

**Before the  
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION**

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**Case No. 56 of 2011**

**In the matter of**

Petition filed by M/s. Lloyds Metals & Energy Ltd. under Section 62 (1) (a) & Section 86 (1) (e) of the EA 2003, for determination of tariff for supply of electricity from Industrial waste heat recovery co-generation power plant of capacity 30 MW at Ghugus, Dist. Chandrapur of Maharashtra to the Distribution licensee in Maharashtra and fixation of purchase obligation for electricity produced from waste heat recovery based co-generation plants.

**Shri V.P. Raja, Chairman**

**Shri Vijay L. Sonavane, Member**

M/s. Lloyds Metals and Energy Ltd  
Trade World 'C' Wing,  
16<sup>th</sup> floor Kamala City, Senapati Bapat Marg,  
Lower Parel (W), Mumbai 400013

..... Petitioner

Vs.

1. Maharashtra State Electricity Distribution Company Ltd
2. The TATA Power Company Ltd-D
3. Reliance Infra-D
4. Brihanmumbai Electricity Supply and Transport

..... Respondent No.1  
..... Respondent No. 2  
..... Respondent No. 3  
..... Respondent No. 4

For the Petitioner

Shri. Prashant Puri, Shri. Surendra Pimparkhedkar (WISE)

## **INTERIM ORDER**

**Dated: 29<sup>th</sup> December, 2011**

M/s. Lloyds Metal & Energy Ltd., the Petitioner has commissioned 30 MW capacity, Co-generation power project based on industrial Waste Heat generated by its Sponge iron plant located at Village Ghugus in Chandrapur district in Maharashtra State in October 2010. The plant has waste heat recovery system which is designed to utilise the heat of waste gas in the sponge iron process. A sponge iron plant burns coal in kilns and the high temperature flue gases generated therefrom are passed through a waste heat recovery boiler for generation of power. Such plants should, therefore, be welcomed on energy efficiency basis and also on the ground that such plants prevent environmental pollution and avoid burning of coal to produce equal quantity of electricity.

This energy (electricity) could be sold to the distribution licensees at the tariffs which could be determined under Section 62(1)(a) read with Section 61(h) of the Electricity Act, 2003 (“EA 2003”) in furtherance of the functions of the Commission under Section 86(1)(e). The present Petition has been filed to invoke the aforesaid statutory provisions seeking determination of tariff for supply of electricity from the industrial waste heat recovery co-generation power plant of installed capacity of 30 MW located at Ghugus, District Chandrapur of Maharashtra, to the Distribution licensees in Maharashtra. The Petition has also been stated to be filed for fixation of Purchase Obligation for electricity produced from waste heat recovery based co-generation plants.

2. The following are the prayers of the Petitioner:

“

- a) *Accept this Petition for (a) determination of tariff for supply of electricity from Industrial waste heat recovery cogeneration power plant of 30 MW capacity at Ghugus, Dist. Chandrapur of Maharashtra to the Distribution licensees in Maharashtra. (b) fixation of purchase obligation for electricity produced from waste heat recovery based co-generation power plant in the state under 86 (1) (e) of Electricity Act, 2003.*
- b) *Approve the levellised tariff of Rs. 4.84 / kWh for sale of electricity generated from waste heat recovery based co-generation power plant of 30 MW capacity at Ghugus, Dist. Chandrapur of Maharashtra to distribution licensees in Maharashtra. The Hon Commission may approve tariff period equal to 13 years & direct the distribution licensee to execute the PPA with the Petitioner for purchase of electricity from LMEL 30 MW waste heat recovery Co- generation plant.*
- c) *Issue an interim tariff order at an early date to enable sale of electricity from LMEL 30 MW waste heat recovery co-generation plant to the distribution licensee in the state.*
- d) *To grant an opportunity in person before Hon Commission during the hearing on the above matter.*
- e) *Condone any inadvertent omission/errors short comings and permit the Petitioner to add/ change/modify/alter this filing and make future submissions as may be required at a future date.”*

3. Based on the Petitioner's submission, the Commission admitted the Petition and a notice was issued to the Petitioner and four Authorized Consumer Representatives on May 11, 2011. Consequently, the first Technical Validation Session ("TVS") was held on 20<sup>th</sup> May 2011.

