

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 45/GT/2016

**Coram:
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member**

Date of Order : 22.5.2017

In the matter of:

Approval of tariff for Bongaigaon Thermal Power Station, Unit I (1 x 250 MW) from 1.4.2016 to 31.3.2019

And in the matter of

NTPC Ltd
NTPC Bhawan,
Core-7, SCOPE Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003

.....Petitioner

Versus

1. Assam Power Distribution Company Ltd.,
Bijulee Bhawan, Paltan Bazar,
Guwahati-782 001
2. Meghalaya Energy Corporation Ltd.,
Short Round Road,
Sillong- 793 001
3. Department of Power,
Government of Arunachal Pradesh,
Itanagar
4. Power and Electricity Department,
Government of Mizoram,
Aizawal- 796 001



5. Manipur State Power Distribution Company Ltd.,
Khwai Bazar, Keishampat,
Imphal- 795 001
6. Department of Power,
Government of Nagaland,
Kohima
7. Tripura State Electricity Corporation Limited,
Bidyut Bhawan, North Banamalipur,
Agartala – 700 001

.....**Respondents**

1. Mallika Sharma Bezbaruah,
C/O Mr. A. K. Datta, 222, Pocket-E,
Mayur Vihar Phase-II, New Delhi – 110091
2. Saurabh Gandhi,
C/O Mr. A. K. Datta, 222, Pocket-E,
Mayur Vihar Phase-II, New Delhi – 110091

.....**Objectors**

Parties present:

For Petitioner:

Shri Ajay Dua, NTPC
Shri M.K.Sharma, NTPC
Shri Nishant Gupta, NTPC

For Respondents:

Shri K. Goswami, APDCL

ORDER

This petition has been filed by the petitioner, NTPC for approval of tariff of Bongaigaon Thermal Power Station (BTPS) Unit I (1 x 250 MW) (hereinafter referred to as “the generating station”) from 1.4.2016 to 31.3.2019 in accordance with the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as “the 2014 Tariff Regulations”).



2. The Bongaigaon Thermal Power Station (BTPS) with a capacity of 750 MW comprises of three units of 250 MW each, out of which one Unit has achieved COD on 1.4.2016 and two units are yet to achieve COD.

3. The petitioner has filed the original petition for Units 1 to 3 (3x250 MW) on 16.3.2016 with anticipated COD as on 21.3.2016 for Unit I, 31.3.2017 for Unit II and 30.9.2017 for Unit III. It was observed that petition for this generating station was filed for only Unit I of the project, however in tariff forms, the capital cost of Unit II and Unit III were also included as on date of anticipated COD of Unit II and Unit III as on 31.3.2017 and 30.9.2017, respectively. The petitioner was directed to submit revised tariff forms along with Auditor's Certificate for Unit I only. Thereafter, the petitioner vide affidavit dated 8.8.2016 submitted revised petition and tariff forms for Unit I based on actual COD of 1.4.2016. Further, the petitioner vide affidavit dated 31.8.2016 submitted the auditor's certificate towards capital cost for the Unit.

4. The investment approval for the generating station was accorded by the Board of the Petitioner's Company in the 311th Board meeting on 30.1.2008. The original cost as per Investment Approval of the Project was ₹437535 lakh at 4th quarter 2007 price level. Thereafter, in the 408th Board meeting on 19.06.2014, the project cost was revised to ₹674918 lakh at 4th quarter 2013 price level.

5. The petitioner has submitted that Assam Power Generation Company Ltd. (APGCL) was operating at plant of capacity 240 MW (4x60 MW) at the site of this generating station. The petitioner has further submitted that keeping in view the long term power purchase requirement of the state of Assam and the dilapidated condition of the old



power plant, it was decided by the Central Govt. that APGCL would hand over its old generating station to the petitioner NTPC, according to which the petitioner would construct a new generating station at the same site after dismantling/ scrapping of the old generating station. Thus, the implementation of the project included the dismantling/ scrapping of the unserviceable equipments, old buildings and concrete structures from the plant area.

6. As per Original Investment Approval dated 30.1.2008 the project was scheduled to be commissioned on 4.2.2011. However, the actual COD of the generating station, i.e. Unit I was 1.4.2016 and therefore there has been delay of approximately 1886 days i.e. 61 months and 28 days in Unit-I achieving commercial operation.

7. The petitioner has sought approval of tariff for the period 2016-19 in accordance with the provisions of the 2014 Tariff Regulations and has submitted Auditor's certificate in support of the actual capital cost claimed. The capital cost and the annual fixed charges claimed by the petitioner for the period 2016-19 are as under:

Capital Cost

	(₹in lakh)		
	2016-17	2017-18	2018-19
Capital cost as on COD on cash basis	243123.17	-	-
Notional IDC Capitalised	2533.00	-	-
Less: Short Term FERV Charged to P&L A/c	(-)76.26	-	-
Add: Adjustment: Transfer Out Assets	2912.59	-	-
Less: Adjustment : Transfer In Assets	(-)2256.49	-	-
Opening Capital Cost as on 1.4.2016	246236.02	276430.59	277152.70
Additions during the year	10800.00	0.00	0.00
Liability discharges during the year	19394.57	722.10	0.00
De-capitalization	0.00	0.00	0.00



	2016-17	2017-18	2018-19
Net Additions	30194.57	722.10	0.00
Closing Capital Cost	276430.59	277152.70	277152.70

Annual Fixed Charges

	<i>(₹ in lakh)</i>		
	2016-17	2017-18	2018-19
Depreciation	13378.10	14186.98	14205.49
Interest on Loan	15318.62	14953.42	13614.25
Return on Equity	15449.08	16362.92	16384.26
Interest on Working Capital	3691.77	3985.06	3986.03
O & M Expenses	6750.00	7892.50	8390.25
Total Annual Fixed Charges	54587.57	57380.88	56580.28

8. In compliance with the directions of the Commission vide RoP of the hearing dated 20.5.2016, 11.7.2016, 10.8.2015 and 6.9.2016, the petitioner vide affidavits dated 30.8.2016, 5.9.2016 and 13.10.2016 has filed additional information and has served copies on the respondents. The respondents, Assam Power Distribution Company Ltd. (APDCL) and Manipur State Power Distribution Company Ltd. (MSPDCL) have filed their replies in the matter. During the RoP of the hearing dated 6.9.2016, one Shri Saurabh Gandhi appeared in the matter based on the authorisation letter given by Ms. Mallika Sharma Bezbaruah to represent her in the matter. On a specific query by the Commission as regards the validity of the authorization letter and the absence of details of the representative authorised to appear in the matter, the consumer representative could not submit any clarification. The Commission however observed that instead of seeking impleadment in the matter, the consumer could participate by filing its objections/ comments in the matter. Accordingly, the objector, Ms Mallika Sharma Bezbaruah has filed her objections/comments in the matter. The petitioner has filed its rejoinder to the replies of APDCL and MSPDCL and response to the objection of the



objector. We now proceed to examine the claim of the petitioner based on the submissions of the parties and the documents available on record, as discussed in the subsequent paragraphs.

Date of Commercial Operation

9. The petitioner vide affidavit dated 8.8.2016 has submitted that the actual COD of the generating station is 1.4.2016. The petitioner was directed to provide the documentary evidence in support of trial operation of Unit I and in response, the petitioner vide affidavit dated 8.8.2016 has submitted that trial operation of the generating station was carried out from 10:15 hrs of 23.3.2016 to 10:15 hrs of 26.3.2016 i.e. for 72 hrs in line with Regulation 5(1) of the 2014 Tariff Regulations and has submitted NERPC letter No. NERPC/CC/CSA/98/2016/988 dated 31.3.2016 confirming that NTPC Ltd. vide letter dated 31.3.2016 had declared the Unit I (250 MW) of Bongaigaon TPS on commercial operation w.e.f. 1.4.2016 and had submitted the certificate in accordance with the Regulation 4(1)(iii) of the 2014 Tariff Regulations. Further, the NERPC vide the above letter has confirmed that NPTC has successfully conducted the 72 hours trial run operation of the generating station w.e.f. 23.3.2016 to 26.3.2016.

10. Accordingly, the Commission has considered the actual COD of the generating station as 1.4.2016. Based on this, the cut-off date of the generating station is 31.3.2019.

Time Over-run

11. As stated, the generating station comprises of three units of 250 MW each. The Investment Approval of the project was accorded by the Board of the Petitioner



Company on 30.1.2008, wherein it was envisaged that the first Unit would be commissioned in scheduled timeline of 36 months and subsequent units at an interval of 4 months thereafter from date of letter of award (LOA). The petitioner has submitted that the main plant TG and SG packages were awarded to M/s BHEL on 5.2.2008 and therefore the scheduled COD of Unit I is 4.2.2011, Unit-II is 4.6.2011 and of Unit-III is 4.10.2011. The petitioner has further submitted that Unit I was put under commercial operation on 1.4.2016 and Units II and III are expected to be commissioned on 31.3.2017 and 30.9.2017, respectively. Thus, the petitioner has submitted time overrun of approximately 1886 days i.e. 61 months and 28 days in the declaration of commercial operation of Unit I. As regards the reasons for the delay in completion of the project, the petitioner has submitted the following:-

(a) Bandhs: The Kokrajhar district in the state of Assam falls under Bodoland Territorial Area Districts (BTAD) region, which is a sixth schedule area i.e. disturbed area from law and order point of view. Since inception of the project, the locality has experienced bandhs on 296 days called by various groups like Bodo Land People Front, Bodo Peoples Forum, Birsa Commando Force, ULFA, BTC etc. In view of poor law and order situation in Kokrajhar area, workers did not turn up for the job or turned up in very small number during bandh calls. In addition, the movement of goods, vehicles, etc. were also affected during the bandhs. On an average each bandh had an effect of minimum of 2 working days and therefore, 564 days (approx) were lost due to bandhs. However, after excluding the bandh days, overlapping with the period of violence, the petitioner has submitted that the effective delay works out to 331 days. Therefore, the Commission may condone the delay of 331 days.



The respondent, APDCL has submitted that since the petitioner has not furnished any documentary evidence of the number of man days lost due to bandh, the petitioner should be directed to submit the same.

In response, the petitioner in the rejoinder has submitted that workers had not turned up for work due to poor law and order situation in the district of Kokrajhar. The petitioner has also submitted that temporary shelters were built earlier to facilitate staying of workmen but after violence in the area, the workmen refused to stay in such temporary shelters. It has further submitted copy of letter issued by office of the District Magistrate, Kokrajhar, Government of Assam as regards the prohibitory orders issued in the district of Kokrajhar, report of Asian Center for Human Rights and prohibitory orders issued by administration and news paper have been furnished in support of the said claim.

(b) Ethnic Violence and related Bandhs: The Kokrajhar region had witnessed outbreak of violence many times during the project construction period and this has resulted in loss of lives and the curfew during the period was imposed by the administration prohibitory orders as under:-

- **August 2008 to October 2008 (31 days)-** The Bodoland Territorial Autonomous Districts (BTAD) consists of four districts namely Kokrajhar, Baksa, Udalguri and Chirang. During the period, mass violence broke out in the districts of Udalguri and Chirang and few people were also killed in the blast in Kokrajhar district which resulted into communal and ethnic riots and mass displacement of people and accordingly the project construction works and transportation of construction material were badly affected for 31 days during the period from 1.8.2008 to



31.10.2008 after adjusting the overlapping period of rainfall. Hence, the delay of 31 days may be condoned.

- **July 2012 to December 2012 (184 days)-** There was outbreak of communal violence on 20.7.2012 in BTAD and this resulted in mass displacement of people from Kokrajhar district due to which project construction work was totally stopped. During this period, prohibitory orders were imposed under Section 144 of the IPC by the administration and curfew were imposed and bandhs were called by local groups (around 20 times), resulting in stoppage of project construction. In view of law and order situation in BTAD region, the workers had not reported for work during the bandh calls and during imposition of Section 144 and this badly impacted the project construction work, resulting in the delay in completion of the project in 184 days. Hence, the delay of 184 days may be condoned.

The respondent, APDCL has submitted that it is unlikely that out of six months all the days are under bandh calls or all the people of the area left the surrounding areas and hence the Commission may examine the matter prudently. The petitioner vide its rejoinder has submitted that safety of men and material can be ensured inside plant boundary but during the bandh calls, workers rarely came out of their homes and report at workplace. The petitioner has also submitted that temporary shelter were built earlier to facilitate staying of workmen but after the violence in the area, workmen refused to stay in such temporary shelters. The petitioner has submitted that the Commission may condone the delay of 184



days caused due to imposition of Section 144, imposition of curfew and due to communal violence as the same was beyond the control of the petitioner.

- **April 2013 to January 2015 (671 days)** - During this period prohibitory orders were imposed in Kokrajhar district by the administration under Section 144 of the IPC, shoot at sight orders were issued by the administration, curfews were imposed, bandhs were called approximately 100 times by local groups and Parliamentary elections were held which had resulted in complete stoppage of project construction work. The petitioner has further submitted that communal violence also broke out in the area during December 2014 which again resulted in mass exodus of workers. The entire work force fled the site during the period of violence and unrest in the region, and it took months to bring back the site to the original strength after peace returned in the region. Though there was relaxation in curfews/ Section 144 during the period, the construction of project could be started in full swing only after the situation returned to normal in the region, as the workers turned up for the job only after there were signs of peace in the region. In view of the above, the Commission may condone the delay of 671 days caused due to imposition of Section 144, imposition of curfew and due to violence and Bandh calls.

- (c) Outbreak of Koro Syndrome during the period from September 2010 to October 2010:** There was outbreak of Koro Syndrome in the vicinity of the project and the fear and panic of the disease/syndrome caused the workers to flee the site and immerse themselves in water holes for prolonged period of time. There was no effective delay due to Koro syndrome as the petitioner managed to deploy resources



of Units II and III into Unit I of the generation project. Hence there is no delay on account of Koro Syndrome.

The respondent, APDCL has submitted that such type of news is simply a media creation and therefore, the same should be authenticated with a report from district authorities and health department. In response, the petitioner vide its rejoinder has submitted that it had taken the help of its team of doctors and site representatives to make the people realize that Koro syndrome was merely a superstition and no such thing has even remotely possible and it took some time to overcome the said beliefs among the people.

(d) Excessive Rainfall: The district of Kokrajhar received unprecedented rainfall during the monsoon season (June to September) of the years 2008, 2010, 2012, 2014 and 2015. The long period average (LPA) rainfall during monsoon season in regions of the states of Assam and Meghalaya is 1885 mm, while in Kokrajhar district the rainfall received was from 2714 mm to 3125 mm during the said monsoon seasons as under:-

Monsoon year	Actual rainfall in Kokrajhar (mm)	Normal Average rainfall (mm)	Deviation %	No. of months lost due to excessive rainfall
2008	2760	1885	46.42%	4
2010	2762	1885	46.53%	4
2012	2665	1885	41.38%	4
2014	2714	1885	44.49%	4
2015	3125	1885	65.77%	4
				20

During the monsoon season, even a light drizzle in the morning result in the loss of entire day work as workers do not turn up or workers turn up in very limited numbers, thereby affecting the productivity of the entire day. In addition to above, the rainfall



during some of the months (other than monsoon period) has been very high and no work was carried out in the project during those months as detailed under:-

Month	Rainfall (mm)	No. of months lost due to rainfall
May 2009	587.20	1
April 2010	653.20	1
May 2010	772.60	1
May 2013	542.00	1
May 2014	509.10	1
May 2015	576.60	1
Total		6

Due to the excessive rainfall during the monsoon in Kokrajhar region, no appreciable progress of the project construction jobs especially in civil works was made. The movement of piling rigs and associated heavy machines is almost impossible in wet soil until and unless the soil gets dried-up. Also, the workers cannot do any work during the rains, which had resulted in delays in all the piling foundation works. Rainfall stopped the work on all fronts and the heavy flow of water often washed away some under construction foundation etc and the excavated area again filled with mud and water. Heavy rains during the last week of August 2015 caused severe damage to the foundation of structure of coal conveyer 3A/3B and as a remedial measure, it had removed the entire structure of conveyer and drove four additional piles below the trestle foundation of conveyer 3A/3B. Accordingly, total delay in project execution due to rainfall is 26 months i.e. 795 days and after excluding the overlapping period with bandhs and violence, the effective delay due to rainfall comes out to be 519 days. Hence, the Commission may condone the delay of 519 days in the completion of the project.

