

BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS NO. 33-36, SECTOR-4, PANCHKULA-134113, HARYANA

Date of Hearing : 03.10.2017

IN THE MATTER OF

- I) Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2017-Suo Motu.**
- II) Petition filed by Amplus Infrastructure developers Pvt. Ltd. seeking implementation of exemption of from/ waiver of wheeling charges, cross-subsidy charges, transmission and distribution charges and surcharge for ground mounted and rooftop solar power projects (Case No. HERC/PRO-46 of 2017).**
- III) Petition filed by Haryana Power Purchase Centre (HPPC) on behalf of the Haryana Distribution Licensees under section 86(1)(e) of the Electricity Act, 2003 read with sub-regulation (2) of Regulation 67 of the Haryana Electricity Regulatory Commission (Terms and Conditions of Determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2010 and regulation 23 of the Haryana Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 seeking relaxation of Renewable Purchase Obligation (Case No. HERC/PRO-67 of 2017).**

Present:

Shri Rajat Khanna

Shri Alope Verma,

Shri R.K. Arora, Expert, REMCL

Shri Devender Singh

Shri Rajesh Sharma, Escorts Plant 2&3
Shri A.P. Singh, AEE / HPPC
Dr. B.S. Yadav, NSEFI
Shri Dalbir Singh, XEN / Commercial / HPPC
Shri Anish Kumar, XEN / RA / DHBVN
Shri Amarjit Singh, AVP, Shree Cement Ltd.
Shri Chetan Rawat, DGM, Shree Cement Ltd.
Shri Ravi Sinha, Manager / RA / Ecogreen Energy Pvt. Ltd.
Shri J.S. Kohli,
Shri R.S. Poonia, PO
Shri Bala Kishore, AVP
Shri U.K. Agarwal, SE / HPPC
Smt. Seema Sidana, AE / HPPC
Shri Chirag Sachdeva, PTC India Ltd.
Shri Neeraj Sharma, SE / RA
Shri Vedant Sonkhiya
Shri Satprakash
Shri Vijay Jindal,
Shri Rajiv Mishra, XEN / HPPC
Shri Shantanu
Shri Guarav / Saurabh Saini
Shri R.C. Taneja
Shri Gaurav Gupta, XEN/ HPPC
Shri Varun Kumar,
Shri Aditya,
Shri Raj Kumar, Director / Mor Bio Energy Pvt. Ltd, Jind
Shri Anuj Raj Khatri, Advocate , Sonapat
Shri Ajay Padya, Starwire, Delhi
Shri Gaurav Chhabra, ILFS, Delhi
Shri Pravin Prabhakar,
Shri Aditya Pandey,

Shri Ankur , Consultant

Quorum

Shri Jagjeet Singh, Chairman

Shri M.S. Puri, Member

Shri Debasish Majumdar, Member

ORDER

Brief Background of the Case

1. All the aforesaid matters brought before this Commission by the parties including Suo Motu relates to amendment and / or modification of Haryana Electricity Regulatory Commission (Terms and Conditions of Determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2010 and its subsequent amendments (hereinafter referred to as RE Regulations, 2010). Hence the Commission has considered it appropriate to dispose of all these petitions vide the present common order.
2. Section 61 read with Section 181 (2) of the Electricity Act, 2003 casts statutory obligation on the State Commissions to promote co-generation and generation of electricity from renewable sources of energy and to make Regulations by way of notifications to carry out the provisions of the Act.
3. In exercise of the powers conferred on it under Section 181 of the Act and all other powers enabling it in this behalf, the Commission had notified the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulation, 2010 which came into effect from the date of its notification in the Haryana Government Gazette i.e. 3.02.2011. Subsequently some of the provisions of the said Regulations were amended / new clauses added by way of 1st Amendment dated 5th September, 2011; 2nd

Amendment dated 25th November, 2011, 3rd Amendment dated 15th July, 2014 ; 4th Amendment dated 12th August, 2015 and 5th Amendment dated 5th October, 2016, after following the due process prescribed for the purpose.

Regulation 4 of the Principal Regulations i.e. Haryana Electricity Regulatory Commission (Terms and conditions for determination of tariff for renewable energy sources, renewable purchase obligations and renewable energy certificates) Regulations, 2010, provides that revision of the Regulations is to be undertaken six months prior to the end of the first Control Period (emphasis supplied). Further, the Control Period or Review Period is defined under sub-regulation (9) of Regulation 2 of the Principal Regulations i.e. from FY 2010-11 to FY 2012-13.

In view of the above the Commission had vide suo motu proceedings amended the regulation 4 and had determined the 2nd Control Period of four years of which the first year was to be the FY 2014-15.

4. The Commission, after hearing the Interveners on 08.09.2016, had passed an Order dated 28.09.2016. The relevant part of the said Order is as under:-

“As large numbers of issues were raised regarding RPO trajectory, wheeling/banking, benchmarking of capital cost, escalation factor, discounting rate, solar power projects etc. which is likely to take some more time to examine and finalize. Hence, the present Order is limited to finalization of the proposed draft Regulations pertaining to Waste to Energy Projects. Accordingly, the Commission, in the present Order, has dealt with the comments/objections/suggestions germane to the Waste to Energy (WtE) Regulations as under:-“

Accordingly, the Commission had finalized and subsequently notified the norms / Regulations for Municipal Solid Waste ((WtE) Regulations vide the ibid Order by enacting 5th Amendment to the HERC RE Regulations.

5. The Commission, in the present order, has dealt with the regulations / parameters for the RE Projects to be commissioned in Haryana other than processed Waste to Energy Projects. As during the earlier proceedings and thereafter a large number of objections / suggestions were received from the stakeholders, the Commission considered it appropriate to recast the HERC RE Regulations including consolidation of various amendments up to the fifth amendment of the RE Regulations, 2010 and also after taking into account the CERC (Terms and Conditions for Tariff determination from Renewable Sources) Regulations, 2017 dated 16th February, 2017.
6. In view of the above, the Commission had prepared discussion paper for public / Stakeholders consultations based on the feedback received on the discussion paper, the HERC RE Regulations, 2017 is being given a final shape by the Commission for notification.
7. The ibid discussion paper was placed in the public domain. Accordingly public notice inviting comments / objections, on or before 11.08.2017, was inserted including the date of hearing i.e. 11.09.2017 in the Times of India dated 24.05.2017 and Dainik Bhaskar dated 25.05.2017. Subsequently, vide public notice inserted in the Times of India dated 08.09.2017 and Dainik Bhaskar dated 08.09.2017 the public hearing was re-scheduled to 3.10.2017.
8. As the discussion paper was made available in the public domain and quite a few stakeholders filed their comments / objections / suggestions, the content of the said discussion paper, for the sake of brevity, is not being re-produced here. The issues raised by the interveners' vis-à-vis the provisions of the discussion paper shall be dealt by the Commission at the relevant paragraph of the present Order.
9. **Case No. HERC/PRO-46 of 2017 (M/s Amplus Infrastructure Developers Pvt. Ltd.)**

That the Renewable Energy Department, Government of Haryana notified the Haryana Solar Power Policy, 2016 dated 14.03.2016 to promote generation of

power from solar energy. For giving effect to the said policy necessary amendments, rules and regulations, wherever necessary were to be undertaken by the department concerned.

That the exemptions and waivers notified in the aforesaid policy have not fructified as these have not been implemented by any order of the HERC.

That the Appellant, on 30.01.2017 wrote to the HERC seeking notification for the exemption /waiver of the transmission charges, wheeling charges, cross-subsidy charges and surcharges and notification of the wheeling and banking arrangement. However, no steps have been taken on the basis of the Appellant's letter and the exemption / waivers have not been notified.

That the petitioner company has also signed a MoU dated 03.03.2016 with the Haryana Government for setting up Distributed Solar Power Projects and have invested Rs. 1000 Crore. Which is likely to generate employment for 500 people. The petitioner has also given a commitment of completing the project by end of 2018. However, in the absence of any order passed by the Commission with regard to the implementation of the exemption and waivers, the investment made has become stranded which is against the purpose and interest as envisaged

10. HPPC (Case No. HERC/PRO-67 of 2017) seeking relaxation of RPO

That the Ministry of Power, Government of India, had notified Tariff Policy on 28.01.2016. The said policy gives discretion to the SERCs to reserve a minimum percentage for purchase of Solar Energy in such a manner that it reaches 8% of total consumption of energy, excluding Hydro Power, by March, 2022. Further, vide notification dated 23/03/2016 – R&R dated 22.07.2016 long term growth trajectory of RPO for non solar as well as solar for three years from 2016-17 to 2018-19 was specified as under:-

Long Term Trajectory	2016-17	2017-18	2018-19
Non – Solar (%)	8.75	9.50	10.25
Solar (%)	2.75	4.75	6.75

Total (%)	11.50	14.25	17.00
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That Clause 5 of the said order gives discretion to the SERCs to notify RPO for their respective states in line with aforesaid uniform RPO trajectory.

That in the draft discussion paper, 2017, the Commission has proposed to revise the minimum RPO of total consumption (excluding Hydro) manifolds. The said quantum is far higher than the existing / planned renewable power capacity within the State. Also very little potential for hydro, wind, biomass and availability of waste land exists in Haryana. Hence, it has been submitted that increase in RPO is not feasible. Further, RE Power is costlier than conventional power and the APPC is also lower than the cost of RE Power. Procurement of solar power during off-peak day hours will increase the gap between demand-supply. The surplus solar power will force back down the cheaper power leading to loss to the State Utilities and in turn burden the electricity consumers of Haryana. HPPC provided a list of installed capacity in the State of Haryana from the FY 2011-12 to the FY 2016-17 from all sources. The same increased from 117.3 MW in the FY 2011-12 to about 266.40 MW in the FY 2016-17.

That in the case of solar power, with the existing installed capacity of 124.8 MW, maximum 207 MUs can be generated @ 19% CUF against the target of 625 MUs and 800 MUs in the FY 2017-18 and the FY 2018-19 respectively.

That in the case of non-solar power, with the existing installed capacity of 141.6 MW, maximum 620 MUs can be generated @ 50% PLF against the target of 1375 MUs and 1601 MUs in the FY 2017-18 and the FY 2018-19 respectively.

That as a matter of record, the Discoms, despite all possible efforts, have not been able to achieve the RPO targets as per the existing Regulations.

That as far as purchase of REC is concerned, Steering Committee for Power Planning (SCPP) in its various meetings deliberated and decided as under:

“Regarding purchase of REC, the Committee was of the view that the cost of REC, if purchased, would be passed on to the consumers in the State without actually purchasing any power. This would amount to unnecessarily burdening the consumers without any corresponding benefits. Therefore, it was decided that instead of purchasing RECs, HPPC should go for purchasing RE Power at reasonable rate for fulfilling its RPO obligations”.

In the light of the above submissions, HPPC has prayed that the RPO targets for the current and upcoming years may be relaxed or pass any other such orders as the Commission may deem fit and proper in the facts and circumstances of the case and in the interest of justice and fair play.

11. In response to the public notice issued by the Commission seeking objections / comments from the stakeholders on the amendments of RE Regulations, the following parties filed their written objections / comments.

- i. National Solar Energy Federation of India,
- ii. Director / HAREDA,
- iii. IL&FS Energy Development Company Limited,
- iv. PTC India,
- v. Clean Max Enviro Energy Solutions Pvt. Ltd.
- vi. RSR Agencies Pvt. Ltd.
- vii. M/s Rays Power Experts Pvt. Ltd.
- viii. Star Wire (India) Vidyut Pvt. Ltd.
- ix. Amplus Energy Solutions Private Ltd.
- x. Distributed Solar Power Association,
- xi. Faridabad Industries Association,
- xii. Open Access Users Association,
- xiii. Gurgaon Industrial Association,
- xiv. Sh. Rohit Kapoor, ASK Automotives Ltd.
- xv. Bharti Airtel Ltd.
- xvi. Subros Limited,
- xvii. Honda Motorcycle and Scooter India Pvt. Ltd.
- xviii. Ultra Tech Cement Ltd.
- xvix. Star Wire (India) Ltd.
- xx. Sh. Kashmir Singh Saini, SSE 66 kV Substation HVPNL, Barwala,
- xxi. Haryana Power Generation Company (HPGCL), Panchkula,
- xxii. SBI Capital Markets Ltd.,
- xxiii. Hero Future Agencies,

xxiv. Re New Power Ventures Pvt. Ltd,
xxv. Shree Cement Ltd.
xxvi. Adani Green Energy Limited,
xxvii. Ecogreen Energy Power Ltd,
xxviii. Haryana Vidyut Prasaran Nigam Ltd (HVPNL)
xxiv. Shri Naresh Kumar Phogat, Advocate, Gurugram (email 2620 / FTMS dated 30.10.2017).

12. The objections / comments filed by the Interveners on the draft discussions paper and Commission's response to the same is presented below:-

1. Chapter -1 Clause no 1 (3): Comments filed by Shree Cement Ltd.

As per HERC Draft Regulation: - These regulations shall extend to all the renewable energy projects developer and obligated entities in the State of Haryana. The word "...Project Developer" shall be deleted

The Commission has considered the above and finds some merit in the suggestion. Hence, this Clause shall read as under:-

"These Regulations shall extend to all grid connected renewable energy projects and obligated entities in the State of Haryana".

2. Clause no 2 (15) Installed capacity

As per HERC Draft Regulation: - 'Installed capacity' or 'IC' means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals);

Comments filed by Shree Cement Ltd.

'Installed capacity' or 'IC' means..... at the generator terminals); The same can be either in MW or MVA. For conversion of MW in MVA unity power factor shall be considered.

The Commission has considered the above suggestion and accordingly the said Clause shall read as under:-

'Installed capacity' or 'IC' means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals / Solar Inverter in MW / MVA), as the case may be;

3. Clause no 2 (16) Inter Connection Point

As per HERC Draft Regulation:- "Inter Connection Point shall mean interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be.

i) Comments filed by Shree Cement Ltd

'Inter-connection Point' shall.....as the case may be, ***and in case of a co-located plant (i.e. where the power plant and the consumption plant are located in the same factory premises) interface point of that facility with the transmission or distribution system.***

The Commission has considered the above suggestions / comments and observes that in order to remove any scope of ambiguity the said clause shall read as under:-

'Inter-connection Point' shall mean interface point of renewable energy generating facility including Waste to Electricity projects with the transmission system or distribution system,

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

ii. in relation to small hydro power, biomass power, waste to energy projects and non fossil fuel based cogeneration power projects and Solar Thermal Power Projects the, inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;

Comments filed by Ecogreen Energy Private Ltd:-

Kindly include Waste to Energy project as well under the definition.

The Commission has considered the above and observes that Waste to Energy Projects have been already included in the definition as well as at other relevant places in these Regulations.

4. Clause no (17) Infirm Power:-

That as per HERC Regulation:-

‘Infirm power’ means the power generated from renewable sources, the hourly variation of which is dependent upon nature’s phenomenon like sun, cloud, wind, etc., that cannot be accurately predicted;

i) Comments filed by Ecogreen Energy Private Ltd

As per CERC Regulation:- Infirm Power means the power generated from renewable sources, the hourly variation of which is dependent upon nature's phenomenon like sun, cloud, wind, etc., that cannot be accurately predicted;

Proposed Amendment:-

In case of thermal project, infirm power generally be categorized as the power which is being injected in to the grid before CoD during trial operation of the project where infirm power get paid as per UI rate. It may kindly be examine and modified accordingly.

The Commission has considered the above comments as well as proposed amendment and observes that infirm power for the purpose of these Regulations as defined in the discussion paper is verbatim that of CERC. The concept of infirm power as suggested by the Intervener may be correct for conventional fuel based large power plants where due to various reasons there could be substantial lag between ‘trial operation’

and actual CoD and the need for accounting thereto for such infirm power. However, in the case of RE Power Projects ‘infirm’ power is dependent on its predictability. Hence, on this issue, the Commission is of the considered view that the definition, as per the discussion paper, is appropriate.

However, to review any scope of confusion the “infirm” power appearing in the draft Regulations shall be substituted by “non firm” power.

5. Clause no 2 (22) Obligated Entity:-

As per HERC Draft Regulation:-

‘Obligated entity’ means an entity in the State of Haryana which is mandated to fulfill renewable purchase obligation under these Regulations and include the following:-

- i) Distribution licensee(s)
- ii) Open Access consumers including short term open access consumers, and
- iii) Conventional fuel based Captive Power Plant of 5 MW and above.

Comments filed by Shree Cement Ltd

That the draft proposes to include “Short Term Open Access Consumers” under obligated entity. It is submitted that status quo should be maintained and STOA consumers should not be made part of ‘Obligated Entity’ and should be exempted from RPO requirement.

The Commission has considered the above comments / suggestions and is of the considered view that the Commission is under statutory obligation to promote RE Power project and RPO / REC mechanism is one of the tools available for the purpose. Hence, enlarging the ambit of

‘obligated entity’ by including STOA has been considered appropriate and the same shall be retained. Additionally, the Commission observes that the short term embedded open access consumers are also using the same grid to bring power from outside rather than sourcing their entire electricity requirements from the Distribution licensees in Haryana. This creates some imbalance in the revenue accruing to the Discoms from sale of power. As the tariff for such consumers is a two part tariff comprising of demand charge and energy charge, the demand charge or the fixed charge in the tariff design as it exists today is not fully cost reflective i.e. it does not cover the entire fixed cost borne by the Discoms, hence, a part of the fixed cost is reflected in the energy charge as well. As the short term open access consumers pare down their energy demand from the Discoms, a part of the demand charge remains un-collected. Hence, as the energy consumption, either from the Discoms or through short term open access, happens in the State, the Commission has considered it appropriate to include STOA as obligated entity for the purpose of these Regulations. Further, the words “conventional fuel” shall be replaced by “Fossil Fuel” including Fossil Fuel based co-generation projects.

6. Clause no 2 (27, 28) Renewable Energy and Renewable Energy Power Plants:

As per HERC Draft Regulation:

(27) ‘Renewable Energy’ means the grid quality electricity generated from renewable energy sources;

(28) ‘Renewable Energy Power Plants’ means the power plants other than the conventional power plants generating grid quality electricity from renewable energy sources;

Comments filed by Shree Cement Ltd

It should be clarified that Renewable Energy Power Plants generating good quality electricity but not connected with grid, directly or indirectly, are not excluded in the definition.

The Commission has considered the above suggestions and observes that all such sources as approved by the MNRE qualify as Renewable Energy Sources. Hence, no further clarification is required in the matter. Renewable Energy Power Plants shall also be construed accordingly except the word “grid quality” appearing in the definition shall be deleted.

7. Clause no 2 (29) Renewable Energy Sources and Sec. 3 (e) Eligibility Criterion_(Shree Cements Ltd.)

As per HERC Draft Regulation:

(29) ‘Renewable Energy Sources’ means renewable sources such as small hydro, wind, solar including its integration with combined cycle, biomass, bio fuel cogeneration, urban or municipal waste and other such sources as approved by the MNRE;

3(e) Non-fossil fuel based co-generation project: The project shall qualify to be termed as a non-fossil fuel based co-generation project, if it is using new plant and machinery and is in accordance with the definition and also meets the qualifying requirement outlined below:-

Topping cycle mode of co-generation – Any facility that uses non-fossil fuel input for the power generation and also utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously.

Provided that for the co-generation facility to qualify under topping cycle mode, the sum of useful power output and one half the useful thermal output be greater than 45% of the facility’s energy consumption, during season”.

Explanation. - For the purposes of this Clause,

- (i) 'Useful power output' is the gross electrical output from the generator. There will be an auxiliary consumption in the cogeneration plant itself (e.g. the boiler feed pump and the FD/ID fans). In order to compute the net power output it would be necessary to subtract the auxiliary consumption from the gross output. For simplicity of calculation, the useful power output is defined as the gross electricity (kWh) output from the generator.
- (ii) 'Useful Thermal Output' is the useful heat (steam) that is provided to the process by the cogeneration facility.
- (iii) 'Energy Consumption' of the facility is the useful energy input that is supplied by the fuel (normally bagasse or other such biomass fuel).

Comments filed by Shree Cement Ltd.

The proposed definition and eligibility criteria considers only the bio fuel / non-fossils fuel based cogeneration plants as renewable energy sources and excludes other form of cogeneration such as waste heat recovery Power Plants. It is submitted that such discrimination of cogeneration based on input fuel is against Electricity Act. Cogeneration as defined in Section 2 (12) of the Act means a process which simultaneously produces two or more forms of useful energy (including electricity). Further in the Section 86 (1)(e) of the Act, which mandates state commissions to promote co-generation and generation of electricity from renewable sources, the expression 'Co-generation' nowhere means cogeneration from renewable sources alone. This is a settled position of law and has been vindicated in various APTEL judgments that cogeneration cannot be discriminated based on input fuel and all types of cogeneration shall be treated at par with other renewable sources such as Wind, Solar, Small Hydro etc.

Further is submitted that the National Tariff Policy 2016, which differentiate between cogeneration based on RE and Non-RE source is subordinate legislature than EA 2003. The necessary amendments in the Act are still pending for consideration with the parliament. Therefore, NTP 2016 cannot form basis for such discrimination among cogeneration unless necessary amendments are being carried out in the EA 2003. It is therefore requested to include all kinds of cogeneration including the Waste Heat Recovery generators using conventional fuel under Renewable Energy Sources.

The Commission has considered the above objection at length and observes as under:-

Section 86(1)(e) of the Electricity Act, 2003 cast statutory obligation on the SERCs to “promote cogeneration and generation of electricity from renewable sources of energy ...” . Further, the Act defines “Cogeneration” as a process which simultaneously produces two or more forms of useful energy (including electricity). Thus, the Act, as such, does not distinguish between co-generation using renewable sources and other sources. However, the entire focus of the ibid section is promotion of renewable sources of energy. Resultantly, the National Tariff Policy 2016, as also pointed out by the Intervener, has differentiated between cogeneration based on RE and Non-RE sources. The Commission further observes that Section 86(4) of the Act clearly provides as under:-

“ (4) In discharge of its functions, the State Commission shall be guided by the National Electricity Policy, National Electricity Plan and tariff policy published under section 3.”

In line with the above, the draft discussion paper excludes other form of cogeneration as the objective is to promote electricity generation from renewable sources and the same shall be incorporated in the final Regulations. The said clause, with minor changes, shall read as under:-

(29) 'Renewable Energy Sources' means renewable sources such as small hydro, wind, solar including its integration with combined cycle biomass, bio fuel, non-fossil fuel based cogeneration, urban or municipal waste and other such sources as approved by the MNRE;

Regulation 3 (a to h) – Eligibility Criterion

The necessity of using new plant and machinery to be an eligible renewable energy power project should not be applicable for Captive Plants as well as for IPPs selling power in open market for the purpose of fulfilling RE obligations.

The Commission has considered the above objections and observes that it has some merit. Hence, it is clarified that the necessity of new plant and machinery shall be applicable where the DPR is approved by HAREDA and tariff is determined by the Commission under Section 62 of the Act as well as procurement of power by the Distribution Licensee(s) under Section 63 of the Act in case the bidding documents / guidelines so provides. The dispensation shall include the RE Projects where capital subsidy is claimed by the project developer.

Further, in the considered view of the Commission, the clause 3(e) including the explanation is redundant and hence the same shall be deleted.

8. Comments filed by the Director, HAREDA, Panchkula:-

Point No. 3(g) i.e. eligibility criteria

Biomass Gasifier Power Projects - The projects shall qualify as *gasifier (instead of Biogas)* based power project provided it is using new plant and machinery and having a grid connected system that uses 100% gas engine

with MNRE approved gasification technology and shall use non fossil fuel as approved by MNRE.

The Commission has considered the above objection / suggestion of HAREDA, accordingly the word “biogas” appearing herein shall be substituted by the word “gasifier”. Further, the word “syngas” shall be replaced with “syngas/producer gas”.

Clause no 4 Control Period or Review Period

As per HERC Draft Regulation

The Control Period or Review Period under these Regulations shall be of three years from the date of notification of these regulations up to 31st March, 2020.

Provided that the benchmark capital cost and tariff for Solar PV (rooftop, ground mounted, canal based / Water Works solar projects, wind power, small hydro shall be determined on case specific basis only. The Discoms/HAREDA may determine an indicative tariff, aligned to the prevailing market conditions, and submit the same for approval of the Commission prior to initiating competitive bidding / reverse bidding process.

Provided further that the tariff determined / discovered and approved by the Commission for the RE projects commissioned / to be commissioned during the Control Period, shall continue to be applicable for the entire duration of the Tariff Period as specified in Regulation 5 below.

Provided also that the revision in Regulations for next Control Period shall be undertaken at least six months prior to the end of the first Control Period and in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised

Regulations and the Control Period shall be deemed to have been extended up to the date of notification of the next Control Period.

Comments:-

- i) Control period should be for a minimum of three years from the date of notification of Regulations and should not be limited up to 31st March, 2020.

The Commission has perused the objections / suggestions on the “control period” and observes that in order to have simplicity and clarity of understanding vis-à-vis different applicable norms / parameters in these Regulations it is essential that the control period coincides with the financial year(s). However, as the notification of these Regulations have been delayed, the Commission has considered it appropriate to extend the control period i.e. 31st March, 2020 to 31st March, 2021. Hence, the control period shall be FY 2017-18 to the FY 2020-21.

ii) Comments filed by the Director, HAREDA, Panchkula:

It will not be possible for HAREDA/DISCOMs to determine an indicative tariff as per prevailing market conditions as the tariff varies from State to State depending upon the policies of these states i.e. provision for providing land, grid-connectivity mechanism, transmission/wheeling charges etc. and solar insolation level. Further, in case of rooftop, some states have notified the feed-in tariff which also varies from State to State.

Also, it has been mentioned that the HAREDA/DISCOMs have to submit the indicative tariff for approval to the Hon’ble Commission before competitive/reverse bidding process. So, the permission of the Hon’ble Commission has to be taken twice i.e. first for approval of indicative tariff and again for approval of tariff finalize through competitive bidding which is a time consuming process.

So, an indicative ceiling tariff may be notified by the Commission on yearly basis on which the bidding can be initiated.

The Commission has considered the above and is of the view that given the fast changing market conditions it would be appropriate for HAREDA to adopt reverse bidding with the lowest quoted tariff as the base tariff. Accordingly the regulations will be modified to this effect.

iii) Comments filed by the IL&FS Energy Development Company Limited, Gurgaon

The Commission has defined the control period of the applicability of this Energy (RE) sector in the state of Haryana, the Commission may consider to define a certain period (at least 15 years from commissioning) of applicability of the concessions/ exemptions for projects installed during the control period of these proposed Regulations.

National tariff Policy has emphasized on predictability and consistency in regulatory approach. Also, it should be noted that the Central Electricity Regulatory Commission (CERC) along with various State Electricity Regulatory Commission's (SERCs) defines the applicability of the concessions/exemptions on the RE projects for a certain period of time which is either the useful life of the project or at least 10-15 years of the useful life of the project.

Example:

Ministry of Power's amendment to Order No.23/12/2016-R&R dated 14th June, 2017:

"For the generation projects based on solar resources, no interstate transmission charges and losses will be charged for use of inter-state

transmission system (ISTS) network by such projects commissioned till 31.12.2019.

Provided that the above waiver will be available for a period of 25 years from the date of commissioning of such projects”

Also, the many SERCs eg. Andhra Pradesh, Karnataka, Rajasthan have defined the applicability of the concessions on open access charges for a certain period (usually 10 or 15 years) of the useful life of the project from the date of commercial operation. Karnataka Electricity Regulatory Commission vide Order dated August 18, 2014, in the matter of wheeling charges, Banking charges and Cross Subsidy Surcharge for Solar power has exempted open access charges for a period of 10 years for the projects installed during the control period. Relevant excerpts are extracted as below-

“1. All solar power generators in the State achieving commercial operation date (CoD) between 1st April 2013 and 31st March 2018 and selling power to consumers within the State on open access or wheeling shall be exempted from payment of wheeling and banking charges and cross subsidy surcharge for a period of ten years from the date of commissioning. This is also applicable for captive solar power plants for self-consumption within the State.”