**4. First TVS**

4.1 First TVS in the above matter was held on 20<sup>th</sup> May, 2011 at 12.30 hrs at the Commission's office.

4.2 Shri. Surendra Pimparkhedkar and Shri. Prashant Puri made a detailed presentation on industrial waste heat recovery co-generation technology while relying upon Section 61 (h), Section 62 (1) and Section 86(1)(e) of EA 2003 to support the contention that tariff needs to be determined inter alia to promote co-generation based projects in the Maharashtra State. Shri. Prashant Puri explained that the co-generation Plant has been designed in such a way, so as to produce 95 TPH (Tonnes Per Hour) of steam using waste heat and considering normative requirement of 4 TPH of Steam to generate 1 MW power, the co-generation plant is designed to produce 22.5 MW using waste heat. The power generation shall generally depend on the process controlled by Sponge Iron production; there shall be 'infirm' power generation. Hence, to have consistent generation of firm power, 90 TPH coal fired boiler has been installed. This coal fired boiler gives additional 7.5 MW power and supplements any shortfall of steam due to process variation and shutdown to ensure firm power generation at all times. The first phase of 30 MW waste heat recovery based co-generation power plant is commissioned recently in

October 2010 at Ghugus, district. Chandrapur and out of that total 24 MW power is being scheduled and being sold to the trader.

**4.3** The Commission observed that substantial data has been submitted by the Petitioner, however, the necessary benchmarking needs to be done for the said data with reference to standard norms applicable to such industrial waste heat recovery co-generation plants. The Commission further observed that the said case would be considered on generic basis instead of case to case basis. The Commission directed the Petitioner to submit the data about number of existing Sponge iron manufacturer and other industrial manufacturer who have co-generation in the Maharashtra State and to also get the details of such information from All India Association, CPRI and CSIR.

**4.4** Further, the Commission directed the Petitioner to compare and submit the present plant performance with reference to National/International standards and to also submit the list of consultants in the field of sponge iron manufacture.

The Commission scheduled the next TVS in the matter on Tuesday, 14<sup>th</sup> June 2011 at 15.00 hours. Notice was accordingly sent to the Petitioner and the four Consumer Representatives authorised by Section 94(3) of the EA 2003.

**5.** The Petitioner filed its submissions dated June 14, 2011 related to the issues raised/ information sought by the Commission during the TVS held on 20<sup>th</sup> May 2011. These are briefly stated as follows:-

**I.** The Petitioner submitted that “Generic tariff approach” is usually adopted in the following cases:

- When smaller capacity of projects exist in relatively large number.
- Ownership of project is diverse.
- It is possible to specify a ‘generic tariff’ based on a representative case after fixing the benchmark operational and financial parameters.

On the contrary, in case of industrial waste heat recovery based co-generation power projects, the Petitioner states as follows:-.

- a.** Sponge iron manufacturing units having co-generation facility are very limited. At present only 7 such plants are operating in Maharashtra. There are 14 sponge iron manufacturing units without co-generation facility in Maharashtra.
- b.** Sponge iron is manufactured via two routes in India viz. i) coal Based ii) gas based. There are various different technologies used for manufacture of sponge iron (like IS/RN process, KRUPP-CODIR, Allis-chalmer controlled atmospheric reduction process, Tata direct reduction process, Jindal Technology). So, all sponge iron plants may not be identical to each other in process/ technology and therefore the plants may differ in cost related and operational parameters.
- c.** The Petitioner submitted that Rajasthan Electricity Regulatory Commission (RERC) in its Tariff Regulations has specified both the options i.e. generic tariff and tariff on case to case basis. While the Kerala Electricity Regulatory Commission (KSERC) in its tariff regulations has recommended project

specific tariff for the industrial waste heat recovery based co-generation plant on case to case basis.

Considering different types of processes and technologies involved in cogeneration plants and the presence of limited number of such plants the Petitioner requested that tariff be determined on case to case basis for such co-generation power plants instead of adopting a generic tariff approach.

**II.** Petitioner submitted the list of the consultants in the field of sponge iron manufacture and the comparison of present plant performance with respect to the design parameters.

## **6. Second TVS**

**6.1** The second TVS in this matter was held on June 14, 2011 at 15.00 hrs. at the office of the Commission. Shri. Prashant Puri and Shri. Surendra Pimparkhedkar (WISE) were present on the behalf of the Petitioner during the TVS.