The objector, Ms Mallika Sharma Bezbaruah has submitted that the Ministry of Earth Science had supplied data of rainfall for few years without any certification as to



whether the rainfall were excessive, below normal or average. She has also stated that on the basis of one or two years, the excessive or normal rainfall cannot be decided and at least a data for 25 to 30 years of rainfall is required for assessment. She has further stated that the petitioner must be aware that north eastern region receives high rainfall than other parts of the country, but not throughout the year.

The respondent, APDCL has submitted that loss of around 19 months as claimed by the petitioner due to excessive rainfall seems to be on higher side. It has further submitted that inspite of the rainfall and occurrence of flood, people were engaged in pursuit of economic activities with the assistance of district authorities.

In response, the petitioner has submitted that movement of piling rigs and associated heavy machines was almost impossible in wet soil and until and unless the soil got dried-up, and there was delay in all piling foundation works. It has also submitted that during the monsoon season, rainfall remains so heavy that no work can be done by the workers. The petitioner has stated that excess rainfall has cascading effect since the work on all fronts and the heavy flow of water often washed away some under construction foundation etc. and the excavated area is again filled with mud and water.

(e) Storm causing the failure of a structure: On 21.3.2013, the Kokrajhar region was hit with a very heavy thunder storm and gusts of wind were so powerful that the transfer point structure of coal handling plant (under execution) fell from over a height of above 40 m and more than 15-20 m away. The structure also fell on top of pipe and cable trestle galleries, nearby CW duct lines and other areas which was



very critical to the commissioning of the project. The petitioner managed to deploy resources of Units II & III into Unit I and therefore there is no effective delay.

The objector Ms. Mallika Sharma Bezbaruah has submitted that structure was constructed by M/s SPML Infra Ltd. but, the contract of the said firm was cancelled much ahead of the storms. She has further submitted that as the petitioner did not mention the reasons for cancellation of contract, there is reason to believe that the workmanship of the contractor was not satisfactory and that the contract was cancelled based on this. In view of the above, the objector has submitted that such poor quality of work resulted in falling of completed structure as no adequate design protection for protection from wind was made.

The respondent, APDCL has submitted that the Commission should prudently check the matter.

In response, the petitioner has submitted that above storm was too powerful that the structures fell at more than 15-20 m away. It has also submitted that the structures also fell on top of pipe and cable trestle galleries, nearby CW duct lines and other areas. The petitioner has also submitted that secondary damage caused due to collapse of structure pushed the work behind many days as the completion of the damaged items was very critical to the commissioning of the project.

(f) Non availability of RCC bridge to support heavy consignments (60 days): At the time of inception of the project the condition of approach roads and wooden bridges leading to the site of the project was very poor. These bridges could safely handle load upto 10 MT and were not suitable for heavy vehicles carrying civil construction



material (weighing more than 22 MT) and power plant equipment. Therefore, the petitioner took up the matter with local authorities like PWD for strengthening/ up gradation of these bridges as early as November 2007, i.e. before Investment Approval but the upgraded bridges were declared open for movement by PWD during June, 2013 only. The above constraint has lead to delay in transportation of heavy consignments/ equipment, etc. meant for the project. The total effective delay on account of non-availability of sufficient capacity bridge is 2 months as the consignments were transported in parts or through smaller vehicles and heavy consignment like turbine generator etc were transported through rail. The delay was reduced to 60 days after deploying resources of Units 2 and 3 to this generating station (i.e. Unit I). Hence, the Commission may condone the delay of 60 days.

The objector, Ms. Mallika Bezbaruah has submitted that in reply to the letter from the petitioner to Assam PWD, the Assam PWD has confirmed that the road can bear load upto 70 MT. She has further submitted that already one broad gauge railway track was available from the Kokrajhar railway station upto the project site which was handed over to the petitioner by APGCL without any cost.

The respondent, APDCL has submitted that documents collected from the Public Works Department require prudent check and hence the Commission may direct petitioner to submit detailed information. The respondent has further submitted that petitioner had prior knowledge of the project site much before, as the erstwhile Bongaigaon TPS was located with all infrastructure in place. It has stated that heavy consignments like Turbine, Generator etc were transported through rail and therefore, the respondent has submitted that petitioner's claim of 4 months delay in



transportation of heavy consignments on account of non availability of RCC Bridge has no basis.

In response, the petitioner has submitted that the condition of approach roads and bridges at the time of inception of the project were very poor and all the bridges were wooden bridges. It has stated that the matter was taken up with local authorities like PWD for strengthening/ upgradation of these bridges as early as in November, 2007 i.e. before Investment Approval but the upgraded bridges were declared open for movement by PWD during 2013 only, which resulted in delay in transportation of heavy consignments/equipment etc. meant for the project.

(g) Aggregate Availability: During inception of project it was envisaged that the aggregate and other civil construction material shall be sourced from the quarries situated in the State of Assam which were situated within 100 km range of the project site. The Hon'ble Supreme Court vide judgment dated 27.2.2012 in the matter SLP(C) 19628-19629 of 2009 (Deepak Kumar v/s the State of Haryana and others) has put restrictions on mining of minerals including aggregates and directed the State governments to give effect to the recommendations made by Ministry of Environment and Forests (MoEF) got in its report of March, 2010 due to which all the crushing and extraction activities came to halt in State of Assam. The supply of aggregate was affected from the quarries situated in the vicinity of the project till notification was issued by Government of Assam. In order to cater to the requirement of project construction, aggregates were sourced from Pakud quarries situated in the State of Jharkhand, approximately 550 km from the project site and the aggregate was transported through rail cum road. The petitioner has further submitted that the



overall activity resulted in significant delay in project construction activities as no civil work was carried out in the absence of aggregate and as a result, civil fronts could not be handed over to the other agencies for subsequent equipment erection and other works thereby delayed the entire project by 60 days (effective). The delay was reduced to 60 days after deploying resources of Units II and III into Unit I. Hence, the Commission may condone the delay of 60 days.

The respondent, APDCL has submitted that longer distance involved for bringing aggregates from outside the State of Assam may result mainly in increase of transportation cost and the nominal time delay covering the distance. In response, the petitioner has submitted that crushing and extraction activities came to halt not only in the State of Assam but in other part of country also after the above Judgment of the Hon'ble Supreme Court. In order to cater to the requirement of project construction, aggregates were sourced from Pakud quarries situated in the State of Jharkhand, 550 km (approx) from project site and aggregate was transported through rail cum road and this resulted in significant delay to the project activities.

(h) Change of course of Champamati river (30 days): The generating station was initially synchronized to grid on 22.6.2015 and after assessing the progress of works, the petitioner had planned to declare commercial operation of Unit-I within six months, i.e., by 21.12.2015 and accordingly, a program was made to run the generating station at full load, establish stable operation and then declare COD thereafter. The pending works envisaged during the six months pertained to milling system, steam generator, coal handling plant and turbine generator. It was envisaged to use make up water from river Champamati and necessary clearances



were also obtained from the Central Water Commission and Bodoland Territorial Council. The erection of makeup water pumps was complete and make up water pumps were envisaged to have suction from intake well however, due to very high deposition of silt and consequent change of course of river near intake well, the flow of water was heavily reduced near intake well. The petitioner has further submitted that due to low flow of water near intake well, makeup water pumps were not able to provide required quantity of raw water for sustained operation of the generating station at full load and after study, the need to install submersible pumps emerged. The problem of low level of water near intake resulted in delay in declaration of commercial operation by 30 days. Hence, the Commission may condone the delay of 30 days.

The respondent, APDCL has further submitted that the Commission may prudently examine the claim of the petitioner as regards change of course of the river Champawati.

The objector has submitted that photograph depicts that river Champawati has not changed its course. She has further submitted that the raw water pump house contract was awarded on 20.9.2010 with a value of ₹414.00 lakh on escalated basis, but, this work started on 3.1.2011 and completed on 31.7.2015. The objector has further submitted that the Commission may carry out prudence check with proper investigation for such delay.

12. Accordingly, the petitioner has submitted that the reasons for the delay is beyond reasonable control of the petitioner and major hurdles has occurred in the execution of



the project. The petitioner has further submitted that the above said reasons caused cumulative delay of 72 months (approx) i.e. 2156 days in the declaration of commercial operation of the generating station, but by persistent efforts and by employing prudent project management practices and by diverting the resources of Units II and III towards Unit-I, the effective delay was reduced to 61 months and 28 days i.e. 1886 days. Hence, the petitioner has prayed that the Commission may condone the delay of 1886 days in declaration of COD of Unit-I of this generating station. The petitioner has further submitted that reasons for the delay in declaration of commercial operation of Units II and III will be submitted as and when CoD/ synchronization of units approaches.

13. The respondent, APDCL has submitted that time over-run of 61.5 months has been claimed and the Commission may exclude the time overrun for reasons that are attributable to the petitioner. In response, the petitioner has reiterated that the COD of the generating station was delayed due to the reasons beyond the control of the petitioner.

14. The objector, Ms Mallika Sharma Bezbaruah has submitted that petitioner should have submitted more authentic documents such as log sheets of working and non working days for all of the reasons cited duly signed by both the contractors/sub-contractors and the project authority mentioning the reasons and loss of man days for those reasons. She has further submitted that the project site is a protected area and therefore the effect of Section 144 cannot be taken as ground for cost overrun. The objector has further submitted that downloaded documents submitted by the petitioner cannot be accepted, as the reasons of delay in executing the projects when there are many technical reasons attributable to the petitioner.



Analysis

15. The factors responsible for the delay in commissioning of Unit I from the submissions of the petitioner are categorized as under:

- (i) Violence, Bandhs & Curfew in 2008, 2012 & 2013
- (ii) Rainfall in 2008, 2009, 2010, 2012, 2013, 2014 & 2015
- (iii) Non availability of RCC bridge
- (iv) Koro Syndrome
- (v) Aggregate availability
- (vi) Storm causing failure of structure
- (vii) Change of course of Champamati river

16. We now examine the delay in the above categories are under:

Bandhs, Violence & Curfew

17. We have considered the submission of the parties. As regards the time over-run due to bandhs during the period 2008-12, the petitioner has submitted that the locality has experienced bandhs on 296 days and on an average each bandh had an effect of minimum of 2 working days due to which approximate 564 days were lost. However, after excluding the bandh days overlapping with the period of violence, the petitioner has claimed the effective delay of 331 days due to bandhs. It is observed that the generating station is situated in area wherein the locality has experienced bandhs called by various groups on several days. It is noticed that the activities of the project had stopped during the bandhs as the workers had not reported to the project site. As regards the submission of the petitioner that 2 working days were affected on account of one bandh, it is noticed that the petitioner has not furnished any justification to support its claim and therefore the same has not been considered. Hence, the impact of one day due to each bandh has been considered and therefore, the overall delay of 296 days only has been



condoned on account of bandhs. Based on the above discussion, the total delay of 296 days has been condoned, out of the delay of 331 days claimed by the petitioner.

18. As regards the time over-run due to violence during the period from August 2008 to October 2008, the petitioner has submitted the newspaper clippings of October 2008 and map of Assam. It is observed from the submissions of the petitioner that clashes between Bodos and Muslims erupted which was followed by three blasts on 30.10.2008 in Kokrajhar district which killed dozens of people. It is further submitted that clashes in the districts of Udalguri and Darrang forced more than 100000 people to leave their village. As the petitioner has already claimed the for delay for August 2008 and September 2008 due to rainfall, therefore, it has requested to condone the delay for the period from 1.10.2008 to 31.10.2008 i.e. 31 days after making the adjustment with rainfall and bandhs. Accordingly, after checking the newspaper clippings submitted by the petitioner, we are inclined to condone the delay for 31 days. Based on the above discussion, the total delay of 31 days has been condoned, out of the delay of 31 days claimed by the petitioner.

19. As regards time over-run due to violence and bandhs during the period from July, 2012 to December, 2012, it is observed from the submissions that since 20.7.2012, the riots in the Bodoland Territorial Autonomous Districts (BTAD) have claimed about 90 lives and had displaced over 400000 people which has been described as the largest internal displacement since India's partition. In this regard, the petitioner has submitted the supporting documents like copy of letter dated 4.6.2013 issued by office of the District Magistrate, Kokrajhar. Government of Assam regarding details of prohibitory orders under section 144 Cr.P.C. w.e.f. July, 2012 to October, 2012 issued in Kokrajhar,



copy of report of Asian Center for Human Rights stating the information of loss due to riots in the BTAD, copy of prohibitory orders dated November 25, 2012, December 6, 2012 and December 11, 2012 issued by administration, newspaper clippings and copy of letter dated April 18, 2015 issued by office of the District Magistrate, Kokrajhar, Government of Assam stating the data/order relating to Bandhs during the said period. Considering the imposition of prohibitory orders under Section 144, curfews, bandhs and such mass displacement on several occasions, there has been stoppage of project construction as the work force had fled the site. Accordingly, we are inclined to condone delay of 184 days. Based on the above discussion, the total delay of 184 days has been condoned, out of the delay of 184 days claimed by the petitioner.

20. As regards time over-run due to violence and bandhs during the period from April, 2013 to January, 2015, petitioner has requested to condone the delay of 671 days and has furnished the copy of the various prohibitory orders, but the same does not indicate the exact date of imposition of prohibitory orders. The petitioner has also submitted the supporting document indicating the prohibition from 2.5.2014 to 2.6.2014 (i.e. 32 days). Though, the petitioner was directed to submit the effective duration of band against prohibitory orders, the petitioner has not submitted the same and therefore, we are inclined to condone the delay of only 32 days. Based on the above discussion, the total delay of 32 days has been condoned, out of the delay of 671 days claimed by the petitioner.

Rainfall

21. As regards the time over-run due to rainfall, it is noticed that site development and SG civil works, TG civil works and condenser erection, boiler erection was delayed due



to heavy rainfall. It is further observed that the petitioner has compared the rainfall during monsoon period for the years 2008, 2010, 2012, 2014 and 2015 with the long period with average rainfall of Assam and Meghalaya region. From the submissions of the petitioner we have compiled the following table:

	June	July	August	September
Average rainfall during period 2002-07	751.6	758.8	383.7	537.1
Actual rainfall in 2008	481	517.2	1202.1	561.4
Actual rainfall in 2010	657.4	834.6	552.5	719.6
Actual rainfall in 2012	1490	413.8	277.4	483.9
Actual rainfall in 2014	644.8	967.8	1024.8	446.0
Actual rainfall in 2015	684.4	571.2	1187.2	522.8

22. It is observed from the above that there was excessive rainfall during the months of August, 2008, July, 2010, September, 2010, June, 2012, July, 2014, August, 2014 and August, 2015 as compared to the average rainfall during the month of June to September for the period from 2002-07 (month wise). It is further observed that the petitioner has not submitted any normalization period and hence we have considered the above months of August, 2008, July, 2010, September, 2010, June, 2012, July, 2014, August, 2014 and August, 2015 as the month of excessive rainfall along with normalization period of 1 month. In addition to above we have also considered the months of May, 2009, April, 2010, May, 2010, May, 2013, May, 2014 and May, 2015 as there was heavy rainfall as compared to the average rainfall and hence the same has been analysed. Accordingly, we are inclined to condone the following months for the delay due to rainfall which has impacted the civil works:

- (a) 2008: August & September (61 days)
- (b) 2009: May (31 days)
- (c) 2010: April to September (183 days)



- (d) 2012: June (30 days) (July, 2012 subsumed in Violence 2012 i.e. from 9.7.2012 to 31.12.2012)
- (e) 2013: May, 2013 (31 days)
- (f) 2014: May, 2014 to September, 2014 (121 days) as period from 2.5.2014 to 2.6.2014 subsumed in Violence 2013 (from 1.4.2013 to 31.1.2015).
- (g) 2015: May, June, August, September (122 days)

23. Based on the above, the effective delay of 700 days has been considered after adjusting the overlapping period of bandhs and hence the same has been condoned.

