Dear Sirs,

We are obliged to submit our replies for the review request; we thank the opportunity provided by the CDM-EB to further explain on following issues:

1. ACM0004 v2 states that, "Among the alternatives that do not face any prohibitive barriers, the most economically attractive alternative should be considered as the baseline scenario." The PDD should be revised to clearly state that the baseline is the alternative, which is the most economically attractive.

Selection of baseline Grid Vs Fossil fuel based CPP.

Since the outset of the project inception it is in the minds of RLUL management to cater their power needs by grid import. The events listed down below would clearly reckon the fact that at no point in time the PP is intended to set up any captive power plants without any assistance in the form of CDM.

1. Initial investment requirement for setting up of captive power plant
2. Common practice in the region
3. Fuel supply hindrances
4. Steps undertaken by RLUL to meet the power requirement from grid.
    a. Agreement for power supply with West Bengal State Electricity Board
    b. Land provided at free cost by the PP to set up a substation
    c. Cost incurred by the PP is setting up of their own transmission lines
    d. RLUL additional power requirement after the CDM project conceived date
5. Indian Sponge Iron sector and its power needs

Initial investment: The initial investment on setting up of a power plant is more than 55% for a Waste heat recovery in comparison to that of the total sponge iron unit cost, and being a small player in the industry it is quiet difficult for us to mobilize any funds in terms of equity and debt unless there are any additional advantages available for us to set up a power plant. So by default importing power from the grid is most plausible baseline condition. Our initial board discussions and the board proceedings would very well reckon the fact that the most likely option of our management is to import from the grid not setting up any captive power plant. The board resolutions are submitted for your kind perusal as Annex- I.

Common Practice region:

By the time when we have decided to set up the sponge iron unit, historically more than 93% of the sponge iron manufacturers in the region are procuring power from the grid to meet their own power demands except a few who are the big players in the industry. Even now the situation prevails in the region is same, the latest study report published by the Joint plant Committee report (A Govt. of India Institution) has concluded that the

CPP available in the state is less. Being a small player in the industry this is the second reason, which made us to be skeptical on deciding up on setting a captive power unit. The latest report published by the JPC is annexed as Annex – II.

There are a total of 67[1] sponge iron plants already in operation/commissioning in the state surrounding the proposed project activity. Of the 67 sponge iron plants, only 4 plants have Waste Heat Recovery plants/Captive power plants and the same have also applied to avail carbon credits.

Fuel supply:

Since being a small player getting necessary approvals and sanction for uninterrupted coal linkage is very cumbersome process and for this small magnitude of power generation capacities it would be economically not feasible for us to opt for captive coal based power units, Because the PP is new in setting up of coal based captive power plant, Government statutory approvals are cumbersome because of coal linkage sanctions, air pollution hazards and ash handling problems. Delay in obtaining approvals and regular permissions from the concerned authority will lead to cost overrun. This option is unattractive when compared to the import of power from the grid, wherein the PP is already having power supply contracts for import. This is the third reason for which the PP has decided to opt for a grid power over the coal based CPP.

Steps undertaken by RLUL for its power requirement

The chronological events of activities and the deployment of funds on availing grid power by RLUL will clearly indicate that no point in time RLUL is thinking of setting coal based CPP.

Agreement for power supply with West Bengal State Electricity Board

The total power requirement for the plant is estimated to be 20 MVA in 2005 and then requested the concerned authorities to provide the necessary power to operate the plant and the PP has got necessary approvals for importing 20 MVA. The supporting evidences are provided as Annex – III.

Provision of land to set up a 132 KV substation:

The PP has invested to acquire 9.3 acres of land (7.46 acres will be built up area of the substation) and provided at free of cost to local electricity distribution company (WBSEB) to set up a 132 KV substation. The supporting evidence are provided for the same as Annex- IV

Cost incurred by PP to set up this substation:

The PP (RLUL) and the West Bengal State Electricity Board (WBSEB) has executed an agreement to set up a 132 KV substation and the entire agreement is annexed for EB kind perusal as Annex- V.