**6.2** The Petitioner made a detailed presentation on sponge iron manufacturing Units in Maharashtra State. The Petitioner had approached the Sponge Iron Manufacturing Association of India (SIMA) for data collection. The Petitioner submitted that presently there are 14 sponge iron manufacturing units without co-generation facility and 7 sponge iron manufacturing units with co-generation facility having capacity of 153 MW in Maharashtra. Petitioner also submitted the comparison statement of present plant performance with reference to design parameters of its plant at Ghugus and the list of Consultants in the field of sponge iron.

**6.3** Having heard the Petitioner's submissions, the Commission directed that the necessary benchmarking should be done based on the data submitted by the Petitioner with respect to the standard norms applicable to such industrial waste heat recovery co-generation plants.

**6.4** Further, the Commission directed the Petitioner to compare and submit the present plant performance with reference to National/International standards and get the same certified from CPRI or any authorized third party. The Commission also directed the Petitioner to submit the breakup of total 153MW capacity waste heat based co-generation power projects in the Maharashtra State with respect to captive use and surplus power injected into the grid. The Commission directed the Petitioner to examine whether any incentives are applicable (such as Energy Saving Certificate) for reduction of specific energy consumption for such plants under Energy Conservation Act 2001.

The Commission scheduled the next TVS on Friday, 29<sup>th</sup> July 2011 at 15.00 hrs.

7 The Petitioner submitted additional submissions dated July 28, 2011 related to the issues raised/ information sought by the Commission during the TVS held on 14 June 2011.

The Petitioner submitted as follows:-

**7.1** Plant performance with respect to the National/ International standards :

As per the direction of the Commission, the Petitioner has approached

i) Central Power Research Institute (CPRI) Ministry of Power, Government of India and ii) Central Institute of Mining and Fuel Research, Government of



India to examine and certify the plant performance with respect to the relevant national/ international standards.

The Energy audit team headed by Additional Director (ERED), CPRI, Bangalore visited the Petitioner's 30 MW co-generation power plant at Ghugus, Chandrapur during 11<sup>th</sup> July 2011 to 15<sup>th</sup> July 2011, in order to conduct the requisite inspection and to carry out the necessary measurements.

The Petitioner also submitted a detailed CPRI report titled "Heat Rate study at 30 MW co-generation plant, Ghugus, Chandrapur" for the information of the Commission.

Following salient points have been brought out by CPRI in its report:

**i. Gross overall test station heat rate (SHR) v/s Design station heat rate (DHR):**

The gross overall test station heat rate (SHR) is 3462.90 kcal/kwh at the test load of 100% as compared to the design heat rate (DHR) of 3276.8 kcal/kwh. The DHR is at par with the waste heat recovery co-generation plants of similar magnitudes.

**ii. Gross overall efficiency v/s design efficiency:** The gross overall efficiency is **24.8%** against the designed value of **26.2%**.

**iii. Coal analysis:** The coal used in the AFBC boiler is of F grade with GCV of 3200 kcal/kg with volatile matter of 24 %(+/- 2%). The landed cost of coal (market based, non-linkage) is around Rs 4100 to 4200/ ton.

**iv. Kiln:** The 500 t/day kiln generate around 90,000 to 120,000 Nm<sup>3</sup>/h of flue gases at around 750 to 950° C. Each 100 t/day kiln generate around 20,000 to 27,000

Nm<sup>3</sup>/h of flue gases at around 750 to 950° C. Presently 100% flue gas generated from Kiln is being used for the power generation process.

- v. **Boiler efficiency tests results:** Boiler efficiency of the WHRB units (10t/h) is in the range of 78.46% - 79.63% against the design value of 80.37%. Whereas, the efficiency of WHRM (55t/h) is 82.13% as against the design value of 82.19%. The efficiency of AFBC is 82.17% against the design value of 82.28%.
- vi. **Turbine-generator efficiency test results:** The turbine efficiency is 31.12% and turbine heat rate is 2763.92 kcal/kWh, as against the design value of 32.89% and 2614.71 kcal/kWh respectively. The generator efficiency is 97.80% which is at par with the design value. The turbine-generator heat rate is 2826.10 kcal/kWh and the efficiency is 30.43% against the design value of 2673.53 kcal/kWh and 32.17% respectively. The turbine is aptly sized to meet the process flue gas requirements with a 25% margin. The turbine heat rate is at par with similar sized units in the power boiler and co-generation sector.
- vii. **Auxiliary equipment, auxiliary power consumption:** The auxiliary power consumption is worked out to 12.3% of the gross generation on the basis of actual energy measurement carried out at plant site.
- viii. The flue gas flow rates and temperature are linked to the sponge iron manufacturing process and for the process of power generation these are uncontrollable.