Also, Andhra Pradesh Solar Policy 2015 provides concessions for 10 years of the useful period. Relevant excerpts are provided below for reference-

1. Operative Period

This policy shall come into operation with effect from the date of issuance and shall remain applicable for a period of five (5) years and/or shall remain in force till such time a new policy is issued. Solar Power Projects (SPP) that are commissioned during the operative period shall be

eligible for the incentives declared under this policy, for a period of ten (10) years from the date of commissioning”

It is hereby submitted that the investments in the RE space are driven by long term certainty in the period of concessions provided under the state policies for financial viability purposes. In case of regulatory uncertainty and uncertain future revenue stream, there is high perceived risk leading to the projects becoming non-bankable/ unviable. The uncertain revenue stream boosts investor's confidence with regard to the future investment plans as well. Hence to promote investments in renewable space in the state of Haryana which is the intent of the said regulations and Haryana Solar Power Policy 2016, the Honorable Commission is requested to provide clarity with regard to the applicability of exemptions/waivers either for useful life of the project or minimum 15 years from the CoD for regulatory certainty and stable revenue stream to the developers.

The Commission has considered the objections filed by the intervener including the practice adopted by different SERCs. This Commission is of the considered view that in order to make the Solar PV projects commissioned / to be commissioned during the control period as defined in these Regulations bankable and in order to provide certainty in the cash flow and project IRR, all the waivers / concessions provided in these Regulations shall correspond to the period of 10 years from the date of commissioning or date of notification of this regulation, whichever is later, for power generated and consumed within the State of Haryana. Provided the waivers / concessions shall be applicable till the aggregate installed capacity of 500MW of Solar PV Plants in the State is achieved, where after the Commission shall review the provision of waivers / concessions taking into account the financial impact on the Distribution Licensees. Further provided that waivers/ concessions once provided to any project shall be applicable for a period of 10 years, as above.

9. Comments filed by M/s PTC India Limited

The Control Period/ Review Period under these Regulations shall be of three years from the date of notification of these regulations up to 31st March, 2020. Further, for all the solar projects commissioned within during the control period of this regulation, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for third party sale / Open Access consumers for energy from such ground mounted / Roof Top Solar power projects for a period of 25 years from the date of commissioning of such project. This shall be subject to the condition that such solar project is commissioned within the control period of this regulation and the solar power is generated and utilized in the State of Haryana.

Rationale for the amendment:

Since this is the first time when HERC is coming up with such waiver of OA charges, the commission may allow a period of minimum of 3 years to the projects for commissioning to avail waiver of charges for entire life of the project. This is line with CERC ISTS charges and losses waiver, which provides a time bound window for solar projects to get commissioned for availing waiver of ISTS charges and losses for the entire 25 years period.

The Commission has already dealt with the aforesaid issues.

9. Comments filed by the Open Access Users Association

“Control Period or Review Period. -The Control Period or Review Period under these Regulations shall be of three years from the date of notification of these regulations up to 31stMarch, 2020.

Provided further that the tariff determined / discovered and approved by the Commission for the RE projects commissioned / to be commissioned during the Control Period, shall continue to be applicable for the entire duration of the Tariff Period.”

It is evident from the current stand of HERC on Feed in Tariff mechanism that there is a definitive long term tariff visibility for the projects which will be commissioned in the control period. This builds the confidence amongst developers and bankers on the certainty of revenues during the debt repayment period (10 years).

A similar long term visibility is also required for the projects which will be availing the open access benefits like Wheeling Charges, T & D charges, Cross-Subsidy Surcharge and Additional Surcharges. It is thus imperative for the commission to consider the firmness of the exemption for a longer duration.

Most states which are promoting solar energy in a major way have a fairly long and certain visibility of these exemptions. So for ensuring revenues and repayment of debt capital period (10-15 years) for projects being developed within the open access ambit, it is necessary to have the exemption extended upto 15 years.

Provisions on these lines are already in operation in other states, where the period of exemption from all open-access charges, is duly specified. Some of such provisions in vogue, in other States are as under:-

Rajasthan

As per RERC order 2014 for Solar and Wind Energy plants the Control Period Petition No.RERC 488/14 and 499/14 Investment Plan of Rajasthan Rajya Vidyut Prasaran Nigam Limited for FY 2015-16;(ii) ARR and determination of tariff for FY 2015-16 for recovery of Transmission and

SLDC Charges and True up of ARR for FY 2013-14 of Rajasthan Rajya Vidyut Prasaran Nigam Limited. dated 14.08.2015 under these Regulations is of five (5) financial years starting from April 1, 2014. "The State Government vide letter no F20. (6) energy 2010 Pt2. Dated 13.01.2015 has issued a policy directive to fix the transmission tariff of STU for solar power projects to be commissioned during the period 01.04.2015 to 31.03.2018 or for a capacity of 2000MW whichever is earlier, at a rate whichever is earlier at a rate equal to 50% of normal transmission tariff (Rs. Per MW) as applicable to conventional power for a period of 25 years for which no subsidy shall be provided by the state government. Therefore commission directs RVPN to charge the transmission tariff @equal to 50% of the rate specified at sr.no 5&6 above for such solar power projects which are covered under the above policy directive."

Punjab

As per Petition No. 56 of 2015 Date of Order: 15.01.2016 and PSERC (Terms and 12 Conditions for Intra-state Open Access) amendment of Regulations, 2011, The 21st January, 2016.

Provided that in case of wheeling of power for consumption within the State, generated from NRSE project in the State, achieving commercial operation (COD) from 09.07.2015 to 31.03.2017, no transmission and wheeling charges shall be leviable, irrespective of the distance, for a period of 10 (ten) years from its date of commercial operation (COD).

Karnataka

Vide order on Wheeling charges, Banking charges & Cross Subsidy Surcharge for Solar Power Generators dated 18th August 2014 of the KERC all solar power generators in the State achieving commercial operation date (CoD) between 1st April 2013 and 31st March 2018 and selling power to consumers within the State on open access, or wheeling

shall be exempted from payment of wheeling charges, banking charges and cross subsidy surcharge for a period of ten(10) years from the date of commissioning. This is also applicable for captive solar power plants for self-consumption within the State.

It is humbly suggested that appropriate stipulations may be put in place on the similar lines, for the State of Haryana also.

To conclude, the summary of submissions/suggestions made hereinabove is as under:-

- i) The term 'Banking' should be defined.
- ii) A framework governing monthly energy settlement and banking for solar generators and Open Access consumers should be put in place.
- iii) Renewable/ solar power generator be exempted from the applicability of scheduling & deviation mechanism and the consequent deviation penalties.
- iv) Appropriate provisions should be made in the regulations to incorporate exemption to solar generators and consumers from scheduling and contract demand reduction.
- v) It may also be clarified that Regulation 24 and 42 of the HERC (Terms and Conditions for grant of connectivity and open access for intra-State transmission and distribution system) Regulations, 2012, insofar as they relate to imposition of imbalance charges and contract demand reduction, shall have no application to the solar generators/traders and open access consumers of solar power.
- vi) The period of exemption from all open-Access charges e.g. Wheeling Charges, T & D charges, Cross-Subsidy Surcharge and Additional Surcharges should be determined at 10 years.

The Commission has already dealt the issue of period of exemptions. Additionally, the waivers / concessions shall be applicable to the Captive Solar PV Power for self consumption as well. However, the

losses, as determined by the Commission, shall be recovered in kind by the Haryana Power Utilities.

Provided, banking charges as per these Regulations, shall be applicable so that the Haryana Power Utilities are not burdened unreasonably.

Provided that the waiver shall be applicable only in the case of Solar Power projects, ground mounted and roof top.

10. Comments filed by the Faridabad Industries Association

The Commission should define two periods – the Control Period to avail waiver for commissioning renewable energy systems and the Waiver Period to define the duration (in years) of waiver applicability.

Waiver duration for plants may be set at 10 years from the respective commissioning date. This will ensure cash flow visibility for lenders and hence help to increase finance for these projects. HERC could possibly notify preferential non-zero charges for the extended Waiver Period of 10 years (instead of zero charges) to ensure financial viability of this scheme to Power Utilities in Haryana.

The Commission has already dealt with the aforesaid issues raised by the FIA in the present order. Hence, these are not being repeated here.

10. Comments filed by Gurgaon Industries Association

If the Commission could define two periods - the Control Period to avail waiver for commissioning renewable energy systems; and the Waiver Period to define the duration (in years) of waiver applicability. Waiver duration for

plants may be set at 10 years from the respective commissioning date. This will ensure cash flow visibility for lenders and hence help to increase finance for these projects.

HERC could possibly notify preferential non-zero charges for the extended Waiver Period of 10 years (instead of zero charges) to ensure financial viability of this scheme to power utilities in Haryana.

The Commission has already dealt with the aforesaid issues raised by the FIA in the present order.

10. Comments filed by Bharti Airtel Limited

It would be beneficial if the Commission could define two periods — the Control Period to avail waiver for commissioning renewable energy systems; and the Waiver Period to define the duration (in years) of waiver applicability. Waiver duration for plants may be set at least 15 years from the respective commissioning date and can ensure that these periods are not reduced/revoked at later point of time. This will ensure cash flow visibility for lenders and hence help to increase finance for these projects.

The Commission has already dealt with the aforesaid issues raised by the FIA in the present order.

11. Comments filed by Honda Motorcycle and Scooter Private Limited

It would be beneficial if the Commission could define two periods — *the Control Period to avail waiver* for commissioning renewable energy systems; and the Waiver Period to define the duration (in years) of waiver applicability. Waiver duration for plants may be set at least 15 years from the respective commissioning date and can ensure that these periods are not reduced/revoked at later point of time. This will ensure cash flow visibility for lenders and hence help to increase finance for these projects.

The Commission has already dealt with the aforesaid issues raised by the FIA in the present order.

12. Comments filed by Ultra Tech Cement Limited

It would be beneficial if the Commission could define two periods - the Control Period to avail waiver for commissioning renewable energy systems, and the Waiver Period to define the duration (in years) of waiver applicability. Waiver duration for plants may be set at least 15 years from the respective commissioning date and can ensure that these periods are not reduced/revoked at later point of time. This will ensure cash flow visibility for lenders and hence help to increase finance for, these projects.

The Commission has already dealt with the aforesaid issues raised by the FIA in the present order.

13. Comments filed by National Solar Energy Federation of India Limited

During last two to three years, capital cost of grid connected ground mounted Solar PV plants have significantly come down (in last two years from Rs. 7.05 crore/MW in 2015 to Rs.5.09 crore in 2017). This has further gone down in case of projects which are being set up in Solar Parks as land, other infrastructure facilities like power evacuation, road, drainage etc are made available to the developers in these Parks at a comparatively cheaper cost.

On other hands, cost of developing Solar Power Projects set up in States like Haryana, Punjab etc. are high as compared to developing same capacity projects in other States which are attracting Investors through Solar Parks. Thus, per MW cost of Solar Power Plants varies from State to State. Depending upon the policies of these states i.e. provision for providing land,

grid-connectivity mechanism, transmission/wheeling charges etc. and solar insolation level. Therefore, in our submission, site/project specific tariff determination process be adopted for determining tariff of Solar Power Projects in States like Haryana and Punjab as it would be a better approach. Site /Project specific tariff so decided shall be more realistic as these would be based on cost of plant and machinery which shall be prevalent in the market at project tariff determination time and other site specific factors.

The Commission has considered the above submissions and is of the view that for Solar RE, it would be appropriate for the Discoms / HAREDA to procure such power through competitive bidding route u/s 63 of the Electricity Act, 2003. However, if required, with the concurrence of the Discoms, a Solar Power generator may approach this Commission for project specific tariff determination u/s 62 of the Act for Solar Power below 5 MW as per the guidelines in vogue.

14. Clause no 55 Renewable Purchase Obligation As per HERC Draft Regulation

55. Renewable Purchase Obligation. – (1) Every obligated entity including distribution licensee, consumers owning captive power plant and open access consumers including short term open access consumers in Haryana, shall purchase energy from renewable energy sources under the Renewable Purchase Obligation (RPO) as under:-

FY	Existing Total RPO (%) of Consumption		Revised Minimum RPO (%) of Total Consumption Excluding Hydro	
	Total RPO	Solar	Non Solar	Solar
2016-17	3.75	1.0	2.75	1.00
2017-18	4.00	1.25	2.75	2.50
2018-19	4.50	1.50	3.00	4.00
2019-20	4.75	2.00	3.00	5.50
2020-21	5.00	2.50	3.00	7.00

2021-22	5.50	3.00	3.00	8.00
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(2) Provided that solar renewable purchase obligation specified above shall be procured from generation based on solar energy sources only.

Provided further, such obligation to purchase renewable energy shall be inclusive of the purchases, if any, from renewable energy sources already being made by obligated entity concerned.

Provided also that the power purchases under the power purchase agreements for the purchase of renewable energy sources already entered into by the distribution licensees and consented to by the Commission shall continue to be made till validity of the Power Purchase Agreement approved by the Commission, even if the total purchases under such agreements exceed the RPO as specified in these regulations.

15. Comments filed by Shree Cement Ltd:

a) Regulation 55 (1) - Renewable Purchase Obligation

Proposed Changes: - Notwithstanding our suggestion at Sr. No. #2 of not making short term open access consumer part of obligated entities, it is further submitted that the proposed Solar RPO trajectory is very steep upwardly and may not be achievable due to limited availability of solar power in the state. Such steep increase (8 times increase in five years) in RPO would also put unnecessary financial burden on obligated entities (including State Discoms) and would make it difficult for them to fulfill the set RPO.

b) Regulation 55 (2) - Renewable Purchase Obligation

Proposed Changes: - The following should be added – Provided also that excess solar energy procured and consumed from solar energy sources beyond specified RPO in a given year should be allowed to be adjusted against the shortfall in non-solar RPO, if any in that year and vice-versa i.e.

excess renewable energy (other than solar) procured beyond specified RPO shall also be allowed to be adjusted against the shortfall in solar RPO. Provided also the Renewable Energy generated and consumed in excess of RPO percentage shall be permitted to be carried forward for off-setting RPO targets of next year.

The Commission has considered the above submissions and is of the considered view that, at this stage and without due deliberations, it may not be appropriate to make the Solar and Non Solar RPOs interchangeable. More so even the Solar and Non Solar RECs availability / demand and price seek different levels. Further, the Commission finds no convincing reason to carry forward excess RE for the purpose of offsetting for more than 12 months as per the draft Regulations.

Provided, the issue of interchangeability of solar and non-solar RPO, if decided in favour at Central level, shall be applicable under these Regulations.

3. Comments filed by Adani Green Energy Limited:-

The proposed Renewable Purchase Obligation (RPO) in discussion paper are not justified and in lower side. The Ministry of Power under the Tariff Policy provision, in order to achieve the target of 175 GW by 2022, in consultation with the MNRE notified a long term trajectory for RPO including solar uniformly for all States/Union Territories initially for three years i.e. 2016-17 to 2018-19, vide its Order dated 22.07.2016 as under:-

Long Term Trajectory	2016-17	2017-18	2018-19
Non-Solar	8.75%	9.50%	10.25%
Solar	2.75%	4.75%	6.75%
Total	11.50%	14.2 %	17.0 %

The above referred notification also mandates SERCs to consider notification of such RPO targets for their respective States in line with uniform RPO trajectory. Moreover, the cost of generation from solar energy has been drastically reduced in last few years. In the recent competitive bidding the tariff discovered are even less than the new conventional power plants.

The above referred amendment to the Tariff Policy, furthermore states that the Regulatory Commissions should reserve a “minimum percentage” for procurement from “Solar”. Accordingly, most of the State Commission has specified the total RPO and within that RPO, the State Commissions have reserved the “minimum percentage” for procurement from “Solar”. In view of the above, We would like to submit that the Hon’ble Commission should revise RPO in line with above referred Notification of MoP.

The Commission has considered the above submissions and is of the considered view that, after considerable deliberation the RPO targets have been fixed. Further, even the Discoms have raised the issue of these targets being on the higher side. Further, it has been submitted by the Discoms / HPPC procurement of RE power in the peak hours will not only add to the demand – supply gap but also add to the surplus and backing down of cheaper conventional power putting avoidable financial burden on the electricity consumers of Haryana. Hence, the Commission finds no reason to change the RPO targets as appearing in the draft Regulations as the same in the considered view of the Commission attempts to balance the interest of all the stakeholders.

4. Comments filed by the Director, HAREDA, Panchkula

It is submitted that Ministry of Power, Govt. of India vide Order no. 23/3/2016-R&R dated 22.7.2016 issued guidelines for long term RPO growth trajectory of RPOs for solar as well as non solar based projects uniformly for

all states and Union Territories, initially for 3 years from 2016-17 to 2018-19 as under:-

FY	Non Solar	Solar
2016-17	8.75	2.75
2017-18	9.50	4.75
2018-19	10.25	6.75

Accordingly, the DISOMs were requested vide memo no. 3730-31 dated 03.02.2017 to file the petition in Hon'ble Commission for revision of RPO as per the guidelines of MoP, GoI and a copy was endorsed to the Secretary, HERC. The proposed RPO trajectory is not in line with the Order of Ministry of Power, Govt. of India dated 22.07.2016.

The Commission has already dealt with the issue. It is, however, added that the ibid notification is one of the guiding factor. The Commission has taken into account the views of the stakeholders including Discoms and the past experience for determining the RPO trajectory as appearing in the draft discussion paper.

5. Comments filed by the M/s. PTC India limited:-

Solar RPO has been revised as follows:-

- FY 17 : 1.0%
- FY 18 : 2.5%
- FY 19 : 4.0%
- FY 20 : 5.5%
- FY 21 : 7.0%
- FY 22 : 8.0%

Non-compliance to RPO will attract penalty as decided by the regulator. This is a welcome step from HERC to set RPO targets in line with MNRE targets. However, the same needs to be enforced strictly and non-compliance should attract penalty.

6. Comments filed by the Sh. Kashmir Singh Saini SSE 66 kV Substation:-

To avoid confusion for third party sale to Open Access consumers from non-conventional sources this para should be as under:-

Every obligated entity including distribution licensee, consumers owning captive power plant and open access consumers including short term open access consumers **(except power purchased from non-conventional sources)** in Haryana, shall purchase energy from renewable energy sources under the Renewable Purchase Obligation (RPO) as under.

The above issue has been considered and the Commission observes that the draft Regulations are quite clear, hence, no change is required.

7. Comments filed by the Hero Future Agencies

Every obligated entity including distribution licensee, consumers owning captive power plant and open access consumers including short term open access consumers in Haryana, shall purchase energy from renewable energy sources under the Renewable Purchase Obligation (RPO) as under: -

	FY 2016-17	FY 2017-18	FY 2018-19
Non Solar	8.75%	9.50%	10.25%
Solar	2.75%	4.75%	6.75%
Total	11.50%	14.25%	17.00%

Provided that the obligated entities shall not be allowed to carry forward RPO obligations from one financial year to the next or subsequent financial year(s).

Reasons:

We would like to bring notice to the Honorable Commission that solar power potential of Haryana as per National Institute of Solar Energy (NISE) is 4560 MW however as on March 31, 2017 the total solar power installation in Haryana is only 81 MW. The Central Govt. of India has set a target to achieve 100 GW of solar power installation by 2022, under which the state specific target for Haryana is 4142 MW.

The state Govt. of Haryana in order to realise the above targets have notified Haryana Solar Power Policy, 2016 on March 14, 2016 under which the Haryana Govt. has envisaged a target to install 3200 MW of Solar power by 2021-22.

We would also like to highlight that the Ministry of Power has notified long term RPO targets on 22.07.16 under which MoP has advised all the SERCs to adopt the following RPO targets are envisaged by FY 18-19 in order to achieve Central Govt. target of 175 GW of RE capacity by 2022.

	FY 2016-17	FY 2017-18	FY 2018-19
Non-Solar	8.75%	9.50%	10.25%
Solar	2.75%	4.75%	6.75%
Total	11.50%	14.25%	17.00%

Thus, in order to achieve the target, set by the State Govt. of Haryana under Haryana Solar Policy 2016 and also comply with MoP RPO notification and Central Govt. targets we request the Honorable Commission to adopt the aforesaid RPO targets.

The Commission has already dealt with the issue in the present order.

8. Comments filed by the Re New Power Venture Limited

“Renewable Purchase Obligation. – (1) Every obligated entity including distribution licensee, consumers owning captive power plant and open access consumers including short term open access consumers in

Haryana, shall purchase energy from renewable energy sources under the Renewable Purchase Obligation (RPO) as under:-

	FY 17	FY 18	FY 19
Non Solar	8.75%	9.50%	10.25%
Solar	2.75%	4.75%	6.75%
Total	11.50%	14.25%	17.00%

Provided that the obligated entities shall not be allowed to carry forward RPO obligations from one financial year to the next or subsequent financial year(s)".

Reasons

We would like bring notice to the Hon'ble Commission that the Ministry of Power has notified long term RPO targets on 22.07.16 under which the following RPO targets are envisaged by FY 18-19 in order to achieve Central Govt. target of 175 GW of RE capacity by 2022.

	FY 17	FY 18	FY 19
Non Solar	8.75%	9.50%	10.25%
Solar	2.75%	4.75%	6.75%
Total	11.50%	14.25%	17.00%

Hence we pray before the Hon'ble Commission to consider the same targets as envisaged by Ministry of Power under the aforesaid regulations.

The Commission has already dealt with the above issue raised by the intervener.

9. Comments filed by National Solar Energy Federation of India Limited :-

Ministry of Power, Govt. of India vide Order no. 23/3/2016-R&R dated 22.7.2016 issued guidelines for long term RPO growth trajectory of

solar as well as non solar based projects uniformly for all states and Union Territories, initially for 3 years from 2016-17 to 2018-19 as the proposed RPO trajectory is not in-line with the Order of Ministry of Power, Govt. of India dated 22.07.2016. This needs to be brought in line with RPO trajectory set by Govt. of India and target set by Haryana Govt. under its Climate Change Action Plan.

10. Clause no 58 Effect of Default

As per HERC Draft Regulation:

Effect of Default. - (1) If the obligated entities do not fulfill the renewable purchase obligation as provided in these regulations during any year and also does not purchase the certificates, the Commission may direct the obligated entity to deposit into a separate fund, to be created and maintained by such obligated entity, such amount as the Commission may determine on the basis of the shortfall in the RPO determined under these regulations from time to time at the forbearance price decided by the Central Commission.

Provided that the fund so created shall be utilized, as may be directed by the Commission, for purchase of the renewable energy certificates.

Provided further that the Commission may empower an officer of the State Agency to procure from the Power Exchange the required number of certificates to the extent of the shortfall in the fulfillment of the obligations, out of the amount in the fund.

Provided also that the distribution licensee shall be in breach of its licence condition if it fails to deposit the amount directed by the Commission within 30 days of the communication of the direction or within such period as directed by the Commission.

(2) Where any obligated entity fails to comply with the obligation to purchase the required percentage of power from renewable energy sources or the renewable energy certificates, it shall also be liable for penalty as may be decided by the Commission under section 142 of the Act.

Provided that in case of genuine difficulty in complying with the renewable purchase obligation because of limited availability of renewable energy or non-availability of certificates, the obligated entity can approach the Commission for relaxation or carry forward of compliance requirement to the next year. However, in normal circumstances, the renewable purchase obligation shall not be waived of.

Provided further that where the Commission has consented in writing on an application made by the obligated entity to carry forward of compliance requirement, the provision of regulation 58 (1) of these Regulation or the provision of section 142 of the Act shall not be invoked.

i) Comments filed by Shree Cement Ltd:-

Proposed Changes:

If the obligated entities do not fulfill the renewable purchase obligation as provided.....to be created and maintained by such obligated entity, such amount as the Commission may determine on the basis of the shortfall in the RPO determined under these regulations from time to time at the Floor price decided by the Central Commission.

The Commission has considered the above submissions and is of the view that the existing Clause is quite comprehensive. In case the Commission determines any such amount, if required, it would obviously be in reference to prevailing floor price or any other

appropriate benchmark. Hence, no amendment to the clause as appearing in the draft regulations is required.

11. Clause no 59 Banking of RE Power:-

As per HERC Draft Regulation:

59. Banking of RE Power._ The RE Generators shall be allowed to bank power with the Distribution Licensee(s) subject to the condition that 2% of the power banked (in kind) shall be deducted towards banking charges.

Provided the banked power shall be utilised within the same financial year and if the banked energy is not utilised within a period of 12 months from the date of power banked with the Discoms it will automatically lapse and no charges shall be paid in lieu of such banked power.

Provided that the RE Generators shall pay the difference in UI charges, if any, prevalent at the time of injection and the time of drawl of such power. No other banking charges shall be payable.

Provided that the banked power shall not be allowed to be drawn from the Grid during the peak load hours and time of day (ToD) tariff period as and when introduced in Haryana.

i) Comments filed by Shree Cement Ltd:-

1. It is submitted that instead to only RE generators, banking should be permitted at both the generator (injection point) end as well as consumer (drawl point) end, choice of deciding utilization of which is to be left with the consumer/generator. Further the Banking facility shall be

made available for both third party sale as well as captive consumption of power.

2. Since, in case of Solar, Cogeneration, Biomass etc. a captive plant may be located at the same location where the consumption of energy happen, Banking should be permitted to such co-located plants as well where no conveyance of power would take place from one location to another. However, there would be intermittent exchange of power with the grid, whenever there is mismatch between generation and consumption.
3. The banked energy that remains unutilized after 12 months shall be paid at APPC of Haryana Discoms or at a rate decided by the Hon'ble HERC.
4. Furthermore, banking charges should not be more than 1% to improve viability of such plants.

The Commission has considered the above submissions and is of the considered view that the entire gamut of terms of banking including permissible capacity that can be banked, banking charges, drawl of banked energy as well as energy settlement rules are required to be elaborately covered in the Regulations. Accordingly, the Commission has examined the issues and approves as under:-

The Commission is of the view that a solar power generator or consumer may be allowed to bank the uncertain / non-firm solar power with the distribution licensee to avail / draw the same at the time / period specified in the interest of resource conservation in the absence of storage energy system due to economic reason. Further, the Commission is of the view that the promotion of such system to harness

solar power in the State may add to the development of state economy as well.

In order to provide some revenue cushion to the Power Utilities and also prevent loss of revenue on account of unutilized power 5% banking charges in place of 2% and the restriction on drawl of banked power during peak season and during the peak load hours shall be applicable.

The Commission is of the considered view that banking is a facility provided and the banking charges is not a tradeoff between cost of delivered energy during the peak / ToD hours and the cost of energy. Further, the deviation settlement at UI rate as per the draft Regulations has been objected to by a few intervener. Hence, the Commission shall address the same in these Regulations.

The Commission is of the considered view that once the Commission finalizes the relevant Regulations i.e. HERC “Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation” Regulations, deviation penalty shall be levied as per the provisions of these Regulations for such RE power projects.

The Commission observed the following arrangements in the various states exist:-

Karnataka Order dated 09.06.2005 contd. Vide order dated 11.07.2008 and dated 04.07.2016

1. Wheeling & Banking Charges for Non Renewable on Wind & Mini Hydro are 5% & 2% respectively on yearly basis for 10 years.
2. Unutilized banked power at the end of the month to be paid at 85% of wind, mini hydel & solar plant generic tariff.
3. Existing CSS to continue.
4. Banking charges for Wind * mini hydro only.

Vide order dated 18.08.2014, Banking, Wheeling and CSS exempted for 10 years on solar power plant coming up during 01.04.2013 to 31.03.2018. However, CPP under REC mechanism to pay wheeling banking and other charges.

Punjab

1. Banking facility allowed in case of mini hydro for one year only. For other RE banking not allowed.

Andhra Pradesh

1. Banking allowed all the 12 months in a calendar months.
2. Banking year for settlement is Financial Year.
Drawal of power not allowed in peak season (April-June, Feb-March)
3. Drawal of power not permitted in peak load hours
4. Energy banked in Feb-March to carry forwarded in next Financial Year.
5. Unutilized energy at the end of January to be paid by Discoms at 50% APPC.

Rajasthan

Adjustment of energy banked in a given priority (OA Regulations, 2016).

Maharastra

1. Banking permitted during all 12 months / 2% banking charges.
2. Banking year should be Financial Year for credit for banked energy.
3. Drawl not allowed April, May, October, November
4. Untilitized energy upto 10% of actual generation in year shall be deemed purchase at pooled cost.
5. Energy banked during peak TOD can be drawn during off peak TOD but not vice versa.

The Commission further observed that as per policy (GoH-2016) banking facility to be allowed for one year and no drawl to be allowed during Peak and ToD hours.

