Before the

MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

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Case No. 42 of 2010

In the matter of

Petition filed by M/s. Cogeneration Association of India seeking review of the Tariff Order and Tariff structure of the Non-qualifying/ Incidental type Bagasse based Grid connected Co-generation projects in Maharashtra.

Shri V.P. Raja, Chairman

Shri Vijay L. Sonavane, Member

M/s. Co-generation Association of India. …..Petitioner
1st Floor, SakharSankul, Shivaji Nagar
Pune - 411005

1. Maharashtra state Electricity Distribution Co. Ltd.
Prakashgad Building, Plot No. G-9,
Bandra (East), Mumbai-400051.

2. Maharashtra Energy Development Agency
MHADA Commercial Complex, 2nd Floor,
Opp. Tridal Nagar, Yerwada,
Pune - 411006

3. M/s. Tata Power Company Ltd.
Bombay House, Fort

Respondents

Mumbai - 400001.

4. M/s. Reliance Infrastructure Limited…
Reliance Energy Centre
Santa Cruz (East), Mumbai 400055

5. M/s. Brihanmumbai Electricity Supply & Transport Undertaking
BEST Bhavan, BEST Marg
Mumbai - 400001

} Respondents

Present during the hearing:

For the Petitioner:	Shri S. C. Natu, Member Secretary
For the Respondent - 1:	Shri M. S. Kele, SE (Commercial)
	Shri A. V. Bute, Dy. EE (Commercial)
For the Respondent –2:	Shri S. A. Patil, GM i/c
	Shri Sameer Ghodake, Project Officer
For the Gokhale Institute of Politics & Economics, Pune (GIPE):	Shri Arvind Karandikar, Energy Expert
	Dr. Anurag Asawa, Financial Expert

ORDER

Date: 22 August, 2012

The Petitioner M/s. Co-generation Association of India (the Petitioner) filed a Petition on affidavit before the Commission on 15 June, 2010 under Section 94 (1) (f) of Electricity Act, 2003 seeking review of the Tariff Order and Tariff structure of the non-qualifying / incidental type bagasse based grid connected co-generation projects in Maharashtra.

2. The following is the main prayer of the Petitioner:

"That the Commission to increase the Tariff of non-qualifying / incidental type bagasse cogeneration projects to present realistic pricing of at least Rs. 3.5/unit. This will create a win-win situation for the bagasse co-generators in this category, all state utilities, all Cane growing farmers and society at large."

3. The Petitioner has made the following submissions:

3.1 That it seeks review of the Tariff of Rs. 1.94 / kWh in the first year of operation with 2% annual compounded escalation, announced in the year 2005 (Case No 26 of 2004) dated 25 May, 2005 and Tariff Order of 14 July, 2010(Case No 20 of 2010) with revised tariff of Rs. 2.14/KWh for the FY 2010-11. The Sugar mills who have implemented these non-qualifying / incidental type projects particularly during 2006-2010 periods are facing serious difficulties related to increased wages and O&M expenses. The capital cost has increased substantially as well, during the last 5 years and the upcoming projects will also face serious difficulties. This further increases difficulty related to financial closure with Maharashtra state Co-operative Bank, NCDC and other scheduled banks for the upcoming/new projects. The major reason for the same is the poor financial viability of non-qualifying / incidental type bagasse based cogeneration projects even at present (FY 2010-11) Tariff of Rs. 2.14/KWh.

3.2 The Petitioner in its Petition highlighted the major changes since 2002, which have direct impact on the Tariff rate and Tariff structure as under;

a. **Open access and Renewable Power Purchase Obligations**:

The Commission has provided open access Orders and directions. Any independent power generator including bagasse based co-generation projects can trade the power through the registered power traders. Sugar mills in Karnataka are receiving more than Rs. 6/kWh for the last seven months for the power exported to the power traders. Private power traders have expressed interest in purchasing power from the proposed co-generation projects and have indicated short term power purchase rate of Rs. 6 / kWh and Long term power purchase rate of Rs. 5 /kWh. However, the unit rate would be based on the cost of the power actually traded.

Proposed non-qualifying / incidental type bagasse based co-generation power projects are trying to achieve financial closure based on the above assumption of sale of power to power traders. The required financial

norms of DSCR are not met by the existing Tariff of Rs. 1.94 / kWh in the first year with the 2% annual compounded escalation for non-qualifying / incidental type bagasse based co-generation projects.

During the crushing season for F.Y 2009-10, 142 sugar factories were in operation in Maharashtra and cumulatively crushed 61.50 million tonnes of sugarcane with average sugar recovery of 11.50% in 180 average days. They had annual turnover of about Rs. 15000 crore. The sugar industries in Maharashtra annually contribute Rs. 2600 crore to National & state Exchequers, and by way of revenue & taxes distribute about Rs. 7000 crore to cane growers by way of cane prices and release about Rs. 570 crore as salaries & wages to lakhs of employees. This industry annually provides livelihood to about 8 lakhs poor labours involved in harvesting / transport of sugarcane. Projects taken up by co-operative sugar mills must have financial viability for approval of all stakeholders and also need to have an underlined purpose of advantage to the society at large, state and local area.

