

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 135/GT/2015**

**Coram:**

**Shri Gireesh B. Pradhan, Chairperson  
Shri A.K.Singhal, Member  
Shri A. S. Bakshi, Member  
Dr. M. K. Iyer, Member**

**Date of Order: 11.7.2017**

**In the matter of**

Approval of tariff of coal based NLC Tamil Nadu Power Limited TPS (1000 MW) for the period from the date of declaration of commercial operation of Units-I &II till 31.3.2019

**And**

**In the matter of**

NLC Tamil Nadu Power Limited  
(*a joint venture of NLC & TANGEDCO*)  
Harbour Estate, Tuticorin-628004

**...Petitioner**

Vs

1. Transmission Corporation of Andhra Pradesh  
VidyutSoudha, Khairatabad,  
Hyderabad – 500082
2. Southern Power Distribution Company of Andhra Pradesh Ltd,  
D. No: 19-13-65/A,Srinivasapuram  
Tiruchhanur Road, KesavayanaGunta,  
Tirupati (AP) – 517501
3. Eastern Power Distribution Company of Andhra Pradesh Ltd  
Corporate Office P&T Colony,Seethammadhara,  
Visakhapatnam (AP) – 530013
4. Transmission Corporation of Telangana Ltd  
VidyutSoudhaKhairatabad,  
Hyderabad – 500082
5. Northern Power Distribution Company of Telangana Ltd.  
H.No 1-1-504, Opp. NIT petrol pump,  
Chaityanarayani colony, Hanamkonda  
Warangal (Telangana) – 506004
6. Southern Power Distribution Company of Telangana Ltd  
2<sup>nd</sup> Floor,H.No. 6-1-50,Mint Compound  
Hyderabad – 500063
7. Power Company of Karnataka Ltd  
KPTCL Complex, KaveriBhawan  
Bangalore – 560009
8. Bangalore Electricity Supply Company Ltd  
Krishna Rajendra Circle  
Bangalore – 560001

9. Mangalore Electricity Supply Company Ltd  
Paradigm Plaza A.B Shetty circle  
Mangalore – 560009

10. Chamundeshwari Electricity Supply Company Ltd  
Corporate Office No. 927, L.J Avenue  
New Kantharaj Urs Road, Saraswathipuram  
Mysore – 570009

11. Gulbarga Electricity Supply Company Ltd  
Main Road, Gulbarga  
Karnataka – 585102

12. Hubli Electricity Supply Company Ltd  
PB.Road, Navanagar  
Hubli – 580025

13. Kerala State Electricity Board  
VaidyuthiBavanam, Pattom  
Thiruvananthapuram – 695004

14. Puducherry Electricity Department  
137, NSC Bose Salai  
Puducherry – 605001

15. Tamilnadu Generation and Distribution Corporation Ltd  
NPKRR Maaligai, 144, Annasalai,  
Chennai – 600002

### **...Respondents**

#### **Parties present:**

Shri M.G. Ramachandran, Advocate, NLC  
Ms. AnushreeBardhan, Advocate, NLC  
Shri S. GnanaPrabhakaran, NLC  
Shri S. Vallinayagam, Advocate, TANGEDCO  
Shri R. Jayaprakash, TANGEDCO

### **ORDER**

This petition has been filed by the petitioner, NLC TamilNadu Power Limited (in short 'NTPL') for approval of tariff of NLC TamilNadu Power Limited TPS (2 x 500MW) ('the generating station/project') for the period from the date of commercial operation (COD) of Units-I & Unit-II till 31.3.2019, based on the provisions of the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2014 ('the 2014 Tariff Regulations').

2. The petitioner is a joint venture Company of Neyveli Lignite Corporation (NLC) and TANGEDCO and is a subsidiary of NLC Ltd. The said joint venture company was incorporated on 18.11.2005 to implement the power project (coal fired) at Tuticorin and the promoters namely, NLC and TNEB/TANGEDCO share the equity in ratio of 89:11 respectively. This coal based thermal power

project is located at Harbour estate of Tuticorin Port Trust (TPT) and is adjacent to the Tuticorin Thermal Power station in Tamilnadu.

3. The Investment Approval of the project comprising of two units of 500 MW each was sanctioned on 12.5.2008 by the Govt. of India at a cost of ₹4909.54 crore at April, 2007 Price Level. As per Govt. of India guidelines, the Revised Cost Estimate (RCE) was submitted and approved on 9.12.2013 by GOI. The approved project cost as per RCE-I is ₹6602.74 crore, including IDC, at June, 2013 Price Level. Further, RCE-II of ₹7293.48 crore was approved by GOI on 27.4.2016 including IDC of ₹1379.15 crore of Foreign Exchange component of ₹93.11 crore equivalent to US \$18.10 million at June 2015 price level. The petitioner has entered into Power Purchase Agreements (PPA) with the respondent beneficiaries and the Ministry of Power, Govt of India has allocated the power generated from this project amongst the respondent beneficiaries on 9.8.2010, as under:

Tamil Nadu	387 MW
Andhra Pradesh &Telangana	254.6 MW
Karnataka	157.9 MW
Kerala	72.5 MW
Puducherry	9.5 MW
Un-allocated	118.5 MW

4. The petitioner vide affidavit dated 8.5.2015 had sought approval of tariff of the generating station from the anticipated date of commercial operation of Units-I (30.4.2015) and Unit-II (15.5.2016) till 31.3.2019. However, the Commission vide order dated 13.10.2015 had granted interim tariff on *pro rata* basis for the period from the anticipated COD of Units-I&II till 31.3.2017as under:

	<b>Anticipated COD of Unit-I (30.4.2015to 14.5.2015)</b>	<b>Anticipated COD of Unit-II (15.5.2015to 31.3.2016)</b>	<b>2016-17</b>
Return on Equity	600.20	22925.45	26058.12
Interest on Loan	762.97	28187.41	29796.34
Depreciation	528.32	20179.83	21742.08
Interest on Working Capital	196.33	8200.84	9291.33
O&M Expenses	348.57	14965.08	18080.00
<b>Total</b>	<b>2436.38</b>	<b>94458.61</b>	<b>104967.87</b>