The Commission is of the view that the frame work governing banking and energy settlement should also be laid down in the Regulation.

In view of above the Commission has decided that a generator or a captive power producer or a Consumer in the State may bank power on payment of the banking charges along with the transmission and distribution losses for availing the open access on the transmission or distribution network of the licensees for banking and drawl of banked power from the **Discoms after entering into the banking agreement with the concerned Discoms at the terms and condition specified in the agreement**, as follows:

1. The solar power shall be allowed to be banked with the distribution licensee(s) subject to the condition that 5% of power banked in (kind) shall be deducted toward banking charges.
2. The Energy Banked shall be permitted to be carried forwarded from month to month. The banked power shall be utilized within the same financial year failing which the unutilized energy at the end of the financial year shall lapse, provided the solar energy banked during the last quarter of the financial year shall be carried forward to the next financial year.
3. The banking shall be allowed throughout the year, however, the drawl of banked power shall not be allowed during the peak season period (July to mid October).
4. The drawl of bank power shall also be not allowed during peak load hours and time of day (ToD) tariff period.
5. The Banked Energy Shall be calculated at the end of a month as follows:-

Banked Energy at the end of month (E_{bi})= $\{E_g(1-\text{losses})-E_c\} * (1-b) + E_b (i-1)$

* E_g = Energy Generation for the i th month

* E_c = Energy consumption for the i th month

* $E_b (i-1)$ = Energy Banked at the end of previous month

* b = Banking charges in kind.

Further, as far as scheduling and deviation mechanism is concerned, the Commission in the process of finalization of Regulations on forecasting, scheduling and settlement and once these Regulations are notified the same shall be applicable.

The Solar power shall be adjusted as first charge in order of consumption of energy by a consumer. The banking will be counted on daily basis for the purpose of monthly account

Settlement of wheeled energy at consumer end shall be in the following priority:

1. Solar generation after deduction of losses.
2. Captive Power.
3. Banked Energy from Solar.
4. Open Access Power through Exchange.
5. Discom Power

HVPNL / SLDC shall formulate the criteria for settlement of wheeled energy at Consumer end in consultation with the Stakeholders and submit the same to the Commission for approval within 3 months of notification of these Regulations.

ii) Comments filed by Adani Green Energy Ltd:-

Proposed Amendment

Banking is a provision where in an RE power-generating facility is allowed to bank the electricity it produces that is not used by its off-taker or to borrow the energy it needs to sell to the buyer in the event of its inability to produce for a given duration (from 15 minutes to one year). These deviations are accounted for and the net surplus or shortfall is financially settled on a monthly, quarterly, or annual basis. Banking provisions typically provided at the point of consumption by the distribution licensees.

We would like to appreciate that the Hon'ble Commission has proposed Banking facility for RE Generators at the rate of 2% to promote RE power projects. Whereas for accounting of unutilized banked energy, the Hon'ble Commission has proposed that it will automatically lapse and no charges shall be paid in lieu of such banked power. The RE Project, specially Solar / Wind have single part tariff and any loss of generated power make a direct impact on the economic viability of Project.

Therefore, we request to provide the banking for Solar Power Plant during the financial year with the condition that, the unutilized banked energy shall be considered as deemed purchase by DISCOM(s) at the rate of 85% of Feed in Tariff determined by Commission based on the COD year or APPC rate of that year, whichever is high.

The Commission has already dealt with the issues raised above. Hence, no further deliberations are required in the matter.

iii) Comments filed by the Director, HAREDA, Panchkula :-

The definitions in para 2 of this clause are in contradiction to each other i.e. in the first line it has been mentioned that bank power should be utilized within the same financial year. It has been further mentioned

that if the bank energy is not utilized within a period of 12 months from the date of power banked with the DISCOMS, it will automatically lapse.

So, the above para may be amended as “Provided the banked power shall be utilised within a period of 12 months and if the banked energy is not utilised within a period of 12 months from the date of power banked with the DISCOMS it will automatically lapse and no charges shall be paid in lieu of such banked power.”

The Commission has considered the above and the dispensation in the draft Regulations shall be accordingly corrected. Hence, the banked power shall be utilized within the same financial year and beyond that it would lapse and no compensation whatsoever shall be claimed / paid for such lapsed banked energy, provided the solar energy banked during the last quarter of the financial year shall be carried forward to the next financial year.

iv) Comments filed by M/s PTC India Limited :-

Since the Distribution licensee is deducting 2% of the power banked (in kind) towards banking charges, hence there should not be any restriction on drawing power during peak hours and TOD tariff period.

Further, it is very difficult to manage and ascertain the amount to be paid in lieu of difference in UI charges prevalent at the time of injection and the time of drawl of such power when banking is available, hence in the same may be waived for the RE Generators as well.

We may take the example of the state of Karnataka, wherein, as per KERC Order dated 18/08/2014, in the matter of Wheeling charges, Banking charges & Cross Subsidy Surcharge for Solar Power Generators.

“All solar power generators in the State achieving commercial operation date (CoD) between 1st April 2013 and 31st March 2018 and selling power to consumers within the State on open access or wheeling shall be exempted from payment of wheeling and banking charges and cross subsidy surcharge for a period of ten years from the date of commissioning. This is also applicable for captive solar power plants for self-consumption within the State.”

Further, as per KERC Order dated 04/07/2014 “Annual Banking is continued for non-REC wind, mini hydel and solar energy projects and henceforth the banked energy unutilized at the end of a wind year, water year or financial year, as the case may be, shall be deemed to have purchased by the Distribution licensee of the area where generator is located and shall be paid for at 85% of the generic tariff determined by the commission in its latest orders in case of wind, mini-hydel and solar projects. The Commission decides to discontinue the differential UI charges payable, to account for the difference in the power purchase cost between the time of injection and drawl, for both existing as well as new projects utilizing banking facility.

The Commission has already dealt with the aforesaid issues. Further, the deviation settlement at UI rate shall not be applicable. However, deviation settlement as per Forecasting Scheduling and Settlement (wind and Solar) Regulation under formulation by the Commission shall be applicable, as and when the same is notified by the Commission.

v) Comments filed by the Clean Max Enviro Energy Solutions Pvt. Limited :-

Proposed Change: UI Charges may be waived for solar PV plants as it is an infirm power source.

Reason: Work involved in forecasting energy demand for 15 minutes time block is highly complicated for Discoms and so billing process for plants under 1-10 MW range will be very cumbersome and it would be impractical to calculate UI charges.

The Commission has already dealt with the aforesaid issue.

vi) Comments filed by the Director, M/s Rays Experts Pvt. Limited:-

Proposed Change: - The unutilized energy at the end of the year should be accounted for payment at APPC rate. The charges against difference in UI charges should be exempted.

The Commission had already dealt with the aforesaid issue in the present order.

vii) Comments filed by the Amplus Energy Solutions Pvt. Limited:-

We would like to submit that proposition on payment of UI charges to RE generators on difference of injection and drawl without states own forecasting, scheduling and deviation settlement regulation is not rationale. So, there will ambiguity related to applicability and determination of UI charges on state RE generator due to lack of proper framework. In this context, we submit that banking charges should be flat on the banked solar power, i.e. 2% of the banked energy.

The Commission had already dealt with the aforesaid issue in the present order. The Commission, after following the due process prescribed for the purpose, shall finalize forecasting, scheduling and deviation settlement Regulation.

viii) Comments filed by the Open Access Users Association:-

The Association herein seeks to submit that the above provision in its present form is not adequate to effectuate the concept. Further a

perusal of the said provision would show that although the clause seeks to lay down the substantive enabling provision permitting energy banking by the RE generators, the operational aspect of the transaction as well as other relevant terms and conditions have not been provided for.

Broadly the Association wishes to place the following issues concerning energy banking for kind consideration of the Hon'ble Commission:

- i) The term 'Banking' should be defined.
- ii) It would be apt to provide 12 months of banking from the date of drawl of energy from the solar project since this would allow optimisation of the power generated from renewable energy sources and would support the cause of incentivization of the renewable energy generators in proper way.
- iii) A framework governing energy settlement and banking should be clearly laid down in the regulations.

The issue wise rationale behind the suggestions made above is as under:-

i) Definition of the term 'Banking':

The absence of a formal definition to the term may lead to ambiguity. It is prudent to have a definitive meaning of a term so as to clearly define the intent as well as scope of the activity. The Commission may consider the following definition, accorded to the term by the Andhra Pradesh Electricity Regulatory Commission. Vide its Regulation No.2 of 2014 Second Amendment to (Interim Balancing & Settlement Code of Open Access Transactions) Regulation No.2 of 2006 notification dated 1st April 2014:

“Banking” means a facility through which unutilized portion of energy (under-utilization or excess generation and above scheduled wheeling) from any of the three renewable generation sources namely wind, solar or mini-hydel during the billing month is kept in separate account and energy accrued shall be treated in accordance with conditions laid down in this regard .

ii) Lapse of unutilized energy after 12 months:

The said condition as laid down in the draft regulations shall cause undue burden on the infirm sources of power generation like solar. Keeping in view the object as stated in the National Electricity Policy 2016 as well as Haryana Solar Policy 2016, the focus should be on encouraging power generation from renewable sources. Keeping in view the said perspective, the stipulation with respect to automatic lapse of banked energy after a period of 12 months appears to be counter- productive as it strikes at the root of the objective of providing stimulus to the infirm power sector. By denying the solar generators any credit for the power generated by them, the objective of increasing the solar power generation shall be seriously and adversely affected.

In this regard it is submitted that the clause should be suitably modified to the effect that in case of non utilisation of banked power within 12 months, such power shall be deemed to have been purchased by the Discom at its pooled cost of power purchase for that year and credit for the same be given to the solar and other RE generators.

iii) Terms & conditions governing energy settlement and banking should be clearly laid down:-

The relevant clause (Regulation 59 of the proposed regulations) dealing with energy banking is silent on most of the aspects of settlement of energy pursuant to banking of the same. It would be appropriate to provide a mechanism for monthly settlement of renewable energy wheeling. Further drawl schedule for both peak and off-peak hours also needs to be prescribed.

It is noteworthy here that such measures have already been adopted and regulations have been framed by various other State Electricity Regulatory Commissions. Provisions laid down by various other SERCs for Maharashtra, Rajasthan and Punjab are being referred to in this regard. The brief details of the conditions laid down in the above referred States are as under:

MAHARASHTRA

MERC has framed and notified MERC Distribution Open Access Regulations 2016, Dated 30th March 2016 which inter alia provides as under (Clause 20.4):

- Night Off-peak ToD Slot (22 Hours- 0600 Hours) may only be drawn in the same ToD slot.
- Off-Peak ToD Slot (0600 Hours-0900 Hrs & 1200 hrs- 1800 hrs) may be drawn in the same ToD slot and also during Night Off-peak ToD slot (However, the energy banked during Night Off-peak and off-peak shall not be drawn during morning peak and evening peak).
- Morning Peak ToD slot (0900 hrs- 1200 hrs) may be drawn in the same ToD slot and also during off-peak and Night off-peak ToD slots.
- Evening Peak ToD Slot (1800 hrs-2200 hrs) may be drawn in the same ToD slot and also during the off-peak and Night off-peak ToD slots.

RAJASTHAN

The RERC permits banking of energy on monthly basis. As per Clause 39 of RERC Renewable Energy Regulation 2014, Energy is allowed to be banked at consumption end, for captive consumption within the state only. The period of banking has been provided to be on monthly basis.

Further clause 25 of the RERC (Terms & Conditions for Open Access Regulations) 2016 regulates adjustment of energy drawl by open access consumers from different sources by following a sequence of reducing priority of the energy sources. Clause 25 of the said Regulations is reproduced hereunder:

“25. Adjustment of Energy

(I) The priority of adjustment of energy drawl by an open access consumer from different sources shall be as per the following sequence of reducing priority and shall be implemented for each time block:

- (i) Renewable power generation;
- (ii) CPP;
- (iii) Banked Energy to be settled in 15 min time block: Banked energy available at the end of previous month in KWh / (96 time blocks* Actual no. of days in current month):
- (iv) Long Term Bilateral purchase;
- (v) Medium Term Open Access;
- (vi) Short term inter-State open access including Power Exchange Transaction;
- (vii) Short term intra-State open access;
- (viii) Distribution Licensee.

The issues raised above are to ensure the smooth and seamless integration of solar projects availing open access regulations. As these critical points serve as proper enablers for

the solar power projects developed under the open access scheme. We humbly request the Hon'ble Commission to consider and incorporate the above submission before issuing the final regulations.

PUNJAB

The monthly energy settlement has been allowed in Punjab vide an order of the PSERC in the matter of M/s Winsome Yarns Limited versus PSEB (now PSPCL). Vide its order dated 27.5.2009 in the said Petition (Petition No. 25 of 2008), the Commission has allowed the developer to set off the energy injected from their Micro Hydel Project against the consumption in its factory as consumer of PSPCL after deducting the losses and wheeling charges in kind. The operative part of the order is reproduced as under:-

“The petitioner has also prayed for banking of power. The Board is not in favour of banking of power for the reasons mentioned in para 2 above. However, clause 4(ii) of Appendix II of the NRSE Policy 2006 clearly provides that banking of power generated from NRSE projects shall be allowed by the Board for a period of one year. In view of the clear stipulation in the NRSE policy, the Commission is inclined to allow banking of power for one year. The monthly energy injected into the grid after accounting for wheeling charges and T&D losses will be subtracted from the total energy drawl of the petitioner and the balance shall be charged as per prevalent PSEB tariff. If the energy injected after accounting for wheeling charges & T&D losses is more than the total units consumed by the petitioner, the excess energy shall be credited to the accounts of the petitioner for subsequent drawl. At the end of the year if there is still some surplus injection, the same will be paid for by the Board at the

applicable NRSE rate approved by the Commission for that year. Electricity consumption for essential services/start up, if drawn by the customer, will also be accounted for while calculating the injection in the grid.”

The Association humbly suggests that by incorporating appropriate provisions on similar lines as stated above, a clear and defined operational set up can be put in place which may go a long way in meeting the objective behind the Haryana Solar Policy 2016.

The Commission has already dealt with the issues raised above.

ix) Comments filed by Sh. Kashmir Singh Saini SSE 66 kV Substation:-

This Para is self-contradictory. So it may be clarified whether banked power will be utilized in 12 months from the date of banking or within the same financial year.

For example: If power generated in the month of March 2018 is banked then, whether it is possible to utilize this power within 12 months from the date of banking i.e. before February 2019 or it will laps on 31st March 2018 i.e at the end of financial year. It may be clarified. This regulation is silent on wheeling & transmission losses. So, it may be clarified whether Transmission & wheeling losses are waived off or not on third party sale/open access.

The Commission has considered the above submissions and observes that the issues have already been dealt with in the present order.

x) Comments filed by Hero Future Agencies

Proposed Changes

The RE Generators shall be allowed to bank power with the Distribution Licensee(s) subject to the condition that 2% of the power banked (in kind) shall be deducted towards banking charges.

Provided the banked power shall be utilised within the same financial year and if the banked energy is not utilised within a period of 12 months from the date of power banked with the Discoms it will automatically lapse and no charges shall be paid in lieu of such banked power.

Provided that the banked power shall not be allowed to be drawn from the Grid during the peak load hours and time of day (ToD) tariff period as and when introduced in Haryana.

The 12 months banking facility and 2% banking charges shall be applicable for all the RE projects which achieves commercial operation date (COD) during the control period of this regulation for a period of 25 years from the COD.

Reasons:

The calculation by the Discom of difference in UI charges prevalent at the time of injection and time of drawl of banked power shall be very complicated because unconsumed energy gets continuously banked for 12 months. This banked energy has to be consumed by the 31st March. It will be quite difficult, for Discom to attribute the exact time when a particular unit of banked energy was injected and consumed by the consumer. In fact, this same provision was notified by the Karnataka Electricity Regulatory Commission in its order in the matter of determination of Transmission Charge, Wheeling Charge and Cross Subsidy

Surcharge under Open Access dated 9th June 2005 which read as follows:

“Commission’s Views/Decision

7.06 The Commission notes that most of the stakeholders including the GoK and utilities are in favour of banking to infirm sources of energy. After considering the above views, the Commission hereby decides to allow banking facility in respect of wind and mini-hydel projects subject to payment of difference of UI charges between the time of injection and time drawal of the power from these sources, as suggested by KPTCL and also payment of banking charges @ 2% of the input energy.”

The same got reversed by KERC in its order on determination of Wheeling and Banking Charges of renewable sources of energy dated 4th July 2014 citing difficulty in calculation and implementation. The operative part is as follows:

Commissions Views

g) Keeping in view the difficulty expressed by stakeholders, in implementing the differential UI charges payable, to account for the difference in the power purchase cost at the time of injection and drawal, the Commission decided to discontinue the same for both existing as well as new Projects eligible for Banking of Energy”.

In fact, no state in the country is implementing this. Hence, we suggest to delete the same.

RE power is infirm in nature hence rightfully the Hon’ble HERC has provided the facility of 12 months banking.

However, we would like to highlight the RE projects like solar has a life of 25 years. In order to provide long term clarity, banking should be allowed till the life time of the Project.

xi) Comments filed by the Re New Power Venture Limited :-

Proposed Changes The RE Generators shall be allowed to bank power with the Distribution Licensee(s) subject to the condition that 2% of the power banked (in kind) shall be deducted towards banking charges.

Provided the banked power shall be utilised within the same financial year and if the banked energy is not utilised within a period of 12 months from the date of power banked with the Discoms it will automatically lapse and no charges shall be paid in lieu of such banked power.

Provided that the RE Generators shall pay the difference in UI charges implementation to started in phases, after forecasting and scheduling mechanism is in place. No other banking charges shall be payable.

Reasons:-

We whole heartedly welcome the provision of banking extended for RE project by this Hon'ble the . Keeping in view the variable nature of generation from RE sources the unconditional banking arrangement is of utmost importance

We would like to draw your attention to the proposed arrangement of levy of difference of UI charges at the time of injection and time of drawl.

Here we feel it pertinent to mention no other state is following such an arrangement for banking of power. The power is only deemed to be banked, in reality same is consumed in the area of

Discoms through which revenue is generated, in addition to which the RE generator is already paying a banking charges of 2%.

In view of above it can be said that the Discoms are adequately compensated for providing the banking facility and there is no need for any other compensation.

Further for levy of difference for UI charges, following are the points which need clarity:

1. Basis for calculation of difference UI Charges;
 - 15 minutes' time block.
 - Daily
 - Weekly
 - Fortnightly
 - Monthly.
2. What will the proposed settlement mechanism for drawl of banked energy?
3. What will the treatment if difference of UI charges is negative?

The Commission has already dealt with the aforesaid issues raised by the intervener in the present order.

xii) Comments filed by National Solar Energy Federation of India Limited:-

In para 2 of this clause, it has been mentioned that banked power should be utilized within the same financial year.

Submission: The above para may be amended as "the banked power shall be utilized within a period of 12 months and if the banked energy is not utilized within a period of 12 months from

the date of power banked with the DISCOMS, it will automatically lapse and no charges shall be paid in lieu of such banked power.

The aforesaid issues have already been dealt with by the Commission in the present order.

12. Clause no 60 Cost of Evacuation System:-

As per HERC Draft Regulation:

60. Cost of Evacuation System._ The State transmission utility or the Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line up to a distance of 10 km. from the inter-connection point. In case the distance between the inter connection point and point of grid connectivity is more than 10 KMs then the cost of transmission line for the distance beyond the 10 KMs shall be borne equally between the Independent Power Producer and the licensee. However for canal based solar power projects, the transmission lines shall be provided by the utilities, free of cost, irrespective of the distance of the project from the substation. The cost of any augmentation required after the interconnection point in the grid system of the Transmission/Distribution Licensee shall also be borne by the Transmission/Distribution Licensee concerned.

i) Comments filed by M/s PTC India limited:-

Concerned Transmission/Distribution Licensee to ensure that the transmission lines for grid connectivity of the project to be commissioned within 6 months from the date of application submitted by the project developer.

Rationale for the amendment

Since the solar power projects have low gestation period ranging from 4-6 months in case of projects upto 10 MW capacity. The Commission is requested that the disbursal of cost and the development of transmission line and allied infrastructure should commission in a time bound manner to avoid delay in project commissioning due to non-availability of evacuation system.

The Commission has considered the above and finds some merit in the submissions of the intervener. Thus, the power utilities concerned, on being informed about the Scheduled Commissioning Date (SCOD) shall complete the evacuation system well in time.

ii) Comments filed by Sh. Kashmir Singh Saini SSE 66 kV Substation:-

Para no. 60 regarding 10KM line should be clarified whether it is also applicable on Solar IPP developed for third party sale / Open Access consumers & for captive use of power instead of supply to power utilities.

The dispensation on 10 KM line shall be applicable for all RE power projects set up / to be set up in Haryana under these Regulations and supplying power for consumption within the State.

iii) Comments filed by Re New Power Venture Limited:-

Proposed Changes

The State transmission utility or the Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line from the inter-connection point needs to be amended as under:-

Reasons:-

The lucrative solar policy of the state is making it the next investment hub in country. More favourable circumstances is being developed, same is reflected from regulatory regime which is amended from time to time with respect to market perspective.

A further step ahead, in providing the transmission line with no cost implication for the developer will attract more investors. This will further help in the growth of projects, employability and enhance the development of all location equally. No constrain in evacuation of power will help overall development of Haryana as a state.

So, we humbly request Hon'ble Commission to provide the augmentation of transmission line for long term PPA related to solar projects.

iv) Comments filed by Adani Green Energy Limited:-

Proposed Amendment:-

The Draft Regulations has proposed that the State transmission utility or the Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line up to a distance of 10 km. whereas the land for solar power plants is available in remote location and the distance vary from 30 Km to 50 Km. Therefore, the state Government should bear 100% cost of at least for 25 km transmission line to make project economic viable.

In the present circumstances, all projects would be awarded through competitive bidding and under that developer has to complete project within the stipulated time frame. Therefore, it is a necessity to provide a certainty to developer for getting

connectivity in a time bound manner. The suggested para is given below:

- The State transmission utility or the Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line up to a distance of 25 Km from the inter-connection point. In case the distance between the inter connection point and point of grid connectivity is more than 25 Km then the cost of transmission line for the distance beyond the 25 Km shall be borne equally between the Independent Power Producer and the licensee.
- State DISCOM shall dispose the proposals for the technical feasibility for evacuation within 14 days from the date of receipt of application. Any upstream system strengthening requirement shall be borne by State Transco/ Discom(s) on a priority basis.
- State DISCOM shall provide evacuation approval to these projects on priority within 45 days from application made, subject to feasibility of evacuation.

The Commission has considered the above suggestions and if of the considered view that in order to balance the interest of the power utilities, electricity consumers and that of the IPPs, the existing dispensation is in order and needs no change.

v) Comments filed by HVPNL:-

Proposed Amendment:-

The state transmission utility or the transmission/distribution licensee shall bear the cost of extra high voltage (EHV)/High Voltage (HV) transmission line up to a distance of 10 km. from the inter-connection point. In case the distance between the inter connection point and point of grid connectivity is more than 10 KMs then the cost of transmission line for the distance

beyond the 10 KMs shall be borne equally between the independent power producer and the licensee. However, for canal based solar power projects, the transmission lines shall be provided by the Utilities, free of cost, irrespective of the distance of the project from the substation. The cost of any augmentation required after the interconnection point in the grid system of the Transmission/Distribution Licensee shall be borne by the Transmission/Distribution Licensee concerned. This shall be subject to the conditions that the solar power is generated and utilized within the state of Haryana and is counted towards RPO of the Distribution Licensee (s).”

The Commission has considered the above and finds some merit in the submissions of HVPN as Canal based solar power projects are entirely on a different footing, the cost of evacuation system including augmentation etc. shall be borne by the Transmission / Distribution Licensee irrespective of the distance of the project from the grid substation subject to the conditions that the solar power is generated and utilized within the state of Haryana and is counted towards RPO of the Distribution Licensee (s).

13. Clause no 61 (1) and (2) :-

As per HERC Draft Regulation:

61. (1) Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for third party sale / Open Access consumers for energy from ground mounted / Roof Top Solar power commissioned / to be commissioned during the control period under these

Regulations. This shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s).

(2) Provided that the Commission may review the above depending on the impact of such waiver on the revenue of the power utilities in Haryana.

i) Comments filed by the Director, HAREDA, Panchkula

1. In this para, two statements are contradictory to each other as explained below:-

It has been mentioned that Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for **third party sale / Open Access consumers** for energy from ground mounted / Roof Top Solar power during the control period under these Regulations.

It has been further mentioned that this shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s).

The solar power generated/ purchased by third party through open access cannot be considered as purchased by the Distribution Licensee (s), hence cannot be counted towards RPO of Distribution Licensee(s)

So, this condition of “is counted towards RPO of the Distribution Licensee(s)” needs to be deleted.

The Commission has taken note of the above comments. Accordingly, the Regulation shall provide Solar Power generated and consumed within the

State and availing waivers of concessions in respect of CSS, ACS, wheeling and transmission charges shall be counted towards RPO of Distribution License, provided such generated power is not sold to the obligated entities.

Further provided, that if such generated power is sold to obligated entities, Distribution licensee shall be eligible for RPO benefit only to the extent the consumed solar power is in excess of the purchase obligation of the obligated entity.

Further provided, that the Distribution Licensee shall be eligible for RPO benefits to the extent of unitized banked power at the end of the financial year.

2. The discussion paper is silent about wheeling charges for the projects selling the power to the utilities through PPA as in the past; no wheeling charges were levied for sale of power to the utilities by the IPP.

The above shall be governed by the dispensation provided in the respective PPAs and Commission's order on levy of wheeling charges from time to time.

In addition to above, following incentives/provisions available under Haryana Solar Policy-2016 have not been included.

ii) Clause No.2.2 (same point has been filed by National Solar Energy Federation India Limited)

The HPPC will float the tenders from time to time for inviting bids for purchase of solar power. Each bid shall be comprised of the power required to be purchased for fulfilling the RPO plus 20% additional power for allocation to the small generators of 1MW to 2 MW capacity.

The Commission has considered the above and is of the considered view that the RPO trajectory specified by the Commission in these Regulations are minimum statutory requirement. Hence, anything above the said trajectory shall depend on the willingness of the obligated entities including the Discoms and the cost implications thereto.

iii) Clause No. 2.3

HPPC will purchase solar power over and above the RPO obligation subject to a limit of 200 MW.

The issue has been decided as above.

iv) Clause No. 2.4 (same point has been filed by National Solar Energy Federation India Limited)

A price preference of 2% will be given to the solar power generators of 1MW to 2 MW capacity who set up their plants within the territory of Haryana State as compared with the solar power plants who supply power from the plants located outside the territory of Haryana.

The above has been considered and the same cannot form part of these Regulations.

v) Clause No. 2.6

The setting up of MW scale Solar Power Plants on canals tops/banks shall be encouraged as per the guidelines and incentives issued by MNRE, Government of India, from time to time. For that the sites for shadow free space available on canal banks shall be indentified in consultation with Irrigation Department, Haryana. The bidder shall be selected through open competitive bidding by a separate tender by HPPC. The entire power from the Solar Power Plant shall be purchased by

HPPC, if need be, to meet their RPO, at the tariff so discovered. They shall be provided with all the benefits as provided for Ground Mounted Megawatt scale Power Projects including free evacuation facility irrespective of the distance by the State. Further the Independent Power Producers, who have already set up small hydro projects on the canals, shall also be motivated to set up solar power projects on the canal tops/banks allocated to them.

The Commission has considered the above and is of the view that the above cannot form part of these Regulations. However, separate bids, in consultation with the Discoms, may be invited from time to time.

vi) Clause No. 3.2 (same point has been filed by National Solar Energy Federation India Limited)

Cluster of rooftops of public / private buildings

Some percentage capacity (to be fixed from time to time) of the setting up of ground mounted mega watt scale grid connected power plants, to meet the solar RPO shall be developed by setting up of grid connected rooftop solar power plants. For that the offers shall be invited by Renewable Energy Department, Haryana/HAREDA from the independent power producers for development of grid connected rooftop solar power plants, of capacity ranging from 250 kWp to 1 MW, on a cluster of public private buildings on the last lowest tariff discovered and conveyed by HPPC. The entire power produced by power producers who set up plants within four years from the date of notification of this policy shall be purchased by the HPPC or any entity of Haryana Govt. Alternatively, the developer can also supply/provide the power for the captive use of the premises where the system is

installed along with net meter and can sell the remaining power to HPPC or any entity of Haryana Govt. on the last lowest tariff discovered and conveyed by HPPC or to third party as per HERC regulations.