[1] List of the industries provided by the Directorate of Industries, West Bengal provided to the DOE

RLUL expressed its willingness to execute the entire service connection work directly by them selves under WBSEB's supervision and also incurred expenditure in the form of establishing EHV lines. The following are the cost incurred by the PP to wheel power from the grid.

Works undertaken	**INR Millions**
Cost of EHV lines	47.925
Security Deposit	57.900
Supervision charges	9.9553
LAND	FREE TO WBSEB

From that above it clearly establishes the fact the management of RLUL has viewed the economic attractiveness in terms of the initial investment, mobilization of such high funds to set up a CPP and further to add on from the first Annex it is very well understood that unless the CDM benefits are available the RLUL unit it would have drawn the same power from the grid. This would express the views of the management that at no time it is in the minds of the promoters/board to set up captive power plant.

RLUL additional power requirement after the CDM project conceived date

The following letter attached, as Annex- VI will very establish a fact that the PP has requested for additional bay line capable of supplying 20 MVA from the regional grid summing up to 40 MVA apart from the CDM project activities 20 MVA. This would clearly express the views of the management that at no time it before and after CDM project activity also the PP has requested additional power supply from the grid not based on any captive power. This would explicitly denote that unless the CDM benefits are explained by the outside world/consultants the PP would have drawn the equivalent amount of power generated by the CDM project activity from the grid.

Indian Sponge Iron Sector and its Power needs:

The following statement/statistics are no where intended to impose precedence on the CDM –EB whilst this tries to give a clear picture on the mindset of the Indian sponge iron sector promoters in the on opting/selection the baseline power condition.

The JPC report earlier annexed as Annex–II clearly indicates that out of 30 units in state of West Bengal none of them have a CPP, it is to be understood that they are not talking specifically to WHR based CPP but on a whole all sorts fossil fuel based CPP this is quiet evident that the operators of the sponge iron industry will always be tended to import power from the grid.

From the state where the project is proposed so far 3 projects are registered by the CDM – EB and all of the three have considered grid as the baseline, also while considering the regional grid (the region for which grid emission factor is computed) the project activity

falls under the eastern region grid of the host country and among the 7 projects registered so far from this region 6 out of that 7 has considered grid as the baseline. This indicates a level of penetration of such technology similar to that that of the project activity (WHR based) but also on a whole the concept of CPP itself.

Evaluation of the alternatives on economic attractiveness:

As per the methodology, the alternatives are evaluated on the basis of economic attractiveness. The prohibitive barrier is the capital investment required to implement an alternative that would provide equivalent of electricity for meeting partial electricity requirements of RLUL's existing industrial complex. The capital cost comparison for the alternatives are provided below:

Table below shows the economic evaluation of the three options:

Alternative	Capital cost (Crores INR)	Comments	Conclusion
Import of electricity from grid	NIL	Continuation of current practice in the region, annual expenses in the form of tariff is low, no additional investment, easy government approvals.	An economically attractive option
Coal based CPP	800 (40Million/MW)	High capital cost- difficulty in accessing bank loans, government clearances cumbersome.	This option is economically unattractive
Project activity	34	The promoters are reluctance to set up the waste heat recovery based power unit, primarily on account of the high capital cost and the risks involved. In fact it was only when the CDM related revenue was highlighted to the investor group and concrete offers were produced to the investors that they agreed to invest the equity component required to fund the power plant. Otherwise, the investors were of the opinion that the project was very risky and preferred to set up the project by drawing the required power from the state electricity grid. In addition, all (most) similar WHR projects being set-up in the country (in the SME segment) are being developed under the CDM. In view of the above, it may be concluded that at the point in time when the decision to proceed with the project was taken, the related CDM linked revenue were seriously considered and was a key factor responsible for the	This option is not a viable baseline scenario

		favorable decision.	

Based on the above information it is evident that "Import of electricity from the grid" requires the minimum initial investment and hence is the most economically attractive baseline alternative considered/available to RLUL for obtaining power requirement in its industrial complex. Hence, **"Import of electricity from the grid"** has been considered as the baseline scenario in this project activity.