5. Pursuant to the COD of Unit-I on 18.6.2015 and Unit-II on 29.8.2015, the petitioner vide affidavit dated 29.3.2016 amended the petition based on actual COD of the units and has sought approval of

tariff from the COD of the Units-I & II till 31.3.2019. Accordingly, the annual fixed charges claimed by the petitioner for the period from COD of Unit-I (2015-16) till 2018-19 is as under:

	2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
	18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				
Depreciation	3195	19302	31758	31758	31758	
Interest on Loan	4235	25021	38622	34830	31823	
Return on Equity	3613	21833	36994	36994	36994	
Interest on Working Capital	1004	6124	10515	10618	10643	
O & M Expenses	1673	10039	18080	19220	20430	
<b>Total</b>	<b>13720</b>	<b>82318</b>	<b>135971</b>	<b>133420</b>	<b>131649</b>	

6. In compliance with the directions of the Commission, the petitioner has filed additional information with copies to the respondents. The respondents, TANGEDCO and KSEB have filed their replies and the petitioner has filed its rejoinder to the said replies. The matter was heard on 29.9.2016 and the Commission after directing the petitioner to file certain additional information reserved its orders in the petition. Based on the submissions of the parties and the documents available on record, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

### Commissioning schedule

7. The Investment approval of the project was sanctioned by the Govt. of India on 12.5.2008 and the main plant was awarded on 28.1.2009. The schedule date of declaration of commercial operation of Unit-I was 11.3.2012 and Unit-II was 11.8.2012. As stated, the actual date of commercial operation of Unit-I is 18.6.2015 and Unit-II is 29.8.2015, thereby resulting in the delay of 39.23 and 36.60 months from the schedule, as summarized hereunder:

Unit No	Original schedule as per Ministry of Coal, GOI	Actual COD	Time overrun (in months)
I	11.3.2012	18.6.2015	39.23
II	11.8.2012	29.8.2015	36.60

### Admissibility of additional ROE

8. The date of original investment approval for the project is 12.5.2008. In order to avail the additional ROE of 0.5%, the completion time line specified under the 2014 Tariff Regulations for green field projects (Coal/lignite) with a unit size of 500 MW/600 MW from the date of investment approval is

44 months, with subsequent units at an interval of 6 months each. The original schedule as per MoC guidelines were 11.3.2012 and 11.8.2012 for Unit- I and Unit-II of the generating station respectively and the actual COD of Unit-I is 18.6.2015 and Unit-II is 29.8.2015. Hence, there is a time overrun of 39.23 months in the COD of Unit-I and 36.60 months in the COD of Unit-II, from the date of investment approval. As the units of the project have been declared under commercial operation beyond the completion timeline specified under the 2014 Tariff Regulations, we are not inclined to grant additional ROE of 0.5%. Accordingly, the generating station is not entitled to the additional return on equity of 0.5% which is allowed for timely completion of the Project.

### **Time Overrun**

9. The petitioner vide affidavit dated 8.5.2015 has stated that the delay from the RCE is 14 months for Unit-I and considering the first investment approval, it is 37 months. It is also submitted that site encumbrances and technical issues such as change of foundation type to suit local soil conditions, etc. which are beyond the control of the petitioner have contributed to the delay during the construction period. The petitioner has further submitted that the project could not proceed faster during/ after the first synchronization due to unforeseen technical problems which surfaced while operating the unit. The petitioner vide Annexure-VI of the said affidavit has furnished the causes of delay through delay analysis and endorsed by the project consultant M/s MECON. The petitioner has submitted that due to various delays in rerouting of existing power lines and water lines along the length and breadth of the project, unforeseen rain, unprecedented wind power and commissioning delays are major contributing factors for the delay in commissioning of the plant. A cursory view of the delay in achieving milestone activities as tabulated by the petitioner is as under:

<b>SI.No.</b>	<b>Milestone/ Event</b>	<b>Occurrence date</b>	<b>Quantified delay</b>
a	Unit-I Boiler Light up	19.3.2014	29 months
	Unit-II Boiler Light up	23.9.2014	30 months
b	Unit-I Synchronization		
	i) With coal firing	10.3.2015	37 months
c	Unit-I COD	30.4.2015	36 months
d	Unit-II COD	15.5.2015	33 months

10. Accordingly, the petitioner has furnished the reasons for the delay during the project execution stage and the delay during the commissioning and has submitted that the same were beyond the control of the petitioner. The petitionervide affidavit dated 29.3.2016 has furnished the reasons for delay in declaration of COD of the project, under the following heads:

### **Delay due to Environmental clearance**

#### **(a) Forest clearance**

(i) The petitioner had taken 102.465 Ha of land from VOCPT on long term lease basis for setting up of the Thermal Power Project, out of which about 59 Ha of land was marked as "Kaadu" (Forest) in the revenue records, which is a part of about 1200 Acres of land notified in the year 1923 and handed over to Tuticorin Port Trust Authorities for management, though the above area was devoid of forest cover and has long back been used for non-forestry purpose under the orders passed by the competent authorities from time to time. However, the said land legally continues to be reserved forest as it was never de-notified. The situation necessitated VOCPT to approach the Hon'ble Supreme Court of India for permission and seek the approval of Central Government under section 2 of the Forest (Conservation) Act, 1980 for the de-reservation of the said forest land.

(ii) Since beginning of the project, NTPL had been communicating with VOCPT (Lessor of the land) and the concerned officials of the Forest Department for getting forest clearance for the land at the earliest possible.

(iii) Following the GOI sanction for the project in May-2008, various package contracts were awarded during the year 2009 & 2010 and the site construction activities have started picking momentum during the year 2011. Considering the escalation of site activities following the award of contract and also considering the fact that, forest clearance for the land was a perquisite for signing Fuel Supply Agreement (FSA) for the project with Mahanadi Coalfields Ltd (MCL), NLC/NTPL was steadfastly and closely following up this issue with VOCPT and GoTN at various levels for securing forest clearance for the land at the earliest possible.