To enable the non-qualifying/incidental type bagasse based co-generation projects to be financially viable, it is inevitable to increase the Tariff to at least Rs.3.5/kWh.

b. **WPI Index for FPL & L (fuel, power, light & lubricants) has been raised from 239.20 in 2002-03 to 324.00 in 2006-07 or by 35 %:**

The growth rate of the WPI index for FPL & L has been 8% annually compounded. The average inflation rate is also at the same level and presently at higher level. Increase in the wages, salaries, operation & maintenance cost, lubricants has also been at similar levels. The anticipated rise of the sugarcane price by farmers has been much higher. Considering the same, the Petitioner prays to the Commission to review the 2 % annual compounded escalation rate in the Tariff to the level of 5 %.

c. **Projects cost has risen from Rs. 0.67 crore /MW in 1996 to Rs. 4.59 crore/ MW for 2010 for non-qualifying/ incidental type bagasse**

based co-generation projects. With this project cost and the present Tariff, the DSCR is below one with project internal rate of return below 7%. All variable costs including wages and other O&M costs have substantially increased and are expected to increase further in the years to come:

Considering the above increase in fixed and variable costs, the Petitioner prays for a corresponding Tariff review.

d. **Average crushing days of sugar factories in operation in Maharashtra was 146 in 2007-08 and 175 in 2006-07:**

The Commission in its earlier Order had considered 180 days as average crushing days for sugar factories. However, the average for the last five years is below 150 days and the average for the last two seasons is 160 days. There is a distinct pattern of decrease in sugar season and higher capacity utilization of the sugar mills. These are due to various factors including requirement of increasing average season recovery, availability of sugar cane, changing climate conditions, etc. This may not have serious impact on sugar mills economics but will substantially reduce the annual PLF or capacity utilization of these projects. The decrease in DSCR between 180 days and 160 days is 10%.

Based on the same, the Petitioner prays to the Commission to review the Tariff based on 160 season days.

e. **Operating data of five Sugar co-generation projects indicates generation cost of Rs. 1/kWh to Rs. 8/kWh:**

The penetration of the bagasse based co-generation plants has been low in the co-operative sugar mills in the state. Data have been collected from eight non-qualifying / incidental type bagasse based co-generation projects having installed capacities between 1.2 to 6.9 MW. The fixed and variable cost has been computed and the generation cost between the five sugar mills varies from Rs. 1 /kWh to Rs. 8 /kWh over the span of last 14 years. The Commission had in its earlier Order acknowledged the requirement of higher rate of return of 20% for bagasse cogeneration

projects, considering the infirm fuel supply scenario. Therefore, the Petitioner prays to the Commission to acknowledge the actual fixed and variable cost being incurred and review the Tariff.

f. **Increasing demand – supply gap in the state leading to procurement of expensive energy, this does not account for efficiency of generation:**

The Commission, all utilities and all stake holders are gravely concerned about the demand supply gap in the state and the unpleasant load shedding. Expensive power has been sourced by all utilities from any or all available sources to decrease the gap. Expensive power is being purchased above Rs. 7/kWh. The Commission in its earlier Order had distinguished between non-qualifying / incidental and qualifying bagasse based co-generation projects. Non qualifying incidental cogeneration projects are those which supply available excess power from existing backpressure turbines. In the event that there is no purchaser for this power, some part of the steam for process is obtained through a pressure-reducing valve.

In the present scenario many inefficient generators are also sustaining operations by supplying expensive power. Backpressure power generation or incidental power generation has a cycle efficiency of above 80%. Incidental co-generation projects can be commissioned within 3-4 months and can provide some relief in load shedding in the local areas. In the present scenario and to reduce the overall procurement cost of the expensive energy, these projects need to be encouraged and catalyzed.

The power generated from the non-qualifying / incidental type co-generation projects is purely renewable in nature. Also, no other major sugar producing state has made this distinction between incidental and non-incidental co-generation projects.

Based on this, the Petitioner prays that the Commission should remove the distinction between non-qualifying/incidental bagasse based co-generation plants and qualifying bagasse based co-generation plants and

provides similar Tariff for qualifying and non-qualifying/ incidental type bagasse based co-generation projects.

g. **Lower penetration of bagasse based co-generation projects.**

Against the state's potential of 1250 MW of power from bagasse based co-generation projects, the penetration is still 40%. The penetration is much less if reviewed in terms of units of power exported to the grid. Against the tenth/ eleventh plan projections of addition of 500 MW by bagasse based co-generation projects, the actual achievement was in the order of 125 MW.

All the sugar mills have expressed interest in installing grid connected projects and carried out site specific studies. The present Tariff rate is not economical, viable or bankable for operating projects as well as non-qualifying/ incidental type projects. The Petitioner, hence, prays to the Commission to increase the Tariff of non-qualifying co-generation projects to a more realistic pricing of at least Rs. 3.5 /kWh. This will create win-win situation for the bagasse based co-generators in this category, all state utilities, all cane growing farmers and society at large.

4. The Commission, vide notice dated 23 September, 2010, scheduled a hearing in the matter on 11 October, 2010. In the said notice, the Commission had directed the Petitioner to complete service of its Petition on all Respondents and four authorized consumer representatives. Further, the Commission directed all the Respondents to submit their replies with copy to the Petitioner as well as four authorized consumer representatives.

5. Respondent-1 and Respondent-2 submitted their replies as under;-

5.1 MSEDCL'S submission (Respondent - 1):

The Respondent 1 vide letter dated 7 October, 2010 submitted its reply on the Petition filed by the Petitioner as under:

a. That MSEDCL is keen to procure power from Non-conventional Energy Sources (NCE).

b. Further in order to promote RE generation, MSEDCL has no objection to the rate proposed by Cogeneration Association of India.

c. The rate as proposed by Cogeneration Association of India may be vetted by MEDA.

d. This amount may please be allowed as direct pass through in MSEDCL's ARR.

e. That the Commission may decide the rate considering the submission made by the Petitioner so as to ensure financial viability of the non-conventional non-qualifying (NCNQ) generators.

Further it was submitted that, as a policy, NCE sources are always encouraged and Respondent 1 intends to procure maximum possible generation from these sources and hence a reasonable rate may be considered to ensure their financial viability.