Non-availability of RCC Bridge

24. As regards the non availability of RCC bridge to support heavy consignments, it is noticed that the petitioner was well aware about the poor condition of approach roads and wooden bridges leading to the generating station which could handle load only upto 10 MT. The petitioner has taken up the matter with local authorities like PWD for strengthening/ upgradation of these bridges during November 2007 and the same was upgraded and opened up for movement by PWD during June, 2013. It is noticed that despite the petitioner making several follow ups and co-ordinating with the appropriate authorities, the delay was not within the control of the petitioner to upgrade the bridge. However, as the petitioner was aware of the condition of the bridge, it could have made alternative arrangements for transportation like railways to avoid the delay, instead of waiting for the bridge to get upgraded, which eventually was taken through railways. In our view, there was no prudence on the part of the petitioner in the management of the project and the delay in on account of slackness on the part of the petitioner and hence



we are not inclined to condone the delay of 60 days on account of non availability of RCC bridge for movement of heavy consignments. We direct accordingly.

Non-availability of RCC Bridge

25. As regards time over-run due to non-availability of aggregates, it is noticed that restrictions on mining of minerals including aggregates was imposed by Hon'ble Supreme Court by its Judgment dated 27.2.2012 in the matter SLP(C) 19628-19629 of 2009 in Deepak Kumar v/s the State of Haryana and others after the start of the project. Due to above restriction on the aggregates sourced from quarries located in Assam within the 100 km range of the project site, the petitioner had started to source aggregate from Pakud quarries which are located 550 km away from the project site which was initially sourced from quarries located in Assam within the 100 km range of the project site. Considering the time consumed in making arrangement and the distance of the quarries in the sourcing of aggregates, we are inclined to condone the delay of 60 days on account of non-availability of aggregate.

Change of course of Champawati River

26. As regards time over-run due to change of course of Champamati river, the petitioner has submitted that due to change in course of river near intake well, the flow of water was heavily reduced near intake well, due to which makeup water pumps were not able to provide required quantity of raw water for sustained operation of the generating station at full load. It is noticed that the said activity took place during the period from 1.10.2015 to 31.12.2015, which was just after the period of heavy rainfall i.e. 1.6.2015 to 30.9.2015. In view of this, it is not clear that how can the water level of the Champamati



river reduced drastically immediately after the months of heavy rainfall. Due to lack of adequate/proper justification of the delay under the head, we are not inclined to condone the delay of 30 days on account of change in course of Champamati river.

27. In the above background the cumulative delay condoned on account of various reasons works out to 1303 days as against the delay of 1886 days claimed by the petitioner. The scheduled COD has been re-set after considering the time overrun allowed, and residual time overrun disallowed after adjustment is as under:-

Date of Investment Approval (IA)	Date of Main plant award	Scheduled COD as per IA i.e. 36 months from date of main plant award	Actual COD	Time overrun considering SCOD (days)	Time overrun allowed (days)	SCOD for IDC/IEDC computation
30.1.2008	5.2.2008	4.2.2011	1.4.2016	1886	1303	27.8.2014

Capital Cost as on actual COD

28. Regulation 6(2) of the 2014 Tariff Regulations provides as under:

“(2) For the purpose of determination of tariff, the capital cost of a project may be broken up into stages, blocks, units, transmission lines and sub-stations, forming part of the project, if required:

Provided that where break-up of the capital cost of the project for different stages or units or blocks and for transmission lines or sub-stations is not available and in case of on-going projects, the common facilities shall be apportioned on the basis of the installed capacity of the units, line length and number of bays:

Provided further that in relation to multi-purpose hydro schemes, with irrigation, flood control and power components, the capital cost chargeable to the power component of the scheme only shall be considered for determination of tariff.”

29. Further, Regulation 9(2) of the 2014 Tariff Regulations provides as under:

“(2) Capital cost for a project shall include:

(a) the expenditure incurred or projected to be incurred up to the date of commercial operation of the project;

(b) Interest during construction and financing charges, on the loans

(i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or



(ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed;
(c) Increase in cost in contract packages as approved by the Commission;
(d) Interest during construction and incidental expenditure during construction as computed in accordance with Regulation 11 of these regulations;
(e) capitalized Initial spares subject to the ceiling rates specified in Regulation 13 of these regulations; (f) expenditure on account of additional capitalization and de-capitalization determined in accordance with Regulation 14 of these regulations;
(g) adjustment of revenue due to sale of infirm power in excess of fuel cost prior to the COD as specified under Regulation 18 of these regulations; and
(h) adjustment of any revenue earned by the transmission licensee by using the assets before COD.”

30. The petitioner vide affidavit dated 8.8.2016 has revised the claim for annual fixed charges based on the audited capital cost as on actual COD and has furnished the Auditor's Certificate for the capital expenditure incurred as on COD and audited accounts for the generating station as on COD. The petitioner has claimed expenditure of ₹246236.02 lakh as on COD of Unit I, which comprise of the capital cost (on cash basis) for ₹243123.17 lakh, notional IDC for ₹2533.00 lakh, short term FERV loss charged to P&L account for ₹(-)76.26 lakh, adjustment of transfer out assets of ₹2912.59 lakh and adjustment of transfer in assets of ₹(-)2256.49 lakh. The petitioner has claimed additional capital expenditure of ₹30194.57 lakh in 2016-17 and ₹722.10 lakh in 2017-18, which is inclusive of liabilities which are proposed to be discharged in these years.

31. The respondent, APDCL has submitted that petitioner has escalated the cost without any valid reason and in an arbitrary manner. As regards land cost, the respondent has submitted that though the land for the Bongaigaon generation project was handed over by APDCL (erstwhile ASEB) free of cost, the petitioner has indicated the revised estimate as ₹373.28 lakh for the value of land. As regards escalation of land development cost including site clearance and leveling, the respondent has further submitted that the petitioner has escalated the same from ₹21.09 lakh as per original



estimate to ₹392 lakh. It has further submitted that project site was handed over with the earlier power project of 240 MW with all infrastructures including roads, water supply, electricity supply etc. and no valid reasons have been furnished for these escalations. Accordingly, the respondent has prayed that the Commission may direct the petitioner to submit reasons for the escalation in cost.

32. In response, the petitioner vide affidavit dated 22.9.2016 has submitted that the land which was handed over by APDCL (erstwhile ASEB) free of cost, was not sufficient to cater to the railway siding required for enhanced capacity of the generating station and hence the petitioner had to acquire around 50 acres of land for railway siding at a cost of ₹373.28 lakh. It has also submitted that to make the additional land site workable for railway siding work, the cost associated with site leveling and other works had increased to ₹392.00 lakh.

33. The respondent, MSPDCL has submitted that capital cost proposed by the petitioner is more than ₹10 crore per MW of the plant, which is higher than the benchmark norm specified by the Commission for coal based thermal generating stations which is ₹4.5-5 crore (approx) per MW (based on December 2011 indices as per order dated 4.6.2012) and the same when increased to the present level of prices shall be ₹5.5-6.2 crore (approx) per MW. The respondent has further submitted that as the present capital cost of similar thermal generating stations is also around ₹5-6 crore per MW, the substantial increase of capital cost beyond the benchmark cannot be passed on to the beneficiaries. The respondent has submitted that the generating station was scheduled to be commissioned during 2011-12 but has been commissioned during April 2016. It has further submitted that there has been delay of around 5 years in the



completion of the project which has increased the capital cost and therefore it is not justified to pass on the inefficiencies of the petitioner in completing the project on time to the beneficiaries. It has further submitted that the Commission may direct petitioner to conduct an independent study of the delays in execution of the project and cost overruns of the generating station and till the time the results of the study are available, the tariff should be determined on the benchmark capital cost.

34. In response, the petitioner has submitted that the petition has been filed based on anticipated completed cost and any comparison of hard cost can be done only after working out the actual capital cost. It has further submitted that the benchmark capital cost for 250 MW units has not been specified by the Commission in order dated 4.6.2012 and therefore any comparison of the cost of the generating station with the benchmark capital cost specified in above order of the Commission is hypothetical. The petitioner has also submitted that in view of the geographical location of the generating station and higher transportation and other charges involved, the hard cost of project shall remain high as compared to the similar thermal generating stations in India. Further, the petitioner has submitted that scheduled completion period approved by the Board of directors of the petitioner was based on best efforts basis but due to the prevailing law and order problems in North Eastern Region and various other reasons, which were beyond the reasonable control of petitioner and hence there has been delay in completion of the project.

35. The petitioner vide ROPs of the hearing dated 10.8.2016 was directed to submit the detailed scope of work approved at the time of investment approval and in response, the petitioner has submitted that the work executed or projected to be executed is as per



scope of work approved at the time of investment approval. However, the petitioner has not submitted the detailed scope of work.

36. Accordingly, based on the above submissions, the admissible capital cost of the generating station has been worked out in terms of the Regulation 9(2) of the 2014 Tariff Regulations, as below:

Infirm Power

37. The petitioner was directed to furnish the details of revenue from sale of infirm power and the quantum of infirm power generated, if any. The petitioner was also directed to confirm as to whether such revenue has been adjusted in the capital cost. In response, the petitioner has submitted that the revenue obtained from sale of infirm power is ₹1813.13 lakh and the same has been adjusted in capital cost of the unit. The petitioner has further submitted that quantum of infirm power generated was 117.32 MU.

38. In our view, the net construction and pre-commissioning expenses amounting to ₹5353.78 lakh, as submitted in Form 5B, is after adjustment of revenue from sale of infirm power. Accordingly, the same is capitalized as on COD of the generating station.

Cost Over-run

39. The petitioner has submitted that the original cost of investment approval of the Bongaigaon Project (Units I to III) was ₹437535.00 lakh and thereafter, the project cost for the three units was revised to ₹674918.00 lakh. The petitioner has claimed capital cost of the generating station (Unit I) as ₹246236.02 lakh as on COD, which is within the approved cost.



40. The respondent, APDCL has submitted that petitioner has not furnished the copy of original investment approval of the project (i.e. project cost of ₹437535.00 lakh at price level of 4th Quarter 2007 accorded by the 311th meeting of NTPC Board). It has also stated that in absence of the original copy of approval, the original targets like initial scheduled commissioning date etc cannot be estimated. It has further submitted that petitioner has only submitted the RCE approved by the Board of the Petitioner Company at the 408th meeting held on 19.6.2014 for a RCE cost of ₹674918.00 lakh at price level of 4th Quarter 2013 and therefore, the petitioner should be directed to furnish the original copy of investment approval. In response, the petitioner has furnished the copy of Board Resolution as along with the scheduled COD of the generating station, as resolved in 311th meeting of Board of the Petitioner Company.

Hard Cost

41. The details of the breakup of capital cost approved at the time of Investment Approval and the capital cost claimed as on COD of the generating station are as under:

<i>(₹in lakh)</i>			
	Initial Investment Approval dated 30.1.2008	RCE dated June 19, 2014	Actual Cost as on COD (cash basis)
	for Units I, II and III	for Units I, II and III	for Unit I
Steam Generator Island	123093.90	152049.00	37036.28
Turbine Generator Island	59097.40	70746.40	18132.72
Initial Spares	8632.90	Included above	included above
Taxes & duties	6849.30	Included above	included above
Plant & Machinery (SG and TG package including initial spares and taxes & duties)	197673.50	222795.40	55169.00
Land and civil works (including Perm. Way incl E/W, Bridges, etc. for coal transportation system)	90663.70	136974.60	38066.44
BOP Mechanical	37714.10	74201.90	39697.91



	Initial Investment Approval dated 30.1.2008	RCE dated June 19, 2014	Actual Cost as on COD (cash basis)
	for Units I, II and III	for Units I, II and III	for Unit I
BOP Electrical	28287.70	32629.60	12395.59
C&I	2424.80	4907.70	1277.61
BOP (including C&I)	68426.60	111739.20	53371.11
Construction & Pre-Commissioning Expenses	2981.50	3405.50	5353.78
Consultancy	187.40	0.00	0.00
Other Assets	21762.70	0.00	1796.07
Total	381695.40	474914.70	153756.40
Less: FGD cost included in above	37500.00	0.00	0.00
Total Hard cost	344195.40	474914.70	153756.40
Hard Cost (Rs Crore/MW)	4.59	6.33	6.15

42. The details regarding the increase in price of different packages from the Investment Approval as against the capital cost as on COD is as follows:-

Plant & Machinery (SG and TG package including initial spares and taxes & duties)

43. As regards the Plant & Machinery cost, it is observed that the cost as per Investment Approval dated 30.1.2008 is ₹197673.50 lakh for all the three units and the cost as per RCE dated 19.6.2014 is ₹222795.40 lakh. The petitioner has not furnished the reason and justification for increase in cost of ₹25121.90 lakh (222795.40 – 197673.50) from initial Investment Approval to RCE. The pro-rated cost under this head works out to ₹65891.17 lakh for Unit I. However, the actual cost claimed by the petitioner as on COD (1.4.2016) is ₹55169.00 lakh for Unit I, which is lesser than the corresponding cost in the Investment Approval, and therefore the same has been considered now for the purpose of Hard cost. The petitioner is however directed to furnish the details of the actual expenditure after the COD of all the units of the



Bongaigaon Power Project detailing the reasons for increase in cost in the Ppackage as compared to the original investment approval

Initial Spares

44. The petitioner has not given the figures of initial spares separately in Plant & Machinery cost as on COD. However, in the Investment Approval dated 30.1.2008, the initial spares is given as ₹8632.90 lakh, which is 4.3% of total Plant & Machinery Cost as per Investment Approval. Since, the actual cost of Plant & Machinery for Unit I is ₹55169.00 lakh as on COD, which is within the Investment Approval cost for one unit on pro-rata basis, it is considered that the initial spares included in the actual cost for Unit I is within 4% of the Plant & Machinery Cost as on COD and, accordingly the same has been considered. However, the petitioner shall furnish the details of initial spares capitalized as on COD for Unit I and also for Unit II and entire generating station, when the petitioner comes for tariff determination after the COD of Units I, II and III of Bongaigaon Thermal Power Station.

Land and civil works (including Perm. Way incl E/W, Bridges, etc. for coal transportation system)

45. As regards the cost incurred towards land and civil works, it is observed that there is substantial increase in civil cost as compared to the original investment approval. The cost as per original Investment Approval is ₹90663.70 lakh towards land and civil package (including Perm. Way incl E/W, Bridges, etc. for coal transportation system) for all the three units and the pro-rated cost works out to ₹ 30221.23 lakh for Unit I. However, the actual cost as on COD (1.4.2016) is ₹38066.44 lakh for Unit I, which is less than the pro-rata cost of Unit I of ₹45658.20 lakh (₹136974.60 lakh / 3) as per the



RCE dated June 19, 2014. Accordingly, actual cost of Unit – I of ₹38066.44 lakh as on COD towards land, civil works etc. has been allowed. In RCE approved cost, there is almost 51.08% increase in the cost of land and civil works due to additions of certain additional work such as Ash Handling System, MGR & Marshalling Yard, Township & Colony, Temporary construction & enabling works, Chimney, etc. Accordingly, the petitioner shall submit the details of the actual expenditure after the COD of all the units of the Bongaigaon Power Project detailing the reasons for increase in cost in the land, civil work package as compared to the original investment approval.

BOP (Mechanical)

46. As regards cost incurred in BOP (Mechanical), it is observed that there is substantial increase in cost as on COD of Unit I as compared to pro-rata cost of Unit I in the original investment approval as well as in the RCE. It is observed that the cost as per Investment Approval is ₹37714.10 lakh for all the three units and the pro-rated cost works out to ₹ 12571.37 lakh for Unit I. However, the actual cost claimed by the petitioner as on COD (1.4.2016) is ₹39697.91 lakh for Unit I, which is more than the corresponding cost of Investment Approval. Further, as per the RCE dated June 19, 2014, the cost of said package is approved to ₹ 74201.90 lakh for all the three units and the pro-rated cost works out to ₹24733.97 lakh for Unit I, which is almost 96.75% higher than the Investment Approval cost. In RCE approved cost, there is almost 96.75% increase in the cost BOP (Mechanical) due to increase in the cost of Coal Handling Plant, AC & Ventilation System, Fire Fighting System and LP Piping and further addition of the works such as Chlorination Plant, and Rolling Stock and Locomotives. Accordingly, the petitioner shall submit the details of the actual expenditure after the



COD of all the units of the Bongaigaon Power Project detailing the reasons for increase in cost in the BOP (Mechanical) package as compared to the original investment approval and RCE. The increase in cost is not justified at this stage and further in absence of any unit wise bifurcation of the cost, we are restricting the cost to the RCE approved cost.