- ix. Presently the total heat from sponge iron plant is being tapped for the power generation process through the bottoming cycle. The total extractable energy from the flue gases is being used for the power generation process.
- x. Supplementing of the energy/ steam flow to the steam turbine- generator is from the AFBC boiler. The extend of topping up varies between 25% to 40% of the total steam requirement for generating 30 MW power.
- xi. CPRI has noticed that there is a major increase in the station heat rate with respect to design station heat rate by 169.5 kcal/ kWh.

**7.2** As per information supplied by SIMA, most of the existing sponge iron based cogeneration plant in Maharashtra (153MW) are basically captive power plants consuming 51% of the generation for own use. In absence of plant-wise units export data, the surplus energy injected into the grid is calculated considering the normative operating parameters of standard co-generation plants. The total surplus power injected into the grid through the 153 MW capacity sponge iron based co-generation plants would be around 473 MU / annum as given below.

<b>Capacity 153 MW</b>		
CUF	80%	
Gross Generation	1072.22	Million units/ annum
Auxiliary Consumption	10%	
Net Generation	965.00	Million units/ annum
Export to the grid	472.85	Million units/ annum

**7.3** The Petitioner further submitted that the National Mission for Enhanced Energy Efficiency is one of the missions recommended under National Action Plan on Climate Change. The flagship scheme of the mission is the Perform, Achieve and Trade (PAT) mechanism, which is a market based mechanism to make improvements in energy efficiency in energy-intensive large industries and facilitates cost-effectiveness by certification of energy savings that could be traded. The scheme is under discussion at this stage, a draft PAT scheme has been prepared by Bureau of Energy Efficiency. To finalize the scheme Bureau of Energy Efficiency has requested the designated industries to submit energy consumption data. Since iron and steel sector is defined as one of the designated industry under Bureau of Energy Efficiency framework, Lloyds Metal and Energy Limited (LMEL), the Petitioner has also submitted the data to Bureau of Energy Efficiency to this effect.

The Petitioner submitted that the incentives under PAT scheme are related to encouraging the energy efficient operation of the sponge iron production plant and therefore the same should not be linked with the tariff fixation process.

## **8 Third TVS**

**8.1** The third TVS in this matter was held on July 29, 2011 at 15.00 hrs. at the office of the Commission. Shri. Prashant Puri and Shri. Surendra Pimparkhedkar (WISE) were present on the behalf of the Petitioner's company.

**8.2** As directed by the Commission during the TVS held on June 14, 2011, the Petitioner submitted a report prepared by CPRI for the Petitioner's sponge iron

plant. Shri. Pimparkhedkar and Shri. Puri made a presentation on the study conducted by CPRI at the Petitioner's 30 MW industrial waste heat recovery plant.

- 8.3** Having heard the Petitioner, the Commission directed the Petitioner to make a comprehensive presentation by expert in this field, on the status of other industrial waste heat recovery power plants in India in general and for the State of Maharashtra in particular. The Commission also directed the Petitioner to apprise the Commission of the pros and cons of impact of these co-generation plants on other industrial activities, present status of other industrial co-generation activities and total potential, for necessary benchmarking of industrial waste heat recovery Plants.

The Commission fixed the next date of TVS on Friday 26<sup>th</sup> August, 2011 at 11.00 Hrs.

## **9 Fourth TVS**

- 9.1** The fourth TVS in this matter was held on August 26, 2011 at 11.00 hrs. in the office of the Commission. Shri. Prashant Puri, Shri R. M. Alegavi (VP LMEL) and Shri. Surendra Pimparkhedkar (WISE) were present on the behalf of the Petitioner's company.