Further keeping in view of logic while two credible baselines exists the lowest emission factor among them needs to be considered and hence PP has chosen grid import as the most conservative baseline. From the below stated figures of baseline emission factor from grid replacement and coal based CPP (refer Annex VII), the import of power from the grid is the conservative option for the CPP. Hence in absence of this project activity the equivalent power would have been imported from the grid.

Baseline emission factor per GWh (Grid as baseline)	964.51	tCO2e/GWh
CEA database baseline emission factor	1061.3	tCO2e/GWh
Baseline emission factor per GWh (Coal based CPP as baseline)	1091.87	tCO2e/GWh

We are not denying the fact that though on an economic perspective for a genuine plant the coal based power plant and grid import (mentioned in the PDD submitted for registration) may be possible baseline scenario, however based on the relative dilemma of the PP in mobilizing the necessary initial investment and the lock in period of the paid up capital (ROC) and the peculiar characteristics/steps undertaken for this project by the PP in taking steps to set up a substation etc would very well express that fact that the import of power from the grid is eventually the most likely scenario for us (the project proponent).

All the above explanation on determining the most economic plausible baseline has been clearly incorporated in the revised PDD.

2. Version 3 of the Tool for the demonstration and assessment of additionality should be applied.

As per the EB 30 Para 17 the effective date of the revision of the approved tool are as per changes contained in annex 2 of the EB 30 report. The following is the excerpt from Annex –II of EB 30 para 18. *"The revision of an approved methodology or tool referred to in a methodology shall not affect (i) registered CDM project activities during their crediting period; and (ii) project activities that have been published for public comments for validation using the previously approved methodology or tool, so long as the project activity is submitted for registration within 8 months of the date when the revision became effective."*

The following is the chronological events of the proposed project activity:

Activity	Date	Source
Project uploaded for public comments / International stake holder consultation	6th Dec 2006 till 4th Jan 2007	http://cdm.unfccc.int/Projects/Validation/DB/YNS09NDX3KWT7NU6FX68QJ7N1W2HVO/view.html
Request for review period / submission for registration	24 Aug 07 - 20 Oct 07 @17:00 GMT	https://cdm.unfccc.int/Projects/DB/SGS-UKL1185448235.09/view.html
Adoption of Additionality tool version 3	14 –16 Feb 2007	EB 29 Annex 5
Guidelines provided by EB on impact of revision Revised procedures for the revision of an approved baseline or Monitoring methodology by the executive board	21 –23 Mar 2007	EB 30 Annex 2 Para 18
Application of revision	16 Feb 2007 + 8 months	= 16th Oct 2007, the project submitted for registration is 24th Aug 2007 and hence version 2 is applicable.

From the above it is of our opinion that the applied tool is valid until for the project submitted for registration before 16th Oct 2007 and the RLUL project activity has submitted two months prior to this deadline and hence deemed to be applicable.

3. The baseline emission factor does not appear to be consistent with Central Electricity Authority of India published data.

The date of study and completion of the baseline and baseline emission factor for the project was prepared on 25/03/2006. It is just after that First Version 1.0 of CEA baseline database published in November 2006, Second Version 1.1 of CEA baseline database published in December 2006 and now the Latest Version 2 of CEA baseline database published in July 2007.

Out of three-baseline emission factor from different versions by CEA and PP's grid emission factor, the PP's grid emission factor (0.96451tCO2/MWh) is the most conservative

First Version 1.0 – Eastern region grid emission factor – 1.058tCO2/MWh
Second Version 1.1 – Eastern region grid emission factor – 1.058tCO2/MWh
Latest Version 2 – Eastern region grid emission factor – 1.061 tCO2/MWh

As such, it is PP's opinion that until the time CEA provides the detailed calculations for calculation of emission factor of eastern region grid (by complying all the requirements of ACM0002) or there is a clear decision or guideline by DNA of India or by UNFCCC, RLUL is eligible to use a calculation based on ACM0002 for calculations of the carbon emission factors of the grid (0.96451 tCO2/MWh) as long as this is based on transparent and official data.

We acknowledge that ACM0002 (Page 5) stipulates the following: “Calculations for this combined margin must be based on data from an official source (where available) and made publicly available.” However, we would like to point that at the time of baseline study on grid emission factor and during validation of this project, no official data from CEA was made available publicly on the CEA website. First final report (published on November 2006) was made publicly available on the CEA website. (http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm).