47. Accordingly, the capital expenditure of ₹24733.97 lakh (₹74201.90 lakh /3) towards BOP (Mechanical) for Unit I on pro-rata basis has been considered in this order.

BOP (Electrical)

48. As regards cost incurred in BOP (Electrical), it is observed that there is substantial increase in cost as on COD of Unit I as compared to pro-rata cost of Unit I in the original investment approval as well as in the RCE. It is observed that the cost as per Investment Approval is ₹28287.70 lakh for all the three units and the pro-rated cost works out to ₹9429.23 lakh for Unit I. However, the actual cost claimed by the petitioner as on COD (1.4.2016) is ₹12395.59 lakh for Unit I, which is more than the corresponding cost of Investment Approval. Further, as per the RCE dated June 19, 2014, the cost of said package is approved to ₹32629.60 lakh for all the three units and the pro-rated cost works out to ₹10876.53 lakh for Unit I, which is almost 15.35% higher than the Investment Approval cost. In RCE approved cost, there is almost 15.35% increase in the cost BOP (Electrical) due to substantial increase in the cost of Power Transformer and lighting. Accordingly, the petitioner shall submit the details of the actual expenditure after the COD of all the units of the Bongaigaon Power Project detailing the reasons for increase in cost in the BOP (Electrical) package as compared to the original investment approval and RCE. The increase in cost is not justified at this stage and further in



absence of any unit wise bifurcation of the cost, we are restricting the cost to the RCE approved cost.

49. Accordingly, the capital expenditure of ₹10876.53 lakh (₹32629.60 lakh /3) towards BOP (Electrical) for Unit I on pro-rata basis has been considered in this order.

C&I

50. As regards the C&I cost, it is observed that the cost as per Investment Approval dated 30.1.2008 is ₹2424.80 lakh for all the three units and the pro-rated cost works out to ₹ 808.27 lakh for Unit I. However, the actual cost as on COD (1.4.2016) is ₹1277.61 lakh for Unit I, which is higher than the corresponding cost in the Investment Approval. Further, as per the RCE dated June 19, 2014, the cost of said C&I package is approved to ₹4907.70 lakh for all the three units and the pro-rated cost works out to ₹1635.90 lakh for Unit I.

51. It may be noted that the actual cost of C&I claimed by the petitioner is however justifiable as compared to RCE cost and hence we are inclined to allow the same as claimed by the petitioner. Accordingly, the actual capital expenditure of ₹1277.61 lakh claimed by the Petitioner towards C&I package has been considered.

Construction & Pre-Commissioning Expenses

52. As per Investment approval dated 30.1.2008, the operator's training was approved as ₹200.00 lakh, Tools and plant as ₹907.50 lakh and Start up fuel (pre-commissioning) as ₹1874.00 lakh, thereby, totaling to ₹2981.50 lakh. However, the actual cost incurred as on COD (1.4.2016) for tools and plant is ₹553.49 lakh and start up fuel (pre-commissioning) is ₹4800.29 lakh, totaling to ₹5353.78 lakh.



53. As regards the revenue from sale of infirm power, the petitioner has submitted that revenue from infirm power of ₹1813.13 lakh has been adjusted in capital cost of the unit.

54. It is noticed that the above cost incurred on tools and plant and start up fuel (pre-commissioning) for Unit I do not consist of the cost pertaining to common activities. Accordingly, the capital expenditure of ₹5353.78 lakh towards construction & pre-commissioning expenses has been considered.

Consultancy and other assets (including audit & accounts, contingency, corporate allocation, other assets (MBOA) and losses on stocks)

55. It is observed that the cost as per Investment Approval dated 30.1.2008 is ₹187.40 lakh for Consultancy and ₹11244.00 lakh for Audit & Accounts, ₹8594.70 lakh for Contingency, ₹1874.00 lakh for Corporate allocation and ₹50.00 lakh Losses on stocks, thereby, totaling to 21950.10 lakh for all the three units and the pro-rated cost works out to ₹7316.70 lakh for Unit I. However, the actual cost as on COD (1.4.2016) is ₹1796.07 lakh for other assets (MBOA) for Unit I, which is within the corresponding cost of Investment Approval. Hence, the same has been considered.

56. It is further noticed that the total cost as per Investment Approval dated 30.1.2008 including plant & machinery, land & civil works, BOP, C&I, construction & pre-commissioning expenses, consultancy and other assets is ₹381695.40 lakh in respect of the three units. Also, it is observed that the petitioner has included the FGD cost of ₹37500.00 lakh in the Investment approval cost and therefore, the hard cost, excluding FGD cost, as per Investment Approval dated 30.1.2008 works out to ₹344195.40 lakh for



three units. Thus, the hard cost as per the Investment Approval dated 30.1.2008 works out to ₹4.59 Crore/MW.

57. Based on the above discussions, the hard cost as on COD (1.4.2016) for Unit I is approved subject to true up of tariff for the generating station for the period 2014-19 as under:-

(₹in lakh)		
	Actual Cost claimed as on COD (cash basis)	Actual Cost allowed as on COD (cash basis)
	for Unit I	for Unit I
Steam Generator Island	37036.28	37036.28
Turbine Generator Island	18132.72	18132.72
Initial Spares	included above	included above
Taxes & duties	included above	included above
Plant & Machinery (SG and TG package including initial spares and taxes & duties)	55169.00	55169.00
Land and civil works (including Perm. Way incl E/W, Bridges, etc. for coal transportation system)	38066.44	38066.44
BOP Mechanical	39697.91	24733.97
BOP Electrical	12395.59	10876.53
C&I	1277.61	1277.61
BOP (including C&I)	53371.11	36888.11
Construction & Pre-Commissioning Expenses	5353.78	5353.78
Consultancy	0.00	0.00
Other Assets	1796.07	1796.07
Total Hard cost	153756.40	137273.40
Hard Cost (₹Crore/MW)	6.15	5.49

58. The hard cost of ₹137273.40 lakh for Unit I approved as on COD (1.4.2016) works out to ₹5.49 Crore/MW. The hard cost claimed for ₹6.15 Crore/MW by the petitioner is case of Unit I is high considering the fact that the petitioner has capitalized the total



expenditure incurred as on COD of the Bongaigaon Project towards common facilities, land and civil works which has been pro-rated to Unit-I as stated above.

Reasonableness of Capital Cost

59. In order to assess the reasonability of the capital cost for determination of tariff on cost plus basis, the capital cost (Hard Cost) of this generating station (Unit I) has been compared with other generating stations of similar capacity viz., 300/350 MW as well as higher sizes of 500 MW, which have been commissioned in recent past and within the previous span of 4-5 years. The comparative statement is as under:

(₹ in Crore)					
Sl. No.	Plant Name	Capacity in MW	Commercial Operation Date (COD)	Capital Cost	Hard Cost (in ₹crore/ MW)
1	Reliance Rosa (Unit 1 & 2)	2 x 300	30.6.2010	3112.81	5.31
2.	Mauda STPS	2 x 500	30.3.2014	5521.37	5.52
3.	Bongaigaon TPS (Unit 1)	1 x 250	1.4.2016	1372.73	5.49
4.	GMR- Kamalanga	3 x 350	24.3.2014	5936.43	5.56

60. The Hard cost of the generating station (Unit I) as allowed as on COD is ₹137273.40 lakh. Accordingly, the hard cost per MW works out to ₹5.49 crore/MW. No bench mark capital cost for 250 MW size units based on coal/ lignite fired has been specified by the Commission. However, it is observed that the hard cost per MW of this generating station is lower than the hard cost per MW of the other 350 MW and 500 MW generating stations considered for comparison. Since the EPC package was decided for the project through a process of ICB and the cost of project is comparable to other generating stations despite unit size being lower and without any advantage of economy of scale, the hard cost of ₹137273.40 lakh excluding FERV increase is considered reasonable and accepted.



Interest During Construction (IDC), Normative IDC and Financing Charges (FC)

61. IDC, Normative IDC (indicated as notional IDC) & FC claimed by the petitioner vide affidavit dated 8.8.2012 is as under:

	<i>(₹ in lakh)</i>
Interest During Construction (including Financial Charges) transferred to fixed assets as on COD of Unit I	56908.35
Notional IDC (interest on equity deployed more than 30%) as on COD of Unit I	2533.00

62. The respondent, APDCL has submitted that the Commission may examine the submission of the petitioner as regards treating excess equity deployed for more than 30% as normative loan and notional IDC of ₹2280 lakh as part of the capital cost. In response, the petitioner has submitted that it has claimed excess equity deployed for more than 30% as normative loan and notional IDC as part of capital cost in terms of the 2014 Tariff Regulations.

63. The petitioner was directed to provide the basis of allocating loan (Form 6) and quarterly debt and equity statement (Form 14A) to Unit I in Form 6 and Form 14 A respectively. In response, the petitioner has submitted that loan drawn in the project is for the stage as a whole and not for a particular unit. The petitioner has further submitted that the expenditure during construction is allocated to various CWIP heads in the ratio of accretions during the year thereto and accretion generally means opening balance reduced from closing balance in each CWIP head before allocation for the year. The petitioner has further submitted that Interest During Construction (IDC) accrued during the financial year is allocated on the basis of average balance of each CWIP head during the year.



64. The petitioner was directed vide ROP dated 20.5.2016 to submit detailed calculation of IDC. In response the petitioner submitted that IDC (including FC) on cash basis is ₹56908.35 lakh which has been claimed in the capital cost in Form-5B.

65. The petitioner has submitted datewise details of the loan draws, applicable rate of interests with reset details. Petitioner has also submitted draw down schedule of IDC along with deployment of the loan and equity vide form 14 as well as details regarding the loan allocated to the project vide form 8. Based on the aforesaid details, total IDC computed till 31.3.2016 (i.e. till COD of Unit I) amounts to ₹142319.38 lakh. The same is also found to be in conformity with the interest during construction as per the financial statement as on 01.4.2016.

66. As stated earlier, the Commission has condoned the delay of 1303 days as against the delay of 1886 days claimed by the petitioner. Accordingly, scheduled COD has been re-set to 27.8.2014 after considering the time overrun allowed, and residual time overrun disallowed. Therefore, IDC has not been allowed for the time overrun period of 583 days from 27.8.2014 to 31.3.2016 in respect of this generating station (i.e. Unit I). Thus, IDC calculation has been restricted till 26.8.2014 which amounts to ₹90022.90 lakh.

67. The total IDC calculated till 26.8.2014 (₹90022.90 lakh) has been apportioned to Unit I on the basis of installed capacity as under:

<i>(₹ in lakh)</i>	
IDC allowed for capitalisation as on COD of Unit I	₹30007.63 lakh

68. With regard to Financial Charges (FC), the petitioner has furnished the details/ break up vide Form 14. Based on the aforesaid details, total Financial Charges (FC)



computed till 31.3.2016 (i.e. till COD of Unit I) amounts to ₹686.34 lakh (total calculation) and the same has been apportioned to Unit I on the basis of installed capacity. The same shall be subject to true up based on the detailed break-up of the financial charges supported with the documentary evidences to be furnished by the petitioner at the time of true up.

Financial Charges (FC) allowed for capitalisation as on COD of Unit I	₹228.78 lakh
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Incidental Expenditure during Construction (IEDC)

69. As regards the claim of IEDC, the petitioner in Form 13D has submitted detailed breakup of IEDC upto to COD 1.4.2016 of Unit I. Due to the delay in the achieving the commercial operation date of the unit, the overhead expenses in establishment under IEDC such as salary, travel, security expenses etc. have increased, which can be allowed only to the extent time overrun is allowed. As such, the IEDC as claimed by the petitioner requires be a pro rata disallowance for the period of 583 days as on COD of Unit-I. As per Form 13D, the total overheads incurred till 31.03.2016 amounts to ₹59073.78 lakh, out of which, the petitioner has transferred ₹23676.51 lakh to gross block and ₹35397.27 lakh is lying in CWIP as on the COD of Unit 1. Thus, the petitioner has claimed IEDC of Rs. 23676.51 lakh for capitalisation as on COD. Considering the same and the pro rata deduction due to the delay of 583 months in the COD of Unit I, the IEDC allowed for the purpose of tariff is worked out as under:

(₹ in lakh)

As on COD	Total time taken from zero date to actual COD (days)	Time overrun disallowed (days)	IEDC considered as on COD before impact of time overrun	Pro-rata reduction	IEDC allowed after impact of time over run
	(a)	(b)	(c)	$d = \frac{(c) \times (b)}{(a)}$	$e = (c) - (d)$
Unit I (1.4.2016)	2987 days	583 days	23676.51	4621.16	19055.35



Normative IDC

70. The petitioner has claimed the normative IDC (indicated as notional IDC) of ₹2533.00 lakh on the equity deployed in excess of 30%. The petitioner was directed to provide the detailed working of the claimed Normative IDC and adjustment of transfer out assets and transfer in assets. In response, the petitioner has submitted the detailed computation of notional IDC for ₹2533.31 lakh.

71. We have examined the computation of normative IDC in line with Form 14 submitted by the petitioner. It is observed that the petitioner has applied the rate of interest as arrived at on the basis of quarterly interest accrued on entire loan. The 2014 Tariff Regulations do not provide for notional IDC, however, we have worked out the normative IDC in accordance with Regulation 9(2) of the 2014 Tariff Regulations. In accordance with Regulation 9(2) of the 2014 Tariff Regulations, if the actual equity deployed is less than 30% of funds deployed (i.e. actual debt is more than 70%), the interest on the actual amount of loan has to be included in capital cost. Also, if the actual equity deployed is more than 30% of the funds deployed (i.e. actual debt is less than 70%), interest on 70% of the funds deployed has to be included in capital cost as Interest during Construction (IDC) by treating equity infusion above 30% as normative loan by the company to itself.

72. Thus, the Normative IDC has been worked out on the basis of rate of interest as arrived at on the basis of quarterly actual interest accrued on entire actual loan drawn during the corresponding quarter. Due to the reset of scheduled COD of Unit I to 27.8.2014 (as stated above), normative IDC has been restricted till 26.8.2014. Based on



this, normative IDC is worked out as ₹3628.82 lakh in accordance with the Regulation 9(2) of the 2014 Tariff Regulations and the same has been apportioned to Unit I on the basis of installed capacity. Thus, the normative IDC allowed for the purpose of tariff towards COD of Unit I amounts to Rs 1209.61 lakh.

Liquidated Damages (LD)

73. The petitioner was directed to furnish the details of liquidated damages, if any, recovered from the contractors in different packages. In response, the petitioner vide affidavit dated 5.9.2016 has submitted that the works in various packages are under progress and contract closing has not been completed. The petitioner has further submitted that even for the packages which have been completed, the contract closing takes some time and the LD clause as per the “Agreement” with its contractors and the levy of LD recoverable from the contractor can be assessed and finalized only at the time of contract closing after satisfactory resolution of various issues like completion schedule and performance related issues. The petitioner has also submitted that LD, if any, recovered from the contractor as per the terms of the contract at the time of contract closing, shall be submitted and adjusted in the capital cost.

74. The petitioner is directed to furnish the details of liquidated damages, if any, recovered from the contractors in different packages at the time of truing up of tariff for adjustment in the capital cost.

Foreign Exchange Rate Variation (“FERV”)

75. Petitioner has claimed FERV loss of ₹8781.90 lakh in the capital cost with adjustment of ₹(-)76.26 lakh as Short Term FERV loss Charged to P&L A/c. The



petitioner vide affidavit dated 8.8.2016 has also submitted the detailed calculation of FERV and has also submitted the computation of Short Term FERV loss claimed upto COD of the generating station (Unit I). The claim of the petitioner has been examined. From the computation of Short Term FERV loss submitted vide the said affidavit dated 8.8.2016, it is noticed that the Short Term FERV loss is Rs. (-)762.58 lakh as against Rs. (-)76.26 lakh claimed in the petition.

76. Accordingly, the FERV loss of ₹8781.90 lakh as per Form 5B along with adjustment of ₹(-)762.58 lakh as Short Term FERV is being allowed at this stage. However, the actual position in respect of the FERV claimed along with explanation on 'Short-term FERV' with detailed calculations and reconciliation of the same with the financial statement of the station shall be submitted by the petitioner at the time of final truing-up of tariff for the period 2016-19 for this generating station.