All maximum and extra benefits possible will be extended to Roof Top Solar Power Producers.

The Commission has considered the above and is of the view that in Haryana, rooftop solar is an integral part of promotion of solar power projects in Haryana. Accordingly, the above mentioned dispensation as per the State Solar Policy shall be included in the Regulations.

National Solar Energy Federation of India Submission:-

The Commission is requested to decide on incorporating the above provision of the Solar Power Policy in its RE Regulation of 2017 so that on the provision of sale of surplus power from a roof top solar power plant to the third party or consumer of the building or to DISCOM on the tariff determined by SNA or HERC are made clear to the Investors.

vii) Clause No. 5.3

Lease of Government buildings/Land

The rooftop space available in the government organization, institutions, buildings or vacant land of the same can also be provided on lease/rent to the Independent Power Producer/ RESCO developer for setting up of solar power projects.

For such sites the lease/rent rate shall be decided by a Committee of Deputy Commissioner of concerned district, PWD (B&R) Department and the Department owning the building. The developer can also supply/provide the power for the captive use of the premises where the system is installed

along with net meter and can sell the remaining power to HPPC on the minimum last tariff discovered and conveyed by HPPC or to third party as per the HERC Regulations.

The Commission has considered the above and is of the view that in Haryana, rooftop solar is an integral part of promotion of solar power projects in Haryana. Accordingly, the above mentioned dispensation as per the State Solar Policy shall be included in the Regulations.

viii) Comments filed by the IL & FS Energy Development Company Limited, Gurgaon:-

ix) Clause no. 61.(1)

It is stated that the solar power generated at optimal locations having high irradiation intensity provides for lower cost of generation as compared to generation at sub-optimal locations having lower irradiation and high capital cost. Recently concluded bids have seen the solar tariff going as low as Rs.2.44/kWh in the state of Rajasthan and Rs.2.95/kWh in the state of Madhya Pradesh. The intent of the state should be to consume green energy and contribute to the greater cause of climate change. It would be a wise decision to source solar power from such locations rather than putting up projects at sub-optimal locations, in the state of Haryana, where the cost of land is also very high and solar irradiation intensity is low. Also, it should be noted that owing to the fertile land available in the state of Haryana, the rational decision should be to use it for agricultural purposes only to sustain the ever-growing population and their needs.

It is worthwhile to mention here that Distribution Companies of Haryana have been permitted by HERC to procure solar power from outside the state and they are already availing the aforesaid concessions and benefits applicable for solar power. It is required to provide a supportive environment by extending the concessions to solar power being provided in the Haryana Solar Energy Policy 2016 to solar power being sourced from outside the state.

It is further proposed that in order to motivate DISCOMs to support this proposal, the solar power so consumed by the retail consumers could be counted towards meeting the RPO of the concerned DISCOMs.

The issue of concessions and benefits has already been dealt with by the Commission in the present order.

x) Comments filed by M/s. PTC India Limited:-

Clause 61 (1)

Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for third party sale / Open Access consumers for energy from ground mounted / Roof Top Solar power during the control period under these regulations for a period of 25 years from the date of commissioning of such project. This shall be subject to the condition that the such solar project is commissioned within the control period of this regulation and the solar power is generated and utilized in the State of Haryana. and is counted towards RPO of the Distribution Licensee(s). Further, in case the Distribution Licensee(s) procure the power from the ground mounted solar

project in Haryana, then the solar power generated is counted towards RPO of such Distribution Licensee(s).

Rationale for the amendment:

Commission may appreciate that the Solar power project developers and lenders commit significant capital which is based on the long term power purchase agreement and OA charges considering nominal project returns. Hence, the waiver of the said charges has to be extended to the full life of the Project to have a clear visibility and continued viability of the Project.

Since this is the first time when HERC is coming up with such waiver of OA charges, the commission may allow a period of minimum of 3 years to the projects for commissioning to avail waiver (i.e. the control period of this regulation) of charges for entire life of the project. This is line with CERC ISTS charges and losses waiver, which provides a time bound window for solar projects to get commissioned for availing waiver of ISTS charges and losses for the entire 25 years period. Similarly KERC has also provided window for solar project commissioning and offer waiver of OA charges and CSS charges for a period of 10 years.

In case where the power from the solar project is sold to third party within the state through Open Access, the solar power should be counted towards RPO of the consumer which is also an obligated entity. Without this sale of solar power within the state becomes difficult and there would be no incentive for the procurer to buy solar power. Further, it is difficult to understand that an obligated entity even after buying solar power cannot

comply with solar RPO. The solar power generated may be counted towards RPO of the Distribution Licensee(s) in cases where the procurer of solar power is not obligated entity. The Commission is requested to update the Clause accordingly.

Similar order has been released by KERC. As per KERC Order dated 18/08/2014, in the matter of Wheeling charges, Banking charges & Cross Subsidy Surcharge for Solar Power Generators.

“All solar power generators in the State achieving commercial operation date (CoD) between 1st April 2013 and 31st March 2018 and selling power to consumers within the State on open access or wheeling shall be exempted from payment of wheeling and banking charges and cross subsidy surcharge for a period of ten years from the date of commissioning. This is also applicable for captive solar power plants for self-consumption within the State.”

Clause 61 (2)

Provided that the Commission may review the above depending on the impact of such waiver on the revenue of the power utilities in Haryana .

Rationale for the amendment

Any change in Regulations pertaining to waiver of charges will impact the viability of the projects. Developers of renewable projects make huge investments in the state to set-up and operate these projects, any change in the regulations make their investments sunk cost, Project NPA and discourages investors for any further investments. Further, such regulation/ Policy shifts may lead to uncertainty for RE investors in the state. For

the promotion of RE projects in the state, the waiver of the said charges may be extended to the full life of the Project.

The Commission has considered the above and observes that the ibid issues have already been dealt with by the Commission.

xi) Comments filed by the Clean Max Enviro Energy Solutions Pvt. Ltd:-

Clause 61 (1) Proposed Change: The Commission may define two periods — the Control Period for commissioning renewable energy systems to avail waiver; and the Waiver Period to define the duration (in years) of waiver applicability. This will ensure investor confidence. Karnataka Electricity Regulatory Commission (KERC) adopted such an approach and was able to attract significant investments for several hundred MWs of solar power in Karnataka.

- The Control Period for commissioning renewable energy plants may be maintained at March 31st, 2020 for availing these benefits.
- Waiver duration for plants commissioned within the Control Period may be set 15 years from the respective commissioning date; only then are projects financeable.

Reason: Loan period for financing is generally 15 years. If policy says, "waiver period to be 3 years and or may review the structure depending on its impact" then it adds uncertainty to project cash inflows and makes the project difficult to finance (by lenders) and hence unviable.

Clause 61 (2)

Proposed Change: "Review the above depending" may be replaced with "review the above to extend the Control Period or Waiver Period depending".

Reason: Same as above; project not financeable due to uncertainty in project cash inflows.

The Commission has considered the above and observes that all the aforesaid issues have been dealt with in the present order.

ii) Comments filed by the Sh. R.C Taneja Director, RSR Agencies Pvt. Ltd

The contents of both parts of this clause are ambiguous and shall be strong deterrent for the new investors in the installation of solar PV generation plant. The provisions are also not in line with the "Haryana Solar Power Policy 2016" issued by Govt. of Haryana dated 14-03-2016 (Para 4.3)

(A) The relaxations of totally waiving off the wheeling charges, transmission and distribution charges and additional surcharge should be valid for the complete project life and not for the control period.

i) As per Para 2- chapter1 'definitions': The project life for solar power plant under (35)(d) page- 9 has been considered as 25 years. Hence it should be clearly stated that all projects of solar PV generation plant shall be given relaxation of above charges for 25 years after the date of commissioning COD.

ii) An embargo can be levied that this facility shall be available only to those projects which are implemented within the present control period i.e. up to 31-3-2020.

(B) Provision made in Para 61(2) is absolutely wrong ambiguous and unjustified. Rules of the game have to be decided before the start and have to be made applicable in entirety till the total project life. Present provision amounts to blackmailing and cheating the general public by the HERC/Govt. Authority. Any impact, due to change not only in this clause, but due to any other clause, as well, must be thoroughly examined and weighed and should be announced only if it is possible to be applied/implemented for full life of the project. The investor has to evaluate each and every factor before deciding to take the plunge. Huge investments are required to be made and so many financial agencies and other regulatory or Govt. Departments, etc. shall be involved. It is absolutely wrong/un-ethical to say that the clock shall be put back or any clause shall be changed leaving everybody in lurch. Hence this provision should be deleted and settled once for all.

(C) A clear cut provision should be made in the rules that no other charges/tax & duty of any type shall be levied on the projects implemented in this current control period.

(D) In case of third party sale or as captive power plant of solar PV, it should be clearly mentioned in the rules that the provision of 'A' & 'C' above shall be applicable for full life of the project and will not have any relation with PPA. This will be a requirement while dealing with the third party sale. Period of PPA may vary and PPA may have to be entered with many consumers during the life span of the project.

(E) It should be clearly mentioned in the rules that there shall be no intervention of the HERC/DHBNV/UHBNV what so ever in the PPA signed by any private parties bilaterally for sale/purchase of solar power. HERC/DHBNV/UHBNV shall

continue to discharge its function of transmission/distribution of power throughout the project life as per the terms and condition signed on the eve of start of the project.

(F) HERC/DHBVN/UHBVN may lay any guide line towards the technical specification of the solar plant and or its installation at the time start of the Project, but once the Project is installed and commissioned then it shall be final and no intervention shall be made.

The Commission has considered the above submissions and observes that the issue of control period / waiver period has already been dealt with by the Commission in the present order. It needs to be noted that these Regulations upfront provides for the rules so that there remains no regulatory un-certainty.

iii) Comments filed by the Director, M/s Rays Experts Pvt. Ltd:-

Proposed Change:- Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge and transmission and distribution losses shall be totally waived of for captive use/ third party sale / Open Access consumers for energy from ground mounted / Roof Top Solar power for the life of the project(25 Years) under these Regulations. This shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s).

The aforesaid issues have already been dealt with by the Commission in the present order.

iv) Comments filed by the Amplus Energy Solutions Pvt. Ltd:-

Solar projects have a life of twenty-five (25) years and require substantial capital investment in form of debt financing. Proposed mid-term exemption does not offer visibility to consumers beyond the control period and resultant will be only in the mid-term off- take commitment.

It is critical to mention that normal repayment period of debt is 8 to 10 years. To de-risk the commercial financial flow lenders requires a minimum of 10-year off- take commitment. Therefore, financing of such projects will not be possible at all. Karnataka, Andhra Pradesh, Telangana, Punjab has already given concessional benefits/exemption on solar power for Ten (10) years to make projects sustainable and bankable for Renewable Energy Generators/IPPs. Exemptions applicable in various states of India is following:-

States	Exemption Applicability	Duration in Years
Karnataka	Wheeling, Banking & Cross Subsidy Surcharge	Ten (10) years
Andhra Pradesh	Transmission and Wheeling Charges	Ten (10) years
Telangana	Transmission and Wheeling Charges	Ten (10) years
Punjab	Transmission & Wheeling Charges	Ten (10) years

It will not be out of place to mention that Haryana has potential of 4560 MW* solar capacity. Against which installed capacity is 73.27 MW only*. It clearly indicates an incompetent environment in barring investment in the sector. Therefore, delivery of a long term and positive regulatory framework is essential for to encourage the investment.

In this context, we suggest extending exemptions to 10 years for all solar projects installed during the control period of regulation bringing a long- term visibility.(*Source- MNRE & NISE).

The aforesaid issues have already been dealt with by the Commission in the present order.

**v) Comments filed by Sh. Kashmir Singh Saini SSE 66 Kv Substation:-
Comments:**

The Commission should waive of the wheeling and transmission charges cross subsidy etc. for at least 10 years to promote the renewable energy in Haryana in true letter and spirit.

The aforesaid issues have already been dealt with by the Commission in the present order.

vi) Comments filed by SBI Capital Markets Limited:-

Based on the MNRE's target of 40 GW of Rooftop Solar Capacity and 60 GW of Ground Mounted Solar Capacity to be installed by 2022, robust and viable investments are required to be made in the solar sector. Most solar projects are financed on non-recourse, project finance basis, and it is an accepted practice to consider debt repayment period for project financing loans to the renewable sector as being between 10-15 years depending on the tenure of the PPA. In case the waiver of the aforementioned charges are only for the duration of the control period(with the life of the plant being 25 years), it will lead to uncertainty of revenues during the balance tenure of the loan.

Hence, to ensure certainty of revenues and to enable the investors to repay the debt over a long tenure, we request the

Commission to extend the waiver of the said charges to a period of 10 to 15 years in line with the debt repayment period, while retaining the control period of the tariff order for three years as currently specified.

- We also request that the Honourable Commission may ensure that these periods are not reduced/revoked at a later point in time. Since the project credit appraisal at the time of sanctioning loans would take the assumption for wheeling charges, etc. for the entire loan tenure.
- Additionally, it would be valuable if the Commission can pre-define the non-applicability of any other additional open access charge or surcharges for the duration of the waiver period with a view of boosting investor confidence and securing lender interests.

The aforesaid issues have already been dealt with by the Commission in the present order.

vii) Comments filed by Hero Future Agencies:-

Proposed Changes:-

Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for third party sale / captive open access sale /Open Access consumers for energy from ground mounted / Roof Top Solar power during the useful life defined control period under these Regulations. This shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s).

Reasons:-

We would request the Honorable Commission to kindly extend the exemption of wheeling charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge for captive open access sale also.

Further such exemption needs to be provided for the useful life of the project since these RE projects have to cater to energy needs of industrial and commercial consumers for its life time of 25 years. Exemption over the control period (3 yrs) of the regulations is too small a period to merit investment in the state for open access projects.

Karnataka Electricity Regulatory Commission vide its order dated 18.08.14, in order to promote solar power open access sale has provided 10-year exemption of all the open access charges. The relevant excerpts is reproduced below:-

“1. All solar power generators in the State achieving commercial operation date (CoD) between 1st April 2013 and 31st March 2018 and selling power to consumers within the State on open access or wheeling shall be exempted from payment of wheeling and banking charges and cross subsidy surcharge for a period of ten years from the date of commissioning. This is also applicable for captive solar power plants for self-consumption within the State.”

Till the time renewable power is consumed by the Distribution Licensee, it cannot satisfy its Renewable Power Obligation. Hence exemption of open access charges should not have a precondition which is impossible to meet.

Thus, we would request the Honorable Commission to kindly provide exemption of open access charges for the useful life of solar projects. Also, solar power procured by open access

consumer will be counted towards their RPO and not towards the Distribution Licensee.

ii) Clause no.61(2)

Proposed Changes:-

Provided that the Commission may review the above depending on the impact of such waiver on the revenue of the power utilities in Haryana, provided any change in above waiver will be applicable prospectively i.e. for projects which get commission post such review.

Reasons:

We would like to re-iterate that solar projects under open access enters into long term power sale agreement with industrial and commercial and generate power to cater to the need of industrial and commercial consumer till its lifetime of 25 years Any change in the waiver provided will affect the viability and sustainability of renewable project and act as deterrent to investment in the state

Thus, we would request the Honorable Commission that if in future the Honorable Commission reviews such waiver and proposes any change in it then such change shall be made applicable for only those projects which gets commission post such review.

The aforesaid issues have already been dealt with by the Commission in the present order.

viii) Comments filed by Re New Power Venture Limited:-

Proposed Changes (Clause No. 61(1))

Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for third party sale / Open Access consumers for energy from ground mounted / Roof Top Solar power during the control period under these Regulations. This shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s). The above exemption will be applicable for 10 years from the date of commissioning of such projects.

The state Govt. of Haryana in order to realise the above targets has notified Haryana Solar Power Policy, 2016 on March 14, 2016 under which the Haryana Govt. has envisaged a target to install 3200 MW of Solar power by 2021-22 and provided gamut of incentives to solar power developers in order to exploit solar power potential of Haryana.

It is important to note that various obligated entities in Haryana, have not been able to meet with the RPO trajectory set by the Commission and there is huge backlog of RPO noncompliance on these obligated entities. The State Govt. in order to resolve these issues and to promote solar power projects in the state has incorporated clause 4.3 under Haryana Solar Power Policy 2016, under which solar power projects will get exemption from open access charges:

Reasons:-

We would like to bring notice to the Hon'ble Commission that solar power potential of Haryana as per National Institute of Solar Energy

(NISE) is 4560 MW however as on July 31, 2016 the total solar power installation in Haryana is only 15.3 MW.

The Central Govt. of India has set a target to achieve 100 GW of solar power installation by 2022, under which the state specific target for Haryana is 4142 MW.

“4.3 Exemption of Electricity Duty & Electricity Taxes & Cess, Wheeling, Transmission & distribution, cross subsidy charges, surcharges and Reactive Power Charges:

All electricity taxes & cess, electricity duty, wheeling charges, cross subsidy charges, Transmission & distribution charges and surcharges will be totally waived off for Ground mounted and Roof Top Solar Power Projects”

The above provision will encourage solar power developers in exploring solar power sale under open access route in Haryana and offer competitive rate to various obligated entities through which the obligated entities will be able to fulfill its RPO targets.

We would also like to bring notice to the Hon’ble Commission that various other state regulatory commissions offer following exemption of open access charges to solar power projects.

In light of the above, we request Hon’ble Commission to provide the timeline for the exemption provided. As depicted for other states above, we request commission to exempt these charges for 10 years from the date of CoD.

Further, we request the commission to clarify on below mentioned query.

- The power is already consumed as Green power by obligated parties. In this scenario, how the same power can be utilized for RPO fulfillment of the Discom.
- In the scenario represented by the Hon'ble Commission, if any obligated third party consumer want to purchase green power than will they get all the benefits mentioned in this clause of the regulation.

The Commission has considered the above submissions and is of the view that the issues as brought out above have already been dealt by the Commission.

ix) Comments filed by Shree Cement Limited:-

Proposed Changes:-

National Tariff Policy 2016 provides that no inter-state transmission charges and losses shall be levied on transmission of the electricity generated from solar and wind sources of energy through the inter-state transmission system for sale.

CERC in its Regulation Sharing of Inter State Transmission Charges & Losses Regulations, 2010 has also exempted solar power from payment of any transmission charges and losses for use of ISTS.

Therefore, it is submitted that exemptions/ waiver available to ground mounted / roof top solar power generated within the state, shall also be available when the same is supplied from plant (s) located outside the state of Haryana for consumption within Haryana.

x) Comments filed by Adani Green Energy Limited:-

Proposed Amendment:-

We would like to appreciate that the Hon'ble Commission has waived of the Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge for third party sale / Open Access consumers for energy from ground mounted / Roof Top Solar power to promote RE Projects in the state of Haryana.

In the draft Regulation, all above incentives are applicable during the control period, i.e three years from the date of notification of these regulations up to 31st March, 2020. The uncertainty of applicability of incentive will not only reduce the interest of investor as well as involve an uncertain risk on the economic viability of project after 3 year. The developer invest in a RE Project for the period of its useful life having an upfront clarity on the applicable charges for useful life of projects.

In order to facilitate transmission of Solar / Wind power from resource rich States to other resource deficit States, the Revised Tariff Policy mandated CERC to waive off the inter-state transmission charges and losses for inter-state sale of Solar / Wind Power. Accordingly, Ministry of Power has issued an order dated 30.09.2016 and 14.06.2017 (in continuation of order dated 30.09.2016) in the matter of waiver of the inter-state transmission charges and losses on transmission of electricity generated from solar and wind source of energy under para 6.4.(6) of the revised Tariff Policy;

“Para 3 (i) For generation projects based on Wind resources, no inter-State transmission charges and losses will be levied on

transmission of the electricity through the inter-state transmission system for sale by such projects commissioned till 31.03.2019.

Provided that the above waiver will be available for a period of 25 years from the date of commissioning of such projects

Para 3 (ii) For generation projects based on Solar resources, no inter-State transmission charges and losses will be levied on transmission of the electricity through the inter-state transmission system for sale by such projects commissioned till 31.12.2019.

Provided that the above waiver will be available for a period of 25 years from the date of commissioning of such projects”.

In view of aforesaid facts, it is therefore submitted that the applicable waiver of the Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge for third party sale / Open Access consumers for energy from ground mounted / Roof Top Solar power should be applicable for the projects Commissioned during the control period with a condition that above waiver will be available for the period of 25 years from the date of commissioning of such projects to protect the interest of investors.

The Commission has considered the above and observes that the aforesaid issues have already been dealt with by the Commission in the present order.

xi) Comments filed by National Solar Federation India Limited:-

In this para, it has been mentioned that Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of for third party sale /

Open Access consumers for energy from ground mounted / Roof Top Solar power during the control period under these Regulations. It has been further mentioned that this shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s).

In our opinion, Third party sale/ purchase projects are primarily set up by those parties who are designated entities under the EA Act, 2003 and such purchase/ sale is counted by them for meeting their Solar RPO obligation. Therefore, the solar power generated/ purchased by third party through open access cannot be considered as purchased by the Distribution Licensee (s), hence should not be counted towards RPO of Distribution Licensee(s).

The Commission has considered the above submissions and observes that the above mentioned issues have been already dealt with in the present order.

14. Clause no 20 Sharing of CDM Benefits:-

As per HERC Draft Regulation:

(1) The proceeds of carbon credit from approved CDM project, after deduction of expenses incurred by the generating company for registration and approval of the project as CDM project shall be shared between generating company and concerned beneficiaries in the following manner:-

- a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station i.e. 12 months from CoD;

- b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

Comments:-

i) Comments filed by the Director, HAREDA, Panchkula:-

In this clause, the definition of the beneficiaries needs to be clearly defined.

The Commission has considered the above and is of the considered view that the definition of 'beneficiary' as provided in these Regulations are very clear and needs no further elaboration.

15. Clause no 38 Use of Fossil Fuel:-

As per HERC Draft Regulation:

Use of Fossil Fuel shall not be permitted. The Project developer shall furnish monthly fuel (biomass mix) usage statement and monthly fuel (biomass mix) procurement statement duly certified by Chartered Accountant to the beneficiary (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring fuel consumption) for each month, along with the monthly energy bill.

(2) Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such biomass based power project. In such cases the PPA(s)

shall be terminated and the Discoms (beneficiaries) shall be under no obligation to make any payments for the power supplied by the seller in breach of the regulation on fuel usage.

Comments:-

i) Comments filed by the Director, HAREDA, Panchkula:-

It is submitted that as per the scheme guidelines for “Promotion Of Grid Interactive Biomass Power & Baggase Cogeneration In Sugar Mills” of Ministry of New & Renewable Energy, Govt. of India issued vide no. 13/10/2013-BM dated 20.06.2014 which were valid up to 12th plan period i.e. upto 31.03.2017, it has been mentioned under the eligibility parameters that “Maximum of upto 15% use of fossil fuel of total energy consumption in Kcals, or as per DPR, whichever is less”.

So, it is proposed that under this clause, it may be mentioned that the use of fossil fuel shall be as per the guidelines of the Ministry of New & Renewable Energy, Govt. of India prevailing at that time.

The Commission has considered the above and is of the considered view that no useful purpose is served by providing for use of fossil fuel. Moreover, the validity of the aforesaid notification is already over. Hence, it requires no further comments.

Provided that the bagasse based co-generation projects, selling power to the Discoms under PPA approved by the Commission, shall be permitted to use

biomass as fuel during the non-cane crushing season. In such cases the generators can approach the Commission for determination of tariff for the power generated using biomass as fuel. The HPPC shall not refuse purchase of such power without the prior approval of the Commission.

16. Clause no 49 Technology Aspects (Technology specific parameters for Solar PV Power Projects:-

As per HERC Draft Regulation:

Technology Aspects._ Norms for Solar Photovoltaic (PV) power under these Regulations shall be applicable for grid connected PV systems that directly convert solar energy into electricity and are based on the technologies such as crystalline silicon or thin film etc. as may be approved by MNRE. The Commission shall not determine generic tariff under these Regulations and only project specific tariff, if required, shall be determined.

Provided that the Discoms / HAREDA may work out indicative tariff, aligned with the prevailing market trends and submit the same for approval of the Commission prior to initiating competitive bidding / reverse bidding process.

Provided that the norms including Capital Cost, CUF, Auxiliary Energy consumption, O&M expenses etc. and the tariff thereto for Solar Pv / Thermal / Rooftop / Canal top / Water works, as per the technology approved by the MNRE, shall be determined on project specific basis depending on the prevalent market trend only if required i.e. in case the competitive bidding route for any reason does not take effect. The broad guiding parameters shall be as under:-

Comments:-

i) Comments filed by the Director, HAREDA, Panchkula:-

It will not be possible for HAREDA/DISCOMs to determine an indicative tariff as per prevailing market conditions as the tariff varies from State to State depending upon the policies of these states i.e. provision for providing land, grid-connectivity mechanism, transmission/wheeling charges etc. and solar insolation level.

Also, it has been mentioned that the HAREDA/DISCOMs have to submit the indicative tariff for approval to the Hon'ble Commission before competitive/reverse bidding process. So, the permission of the Hon'ble Commission has to be taken twice i.e. first for approval of indicative tariff and again for approval of tariff finalized through competitive bidding which is a time consuming process.

So, an indicative ceiling tariff may be notified by the Commission on yearly basis on which the bidding can be initiated.

The Commission has already dealt with the aforesaid issue in the present order.

17. Clause no 52 Technology Aspects (Technology specific parameters for Biomass Gasifier based Power Projects) :-

As per HERC Draft Regulation:

(1) A process achieved by reacting biomass at a high temperatures without combustion / incomplete combustion, with a controlled amount of oxygen and/or steam resulting in production of combustible gases consisting of a mix of Carbon Monoxide (CO), Hydrogen (H₂) and traces of Methane (CH₄), which shall

be called synthesis gas to be used as fuel. The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that uses 100% syngas engine with MNRE approved gasification technology and shall use non fossil fuel as approved by MNRE.

(2) The useful life, for the purpose of these Regulations, for biomass gasification based Projects, shall be 20 years.

(3) The normative Capital Cost, after accounting for capital subsidy, shall be Rs. 4.43 Crore / MW for the entire control period unless reviewed by the Commission.

(4) The threshold Plant Load Factor (PLF), including stabilisation period, for the purpose of determining levellised generic tariff under these Regulations shall be 85%.

(5) The Auxiliary Energy Consumption (AUXe), for the purpose of determination of levellised generic tariff under these Regulations, shall be 10%.

(6) The Normative Specific Fuel consumption shall be 1.25 Kg./kWh.

(7) The Normative Operation and Maintenance (O&M) expenses shall be Rs. 0.53 Crore / MW for the base year i.e. the FY 2017-18, the same shall be subject to an escalation factor @ 5.72% per annum from second year onwards.

(8) The base year (FY 2017-18) fuel cost shall be Rs. 3270 / MT and the same shall be escalated @ 5% per annum for the purpose of arriving at generic levellised tariff for the entire useful life of the project.

Comments:-

i) Director, HAREDA, Panchkula:-

The gas produced from gasification technology mainly contains carbon-mono-oxide and is generally called producer gas whereas the biogas mainly contains methane. So, the gas produced from the gasifier project cannot be named as biogas. Accordingly, it is proposed that the bold line in the existing draft may be amended as “The projects shall qualify as gasifier based power project”.

18. Clause no 10 (1) Dispatch Principles for electricity generated from Renewable Energy Sources:-

As per HERC Draft Regulation:

(1) All renewable energy power plants except for biomass power plants with installed capacity of 10 MW and above, and non-fossil fuel based cogeneration plants shall be treated as ‘MUST RUN’ power plants and shall not be subjected to ‘merit order despatch’ principles.

(2) The biomass power generating station with an installed capacity of 10 MW and above, non-fossil fuel based co-generation projects and processed municipal solid base WtE power projects shall be subjected to scheduling and dispatch code as specified under Haryana Grid Code (HGC) and other relevant regulations including amendments hereto.

i) Comments filed by M/s PTC India Limited:-

All renewable energy power plants (except for biomass power plants) with installed capacity of 10 MW and above , non-fossil fuel based cogeneration plants shall be treated as ‘MUST RUN’ power plants and shall not be subjected to ‘merit order despatch’ principles.