- 9.2** As per the directives given by the Commission in the hearing held on July 29, 2011, Shri. R. M. Alegavi, an expert in co-generation technology, made a comprehensive presentation on the status of other industrial waste heat recovery power plants in India in general and for the state of Maharashtra in particular and the followings points were covered in the presentation;

- i. Waste heat recovery option and technology aspects.
  - ii. Calculation of normative benchmark for waste heat generation for different industries.
  - iii. Power potential for the co-generation power plants and actual production capacities for India as well as for Maharashtra.
  - iv. Comparison of all India waste heat recovery power potential computed by normative benchmark.
  - v. The presentation also covered the various challenges in recovering the low temperature heat waste like corrosion of the heat exchanger surface, large heat exchange surfaces required for heat transfer and finding a use for low temperature heat.
- a.** The presentation covered the pros and cons of promoting co-generation projects and its impact on renewable energy sector, briefly stated as follows:-.
- i) The policy and regulatory framework for renewable energy sector is well defined; whereas the waste heat recovery based co-generation does not have such promotional framework in the State.
  - ii) The Commission has approved Rs.5.05 /kWh rate for purchase of power from captive power plant in past, the Petitioner is requesting for similar tariff.
- b.** The impact on average power purchase Cost of DISCOM due to purchase of entire co-generation power is negligible, therefore there is no adverse effect on end consumer tariff if Commission specifies Purchase Obligation for co-generation projects.

c. Like SERC's of Kerala and Rajasthan the Commission can also allow the purchase from WHR based co-generation to meet the Renewable Purchase Obligation.

**9.3** The Commission enquired about the Tariff Orders issued by the State Regulatory Commissions of the other states in India with reference to waste heat recovery cogeneration of power. The Petitioner submitted that Orissa Electricity Regulatory Commission (OERC) has specified separate purchase obligations for co-generation plants. RERC has treated the electricity generated from waste heat recovery based co-generation plants equivalent to the electricity generated from the renewable energy power plant. KERC also has not made any distinction between the renewable and waste heat recovery based co-generation power plants. The KERC have included the co-generation technology eligible for meeting the Renewable Purchase Obligations.

**9.4** The Commission enquired with the Petitioner as to whether the said 30 MW cogeneration plant of the Petitioner would compare at par with a renewable energy plant. The Petitioner replied that it is the first case of tariff determination for fossil fuel waste heat recovery based cogeneration plant; however, the said co-generation plant would compare favourably with plants running on renewable energy sources.

## **10 Analysis and Observations:**

**10.1** The Petitioner has prayed levellised tariff of Rs. 4.84 / kWh be approved for sale of electricity generated from waste heat recovery based co-generation

power plant of 30 MW capacity at Ghugus, district Chandrapur of Maharashtra to distribution licensees in Maharashtra. The Petitioner has also prayed that tariff be approved for period equal to 13 years and directions be issued to the distribution licensees to execute power purchase agreement with the Petitioner for purchase of electricity from LMEL's 30 MW waste heat recovery co- generation plant.

- 10.2 The Maharashtra Electricity Regulatory Commission (Terms and Conditions for determination of RE Tariff) Regulations, 2010 were notified on 17th June 2010. These Regulations cover determination of tariff for non-fossil fuel based co-generation plants. However, the co-generation from waste gas in the process of sponge iron manufacture is from fossil fuel.

The power plant of the Petitioner is a co-generation facility where 22.5 MW power is generated by recovery of heat from flue gases emanating from the Petitioner's sponge iron plant and 7.5 MW power is generated from fossil fuel thermal plant.

The Hon'ble Appellate Tribunal for Electricity in its judgment dated April 26<sup>th</sup> 2010 in Appeal No. 57 of 2009 in the matter of 'Century Rayon vs. Maharashtra Electricity Regulatory Commission' has come to the finding that co-generation, irrespective of fuel used, is to be promoted under Section 86(1)(e). Some findings are extracted below:

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*45. Summary of our conclusions is given below:-*



*i. The Plain reading of section 86 (1) (e) does not show that expression “co-generation” means cogeneration from renewable energy sources alone. The meaning of the term ‘co-generation’ has to be understood as defined in definition section 2 (12) of the Act.*

*II. As per Section 86(1)(e), there are two categories of `generators namely (1) co-generators (2) Generators of electricity through renewable sources of energy. It is clear from this Section that both these categories must be promoted by the State Commission by directing the distribution licensees to purchase electricity from both of these categories.*

*III. The fastening of the obligation on the co-generator to procure electricity from renewable energy procures would defeat the object of Section 86 (1)(e).*

*IV. The clear meaning of the words contained in Section 86(1)(e) is that both are different and both are required to be promoted and as such the fastening of liability on one in preference to the other is totally contrary to the legislative interest.*