It should also be noted that CEA values of emission factors for all the regional grids of India are available (Ref.: http://www.cea.nic.in/). However, the values of emission factors of the eastern region grid calculated in the PDD by RLUL are on the conservative side than the CEA values.

In addition to the above, calculations of emission reduction will be complete, correct and transparent if the following (below) are demonstrated with evidence and source of data:

a) In the CEA baseline database calculations, IPCC values have been used for the calorific values. However CEA/ India’s national communication data provides calorific value for the different fossil fuels. These values should be used in the calculations since these values are applicable to the Indian scenario and these are also conservative values. Similarly, the CEA/ India’s national communication data values for the gas and diesel should be used and not the IPCC value.

b) In some cases, for the unit wise power generation calculations for the BM, the installed capacity data used in the calculation is differing from CEA data. One particular case is the Talcher (NTPC) generation for the year 2002-03,2003-04,2004-05 are 2248,2743,3197 MU resp, these values are considered by PP from CEA information source as general performance review “ENERGYWISE - PERFORMANCE STATUS ALL INDIA – REGIONWISE PERIOD : MAR,2005 VIS-A-VIS MAR,2004 AND APR.-MAR,2005”, where as the CEA baseline database values for the same years are 1996, 2445, 2858 etc. Secondly power plants capacity additions for build margin in the electricity system that comprise 20% of the system generation and that have built most recently is adopted. 16 power plants that comprise 20% of the system generation and which are built most recently with cumulative generation of 17005.81MU where as CEA as 15,818MU are used in the calculations.

Moreover it is to be confirmed that the station heat rates and carbon emission factors data used by RLUL are based on CEA (2002-03, 2003-04, 2004-05) data, is based on a reliable and an official Indian source of data.

PP is able to confirm the following:

There is no detailed calculation (at the time of baseline study and validation), for determining the emission factor of eastern region grid, available on Central Electricity

Authority of India (CEA) website (though later on many versions of the report published starting from November 2006).

However on comparing the CEA available baseline data and the PP's elaborated grid emission factor, the factor 0.96451tCO2/MWh is the most conservative.

4. The project activity involves the use of light diesel oil (LDO) for the generation of power. Clarification is required as to why this is included in the project emissions, which, as per the methodology, is applicable only if auxiliary fuels are fired for generation start up, in emergencies, or to provide additional heat gain before entering the waste heat recovery boiler.

   The following are the typical characteristics of the waste MBF gases:

   High Inerts and Low Calorific Value. These waste MBF gases contain very low amount of combustibles (20-22% CO) and high amounts of inert such as Nitrogen and Carbon dioxide resulting in low calorific value. Due to low calorific value, combustion of these gases is carefully stabilized.

   Slow Burning: As a result of the low calorific value and high amount of inert, the waste MBF gases burn slowly and hence in order to ensure complete combustion of these gases, higher residence time in the furnace is very essential. This higher residence time have been achieved by using larger boiler furnace and lower furnace volumetric heat release rate.

   Due to such typical characteristics of the waste MBF gases, the success of the boiler largely depends on the burner design. In the project activity, a scroll burner has been used to provide spin to the waste MBF gases as they enter the furnace for ensuring high mixing energy at the point of air fuel mixing. The scroll burner also uses the principle of pre-mixing fuel with air for better combustion by injecting a stream of air into the waste MBF gas stream before it enters the furnace. The temperature of the waste MBF gases is then raised by its combustion. The raised temperature so reached is used in the heat exchanger to produce steam and subsequently power. Since the project activity occasionally uses LDO, the purposes of such uses are described below.

