80**	**11.32**	**11.87**	**12.44**	**13.05**	**13.68**
Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146
Variable Cost(FY 2014-15)	Rs/Unit	4.09																				
Levellised FixedTariff	Rs/Unit	2.47																				
Applicable Tariff(FY2014-15)	**Rs/Unit**	**6.55**																				

Determination of Accelerated Depreciation for Biomass Gasifier Power Project																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	427.118																				
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	11.28	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	12.30	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Accelrated Deprn.	Rs Lakh	213.56	192.20	17.08	3.42	0.68	0.14	0.03	0.01	0	0	0	0	0	0	0	0	0	0	0	0
Net Depreciation Benefit	Rs Lakh	202.28	169.65	-5.47	-19.13	-21.87	-22.42	-22.52	-22.55	-22.55	-22.55	-22.55	-22.55	-22.55	-22.55	-22.55	-22.55	-22.55	-12.30	0.00	0.00
Tax Benefit	Rs Lakh	68.76	57.66	-1.86	-6.50	-7.43	-7.62	-7.66	-7.66	-7.67	-7.67	-7.67	-7.67	-7.67	-7.67	-7.67	-7.67	-7.67	-4.18	0.00	0.00
Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Per unit benefit	Rs/Unit	2.05	0.86	-0.03	-0.10	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.63	0.57	0.52	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.23	0.21	0.19	0.17	0.15
Tax Benefit Levellised	Rs Lakh	8.03																			
Electricity Generation (Levellised)	MU	6.35																			
Levellised benefit	**Rs/Unit**	**0.13**																			

Annexure-7

ASSUMPTION FOR BIOGAS BASED POWER PROJECT PARAMETERS

Sl. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Assumptn
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary consumption during stability	%	12%
			Auxiliary consumption after stability	%	12%
			PLF(Stability for 6 months)	%	90%
			PLF(during first year after stability)	%	90%
			PLF(secondary year onwards)	%	90%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost		
			1)Before subsidy	Rs. Lacs/MW	1154.236
			2)After subsidy		854.236
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs.Lacs	597.965
			Total Equity Amount	Rs. Lacs	256.271
		Debt component	Loan Amount	Rs. Lacs	597.965
			Moratorium Period	Years	0
			Repayment Period (incld. Morat.period)	Years	12
			Interest Rate	%	12.70%
		Equity Component	Equity amount	Rs. Lacs	256.271
			Return on Equity for first 10 years	% p.a	20.00%
			Return on Equity after 10 years	%	24.00%
			Weighted average of ROE	%	22.00%
			Discount Rate(equiv. to WACC)	%	10.67%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	33.99%
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th years onwards	%	2.51%
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15%
		Receivables for Debtors		Months	2
		For Variable Charges			
		Biomass Stock		Months	4
		Interest On Working Capital		%	13.20%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	Kg/kwh	3
			Base Price	Rs/T	1176.54
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	O & M Expenses (2014-15)		Rs. Lacs	44.71
		O & M Expenses Escalation		%	5.72%
		O & M Expenses(2013 – 14)		Rs. Lacs	42.29