(iv) Because of the relentless efforts taken by the NLC/NTPL, Chief Secretary/GoTN has finally convened a meeting with concerned authorities to deliberate on the issue on 26.03.2013 and during the meeting VOCPT was advised to file an Interlocutory Application (IA) with the Supreme Court of India seeking permission for de-notification of the forest land and accordingly VOCPT had filed IA with Supreme Court of India on 26.08.2013. The real breakthrough in the forest clearance issue could be achieved only when the Supreme Court of India has issued an order during March 2014 on the IA filed by VOCPT, accepting the recommendation of the Central Empower Committee of Supreme Court of India. Pursuant to the Supreme Court of India order VOCPT has submitted application for seeking approval under section 2 of the Forest (Conservation) Act 1980 for the de-reservation of the 457.25 Ha of forest land with Conservator of Forest on 11.3.2014. Further VOCPT has deposited ₹200275500/- with "Compensatory Afforestation Fund Management and Planning Authority" CAMPA on 17.3.2014 as Net Present Value for 457.25 Ha of land as per the Supreme Court of India directive. With the Order of the Supreme Court of India, the matter has started moving on a fast track. Govt. of TN has forwarded the recommendation of the Principal Chief Conservator

of Forest, Chennai for the de-reservation of the 457.25 Ha of forest land to Assistant Inspector General of Forest, MOEF, GOI on 16<sup>th</sup> July 2014. Subsequently Addl. PCCF and Dy. Director, MOEF visited the site on 18.09.2014 and submitted a report to Addl. Director General of Forest, MoEF.

(v) The proposal for the de-reservation of 457.25 ha of Mullakadu reserved forest land was discussed in the Forest Advisory Committee (FAC) meeting held on 28.11.2014 at New Delhi and the FAC has recommended the State Government proposal for the de-reservation of the forest land, subject to certain conditions. Subsequently VOCPT/State Government has complied with all the requirements of FAC and MOEF has communicated its in-principle approval for the de-reservation of the Forest land on 16.4.2015 subject to compliance of certain conditions. On the basis of the compliance report given, MOEF has accorded approval for the de-reservation of the 457.25 Ha of reserved forest land on 12.5.2015. Ultimately the 457.25 ha of Mullakadu reserved forest land in Thoothukudi has been de-reserved vide G.O (MS) No.66 dated: 02.06.2015 of Environment and Forest Department, GoTN. Tamil Nadu Government Gazette notification to this effect was issued on 24.6.2015.

**(b) Wildlife clearance**

(i) The Project is located 6.2KM South/South West of Gulf of Mannar National Marine Park boundary. As the project is located within 10 KM from Gulf of Mannar National Marine Park boundary, the provisions of Wildlife (Protection) Act, 1972 were applicable. Similarly one of the conditions of the Environmental Clearance under EI A notification 2006 accorded for the project on 13th June 2007 stipulates that, clearance under Wildlife (Protection) Act 1972 is to be obtained from competent authority. In the early stages of the project itself, NLC had sought for Wildlife Clearances for the project. The Chief Wild Life Warden (CWLW), Chennai after considering the various details furnished by NLC, accorded No Objection Certificate (NOC) to the project subject to certain conditions on 21.05.2009 and was forwarded to MOEF, New Delhi.

(ii) However, on 28.12.2010, Wildlife department of MoEF, New Delhi addressed to Chief Wildlife warden, Chennai requesting to provide a detailed factual report, whether the project involves intake and release of water from Gulf of Mannar. Based on this, the Wildlife warden, Ramanathapuram and Conservator of Forest, Virudhunagar visited the Project Site and asked for a report on Baseline Information of flora and fauna in the Marine Environment towards the National Park. The work was carried out by M/s.Suganthi Devadasan Marine Research Institute (SDMRI), Tuticorin and the reports were submitted to the Wildlife Authorities.

(iii) In the meeting convened by Principal Secretary, Energy, GoTN on 23.11.2011, the Chief Wildlife Warden had informed that the baseline data submitted is not sufficient and a comprehensive study on bio diversity impact assessment and allied issues has to be carried out by an accredited agency of Govt.of India. Accordingly the study of impact assessment as required by Wildlife department was carried out by M/s Cholamandalam MS Risk services, Chennai and they have submitted the report on 16.04.2012. The Report along with the required application for Wildlife clearance in Form I & II was handed over to Wildlife warden, Ramanathapuram on 02.05.2012 for consideration and recommendation. The Principal Secretary, Environment and Forests had forwarded the applications along with Form V to the Inspector General of Forests, MoEF, New Delhi on 1.11.2012 recommending the project under

Wildlife protection Act, 1972 and to place the proposal before the Standing Committee of National Board for Wildlife (NBWL).

(iv) The proposal for the Wildlife Clearance for the Project was listed in the 28th meeting of the Standing Committee of National Board for Wildlife held on 20.03.2013. However the proposal was deferred by the Committee as it had not been considered by the Tamil Nadu State Board for Wildlife (SBWL). State Board for Wildlife was not in existence at that point of time. The Wildlife clearance for the project was again listed in the agenda of the 30th meeting of the NBWL on 04.09.2013 and the proposal was deferred citing that, the proposal has to be recommended by the SBWL. The proposal was again discussed in the 31st meeting of the Standing Committee of NBWL held on 12th & 13th August 2014. However the proposal was deferred again for want of recommendation from SBWL. NTPL had followed up with GoTN for early constitution of the SBWL and consideration of NTPL Wildlife clearance proposal. Government of Tamilnadu reconstituted the State Board for Wildlife (SBWL) vide GO. No. 178 dated 6.11.2013 and the SBWL meeting held on 11.9.2014 has considered the wildlife clearance proposal of NTPL and forwarded its recommendation to MoEF, GOI to place it before the National Board for Wild Life for consideration.

(v) The 32nd meeting of the Standing Committee of the NBWL held on 21.1.2015 recommended the proposal for Wildlife clearance of the project. PCCF & Chief Wildlife Warden, Chennai, vide letter dated 14.5.2015 informed that, the above recommendation of NBWL constitutes clearance of the project in wildlife angle. The Project Monitoring Group (PMG), Cabinet Secretariat, GOI had played a vital role in securing the Forest & Wildlife Clearances for the project. PMG closely monitored the project during the year 2014-15 with a special thrust on Forest & Wildlife Clearances for the project and resulted in Forest Clearance for the project in the month of June-2015 & Wildlife clearance for the project in the month May-2015.

### **(c) Coastal Regulation Zone clearance**

(i) An application was submitted by NTPL to the District Environmental Engineer on 27.5.2005 for clearance under `Coastal Regulation Zone (CRZ). It was considered by the Tuticorin District Coastal Zone Management Authority and the application was forwarded to Tamil Nadu State Coastal Zone Management Authority (TNCZMA). On the recommendation of TNCZMA on 17.10.2006, the Principal Secretary, Environment and Forest, GoTN forwarded the application to National Coastal Zone Management Authorities (NACZMA), MoEF, New Delhi for further clearance.