5.2 MEDA's submission (Respondent 2):

The Respondent 2 vide letter dated 11October, 2010 submitted its replies as under:

"

a. That the first Tariff Order on non-qualifying/ incidental type bagasse based co-generation projects was issued by the Commission vide Order dated 25 May, 2005 in Case No. 26 of 2004. On the basis of this Order, new Tariff Order for the new control period was declared by the Commission vides its Order dated 14 July, 2010 in Case No. 20 of 2010. It is observed that the approach adopted in determining the new Tariff for this category of co-generation project have fallen short in assessing the rise in per MW cost and subsequently increase in selling price of bagasse. Consequently, the new Tariff structure for this category of co-generation projects looks unattractive and unviable.

b. The desire of encouraging efficiency in bagasse based co-generation projects has led to the formation of two categories of co-generation projects namely qualifying and non-qualifying/ incidental. This aspect is

not adopted in general by other states who have one common Tariff structure for all co-generation projects. It is therefore proposed that similar approach should be adopted for the Maharashtra state. While doing so the condition of undertaking modernization of their process plant be made mandatory within certain period i.e. say 2 years.

c. Non-qualifying /incidental type co-generation by its nature implies that the excess energy generation is incidental and not intentionally planned. Therefore, the investment made in such projects is basically for process plant and to meet captive power demand. In light of this, per MW cost as mentioned by the Petitioner for the surplus power to the grid requires to be assessed.

d. The average power procurement cost (APPC) of the distribution licensees in Maharashtra in FY 2009-10 was Rs. 2.51/kWh (CERC Regulation 99/2010 (Suo-Motu) dated 1 June, 2010 on the forbearance and the floor price for REC). The APPC reflects the power procurement cost from the conventional sources of energy. Although the non-qualifying / incidental co-generation projects cannot compare with the qualifying co-generation projects on the efficiency grounds, the Commission may please note that it produces the electricity from renewable sources (bagasse) and therefore non-qualifying/ incidental type co-generation projects should be eligible for getting higher Tariff than the APPC.

e. The power procurement transactions of the MSEDCL (Respondent-1) during the F.Y 2008-09 indicates that the MSEDCL (Respondent-1) has purchased costly power to the tune of 3982 million units at the weighted average Tariff of Rs. 6.60/kWh, portion of it is purchased at higher Tariff of Rs. 7.37/kWh. (MERC ARR/ Tariff Orders for the F.Y 2008-09 and F.Y 2009-10). The excess cost being incurred on purchase of this short term energy can be avoided if attractive Tariff is given for energy procured from this category projects.

f. In Orissa, for meeting the increasing power demand the OERC has issued a Tariff of Rs. 3.20/kWh to 4.05/kWh (based on capacity) for energy generated from fossil fuel based captive power projects having co-

generation facilities (Case No. 06/2009, OERC Order dated 28.10.2009). In the same approach, we may promote the green energy generated from non-qualifying/incidental co-generation by giving appropriate Tariff and encourage this sector.

g. In the view of the above, it is proposed that, the Commission may provide appropriate Tariff for this category of project."

6. As scheduled, a hearing in the matter was held on 11 October, 2010. Shri S. C. Natu, Member Secretary appeared on behalf of the Petitioner, Shri R. G. Sonavane, SE (Commercial) appeared on behalf of the Respondent 1 and Shri M. P. Pujari appeared on behalf of the Respondent 2.

6.1 During the hearing, the Petitioner explained the background of the present Petition. Further, the Petitioner submitted that, the current Petition is filed for reviewing the Tariff Order and Tariff structure for non-qualifying / incidental type grid connected bagasse based co-generation projects in the Maharashtra state. The rate given by the Commission in the last Order is very low and considering the increase in wages, salaries and other expenditures, the minimum rate may be fixed at Rs. 3.50/kWh.

6.2 Further the Respondent 1 and Respondent 2 submitted their comments as mentioned above and requested the Commission to take it on the record.

6.3 After having heard the parties and considering the aspects involved in the present petition, the Commission observed that, the issues required a detailed analysis before taking any conscious decision in the matter. The Commission had observed that the entire issue would be deliberated internally and a suitable professional institution will be engaged for the same. Once a study report is received, the Commission shall fix up the matter for hearing on a suitable date.

7. In view of above observations, the Commission appointed M/s. Gokhale Institute of Politics and Economics, Pune (GIPE) for conducting an in-depth study in the matter of Tariff determination as well as to study both the Technical and Economic issues related to the non-qualifying / incidental type bagasse based co-generation projects in Maharashtra state.

8. Accordingly, GIPE vide letter dated 16 March, 2011 submitted the first draft report, vide letter dated 7 April, 2011 revised draft and vide letter dated 6 July 2011 submitted the final report in the matter of *"Conducting in-depth study in the matter of Tariff determination for non-qualifying / incidental type bagasse based co-generation projects in Maharashtra ."*

The salient features of the report are as follows:

a. In Maharashtra, there are total 190 sugar factories, out of these, 21 factories have established co-generation plants and in another 33 factories the erection of co-generation plant is in progress. This means that there are still 136 sugar factories which can be persuaded to go for energy sale.

b. However, as per the data available on MEDA's website, there are 21 biomass/bagasse based co-generation plants with installed capacity of 231.5 MW and a surplus capacity of 115.7 MW, which are operated by co-operative sugar factories and 3 plants with installed capacity of 39 MW and surplus capacity of 24 MW, are operated by private industries. Thus, there are a total 24 sugar factories having co-generation facility with installed capacity of 270.5 MW and surplus capacity of 139.7 MW.

c. The number of co-operative sugar factories with projects in the pipeline are 21 with a proposed installed capacity of 373.2 MW and the number of private sugar factories with projects in the pipeline are 12 with a proposed installed capacity of 262.7 MW. Thus, total co-generation projects under pipeline are 33 with a proposed installed capacity of 635.9 MW.