Initial Spares

77. The petitioner was directed to submit the computation of initial spares and in response, the petitioner vide affidavit dated 8.8.2016 has submitted that in accordance with Regulation 13 of the 2014 Tariff Regulations, initial spares upto 4% of Plant and Machinery cost upto the cut-off date are required to be capitalized for the purpose of tariff. The petitioner has further submitted that the computation of initial spares, actually capitalized, shall be submitted after all the three units of the project achieves COD. Accordingly, the petitioner is directed to furnish the computation of initial spares as and when all the units are commissioned and petition in respect of the same is filed for determination of tariff.



Liabilities deducted from Capital cost

78. The petitioner has worked out the capital cost as on COD, after deducting liabilities of ₹20116.68 lakh. The petitioner has also claimed the discharge of these liabilities beyond the COD of the generating station as additional capital expenditure in the year of discharge.

79. It is observed that the capital cost as on 1.4.2016 is on cash basis and the same has been arrived at after deducting the liabilities as on COD. The petitioner has claimed the adjustment of transfer out assets of ₹2912.59 lakh and adjustment of transfer in assets of ₹(-)2256.49 lakh. Further, the petitioner was directed to provide the detailed working of adjustment of transfer out assets and transfer in assets. In response, the petitioner has submitted the detailed breakup of adjustment of transfer out assets of ₹2912.59 lakh and adjustment of transfer in assets of ₹(-)2256.49 lakh. It may be noted that the above costs are for the three units, whereas, this petition is for Unit-I only commissioned on 1.4.2016, and therefore the corresponding cost of Unit-I may include the cost corresponding to common activities for three units. In accordance with the Regulation 6(2) of the 2014 Tariff Regulations, as the petitioner has not provided bifurcation of common facilities for the above costs corresponding to transfer out assets and transfer in assets, therefore, we have apportioned above cost on the basis of the installed capacity of the units. Accordingly, we have considered the adjustment of transfer out assets of ₹ 970.86 lakh and adjustment of transfer in assets of ₹(-)752.16 lakh for the computation of tariff. Further, as the petitioner has not submitted the details of assets corresponding to inter unit transfer, we shall consider the final cost



corresponding to transfer out assets and transfer in assets at the time of truing up of tariff for the period 2014-19 for this generating station.

80. In view of the above discussions, the capital cost allowed for the purpose of tariff as on COD of the generating station is as under:

	(₹ in lakh)
Total approved hard cost (X)	137273.40
FERV Loss (Y)	8781.90
Capital cost excluding IDC/IEDC/FC (A=X+Y)	146055.30
IDC Allowed (B)	30007.63
FC Allowed (C)	228.78
IEDC Allowed (D)	19055.35
Capital cost Allowed (E= A+B+C+D)	195347.06
Normative IDC Capitalised (F)	1209.61
Short Term FERV loss Charged to P&L A/c (G)	(-)762.58
Adjustment : Transfer Out Assets (H)	970.86
Adjustment : Transfer In Assets (I)	(-)752.16
Capital cost as on COD (E+F+G+H+I)	196012.80

81. Normative IDC is to be treated as income in the financial statement i.e. Profit & Loss Account and Balance sheet by the petitioner as it form part of capital cost for the purpose of tariff.

Projected Additional Capital Expenditure

82. Regulation 14 (1) of the 2014 Tariff Regulations, provides as under:

“(1) The capital expenditure in respect of the new project or an existing project incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:

(i) Un-discharged liabilities recognized to be payable at a future date;

(ii) Works deferred for execution;

(iii) Procurement of initial capital spares within the original scope of work, in accordance with the provisions of Regulation 13;

(iv) Liabilities to meet award of arbitration or for compliance of the order or decree of a court of law; and

(v) Change in law or compliance of any existing law: Provided that the details of works asset wise/work wise included in the original scope of work along with estimates of expenditure, liabilities recognized to be payable at a future date and the



works deferred for execution shall be submitted along with the application for determination of tariff.”

83. The projected additional capital expenditure claimed by the petitioner for the period 2014-19 is detailed as under:

		<i>(₹ in lakh)</i>	
	Regulation Claimed	2016-17	2017-18
Additional capital expenditure for installation of Flue Gas Desulphurisation system	14(1)(ii)	10800.00	0.00
Liability Discharges	14(1)(i)	19394.57	722.10
Total additional capital expenditure claimed		30194.57	722.10

84. We now examine the year-wise claim of these assets as under:

Installation of Flue Gas De-sulphurisation system

85. The petitioner has claimed additional capital expenditure of ₹10800.00 lakh towards installation of Flue Gas Desulphurisation System (FGD) in 2016-17 under Regulation 14(1)(ii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the work of installation of Flue Gas Desulphurisation system from part of original scope of work of the project and is in line with the MOEF guidelines. The petitioner has further submitted that FGD system package is being implemented by M/s BHEL, through DUCON technology, USA with the SO₂ removal efficiency of 95%. The petitioner has claimed the total estimated capital expenditure of ₹10800 lakh for the FGD system, considering an approximate expenditure of 10% of the total project cost of the generating station upto its cut-off date. The petitioner has also submitted the extract of the Guarantee Declaration by vendor M/s BHEL depicting the guarantee figures of SO₂ removal efficiency of 95%, Lime Stone consumption of 10500 kg/hr and Auxiliary Power Consumption in FGD (one unit) of 4050 kW. The petitioner has also submitted the



technical data of induced draft fan depicting the maximum continuous power demand of an ID fan at Bongaigaon as 3695 kW.

86. The petitioner was directed to submit justification for the installation of FGD system and in response, the petitioner vide affidavit dated 13.10.2016 has submitted that the coal linkage for first two units of Bongaigaon Project is from North Eastern Coalfields Limited (NECL) and for the remaining one unit, the linkage is from Eastern Coalfields Limited (ECL). It has also submitted that the use of NECL coal in boiler requires desulphurization of flue gas before emission through stack in view of its high sulphur content and in view of the above and the conditions laid down by the Ministry of Environment & Forests, GoI, FGD system is being installed in the units of this generating project to minimize SO₂ emissions.

87. The respondent, APDCL has submitted that certain ambiguities have been observed regarding continuous demand of ID fan. It has also submitted that the Maximum Continuous Demand (MCD) of ID fans for Bongaigaon Project is 3695 kW, whereas the MCD of ID fans for similar unit of Navinagar TPS (4x220 MW) is 1843 kW. Accordingly, the respondent has submitted that the Commission may direct petitioner to submit the reasons for such variance in MCD. In response, the petitioner vide affidavit dated 22.9.2016 has submitted that the maximum continuous demand of ID fans installed at the generating station is high as compared to that of the similar unit at Nabinagar TPS due to the installation of FGD in line with the directions contained in the MOEF clearance. The petitioner has further submitted that FGD has been installed as additional component in flue gas path and it increases pressure drop of flue gas and



therefore, in order to overcome additional pressure drop of flue gas, higher capacity ID fan is provided at the generating station.

88. The respondent, APDCL has submitted that the petitioner has included the cost of FGD system for the purpose of tariff and the same is yet to be commissioned. The respondent has further submitted that cost of FGD should be considered only after it is put into service. In response, the petitioner vide its affidavit dated 22.9.2016 has submitted that there is delay in implementation of FGD system due to various reasons and it is expected that FGD for first unit shall be completed and capitalized by 30.3.2017 and accordingly relaxed O&M charges, Auxiliary Power Consumption and consumption of limestone have been proposed only from 31.3.2017 onwards.

89. We have examined the matter. It is observed from the submissions of the petitioner that expenditure towards FGD system has been planned by the petitioner in compliance with the guidelines laid down by the environmental clearance accorded by MoEF, GOI vide its letter dated 2.5.2012 in order to minimize SO₂ emissions, which emerges that FGD shall be installed for the proposed expansion unit. Considering the fact that the projected additional capital expenditure is to be incurred by the petitioner for compliance with the direction of MoEF, GOI for minimizing SO₂ emissions of the area, we are inclined to allow the capitalization of the FGD system under Regulation 14(3)(ii) of 2014 Tariff Regulations. It is however noticed that the additional information with regard to capital cost and the assets to be installed have not been submitted. The petitioner has only furnished a one page extract of the Guarantee Declaration by vendor M/s BHEL and in the absence of any precedents towards the installation of FGD system, it appears that the petitioner is unable to substantiate/furnish adequate reasons in support of the



reasonability of the estimated cost of FGD system claimed as 10% of the project cost. In the present case, there is an increase in the capital cost of the generating station on account of installation of FGD system. On this count, there may also be increase in Auxiliary Power Consumption and O&M expenses much beyond the norms specified under the 2014 Tariff Regulations. Accordingly, the additional investment on account of installation of FGD system would require prudence check of the reasonability of the proposed expenditure and the technology used should be commensurate with the requirement. Also, the benefits of installation of this system should be made known to the procurers along with the possible impact on the tariff. It is noticed that the petitioner has not submitted any details of packages awarded in respect of FGD as required under Form 5D of the tariff filing forms.

90. In the similar case, the Commission in order dated 31.8.2016 in Petition No. 234/GT/2015 had allowed the allow the capitalization of the FGD system under Regulation 14(3)(ii) of 2014 Tariff Regulations as under:-

“35. We have examined the matter. It is observed from the submissions of the petitioner that expenditure towards FGD system has been planned by the petitioner in compliance with the guidelines laid down by the environmental clearance accorded by MoEF, GOI vide letter dated 2.5.2012 to minimize SO₂ emissions, which mentions that the FGD shall be installed for the proposed expansion unit. Considering fact that the projected additional capital expenditure is incurred by the petitioner for compliance with the direction of MoEF, GOI for minimizing SO₂ emissions of the area, we are inclined to allow the capitalization of the FGD system under Regulation 14(3)(ii) of 2014 Tariff Regulations. The capitalization is allowed as a special case by relaxing the provision of Regulation 14(1) in term of Regulation 54 of the 2014 Tariff Regulations. However, the same may not be quoted as a precedent in future.

36. It is however noticed that there is no adequate information submitted with regard to the capital cost and the assets to be installed. The petitioner has only provided a one page extract of the Guarantee Declaration by their vendor M/S Alstom. In the absence of any precedent on the installation of FGD system, it appears that the petitioner is unable to substantiate/furnish adequate reasons in support of the reasonability of the estimated cost of FGD system claimed as 10% of the project



cost. In the present case, there is an increase in the capital cost of the generating station is increasing on account of installation of FGD system. There may also be increase in Auxiliary Power Consumption and O&M expenses beyond the norms specified under the 2014 Tariff Regulations. We have in the above paragraph, allowed the capitalization of the FGD system on the ground that the same is in compliance with the statutory guidelines of the statutory authority MoEF, GOI.

37. It is observed that the additional investment on account of installation of FGD system would require prudence check of the reasonability of the proposed expenditure and technology used should be commensurate with the requirement. Also, the benefits of the installation of this system should be made known to the procurers and the possible tariff impact on the tariff. Further, the petitioner has not submitted the details of packages awarded in respect of FGD as required under Form 5D of the tariff forms. In this background and based on the information available on record, the projected cost of the FGD system is provisionally considered as 80% of the claim of the petitioner i.e. ₹16104 lakh (₹11632 lakh in 2016-17 and ₹4472 lakh in 2017-18) and the same is subject to revision based on the actual capital expenditure incurred.

38. As discussed above, we have considered the petitioners submission for the increase in Auxiliary Power Consumption due to FGD system installation. The specification submitted by the supplier M/s Alstom are the guaranteed specifications and are subject to actual performance of FGD when it is installed. Accordingly, the increase of 1.00% is allowed, along with limestone Consumption of 6250 kg/hr which is subject to revision at the time of truing-up of tariff or the separate norms specified by the Commission, if any”

91. In this background and based on the information available on record, we restrict the projected cost of the FGD system provisionally to 80% of the claim made by the petitioner, i.e. ₹8640.00 lakh (i.e. 80% of ₹10800.00 lakh) in 2016-17 and the same is subject to revision based on the actual capital expenditure incurred. The petitioner is also directed to submit the following details of the actual expenditure incurred at the time of truing-up in terms of Regulation 8 of the 2014 Tariff Regulations:

- a. Justification for assuming estimated cost of the FGD system as 10% of the project cost, details of packages awarded in respect of FGD system and details of LOA with M/s BHEL
- b. Cost benefit analysis for the installation of the FGD system in the project
- c. Actual expenditure incurred after installation of FGD



Discharge of Liabilities

92. The petitioner has claimed additional capital expenditure of ₹19394.57 lakh in 2016-17 and ₹722.10 lakh in 2017-18, totaling to ₹20116.68 lakh, under Regulation 14(1)(i) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that these liabilities are corresponding to the works within original scope and which have been completed prior to CoD.

93. The petitioner was directed to furnish clarification why the liability discharged has been included in the capital cost and in response, the petitioner vide affidavit dated 8.8.2016 has clarified that in accordance with Regulation 14(1)(i) of the 2014 Tariff Regulations, undischarged liabilities are to be payable at a future date and shall form part of capital cost and hence treated as additional capital expenditure. It has also submitted that liabilities have been indicated in Form 9(A) and included in capital cost as and when they are expected to be discharged. The petitioner was further directed to provide details of the nature/works against which the payment has been discharged during the years 2016-17 and 2017-18 along with names of contractor/supplier and the amount of balance payments yet to be made and in response, the petitioner has submitted that for the years 2016-17 and 2017-18, liabilities to be discharged are on projection basis and shall be submitted based on actual discharges at the time of truing up of tariff of the generating station.

94. We have examined the matter. It is observed that the petitioner has claimed the total liabilities of ₹49543.43 lakh during the period 2016-19, out of which ₹20116.68 lakh has been included in gross block as on COD and remaining ₹29426.75 lakh is in CWIP



portion. On prudence check, it is observed that the liabilities as reflected in audited Balance Sheet of the petitioner as on 1.4.2016 is more than the claimed liabilities of ₹49543.43 lakh. Since the petitioner has furnished the details of nature/works of such liabilities discharged of ₹20116.68 lakh in Form 5B, we have considered the said claims for the purpose of tariff of this generating station. However, the petitioner is directed to furnish the details of actual liabilities discharged during the years 2016-17 and 2017-18 at the time of truing up of tariff of the generating station.

95. Based on above discussions, the projected additional capital expenditure allowed for the period 2016-19 is as under:

	<i>(₹ in lakh)</i>	
	2016-17	2017-18
Additional capital expenditure for installation of Flue Gas Desulphurisation system (A)	8640.00	0.00
Liability Discharges (B)	19394.57	722.10
Total additional capital expenditure (C= A+B)	28034.57	722.10

96. Accordingly, the capital cost for the period 2016-19 in respect of the generating station is worked out and allowed as under:

	<i>(₹ in lakh)</i>		
	2016-17	2017-18	2018-19
Opening Capital Cost (X)	196012.80	224047.37	224769.48
Additions Allowed (A)	8640.00	0.00	0.00
Liabilities Discharged (B)	19394.57	722.10	0.00
Net Additions Allowed (C=A+B)	28034.57	722.10	0.00
Closing Capital Cost (C+X)	224047.37	224769.48	224769.48
Average Capital Cost	210030.08	224408.42	224769.48

Debt-Equity Ratio

97. Regulation 19 of the 2014 Tariff Regulations provides as under:



“(1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that:

(i) where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:

(ii) the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:

(iii) any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt-equity ratio.

Explanation - *The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.*

(2) The generating Company or the transmission licensee shall submit the resolution of the Board of the company or approval from Cabinet Committee on Economic Affairs (CCEA) regarding infusion of fund from internal resources in support of the utilisation made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.

(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2014 shall be considered.

(4) In case of generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2014, the Commission shall approve the debt: equity based on actual information provided by the generating company or the transmission licensee as the case may be.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2014 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.



98. The petitioner has claimed debt equity ratio of 70:30 for capital cost as on COD and additional capital expenditure during 2016-19. The petitioner was directed to furnish Form 10 (financing of additional capitalization) and in response, the petitioner vide affidavit dated 5.9.2016 has submitted Form 10 stating that financing of additional capital expenditure during the period 2016-19 is proposed to be done in the debt equity ratio of 70:30. The petitioner has further submitted that the actual financing shall be submitted at the time of truing up of tariff of the generating station.