However in case of biomass power plants with installed capacity of 10 MW and above shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order despatch' principles.

Rationale for the amendment:

The text amendment is suggested to bring clarity that solar power projects of any capacity are treated as "MUST RUN".

Since, solar power projects are based on the technology is totally depended on solar energy to generate power and there is no fuel cost. Further, variations in small capacity solar power can easily be absorbed by DISCOM.

As per MNRE all solar power projects have must run status (irrespective of the capacity). Hence commission is requested that small solar projects below 10 MW may be treated as "MUST RUN" power plants.

On similar lines, as per Clause 5.2 (u) of Indian Electricity Grid Code Regulation, 2010

"System operator (SLDC/RLDC) shall make all efforts to evacuate the available solar and wind power and treat as a must run station.

ii) Comments filed by the Clean Max Enviro Energy Solutions Private Limited:-

Proposed Change: "10 MW and above" may be replaced with "1 MW and above".

Reason: Typical industrial and consumer open access plants are under the range of 1-10 MW. To enable financial viability for captive system for small open access consumers we propose the above change.

The Commission has considered the above submission and finds ambiguity in the provisions relating to dispatch from RE plants. Accordingly, Commission decides that the regulations shall provide that all Renewable Energy Power plants except for Biomass power plants of installed capacity 10 MW and above shall be treated as must run power plants. Biomass power with installed capacity of 10 MW and above shall be subjected to scheduling and dispatch as specified under Haryana Grid Code and other relevant regulations including amendments thereto. The scheduling and deviation settlement issues related to solar and wind power shall be addressed through a separate set of Regulations already under formulation.

Further, as far as scheduling and deviation settlement mechanism for other source of RE generator is concerned, till the time the Commission notifies the said mechanism after due deliberations, the dispensation provided in the present Regulations shall be applicable.

iii) Comments filed by SBI Capital Market Limited:-

It has been our experience that most industrial and consumer open access or rooftop solar plants typically are in the range of 1-10 MW. Hence, subjecting plants with installed capacity of less than 10 MW to 'merit order despatch' principles puts the debt repayment capability of such projects at risk. So, to enable financial viability for captive system for small open access consumers, we request the Commission to replace "10 MW and above" with "1 MW and above" as 'MUST RUN PLANTS'.

The Commission has already dealt with the aforesaid issue in the present order.

iv) Comments filed by RE New Power Venture Limited:-

(1) All renewable energy power plants except for biomass power plants with installed capacity of 10 MW and above , and non-fossil fuel based cogeneration plants shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order despatch' principles.

Reasons:-

Must run status is provided to non-conventional power projects broadly on account of following anomaly:

1. Variability and inability to control availability of natural resource.
2. Present single part tariff structure for such plants leading to recovery of fixed cost on per unit's basis.

Basis above we would like to draw your kind attention to the facts that Bio-mass based plants are free from the above mentioned anomaly. The fuel availability can be ascertained with high degree of precision and they have two-part tariff structure securing their fixed cost liabilities. Including biomass based plant with capacity less than 10 MW will affect the Discoms ability to offtake power from other renewable energy sources which actually suffers from the above mentioned anomaly. In view of above we request this Hon'ble commission to exclude Biomass based plant from list of must run plants irrespective of the plant size.

The Commission has considered the above and finds that the issues raised herein has already been dealt with in the present order.

v) Comments filed by Ecogreen Energy Private Limited:-

As per CERC regulation 2017, Must Run status has been given to all the renewable energy power plants except for biomass power plants with installed capacity of 10 MW and above, and non-fossil fuel based cogeneration plants shall not be subjected to 'merit order despatch' principles. Where, the biomass power generating station with an installed capacity of 10 MW and above and non-fossil fuel based co-generation projects shall be subjected to scheduling and despatch code. CERC has not included Waste to Energy projects in to scheduling and despatch code.

Further, Projection of power generation from waste to Energy projects are really difficult as because of the frequent generation fluctuation due to inconsistency in the fuel characteristics and the GCV. MSW fuel is happened to be heterogeneous in nature and thus its composition & characteristics varies enormously.

It is therefore requested to kindly exclude the Waste to Energy plant from scheduling and dispatch code conforming to the CERC regulation 2017.

The Commission has considered the above issue and observes that the issue has already been dealt in the order. However, it will be further made clear in the Regulations.

19. Chapter 3 Point No 18 Rebate:-

As per HERC Draft Regulation:-

(1) For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed.

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

i) Comments filed by Ecogreen Energy Private Limited:-

1) Little clarity required as 2 % rebate would only be appropriate if the payment is being made immediately within a day or two. Time frame need to be mentioned for claiming 2% rebate.

2) And accordingly after expiry of 2 % rebate period, 1 % rebate to be restricted to the payment if made within 15 days.

The Commission has considered the above and is of the considered view that the draft provision needs no change.

20. Chapter 3 Point No 19 Late Payment Surcharge:-

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

i) Comments filed by Ecogreen Energy Private Limited:-

With this we understand that the utility will have the liberty of payment up to 60 days from the bill date without implication of any late payment surcharge. Late payment surcharge to be made applicable from the 31st day so as to ensure timely payments to the generators and that too within 30 days.

The provisions regarding rebate and surcharge has already been dealt with in the present order.

21. Chapter 3 Point No 20 Sharing of CDM Benefits:-

As per HERC Draft Regulation:-

(1) The proceeds of carbon credit from approved CDM project, after deduction of expenses incurred by the generating company for registration and approval of the project as CDM project shall be shared between generating company and concerned beneficiaries in the following manner:-

- a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station i.e. 12 months from CoD;
- b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

i) Comments filed by Ecogreen Energy Private Limited:-

It is highlighted here for the Gurgaon-Faridabad project we already have signed the concession agreement with the respective corporation and as per RFP and the agreement condition the CDM benefits is to be shared with the corporation. Relevant Para from concession agreement is as under:-

The Concessionaire shall receive revenue generated through products produced out of such processing like compost, energy, RDF, biogas, etc. The revenue generated through carbon credits

shall be shared in the ratio of 50:50 between the Concessionaire and the Participating ULBs.

Now sharing it with the utilities is not possible in the present case. Hence, it may appropriately be modified or directed suitably with necessary incorporation.

The Commission has considered the above and observes that in case the Concession Agreement as PPA has specific provision regarding sharing of CDM benefits, the same shall be applicable in such cases.

22. Clause no 65 Power to Relax:-

As per HERC Draft Regulation:

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

i) Comments filed by the Clean Max Enviro Energy Solutions Private Limited:-

Proposed Change: The Commission should ensure that the Waiver Period and Control Period are not reduced nor revoked retrospectively; only then are projects financeable.

Reason: Same as above; project not financeable due to uncertainty in project cash inflows.

The Commission has already dealt with the aforesaid issue in the present order.

23. Clause no 67 Power to Amend:-

As per HERC Draft Regulation:

The Commission may, at any time, add, vary, modify or amend any of the provisions of these regulations.

i) Comments filed by the Clean Max Enviro Energy Solutions Private Limited:-

Proposed Change: This clause may be removed.

Reason: Existence of this clause will impede investments in Haryana as it increases the perceived regulatory risk; project not financeable due to uncertainty in project cash inflows.

The Commission has considered the above and is of the view that the process followed in case any change / amendment etc. is required in the Regulations is also the same as followed for framing / notifying the principal Regulations including public / Stakeholders consultation and public hearing. Moreover, it a standard clause appearing in almost all Regulations notified by the Commission.

24. Clause no 15 Return on Equity:-

As per HERC Draft Regulation:

- (1)** The value base for the equity shall lower of the two either 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under Regulation.
- (2)** The normative Return on Equity shall be as under:-
 - a) 14% per annum calculated on normative Equity Capital.
 - b) MAT/Corporate Tax applicable shall be considered as pass through.

Provided that the applicable MAT / Corporate Tax shall be separately invoiced as per the actual paid at the rate as declared by the Income Tax Department. The Generator shall raise the bill for reimbursement of MAT / Corporate Tax applicable on Return on Equity in 12 equal installments which shall be payable by the beneficiaries.

i) Comments filed by the Director, M/s Rays Experts Private Limited:-

a) The Return on Equity shall be 18% per annum.

ii) Comments filed by the ECOGREEN ENERGY Private Limited:-

CERC has also given the same 14% but on post Tax basis which comes out to be 17-18. % on pre Tax basis. Pre Tax figure generally used during the calculation of the tariff. It may appropriately be modified to pre Tax basis only.

25. Clause no 22 Taxes and Duties:-

As per HERC Draft Regulation:

Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government. Any tax / duty levied by the appropriate Government shall be allowed as pass through on actual incurred basis.

i) Comments filed by the Director, M/s Rays Experts Private Limited:-

Tariff shall be determined considering prevailing taxes and duties.

The Commission has perused the aforesaid comments and is of the view that as per the draft discussion paper taxes / levies etc. is a 'pass through'.

Hence, the same shall be as per the prevailing dispensation and should have been actually paid to the authority (ies) concerned.

26. Clause no 11 Capital Cost:-

As per HERC Draft Regulation:

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

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost items along with its petition. Provided further that cost of land shall not form part of Capital Cost in case of land obtained on lease.

i) Comments filed by the Amplus Energy Solutions Private Limited:-

Land in any form acquired is an integral part of the project cost and hence contributes in Capital cost. All type of land acquired is also included in the capital cost as per the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017. In this context, we would further request commission to include lease land as the part of the capital cost. Lease land, if not included in the capital cost need to be reflected and included in the financial principles of the project.

iii) Comments filed by the Re New Power Venture Limited:-

Proposed Changes:-

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost items along with its petition. Provided further that cost of land shall not form part of Capital Cost in case of land obtained on lease.

Reasons:-

Land acquired through any arrangement has a cost associated to it, same should be included either in the Capital cost or should be reflected separately under any relevant head while determining the tariff.

As per the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017, The cost of land acquisition irrespective of modalities forms a part of the capital cost. The provision related capital cost is reproduced for your perusal:

“12. Capital Cost

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

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost items along with its petition in the manner specified under Regulation 8.” It is evident from the above that nowhere land cost is excluded while ascertaining the capital cost.

Further we would to make following suggestion for kind consideration of this Hon'ble Commission for treatment of leased land cost while calculating the capital cost:

1. If the total amount towards leasing the land is paid in single lot same should be considered as a part of capital cost.

2. If the amount towards leasing the land is paid in timely installment same should be considered in the financial model under any reoccurring expenditure head.

Basis above we would request the honorable commission to amend the clause as proposed.

The Commission has considered the above submissions and is of the view that there are various ways in which lease can be structured. As such in case where land is on lease basis the cost of land to be taken as part of the capital cost shall be determined as per the Land Lease Agreement. This dispensation shall be applicable for project specific cases.

iv) Comments filed by the ECOGREEN ENERGY Pvt. Limited:-

As per CERC Consideration:-

The normative capital costs during the entire control period under these Regulations, unless reviewed earlier by the Commission, shall be Rs. 15 Crore/ MW.

Proposed Changes:-

The sector is not matured so far for such waste to Energy projects only one or two plants are fully operation across India and there are lots of projects who are under various stages of development and to be commissioned in coming 2-3 years which was bided considering the state determined generic tariff available to them.

Still most of them are struggling for the financial closure, even when tariff is determined, Financial institutions are also reluctant to this sector as there is more failure story than success story.

In absence of the generic tariff, it is almost impossible to have financial closure for waste to Energy Projects.

Further, since there is a revised Solid Waste Management Rule 2016 notified in April 16 according to which Waste to Energy Projects are required to follow more stringent norms for emission level per attached Annexure-II which leads to higher capital cost where additional Flue Gas Treatment System to control the Air emission, Lechate treatment plant (LTP) for scientific treatment of lechate and Sanitary Land fill are required to develop for scientific disposal of ash & rejects. Suggesting capital cost for this kind projects are quite difficult as there are only few plants which have been commissioned so far and are operational.

However we would like to propose the capital cost of WTE Plant with Air cooled condenser configuration and Water cooled condenser configuration separately:

Technology	Cost with WCC (Crore/MW)	Cost with ACC (Crore/ 'MW)
MSW	16	18
RDF	10	12

The Commission has considered the above submissions and is of the view that the Commission has determined Capital Cost for processed WtE projects after due deliberations and hence, at this stage, no further change is warranted.

**27. Clause no 13 Loan and Finance:-
As per HERC Draft Regulation:**

(1) For the purpose of determination of tariff, loan tenure of 13 years shall be considered.

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

(b) For the purpose of computation of tariff, the normative interest rate shall be considered as the Base Rate of State Bank of India (SBI) prevalent on 1st April of the relevant year plus a margin of up to 200 basis points i.e. 2%.

(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.

i) Comments filed by the Amplus Energy Solutions Private Limited:-

It is to be noted that Hon'ble CERC has replaced the base rate methodology with Marginal Cost of Funds based Lending Rate (MCLR) from Apr 2016 onwards. Therefore, we request to update the same as per the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017.

ii) Comments filed by the Re New Power Venture Limited:-

Proposed Changes:- For the purpose of computation of tariff, normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor)

prevalent during the last available six months shall be considered.

Reasons:- The base rate methodology has been replaced by new methodology of MCLR (Marginal Cost of Funds based Lending Rate) from Apr 2016 onwards.

Therefore, we request Hon'ble commission to update the same as per the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017.

The Commission has considered the above and agrees to replace the 'base rate' with Marginal Cost of Funds based Lending Rate (MCLR).

28. Clause no 16 Interest on Working Capital:-

As per HERC Draft Regulation:

(1) The Working Capital requirement in respect of wind energy projects, small hydro power, solar PV and Solar thermal power projects and Processed Municipal Solid Waste (WtE) projects shall be computed in accordance with the following :-

- a) Operation & Maintenance expenses for one month;
- b) Receivables equivalent to 2 (two) months of fixed and energy charges for sale of electricity calculated on the normative CUF / PLF;
- c) Maintenance spare @ 15% of operation and maintenance expenses.

(2) The Working Capital requirement in respect of biomass power projects (Rankine Cycle Technology), Biomass Gasifier / Bio gas based projects and bagasse / non-fossil fuel based co-generation projects shall be computed as under:-

- a) Fuel costs for four months at 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 normative PLF;
- d) Maintenance spare @ 15% of operation and maintenance expenses.

(3) Interest on Working Capital, for the purpose of tariff determination, shall be computed at the average of the base rate of SBI prevailing during the last available six months, for loan tenor of up to one year, of the previous year plus an appropriate margin not exceeding 200 basis points i.e. 2%.

i) Comments filed by HPGCL Panchkula:-

Clause 16 (3) Proposed Amendment

Interest on Working Capital, for the purpose of tariff determination, shall be computed at the average of the base rate of SBI prevailing during the last available six months, for loan tenor of up to one year, of the previous year plus an appropriate margin **not exceeding 300 basis points i.e.3%.**

Rationale for the Change

- Normally Interest rate on working capital as offered by banks/FIs is higher than interest rate on term loan, since the

same is without any collateral. Hon'ble Commission has approved margin not exceeding 200 basis points i.e. 2% over basis rate of SBI for Interest on Term-Loan. Hence the rate of Interest on working capital should have a margin of at least 3% above SBI base rate.

- Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017 has also considered the 300 basis points above SBI MCLR.
- Working Capital requirement is assessed by the Hon'ble Commission on normative basis. Due to stringent norms the actual Working Capital requirement of the utilities may be more but there is no provision to compensate for such cost of interest on enhanced Working Capital requirement.

The Commission has considered the above submissions and as previously stated has agreed to replace base rate with MCLR. However, the margin in terms of basis points, in the falling interest rate regime shall continue to be the same as per the discussion paper i.e. not exceeding 200 basis points.

ii) Comments filed by Ecogreen Energy Private Limited:-

As per CERC Consideration:-

Working capital calculation:

- i. O&M expenses for 1 month
- ii. Receivables equivalent to 2 months of energy charges based on normative CUF.
- iii. Maintenance spares @ 15% of O&M

Shall be computed at the average of the base rate of SBI prevailing during the last available six months, for loan tenor of up to one year, of the previous year plus an appropriate margin not exceeding 200 basis points i.e. 2%.

Proposed Changes:-

With this principles it is coming out to 11.66%. Earlier it was 13.75% as considered by the Hon'ble commission for FY 2016-17 which any way was much difficult to get.

Actual Interest rate also falls even beyond that when lending institutions shows lot of reluctance to fund these projects due to non provenness of the technology & poor performance of RE sector specially WtE.

Thus it is proposed to consider it as minimum 14.5 % and the norms to consider above 450 basis points practically.

The Commission has already dealt with the aforesaid issue in the present order.

29. Clause no 27(1) Capital Cost of Small Hydro:-

As per HERC Draft Regulation:

(1) The indicative capital cost for small hydro projects during the Control beginning the FY 2017-18, unless reviewed earlier by the Commission shall be as under:-

Size of project	Capital Cost (Rs. Crore / MW)
Below 5 MW	7.79
5 MW to 25 MW	7.07

Provided in the case of small hydro power projects the Commission shall determine project specific tariff only and

accordingly determine project specific capital cost as well as CUF, if required, based on case specific hydrological data.

i) Comments filed by the Director, HPGCL Panchkula:-

The indicative capital cost for small hydro projects during the Control beginning the FY 2017-18, unless reviewed earlier by the Commission shall be as under:-

Size of Project	Capital Cost (Rs. Crore/MW)
Below 1 MW	15.00
1 MW to below 5 MW	7.79
5 MW to 25 MW	7.07

Provided in the case of small hydro power projects the Commission shall determine project specific tariff only and accordingly determine project specific capital cost as well as CUF, if required based on case specific hydrological data.

Rationale for the Change

- There is no provision for Micro Hydel Plants (<1MW). There is huge difference in per MW Capital Cost of the Micro Hydel Plants (<1MW) due to lack of benefit of economy of scale.
- There are certain fixed cost components for development of Hydro Project which don't change with installed capacity. In other words a part of the fixed cost remains constant irrespective of installed capacity of the Hydro Project, which leads to Higher Capital fixed cost per MW in case of Micro Hydro Projects. Hence the per MW capital cost of Micro Hydel Plants (<1MW) required to be appropriately increased by providing specifically.
- From the market scenario also it has been revealed that the Capital Cost of Micro Hydel Project (<1MW) is on higher side. Please refer to HPGCL rates filed vide PRO No.34 of 2017 for 2x200 KW Kakroi Hydro Micro, Project.

The Commission has considered the above submissions and is of the view that given almost negligible potential for setting up hydro power projects in Haryana it would be appropriate to determine case specific tariff, if required, for below 5 MW projects after taking into consideration the case specific data / information and after subjecting the same to prudence check. Hence, in the Regulations, under consideration, no changes in the Capital Cost norm, as per the draft discussion paper, is required.

30. Clause no 30 O&M Expenses of Small Hydro:-

As per HERC Draft Regulation:

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

Project size	O&M Expenses (Rs. Crore / MW)
Below 5 MW	0.29
5 MW to 25 MW	0.21

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

i) Comments filed by HPGCL Panchkula:-

Normative O & M expenses for the first year of the Control Period (i.e. FY 2017-18) shall be as under:-

Project Size	O & M Expenses (Rs. Crore/MW)
Below 1 MW	0.50
1 MW to below 5 MW	0.29
5 MW to 25 MW	0.21

Normative O & M expenses allowed under these Regulations shall be escalated at the rate of 5.72% per annum for the Tariff

period for the purpose of determination of tariff under these Regulations.

Rationale for the Change

- As stated in para 2 above, O & M expenditures are also required to be provided specifically for Micro Hydro Project (<1MW).
- There is minimum amount of manpower which needs to be deployed in any Hydro Project which leads to higher O & M cost in case of small micro Hydro Project. Salary of the manpower per MW hence comes to be very high for Micro Hydel Plants (<1MW).
- Alternately O & M cost may be linked suitably as percentage of the Capital Cost like in case of the Discoms.

31. Clause no 50 Capacity Utilization Factor:- As per HERC Draft Regulation:

The Capacity utilisation factor for Solar PV project shall be 19%. Provided that the Commission may deviate from above norm in case of project specific tariff determination.

i) Comments filed by the Director, HPGCL Panchkula:-

The Capacity utilization facto for Solar PV project shall be 19% with annual derating of 0.25%. Provided that the Commission may deviate from above norm in case of project specific tariff determination.

Rationale for the Change

Derating is natural phenomenon for solar PV Plant and hence should be allowed. The shelf life of the PV Cells deteriorates with the passage of time.

The Commission has considered the above and in the absence of empirical data filed in support, the Commission considers it appropriate to retain the provision as per the draft discussion paper.

32. Clause no 17 Operation & Maintenance Expenses:-

As per HERC Draft Regulation:

Operation and Maintenance Expenses.

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

i) Comments filed by Ecogreen Energy Pvt. Limited:-

As per CERC Consideration:-

The Normative O&M expenses for the first year of the control period under these Regulations i.e. FY 2017-18 shall be 6.5% of normative capital cost. The same shall

be escalated @ 5.72% per annum to arrive at the levelised tariff for the entire useful life of the project.

Proposed Amendment (Ecogreen Energy Pvt. Limited)

Considering the response submitted at Para no 2 for capital cost it is submitted that requirement of additional pollution control equipments to meet the revise standards shall also attract additional operational cost.

And due to corrosive nature of waste/RDF it requires higher O&M in comparison to other.

As compared to Biomass based power plants following are the additional Op-Ex to be factored in to account:

1. Activated carbon (HOC) & Hydrated Lime is mandatory for cleaning of flue gas to control the emission of Dioxin/Furans as per CPCB guideline. It is being procured @ 140/Kg and Rs. 3.75/Kg respectively and in order meet Euro Norms its consumption became exorbitantly high impacting the cost of generation by Rs, 0.90- Rs. 1.0 per unit.
2. Meeting revised Norms of SWM rule 2016 Bag filters to be replaced more frequent i.e. once in 2-3 years. Cost of each bag filter is approximately Rs. 10,000/-.
3. Operational cost of Separate Lechate treatment plant (LTP) for scientific treatment lechate.
4. Operation & maintenance of Sanitary Land Fill site.

Thus, we hereby propose to have O&M cost around 8% of the capital cost with an escalation of 5.72% thereafter.

The Commission has considered the above and is of the view that the escalation of 5.72% is adequate as the O&M expenses comprises large proportion of A&G and employees expenses and routine R&M works. Hence, by targeting operational efficiency and given the softening inflation, the dispensation, as per the draft needs no change.

33. Additional Comments/objection from the stakeholders/General Public :-

1) Comments filed by M/s PTC India Limited:-

The procurer of Solar Power under Open Access would not be required to provide schedules of solar power generation/consumption as mandated under Section 42 of the HERC Terms and Conditions for grant of connectivity and open access for intra-State transmission and distribution system) (1st Amendment) Regulations, 2013, Clause 42.

Further, there shall be no reduction in the permissible drawl from the Discom / other Open Access sources, for an Open Access consumer, on account of procurement of Solar power.

Rationale for the amendment:

Honorable commission may appreciate that the potential procurers of solar power who intends to procure power from the solar projects set-up in Haryana under this RE Regulation, have to increase their contract demand as per the installed capacity of the solar power. This unnecessarily blocks their contract demand levy additional charges and a discouraging factor for promotion of solar power in the state.

Since, the facility of banking is provided for solar power in present draft regulation; it is proposed that commission may

waive-off the requirement additional contract demand for procuring solar power from the project.

2) Comments filed by the Director, M/s Rays Experts PVT. Limited:-

Additional Clause:-

The contract demand of the solar energy consumer should not be reduced, as mentioned in open access policy/regulation as the CUF/PLF of the solar energy plant is very less with respect to the size (MW/Kw) of solar power project.

The individuals/companies should be allowed to install solar power project based on their annual units (kWh) consumption basis and should not be restricted for installation of solar plant capacity up to their contract demand.

The Commission has considered the issues raised above and is of the considered view that Regulation relating to reduction of contract demand shall not be applicable for Solar PV Power. Further no provision is envisaged in the RE Regulation on the restriction of capacity of Solar Plant upto the Contract Demand.

3) Comments filed by the Director, Star Wire (India) Vidyut PVT. Limited:-

Additional Clause:-

- a) The Commission is requested to kindly consider the impact of GST norms on the Renewable Energy Sector. Taxes on various capital goods, inputs and input services (both forming part of capital cost as well as operation & maintenance costs) used for generation of renewable energy should be subsumed in the GST regime. Since the impact has gone -up

from 15% to 18% for services-and from 14.75% to 28% on goods, we request the commission to kindly consider the cost of operation and the escalation of the same for new as well as existing plants in the State of Haryana.

- b) Taxes paid on procurements would continue to be non creditable for the energy sector and hence, forming part of costs. Accordingly, any impact of taxes paid on procurements used in renewable energy sector would have a direct impact on cost of renewable energy. It appears that taxes on procurements for renewable energy sector would go up, which would lead to increase in cost of renewable energy resulting in negative impact for the sector. Hence we request the Commission to kindly consider the effect of the GST in determining the tariff.
- c) As per Commission order, the RE Generators in the State have been asked to pay SLDC charges. We would like to point out that any fees! Charges imposed upon RE plants should be allowed as a cost pass through. All plants below 10MW are must run plants and hence should be exempted from paying SLDC charges. Further, the energy being sold to the Discoms at the bus bar of the generating station, any charges of the SLDC should be borne by the purchaser and not the generator.
- d) With regards to fuel cost we would like to mention that the cost of fuel during the last season of the mustard crop was at an average price of Rs 3600/ per MT. All projects have to incur a 10% cost on the cost of fuel with regards to handling and storage cost so that the fuel does not deteriorate and

lose its calorific value. Also biomass being voluminous, the cost of handling is high.

Further, we would like to request the Commission kindly consider a 10% escalation for fuel cost as biomass market is unorganized and due to the high volume of biomass fuel, the transportation and handling cost of the fuel is very high.

The Commission has considered the above and has already dealt with the Capex and Opex in the present order and hence no further changes are required. However, in case additional costs on account of GST, the generator can approach the Commission with necessary details for allowing additional tariff.

As far as fuel cost is concerned, the Commission for biomass / bagasse based power project both existing and to be set up may consider two part tariff wherein the fixed cost shall be the levelised tariff already determined for the existing projects and the fuel cost shall be as determined on a year to year basis so that the issue of fuel cost and escalation there to is addressed.

4) Comments filed by the Amplus Energy Solutions Private Limited:-

Additional Clause:-

a) Applicability of Open Access (OA) Charges on RE Power:-

Proposed exemptions on OA charges are subjected to RPO fulfillment of DISCOMs from solar power. Further, Commission may review exemptions on the impact of such waiver on the revenue of DISCOMs in Haryana.

Comments:

Above restriction will defy the purpose and objectives of policy for captive consumers and open access consumers drawing solar power to meet their RPO.

It may be noted that many existing open access consumers in Haryana, have not been able to meet with the RPO mandated Hon'ble Commission. Removing the restriction will enable uniform environment for all and result into a higher participation and active RPO compliance by private consumers.

In addition, post participation in UDAY, financial health of DISCOMs have been further improved. According to an analysis of financial health of the DHBVNL released by the power ministry loss of INR 479 crore in 2015-16 turnaround to a profit of INR 201.35 crore in the first half of 2016-17. Further, gap of average cost of supply (ACS) and average revenue requirement (ARR) has been improved to 90% (from 0.81/unit to 0.08/unit) and 75.18% of bonds has been issued. Though financial health of DISCOMs are not shabby but further review may put a risk to investment for developers and it may lead to further uncertainty to growth of solar sector of the states. Therefore, we request you to extend the exemptions to all solar projects without any reservation and review.

(#Source - News Report published at www.livemint.com on 22nd of December 2016).

The Commission has already dealt with the aforesaid issue in the present order. Hence, the same is not repeated here.

b) Other Suggestion: On Energy Settlement mechanism:

At present Open Access scenario in Haryana, intra state generators can revised given schedule and hence extent of penalty reduced. Renewable power is intermittent in nature and the consumer while drawing it may not be in a position to match its exact generation. We suggest Hon'ble HERC should introduce "Energy Accounting & settlement Procedure" in consultation with Hon'ble HAREDA and include in the draft regulation. This will reduce the hiccups in the monthly energy settlement and helps clarify the settlement procedure to Discom(s), consumers and developers on sale of solar power.

The above issues have already been dealt with earlier in the order.