d. The availability of bagasse fluctuates each year. From the data available for the bagasse production in Maharashtra, it is understood that the sugarcane cycle is a four-year cycle. The availability of sugarcane has direct impact on the annual crushing days of the sugar factory. For the five year period ending on FY 2008-09, the average crushing days are 136; minimum in FY 2004-05 at 82 and maximum in FY 2006-07 at 189. Based on the above observations, the average crushing days for the sugar factory and resultant average operational days are considered as 140 days instead of 180 days.

e. Cost of the bagasse consumed can be related to the sugarcane procurement price of the factory, instead of linking it with the market price of the bagasse. Accordingly, the average fair Tariff based on calculation of three non-qualifying co-generation plant (i.e., Kukadi SSK, Kisanveer SSK & Sharad SSK) on the basis of 140 days of operation, worked out to Rs. 2.116/kWh (rounded off to Rs. 2.12/kWh) for FY 2009-10 and weighted average fair price worked out as Rs. 2.26/kWh.

9. Based on the report submitted by GIPE, the Commission vide notice dated 24 August, 2011 fixed the next date of hearing in this matter on 20 September, 2011.

10. Accordingly, the hearing was held in this matter on 20 September, 2011. Shri S. C. Natu, Member Secretary appeared on behalf of the Petitioner. Shri M. S. Kele, S.E and Shri U. R. Dhaygude, E.E appeared on behalf of the Respondent-1 and Shri Arvind Karandikar appeared on behalf of GIPE.

10.1 During the hearing, the Petitioner read out its prayer and requested the Commission to increase Tariff for non-qualifying / incidental co-generation projects up to Rs. 3.50 /kWh. The Petitioner also requested a copy of the report submitted by the GIPE.

10.2 The Commission directed its Secretariat to give copies of the GIPE report to the Petitioner, Respondent 1 and Respondent 2 and directed the parties to submit their opinions on affidavit on the report within two weeks.

11. The Petitioner and the Respondent 1 and Respondent 2 vide their letters dated 31 October, 2011, 5 November, 2011 and 5 November, 2011, respectively, submitted their comments on the report.

11.1. The Petitioner's contentions on the GIPE's report are as follows:

a. The Petitioner does not agree with the linkage of landed cost of bagasse with the landed cost of sugar cane, considered by GIPE for the determination of Tariff. The sugarcane price paid to the farmers by individual sugar factories has complex socio-economic-political linkages and they are lower or higher (in most cases), than the SMP declared by the Central Govt. or state advised price for the respective years. GIPE's calculation for the FY 2009-10, itself shows large

variations in the landed cost of cane from Rs. 1,806/MT (Kisanveer SSK) to Rs. 2,726 /MT (Sharad SSK). The Commission and CERC have both worked out the cost of bagasse, respectively at Rs. 1832 /MT & Rs. 1,159 /MT, considering the market dynamics for bagasse as a commodity. It is stated that the Commission should consider a mean cost of bagasse of Rs. 1,496/MT for Tariff determination for these projects.

b. In the fair Tariff calculations, GIPE has calculated the fixed cost of exportable power considering 25% bagasse consumption for export of power. Similarly, they have considered an allocation of 40% repair and maintenance expenses for exportable power. However, there is no allocation of man power cost, generation and administration overheads, insurance, etc., in the fixed cost for export of power and these costs are for total power generation. It is necessary to consider the allocation of these costs for export of power only. Also, it is presumed that the interest on term loan, working capital loan and return on investment have been only for export of power. The total fixed and variable cost for export of power should be divided by exportable power to arrive at Tariff. However, GIPE has divided total fixed and variable cost by total power generation, while arriving at a Tariff which is not appropriate.

c. The Commission should also consider the fact that although the capacities of all plants are similar, i.e., 2 MW there is a large variation in power generation, captive consumption, and export of power, even on a 140 days operation basis. The operation of individual plants are quite complex and varies depending on the configuration of each plant.

d. The Commission has decided the Tariff of Rs.1.94/kWh, with 2% compound escalation every year in the year 2005. The incidental plants are commissioned in different years, including the sample units in the GIPE report (Kissanveer SSK-2005, Sharad SSK-2006, and Kukadi SSK-2007). Hence, their Tariffs as per MERC Orders will be different for any base year. GIPE's calculation of the average Tariff of Rs.2.11/kWh for FY 2009-10 is an improper assumption.

e. The quantity of steam passed through turbine for generation of exportable power (which goes to sugar process later on) is lesser compared to steam passed through Pressure Reducing and De-superheating System (PRDS) earlier, without

incidental co-generation project. Water addition in the PRDS would give higher quantity of steam available for the process. This process means that for maintaining the quantity of steam required for sugar process, higher quantity of steam is required to be generated requiring higher quantity of bagasse consumption. The ratio of the 25% considered by the GIPE for co-generation power plants may be higher in practice.

f. Sugar prices for individual sugar factories are decided after the sale of sugar, molasses, saved bagasse, press mud, etc., as well as other socio-economic-political considerations indicated earlier. Hence, the bagasse selling price, a function of cane crushing and market opportunity for sale should be considered while determining the Tariff.

11.2 MSEDCL's comments / views on the GIPE report vide affidavit dated 5 November, 2011 are as follows:

a. As per the MERC Order dated 25 May, 2005 in Case No. 26 of 2004, the Commission decided the Tariff of Rs. 1.94/kWh at escalation of 2% per annum for the base year 2005-06. The Tariff rate for existing non-qualifying non-fossil fuel based co-generation projects for FY 2011-12 works out to be Rs. 2.18 /kWh and MSEDCL is implementing the same.

b. The GIPE in its report has submitted two different approaches for Tariff calculations. Accordingly there are different per unit price as given below:

<u>Average Fair Tariff:</u> The average fair price is calculated on the basis of cost estimates provided by the officials of the sugar factories and separate cost for bagasse as suggested by MERC and CERC. The average fair price as per these calculations comes out to be Rs. 2.11/kWh.