99. Accordingly, the gross normative debt equity ratio of 70:30 has been considered for capital cost as on COD of the generating station and the additional capital expenditure allowed. The gross normative loan and equity of ₹137208.96 lakh and ₹58803.84 lakh, respectively, has been considered as normative loan and equity as on COD (1.4.2016). The debt equity ratio of 70:30 has been considered in case of additional capital expenditure for the period 2016-19. This is subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations. The opening and closing debt and equity is as under.

(₹ in lakh)

	As on COD (1.4.2016)		Net Additional capitalization during 2016-19		As on 31.3.2019	
	Amount	(%)	Amount	(%)	Amount	(%)
Debt	137208.96	70.00%	20129.67	70.00%	157338.63	70.00%
Equity	58803.84	30.00%	8627.00	30.00%	67430.84	30.00%
Total	196012.80	100.00%	28756.68	100.00%	224769.48	100.00%

Return on Equity

100. Regulation 24 of the 2014 Tariff Regulations provides as under:

“24. Return on Equity:

(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of



the river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that:

i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:

ii). the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:

iii). additional RoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:

iv). the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues:

vi) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

101. Regulation 25 of the 2014 Tariff Regulations provides as under:

“Tax on Return on Equity

(1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non-generation or non-transmission business, as the case may be) shall not be considered for the calculation of “effective tax rate”.

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where “t” is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), “t” shall be considered as MAT rate including surcharge and cess.”



102. The petitioner has claimed return on equity considering the base rate of 15.50% and effective tax rate (MAT rate) of 21.342%. The petitioner was directed to furnish the computation of effective tax rate of 21.342% considered in the period 2016-19 with supporting documents. In response, the petitioner vide affidavit dated 5.9.2016 has submitted that the effective tax rate of 21.342% is Minimum Alternate Tax (MAT) rate for assessment year 2016- 17 as per Income Tax Act.

103. In line with the directions of the Commission in order dated 27.6.2016 in Petition No. 270/GT/2014 (pertaining to Simhadri STPS, Stage-I of the petitioner company), it is noticed that the effective tax rate (MAT) of 20.961% has been considered for the year 2014-15 and 21.342% for the year 2015-16 onwards up to the year 2018-19 for the purpose of grossing up of base rate of 15.50%. Based on the above, the rate of ROE works out to 19.705% for the year 2016-17 onwards. This is subject to truing up. Accordingly, Return on Equity has been computed as under:

	<i>(₹ in lakh)</i>		
	2016-17	2017-18	2018-19
Notional Equity-Opening	58803.84	67214.21	67430.84
Addition of Equity due to Additional Capitalization	8410.37	216.63	0.00
Normative Equity- Closing	67214.21	67430.84	67430.84
Average Normative Equity	63009.03	67322.53	67430.84
Return on Equity (Base Rate)	15.500%	15.500%	15.500%
Tax rate for the year	21.342%	21.342%	21.342%
Rate of Return on Equity (Pre Tax)	19.705%	19.705%	19.705%
Return on Equity	12415.93	13265.90	13287.25

Interest on Loan

104. Regulation 26 of the 2014 Tariff Regulations provides as under:



“26. Interest on loan capital: (1) *The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*

(2) *The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.*

(3) *The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalization of such asset.*

(4) *Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.*

(5) *The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:*

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(6) *The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.*

(7) *The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.*

(8) *The changes to the terms and conditions of the loans shall be reflected from the date of such refinancing.*

(9) *In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:*

Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.”



105. Interest on loan has been worked out as under:

- a. The gross normative loan of ₹137208.96 lakh has been considered on COD (1.4.2016). In addition to this, loan component towards additional capitalization has been considered as per the approved debt equity ratio.
- b. Addition to normative loan on account of additional capital expenditure approved above has been considered on year to year basis.
- c. Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2016-19.
- d. In line with the provisions of the regulations, the weighted average rate of interest has been calculated by applying the actual loan portfolio existing as on 1.4.2016 along with subsequent additions during the period 2016-19, if any, for the generating station. In case of loans carrying floating rate of interest, the rate of interest as furnished by the petitioner has been considered for the purpose of tariff. The calculations for weighted average rate of interest on loan have been enclosed as Annexure-I to this order.

106. The necessary calculation for interest on loan is as under:

	(₹ in lakh)		
	2016-17	2017-18	2018-19
Gross Notional Loan for the purpose of tariff in the instant petition	137208.96	156833.16	157338.63
Cumulative repayment of loan up to previous year	0.00	10751.80	22253.88
Net opening loan	137208.96	146081.36	135084.75
Addition due to Net Additional Capitalization	19624.20	505.47	0.00
Repayment of Loan during the period	10751.80	11502.08	11520.58
Add: Repayment adjustment on account of de-capitalization	0.00	0.00	0.00
Less: Repayment on account of adjustment in discharge in liabilities	0.00	0.00	0.00
Net Closing Loan	146081.36	135084.75	123564.17
Average Loan	141645.16	140583.06	129324.46
Weighted Average Rate of Interest on Loan (%)	8.6917%	8.6295%	8.5442%
Interest on Loan	12311.36	12131.66	11049.72



Depreciation

107. Regulation 27 of the 2014 Tariff Regulations provides as under:

“27. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units or elements thereof.

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:

Provided that in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.

(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in **Appendix-II** to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.



(6) In case of the existing projects, the balance depreciable value as on 1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission licensee, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project (five years before the useful life) along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services.”

108. The petitioner has claimed depreciation considering the weighted average rate of depreciation of 5.119% in 2016-17 and 5.126% in the years 2017-18 and 2018-19. The rate of depreciation is in order and has been considered for the purpose of tariff calculation. The necessary calculations in support of depreciation are as under:-

	(₹ in lakh)		
	2016-17	2017-18	2018-19
Opening Capital Cost	196012.80	224047.37	224769.48
Net Additional Capitalization	28034.57	722.10	0.00
Closing Capital Cost	224047.37	224769.48	224769.48
Average capital cost	210030.08	224408.42	224769.48
Value of freehold land	96.08	96.08	96.08
Depreciable value	188940.60	201881.11	202206.06
Balance depreciable value	188940.60	191129.31	179952.18
Depreciation	10751.80	11502.08	11520.58
Cumulative depreciation at the end of the period (before adjustment)	10751.80	22253.88	33774.46
Less: Cumulative depreciation adjustment on account of de-capitalization	0.00	0.00	0.00
Cumulative depreciation after adjustment (at the end of the period)	10751.80	22253.88	33774.46

109. The petitioner is directed to submit the asset wise depreciation details for arriving at the weighted average rate of depreciation at the time of truing up of tariff.



Operation & Maintenance Expenses

110.Regulation 29 (1) (a) of the 2014 Tariff Regulations provides the year-wise O&M expense norms claimed for the generating station of the petitioner as under:

<i>(₹ in lakh/MW)</i>		
2016-17	2017-18	2018-19
27.00	28.70	30.51

111.The petitioner has prayed that the Commission may allow the additional O&M expenses of 10% over and above the O&M norms as specified in the 2014 Tariff Regulations as under:-

<i>(₹ in lakh)</i>			
	2016-17	2017-18	2018-19
O&M Expenses under Regulation 29(1)(a)	6750.00	7175.00	7627.50
Additional O&M Expenses on account of FGD @ 10 % of O&M norms	0.00	717.50	762.75

112.The petitioner has also submitted the extract of the Guarantee Declaration by vendor M/s BHEL depicting guarantee figures of SO₂ removal efficiency of 95%, Lime Stone consumption of 10500 kg/hr and Auxiliary Power Consumption in FGD (one unit) of 4050 kW. It has also submitted technical data of induced draft fan depicting maximum continuous power demand of an ID fan at Bongaigaon as 3695 kW. The petitioner has therefore prayed that the Commission may allow the additional O&M expenses of 10 % over and above the O&M norms. The petitioner has further stated that in addition to the increase in Auxiliary Power Consumption, the installation of FGD will also result in additional O&M expenses for the station. Keeping in view that the capital cost of FGD is approximately 10% of project capital cost, the petitioner has claimed additional O&M expenses of 10% of O&M norms as provided in the 2014 Tariff Regulations towards



installation of FGD. In view of the above, the petitioner has prayed that the Commission may allow the increase in Auxiliary Power Consumption by 3.1016% and additional O&M expenses of 10% over and above the O&M norms as specified in 2014 Tariff Regulations in exercise of the powers under Regulation 54 of 2014 Tariff Regulations.

113. The petitioner was directed to submit the basis for 10% additional O&M expenses claimed on account of FGD system and in response, the petitioner vide affidavit dated 13.10.2016 has submitted that as the capital cost of FGD is approximately 10% of project capital cost, the additional O&M expenses of 10% of O&M norms has been claimed in accordance with the 2014 Tariff Regulations towards the O&M of FGD. The petitioner has further submitted that cost for operation and maintenance increases directly with the number of equipment. It has also stated that for Units having FGD, the number of equipment increases significantly and therefore the units using FGD have 10% higher cost than the cost of units without FGD. The petitioner has further submitted that O&M expenses is expected to rise with the same rate. Accordingly, the petitioner has claimed 10% additional O&M cost on account of FGD system.

114. The respondent, APDCL has submitted that in accordance with the 2014 Tariff Regulations, the O&M expenses for such projects are reimbursed as a whole on normative basis depending on the unit size without discrimination of new or existing station and is not allocated on itemwise basis. The respondent has further submitted that O&M expenses are controllable in nature and therefore the petitioner is expected to limit these expenses within the norms specified. The respondent has accordingly requested that extra 10% O&M may not be granted in deviation with the 2014 Tariff Regulations. In response, the petitioner vide affidavit dated 30.9.2016 has submitted that the units of this



generating station are being installed with FGD as per the conditions laid down by the Ministry of Environment and Forests, Govt to minimize SO₂ emissions. The petitioner has further submitted that for units having FGD, normative values of APC and O&M are not specified in the 2014 Tariff Regulations. It has also submitted that installation of FGD for the generating station has resulted in increase of APC by approximately 3.1016% over and above normative APC as provided in the 2014 Tariff Regulations. The petitioner has further submitted that the 2014 Tariff Regulations do not specify norms of O&M expense for the units having FGD and hence, relaxed APC and 10% additional O&M expenses under Regulation 54 of the 2014 Tariff Regulations may be allowed.

Enhancement of O&M Expenses

115. The petitioner has further submitted that salary/ wage revision of the employees of the petitioner will be due with effect from 1.1.2017. The petitioner has claimed O&M expenses in accordance with the 2014 Tariff Regulations and the escalation of 6.35% provided in the O&M expenses does not cover the enhanced employee cost w.e.f. 1.1.2017. The Petitioner has therefore prayed the Commission for liberty to seek enhancement in O&M expenses with effect from 1.1.2017 under Regulation 54 and 55 of the 2014 Tariff Regulations towards the increased salary on account of salary revision due from 1.1.2017, based on the actual payments whenever paid. In this regard, the respondent, APDCL has submitted that it is the duty of the petitioner to provide salary/wage revision of its employees from its own income/profit instead of passing burden to the respondent, which ultimately burdens the ultimate consumers. Therefore, the respondent has requested the Commission to direct petitioner for providing revised salary/wage to its employees from its own income/profit, instead of burdening the



ultimate consumers. In response, the petitioner vide affidavit dated 30.9.2016 has submitted that normative O&M expenditure as provided under the 2014 Tariff Regulations may not be sufficient to cover the actual O&M expenditure of the generating station after wage revision of employees. The petitioner has further submitted that the Commission in Statement of Reasons of the 2014 Tariff Regulations has stated that impact of wage revision shall only be given after checking impact of one full year and in case it is found that O&M norms provided under the 2014 Tariff Regulations are inadequate/ insufficient to cover all justifiable O&M expenses for the particular year including employee expenses, then balance amount may be considered for reimbursement.

116. The year-wise O&M expenses claimed by the petitioner are in terms of the Regulation 29 (1) (a) of the 2014 Tariff Regulations and hence allowed as under:

<i>(₹ in lakh)</i>		
2016-17	2017-18	2018-19
6750.00	7175.00	7627.50

117. As regards, the submissions of the petitioner for additional O&M of 10% of O&M norms for expenditure towards the installation of FGD system, we are of the considered view that the FGD system has not yet been installed and there are no defined norms/ standards relating O&M expenses of FGD system at present. Accordingly, prayer of the petitioner that additional O&M expenses on account of installation of FGD have not been allowed. We direct the petitioner to submit the O&M expenses relating to FGD system on actual basis at the time of truing-up. In case the norms for O&M expenses for FGD is notified prior to truing-up, same will be considered in the case of the petitioner. Based on this, the O&M expenses allowed are as under:



(₹ in lakh)

	2016-17	2017-18	2018-19
O&M Expenses under Regulation 29(1)(a)	6750.00	7175.00	7627.50
Additional O&M Expenses on account of FGD @ 10 % of O&M norms	0.00	0.00	0.00
Total O&M Expenses	6750.00	7175.00	7627.50

118. The petitioner is also directed to submit the year-wise actual O&M expenses incurred for FGD system at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

Operational Norms

119. The operational norms in respect of the generating station claimed by the petitioner are as under:

	2016-17	2017-18	2018-19
Target Availability (%)	83.00	85.00	85.00
Heat Rate (kCal/kWh)	2375.29	2375.29	2375.29
Auxiliary Energy Consumption (%)	9.0000	12.1016	12.1016
Specific Oil Consumption (ml/kWh)	0.50	0.50	0.50

120. The operational norms claimed by the petitioner are discussed as under:

Normative Annual Plant Availability Factor (NAPAF)

121. Regulation 36 (A) (a) of the 2014 Tariff Regulations provides as under:

“(a) All Thermal generating stations, except those covered under clauses (b), (c), (d) & (e) - 85%.

Provided that in view of the shortage of coal and uncertainty of assured coal supply on sustained basis experienced by the generating stations, the NAPAF for recovery of fixed charges shall be 83% till the same is reviewed.

The above provision shall be reviewed based on actual feedback after 3 years from 01.04.2014.”

122. The petitioner has considered the Target Availability of 83% during 2016-17 due to inadequate regular supply of quality coal and 85% during 2017-19. The petitioner was



directed to provide the details of storage capacity of coal yard in million tones and in response, the petitioner vide affidavit dated 5.9.2016 had submitted the total storage capacity for the generating station is 360000 MT. However, the petitioner has not furnished any details justifying the shortage of coal. Accordingly, the Target Availability of 85% has been considered for the period from 2016-17 to 2018-19. The petitioner is directed to submit documentary evidence in justification of shortage of coal along with details of month wise opening stock of coal, coal received during the month, closing stock of the coal for 2016-19 along with annual contracted quantity of coal at the time of truing-up of tariff of the generating station and the same will be considered in accordance with law.

Station Heat Rate (kCal/kWh)

123.Regulation 36(C)(b) of the 2014 Tariff Regulations, provides for maximum design unit heat rate (kcal/kwh) for calculation of Heat Rate of New Thermal generating station achieving COD on or after 1.4.2014. The petitioner has claimed the Station Heat Rate of 2375.29 kCal/kwh as per the 2014 Tariff Regulation. The petitioner has also provided the plant characteristics for the generating station as under:

Guaranteed Design Gross Turbine Cycle Heat Rate (kCal/kWh)	1943.70
Guaranteed Boiler Efficiency (%)	85.01
Multiplying Factor	1.045
Main steams pressure at turbine inlet (150 Kg/cm ²)	150.00
Main steam temperature at turbine inlet (°C)	537.00

124.From the above characteristics for the generating stations, the Gross Station Heat Rate (GSHR) works out as 2286.44 kCal/kWh. However, the petitioner has considered the GSHR of 2375.29 kCal/kWh. The petitioner has submitted that as per Regulation 36 (C)(b) of the 2014 Tariff Regulations, for coal-based and lignite-fired thermal generating



stations having pressure rating 150 Kg/cm², the maximum Turbine heat rate of 1955 kCal/kWh and minimum boiler efficiency for sub-bituminous Indian coal of 0.86, the maximum design unit heat rate is 2273 kCal/kWh. Accordingly, the petitioner has restricted the design heat rate to 2273 kCal/kWh as per above regulation. Hence, the petitioner has computed the heat rate of coal-based thermal generating stations = 1.045 X Design Heat Rate = 1.045x2273 kCal/kWh = 2375.29 kCal/kWh.