(ii) The Project was appraised in the Expert Appraisal Committee (EAC), CRZ in its 79th meeting held on 27 & 28.8.2009 and the committee raised some points for clarification. After deliberating on the clarifications submitted by NTPL, the EAC recommended the issue of CRZ clearance in the 81st meeting held on 29 & 30.10.2009. However CRZ clearance and Wildlife clearances are interrelated subjects, the issue of CRZ clearances for the project also got delayed. CRZ Clearance for the project was accorded by MOEF/GOI on 11.4.2014, subject to compliance of the certain terms & conditions as specified therein.

(iii) COD of Units were achieved within the time frame of 6 months from the initial Synchronization mandated by regulations. Thus, it can assume that there was no delay in respect of the period from first synchronization to COD.

**(d) Delay due to hostile climatic conditions**

**Unprecedented Rainfall**

(i) Before taking up the area grading to higher level, the project area was low lying and undulated. Though the project area is near to sea, no natural drainage was available for this area. Due to these reasons, during the month of November, 2009 and December 2009 heavy rain, much more than the average rainfall, has occurred and caused flooding the project area. At the early stage of project execution and unexpected inundated rainfall, most of the contractors were not equipped with proper dewatering pumps. This caused a delay of about four months in the commencement of civil works. In the year 2014, Tuticorin experienced heavy downpour more than the average. As the project area was flooded and works hampered for about 20 days during Nov'14-Dec'14. Apart from this monsoon rain, about 85 days works were hindered on account of unseasonal rains in the period from March 2009 to Oct, 2014. Also, after each and every rainfall, the project land became slushy and made the surface un-motorable till the water dries out.

**Heavy wind**

(ii) Every year in the months of June, July and August in Tuticorin area, the wind blows heavily along with dust storm much more than the average velocity. Due to this higher elevation works like Chimney, Cooling towers and precision mechanical erection works in Boilers and Power house were hampered. A total delay of about one month in all packages is quantifiable on account of dust storm.

**(e) Delay due to ban on sand supply**

(i) During April, 2011, Government of Tamilnadu has banned the quarrying of river sand in this locality as a measure to regularize the supply of river sand and to check illegal mining. Due to this ban, sand supply from these river sources got disturbed and in turn concreting progress suffered in the months of May, 2011 & June, 2011 in all the packages and this caused a delay of one month.

**(f) Delay due to shortage of water supply.**

(i) Tuticorin area is facing heavy water scarcity during the months of April, May & June in every year. In the year 2012 & 2013 heavy shortage of water supply for construction purpose was experienced. Due to this water shortage in the year 2012 & 2013, construction activities were hampered and delayed about one month on account of this in entire project.

**(g) Delay due to fatal accident.**

(i) Though NTPL had ensured highest safety practices by the package contractors at erection site, due to fatal accidents occurred during the erection activities in various packages and subsequent labour unrest in the whole project, about 7 days of site works was lost.

**(h) Delay due to shortage of skilled and unskilled manpower.**

(i) In general there was heavy shortage of both skilled and unskilled manpower in all the packages throughout the execution phase. As the locality of the project area is heavily industrialized in addition to the fishing industry, local manpower availability is very meagre to cater the requirement of NTPL project and turnkey contractors had to mobilise majority of

manpower strength from northern parts of the country and these migrated manpower didn't wish to continue in Tuticorin due to its southernmost geographical location. Several correspondences and discussions even by highest officials of NTPL to improve the man power could not be realized. Package contractors were informing that the labours are not continuing for the reason cited above. Due to lesser manpower deployment, works like Concreting, Fabrication and Erection of Structures, Boiler and ESP erection, Pressure parts erection and civil & mechanical works in other areas as well were delayed abnormally. This situation prevailed in all the packages almost during the entire period of project execution.

**(i) Delay due to location disadvantages**

- a. Inadequacy of land.
- b. Location compulsion.
- c. Varying soil characteristics.
- d. Higher ground water table.

**(j) Delay in the carrying out the work/clearance from the agencies.**

- a. Rerouting of TWAD water pipe line.
- b. Rerouting of Ammonia and Naphtha line.
- c. Sea water intake approval from Port trust & TNEB.
- d. Outfall pipeline routing approval by TNEB.
- e. Handling over of North Cargo berth by VOCPT.

**(k) Delay in execution of work by package contractors**

(i) The petitioner has further submitted that apart from some delay on the part of package contractors including BHEL, the main reason for delay in the commissioning of the project is attributable to the delay in getting the wildlife and Forest clearances. However, the petitioner had not quantified the period of delay due to delay in environmental clearances.

11. The Commission vide ROP of the hearing dated 2.8.2016 had directed the petitioner to furnish additional information towards justification for time overrun as under:

*"Detailed justification of time overrun of 39.23 months for Unit-I and 36.60 months for Unit-II from the scheduled COD. The reasons for delay shall be explained with PERT chart giving details of working days/months lost with relevant documentary evidence, wherever necessary. Measures taken for reduction of the delays/problems faced during execution of the project alongwith the supporting documents/ correspondence exchanged between the parties/agencies"*

12. In compliance to the directions of the Commission, the petitioner vide affidavit dated 2.9.2016 has furnished detail justification for time overrun along with the PERT chart and has made similar submissions as in affidavit dated 29.3.2016.