<u>Weighted Average Fair Price</u>**:** The weighted average fair price is calculated by GIPE in the initial draft report with the help of quadratic equation. The weighted average fair price as per these calculation comes out to Rs. 2.26/kWh.

c. As per the equation used for calculation of weighted average fair price, it is stated that the excess of electricity over the bagasse cost used in the production must be sufficient for

1. Apportioning processing and manufacturing cost.
2. MERC mandated costs for efficient electricity products.
3. MERC mandated fair price.

However, as mentioned in the report, as there are no separate records maintained by the plant owners, thus the apportioned processing and manufacturing costs are not equal. Hence, the weighted average fair price may not be considered.

d. Moreover, the average fair price calculated in the report considering the base year 2009-10 i.e. 2.11/kWh is in accordance with CERC and MERC guidelines and the determined Tariff of MERC for FY 2009-10 was Rs. 2.10/kWh. Thus, the Tariff determined by MERC is vetted in line with the actual cost data analysis carried out by GIPE.

e. Hence, the Tariff of Rs. 2.18/kWh as determined by MERC for the FY 2011-12 is justified and may be considered for payments.

11.3 MEDA's comments / views vide letter dated 5 November 2011 on the GIPE report are as follows:

a. Non-qualifying/ incidental co-generation by its nature implies that the excess energy generation is incidental and not intentionally planned. Therefore, the investment made in such project is basically for process plant and to meet captive power demand.

b. Further, the GIPE report mentions that for the export of surplus power to the grid, the non-qualifying co-generation projects invests only in installing a turbine and no major investment is made for the purpose.

c. In a qualifying co-generation mode approximately 1.6 kg bagasse is required for 1 kWh generation of power. While in non-qualifying / incidental co-generation projects approximately 4.5 to 5 kg of bagasse is required for 1 kWh power generation. This clarifies that the efficiency of

non-qualifying co-generation projects is not similar to qualifying mode co-generation projects and, therefore, these projects cannot be treated at par with the qualifying mode co-generations.

d. However, the MERC Order dated 25 May, 2005 states that non-qualifying co-generation projects should be given a fixed time within which to upgrade their systems and meet the criteria laid down for qualifying co-generation projects.

12. Taking on record the above submissions made by the Petitioner, the Respondent 1 and the Respondent 2, the next hearing in this matter was held on 8 November, 2011. Shri S.C. Natu, Member Secretary appeared on behalf of the Petitioner. Shri M.S. Kele, S.E, and Shri A.V. Bute from the Respondent 1, Shri S.G. Ghodke from the Respondent 2 and Shri Arvind Karandikar from GIPE were present for the hearing.

12.1 During the hearing, the Petitioner read out its views on the GIPE report. The Respondent 1 and the Respondent 2 also submitted their views orally as mentioned above during the hearing.

12.2 Having heard the parties, the Commission directed GIPE to convene a meeting with the Petitioner along with all other parties within two weeks' time at the Gokhale Institute of Politics & Economics, Pune for further clarity in the matter. The Commission directed the Petitioner to make a point wise presentation comprising the various issues raised and to submit its report to the Commission.

13. A meeting was held on 19 November, 2011 at the Gokhale Institute of Politics and Economics, Pune in the presence of members of the Petitioner to discuss the issues in the report submitted by the GIPE.

14. GIPE vide letter dated 23 November, 2011 submitted the minutes of meeting to the Commission. The points discussed during the meeting are summarized hereunder:

14.1 The participants expressed the opinion that the report may be discussed mainly in the light of the following issues:

i. The pricing of bagasse.

ii. Comparative treatment of qualifying and non-qualifying bagasse based units.

iii. Consideration of uncertainties of the sector.

14.2 The constituents of the aforesaid meeting unanimously accepted the methodology for costing adopted in the report and it was decided that instead of 3 sample units the exercise may be done for all 10 units.

14.3 The report assumes 140 days of operation while working out the fair price. The assumption of 140 days is based on the data for last five years. Instead, the data for last 15 years may be considered to arrive at the figure of average days of operation.

14.4 The members of the Petitioner did not agree with the pricing of bagasse as presented in the report. They suggested that the MERC has in its previous Order given the rate of bagasse at Rs. 1832 / MT. This rate may be considered while arriving at fair price of power produced by non-qualifying units. The GIPE agreed to work out the price using this MERC price also.

15. Subsequently, the next hearing in this matter was held on 30 January, 2012. Shri S.C. Natu, Member Secretary appeared on behalf of the Petitioner. Shri A.V. Bute, appeared on behalf of the Respondent 1, Shri S. G. Ghodke of Respondent 2 and Shri Anurag Asawa of GIPE appeared for the hearing.

15.1 The Petitioner gave the reference of the meeting held on 19 November, 2011 at the office of Gokhale Institute of Politics and Economics, Pune and submitted its comments on the methodology used for Tariff calculation, operational and maintenance cost allocation and pricing of bagasse. The Petitioner further stated that for the fair price calculation an assumption of 140 days of operation for the last 15 years instead of 5 years may be considered to arrive at the average days of operation. In addition, the analysis of cost and financial conditions of all 10 non-qualifying units may also be considered.

15.2 Having heard the parties concerned, the Commission directed GIPE to submit the additional work report by incorporating above raised issues to the Commission by 29 February, 2012.