125. We have examined the matter. It is observed that as per Regulation 36 (C)(b) of the 2014 Tariff Regulations, the minimum boiler efficiency for sub-bituminous Indian coal is 0.86. Further, the petitioner in Form 2 of the petition has submitted the guaranteed design gross turbine cycle heat rate of 1943.70 kCal/kWh. Accordingly, the design heat rate works out to 2260.12 kCal/kWh. Hence, station heat rate of the generating station is worked out as 2361.82 kCal/kWh [= 1.045 X Design Heat Rate = 1.045x2260.12 kCal/kWh] and allowed.

126. As discussed above, the Station heat rate of 2361.82 kCal/kWh is allowed in this case.

Auxiliary Energy Consumption

127. Regulation 36(E)(a)(i) of the 2014 Tariff Regulations provides Auxiliary Energy Consumption of 8.50% for coal based generating stations of 250 MW with Natural Draft cooling tower or without cooling tower. It further provides that for thermal generating stations with induced draft cooling towers, the norms shall be further increased by 0.5%. Accordingly, the Auxiliary Energy Consumption to be considered is 9.00% as per the norms and the same is allowed for the purpose of tariff computations.



128. The petitioner has claimed Auxiliary Energy Consumption at 9.00% for the period 2016-19. The petitioner has further prayed that the Commission may allow the increase in Auxiliary Power Consumption of 3.1016% during the years 2017-18 and 2018-19 for FGD system to be installed in 2016-17 in exercise of the powers under Regulation 54 of the 2014 Tariff Regulations. Accordingly, the petitioner has claimed Auxiliary Energy Consumption as under:

2016-17	2017-18	2018-19
9.0000%	12.1016%	12.1016%

129. The petitioner has stated that Auxiliary Power Consumption of each unit of the project shall increase approximately by 7754 kW due to installation of FGD as additional component in flue gas path will result in increase of APC of generating station by approximately 3.1016% over and above normative Auxiliary Power Consumption as specified under the 2014 Tariff Regulations. The petitioner has submitted relevant documents like calculation of Auxiliary Power Consumption, guarantee certificate from OEM, technical data of induced draft fan, etc., and the extract of the Guarantee Declaration by their vendor M/s BHEL depicting guarantee figures of SO₂ removal efficiency of 95%, Lime Stone consumption of 10500 kg/hr and Auxiliary Power Consumption in FGD (one unit) of 4050 kW. Also, the petitioner has submitted the technical data of induced draft fan depicting maximum continuous power demand of an ID fan at Bongaigaon as 3695 kW. Accordingly, the petitioner has prayed that the Commission may allow the increase in APC of 3.1016%. The detailed calculation of additional APC due to installation of FGD as submitted by the petitioner is as under:-

S. No.	Description	Unit of Measurement	Value
1)	Unit Capacity	MW	250



S. No.	Description	Unit of Measurement	Value
2)	Power Consumption in FGD of one unit (as per the certificate of OEM)	MW	4.050
3)	Maximum Continuous power demand of both ID Fans at Bongaigaon (2X3.695 MW)	MW	7.39
4)	Maximum Continuous power demand of both ID Fans at BRBCL Nabinagar (2X1.843 MW) having similar sized units i.e. 250 MW	MW	3.686
5)	Additional power consumption of ID Fan at Bongaigaon (3-4)	MW	3.704
6)	Additional power consumption in one Unit of Bongaigaon due to FGD (2+5)	MW	7.754
7)	Additional APC of Bongaigaon Unit due to installation of FGD (6/1)	%	3.1016%
8)	Normative APC of 250 MW Units	%	9.0000%
9)	Total APC of Bongaigaon Units	%	12.1016%

130. The petitioner has also submitted that flue gas desulfurization (FGD) system package is being implemented by M/s BHEL through DUCON Technology, USA for the SO₂ removal. Due to various unit and common auxiliaries for FGD system such as absorber recirculation pumps, absorber oxidation air compressor(s), absorber oxidation tank agitators, gypsum bleed pumps, limestone gravimetric feeder, pulveriser and their integral auxiliaries, lime stone slurry pumps, vacuum pumps etc. It has also submitted that Auxiliary Power Consumption for all the equipments and auxiliaries related to FGD at 100% TMCR (250 MW unit load) shall be 4050 kW as per manufacture's document submitted by BHEL and Ducon for performance test procedure of FGD system. The petitioner has further submitted that FGD is installed as an additional component in flue gas path and it increases pressure drop of flue gas and, in order to overcome additional pressure drop of flue gas, higher capacity ID fan is provided at the station. It has stated that the requirement of ID fan is taken as per manufacturer's documents. The petitioner has stated that maximum continuous demand of ID fans installed at the generating station is high as compared to that of similar unit at Nabinagar thermal power generating



station due to installation of Flue Gas Desulphurization (FGD) at this generating station in line with the directions contained in MOEF clearance.

131. We have considered the matter. The specification submitted by the supplier M/s BHEL are the guaranteed specifications and are subject to actual performance of FGD as and when the same is installed. Further, as already discussed earlier while allowing additional capitalization due to installation of Flue Gas Desulphurisation (FGD) system, the Commission in the similar case in order dated 31.8.2016 in Petition No. 234/GT/2015 at Para 35 to 38 had allowed increase of 1% in Auxiliary Power Consumption due to FGD system installation. Accordingly, the increase of 1.00% is allowed, along with limestone Consumption of 10500 kg/hr which is subject to revision at the time of truing-up of tariff or the separate norms specified by the Commission, if any. Accordingly, as a special case, the Auxiliary Energy Consumption is allowed by an increase of 1% by relaxation of Regulation 14(1)(ii) in exercise of our Power to relax under Regulation 54 of the 2014 Tariff Regulations. The relaxation allowed as above shall not form a precedent in future. Accordingly, APC is allowed as under:

2016-17	2017-18	2018-19
9.00%	10.00%	10.00%

132. The petitioner is also directed to submit the actual Auxiliary Consumption of the FGD system at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

Specific fuel Oil Consumption

133. Regulation 36(D)(a) of the 2014 Tariff Regulations provides secondary fuel oil consumption of 0.50 ml/kWh for coal-based generating stations of the petitioner.



Accordingly, the secondary fuel oil consumption considered by the petitioner is as per regulation and is allowed.

Interest on working capital

134. Sub-section (a) of clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

“28. Interest on Working Capital:

(1) The working capital shall cover

(a) Coal-based/lignite-fired thermal generating stations

(i) Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(ii) Cost of coal or lignite and limestone for 30 days for generation corresponding to the normative annual plant availability factor;

(iii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;

(iv) Maintenance spares @ 20% of operation and maintenance expenses specified in regulation 29;

(v) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the normative annual plant availability factor; and

(vi) Operation and maintenance expenses for one month.

Fuel Components and Energy Charges in working capital

135. The petitioner has claimed cost for fuel components in working capital based on “as received” GCV of coal procured and secondary fuel oil for the preceding three months of January, 2016, February, 2016 and March, 2016 as under:

		<i>(₹ in lakh)</i>		
Sl. No.		2016-17	2017-18	2018-19
1A	Cost of Coal for Stock for 30 days (non pit head)	4431.86	4538.65	4538.65
1B	Cost of Coal for Generation for 30 days	4431.86	4538.65	4538.65



Sl. No.		2016-17	2017-18	2018-19
1C	Cost of lime stone for Stock 30 days	0.00	268.10	268.10
1D	Cost of Lime Stone for Generation for 30 days	0.00	268.10	268.10
2	Cost of Main Secondary Fuel Oil for 2 months	52.05	53.30	53.30

Limestone

136. The petitioner in Form 13F has considered the weighted average price of limestone as ₹3617/MT in January 2016 to March 2016. In this regard, the petitioner was asked to submit the basis of considering such price of limestone and submit documentary evidence such as sample bills in support of the same. In response, the petitioner has submitted that as per Budgetary offer of M/s Uthaya Chemicals to Bongaigaon generation project, base price of lime stone is ₹2300.00 per MT. It has also submitted the copy of the said budgetary offer. It has submitted that CST @ 2% is applicable and the same works out to ₹46.00 per MT. The petitioner has considered freight as ₹1200.00 per MT and has worked out the total amount of offer as ₹3546.00 per MT. It has further submitted that entry tax @2% on this amount is levied for ₹71.00 per MT. Hence, the petitioner has claimed the tentative price of limestone as ₹3617.00 per MT in the instant petition.

137. The petitioner has further submitted that the FGD system package is being implemented by M/s BHEL, through DUCON technology, USA with the SO₂ removal efficiency of 95% at a normative specific limestone Consumption of 0.0478 kg/kWh considering the consumption of lime stone consumption @ 10500 kg/hr at normative availability of 83%. Accordingly, the petitioner has claimed energy charge based on the landed price of coal and oil for the months of January 2016, February 2016 and March 2016. Further, the petitioner has submitted the estimated landed price of lime stone @ Rs 3617/MT including transportation cost.



138. We have examined the matter. It is observed that the petitioner has proposed the installation of FGD system package in 2016-17 and consumption of limestone from 31.3.2017 onwards. Further, the petitioner has not furnished Form-15 regarding the actual limestone price for the month of January 2016, February 2016 and March 2016. In this regard, the Commission in order dated 31.8.2016 in Petition No. 234/GT/2015 while tariff determination for Vindhyachal Super Thermal Power Station Stage-V (500 MW) of NTPC Ltd. from the date of commercial operation (30.10.2015) to 31.3.2019 had considered the estimated landed price of lime stone @ Rs 1600/MT (excluding taxes) including Transportation Cost. The petitioner in this petition has submitted the estimated landed price of lime stone @ Rs 3617/MT including transportation cost, which is quite higher. Considering the fact that the Bongaigaon generating station is in remote location of Assam and transportation cost could be higher, we have considered the limestone cost of @ Rs 2000/MT including Transportation Cost for Bongaigaon generating station for working out the interest on working capital at this stage. However, the petitioner is directed to submit the Form-15 regarding the actual limestone price and submit the details of actual Limestone consumption of the FGD system along with copy of invoices of the limestone company at appropriate time.

Coal

139. The issue of "as received" GCV for computation of energy charges was challenged by NTPC and other generating companies through the writ petition before in the Hon'ble High Court of Delhi. The writ petition was heard on 7.9.2015 and Hon'ble High Court of Delhi had directed that the Commission shall decide the place from where the sample of



coal should be taken for measurement of GCV of coal on as received basis within 1 month on the request of petitioners.

140. As per the directions of the Hon'ble High Court, the Commission vide order dated 25.1.2016 in Petition No. 283/GT/2014 has decided as under:

“58. In view of the above discussion, the issues referred by the Hon'ble High Court of Delhi are decided as under:

(a) There is no basis in the Indian Standards and other documents relied upon by NTPC etc. to support their claim that GCV of coal on as received basis should be measured by taking samples after the crusher set up inside the generating station, in terms of Regulation 30(6) of the 2014 Tariff regulations.

(b) The samples for the purpose of measurement of coal on as received basis should be collected from the loaded wagons at the generating stations either manually or through the Hydraulic Auger in accordance with provisions of IS 436(Part1/Section1) -1964 before the coal is unloaded. While collecting the samples, the safety of personnel and equipment as discussed in this order should be ensured. After collection of samples, the sample preparation and testing shall be carried out in the laboratory in accordance with the procedure prescribed in IS 436(Part1/Section1)-1964 which has been elaborated in the CPRI Report to PSERC.”

141. Further, the petitioner has claimed Energy Charge Rate (ECR) of ₹3.234 /kWh in 2016-17 and ₹3.545 /kWh during in the years 2017-18 and 2018-19 based on the weighted average price, GCV of coal (as received basis) & oil procured and burnt for the preceding three months.

142. It is observed that the petitioner has not placed on record the GCV of coal on “as received” basis taken from the loaded wagons at the unloading point, though the petitioner was statutorily required to furnish such information with effect from 1.4.2014. In compliance with the direction of the Hon'ble High Court of Delhi, the Commission in its order dated 25.1.2016 in Petition No. 283/GT/2014 has clarified that the sample for measurement of GCV of coal on “as received” basis shall be taken from the loaded wagons at the unloading point either manually or through the Hydraulic Auger. The



petitioner has not submitted the required data regarding measurement of GCV of coal in compliance with the directions contained in the said order dated 25.1.2016. The present petition cannot be kept pending till the petitioner submits the required information. Hence, the Commission has decided to compute the energy charges by provisionally taking the GCV of coal on as “billed basis” and allowing on adjustment for total moisture as per the formula given as under:

$$\frac{\text{GCV X (1-TM)}}{(1 - \text{IM})}$$

Where: GCV=Gross Calorific value of coal
 TM=Total moisture
 IM= Inherent moisture

143. In view of the above, the cost for fuel components in working capital have been computed at 85% for the period from 2016-17 to 2018-19 and based on “as billed” GCV of coal and price of coal procured and secondary fuel oil for the preceding three months from January, 2016 to March, 2016 and allowed as under:-

<i>(₹ in lakh)</i>				
Sl. No.	Particulars	2016-17	2017-18	2018-19
1A	Cost of coal towards stock- 30 days	3605.39	3605.39	3605.39
1B	Cost of coal for generation- 30 days	3605.39	3605.39	3605.39
1C	Cost of limestone for stock- 30 days	0.00	142.80	142.80
1D	Cost of limestone for generation- 30 days	0.00	142.80	142.80
2	Cost of Main Secondary Fuel Oil for 2 months	53.30	53.30	53.30

144. The petitioner is also directed to submit the actual limestone price and actual limestone consumption of the FGD system at appropriate time.

Maintenance spares

145. The petitioner has claimed maintenance spares in working capital as under:

<i>(₹ in lakh)</i>		
2016-17	2017-18	2018-19
1350.00	1578.50	1678.05



146.Regulation 28(1)(a)(iv) of the 2014 Tariff Regulations provide for maintenance spares @ 20% of the O&M expenses as specified in Regulation 29. As specified in Regulation 29 (2) of the 2014 Tariff Regulations the maintenance spares @ 20% of the operation & maintenance expenses including water charges, allowed are as under:

<i>(₹ in lakh)</i>		
2016-17	2017-18	2018-19
1350.00	1435.00	1525.50

Receivables

147.Receivables equivalent to two months of capacity charge and energy charge for sale of electricity has been calculated on normative plant availability factor. Accordingly, receivables have been worked out on the basis of two months of fixed and energy charges (based on primary fuel only) as under:

<i>(₹ in lakh)</i>			
	2016-17	2017-18	2018-19
Variable Charges -2 months	7364.23	7653.81	7653.81
Fixed Charges - 2 months	7552.16	7881.62	7784.01
Total	14916.40	15535.43	15437.82

O&M expenses for 1 month

148.O&M expenses for 1 month claimed by the petitioner for the purpose of working capital are as under:

<i>(₹ in lakh)</i>		
2016-17	2017-18	2018-19
562.50	657.71	699.19

149.Based on the O&M expense norms specified by the Commission, the O&M expenses for 1 month is allowed as under:

<i>(₹ in lakh)</i>		
2016-17	2017-18	2018-19
562.50	597.92	635.63



Rate of interest on working capital

150. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides as under:

“Interest on working Capital: (3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later.”