## **Submission of the Respondents**

### **TANGEDCO**

13. The respondent, TANGEDCO has mainly submitted as under:

- a) The main reason for the delay in commissioning of the project is attributable to the delay in getting the wild life and forest clearances of the project. Moreover the land to the extent of 102.465 ha has only been acquired on lease basis by the petitioner. Out of the total requirement of 102.465 ha lease hold land, only 59 ha of land was marked as Forest in the revenue records and hence, the reason behind getting approval for de- reservation for 457.25 ha has not been furnished by the petitioner. The petitioner has also not furnished the details of quantum of works affected due to non- availability of forest land. It is ascertained that there was no stoppage of works which have occurred due to non- availability of forest clearance and therefore the delay in getting forest clearance cannot be a reason for the delay in commissioning of the project.
- b) The investment approval for the project was sanctioned during May,2008 and the petitioner should have taken steps to identify the land for earlier commissioning of the project. However, the petitioner after a lapse of five years, had approached the govt. of Tamilnadu in the year 2013. Hence the delay on the part of the petitioner in execution of the project has resulted in abnormal delay in commissioning of the project after a span of nearly 4 years from scheduled COD.
- c) The petitioner has not furnished any communication with regard to the delay in signing the Fuel Supply Agreement (FSA) with Mahanadi Coal fields Ltd.(MCL) Moreover, fuel supply activities will take place only after the completion of plant works. Accordingly, the petitioner may be directed to furnish the details of FSA with MCL to ascertain the clauses necessitating forest clearance.
- d) No documentary evidence/ communication made with the wildlife department have been furnished indicating that the delay in commissioning of the project is due to non- availability of wildlife clearance.
- e) No documentary evidence has been furnished by the petitioner indicating that the delay in commissioning of the project beyond the schedule COD is only due to non- availability of CRZ clearance. Hence the claim of the petitioner as regards delay in getting wildlife clearance is not justifiable.
- f) The delay in commissioning of the project on account of the delay in getting forest clearances, wild life clearance and CRZ clearance and procurements fall under the controllable factors in terms of Regulation 12 of the 2014 Tariff Regulations.

Accordingly, the respondent has prayed that the claim of the petitioner to consider the delay in commissioning of the project may be rejected and the capital cost and IDC may be restricted upto the scheduled COD of the project.

## KSEBL

14. The respondent, KSEBL has mainly submitted as under:

- a) The delay in 10 months for boiler and 12 months for power house are due to lack of proper planning and insight at the time of preparation of original sanction and hence the delay due to these factors is purely attributable to the petitioner.
- b) Undue delay has been observed in the tendering and finalization of various works and hence the delay is purely attributable to the contractor and may be disallowed.
- c) No justification has been furnished by the petitioner as regards the delay of 15 months in the erection works of coal conveyors on North cargo berth and hence the delay may be disallowed. Moreover, the delay in execution of almost all works is purely attributable to the petitioner and the contractors engaged by the petitioner.

15. Accordingly, the respondent has submitted that the delay in commissioning the project has occurred due to the slackness in project management and lack of proper insight and co-ordination with equipment suppliers. It has further submitted that the petitioner has not taken appropriate project monitoring and management measures to achieve the COD of the generating station within the scheduled completion time. Accordingly, the respondent has prayed that in terms of the judgment of the Tribunal, the entire cost due to time overrun may be borne by the generating company.

### **Analysis and decision**

16. We have examined the submissions of the parties and the documents available on record. The Appellate Tribunal for Electricity (the Tribunal), in the judgment dated 27.4.2011 in Appeal No. 72 of 2010 has laid down the following principles for prudence check of time overrun and cost overrun of a project :

*"7.4. The delay in execution of a generating project could occur due to following reasons:*

*Due to factors entirely attributable to the generating company, e.g.,*

- i) imprudence in selecting the contractors/suppliers and in executing contractual agreements including terms and conditions of the contracts, delay in award of contracts, delay in providing inputs like making land available to the contractors, delay in payments to contractors/suppliers as per the terms of contract, mismanagement of finances, slackness in project management like improper co-ordination between the various contractors, etc.*
- ii) due to factors beyond the control of the generating company e.g. delay caused due to force majeure like natural calamity or any other reasons which clearly establish, beyond any doubt, that there has been no imprudence on the part of the generating company in executing the project.*
- iii) Situation not covered by (i) & (ii) above.*

*In our opinion in the first case the entire cost due to time over run has to be borne by the generating company. However, the Liquidated Damages (LDs) and insurance proceeds on account of delay, if any, received by the generating company could be retained by the generating company. In the second case the generating company could be given benefit of the additional cost incurred due to time over-run. However, the consumers should get full benefit of the LDs recovered from the contractors/suppliers of the generating company and the insurance proceeds, if any, to reduce the capital cost. In the third case the additional cost due to time overrun including the LDs and insurance proceeds could be shared between the generating company and the consumer. It would also be prudent to consider the delay with respect to some benchmarks rather than depending on the provisions of the contract between the generating company and its contractors/suppliers. If the time schedule is taken as per the terms of the contract, this may result in imprudent time schedule not in accordance with good industry practices.*

*7.5. In our opinion, the above principles will be in consonance with the provisions of Section 61(d) of the Act, safeguarding the consumers' interest and at the same time, ensuring recovery of cost of electricity in a reasonable manner. "*

17. As stated, there is a time overrun of 39.23 months and 36.60 months in the COD of Unit-I & Unit-II respectively. The petitioner was directed vide ROP of the hearing dated 2.8.2016 and 29.9.2016 to furnish the reasons for delay alongwith PERT chart giving details of activities delayed, working days/months lost (quantification of days) with relevant documentary evidence with scheduled start date, scheduled completion date, actual start date, actual completion date. In response, the petitioner vide affidavit dated 2.9.2016 and 4.11.2016 have submitted the details and it could be inferred from the said submissions that the reasons attributed to the delay in the commissioning of the project is on account of the delay in getting (i) Forest clearance (ii) Wildlife clearance and (iii) CRZ clearance. However, from the PERT chart and the details of the activities furnished by the petitioner, the delay in different activities for Unit-I & Unit-II is compiled and examined as under:

SI. NO	Activity	Scheduled Start Date	Scheduled completion date	Actual start date	Actual completion date	Delay Period (months)
<b>Unit-I</b>						
1	Civil work for Boiler erection	February 2009	November,2009	December,2009	October,2010	10
2	Drum Lifting	April,2010	May,2010	September,2011	September,2011	15
3	Hydro test	March,2011	April,2011	August,2012	September,2012	16
4	Lighting up	October,2011	October,2011	March,2014	March,2014	28
5	Synchronization	January,2012	January,2012	December,2014	February,2015	37
6	COD		March ,2012		June,2015	
<b>Unit-II</b>						
1	Start of boiler erection	April,2010	May,2010	November,2010	December,2010	6
2	Drum Lifting	September,2010	October 2010	September,2011	September,2011	10
3	Hydro test	August,2011	September 2011	August,2012	November,2012	13
4	Lighting up	March,2012	March 2012	September,2014	September,2014	29
5	Synchronization	June,2012	June,2012	September,2014	April,2015	33
6	COD		August,2012		August,2015	36