16. Meanwhile, GIPE vide letter dated 28 February, 2012 brought to the notice of the Commission that even after regular follow ups with all the members of co-generation Association, they received information only from 3 non-qualifying units out of the 10. Due to this, GIPE was unable to submit to the Commission the additional report on the same.

17. The next hearing in this matter was held on 7 March, 2012. Shri S.C. Natu, Member Secretary appeared on behalf of the Petitioner. Shri A.V. Bute, appeared on behalf of the Respondent-1, Shri S. A. Patil of the Respondent-2 and Shri Ramling Gujare of GIPE were present for the hearing.

17.1 During the hearing, the Commission read out GIPE's letter dated 28 February, 2012 and asked the Petitioner the reason for not providing detailed information as requested by GIPE.

17.2 The Petitioner stated that they are in continuous follow up with all members of co-generation Association of India and will provide data by 15 March, 2012. GIPE submitted that it has received information only from 3 units. , while Shree Dutt Shetkari Sahakari Sakhar Karkhana Ltd., Shirol has shifted from non-qualifying to qualifying category, details from the remaining units are awaited.

17.3 The Commission directed the Petitioner to submit and deliver the necessary data to GIPE on or before 15 March, 2012. It also directed GIPE to submit the additional work report by 30 March, 2012.

18. Accordingly, GIPE vide letter dated 19 April, 2012 submitted the supplementary report. The same was forwarded to the Petitioner and the two Respondents.

GIPE in its supplementary report made submissions which are as follows:

a. Out of total 10 non-qualifying/incidental co-generation plants, 5 plants (Datta SSK, Kolhapur, Kisan Veer SSK, Satara, Rajarambapu SSK, Sangli, Kukadi SSK, Ahmednagar & Purna SSK, Parbhani) have not submitted the detailed information for their non-qualifying unit as their project shifted to qualifying mode. Four plants (Chopada Shetkari SSK, Jalgaon, Majalgaon SSK, Beed, Sharad SSK, Kolhapur & Shreeram Jawahar SSK, Satara) have submitted information to GIPE. Only Jawahar SSK, Kolhapur has not submitted any information to GIPE.

b. The data for last 15 years have been considered, instead of 5 years, for 140 days and price of the bagasse has been considered at Rs. 1832/- per tonne. The total bagasse produced was calculated on the basis of total cane crushed and percentage of bagasse. The bagasse sold by SSK's is less than 3 % of the total bagasse produced. And the rate of bagasse has been calculated using moving average method for two years comes at Rs. 1169.81 /MT.

c. GIPE proposed the following four scenarios for fair Tariff calculations:

For Scenario 1 (Cost of bagasse as per Initial Report): Considering the fair price per unit for Kukadi SSK as Rs. 2.30/kWh, Rs. 1.67/kWh for Kisan Veer SSK & Rs. 1.47/kWh for Sharad SSK, the weighted fair Tariff under scenario one work out to be Rs. 1.74/kWh.

For Scenario 2 (Cost of bagasse as weighted cost with weights being the proportions of bagasse output used in house and sold in open market): Considering the fair price for Kukadi SSK as Rs. 2.32/kWh, Rs. 1.70/kWh for Kisan Veer SSK &Rs. 1.48/kWh for Sharad SSK, the weighted fair Tariff under scenario two work out to be Rs. 1.76/kWh.

For Scenario 3 (As per Cost of bagasse at Rs. 1169.81per MT): Considering the fair price of Rs. 3.93/kWh for Kukadi SSK, Rs. 3.33/kWh for Kisan Veer SSK & Rs. 2.12/kWh for Sharad SSK, the weighted fair Tariff under scenario three work out to be Rs. 3.02/kWh.

For Scenario 4 (As per Cost of bagasse at Rs. 1832/- per MT): Considering the fair price of Rs. 5.92/kWh for Kukadi SSK, Rs. 5.01/kWh for Kisan-Veer SSK & Rs. 3.21/kWh for Sharad SSK, the weighted fair Tariff under scenario four works out to be Rs. 4.56/kWh.

The fair Tariff calculation in above four different scenarios is based on 130 season days calculated for 15 years, instead of 140 days for 5 years. But the data received was unauthenticated or unusable with the exception of data of Sharad SSK which was covered in the earlier report. The data as covered in earlier report for 3 units was complete and authenticated by a field visit.

Furthermore, the GIPE in its report made suggestions as follows:

1) Allow bagasse price of Rs. 1832/MT to non-qualifying plants in which case the fair Tariff works out to Rs. 4.56/kWh.

2) Review the regulatory formula for bagasse price as applied to qualifying plant and allow the price of Rs. 1.76/kWh for non-qualifying plants.

However, in view of the Commission's Order dated 30 March, 2012 which has determined a price of Rs. 2.23/kWh for non-qualifying plants and Rs. 4.79/kWh for qualifying plants for the FY 2012-13, the concerns raised above seem to have been implicitly addressed for the time being, so as to encourage continuing investments in this segment.

In support of the Petitioner's contention that the market price of bagasse should be considered instead of the shadow price, it is submitted that initially the Petitioner agreed to furnish the detailed data based on open market sale of bagasse, which only three plants have duly done. On the basis of this data, it is clear that the average market price of bagasse works out to only Rs. 1169.81/MT. Moreover, the percentage of bagasse sold in open market is negligible; it is in the order of 1.78%. Therefore, the contention that the open market price should be used in place of shadow price does not seem to stand on firm ground.