151. In terms of the above regulations, SBI PLR of 12.80% (Bank rate 9.30% + 350 bps) has been considered for the purpose of calculating interest on working capital. Interest on working capital has been computed as under:

	(₹ in lakh)		
	2016-17	2017-18	2018-19
Cost of coal towards stock- 30 days	3605.39	3605.39	3605.39
Cost of coal for generation- 30 days	3605.39	3605.39	3605.39
Cost of limestone towards stock- 30 days	0.00	142.80	142.80
Cost of limestone for generation- 30 days	0.00	142.80	142.80
Cost of secondary fuel oil – 2 month	53.30	53.30	53.30
O&M expenses – 1 month	562.50	597.92	635.63
Maintenance Spares	1350.00	1435.00	1525.50
Receivables – 2 months	14916.40	15535.43	15437.82
Total working capital	24092.99	25118.04	25148.64
Rate of interest (%)	12.80%	12.80%	12.80%
Interest on working capital	3083.90	3215.11	3219.03

152. Accordingly, annual fixed charges approved for the generating station for the period from 1.4.2016 to 31.3.2019 is summarized as under:

	(₹ in lakh)		
	2016-17	2017-18	2018-19
Depreciation	10751.80	11502.08	11520.58
Interest on loan	12311.36	12131.66	11049.72
Return on equity	12415.93	13265.90	13287.25
Interest on working capital	3083.90	3215.11	3219.03
O&M expenses	6750.00	7175.00	7627.50
Total	45312.99	47289.75	46704.08



Month to Month Energy Charges

153. Clause 6 sub-clause (a) of Regulation 30 of the 2014 Tariff Regulations provides for computation and payment of Capacity Charge and Energy Charge for thermal generating stations:

“6. Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to

three decimal place in accordance with the following formula:

(a) For coal based and lignite fired stations

$$ECR = \{(GHR - SFC \times CVSF) \times LPPF / CVPF + SFC \times LPSFi + LC \times LPL\} \times 100 / (100 - AUX)$$

Where,

AUX = Normative auxiliary energy consumption in percentage.

CVPF = Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic metre, as applicable.

CVSF = Calorific value of secondary fuel, in kCal per ml.

ECR = Energy charge rate, in Rupees per kWh sent out.

GHR = Gross station heat rate, in kCal per kWh.

LC = Normative limestone consumption in kg per kWh.

LPL = Weighted average landed price of limestone in Rupees per kg.

LPPF = Weighted average landed price of primary fuel, in Rupees per kg

154. The petitioner shall compute and claim the Energy Charges on month to month basis from the beneficiaries based on the formulae given under Regulation 30(6)(a) of the 2014 Tariff Regulations, 2014 read with Commission's order dated 25.1.2016 in Petition No. 283/GT/2014. The petitioner has been directed in order dated 19.2.2016 in Petition No. 33/MP/2014 to introduce helpdesk to attend to the queries of the beneficiaries with regard to the Energy Charges. Accordingly, contentious issues if any, which arise regarding the Energy Charges, should be sorted out with the beneficiaries at the Senior Management level.

Energy Charge Rate (ECR)

155. The petitioner has claimed an Energy Charge Rate (ECR) of ₹3.234 /kWh for 2016-17 and ₹3.545 /kWh for the years 2017-18 and 2018-19.



156. The respondent, MSPDCL has submitted that average power procurement cost of Manipur from various central generating stations is currently ₹2.86 per unit, against which the power purchase rate of the generating station is proposed by the petitioner as ₹5.80 per unit. The respondent has further submitted that proposed power purchase cost by the petitioner is more than double the current average power procurement cost of the petitioner and this will create financial burden on the said respondent and the same will then need to be passed on to the consumers through substantial increase in tariff. The respondent has further submitted that the estimated energy to be available from all the three units of the plant to Manipur will be approximately be 270 MUs in a year, which will put an additional burden of around ₹8000 lakh in a year ($=270*(5.80-2.86)/10$) as compared to the average power procurement cost at present. It has also stated that the total approved annual revenue requirement of the MSPDCL for 2016-17 is ₹49700 lakh and the approved revenue from sale of power is ₹31500 lakh. It has further submitted that the additional burden of ₹8000 lakh is 16% of the approved ARR and more than 25% of the approved revenue, which implies that if the proposed tariff is approved and the entire burden is passed to the consumers, it would require a tariff increase of more than 25% just to meet the additional cost of one plant. This is unjustified for the distribution licensee and the consumers.

In response, the petitioner vide affidavit dated 6.7.2016 has submitted that petitioner has set up the generating station after the requisition of power received from various beneficiaries including the State of Manipur based on which the PPA was signed on 29.09.2007 between the petitioner and Government of Manipur for purchase of power from the generating station to meet long term power requirements of Manipur. The petitioner has further submitted that decision of investment of huge capital in the generating station was based on the long term power requirements of the beneficiaries including Manipur and only after obtaining their consent in the PPA to service the cost of the project through tariff to be determined by the Commission. Also, it has submitted that PPA provides that the final allocation to Manipur and other beneficiaries from the



generating station shall be as decided by MOP, GOI and the tariff for the electricity supplied from the generating station would be determined by the Commission. The petitioner has further submitted that MOP, GOI vide letter dated 13.10.2008 has allocated 47 MW of power from the generating station to Manipur and that tariff in the instant petition has been worked out in the petition as per the 2014 Tariff Regulations.

157. Accordingly, the base energy charge of ₹2.608 /kWh in 2016-17 and ₹2.741 /kWh in the years 2017-18 and 2018-19 determined based on the price and billed GCV of fuel for the preceding three months and calculated in accordance with the 2014 Tariff Regulations is allowed as under:

	Unit	2016-19	2017-18	2018-19
Capacity	MW	250 MW	250 MW	250 MW
Gross Station Heat Rate	kCal/kWh	2361.82	2361.82	2361.82
Auxiliary Energy Consumption	%	9.00%	10.00%	10.00%
Specific Fuel Oil Consumption	ml/kWh	0.5	0.5	0.5
Weighted Average GCV of Oil	kCal/l	9424.75	9424.75	9424.75
Weighted Average GCV of Coal	kCal/kg	6244.38	6244.38	6244.38
Weighted Average Price of Coal	₹/MT	6242.67	6242.67	6242.67
Weighted Average Price of Oil	₹/kl	34361.18	34361.18	34361.18
Weighted Average Price of Limestone	₹/MT	0.00	2000.00	2000.00
Rate of Energy Charge ex-bus per kWh	₹/kWh	2.608	2.741	2.741

Taxes and duties

158. The petitioner has submitted that petition is exclusive of any statutory taxes, levies, duties, cess, environmental cess, service tax etc. or any other kind of imposition(s) whatsoever imposed/ charged by any Government (Central/ State) and/ or any other local bodies/ authorities/ regulatory authorities in relation to generation of electricity



including auxiliary consumption or any other types of consumption including water, transmission of power, environmental protection, sale or supply of power/ energy, and/ or in respect of any of its installations associated with generating stations and/ or on transmission system. The petitioner has further sought for permitting such charges in the monthly bills raised by the petitioner and the same shall be payable by respondents in the proportion to annual capacity charges payable by them.

159. The respondent, APDCL has submitted that petitioner should be directed to approach the Commission on case to case basis in case of levy of any other taxes, levies, duties, cess, service tax etc. by any statutory bodies. In response, the petitioner vide affidavit dated 30.9.2016 has submitted that the amount of taxes/ duties/ cess/ levies etc. payable by the petitioner to the authorities concerned on account of the said taxes/ duties/ cess/ levies etc. is required to be borne and additionally paid to the petitioner and the same may be permitted to be charged in the monthly bills raised by the petitioner and the same shall be payable by respondents in the proportion to annual capacity charges payable by them. We are of the considered view that charges, if any applicable, shall be reimbursable in accordance with the 2014 Tariff Regulations.

Application Fee and Publication Expenses

160. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2016-19. The petitioner has deposited the filing fees for the period 2016-17 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, we direct



that the petitioner shall be entitled to recover pro rata, the filing fees and the expenses incurred on publication of notices for the period 2016-17 directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period 2017-19 shall be recovered pro rata after deposit of the same and production of documentary proof.

161. The annual fixed charges determined as above is subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

162. Petition No. 45/GT/2016 is disposed of in terms of the above.

Sd/-
(Dr. M. K. Iyer)
Member

Sd/-
(A.S. Bakshi)
Member



DETAILS OF LOAN BASED ON ACTUAL LOAN PORTFOLIO (2016-19)

(₹ in lakh)

	Interest Rate (%)	Loan deployed as on 1.4.2016	Additions during the tariff period	Total
Mizuho II A	2.27%	20.06	0.00	20.06
Mizuho II B	2.27%	915.98	0.00	915.98
5.625% Fixed Rate Notes due 2021	7.18%	52081.65	0.00	52081.65
4.75% EURO BONDS 2022	5.02%	16231.95	0.00	16231.95
4.375% EURO BONDS 2024	4.63%	6472.58	0.00	6472.58
4.25% Fixed Rate Notes due 2026	4.49%	1806.10	0.00	1806.10
Bonds- XXVIII-repayment on 21.11.2018	11.03%	2500.00	0.00	2500.00
Bonds- XXX-repayment on 05.05.2019	7.92%	6000.00	0.00	6000.00
Bonds- XLII-repayment on 25.01.2023	9.03%	1700.00	0.00	1700.00
Bonds- XLVII-repayment on 04.10.2012	8.87%	3500.00	0.00	3500.00
Bonds- XLVIII-repayment on 07.03.2023	8.76%	2000.00	0.00	2000.00
Bonds- XLIX-repayment on 04.04.2023	8.83%	2500.00	0.00	2500.00
Bonds- L-1A repayment on 16.12.2023	8.44%	1812.67	0.00	1812.67
Bonds- L-2A repayment on 16.12.2028	8.51%	928.37	0.00	928.37
Bonds- L-3A repayment on 16.12.2033	8.69%	1158.96	0.00	1158.96
Bonds- L-1B repayment on 16.12.2023	8.69%	774.95	0.00	774.95
Bonds- L-2B repayment on 16.12.2028	8.76%	339.46	0.00	339.46
Bonds- L-3B repayment on 16.12.2033	8.94%	1485.60	0.00	1485.60
Bonds- LI-B repayment on 04.03.2029	8.66%	1600.00	0.00	1600.00
Bonds- L-II repayment on 24.03.2024	9.37%	3400.00	0.00	3400.00
Bonds- L-III repayment on 22.09.2024	9.20%	11000.00	0.00	11000.00
Bonds- L-IV repayment on 25.03.2023	8.52%	54000.00	0.00	54000.00
Bonds- L-VII repayment on 15.12.2025	8.22%	500.00	0.00	500.00
Bonds- L-VIII repayment on 31.12.2020	8.21%	600.00	0.00	600.00
Bonds- L-IX repayment on 24.02.2021	8.36%	3900.00	0.00	3900.00
Allahabad Bank -III (T1 D1)	9.70%	3500.00	0.00	3500.00
Andhra Bank -III (T1 D1)	9.75%	1000.00	0.00	1000.00
Bank of Maharashtra -III (T1 D2)	9.70%	5000.00	0.00	5000.00
Canara Bank -III (T1 D3)	9.65%	10000.00	0.00	10000.00
Dena Bank -II (T1 D1)	9.70%	5000.00	0.00	5000.00
Dena Bank -II (T1 D6)	9.70%	5000.00	0.00	5000.00
HDFC BANK LIMITED-II (T1 D4)	9.30%	3500.00	0.00	3500.00
HUDCO LIMITED (T1 D1)	9.65%	1500.00	0.00	1500.00
INDIAN BANK -II (T1 D3)	9.65%	4000.00	0.00	4000.00
INDIAN OVERSEAS BANK -III (T1 D8)	9.90%	10000.00	0.00	10000.00



	Interest Rate (%)	Loan deployed as on 1.4.2016	Additions during the tariff period	Total
INDIAN OVERSEAS BANK -III (T1 D9)	9.90%	8000.00	0.00	8000.00
INDIAN OVERSEAS BANK -III (T1 D11)	9.90%	1500.00	0.00	1500.00
LIC-IV (T1 D1)	9.64%	17000.00	0.00	17000.00
LIC-V (T1 D2)	11.00%	2500.00	0.00	2500.00
PFC - V (T1 D4)	9.66%	8000.00	0.00	8000.00
PFC - V (T1 D6)	9.32%	10000.00	0.00	10000.00
PFC - V (T1 D8)	9.39%	5000.00	0.00	5000.00
PFC - V (T1 D12)	8.67%	2500.00	0.00	2500.00
PFC - V (T1 D18)	9.36%	14000.00	0.00	14000.00
PFC - V (T1 D19)	8.77%	5000.00	0.00	5000.00
PFC - V (T1 D20)	8.63%	2000.00	0.00	2000.00
PFC - V (T1 D21)	9.92%	2000.00	0.00	2000.00
PFC - V (T1 D22)	9.97%	2000.00	0.00	2000.00
PFC - V (T1 D23)	10.00%	4000.00	0.00	4000.00
PFC - V (T1 D25)	10.17%	6000.00	0.00	6000.00
PFC - V (T1 D28)	10.06%	12500.00	0.00	12500.00
PFC - V (T1 D33)	8.98%	2500.00	0.00	2500.00
PFC - V (T1 D35)	8.77%	5700.00	0.00	5700.00
PFC - V (T1 D38)	8.76%	6500.00	0.00	6500.00
P&SB - I (T1 D3)	9.75%	8000.00	0.00	8000.00
SBI-V (T1 D1)	9.30%	4000.00	0.00	4000.00
SBI-V (T1 D3)	9.30%	2500.00	0.00	2500.00
SBI-V (T1 D6)	9.30%	3000.00	0.00	3000.00
SBI-V (T1 D7)	9.30%	2500.00	0.00	2500.00
SBI-VI (T1 D4)	9.30%	3000.00	0.00	3000.00
SBI-VI (T1 D5)	9.30%	2500.00	0.00	2500.00
SBI-VI (T1 D7)	9.30%	5000.00	0.00	5000.00
SBI-VII (T1 D3)	9.30%	4600.00	0.00	4600.00
SBI-VII (T1 D4)	9.30%	2500.00	0.00	2500.00
SBI-VII (T1 D6)	9.30%	10000.00	0.00	10000.00
SBI-VII (T1 D7)	9.30%	4000.00	0.00	4000.00
SBI-VII (T1 D8)	9.30%	3400.00	0.00	3400.00
SBI-VII (T1 D10)	9.30%	6000.00	0.00	6000.00
SBI-VII (T1 D19)	9.30%	1800.00	0.00	1800.00
SBI-VIII (T1 D2)	9.30%	10000.00	0.00	10000.00
SBI-VIII (T1 D4)	9.30%	6100.00	0.00	6100.00
SBI-VIII (T1 D5)	9.30%	1000.00	0.00	1000.00
SBI-VIII (T1 D7)	9.30%	1100.00	0.00	1100.00
SBI-VIII (T1 D8)	9.30%	2300.00	0.00	2300.00
SBI-VIII (T1 D11)	9.30%	3000.00	0.00	3000.00



	Interest Rate (%)	Loan deployed as on 1.4.2016	Additions during the tariff period	Total
SBI-VIII (T1 D12)	9.30%	3200.00	0.00	3200.00
SBI-VIII (T1 D13)	9.30%	1400.00	0.00	1400.00
SBI-VIII (T1 D14)	9.30%	2200.00	0.00	2200.00
SBI-VIII (T1 D15)	9.30%	2000.00	0.00	2000.00
SBI-VIII (T1 D16)	9.30%	6000.00	0.00	6000.00
Syndicate Bank (T1 D1)	9.70%	2000.00	0.00	2000.00
Syndicate Bank (T1 D7)	9.70%	7000.00	0.00	7000.00
Syndicate Bank (T1 D8)	9.70%	5000.00	0.00	5000.00
Syndicate Bank (T1 D10)	9.70%	10000.00	0.00	10000.00
Union Bank of India -II (T1 D11)	9.65%	5000.00	0.00	5000.00
United Bank of India -III (T1 D3)	9.65%	5000.00	0.00	5000.00
Total		477528.32	0.00	477528.32

**CALCULATION OF WEIGHTED AVERAGE RATE OF INTEREST ON LOAN FOR
TARIFF PERIOD 2016-19**

	(₹ in lakh)		
	2016-17	2017-18	2018-19
Gross loan - Opening	477528.32	477528.32	477528.32
Cumulative repayments of Loans upto previous year	67024.22	92979.63	121185.04
Net loan – Opening	410504.10	384548.69	356343.28
Add: Drawal(s) during the Year	0.00	0.00	0.00
Less: Repayment (s) of Loans during the year	25955.41	28205.41	30491.13
Net loan – Closing	384548.69	356343.28	325852.15
Average Net Loan	397526.40	370445.98	341097.72
Interest on loan	34551.76	31967.75	29144.02
Weighted average Rate of Interest on Loan	8.6917%	8.6295%	8.5442%