Determination of Tariff Component:Biogas Based Power Projects																						
Units Generation	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88
Net Generation	MU		6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94
Variable Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Biogas Cost	Rs lakh		278.28	292.19	306.80	322.14	338.25	355.16	372.92	391.56	411.14	431.70	453.28	475.95	499.74	524.73	550.97	578.52	607.44	637.81	669.70	703.19
Fixed Cost	**Unit**	**Year--->**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
O&M Expenses	Rs Lakh		44.71	47.27	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.14	92.12	97.39	102.96	108.85	115.08	121.66	128.62
Depreciation	Rs Lakh		49.80	49.80	49.80	49.80	49.80	49.80	49.80	49.80	49.80	49.80	49.80	49.80	21.44	21.44	21.44	21.44	21.44	21.44	21.44	21.44
Interest on term loan	Rs Lakh		72.78	66.45	60.12	53.79	47.46	41.14	34.81	28.48	22.15	15.82	9.49	3.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working C	Rs Lakh		25.10	26.04	27.03	28.07	29.18	30.35	31.59	32.90	34.28	35.74	37.52	39.14	40.30	42.25	44.31	46.47	48.74	51.12	53.63	56.26
Return on Equity	Rs Lakh		51.25	51.25	51.25	51.25	51.25	51.25	51.25	51.25	51.25	51.25	61.50	61.50	61.50	61.50	61.50	61.50	61.50	61.50	61.50	61.50
Total Fixed Cost	**Rs Lakh**		**243.64**	**240.81**	**238.17**	**235.74**	**233.54**	**231.58**	**229.87**	**228.42**	**227.24**	**226.36**	**236.28**	**236.03**	**210.38**	**217.31**	**224.64**	**232.37**	**240.53**	**249.14**	**258.23**	**267.82**
Levallised tariff corresponding to Useful life																						
Per Unit Cost of Generation	**Unit**	**Levellised**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Variable COG	Rs/kWh	**5.66**	4.01	4.21	4.42	4.64	4.88	5.12	5.38	5.64	5.93	6.22	6.53	6.86	7.20	7.56	7.94	8.34	8.76	9.19	9.65	10.14
O&M expn	Rs/kWh	**0.96**	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
Depreciation	Rs/kWh	**0.64**	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Int. on term loan	Rs/kWh	**0.53**	1.05	0.96	0.87	0.78	0.68	0.59	0.50	0.41	0.32	0.23	0.14	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capita	Rs/kWh	**0.48**	0.36	0.38	0.39	0.40	0.42	0.44	0.46	0.47	0.49	0.52	0.54	0.56	0.58	0.61	0.64	0.67	0.70	0.74	0.77	0.81
RoE	Rs/kWh	**0.78**	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Total COG	**Rs/kWh**	**9.04**	**7.52**	**7.68**	**7.85**	**8.04**	**8.24**	**8.46**	**8.69**	**8.94**	**9.20**	**9.48**	**9.94**	**10.26**	**10.24**	**10.70**	**11.18**	**11.69**	**12.22**	**12.78**	**13.37**	**14.00**
Discount Factor			1.000	0.904	0.816	0.738	0.667	0.602	0.544	0.492	0.444	0.402	0.363	0.328	0.296	0.268	0.242	0.219	0.197	0.178	0.161	0.146
Variable Cost (FY 2014-15)	Rs/Unit	4.01																				
Levellised Fixed Tariff	Rs/Unit	3.39																				
Applicable Tariff (FY2014-15)	**Rs/Unit**	**7.40**																				

Determination of Accelerated Depreciation for Biogas Based Power Project																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Additional depriciation	20.00%																				
Income Tax (Normal Rates)	33.99%																				
Capital Cost	854.236																				
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	22.55	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	45.10	24.60	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	50.00%	5.00%	1.00%	0.20%	0.04%	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%
Allowed during the year	%	50%	45.00%	4.00%	0.80%	0.16%	0.03%	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%
Closing	%	50%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Accelrated Deprn.	Rs Lakh	427.12	384.41	34.17	6.83	1.37	0.27	0.05	0.01	0	0	0	0	0	0	0	0	0	0	0	0
Net Depreciation Benefit	Rs Lakh	404.57	339.30	-10.93	-38.27	-43.74	-44.83	-45.05	-45.09	-45.10	-45.10	-45.10	-45.10	-45.10	-45.10	-45.10	-45.10	-45.10	-24.60	0.00	0.00
Tax Benefit	Rs Lakh	137.51	115.33	-3.72	-13.01	-14.87	-15.24	-15.31	-15.33	-15.33	-15.33	-15.33	-15.33	-15.33	-15.33	-15.33	-15.33	-15.33	-8.36	0.00	0.00
Energy generation	MU	3.47	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94
Per unit benefit	Rs/Unit	3.96	1.66	-0.05	-0.19	-0.21	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.22	-0.12	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.63	0.57	0.52	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.23	0.21	0.19	0.17	0.15
Tax Benefit Levellised	Rs Lakh	16.06																			
Electricity Generation (Levellised)	MU	6.57																			
Levellised benefit	**Rs/Unit**	**0.24**																			