### **Delay due to Start of Civil works forboiler erection**

18. The petitioner has submitted that there is a delay of 10 months and 6 months in completion of the civil works for boiler erection for Unit-I and Unit-II of the generating station respectively. In justification of the same, the petitioner has submitted that the delay is on account of geological surprises i.e change in type of foundations, heavy rain and flooding during November and December, 2009 and consequent dewatering of the site which has affected the civil works. It is evident from the affidavit dated 4.11.2016 that the first drawing of boiler foundations and Power house were to be submitted by the petitioner by 28.1.2009, but the same was submitted during the months of November, 2009 and January, 2010 respectively due to the delay in finalization of type of foundations. As per the contract technical specifications, the turn key contractors were to conduct the confirmatory soil investigation and the conservative results were to be adopted for foundation design but because of the varying soil characters and unpredictable layers of soft disintegrated rocks & clayey layers, the Package contractors had to change the approved drawings from Open foundation to Pile foundation and vice versa according to the local condition of the sub soil characteristics. It is also noticed that the delay due to geographical conditions was aggravated by heavy rain during the months of November, 2009 and December, 2009 and the rainfall during this period was much more higher than the average rainfall causing flooding of the project area. Moreover, dewatering of the flooded area added to the sufferings of the petitioner thereby causing delay. Also the unpredictable soil characteristics and heavy rain during this period was beyond the control of the petitioner and hence, the delay on this count cannot be attributable to the petitioner. In view of this, we are inclined to condone the delay of 10 months in case of Unit-I and 6 months in case of Unit-II in start of boiler erection work.

### **Delay due to heavy wind & dust storm in Drum Lifting**

19. The petitioner has submitted that there has been delay of 15 months for Unit-I and 10 months for Unit-II in the completion of the Drum lifting work of the generating station. In justification of the same, the petitioner has submitted that Ceiling Girder alignment issue got affected due to heavy winds and dust storms during the months of June, July and August, 2011 and works at higher elevations was at slow pace due to dust storm. It has also submitted that heavy winds during the months of June, July

and August every year in Tuticorin area is a continuous phenomenon. In our considered view, the petitioner at the time of seeking investment approval of the project may have proposed schedule of commissioning of units/station keeping in view the climatic conditions of the site. Moreover the petitioner has not furnished any documentary evidence such as report, newspaper cuttings and video clippings of the site which is stated to have been affected by heavy wind. Also, since the completion of Boiler erection work is October, 2010 for Unit-I and December, 2010 for Unit-II, the drum lifting should have been done within 5 to 6 months as per timeline envisaged in original schedule, which could have then avoided the impact of wind and dust storms during the months of June, July and August. In this background, the delay of 15 months for Unit-I and 10 months for Unit-II in completion of the Drum lifting work has not been condoned.

#### **Consequential delay in Hydro test**

20. The petitioner has submitted that there has been delay of 16 months (from April, 2011 to September, 2012) for Unit-I and delay of 13 months (from September, 2011 to November, 2012) for Unit-II towards the completion of the Hydro test. In justification of the same, the petitioner has submitted that the delay is consequential upon the delay in achieving the previous milestones. It is noticed from the table under para 17 above that due to the consequential delays of the various milestones, the Hydro test was completed in September, 2012 for Unit-I and in November, 2012 for Unit-II. The petitioner has also submitted that there has been heavy scarcity of water during the months of April, May and June 2012-13 had affected the various construction activities. From the submissions of the petitioner, it is clear that the project area is at an average elevation of 2.40m above mean sea level and due to proximity to the sea, the ground water table in the project area is about 1m below the finished ground level. In our view, the petitioner could have arranged water from any of the alternative sources for conducting the hydro test. Moreover, the petitioner has not furnished any documentary proof justifying its claim for shortage of water in the locality. Accordingly, the submission of the petitioner is not acceptable and the delay in commissioning of the project on account of delay in hydro test is not condoned.

## **Delay due to Forest clearance in the Boiler Lighting up**

21. The petitioner has submitted that there has been total delay of 28 months from scheduled completion date of October, 2011 to actual completion date of March,2014 for Unit-I and 29 months from March 2012 to September 2014 for Unit-II up to boiler lighting up. The petitioner has attributed the said delay due to delays in obtaining statutory forest clearance and previous milestones activities i.e. ban on river sand mining by Govt. of Tamilnadu in April, 2011, Dust storms during the months of June, July and August every yearand Heavy rain during the months of November and December every year vide affidavit dated 4.11.2016. The same is examined hereunder.

### **A. Delay due to Forest Clearance**

(i) The petitioner has submitted that MOU was signed on 28.10.2005 between TuticorinPort Trust (now VOCPT) and NLC and subsequently a lease deed agreement was signed on 2.5.2011 for the total area of 127.465 hectare of land (102.465 Ha for Plant and 25 Ha for residential colony). It has also submitted that out of the 102.465 hectares of land for Plant, 59 hectares of land was notified as reserved forest under Section 16 of Madras Forest Act videgazette notification dated 3.11.1923. The petitioner vide affidavit dated 2.9.2016 has further submitted that the issue of forest clearance cropped up after MCL vide Letter of Assurance (LOA) dated 24.9.2010 had agreed to sign the FSA with the petitioner after fulfilling certain requirements and forest clearance was one of the requirements. The petitioner has further submitted that it had followed this issue with VOCPT and the Govt. of Tamil Nadu at various levels for securing the forest clearance. On scrutiny, we find that there is no detail of the communication made by the petitioner to VOCPT prior to 7.5.2012 on which date the first correspondences has been made. It is noticed that subsequently, the petitioner vide letters dated 2.7.2012, 3.8.2012, 17.5.2013, 30.5.2013, 11.9.2013, 1.9.2014, 11.9.2014, 12.11.2014 and 29.12.2014 had communicated to different authoritiesi.e VOCPT, Govt. of Tamil Nadu, Ministry of Power, GOI, Ministry of Environment& Forests, GOI and the Ministry of Coal, GOI as regards to forest and wildlife clearance. However, from the letter dated 7.5.2012, it is noticed that reclassification of land was discussed in the review meeting held by the Chief Secretary of the Govt. of Tamil Nadu on 28.1.2012 and accordingly VOCPT has taken up the issue with Principal