5) Comments filed by the Faridabad Industries Association:-

Additional Clause:-

- a) Although allowing energy banking is a welcome move, however, it would be useful for the Commission to clarify banking procedure in detail. It would be beneficial if the banked energy could be used irrespective of generation / consumption slots independent of Time of Day of generation/ consumption of energy. Additionally, UI Charges may be waived for solar PV systems as it is an infirm power source.
- b) It would be beneficial if Commission could clearly define how customers may avail the green component of power procured from Open Access sources. Additionally, it would be beneficial if the Commission were to pre-define the applicability of any additional Open Access charge or surcharges for the duration of the waiver period. This visibility will help boost investor confidence. Also, it would be

beneficial if the commission could ensure that no other types of charges are levied in addition to the existing charges.

6) Comments filed by the Gurgaon Industrial Association:-

a) Firstly, it would be beneficial if commission could clearly define how customers may avail the green component of power procured from open access sources.

b) Allowing energy banking is a welcome move, however, it would be useful for the Commission to clarify banking procedure in detail. It would be beneficial if the banked energy could be used irrespective of generation/ consumption slots independent of Time of Day of generation or consumption of energy. Additionally, UI charges may be waived for solar PV systems as it is an infirm power source.

c) Additionally, it would be beneficial if the Commission were to pre-define the applicability of any additional open access charge or surcharges for the duration of the waiver period. This visibility will help boost investor confidence. Also, it would be beneficial if the commission could ensure that no other types of charges are levied in addition to the existing charges.

The aforesaid issues have been already dealt with by the Commission in the present order.

(Point No. A, B and C Same objection filed by Bharti Airtel Limited).

7) Comments filed by Sh. Rohit Kapoor, ASK Automotives Pvt. Limited:-

1. Providing clarity of open access charges for 20 years duration.

Commission should bring in more clarity in segmenting the periods of commissioning renewable energy systems to avail waivers and a period to define the period of the applicability of that waiver. Waiver period could be set at 20 years so that it does not add uncertainty to cash flows and make the project viable.

2. Banking issues:

We appreciate the government's decision to allow energy banking, however, a further clarification by the Commission is required regarding its modalities.

- It would be better if commission allows to use banked energy irrespective of generation / consumption slots independent of Time of Day of generation or consumption of energy.
- Waiving the UI charges for solar PV systems as it is an infirm power source.

3. It would be beneficial if the Commission could

- Clearly define ways by which may avail the credits for the component of power procured from open access sources.
- Clarify on the possibility of imposition of some other kind of charges / duties in future along with the existing charges.

8) Comments filed by Subros Limited:-

- 1) Providing clarity about the energy banking would be useful. We would like to use the banked energy irrespective

of generation / consumption slots independent of time of day of generation or consumption of energy.

2) Providing clarity of open access charges for a 20 year term to ensure cash flow visibility and increasing finance ability of these projects.

3) Additionally, it would be beneficial if the Commission were to pre-define the applicability of any additional open access charge or surcharges for the duration of the waiver period.

4) Providing clarity on the additional charges/ duties which can be levied in addition to the existing charges.

9) Comments filed by Honda Motorcycle and Scooter India Private Limited:-

1. Allowing energy banking is a welcome move, however, it would be useful for the Commission to clarify banking procedure in detail. It would be beneficial if the banked energy could be used irrespective of generation / consumption slots independent of Time of Day of generation or consumption of energy. Additionally, UI Charges may be waived for solar PV systems as it is an infirm power source.

2. It would be beneficial if the commission could clearly define how customers may avail the green component of power procured from open access sources the RPO through open access.

3. Additionally, it would be beneficial if the Commission were to pre-define the non-applicability of any other additional open access charge or surcharges for the duration of the waiver period. This visibility will help boost investor confidence. Also, It would be beneficial if the commission

could ensure that no other type of charges / duties are levied in addition to the existing charges.

(Point No 1,2 and 3 same comments filed by Ultra Tech Cement Limited)

All the above issues have been dealt with by the Commission in the present order. Hence, the same are not being repeated here.

10) Comments filed by Star Wire (India)Limited:-

1) Energy Banking

Allowing energy banking is a welcome move, however, it would be useful for the Commission to clarify banking procedure in detail. It would be beneficial if the banked energy could be used irrespective of generation / consumption slots independent of Time of Day of generation or consumption of energy. Additionally, UI Charges may be waived for solar PV systems as it is an infirm power source.

2) Clarity for open access charges for a fifteen-year term

It would be beneficial if the Commission could define two periods - the Control Period to avail waiver for commissioning renewable energy systems; and the Waiver Period to define the duration (in years) of waiver applicability.

Waiver duration for plants may be set at least 15 years from the respective commissioning date and can ensure that these periods are not reduced/revoked at later point of time. This will ensure cash flow visibility for lenders and hence help to increase finance for these projects.

HERC could possibly notify preferential non-zero charges for the extended Waiver Period of 15 years (instead of zero charges) to ensure financial viability of this scheme to power utilities in Haryana.

3) It would be beneficial if the Commission could ensure that no other type of charges/ duties are levied in addition to the existing charges. Also it would be helpful if the Commission could clearly define how customers may avail the green component of power procured from open access sources the RPO through open access.

All the above issues have been dealt with by the Commission in the present order. Hence, the same are not being repeated here.

11) Comments filed by Re New Power Venture Limited:-

Proposed Clause:-

Solar power under open access shall be settled on actual injection basis and consumption by consumer in time intervals when renewable power is not being generated shall be considered to be consumed from Discom at tariff applicable to said category of consumer and no penalty of over-drawl shall be applied.

Reasons:-

At present Open Access consumers in Haryana are required to pay penalty of over-drawl if the source of open access power e.g. generator, trips. For intra state generator, the schedule can be revised and hence extent of penalty

reduced, but in case of inter-state generator revision in schedule is not affected by SLDC and the entire power under open access is said to be overdrawn from the Discom and heavy penalty is applied. Renewable power is intermittent in nature and the consumer while drawing it may not be in a position to match its exact generation. Many a times therefore the consumer shall draw power from Discom. So if its reserves say 1 MW open access from solar power, its parabolic curve of daily generation would imply simultaneous solar and discom power consumption within the 1 MW open access. In the present regulatory dispensation, over-drawl penalty shall apply on the consumer. It is suggested that the last proviso be incorporated by the Hon'ble Commission to avoid this problem for renewable power.

12) Comments filed by the Open Access Users Association:-

EXEMPTION FROM SCHEDULING FOR ENERGY SETTLEMENT AND CONTRACT DEMAND REDUCTION FOR CONSUMERS/SOLAR POWER GENERATORS:

Regulation 42 of the said Regulations reads as under:

“The Consumer shall submit to the distribution licensee a schedule of power through open access for all the 96 slots by 10:00 AM of the day preceding the day of transaction and this will be considered as confirmed schedule for working out the slot-wise admissible drawl of the consumer from the licensee with reference to his sanctioned contract demand. For example, if an embedded consumer with a contract demand of 10 MW has scheduled 4 MW power through open access in any time slot of the succeeding day as per the

schedule submitted by him at 10 AM, then his admissible drawl from the licensee in that time slot will be 6 MW.”

Most states in India which are encouraging the generation of power via Solar plants have granted exemptions for solar generators from “scheduling” of power at drawl point. Since solar power is a non-firm source of power and therefore scheduled consumption for the 96 time blocks across a day is not possible. Similarly open access power consumers who source power from solar energy to meet their energy requirement from also need an exemption from Contract Demand reduction as well since solar generation replaces only a part of the load only and not the entire load.

Accordingly it is suggested that appropriate provisions should be made in the regulations to incorporate exemption to solar generators and consumers from scheduling and contract demand reduction. It may also be clarified that Regulation 24 and 42 of the HERC (Terms and Conditions for grant of connectivity and open access for intra-State transmission and distribution system) Regulations, 2012, insofar as they relate to imposition of imbalance charges and contract demand reduction, may be exempted for consumers procuring power under solar open access.

Solar projects being generated from solar energy which is an infirm source of power are subject to intermittent generation. Harnessing power from such generation is different as compared to most conventional sources of power which are largely fuel based and can be easily controlled. Thus scheduling of infirm power is a major challenge for solar developers.

The open access consumers have to deal with mismatch in demand and generation of solar power. The solar generation projects generate power in bell shape curve and are dependent upon the trajectory followed by the sun over the solar plant. On the other hand the demand and consumption of the same does not follow any such pattern and is independent of the curve mentioned above. The weather conditions are also a relevant factor and on an average on 30-50 days in a year, plant shall have no generation, whereas the demand shall remain there.

As a general rule an Applicant/ renewable energy generator has to provide a schedule for supply of power to an open access consumer, which is not possible to be provided by such solar generator on account of the fact that the said generation is intermittent in nature and not firm. As such solar generators are required to be exempted for the purposes of scheduling of energy and consequent deviation penalties

In view of the above, it is necessary that the renewable/ solar power generator ought to be exempted from the applicability of scheduling and deviation mechanism and provided with banking facility for any mismatch.

The issue has been under consideration of other State Regulatory Commissions. A brief description of relevant provisions and approach of other states in dealing with the issue is as under:

MAHARASHTRA:

Clause 19.3 of the Maharashtra Electricity Regulatory Commission (Distribution Open Access) Regulations 2016 dated 30th March 2016 provides for settlement of deviations

from schedule provided by Generator for open access power supply. Further, Clause 20.1 of the above regulations provides that Regulation 19.3 is not applicable for open access transactions involving renewable sources of energy. Thus renewable energy is completely exempted from deviation obligations in the state of Maharashtra. Regulation 20 of the MERC (Distribution Open Access) Regulation is being reproduced herein below for ready reference:

Clause 20: Banking of Renewable Energy Generation

20.1 Regulations 19.3 shall not be applicable in case an Open Access Consumer obtains supply from a Renewable Energy Generating Station identified as 'non-firm power' by the Commission in its Regulations governing the Tariff for Renewable Energy

20.2 The Surplus Energy from a non-firm Renewable Energy Generating Station after set off shall be banked with Distribution Licensee.

20.3 The banking year shall be the financial year from April to March

20.4 Banking of Energy shall be permitted during 12 months of the year

Provided that credit for banked energy shall not be permitted during months of April, May, October, November and the credit for energy banked in other months shall be as per energy injected in the respective Time of Day slots determined by Commission in its Order determining the Tariffs of Distribution Licensees.

Provided further that the energy banked during peak ToD slot may also be drawn during off peak ToD slots but energy banked during off peak ToD slots may not be drawn during ToD Slot.

ANDHRA PRADESH

According to Interim Balancing and Settlement Code for Open Access Transactions Regulation No.2 of 2006 dated 11.8.2006 with 1st Amendment regulation 2013 dt. 22/4/2013 and second amendment Regulation 2 of 2014 dated 1.4.2014, Solar based Open Access generators are not required to provide a day-ahead wheeling schedule and actual electricity injected by them shall be deemed to be the scheduled energy.

Contract demand Reduction

As a natural corollary and the logical next stage to exemption from scheduling, the solar power generators as well as the open access consumers should also be exempted from the provision from Contract Demand Reduction. Due to the inherent uncertainty involved in solar power generation, it is not possible either for the solar generators or the consumers to provide any scheduling. Thus in view of the inherent inability of solar generators/consumers to schedule the generation/consumption, the provisions mandating contract demand reduction should have no application to them.

At present Regulation 24 of the HERC (Terms and Conditions for grant of connectivity and open access for intra-State transmission and distribution system) Regulations, 2012 as amended in 2013 dated 3rd Dec 2013, prescribes imposition

of imbalance charges to all open access transactions both upon the consumers as well as generators/traders.

Further the amended Regulation 42 of the HERC Regulations 2012, provides for reduction in contract demand in case the consumer draws power through Open-Access, as per the schedule provided by the consumer on Day-ahead basis.

The case referred to here is of Maharashtra, according to MERC Notification dated 25th June 2014 which states that:

Provided that where a consumer of the Distribution Licensee, who is eligible under Regulation 3.1, applies for Long-term or Medium-term or short-term Open Access to the distribution system so as to obtain supply from a Renewable Energy generating plant identified as 'Infirm power' under MERC (Terms and conditions for determination of RE Tariff) Regulations, 2010, as amended from time to time, the Distribution Licensee shall reduce the contract demand/sanctioned load to the extent of Capacity Utilisation Factor (CUF) (approved by the Commission in latest Renewable Energy Tariff Order) of the installed capacity of Non-firm Renewable Energy Generator. For example, Installed capacity of Wind Energy Generator is 100 MW and approved CUF is say 23%, then the extent of reduction in Contract Demand shall be 23 MW and applicable transmission and wheeling losses shall be deducted from 23 MW to compute the net reduction of Contract demand at the consumption end.

Similarly, we may need clarity in Haryana as well for the reduction in contract demand.

The Commission has already dealt with the issues relating to contract demand reduction as per open access regulation and matters concerning scheduling and deviation settlement. Additionally, Commission is of the considered view that the imbalance charges as per open access regulation will not be applicable for Solar Power consumed within the State.

13) Comments filed by ECOGREEN ENERGY PRIVATE LIMITED:-

Interest on Debts (%) per annum:-

As per CERC Consideration:- The normative interest rate shall be considered as the Base Rate of State Bank of India (SBI) prevalent on 1st April of the relevant year plus a margin of up to 200 basis points i.e. 2%.

Proposed: - With this principle it is coming out to 10.66% Earlier it was 12.30% as considered by the Hon'ble Commission for FY 16-17 which any way was much difficult to get.

Actual lending rate fails even beyond that when lending institutions shows lot of reluctance to fund these projects due to non provenness of the technology & poor performance the RE sector specially for WtE.

Thus it is proposed to consider it as minimum 14% and the norms to consider above 400 basis points practically.

14) Comments filed by National Solar Energy Federation of India:-

Developing payment security mechanism for the power purchase by DISCOM to ensure that Solar Power developers donot default in making timely payment of their project loan EMI to the Banks.

Ministry of Power, Govt. of India has issued guidelines for tariff based competitive bidding process for procurement of power from grid connected Solar PV Power Projects vide its Notification No.23/27/2017-R&R-1 dated 03.08.2017.

Under Clause No.5.3, following Payment security mechanism has been made for ensuring timely payment to the Solar Power Generators by the DISCOM's;

Clause No.5.3 The procurer shall provide adequate payment security to the Solar Power Generators through;

- a) Revolving letter of Credit (LC) of an amount less than (one month) average generation And
- b) Payment Security Fund which shall be suitable to support payment for at least 3 months billing of all projects tied up with such funds.
- c) In addition to a) &b) above, the Procurer may also choose to provide State Govt. guarantee in a legally enforceable form ensuring that there is adequate security to the Solar Power Generator both in terms of payment of energy charges and termination compensation if any.

Clause no. 5.5; under this clause, following guideline have been prescribed for off –take constraints due to grid unavailability.

Because of grid shut down, If the Solar Power Generator is not able to evacuate the generated power of the plant, in such situation, generating compensation shall be addressed by the procurer in the following manner;

Generation Loss= (Average generation loss per hour during the contract period X numbers of hours grid unavailable during the contract period).

The excess generation by the SPD equal to this generation loss should be procured by the Procurer at the PPA tariff so as to off- set this loss in the succeeding 3 contract years.

1. Fixation of Tariff for the solar power projects of capacity less than 5 MW under Section 62 of the EC Act- 2003 under section 62 of the Electricity Act.

Vide the notified guideline, it has been made clear that tariff based competitive bidding process is applicable for the projects above 5 MW capacity. For smaller projects having capacity less than 5 MW, the State Electricity Regulatory Commission can determine project specific tariff under Section 62 of the EC Act.

Submission: The procedure for fixing site/project specific tariff for Solar Power Projects having capacity less than 5 MW under section 62 of the EC Act may kindly be clarified in the RE Regulation of 2017.

As far as RE Projects selected through competitive bidding(s) is concerned and where tariff is adopted by the Commission under section 63 of the Act, the terms and conditions of the Guidelines as mentioned in section 63 of the Act and the bidding documents thereto shall prevail. Further, the Commission would prefer that all solar projects are selected through competitive bidding. However, for solar power projects of less than 5 MW the Commission, on an application made by the Solar Power Developer and DPR approved by HAREDA with concurrence of HPPC, may determine project specific tariff.

15) Additional Issues raised by the Intervener

i) The issue of burning of paddy straw / stubble in Haryana by the farmers has raised serious environmental concerns in the region. Regarding this M/s Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL/2017-18/HERC/369 dated 21st November, 2017) has submitted that huge quantities of rice straw / stubble are available but the same is not being used due to unviable cost. It has been further submitted that they would like to use about 30,000 MT of paddy straw / stubble in their plant in the current season. Additionally, it has been submitted that the Government of India has recently announced that NTPC would be procuring paddy straw / stubble from the farmers of Punjab and Haryana at Rs. 5500 / MT the same may also be allowed to the existing biomass based power projects as well as the bulk density of paddy straw / stubble is very low it is very costly to transport and manage the same.

The Commission has taken note of the above. With an objective to utilize and thereby prevent burning of paddy straw / stubble in the farms, the Commission would like to promote use of the same in the power projects. Hence, while determining fuel cost / GCV on a year to year basis applicable for the existing as well as to be commissioned biomass / bagasse power projects appropriate price weightage could be considered. HAREDA may provide the relevant data collected from the field for consideration of the Commission. However, the details of usage of paddy straw / stubble shall be certified by the IPPs and verified by HPPC based on the data emanating from the local authorities concerned.

Further, given the single fuel based generation for paddy straw / stubble based power projects in Haryana working capital norms shall be accordingly determined.

iii) The Secretary, Ministry of New and Renewable Energy, Government of India vide D.O. 7/10/2017-EFM dated 5.12.2017 has sought indulgence of the Commission for aligning RPOs with national trajectory and ensuring compliance without carry forward obligation.

The Commission has taken into account the above and observes that the Commission, in the present Regulations, has attempted to align solar RPO with the national trajectory in a graded manner and has also provided for mechanism in case of default in meeting with the RPO targets by the Obligated Entities.

The Petition is disposed of accordingly. **The Regulations attached herewith at Annexure “A” shall be notified in the Haryana Government Gazette.**

This order is signed and issued by the Haryana Electricity Regulatory Commission.

Date: 30.06.2018

Place: Panchkula

Debasish Majumdar
(Member)

M.S. Puri
(Member)

Jagjeet Singh
(Chairman)

HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS NO. 33-36, SECTOR – 4, PANCHKULA – 134112, HARYANA
Tel. No. 0172 – 2572395 (O), Fax No. 0172 – 2572359
www.herc.nic.in

Notification

The July, 2018

Regulation No. HERC/ 40 / 2018 : - In exercise of the powers conferred on it by section 181 of the Electricity Act 2003 (Act 36 of 2003) and all other powers enabling it in this behalf, the Haryana Electricity Regulatory Commission, hereby makes the following Regulations.

Chapter – 1

General

1. Short title, commencement, extent of application and interpretation. –

- (1) These Regulations may be called the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2017.
- (2) These regulations shall come into force on the date of their publication in the Haryana Government Gazette.
- (3) These regulations shall extend to all grid connected renewable energy projects and obligated entities in the State of Haryana.

2. Definitions. –

- (1) In these regulations, unless the context otherwise requires,

- (1) ‘Act’ means the Electricity Act, 2003 (36 of 2003);
- (2) ‘Auxiliary energy consumption’ or ‘AUXe’ in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipments of the generating station, and transformer losses within the generating station, expressed as a percentage of gross energy generated at the generator terminal of the generating station during the period;

- (3) 'Biomass' means wastes produced during agricultural and forestry operations (for example straws and stalks) or produced as a by-product of processing operations of agricultural produce (e.g., husks, shells, deoiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds whichever permissible; and the wood waste produced in some industrial operations;
- (4) 'Capital cost' means the capital cost as defined in the relevant sub regulations of these Regulations;
- (5) 'Central Agency' means the agency operating the National Load Dispatch Centre or such other agency as the Central Commission may designate from time to time;
- (6) "Certificate" means the renewable energy certificate issued by the Central Agency in accordance with the procedures prescribed by it and under the provisions specified in the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issue of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2009 as amended from time to time;
- (7) 'Commission' means the Haryana Electricity Regulatory Commission;
- (8) 'Conduct of Business Regulations' means the Haryana Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 as amended from time to time;
- (9) 'Control Period or Review Period' means the period during which the norms for determination of tariff and other provisions specified in these regulations shall remain valid;
- (10) 'Floor Price' means the minimum price determined by the Central Commission in accordance with these regulations at and above which the renewable energy certificate can be traded in the power exchange;
- (11) 'Forbearance price' means the ceiling price as determined by the Central Commission in accordance with the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issue of Renewable energy Certificate for Renewable Energy Generation) Regulations, 2010, as

amended from time to time, within which the Certificate can be traded in power exchange;

- (12) 'Gross calorific value' or 'GCV' in relation to a fuel used in generating station means the heat produced in kCal by complete combustion of one kilogram of solid fuel or one litre of liquid fuel or one standard cubic meter of gaseous fuel, as the case may be;
- (13) 'Gross station heat rate' or 'GHR' means the heat energy input in kCal / kWh required to generate one kWh of electrical energy at generator terminals of a renewable energy generating station;
- (14) 'Hybrid Solar Thermal Power Plant' means the solar thermal power plant that uses other forms of energy input sources along with solar thermal energy for electricity generation, and wherein not less than 75% of electricity is generated from solar energy component;
- (15) 'Installed capacity' or 'IC' means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals/Solar Inverter in MW / MVA), as the case may be;
- (16) 'Inter-connection Point' shall mean interface point of renewable energy generating facility including Waste to Electricity projects with the transmission system or distribution system,
 - a) in relation to wind energy projects and Solar Photovoltaic Projects, inter-connection point shall be line isolator on outgoing feeder on High Voltage (HV) side of the pooling sub-station;
 - b) in relation to small hydro power, biomass power, Waste to Energy projects and non fossil fuel based cogeneration power projects and Solar Thermal Power Projects, the inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;
- (17) 'Non firm power' means the power generated from renewable sources, the hourly variation of which is dependent upon nature's phenomenon like sun, cloud, wind, etc., that cannot be accurately predicted;

- (18) “Levelling Tariff” means the tariff calculated by carrying out levelisation for ‘useful life’ of each technology considering the discount factor for time value of money.
- (19) ‘MNRE’ means the Ministry of New and Renewable Energy of the Government of India;
- (20) “Municipal Solid Waste” means and includes commercial and residential wastes generated in a municipal or notified area in either solid or semi solid form excluding industrial hazardous wastes but including treated bio-medical waste;
- (21) ‘Non fossil fuel based co-generation’ means the process in which more than one form of energy (such as steam and electricity) are produced in a sequential manner by use of biomass including Bagasse.
- (22) ‘Obligated entity’ means an entity in the State of Haryana which is mandated to fulfill renewable purchase obligation under these Regulations and include the following:-
- i) Distribution licensee(s)
 - ii) Open Access consumers including short term open access consumers, and
 - iii) Fossil Fuel based Captive Power Plant of 5 MW and above including Fossil Fuel based Co-generation captive plant of 5 MW and above.
- (23) ‘Operation and maintenance expenses’ or ‘O&M expenses’ means the expenditure incurred on operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;
- (24) “Power Exchange” means any exchange operating as the power exchange for electricity in terms of the orders issued by the Central Commission;
- (25) ‘Preferential tariff’ or “Feed in Tariff” means the tariff fixed by the Commission for sale of energy from a generating station based on renewable energy sources to a distribution licensee;
- (26) ‘Project’ means a generating station or the evacuation system upto inter-connection point, as the case may be, and in case of a small hydro generating

station includes all components of generating facility such as dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;

- (27) 'Renewable Energy' means the electricity generated from renewable energy sources;
- (28) 'Renewable Energy Power Plants' means the power plants other than the conventional power plants generating electricity from renewable energy sources;
- (29) 'Renewable Energy Sources' means renewable sources such as small hydro, wind, solar including its integration with combined cycle, biomass (including Bagasse), bio fuel, urban or municipal waste and other such sources as approved by the MNRE;
- (30) 'Small Hydro' means Hydro Power projects with a station capacity up to 25 MW or as specified in the National Tariff Policy or by the Central Government from time to time;
- (31) 'Solar PV power' means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic Cells;
- (32) 'Solar Thermal power' means the Solar Thermal power project that uses sunlight for conversion of heat energy into electricity through Concentrated Solar Power technology based on either line focus or point focus principle;
- (33) 'State agency' means the agency in the State of Haryana to be designated by the Commission to act as the agency for accreditation and recommending the renewable energy projects for registration and to undertake functions under these regulations;
- (34) 'Tariff period' means the period for which tariff / price for sale of power is determined by the Commission on the basis of norms specified in these Regulations;
- (35) 'Useful Life' in relation to a unit of a generating station including evacuation system shall mean the following duration from the date of commercial operation (COD) of such generation facility, namely:
 - (a) Wind energy power project 25 years

- (b) Biomass power project, non-fossil fuel cogeneration 20 years
 - (c) Small Hydro Plant 35 years
 - (d) Solar PV/Solar thermal power plants 25 years
 - (e) Processed Municipal Solid Waste (MSW) WtE based power projects – 20 years
 - (f) Biomass gasifier power plants 20 years
 - (g) Biogas power plants 20 years
- (36) 'Year' means a financial year.
- (2) All other expressions used herein but not specifically defined herein but defined in the Act shall have the meaning assigned to them in the Act. The other expressions used herein but not specifically defined in the regulations or in the Act but defined under Haryana Electricity Reform Act, 1997 (Act 10 of 1998) or the Indian Electricity Grid Code or the Haryana Grid Code or the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff) Regulations, 2012, as amended / reenacted from time to time, shall have the meanings assigned to them respectively in the Haryana Electricity Reform Act, 1997 (Act 10 of 1998) or the Indian Electricity Grid Code or the Haryana Grid Code or any other relevant Regulations in vogue , provided that such definitions in the Haryana Electricity Reform Act, 1997 are not inconsistent with the provisions of the Electricity Act, 2003;
- 3. Eligibility Criteria.** – For the purpose of these regulations a project shall be treated as renewable energy power project only if it meets the following criteria:-
- (a) Wind power project – located at the wind sites having minimum annual mean Wind Power Density (WPD) of 200 Watt/m² measured at hub height of 100 meters and using new wind turbine generators;

- (b) Small hydro project – located at the sites approved by State Nodal Agency / State Government / self identified sites using new plant and machinery, and installed power plant capacity to be lower than or equal to 25 MW at single location;
- (c) Biomass power project – Biomass power projects using new plant and machinery using biomass fuel sources,
- (d) Processed Municipal Solid Waste based WtE power projects – The project shall qualify to be termed as Municipal Solid Waste based WtE power projects, if it is using new plant and machinery and using Municipal solid waste as fuel source for generation of electricity.
- (e) Solar PV and Solar Thermal Power Projects – Based on Technologies approved by MNRE / HAREDA.
- (f) Biomass Gasifier Power Projects - The projects shall qualify as gasifier based power project provided it is using new plant and machinery and having a grid connected system that uses 100% syngas/producer gas engine with MNRE approved gasification technology and shall use non fossil fuel as approved by MNRE.
- (g) Biogas Power Projects - The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that and uses 100% biogas fired engine with MNRE approved technology.

Explanation:

The necessity of new plant and machinery shall be applicable where the DPR is approved by HAREDA and tariff is determined by the Commission under Section 62 of the Act as well as procurement of power by the Distribution Licensee(s) under Section 63 of the Act in case the bidding documents / guidelines so provides. The dispensation shall include the RE Projects where capital subsidy is claimed by the project developer.

Chapter – 2

Norms

- 4. Control Period or Review Period.** – The Control Period under these Regulations shall be from the FY 2017-18 to the FY 2020-21.

Provided that the benchmark capital cost and tariff for Solar PV rooftop, ground mounted, canal based / Water Works solar projects, wind power, small hydro shall be determined on case specific basis only. It would be appropriate for the HAREDA to adopt reverse bidding with the lowest quoted tariff as the base tariff.

Provided further that the tariff determined / discovered and approved by the Commission for the RE projects commissioned / to be commissioned during the Control Period, shall continue to be applicable for the entire duration of the Tariff Period as specified in Regulation 5 below.