19. The Respondent 1 (MSEDCL) vide letter dated 25 April, 2012 submitted its comments on GIPE's supplementary report as follows:

a. Tariff determined as per MERC guidelines for non-qualifying non-fossil fuel based co-generation plants for FY 2009-10 was Rs. 2.10/ kWh. As per the first report of GIPE, the average fair price for the energy generated from non-qualifying non-fossil fuel based co-generation plants considering base year as 2009-10 was calculated as Rs. 2.11/kWh.

b. It is to submit that as per the proceedings of the hearing dated 30 January, 2012 the Petitioner requested an analysis of financial conditions of the 10 non-qualifying units. However, as per second report of GIPE, data from only 4 number of non-qualifying non-fossil fuel based co-generation plants was received and 5 out of these 10 units are under augmentation. Hence, it can be concluded that 50% of the non-qualifying non-fossil fuel based plants are already in the process for upgrading to the co-qualifying mode.

c. Based on the in-depth study 2 alternatives are suggested by GIPE for the consideration of the Commission as mentioned above. The first alternative is to allow a bagasse price of Rs. 1832 / tonne for non-qualifying non-fossil fuel based co-generation plants in which case the fair Tariff work out to Rs. 4.56 / kWh. The bagasse price of Rs. 1832/tonne is considered by the Commission in Case No. 123 of 2008 for Tariff calculation of bagasse based plants. In the said Order it is mentioned that

> *"the Commission has dealt with revision of Tariff only for qualifying co-generation projects."*

Furthermore, the price of the bagasse considered (Rs. 1832 / tonnes) is not the market price but based on a formula linked to price of biomass and gross calorific value of biomass and bagasse. Hence, this price of bagasse may not be considered by the Commission in the present case.

d. It is further submitted that as per the second alternative of GIPE fair Tariff considering the market price of bagasse at Rs. 1.76/kWh which is lower than the Tariff decided by the Commission vide Order dated 8 August, 2005.

e. The CERC (Terms and Condition for Tariff determination from Renewable Energy Sources) Regulations, 2009 considers station heat rate of 3600 kcal/kWh for the co-generation. This is to reward the efficient bagasse based co-generation and de-motivating inefficient utilization of bagasse.

f. As per GIPE's report, out of 10 non-qualifying non-fossil fuel based co-generation plants in Maharashtra only 4 co-generation plants submitted data to GIPE as other co-generation plants are already in the process for up gradation. The inefficient non-qualifying non-fossil fuel based co-generation plants may not be incentivized by considering Tariff hike as demanded by the Petitioner.

g. Hence, the Tariff of Rs. 2.18/kWh as determined by the MERC for the FY 2011-12 is justified, may please be considered for the effecting the payments.

20. The Petitioner vide letter dated 25 April 2012 submitted its views/observations on the supplementary report submitted by the GIPE which are as under:

a. Out of 10 member sugar factories in this category, 6 have already shifted to qualifying mode during the last three years. The remaining 4 sugar factories

cannot shift to the qualifying mode only due to inadequate financial resources generated because of low Tariff for incidental type co-generation facility.

b. The bagasse prices works out in the report by GIPE based on the data submitted by the sugar factories are the average selling rates on ex-factory basis. For the market price of bagasse to be considered for operation of co-generation plants, the loading / unloading and transportation charges must be considered to represent the original market price of bagasse.

c. The Petitioner does not agree with the proposed logic of GIPE that the market cost of bagasse should not be applicable for the qualifying and non-qualifying projects as only 1-5% of bagasse is sold in the market. Hence, the fair Tariff calculation indicated in scenario 1 & 2 of GIPE final supplementary report, linking bagasse cost to the cane cost and market rate for saved bagasse and the balance linkages to the cane cost, are not acceptable.

d. The fair Tariff calculation as per scenario 3 of the GIPE report should be calculated with landed price of Rs. 1670 /MT, which includes transportation, loading / unloading costs.

e. Considering the above, the fair Tariff calculation as per the scenario 4 of the GIPE report, based on cost of bagasse at Rs. 1832/MT as considered by the Commission is acceptable.

21. In view of the above submissions made by GIPE, the Petitioner and the Respondent 1 as stated above, the next hearing in this matter was held on 27 April, 2012. Shri S.C. Natu, Member Secretary representative of the Petitioner, Shri A. V. Bute, Dy. EE and Shri M. P. Wadhe, E.E representatives of the Respondent No. 1, Shri Sameer Ghodake representative of the Respondent No. 2 and Shri Anurag Asawa and Shri Arvind Karandikar representatives of GIPE, were present during the hearing.

21.1 During the hearing, the Petitioner reiterated its submissions as stated above and requested the Commission to review the Tariff for non-qualifying/incidental bagasse based co-generation projects as these plants are unable to shift to qualifying mode due to poor financial conditions. Furthermore, the Petitioner requested the Commission that while considering the price of the bagasse, the cost related to transportation and labour charges for loading/unloading of bagasse may also be considered.

The Respondent 1 requested the Commission not to encourage the inefficient co-generation technology. Perhaps, out of 10 non-qualifying co-generation plants, 6 plants already shifted to qualifying mode. Therefore, the present Tariff for non-qualifying units is justified and same may be considered for effective payment.

GIPE stated that the earlier report submitted to the Commission was based on landed cost of bagasse and landed cost of cane. In the supplementary report, 4 alternative options have been proposed. The fair Tariff calculation in scenario 4 above is based on 130 season days calculated for 15 years data, instead of 140 days for 5 years. But the data received was unauthenticated or unusable with the exception of data of Sharad SSK which was covered in the earlier report. Nevertheless, the data as covered in earlier report for three units was complete and authenticated by the field visit.

Furthermore, GIPE submitted that while preparing the supplementary report, the Petitioner was required to furnish the necessary data for all ten non-qualifying co-generation plants but it was observed that out of total ten non-qualifying plants only four plants submitted the necessary information to GIPE, whereas remaining 6 units have shifted to qualifying mode.