Chief Conservation of Forests vide letter dated 7.3.2012. It is further observed that though the petitioner has mentioned that out of 102.465 hectares only 59 hectares was notified as forest land, the petitioner has not specified the systems/ equipments which were to be installed/erected in the forest land for which Forest Clearance was required. Further, the petitioner has also not furnished the list of the activities which were held up for the want of forest clearance. Moreover, the reserved forest land was de-reserved vide Govt of Tamil Nadu G.O. (MS) No.66 dated 2.6.2015 and accordingly GoTN gazette notification was issued on 24.6.2015. From the table of activity referred above, it is noticed that the petitioner was carrying out all the activities even prior to the notification of de-reserving the forest land. Moreover, the lighting up of Units-I and II of the generating station was completed by the petitioner during March, 2014 and September, 2014 respectively which is prior to the forest clearance notification dated 2.6.2015 obtained by the petitioner. Thus, the petitioner has failed to explain as to how and in what way the forest clearance had hampered the commissioning activities of the project. It is therefore clear that the work of the project was not held up at any stage for the want of forest clearance. In this background, the delay of 12 months for Unit-I and 16 months for Unit-II in the light up of boiler has not been condoned.

(ii) In addition to forest clearance, the petitioner has attributed time overrun due to delay in previous milestones activities like ban on sand supply by Govt. of Tamil Nadu during the months of May, 2011 and June, 2011, Dust storms during June, July and August of project years and heavy rains during the months of November and December. The delay due to heavy rains and heavy winds had already been considered as above in the civil works for boiler erection. However, the ban on quarrying of river sand by the State Govt of Tamil Nadu was a measure to check illegal mining and to regularize the supply of river sand. Moreover, the period of delay affected by the ban on sand supply was in April, 2011 and the lighting up of Units-I and II was scheduled during the months of October, 2011 and March, 2012 respectively and the actual completion of lighting up of the said units were carried out in the months of March, 2014 and September, 2014. In this background, the time overrun on account of delay in previous milestones such as ban on sand supply, heavy rains and dust storms has not been condoned.

## **B. Delay due to Wildlife clearance in the Synchronization**

(i) The petitioner has submitted that there is total delay of 37 months in Unit-I and 33 months in Unit-II up to the Synchronization of respective units and accordingly the delay corresponding to the activity of synchronization is 9 months for Unit-I and 4 months for Unit-II. In justification of the same, the petitioner has submitted that the Tamil Nadu Pollution Control Board (TNPCB) vide letter dated 10.9.2014 had requested to start the operations of the plant only after obtaining clearance under Wildlife Protection Act and thereafter wildlife clearance was obtained in May, 2015. It is observed that despite the directions of TNPCB in letter dated 10.9.2014 that the construction of the Power plant without clearance is in violation of the provisions of the Environment Protection Act, 1986, the petitioner was still carrying out the commissioning activities. It is further observed that the synchronization of Units-I and II of the generating station was carried out during the months of February, 2015 and April, 2015 respectively, even prior to the Wildlife clearance obtained on 14.5.2015. Thus, no delay has been caused in the synchronization of the units for want of wildlife clearance. It is however noticed that the work of the project was hampered for 20 days during the months of November, 2014 and December, 2014 on account of flooding of the project area and accordingly, the delay of 20 days delay in the synchronization of the units has only been condoned.

22. Apart from the above, the petitioner has attributed time overrun of the project due to delay for other reasons namely, 1 month delay in all the packages due to ban on sand supply and 7 days delay due to fatal accidents. As stated above, the delay due to ban on sand quarrying in relation to the delay in Boiler light up had been examined and is not found justifiable. Hence, the delay of 1 month due to ban on sand supply in Boiler lightup has not been condoned. Also, the delay of 7 days due to fatal accident and labour unrest is allowed as the same is not attributable to the petitioner. Based on the above discussions, the total delay of 27 days (20 days due to flooding of project area and 7 days due to fatal accident and labour unrest) is condoned for each unit.

23. Further, the petitioner has attributed time overrun of the project on account of the delay in obtaining Wildlife clearance and CRZ clearance. As stated, the CRZ clearance was accorded to the petitioner on 11.4.2014, the Wildlife clearance on 14.5.2015 and the Forest clearance on 2.6.2015. Accordingly, the delay on account of CRZ clearance and Wildlife clearance has already been subsumed in the delay due to Forest clearance. From the submissions of the petitioner, it is observed that the petitioner has been carrying out the work of the project continuously irrespective of any of the said environmental clearances. It has also failed to clarify the details of the activities/milestones which were really impacted/hampered due to want of the said environmental clearances. The only hindrance due to the absence of environmental clearance, in our view was the Fuel Supply Agreement with MCL and the declaration of COD as no other activities of the project was affected by it. However, due to delay in statutory environmental clearance, the petitioner was able to declare the COD of the units only after 4 months from its synchronisation. In the above circumstances, we are of the considered view, that the delay of 4 months each for Unit-I and Unit-II from synchronisation till the COD of the units has been condoned.

24. In the background of the above discussions and in light of the decision of the Tribunal in judgment dated 27.4.2011, we conclude that the total delay of 15 months for Unit-I and 11 months for Unit-II which includes the delay in the civil works for boiler erection due to geographical surprises, declaration of COD, rain and fatal accident is beyond the control of the petitioner and the petitioner cannot be made responsible for the same. Accordingly, in terms of the principles laid down by the Tribunal in the judgment dated 27.4.2011 [(situation 7.4(ii)]], the total delay of 15 months for Unit-I and 11 months for Unit-II is condoned and the generating company is given the benefit of the additional cost incurred due to time overrun. However, the LD recovered from the contractor and the insurance proceeds, if any, would be considered for reduction of capital cost.