Provided also that the revision in Regulations for next Control Period shall be undertaken at least six months prior to the end of the first Control Period and in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised Regulations and the Control Period shall be deemed to have been extended up to the date of notification of the next Control Period.

- 5. Tariff Period.** –

- (1) The Tariff Period for Renewable Energy power projects shall generally correspond to their respective project life or reckoned with the period provided in the PPA as the case may be.
- (2) Tariff period under these Regulations is for Renewable Energy Power Plants with entirely new plant and machinery. The first year tariff shall be applicable from the CoD of the project and shall continue for 12 months from the CoD and thereafter the tariff for the second year shall be applicable on year to year basis i.e. for first 12 months from CoD, first year tariff shall be applicable, then for next twelve months second year tariff shall be applicable and so on and each period of such 12 months shall be termed as the tariff year.

- (3) Tariff determined as per these Regulations shall be applicable for Renewable Energy power projects, only for the duration of the Tariff Period as stipulated under Regulation 5(1).
- (4) The PPA (s) signed by the distribution licensee (s) on the basis of tariff determined by the Commission in its orders prior to the notification of these Regulations on renewable energy shall remain valid for the tariff period as per the PPA. Such cases shall not be reopened in view of the norms provided in these regulations.

6. Project Specific tariff. –

- (1) Project specific tariff, on case to case basis, may also be determined by the Commission for the following types of projects:
 - (a) Processed Municipal Solid Waste (WtE) Projects
 - (b) Poultry litter / Cow dung etc.
 - (c) Mixed feed
 - (d) small / micro hydro power projects of 25 MW and below
 - (e) Wind
 - (f) Any other new renewable energy technologies approved by MNRE
 - (g) The renewable energy projects which have been commissioned before the control period specified in these Regulations but for which no power purchase agreement has been signed.
 - (h) Solar PV and Solar Thermal Power projects, if a project developer opts for project specific tariff: Provided that the Commission while determining the project specific tariff for Solar PV and Solar Thermal shall be guided by the provisions of these Regulations.
 - (i) Hybrid Solar Thermal Power plants
 - (j) Biomass project other than that based on Rankine Cycle technology application with water cooled / air cooled condenser.

- (2) Determination of Project specific Tariff for generation of electricity from such renewable energy sources shall be in accordance with such terms and conditions as stipulated by the Commission.

Provided that the financial norms as specified under Chapter-3 of these Regulations, except for capital cost, shall be ceiling norms while determining the project specific tariff.

Explanation:

Regarding Solar Power, it would be appropriate for the Discoms / HAREDA to procure such power through competitive bidding route u/s 63 of the Electricity Act, 2003. However, for solar power projects of less than 5 MW, the Commission, on an application made by the Solar Power Developer and DPR approved by HAREDA with concurrence of HPPC/ Discoms, may determine project specific tariff. The Commission would prefer that all solar projects are selected through competitive bidding.

As far as RE projects selected through competitive bidding (s) is concerned and where tariff is adopted by the Commission under section 63 of the Act, the terms and conditions of the Guidelines as mentioned in section 63 of the Act and the bidding documents thereto shall prevail.

7. Petition and proceedings for determination of tariff. –

- (1) 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.
- (2) A petition for determination of project specific tariff shall be accompanied by such fee as may be determined by regulations and shall be accompanied by the following:-
- a) Information in forms 1.1, 1.2, 2.1 and 2.2 as the case may be, and as appended to these regulations;
 - b) Detailed project report outlining technical and operational details, site specific aspects, premise for capital cost and financing plan etc.

- c) A statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined.
 - d) A statement containing full details of calculation of any subsidy and incentive received, due or assumed to be due from the Central Government and/or State Government. This statement shall also include the proposed tariff calculated without consideration of the subsidy and incentive.
 - e) Any other information that the Commission may require the petitioner to submit.
- (3) The proceedings for determination of tariff shall be in accordance with the HERC (Conduct of Business) Regulations 2004, as amended from time to time.

8. Tariff Structure. –

- (1) The tariff for renewable energy technologies shall be single part tariff consisting of the following fixed cost components:-
- (a) Return on equity capital;
 - (b) Interest on loan capital;
 - (c) Depreciation;
 - (d) Interest on working capital including margin money;
 - (e) Operation and maintenance expenses;

Provided that 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, shall be determined. The fuel cost component may be subjected to escalation for computing levellised generic tariff for entire useful life of the project as provided in these Regulations.

9. Tariff Design. –

- (1) The generic tariff shall be determined on levellised basis for the entire 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 computation of levellised tariff, the discount factor equivalent to weighted average cost of capital as per the formula specified in these Regulations shall be considered.
- (3) Levellised tariff shall be specified for the period equivalent to the 'Tariff Period'.

10. Despatch principles for electricity generated from Renewable Energy Sources. –

- (1) All renewable energy power plants except for Biomass power plants of installed capacity 10 MW and above shall be treated as 'MUST RUN' power plants. Biomass power with installed capacity of 10 MW and above shall be subjected to scheduling and dispatch as specified under Haryana Grid Code and other relevant regulations including amendments thereto.
- (2) The scheduling and deviation settlement issues related to solar and wind power shall be addressed through a separate set of Regulations already under formulation. Further, as far as scheduling and deviation settlement mechanism for other source of RE generator is concerned, till the time the Commission notifies the said mechanism after due deliberations, the dispensation provided in the present Regulations shall be applicable.

Chapter – 3

Financial Principles

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

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost items along with its petition.

Provided further that in case where land is on lease basis, the cost of land to be taken as part of capital cost shall be determined as per the Land Lease Agreement. This provision shall be applicable for project specific cases.

- 12. Debt Equity Ratio.** –

- (1) For generic tariff to be determined based on suo motu petition, the debt equity ratio shall be 70: 30.
- (2) For Project specific tariff, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff. Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

- 13. Loan and Finance Charges.** –

- (1) For the purpose of determination of tariff, loan tenure of 13 years shall be considered.
- (2) (a) The loans arrived at in the manner indicated above shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to March 31st of the previous year from the gross normative loan.

(b) For the purpose of computation of tariff, the normative interest rate shall be considered as the average Marginal Cost of funds based lending rate (MCLR) (one-year tenor) of SBI prevailing during the last available six months plus a margin of up to 200 basis points i.e. 2%.

(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.

14. Depreciation. –

- (1) The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The salvage value of the asset shall be considered as 10%.
- (2) Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan tenure and period beyond loan tenure over useful life computed on 'Straight Line Method'. The depreciation rate for the first 13 years of the Tariff Period shall be 5.38% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 14th 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.

15. Return on Equity. –

- (1) The value base for the equity shall lower of the two either 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under Regulation.
- (2) The normative Return on Equity shall be as under:-
 - a) 14% per annum calculated on normative Equity Capital.
 - b) MAT/Corporate Tax applicable shall be considered as pass through.

Provided that the applicable MAT / Corporate Tax shall be separately invoiced as per the actual paid at the rate as declared by the Income Tax

Department. The Generator shall raise the bill for reimbursement of MAT / Corporate Tax applicable on Return on Equity in 12 equal installments which shall be payable by the beneficiaries.

16. Interest on Working Capital. –

- (1) The Working Capital requirement in respect of wind energy projects, small hydro power, solar PV and Solar thermal power projects and Processed Municipal Solid Waste (WtE) projects shall be computed in accordance with the following :-
 - a) Operation & Maintenance expenses for one month;
 - b) Receivables equivalent to 2 (two) months of fixed and energy charges for sale of electricity calculated on the normative CUF / PLF;
 - c) Maintenance spare @ 15% of operation and maintenance expenses.
- (2) The Working Capital requirement in respect of biomass power projects (Rankine Cycle Technology), Biomass Gasifier / Bio gas based projects and bagasse / non-fossil fuel based co-generation projects shall be computed as under:-
 - a) Fuel costs for four months at 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 normative PLF;
 - d) Maintenance spare @ 15% of operation and maintenance expenses.
- (3) Interest on Working Capital, for the purpose of tariff determination, shall be computed at the average Marginal Cost of funds based lending rate (MCLR) (one year tenor) of SBI prevailing during the last available six months plus an appropriate margin not exceeding 200 basis points i.e. 2%.

17. Operation and Maintenance Expenses. –

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

- (2) Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission subsequently in these Regulations for the first Year of the Control Period.
- (3) Normative O&M expenses allowed during first year of the Control Period under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period.

18. Rebate. –

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

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

20. Sharing of CDM Benefits. –

- (1) The proceeds of carbon credit from approved CDM project, after deduction of expenses incurred by the generating company for registration and approval of the project as CDM project shall be shared between generating company and concerned beneficiaries in the following manner:-
 - a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station i.e. 12 months from CoD;
 - b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

Provided that in case the Concession Agreement or PPA has specific provision regarding sharing of CDM benefits, the same shall be applicable in such cases.

- 21. Subsidy or incentive by the Central / State Government.** – The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, available to the generating company, for the renewable energy power plants while determining tariff under these Regulations.
- 22. Taxes and Duties.** – Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government. Any tax / duty levied by the appropriate Government shall be allowed as pass through on actual incurred basis and should have been actually paid to the authority (ies) concerned.

Chapter – 4

Technology specific parameters for Wind Energy

23. Capital Cost. –

- (1) The capital cost for wind energy project shall include Wind turbine generator including its auxiliaries, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and IDC. Provided in case of land obtained on lease, cost of land shall be taken as per lease agreement.
- (2) Given the limited potential for setting up wind energy projects in Haryana, the Commission, on an application received from a prospective wind power generator / developer and willingness of the Disocoms / HPPC to purchase such power, shall determine capital cost for wind energy projects, O&M expenses and tariff based on the market trends prevailing during the relevant year i.e. scheduled CoD of such projects on case specific basis only.

24. Capacity Utilization Factor. –

- (1) CUF norms for the control period shall be as follows:-

Annual Mean Wind Power	
Density (W/m ²)	CUF
Up to 220	22%
221- 275	24%
276- 330	28%
331- 440	33%
441 +	35%

Provided that the number of hours for calculation of CUF shall be 8760 hours.

- (2) The annual mean wind power density specified above shall be measured at 100 meter hub-height.
- (3) For the purpose of classification of wind energy project into particular wind zone class, the State-wise wind power density map prepared by Centre for Wind Energy Technology (C-WET) / MNRE / NIWE , shall be considered.

Provided that the Commission may by notification amend the schedule from time to time, based on MNRE guidelines / NIWE for wind measurement or by the private developer.

Provided in the case of wind measurement data submitted by wind power developer the same shall be acceptable in case it is validated by NIWE.

Chapter – 5

Technology specific parameters for Small Hydro Project

25. Capital Cost. –

- (1) The indicative capital cost for small hydro projects during the Control beginning the FY 2017-18, unless reviewed earlier by the Commission shall be as under:-

Size of project	Capital Cost (Rs. Crore / MW)
Below 5 MW	7.79
5 MW to 25 MW	7.07

Provided in the case of small hydro power projects the Commission shall determine project specific tariff only and accordingly determine project specific capital cost as well as CUF, if required, based on case specific hydrological data.

26. **Capacity Utilization Factor.** – Capacity Utilization Factor (CUF) for the small hydro projects shall be 56%. The normative CUF shall be net of free power to the State, if any, and any quantum of free power, over and above the free power notified by the Central Government, if committed by the developer over and above the normative CUF, shall not be factored into the tariff. Provided further that the number of hours for calculation of CUF shall be 8760 hours.

27. **Auxiliary Consumption.** – Normative Auxiliary Consumption, including losses, for the small hydro projects shall be 1.0%.

28. Operation and Maintenance Expenses. –

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

Project size	O&M Expenses (Rs. Crore / MW)
Below 5 MW	0.29
5 MW to 25 MW	0.21

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

Chapter – 6

Technology specific parameters for Biomass based Power Projects

29. Technology Aspect. – The norms for tariff determination specified hereunder are for biomass power projects based on Rankine Cycle technology application using water cooled condenser and air cooled condenser.

30. Capital Cost. –

- (1) The normative capital cost, during the control period under these Regulations, for the biomass power projects shall be Rs. 5.59 MW (Water Cooled Condenser) and Rs. 6.0 Crore / MW for projects using Air Cooled Condenser.

Provided for the project using single fuel i.e. rice straw / stubble for generation of power the Capital Cost, during the control period, shall be Rs. 6.10 Crore / MW (Water Cooled Condenser) and Rs. 6.52 Crore / MW for projects having air cooled condenser.

31. Plant Load Factor. –

- (1) Threshold Plant Load Factor for determining fixed charge component of Tariff shall be as under:-

1. 1st Year of Operation including Stabilization: 65%
2. From 2nd Year onwards: 80 %

32. Auxiliary Energy Consumption. – The auxiliary energy consumption shall be 10% in the case of projects equipped with water cooled condenser and 12% for air cooled condenser, for the purpose of tariff determination.

33. Station Heat Rate. – The Station Heat Rate for biomass power projects shall be 4126 kCal / kWh and 4063 Kcal / kWh for projects equipped with travelling grate boiler and AFBC boiler respectively.

34. Operation and Maintenance Expenses. –

- (1) Normative O&M expenses for the first year of the Control period (i.e. FY 2017-18) shall be Rs. 0.40 Crore /MW.

- (2) Normative O&M expenses allowed at the commencement of the Control Period (i.e. FY 2017-18) under these Regulations shall be escalated at the rate of 5.72% per annum.

35. Fuel Mix. –

- (1) The biomass power plant shall be designed in such 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 MNRE.
- (2) The Biomass Power Generating Companies shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.

36. Use of Fossil Fuel. –

- (1) Use of Fossil Fuel shall not be permitted. The Project developer shall furnish monthly fuel (biomass mix) usage statement and monthly fuel (biomass mix) procurement statement duly certified by Chartered Accountant to the beneficiary (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring fuel consumption) for each month, along with the monthly energy bill.
- (2) Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such biomass based power project. In such cases the PPA(s) shall be terminated and the Discoms (beneficiaries) shall be under no obligation to make any payments for the power supplied by the seller in breach of the regulation on fuel usage.

Provided that the bagasse based co-generation projects, selling power to the Discoms under PPA approved by the Commission, shall be permitted to use biomass as fuel during the non-cane crushing season. In such cases the generators can approach the Commission for determination of tariff for the power generated using biomass as fuel. The HPPC shall not refuse purchase of such power without the prior approval of the Commission.

- 37. Calorific Value.** – The Calorific Value of the biomass fuel used for the purpose of determination of tariff shall be 3100 (kCal/kg).
- 38. Fuel Cost.** – Biomass fuel price during first year of the Control Period shall be Rs. 3270 /MT and shall be escalated at the rate of 5% per annum for arriving at the levelised tariff for the entire useful life of the project.

Further, the Commission, for biomass / bagasse based power project, both existing and to be set up, may consider two part tariff wherein the fixed cost shall be the levelised tariff already determined for the existing projects and the fuel cost shall be as determined on a year to year basis so that the issue of fuel cost and escalation there to is addressed.

With an objective to utilize and thereby prevent burning of paddy straw / stubble in the farms, the Commission would like to promote use of the same in the power projects. Hence, while determining fuel cost / GCV on a year to year basis applicable for the existing as well as to be commissioned biomass / bagasse power projects, appropriate price weightage could be considered. HAREDA may provide the relevant data collected from the field for consideration of the Commission. However, the details of usage of paddy straw / stubble shall be certified by the IPPs and verified by HPPC based on the data emanating from the local authorities concerned.

Further, given the single fuel based generation for paddy straw / stubble based power projects in Haryana, working capital norms shall be accordingly determined.

Chapter – 7

Technology specific parameters for Non-fossil fuel based Cogeneration Projects

- 39. Technology Aspect.** – A project shall qualify as a non-fossil fuel based Cogeneration project, if it is in accordance with the definition as specified under these Regulations.
- 40. Capital Cost.** - The normative capital cost for the non-fossil fuel based cogeneration projects shall be Rs. 4.925 Crores/MW during the control period, unless reviewed earlier by the Commission.
- 41. Plant Load Factor.** –
- (1) For the purpose of determining fixed charge, the plant load factor for non-fossil fuel based cogeneration projects shall be computed on the basis of plant availability for number of operating days considering operations during crushing season and off-season as specified under sub regulation (2) below and load factor of 92%.
 - (2) The number of operating days shall be 150 days (crushing) + 60 days (off-season) = 210 days operating days and the Plant Load Factor shall be 53%.
- 42. Auxiliary Energy Consumption.** – The auxiliary energy consumption factor shall be 8.5% for the purpose of tariff determination.
- 43. Station Heat Rate.** – The Station Heat Rate of 3600 kCal / kWh for power generation component alone shall be considered for computation of tariff for non-fossil fuel based Cogeneration projects.
- 44. Calorific Value.** – The Gross Calorific Value for Bagasse shall be considered as 2250 kCal/kg.
- 45. Fuel Cost.** –
- (1) The price of Bagasse shall be Rs. 2307/ MT and shall be escalated at the rate of 5% per annum for determination of levellised tariff for the entire useful life of the project.
- 46. Operation and Maintenance Expenses.** –
- (1) Normative O&M expenses during first year of the Control Period shall be Rs. 0.21 Crore / MW.

- (2) The normative O&M expenses allowed at the commencement of the Control Period i.e. the FY 2017-18 under these Regulations shall be escalated at the rate of 5.72% per annum.

Chapter – 8

Technology specific parameters for Solar PV Power Project

- 47. Technology Aspects.** – Norms for Solar Photovoltaic (PV) power under these Regulations shall be applicable for grid connected PV systems that directly convert solar energy into electricity and are based on the technologies such as crystalline silicon or thin film etc. as may be approved by MNRE. The Commission shall not determine generic tariff under these Regulations and only project specific tariff, if required, shall be determined.

Provided that the Discoms / HAREDA may do reverse bidding with the lowest quoted tariff as base tariff.

Provided that the norms including Capital Cost, CUF, Auxiliary Energy consumption, O&M expenses etc. and the tariff thereto for Solar Pv / Thermal / Rooftop / Canal top / Water works, as per the technology approved by the MNRE, shall be determined on project specific basis depending on the prevalent market trend only if required i.e. in case the competitive bidding route for any reason does not take effect. The broad guiding parameters shall be as under:-

- 48. Capacity Utilisation Factor.** – The Capacity utilisation factor for Solar PV project shall be 19%. Provided that the Commission may deviate from above norm in case of project specific tariff determination.
- 49. Operation and Maintenance Expenses.** –
- (1) The O&M Expenses shall be determined based on prevalent market conditions.
 - (2) Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 5.72% per annum.
- 50. Auxiliary Energy Consumption.** – The auxiliary energy consumption shall be 0.25% of the gross generation.

Chapter – 9

Technology specific parameters for Biomass Gasifier based Power Project

51. Technology Aspects. –

- (1) A process achieved by reacting biomass at a high temperatures without combustion / incomplete combustion, with a controlled amount of oxygen and/or steam resulting in production of combustible gases consisting of a mix of Carbon Monoxide (CO), Hydrogen (H₂) and traces of Methane (CH₄), which shall be called synthesis gas to be used as fuel. The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that uses 100% syngas engine with MNRE approved gasification technology and shall use non fossil fuel as approved by MNRE.
- (2) The useful life, for the purpose of these Regulations, for biomass gasification based Projects, shall be 20 years.
- (3) The normative Capital Cost, after accounting for capital subsidy, shall be Rs. 4.43 Crore / MW for the entire control period unless reviewed by the Commission.
- (4) The threshold Plant Load Factor (PLF), including stabilisation period, for the purpose of determining levellised generic tariff under these Regulations shall be 85%.
- (5) The Auxiliary Energy Consumption (AUXe), for the purpose of determination of levellised generic tariff under these Regulations, shall be 10%.
- (6) The Normative Specific Fuel consumption shall be 1.25 Kg./kWh.
- (7) The Normative Operation and Maintenance (O&M) expenses shall be Rs. 0.53 Crore / MW for the base year i.e. the FY 2017-18, the same shall be subject to an escalation factor @ 5.72% per annum from second year onwards.
- (8) The base year (FY 2017-18) fuel cost shall be Rs. 3270 / MT and the same shall be escalated @ 5% per annum for the purpose of arriving at generic levellised tariff for the entire useful life of the project.

Chapter – 10

Technology specific parameters for Biogas Power Project

52. Biogas based power projects. –

- (1) A technology for generation of power using a mixture of different gases produced by the breakdown of organic matter (anaerobic digestion with anaerobic organisms in the absence of oxygen / fermentation of biodegradable materials) i.e. produced from raw materials such as agricultural waste, manure, poultry droppings, cow dung, municipal waste, plant material, sewage, green waste or food waste. The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that and uses 100% biogas fired engine with MNRE approved technology.
- (2) The useful life, for the purpose of these Regulations, for biogas based projects, shall be 20 years.
- (3) The normative Capital Cost, after accounting for capital subsidy, for the entire control period beginning the FY 2017-18 shall be Rs. 8.86 Crore / MW unless reviewed earlier by the Commission.
- (4) The threshold Plant Load Factor (PLF), including stabilisation period, for the purpose of determining levellised generic tariff under these Regulations shall be 90%.
- (5) The Auxiliary Energy Consumption (AUXe), for the purpose of determination of levellised generic tariff under these Regulations, shall be 12%.
- (6) The Normative Fuel consumption shall be 3.0 Kg / kWh of substrate mix.
- (7) The Normative Operation and Maintenance (O&M) expenses shall be Rs. 0.53 Crore / MW for the base year i.e. the FY 2017-18, the same shall be subject to an escalation factor @ 5.72% per annum from second year onwards for determining levellised tariff for the entire useful life of the project.
- (8) The base year (FY 2017-18) fuel cost (Feed Stock Price) shall be Rs. 1229 / MT and the same shall be escalated @ 5% per annum for the purpose of arriving at levellised tariff for the entire useful life of the project. Provided the cost recovery from digester effluent shall be set off against the Fuel Cost (feed stock price) while determining generic levellised tariff.

Chapter – 11

Technology specific parameters for Processed Municipal Solid Waste (WtE) based Power Projects based on Rankine Cycle Technology

53. A project shall qualify as MSW (WtE) based power project if it uses processed municipal solid waste and are based on Rankine cycle technology application, combustion or incineration, Bio-methanation, Pyrolysis and High end gasifier technologies etc.

(1) **Capital Cost.** – The normative capital costs during the entire control period under these Regulations, unless reviewed earlier by the Commission, shall be Rs. 15 Crore / MW.

(2) **Plant Load Factor (PLF).** –

(1) Threshold Plant Load Factor for determining fixed charge component of tariff for the municipal solid waste WtE projects shall be as under:-

PLF(%) processed MSW (WtE) based Power Projects

a) During Stabilisation 65%

b) During the remaining period of the first year (after stabilization) 65%

c) From 2nd Year onwards 75%

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

(3) **Auxiliary Energy Consumption (AUXe)** – The auxiliary power consumption for the Waste to energy power projects using municipal solid waste shall be 15.5%.

(4) **Operation and Maintenance Expenses (O&M)** – The Normative O&M expenses for the first year of the control period under these Regulations i.e. FY 2017-18 shall be 6.5% of normative capital cost. The same shall be escalated @ 5.72% per annum to arrive at the levelled tariff for the entire useful life of the project.

Chapter – 12

Renewable purchase obligation (RPO) and Renewable Energy Certificate (REC)

54. Renewable Purchase Obligation. –

- (1) Every obligated entity including distribution licensee, consumers owning captive power plant and open access consumers including short term open access consumers in Haryana, shall purchase energy from renewable energy sources under the Renewable Purchase Obligation (RPO) as under:-

FY	Existing Total RPO (%) of Consumption		Revised Minimum RPO (%) of Total Consumption Excluding Hydro	
	Total RPO	Solar	Non Solar	Solar
2016-17	3.75	1.0	2.75	1.00
2017-18	4.00	1.25	2.75	2.50
2018-19	4.50	1.50	3.00	4.00
2019-20	4.75	2.00	3.00	5.50
2020-21	5.00	2.50	3.00	7.00
2021-22	5.50	3.00	3.00	8.00

- (2) Provided that solar renewable purchase obligation specified above shall be procured from generation based on solar energy sources only.

Provided further, such obligation to purchase renewable energy shall be inclusive of the purchases, if any, from renewable energy sources already being made by obligated entity concerned.

Provided also that the power purchases under the power purchase agreements for the purchase of renewable energy sources already entered into by the distribution licensees and consented to by the Commission shall continue to be made till validity of the Power Purchase Agreement approved by the Commission, even if the total purchases under such agreements exceed the RPO as specified in these regulations.

Provided also that the issue of interchangeability of solar and non-solar RPO, if decided in favour at Central level, shall be applicable under these Regulations.

55. Certificates under the Regulations of the Central Commission. –

- (1) Subject to the terms and conditions contained in these regulations the Certificates issued under the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 shall be the

valid instruments for the discharge of the mandatory obligations set out in these regulations for the obligated entities to purchase electricity from renewable energy sources.

Provided that in the event of the obligated entity fulfilling the renewable purchase obligation by purchase of certificates, the obligation to purchase electricity from generation based on solar as renewable energy source can be fulfilled by purchase of solar certificates only, and the obligation to purchase electricity from generation based on renewable energy other than solar can be fulfilled by purchase of non-solar certificates.

- (2) Subject to such direction as the Commission may give from time to time, the obligated entity shall act in consistent with the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 notified by the Central Commission and as amended from time to time in regard to the procurement of the certificates for fulfillment of the Renewable Purchase Obligation under these regulations.
- (3) The Certificates purchased by the obligated entities from the power exchange in terms of the regulation of the Central Commission mentioned in sub regulation (1) of this Regulation shall be deposited by the obligated entities to the Commission in accordance with the detailed procedure issued by the Central Agency.

The Obligated Entities including the Power Utilities in Haryana under these Regulations may meet its RPO target by way of own generation or procurement of power from RE developer or by way of purchase from other licensee or by way of purchase of Renewable Energy Certificate or by way of combination of any of the above options.

Provided that in the case of an obligated entity with conventional captive power generation plant as defined in the Electricity Act, 2003, may meet their RPO, solar and non solar as the case may be by self / own generation of respective renewable power.

56. State Agency. –

- (1) The Commission designates Haryana Renewable Energy Development Agency (HAREDA) as the State Agency for accreditation and recommending

the renewable energy projects for registration and to undertake functions under these regulations.

- (2) The State Agency shall function in accordance with the directions issued by the Commission and shall act in consistent with the procedures rules laid by Central Agency for discharge of its functions under the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 as amended from time to time.
- (3) The State Agency shall submit quarterly status to the Commission in respect of compliance of renewable purchase obligation by the obligated entities in the format as stipulated by the Commission and may suggest appropriate action to the Commission if required for compliance of the renewable purchase obligation.
- (4) If the Commission is satisfied that the State Agency is not able to discharge its functions satisfactorily, it may by general or special order, and by recording reasons in writing, designate any other agency to function as State Agency as it considers appropriate.

57. Effect of default. –

- (1) If the obligated entities do not fulfill the renewable purchase obligation as provided in these regulations during any year and also does not purchase the certificates, the Commission may direct the obligated entity to deposit into a separate fund, to be created and maintained by such obligated entity, such amount as the Commission may determine on the basis of the shortfall in the RPO determined under these regulations from time to time at the forbearance price decided by the Central Commission.

Provided that the fund so created shall be utilized, as may be directed by the Commission, for purchase of the renewable energy certificates.

Provided further that the Commission may empower an officer of the State Agency to procure from the Power Exchange the required number of certificates to the extent of the shortfall in the fulfillment of the obligations, out of the amount in the fund.

Provided also that the distribution licensee shall be in breach of its licence condition if it fails to deposit the amount directed by the Commission within 30 days of the communication of the direction or within such period as directed by the Commission.

- (2) Where any obligated entity fails to comply with the obligation to purchase the required percentage of power from renewable energy sources or the renewable energy certificates, it shall also be liable for penalty as may be decided by the Commission under section 142 of the Act.

Provided that in case of genuine difficulty in complying with the renewable purchase obligation because of limited availability of renewable energy or non-availability of certificates, the obligated entity can approach the Commission for relaxation or carry forward of compliance requirement to the next year. However, in normal circumstances, the renewable purchase obligation shall not be waived of.

Provided further that where the Commission has consented in writing on an application made by the obligated entity to carry forward of compliance requirement, the provision of regulation 57 (1) of these Regulation or the provision of section 142 of the Act shall not be invoked.