*V. Under the scheme of the Act, both renewable source of energy and cogeneration power plant, are equally entitled to be promoted by State Commission through the suitable methods and suitable directions, in view of the fact that cogeneration plants, who provide many number of benefits to environment as well as to the public at large, are to be entitled to be treated at par with the other renewable energy sources.*

*VI. The intention of the legislature is to clearly promote cogeneration in this industry generally irrespective of the nature of the fuel used for such cogeneration and not cogeneration or generation from renewable energy sources alone..”*

The Hon'ble Appellate Tribunal for Electricity has thus carved out a special avenue for the promotion of those power plants which do not use renewable source of energy, but use fossil fuels to operate their co-generation plants by its interpretation on Section 86(1)(e) of the 2003 Act in the aforesaid judgement.

Although, on the basis of the above judgment, co-generation plants (even if it is 'fossil fuel based co-generation) and renewable energy plants are to be treated at par , a Writ Petition (numbered as Special Civil Application No.791 of 2011) raising issues on similar lines as raised by the Appellant in the Century Rayon *supra* matter has been filed by Reliance Industries Limited before the High Court of Gujarat challenging a Regulation notified by the Gujarat Electricity Regulatory Commission, which also casts obligations on co-generation power plants to procure electricity from renewable sources of energy.

There is no doubt that if the plant of the Petitioner wishes to supply generated electricity to the Distribution Licensees, tariff will need to be determined under Section 62(1) (a) of the EA 2003. However, whether the said tariff is to be a preferential tariff in furtherance of the functions under Section 86(1)(e) is dependent upon the findings of the Higher Courts as to whether co-generation irrespective of fuel used is to be promoted under Section 86(1)(e) or that Section 86(1)(e) is restricted to promotion of co-generation plants that use only renewable sources. The term "Preferential Tariff" under the Maharashtra Electricity Regulatory Commission (Renewable Purchase Obligation, its compliance and REC framework Implementation) Regulations, 2010, means, the tariff fixed by the state commission for sale of energy from a generating

station based on renewable energy sources to a distribution licensee in accordance with Maharashtra Electricity Regulatory Commission (Terms and Conditions for determination of RE Tariff) Regulations, 2010; and "Renewable Energy Sources" means renewable sources such as mini hydro, micro hydro, small hydro, wind, solar, biomass including bagasse, bio fuel cogeneration, urban or municipal waste and such other sources as recognized or approved by MNRE. The aforesaid regulations also provide as follows:-

*“5.1 ...(b) Any person having a contract demand of not less than 1 MVA and who consumes electricity procured from conventional fossil fuel based generation through open access as per Section 42 (2) of the Act shall be subjected to minimum percentage of RPO to the extent of his consumption met through such open access source.”*

*“11.3 .....Provided further that captive user(s) consuming power from grid connected fossil fuel based co-generation plants are exempted from applicability of RPO target and other related conditions as specified in these Regulations.”*

The Commission observes that the renewable energy generation plants operating on the renewable resources are operating with standardised technologies and there are standard performance norms, parameters, market denominators and indices which help to assess, ascertain and validate various parameters of Fixed and Variable costs. However, as pointed out by the Petitioner during the Technical Validation Sessions, the co-generation plants, even those on waste heat recovery principle, operate on technologies which are

distinct from each other and the only commonality is that, these are operating on Bottoming cycle principle.

### **10.3 Benchmarking:**

The Petitioner has submitted substantial data regarding the plant along with the submission and also subsequently during the Technical Validation Sessions. The Petitioner has also submitted reports of expert individuals and expert agencies who were called upon to examine the said plant. The Commission has evaluated the data from the viewpoint of adequacy of the same for determining the Tariff.

However, the Commission observes from these reports that the details regarding standard or normative values of critical parameters and benchmarks for the same are not available. The Petitioner has requested for approval of a levellised tariff for its plant. However the basic details such as the basis for specifying the trends of escalable and non-escalable factors for the tariff, standard trajectory of plant degradation, normative value of auxiliary consumption and heat rate which are essential, not only for approval of tariff but also for ascertaining and assessing efficiency or inefficiency of operations, are not clear.

The Commission feels that in the absence of all these details, any attempt to determine tariff of the said plant would be arbitrary.

**10.4** The Commission points out that there are several plants operating on renewable resources and also there are several co-generation plants operating in the State.