   Purpose of using LDO as support fuel: The waste MBF gases alone cannot reach the required flame temperature at the start-up. Hence, LDO is required as a support fuel to initially raise the temperature to required levels. The combustion of CO is an exothermic reaction and is self sustaining by itself; however, when waste MBF gases, which is a lean CO gas is put into a hot furnace, it tends to cool down the furnace due to its lower temperature. Hence, adequate re-radiation from hot refractory lining is required to sustain the high temperature so reached. Therefore, in the design of the boiler, refractory lining are provided on the water wall tubes up to first 5 feet of the furnace heat transfer surface. This refractory re-radiates heat into the flame thereby enhancing the flame stability. Also, in the boiler design, for a load of less than 70% (where 100% load is 35 TPH), an oil support of only 5% is required. When operating within the boiler's maximum continuous rating (MCR) at 70 – 100% under stabilized operational conditions with waste MBF

gases and subject to availability of these gases with adequate flow, consistent pressure and consistent quality in terms of gross calorific value (600-800 kCal/Nm3), the boiler provided can be operated on waste MBF gases firing alone without any support fuel. Thus, the project activity in a steady state is not dependent on fossil fuel combustion for power generation but runs on waste MBF gases.

Thus as mentioned above waste MBF gases alone cannot reach the required flame temperature at the start-up. Hence, LDO is required as a support fuel to initially raise the temperature to required levels. Thus, the project activity is not dependent on use of LDO but depends on the calorific value of the waste MBF gases. The enthalpy of the waste gases in the form of its calorific value (about 764kCal/NM3) is utilized for power generation. Since LDO is required initially to fire for generation start up which is applicable as per the methodology, so project emissions from the same are accounted.

A similar case has already been discussed by CDM executive board for a similar type of a project before registration of the project (Ref.No: 0427[2]). Hence RLUL project activity is with in the ambit of the approved methodology ACM 0004 Ver 2.

5. All formulae used to calculate the emission reductions should be stated, e.g. apportioning of steam output from each boiler.

The project is a **100% waste gas** based captive power generation project with no additional fossil fuel based AFBC boiler integrated to the system. The total heat energy available from the waste gas of DRI kilns and MBF are converted into steam on a WHRB and the steam generated in the same is used to drive a 20MW TG which in turn will generate electrical power for captive uses. As per the methodology ACM0004 version 02 the PP has opted for Option 2, where in the Net quantity of electricity supplied to the manufacturing facility by the project during the year *y* in MWh (EGy) needs to be measured and the project activity has the provisions for the same since all the energy supplied are from the Waste heat sources, hence the displaced electricity i.e., net electricity generated from 20MW power plant times the grid emission factor will give rise to baseline emissions.

As per the methodology, the project emissions are applicable only if auxiliary fuels are fired for generation start up, in emergencies, or to provide additional heat gain before entering the WHRB. Light Diesel Oil (LDO) not forms as one of the primary raw materials but as start up fuel for the generation of power. Therefore project emissions on firing LDO as startup fuel will be accounted for emission reductions calculations.

6. Section B.7.1 of the PDD should include all monitored parameters, e.g. steam output of each boiler

Initially the PDD do not include parameters like total steam generated from both the boilers, total steam consumed by TG, Flow of steam from both the boilers from common

[2] (Source:http://cdm.unfccc.int/Projects/DB/BVQI1146639607.87/view.html)

header, average temperature and pressure of steam before common header, enthalpy of effective steam from both the boilers etc.

It is to be noted that the steam generated from both the boilers (waste heat recovery boiler and BF gas boiler) are waste gas based boilers. The total heat energy available from the waste gas of DRI kilns and MBF, on conversion to electrical energy produces about 20MW of electrical power. Waste Heat Recovery Boiler (52.5 TPH) generate steam at 66kg/cm2, 490ºC and BF gas boiler (35 TPH) generate steam at 64kg/cm2, 485ºC. Since steam emanating from two boilers commonly connected to single turbine of 20MW have similar steam parameters and moreover both the steam are waste gas based steam the PP thought that it is not essential to monitor the steam output from each boiler, because total steam generated from both the boilers is to generate 20MW. Though the parameters are not necessary to calculate the emission reductions, since it was pointed out by the EB, the PP has now decided to incorporate the steam parameters just to become aware of the better functioning ambiance of the system/Quality assurance in terms of ascertaining the net power generated from each of the WHR sources.

The same is now incorporated in the concerned section of the revised PDD.

We sincerely hope that the Board accepts our aforementioned explanations and we look forward to the registration of the project activity.