58. Banking of RE Power. – A generator or a captive power producer or a Consumer in the State may bank power on payment of the banking charges along with the transmission and distribution losses for availing the open access on the transmission or distribution network of the licensees for banking and drawl of banked power from the Discoms after entering into the banking agreement with the concerned Discoms at the terms and condition specified in the agreement, as follows:

1. The solar power shall be allowed to be banked with the distribution licensee(s) subject to the condition that 5% of power banked in (kind) shall be deducted toward banking charges.
2. The Energy Banked shall be permitted to be carried forwarded from month to month. The banked power shall be utilized within the same financial year failing which the unutilized energy at the end of the financial year shall lapse, and no compensation whatsoever shall be claimed/ paid for such lapsed banked energy, provided the solar energy banked during the last quarter of the financial year shall be carried forward to the next financial year.

3. The banking shall be allowed throughout the year, however, the drawl of banked power shall not be allowed during the peak season period (July to mid October).
4. The drawl of bank power shall also be not allowed during peak load hours and time of day (ToD) tariff period.
5. The Banked Energy Shall be calculated at the end of a month as follows:-
Banked Energy at the end of month (Ebi)= {Eg(1-losses)-Ec} * (1-b) + Eb (i-1)
 * Eg = Energy Generation for the ith month
 * Ec = Energy consumption for the ith month
 * Eb (i-1) = Energy Banked at the end of previous month
 * b = Banking charges in kind.

Further, as far as scheduling and deviation mechanism is concerned, the Commission in the process of finalization of Regulations on forecasting, scheduling and settlement and once these Regulations are notified the same shall be applicable.

The Solar power shall be adjusted as first charge in order of consumption of energy by a consumer. The banking will be counted on daily basis for the purpose of monthly account.

Settlement of wheeled energy at consumer End shall be in the following priority:

1. Solar generation after deduction of losses.
2. Captive Power
3. Banked Energy from Solar
4. Open Access Power through Exchange
5. Discom power

HVPNL / SLDC shall formulate the criteria for settlement of wheeled energy at Consumer end in consultation with the Stakeholders and submit the same to the Commission for approval within 3 months of notification of these Regulations.

- 59. Cost of Evacuation System.** – The State transmission utility or the Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line up to a distance of 10 km. from the inter-

connection point. In case the distance between the inter connection point and point of grid connectivity is more than 10 KMs then the cost of transmission line for the distance beyond the 10 KMs shall be borne equally between the Independent Power Producer and the licensee. However for canal based solar power projects, the transmission lines shall be provided by the utilities, free of cost, irrespective of the distance of the project from the substation, subject to the conditions that the solar power is generated and utilized within the state of Haryana and is counted towards RPO of the Distribution Licensee (s).

The cost of any augmentation required after the interconnection point in the grid system of the Transmission/Distribution Licensee shall also be borne by the Transmission/Distribution Licensee concerned. Further, the power utilities concerned, on being informed about the Scheduled Commissioning Date (SCOD), shall complete the evacuation system well in time.

- 60.** (1) Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling Charges, Cross Subsidy Charges, Transmission & distribution charges and Additional Surcharge shall be totally waived of, for third party sale /Open Access consumers for energy from ground mounted / Roof Top Solar power, commissioned during the control period under these Regulations. This shall be subject to the condition that the solar power is generated and utilized within the State of Haryana and is counted towards RPO of the Distribution Licensee(s). However, Solar Energy purchased or generated by an obligated entity is to be counted towards the RPO of the said entity and not that of the Discoms.

Further provided that if such generated power is sold to obligated entities, Distribution licensee shall be eligible for RPO benefits only to the extent the consumed solar power is in excess of the purchase obligation of the obligated entity.

Further provided, that the Distribution Licensee shall be eligible for RPO benefits to the extent of unutilized banked power at the end of the financial year.

The waiver shall be applicable to the Captive Solar PV Power for self consumption as well. However, the losses, as determined by the Commission, shall be recovered in kind by the Haryana Power Utilities. Further, banking charges as per these Regulations, shall be applicable so that the Haryana Power Utilities are not burdened un-reasonably.

(2) All the waivers/concessions/banking provided in these Regulations shall correspond to the period of 10 years from the date of commissioning or date of notification of this regulation, whichever is later, for power generated and consumed within the State of Haryana. Provided the waivers / concessions /banking shall be applicable till the aggregate installed capacity of 500MW of Solar PV Plants in the State is achieved, where after the Commission shall review the provision of waivers / concessions /banking taking into account the financial impact on the Distribution Licensees. Further provided that waivers / concessions /banking once provided to any project shall be applicable for a period of 10 years, as above.

- 61. Cluster of rooftops of public / private buildings.** – Some percentage capacity (to be fixed from time to time) for the setting up of ground mounted mega watt scale grid connected power plants, to meet the solar RPO shall be developed by setting up of grid connected rooftop solar power plants. For that the offers shall be invited by Renewable Energy Department, Haryana/HAREDA from the independent power producers for development of grid connected rooftop solar power plants, of capacity ranging from 250 kWp to 1 MW, on a cluster of public private buildings on the last lowest tariff discovered and conveyed by HPPC. The entire power produced by power producers who set up plants within four years from the date of notification of this policy shall be purchased by the HPPC or any entity of Haryana Govt. Alternatively, the developer can also supply/provide the power for the captive use of the premises where the system is installed along with net meter and can sell the remaining power to HPPC or any entity of Haryana Govt. on the last lowest tariff discovered and conveyed by HPPC or to third party as per HERC regulations.

The rooftop space available in the government organization, institutions, buildings or vacant land of the same can also be provided on lease/rent to the Independent Power Producer/ RESCO developer for setting up of solar power projects.

For such sites the lease/rent rate shall be decided by a Committee of Deputy Commissioner of concerned district, PWD (B&R) Department and the Department owning the building. The developer can also supply/provide the power for the captive use of the premises where the system is installed along with net meter and can sell the remaining power to HPPC on the minimum last tariff discovered and conveyed by HPPC or to third party as per the HERC Regulations.

- 62. Discount Factor.** – The discount factor for working out levelised generic tariff shall be the weighted average cost of capital (WACC).

Chapter – 13

Miscellaneous

- 63. Deviation from norms.** – Tariff for sale of electricity by the RE Generating company may also be determined in deviation from the norms specified in these regulations subject to the conditions that the levellised tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levellised tariff over the entire useful life of the project calculated on the basis of the norms specified in these regulations.

Provided that the reasons for deviation from the norms specified under these Regulations shall be recorded in writing.

- 64. Others.** –

- a) The provisions, if any, contained in any other regulation relating to reduction of contract demand shall not be applicable for solar PV Power.
- b) In case of additional cost on account of GST, the generator can approach the Commission with necessary details for allowing additional tariff.
- c) The imbalance charges as per Open Access Regulation will not be applicable for Solar Power generated and consumed within the State.

- 65. Power to Relax.** – The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected may suo moto relax any of the provisions of these regulations or on an application made before it by an interested person.

- 66. Issue of orders or directions.** – Subject to the provisions of the Act and these regulations, the Commission may, from time to time, issue orders and procedural directions with regard to the implementation of these regulations and specify the procedure to be followed on various matters, which the Commission has been empowered by the regulations to direct and matters incidental thereto.

- 67. Power to amend.** – The Commission may, at any time, add, vary, modify or amend any of the provisions of these regulations.

- 68. Power to remove difficulties.** – If any difficulty arises in giving effect to any of the provisions of these regulations, the Commission may, by general or special order,

make such provisions, which in the opinion of the Commission are necessary or expedient to do so.

- 69. Savings.** – Nothing in these Regulations shall limit the inherent power of the Commission to make such orders as may be necessary to meet the ends of justice or to prevent abuses of the process of law / statutes. Nothing in these Regulations shall bar the Commission from adopting, any other procedure, which may be at variance with any of the provisions of these Regulations, as long as they are in conformity with the provisions of the Electricity Act, 2003 and the policies framed by the Central / State Government thereto.

Provided that the reasons for any such deviating shall be recorded in writing.

Provided also that nothing in these regulations shall, expressly or implicitly, bar the Commission from dealing with any matter under these Regulations or exercising any power under the Act for which no regulations have been framed.

By Order of the Commission

Director Tariff
HERC

Table of Parameters	
Capital cost (Rs. in Million / MW)	65.220
Residual value (10%)	6.52
Total depreciation (Rs in Million / MW)	58.70
Loan component (Rs in Million / MW)	45.65
Equity component (Rs in Million / MW)	19.57
CUF (stabilisation)	65%
CUF 1st year (Including Stabilisation)	65%
CUF 2nd year onwards	80%
O&M (Rs Million / MW)	4.00
O&M escalation	5.72%
Depreciation (first 13 years)	5.38%
ROE (1st 10 years)	14%
ROE (11th year onwards)	14%
Income tax (MAT) pass through	0.00%
Income tax (Corporate Tax) pass through	0.00%
Interest on term loan	10.17%
Interest on working capital	10.17%
Auxiliary consumption (1st year)	12%
Auxiliary consumption (2nd year onwards)	12%
Fuel cost (Rs. / MT)	3270
Fuel price escalation	5%
Heat rate (Kcal/kWh)	4063
GCV (Kcal/kg)	3100
Discount rate WACC without tax	11.32%
Levelling tariff	9.61

[illegible]

Biomass Gasifier generic tariff

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Fuel cost escalation		3270	3434	3605	3785	3975	4173	4382	4601	4831	5073	5326	5593	5872	6166	6474	6798	7138	7495	7870	8263
O&M escalation		5.30	5.60	5.92	6.26	6.62	7.00	7.40	7.82	8.27	8.74	9.24	9.77	10.33	10.92	11.55	12.21	12.91	13.64	14.42	15.25
Outstanding Loan amount		31.01	28.62	26.24	23.85	21.47	19.08	16.70	14.31	11.93	9.54	7.16	4.77	2.39							
Loan repayment		2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39							
Interest on loan		3.03	2.79	2.55	2.30	2.06	1.82	1.58	1.33	1.09	0.85	0.61	0.36	0.12							
Working Capital																					
Fuel cost for four months		10.15	10.65	11.19	11.74	12.33	12.95	13.60	14.28	14.99	15.74	16.53	17.35	18.22	19.13	20.09	21.09	22.15	23.25	24.42	25.64
One month O&M		0.44	0.47	0.49	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
2 Months receivables		7.49	7.77	8.06	8.37	8.70	9.05	9.42	9.81	10.22	10.66	11.12	11.60	12.11	12.49	13.10	13.74	14.42	15.13	15.87	16.66
Maintenance spares15% of O&M		0.80	0.84	0.89	0.94	0.99	1.05	1.11	1.17	1.24	1.31	1.39	1.47	1.55	1.64	1.73	1.83	1.94	2.05	2.16	2.29
Total		18.87	19.73	20.63	21.58	22.58	23.63	24.74	25.91	27.14	28.44	29.80	31.23	32.74	34.16	35.88	37.68	39.57	41.56	43.65	45.85
Interest on working capital		1.92	2.01	2.10	2.19	2.30	2.40	2.52	2.63	2.76	2.89	3.03	3.18	3.33	3.47	3.65	3.83	4.02	4.23	4.44	4.66
Variable Costs																					
Parameters	Derivation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Capacity (MW)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Generation (Million Units)	A	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
Auxiliary Cons (%)		10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Generation (Ex-bus Million Units)	A1	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
Specific Fuel Consumption (kg/kWh)	B	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Fuel Consumption (MT)	C=(A*B*1000)	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50	9307.50
Cost of fuel (Rs. per MT)	D	3270	3434	3605	3785	3975	4173	4382	4601	4831	5073	5326	5593	5872	6166	6474	6798	7138	7495	7870	8263
Total Cost of fuel (Rs Million)	E=C*D/10 ⁶	30.44	31.96	33.56	35.23	36.99	38.84	40.79	42.83	44.97	47.22	49.58	52.06	54.66	57.39	60.26	63.27	66.44	69.76	73.25	76.91
Fuel Cost (Rs/kWh)	F=E/A1	4.54	4.77	5.01	5.26	5.52	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.56	8.99	9.44	9.91	10.41	10.93	11.48
Fixed Costs																					
O&M Expenses		5.30	5.60	5.92	6.26	6.62	7.00	7.40	7.82	8.27	8.74	9.24	9.77	10.33	10.92	11.55	12.21	12.91	13.64	14.42	15.25
Depreciation		2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	1.27	1.27	1.27	1.27	1.27	1.27
Interest on Term Loan		3.03	2.79	2.55	2.30	2.06	1.82	1.58	1.33	1.09	0.85	0.61	0.36	0.12							
Interest on Working Capital		1.92	2.01	2.10	2.19	2.30	2.40	2.52	2.63	2.76	2.89	3.03	3.18	3.33	3.47	3.65	3.83	4.02	4.23	4.44	4.66
Return on Equity		1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
Income tax on ROE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost		14.49	14.64	14.81	15.00	15.22	15.46	15.74	16.04	16.37	16.73	17.12	17.56	18.03	17.53	18.32	19.17	20.06	21.00	21.99	23.04
Fixed cost (Rs/kWh)		2.16	2.18	2.21	2.24	2.27	2.31	2.35	2.39	2.44	2.50	2.56	2.62	2.69	2.62	2.73	2.86	2.99	3.13	3.28	3.44
Total cost (Fixed+variable)		44.93	46.60	48.37	50.24	52.22	54.31	56.52	58.86	61.33	63.94	66.70	69.61	72.68	74.92	78.59	82.44	86.50	90.76	95.24	99.95
Tariff (Rs/kWh)		6.70	6.95	7.22	7.50	7.79	8.10	8.43	8.78	9.15	9.54	9.95	10.39	10.85	11.18	11.73	12.30	12.91	13.54	14.21	14.91
Per unit tariff components																					
Per unit O&M Expenses		0.79	0.84	0.88	0.93	0.99	1.04	1.10	1.17	1.23	1.30	1.38	1.46	1.54	1.63	1.72	1.82	1.93	2.04	2.15	2.28
Per Unit Depreciation		0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Per Unit Interest on term loan		0.45	0.42	0.38	0.34	0.31	0.27	0.24	0.20	0.16	0.13	0.09	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Per Unit Interest on working capital		0.29	0.30	0.31	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.50	0.52	0.54	0.57	0.60	0.63	0.66	0.70
Per Unit Return on equity		0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Per unit income tax		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levillised tariff																					
Discount factor		1.00	0.898	0.807	0.72	0.65	0.58	0.53	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.22	0.20	0.18	0.16	0.15	0.13
Discounted tariff components(variable)	6.35	4.54	4.28	4.04	3.81	3.59	3.39	3.20	3.02	2.85	2.68	2.53	2.39	2.25	2.12	2.00	1.89	1.78	1.68	1.59	1.50
Discounted tariff components(Fixed)	2.41	2.16	1.96	1.78	1.62	1.48	1.35	1.23	1.13	1.04	0.95	0.87	0.81	0.74	0.65	0.61	0.57	0.54	0.51	0.48	0.45
Discounted tariff components(Total)		6.70	6.25	5.82	5.43	5.07	4.74	4.43	4.15	3.88	3.63	3.41	3.19	3.00	2.77	2.61	2.46	2.32	2.19	2.06	1.94
Fuel (Variable Cost) Rs/kWh		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Levillised Fixed Cost (Rs/kWh)	8.76																				

Biogas generic tariff

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Fuel cost escalation	1229	1290	1355	1423	1494	1569	1647	1729	1816	1907	2002	2102	2207	2317	2433	2555	2683	2817	2958	3106	
O&M escalation	5.30	5.60	5.92	6.26	6.62	7.00	7.40	7.82	8.27	8.74	9.24	9.77	10.33	10.92	11.55	12.21	12.91	13.64	14.42	15.25	
Outstanding Loan amount	62.02	57.25	52.48	47.71	42.94	38.17	33.40	28.62	23.85	19.08	14.31	9.54	4.77								
Loan repayment	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77								
Interest on loan	6.06	5.58	5.09	4.61	4.12	3.64	3.15	2.67	2.18	1.70	1.21	0.73	0.24								
Working Capital																					
Fuel cost for four months	9.69	10.17	10.68	11.22	11.78	12.37	12.98	13.63	14.32	15.03	15.78	16.57	17.40	18.27	19.18	20.14	21.15	22.21	23.32	24.48	
One month O&M	0.44	0.47	0.49	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	
2 Months receivables	8.48	8.71	8.95	9.21	9.48	9.77	10.09	10.42	10.77	11.15	11.55	11.97	12.42	12.56	13.15	13.77	14.42	15.11	15.83	16.58	
Maintenance spares15% of O&M	0.80	0.84	0.89	0.94	0.99	1.05	1.11	1.17	1.24	1.31	1.39	1.47	1.55	1.64	1.73	1.83	1.94	2.05	2.16	2.29	
Total	19.41	20.19	21.01	21.88	22.80	23.77	24.80	25.88	27.02	28.22	29.49	30.83	32.24	33.38	35.03	36.76	38.59	40.50	42.51	44.63	
Interest on working capital	1.97	2.05	2.14	2.22	2.32	2.42	2.52	2.63	2.75	2.87	3.00	3.13	3.28	3.39	3.56	3.74	3.92	4.12	4.32	4.54	
Variable Costs																					
Parameters	Derivation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Capacity (MW)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Generation (Million Units)	A	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	
Auxiliary Cons (%)		12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	
Generation (Ex-bus Million Units)	A1	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	
Specific Fuel Consumption (kg/kWh)	B	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
Fuel Consumption (MT)	C=(A*B*1000)	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	23652.00	
Cost of fuel (Rs. per MT)	D	1229	1290	1355	1423	1494	1569	1647	1729	1816	1907	2002	2102	2207	2317	2433	2555	2683	2817	2958	
Total cost of fuel (Rs Million)	E=C*D/10 ⁶ *	29.07	30.52	32.05	33.65	35.33	37.10	38.95	40.90	42.95	45.09	47.35	49.72	52.20	54.81	57.55	60.43	63.45	66.63	69.96	
Fuel Cost (Rs/kWh)	F=E/A1	4.19	4.40	4.62	4.85	5.09	5.35	5.61	5.90	6.19	6.50	6.82	7.17	7.52	7.90	8.30	8.71	9.15	9.60	10.08	
Fixed Costs																					
O&M Expenses		5.30	5.60	5.92	6.26	6.62	7.00	7.40	7.82	8.27	8.74	9.24	9.77	10.33	10.92	11.55	12.21	12.91	13.64	14.42	
Depreciation		4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	2.54	2.54	2.54	2.54	2.54	2.54	
Interest on Term Loan		6.06	5.58	5.09	4.61	4.12	3.64	3.15	2.67	2.18	1.70	1.21	0.73	0.24							
Interest on Working Capital		1.97	2.05	2.14	2.22	2.32	2.42	2.52	2.63	2.75	2.87	3.00	3.13	3.28	3.39	3.56	3.74	3.92	4.12	4.32	
Return on Equity		3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	
Income tax on ROE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Fixed Cost		21.82	21.72	21.64	21.58	21.55	21.54	21.56	21.61	21.69	21.80	21.94	22.12	22.34	20.58	21.37	22.21	23.09	24.02	25.01	
Fixed cost (Rs/kWh)		3.15	3.13	3.12	3.11	3.11	3.10	3.11	3.11	3.13	3.14	3.16	3.19	3.22	2.97	3.08	3.20	3.33	3.46	3.60	
Total cost (Fixed+variable)		50.89	52.24	53.69	55.23	56.88	58.64	60.52	62.51	64.63	66.89	69.29	71.84	74.54	75.39	78.92	82.64	86.54	90.65	94.96	
Tariff (Rs/kWh)		7.34	7.53	7.74	7.96	8.20	8.45	8.72	9.01	9.32	9.64	9.99	10.35	10.74	10.87	11.38	11.91	12.47	13.07	13.69	
Per unit tariff components																					
Per unit O&M Expenses		0.76	0.81	0.85	0.90	0.95	1.01	1.07	1.13	1.19	1.26	1.33	1.41	1.49	1.57	1.66	1.76	1.86	1.97	2.08	
Per Unit Depreciation		0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.37	0.37	0.37	0.37	0.37	0.37	
Per Unit Interest on term loan		0.87	0.80	0.73	0.66	0.59	0.52	0.45	0.38	0.31	0.24	0.17	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	
Per Unit Interest on working capital		0.28	0.30	0.31	0.32	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.57	0.59	0.62	
Per Unit Return on equity		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	
Per unit income tax		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Levillised tariff																					
Discount factor		1.00	0.898	0.807	0.72	0.65	0.58	0.53	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.22	0.20	0.18	0.16	0.15	
Discounted tariff components(variable)	5.86	4.19	3.95	3.73	3.52	3.32	3.13	2.95	2.78	2.63	2.48	2.34	2.20	2.08	1.96	1.85	1.74	1.64	1.55	1.46	
Discounted tariff components (fixed)	3.15	3.15	2.81	2.52	2.26	2.02	1.82	1.63	1.47	1.33	1.20	1.08	0.98	0.89	0.74	0.69	0.64	0.60	0.56	0.52	
Discounted tariff components (Total)		7.34	6.76	6.24	5.77	5.34	4.94	4.58	4.25	3.95	3.67	3.42	3.18	2.97	2.70	2.54	2.38	2.24	2.11	1.99	
Fuel (Variable Cost) Rs/kWh		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Levillised Fixed Cost (Rs/kWh)	9.01																				

HERC FY 2017-18 TARIFF (Rs / kWh)

Bagasse generic tariff

Table of Parameters	
Capital cost (Rs. in Million / MW)	49.250
Residual value (10%)	4.93
Total depreciation (Rs in Million / MW)	44.33
Loan component (Rs in Million / MW)	34.48
Equity component (Rs in Million / MW)	14.78
CUF (stabilisation)	53%
CUF 1st year (Including Stabilisation)	53%
CUF 2nd year onwards	53%
O&M (Rs Million / MW)	0.21
O&M escalation	5.72%
Depreication (first 13 years)	5.38%
ROE (1st 10 years)	14%
ROE (11th year onwards)	14%
Income tax (MAT) <u>pass through</u>	0.00%
Income tax (Corporate Tax) <u>pass through</u>	0.00%
Interest on term loan	10.17%
Interest on working capital	10.17%
Auxiliary consumption (1st year)	8.50%
Auxiliary consumption (2nd year onwards)	8.50%
Fuel cost (Rs. / MT)	2307
Fuel price escalation	5.00%
Heat rate (Kcal/kWh)	3600
GCV (Kcal/kg)	2250
Discount rate WACC without tax	11.32%
Levellised tariff	7.53

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Fuel cost escalation		2307	2422	2543	2671	2804	2944	3092	3246	3408	3579	3758	3946	4143	4350	4568	4796	5036	5288	5552	5830
O&M escalation		0.21	0.22	0.23	0.25	0.26	0.28	0.29	0.31	0.33	0.35	0.37	0.39	0.41	0.43	0.46	0.48	0.51	0.54	0.57	0.60
Outstanding Loan amount		34.48	31.82	29.17	26.52	23.87	21.22	18.56	15.91	13.26	10.61	7.96	5.30	2.65							
Loan repayment		2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65							
Interest on loan		3.37	3.10	2.83	2.56	2.29	2.02	1.75	1.48	1.21	0.94	0.67	0.40	0.13							
Working Capital																					
Fuel cost for four months		5.71	6.00	6.30	6.61	6.94	7.29	7.66	8.04	8.44	8.86	9.31	9.77	10.26	10.77	11.31	11.88	12.47	13.09	13.75	14.44
One month O&M		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.05
2 Months receivables		4.41	4.52	4.63	4.75	4.89	5.02	5.17	5.33	5.50	5.68	5.87	6.07	6.29	6.53	6.62	6.92	7.24	7.57	7.92	8.29
Maintenance spares15% of O&M		0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.09
Total		10.17	10.57	10.99	11.43	11.89	12.38	12.90	13.44	14.02	14.62	15.26	15.93	16.64	17.20	18.03	18.91	19.82	20.79	21.80	22.86
Interest on working capital		1.03	1.07	1.12	1.16	1.21	1.26	1.31	1.37	1.43	1.49	1.55	1.62	1.69	1.75	1.83	1.92	2.02	2.11	2.22	2.32
Variable Costs																					
Parameters	Derivation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Capacity (MW)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Generation (Million Units)	A	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
Auxiliary Cons (%)		8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Generation (Ex-bus Million Units)	A1	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
Station Heat Rate (Kcal/KWh)	B	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
Calorific Value of fuel(Kcal/Kg)	C	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250
Overall Heat (Gcal)	D= (A*B)	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714	16714
Fuel Consumption (MT)	E=(D*1000/C)	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428	7428
Cost of fuel per MT`	F	2307	2422	2543	2671	2804	2944	3092	3246	3408	3579	3758	3946	4143	4350	4568	4796	5036	5288	5552	5830
Total Cost of fuel (Rs Million)	G=E*F/10^6	17.14	17.99	18.89	19.84	20.83	21.87	22.97	24.11	25.32	26.59	27.92	29.31	30.78	32.32	33.93	35.63	37.41	39.28	41.24	43.31
Fuel Cost (Rs/kWh)	H=G/A1	4.03	4.24	4.45	4.67	4.90	5.15	5.41	5.68	5.96	6.26	6.57	6.90	7.24	7.61	7.99	8.39	8.81	9.25	9.71	10.19
Fixed Costs																					
O&M Expenses		0.21	0.22	0.23	0.25	0.26	0.28	0.29	0.31	0.33	0.35	0.37	0.39	0.41	0.43	0.46	0.48	0.51	0.54	0.57	0.60
Depreciation		2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	1.41	1.41	1.41	1.41	1.41	1.41	1.41
Interest on Term Loan		3.37	3.10	2.83	2.56	2.29	2.02	1.75	1.48	1.21	0.94	0.67	0.40	0.13							
Interest on Working Capital		1.03	1.07	1.12	1.16	1.21	1.26	1.31	1.37	1.43	1.49	1.55	1.62	1.69	1.75	1.83	1.92	2.02	2.11	2.22	2.32
Return on Equity		2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07
Income tax on ROE		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost		9.33	9.12	8.90	8.69	8.48	8.28	8.08	7.88	7.68	7.49	7.31	7.13	6.95	5.66	5.77	5.89	6.01	6.13	6.27	6.41
Fixed cost (Rs/kWh)		2.20	2.15	2.10	2.05	2.00	1.95	1.90	1.85	1.81	1.76	1.72	1.68	1.64	1.33	1.36	1.39	1.41	1.44	1.48	1.51
Total cost (Fixed+variable)		26.47	27.11	27.79	28.53	29.31	30.15	31.04	31.99	33.00	34.08	35.23	36.44	37.73	37.98	39.70	41.51	43.42	45.41	47.51	49.71
Tariff (Rs/kWh)		6.23	6.38	6.54	6.72	6.90	7.10	7.31	7.53	7.77	8.02	8.29	8.58	8.88	8.94	9.35	9.77	10.22	10.69	11.18	11.70
Per unit tariff components																					
Per unit O&M Expenses		0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.11	0.12	0.13	0.13	0.14
Per Unit Depreciation		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Per Unit Interest on term loan		0.79	0.73	0.67	0.60	0.54	0.48	0.41	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
Per Unit Interest on working capital		0.24	0.25	0.26	0.27	0.28	0.30	0.31	0.32	0.34	0.35	0.37	0.38	0.40	0.41	0.43	0.45	0.47	0.50	0.52	0.55
Per Unit Return on equity		0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Per unit income tax		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levellised tariff																					
Discount factor		1.00	0.898	0.807	0.72	0.65	0.58	0.53	0.47	0.42	0.38	0.34	0.31	0.28	0.25	0.22	0.20	0.18	0.16	0.15	0.13
Discounted tariff components(variable)	5.64	4.03	3.81	3.59	3.39	3.19	3.01	2.84	2.68	2.53	2.38	2.25	2.12	2.00	1.89	1.78	1.68	1.58	1.49	1.41	1.33
Discounted tariff components(fixed)	1.89	2.20	1.93	1.69	1.48	1.30	1.14	1.00	0.88	0.77	0.67	0.59	0.52	0.45	0.33	0.30	0.28	0.25	0.23	0.21	0.20
Discounted tariff components (Total)		6.23	5.73	5.28	4.87	4.49	4.15	3.84	3.56	3.29	3.06	2.84	2.64	2.45	2.22	2.08	1.96	1.84	1.73	1.62	1.53