Regarding the plants operating on renewable resources, the Commission observes that sufficient studies have been carried out at the Central level as well as at the State level to classify them, categorise them and to determine generic tariffs. However, the Commission finds that no such effort has been effectively carried out regarding co-generation plants.

The Commission reiterates that it would find no justification in approving the tariffs based on the existing operating parameters as the reports of studies carried out by the expert agency such as CPRI are not able to provide justification for the deviations observed by it. This would also mean grave injustice to the consumers by determining or approving tariffs for such plants based on such insufficient details and non-standardised procedures of tariff approval.

The Commission observes that fossil fuel based co-generation power projects have been included in RPS scheme in three states, namely Orissa, Rajasthan and Kerala, however the other states in India are yet to formulate policies for such plants. Neither does there appear to be a centrally formulated policy regarding these plants. The Commission is of the view that a comprehensive study and analysis of the orders of the SERCs of these states is required to be done by the Central Electricity Authority while it is formulating a uniform tariff policy.

While the Commission is committed to the principle of encouraging power generation through co-generation plants, there can be no question of bringing in arbitrariness in such a vital process. Also, whether the said tariff is to be a preferential tariff in

furtherance of the functions under Section 86(1)(e) is dependent upon the findings of the Higher Courts as to whether co-generation irrespective of fuel used is to be promoted under Section 86(1)(e) or that Section 86(1)(e) is restricted to promotion of co-generation plants who use only renewable sources.

**10.5 Commission's Direction with reference to Case 26 of 2011:** The Commission observes that a similar Petition has been filed by M/s Reliance Industries Ltd regarding variation, alteration, modification or amendment as well as review of the provisions of the MERC (Renewable Purchase obligation, its Compliance and Implementation of REC framework) Regulations, 2010. The hearing in the above matter was held on October 31<sup>st</sup>, 2011 at 11.00 Hrs. The Commission observed that the methodology for promoting fossil fuel based co-generation needs to be formulated and alternative methodology for encouraging such co-generation (such as PAT scheme) should also be given consideration. The Commission had emphasised upon the need to prepare a draft policy paper on fossil fuel based co-generation projects and the necessity for to deliberate on the issue in its meetings.

In view of the provisions of the Maharashtra Electricity Regulatory Commission (Renewable Purchase Obligation, its compliance and REC framework Implementation) Regulations, 2010 and Maharashtra Electricity Regulatory Commission (Terms and Conditions for determination of RE Tariff) Regulations, 2010, , in order to approve any such new technology as waste heat recovery and production of electricity i.e., co-generation from fossil fuel in sponge iron

manufacture as “qualified renewable energy Source”, the same has to be approved by Ministry of New and Renewable Energy Sources (MNRE).

Since fossil fuel supported waste heat recovery system based co-generation is not being recognized or approved by MNRE, the Commission is of the view that, for this purpose a nation-wide policy needs to be formulated, whereby the key parameters to determine efficient operation of the plant will also get identified. MNRE may need to identify, assess and ascertain the potential of cogeneration of power from fossil fuel waste heat and advantages of such technologies.

In view of the above, the Commission directs the Petitioner to implead MNRE as a necessary party to its Petition so that the views of MNRE can be obtained and the Commission would be able to align its actions with those charted out by MNRE on “national” basis at “generic” level, instead of taking ad-hoc decisions valid only for the present case.

- 11** The matter also needs to be discussed in the Forum of Regulator (FOR) in order to form an efficient methodology for evaluations of operations of such plants on some common basis. The Commission observes that approaching the State Regulatory Commission by individual co-generators as above would involve a rigorous exercise in each case, wasteful in time and resources of several agencies, organisations and individuals as the process would involve sifting of tremendous amount of data and sometimes doing repetitive work.

The Commission would like the co-generation plants to come together on a common platform such as SIMA, prepare a common report and proposal towards a generic approach and common operational parameters, acceptable across the board as standard performance indicators, finalise normative values thereof based on acceptable range of criteria and when ready, make a detailed presentation to the Forum of Regulators, who will be able to approach the Central Electricity Authority with the key data as above for taking actions at the national level.

As explained above, the Commission is not in a position to determine or approve the tariff of co-generation plants in the State on individual case to case basis, till the normative parameters as above are established by the Central Electricity Authority.

Sd/-  
(Vijay L. Sonavane)  
Member

Sd/-  
(V.P.Raja)  
Chairman