COMMISSION'S DECISION WITH REASONS:

As regards the review of Tariff for non-qualifying bagasse based co-generation projects based on market price of the bagasse, it is important to note the findings of the Commission in its Order dated 25 May, 2005 in Case No. 26 of 2004 in the matter of Rate and Other dispensation for purchase of power from bagasse and Other Non-Fossil Fuel based non-qualifying co-generation projects, which is as under:

> *"As regards the linkage of Tariff to the prevalent bagasse price, the Commission had evaluated the submissions of various parties in its Order dated August 16, 2002, and had selected the approach of deriving the price of bagasse on equivalent heat content basis. The Commission had considered a price of Rs 559/ tonne in the first year of operation considering that bagasse for the cogeneration projects would be available in the nearby vicinity,*

and considered an escalation of 8% per annum for evaluation of Projects qualifying under the Order dated August 16, 2002. The Commission appreciates that the price of bagasse is dependent on the yield of sugarcane and corresponding demand supply balance. However, providing a premium above the heat equivalent cost would burden the power sector for usage of bagasse as a non-conventional source of generation. Hence, the Commission is of the view that the Tariff should not be revised based on market price of bagasse or other non-fossil fuel."

While determining the Tariff for non-qualifying bagasse based co-generation projects, the Commission has recognized the need to provide some incentive to sugar factories and similar facilities to upgrade their systems to utilize resources in a more efficient and optimum manner. Considering the fact that these co-generation plants are primarily developed to meet the captive requirement of sugar factories and other such factories, it is fair to allow part recovery of the fixed cost since it is envisaged to be primarily recovered through sugar processing or other operations. Hence, the Commission in its above mentioned Order had determined the Tariff of Rs. 1.94/kWh for non-qualifying bagasse based co-generation projects, based on the assessed average power purchase cost for MSEDCL (erstwhile MSEB) during FY 2003-04 along with Tariff escalation of 2% per annum on compounded basis.

Based on the submission made by the MEDA, it is observed that in qualifying co-generation projects, approximately 1.6 kg bagasse is required for the generation of one unit. However, in non-qualifying / incidental co-generation projects approximately 4.5 to 5 kg of bagasse is required for the same. This implies that the fuel consumption part in co-generation projects which is linked to the variable charge component of Tariff is significantly higher in non-qualifying mode as compared to qualifying bagasse based co-generation projects.

The Commission vide its Order dated 11 January, 2010 in Case No. 123 of 2008 determined a Tariff of Rs. 4.79/kWh with a fixed charge component of Rs. 2.26/kWh and variable charge component of Rs.2.53/kWh for qualifying bagasse based co-generation projects which was applicable up to 31 March, 2010 and the same continues to be applicable in accordance with Regulation 3.3 of MERC (Terms and Conditions for

determination of RE Tariff) Regulations, 2010 for the initial three years of the Control Period of these Regulations i.e. F.Y 2010-11, F.Y 2011-12 and F.Y 2012-13. Subsequently, the Commission vide Order *(suo-motu)* dated 14 July, 2010 in Case No. 20 of 2010 kept the same Tariff of Rs. 4.79/kWh during FY 2010-11 for the qualifying bagasse based co-generation projects and worked out the Tariff of Rs. 2.14/kWh for non-qualifying non-fossil fuel based co-generation projects for FY 2010-11.

Similarly, the Commission vide Order *(suo-motu)* dated 29 April, 2011 in Case No. 39 of 2011 worked out the Tariff of Rs. 2.18 for non-qualifying non-fossil fuel based co-generation projects during F.Y 2011-12 and by Order *(suo-motu)* dated 30 March, 2012 in Case No. 10 of 2012 worked out a Tariff of Rs. 2.23/kWh for non-qualifying non-fossil fuel based co-generation projects applicable during F.Y 2012-13.

GIPE in its supplementary report mentioned that the fair Tariff calculation as mentioned in four different scenarios is based on 130 season days calculated for 15 years data. But the data received was unauthenticated or unusable with the exception of data of Sharad SSK. The data as covered in earlier report for three units was complete and authenticated by the field visit.

The Commission has relied upon GIPE's initial report which was carried out for three non-qualifying bagasse based co-generation plants and authenticated by field visit, wherein the average fair tariff for three non-qualifying bagasse based co-generation plants (i.e. Kukadi SSK, Kisan Veer SSK and Sharad SSK) has been worked out to Rs. 2.116/kWh. (rounded off to Rs. 2.12/kWh) (Fair Tariff for 140 operational days are - Rs. 2.81/kWh in Case of Kukadi SSK, Rs. 1.85/kWh in Case of Kisan Veer SSK and Rs. 1.69/kWh in case of Sharad SSK).

As seen from the latest development from last few years and based on report submitted by GIPE, it is observed that out of ten non-qualifying bagasse based co-generation plants, six plants have already shifted to qualifying mode and incentivized with the Tariff of Rs. 4.79/kWh applicable for qualifying bagasse based co-generation projects.

Furthermore, the Commission is of the view that by incentivizing inefficient non-qualifying bagasse based co-generation projects, the project developers may not upgrade their technology to efficient qualifying mode as the additional expenditure is required for the technology up-gradation.

In view of the above, the Commission is not inclined to review the Tariff for non-qualifying bagasse based co-generation projects. The present Tariff of Rs. 2.23/kWh for F.Y 2012-13 is fair enough to ascertain the financial viability of such projects. The Commission expects that the potential project developers can upgrade their technology to qualifying co-generation mode and can avail the tariff applicable to qualifying bagasse based co-generation projects.

With the above, the Case No. 42 of 2010 stands disposed of.

Sd/-	Sd/-
(Vijay L. Sonavane)	(V. P. Raja)
Member	Chairman