25. The balance delay of 24.23 months for Unit-I and 25.60 months for Unit-II are in respect of factors namely, delay in providing inputs like making land available to the contractors is due to slackness on the part of the petitioner in project management and is within the control of the petitioner. Since these

are controllable factors in terms of Regulation 12(1) of the 2014 Tariff Regulations, the delay is attributable to the petitioner. Accordingly, in terms of the principles laid down by the Tribunal in the judgment dated 27.4.2011 [(situation 7.4(i)], the delay of 24.23 months for Unit-I and 25.60 months for Unit-II cannot be said to be beyond the control of petitioner and hence not condoned. Therefore, the increase in cost on account of the said delay has to be borne by the petitioner. However, the Liquidated Damages (LD) and Insurance proceeds if any, received by the generating company, on account of the said delay, could be retained by the generating company

26. Based on the above discussions, the time overrun allowed (against the actual time overrun) for Unit-I and Unit-II and the schedule COD (reset) for the purpose of computation IDC is summarized as under:

Units	Schedule COD as per Investment Approval	Actual COD	Time Overrun considering SCOD (months)	Time overrun allowed (in months)	SCOD (reset) for IDC computation
I	11.3.2012	18.6.2015	39.23	15	11.6.2013
II	11.8.2012	29.8.2015	36.60	11	11.7.2013

### **Capital Cost**

27. Regulation 9 (2) of the 2014 Tariff Regulations provides as under:

*“The Capital cost of a new project shall include the following:*

- (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) *Capitalised Initial spares subject to the ceiling rates specified in Regulation 13 of these regulations;*
- (f) *Expenditure on account of additional capitalization and de-capitalisation 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.*

### **Approved Capital Cost**

28. The original sanctioned cost of the project is ₹4909.54 crore at April 2007 price level including IDC of ₹597.33 crore and foreign exchange component of ₹716.06 crore equivalent of US \$ 169.884 Million at 1 US \$ = ₹42.16. As per GOI guidelines on "Mandatory Review and Revised Cost Estimate (RCE)", mandatory review of the project cost estimates has to be carried out with a view to make sure whether project cost estimate would require upward revision at the stage when funds to the extent of 50% of the approved cost are released. Accordingly, RCE-I was submitted and approved by Govt. of India on 9.12.2013. Further, on account of time & cost overrun after taking into account the relevant guidelines issued by GOI, RCE-II was submitted and approved by the Board of Directors of the Petitioner Company in the 419<sup>th</sup> Board Meeting held on 9.4.2012. However, the Board of Directors of the Petitioner Company had approved RCE-II considering the increase in project cost and the same was approved by the Govt. of India on 27.4.2016. The petitioner has claimed tariff based on RCE-II amounting to ₹7293.48 crore as on June, 2015 price level, including IDC of ₹1379.15 crore and Foreign Exchange component of ₹93.11 crore equivalent to US \$ 18.10 million. Accordingly, the approved project cost as per original investment approval, RCE-I and RCE-II is as under:

(₹ in crore)		
Sanctioned cost as per original approval dated 12.5.2008	As per RCE-I dated 9.12.2013	As per RCE-II dated 27.4.2016
4909.54	6602.74	7293.48

29. The RCE-II approved by the Board of Directors of the Petitioner Company is ₹7293.48 crore which is ₹2383.94 crore higher than original approved cost of ₹4909.54 crore. Hence, there is increase of 48.56% in the approved cost as per RCE-II from the Original investment approval cost. This increase is due to increase in IDC, Construction & Pre-commissioning activities etc.

### **Actual Capital Cost as on COD**

30. The capital cost considered by the petitioner for the purpose of determination of tariff in Form(1)(i) of the affidavit dated 29.3.2016 is as under:

(₹in lakh)

	<b>2015-16 (Unit-I)</b>	<b>2015-16 (station)</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Capital cost claimed	367184.91	734023.16	668560.63	717742.62	732735.62
Less : IDC Included	68957.50	137915.00	-	-	-
Less : Liabilities included	53465.71	106931.42	-	-	-
Add : IDC claimed	66768.35	137915.00	-	-	-
Add : Notional IDC claimed	1693.62	3387.23	-	-	-
Less : Adjustment of sale of Infirm Power (certified by SRPC provisional)	2510.72	4674.77	-	-	-
<b>Capital Cost allowed</b>	<b>310712.95</b>	<b>625804.20</b>	<b>668560.63</b>	<b>717742.62</b>	<b>732735.62</b>
Less : Land value	-	-	-	-	-
Gross Asset value - Additions (Works) <b>(A)</b>	-	42756.43	49182.00	14993.00	-
Deletion of Asset <b>(B)</b>	-	-	-	-	-
Cum. Depreciation of asset deleted <b>(C)</b>	-	-	-	-	-
Net Assets capital additions <b>[A-(B-C)]</b>	-	42756.43	49182.00	14993.00	-
<b>Closing capital cost</b>	<b>310712.95</b>	<b>668560.63</b>	<b>717742.62</b>	<b>732735.62</b>	<b>732735.62</b>

31. However, in Form-5B of the affidavits dated 29.3.2016 and 4.11.2016, the capital cost, on cash basis, as on COD of Units-I and II claimed by the petitioner is as under:

	<b>2015-16 (Unit I)</b>	<b>2015-16 (station)</b>
Capital Cost including IDC	307501.49	622416.97
Less: IDC	66768.35	137915.00
Capital Cost excluding IDC	240733.14	484501.97

32. The difference between the claim of the petitioner in Form-5B and Form 5(1)(i) is on account of the fact that the capital cost claimed in Form 5(1)(i) includes notional IDC along with actual IDC. Accordingly, the capital cost, on cash basis, as furnished in Form-5B has been considered for the purpose of tariff.

#### **Impact of time overrun on contract price, IDC and IEDC etc**

33. Due to time overrun in the COD of Units-I & II, there is requirement for *pro rata* reduction in the contract price, IDC & IEDC. It is noticed in Form-5D and Form-5B submitted by the petitioner vide affidavits dated 29.3.2016 and 4.11.2016 that there is no increase in the Main plant package cost, Civil works etc. as on the actual COD and up to 31.3.2018 along with provisions as compared to the award value. Therefore, there is no price escalation on account of time overrun. The total actual expenditure on overheads as on COD of the generating station (29.8.2015) is ₹19027.55 lakh (₹9123.93 lakh as on

COD of Unit-I (18.6.2015) and ₹9903.62 lakh as on COD of Unit-II) and the expenditure towards Establishment charges is ₹16604.59 lakh (₹7919.92 lakh as on COD of Unit-I (18.6.2015) and ₹8684.67 lakh as on COD of Unit-II). Due to time overrun, there is increase in establishment charges and the pro-rata deduction in establishment charges is worked out as under:

	Total period taken from zero date to actual COD (Months)	Time overrun disallowed (Months)	Overhead (Establishment) Expenses under IEDC	(₹ in lakh) Pro-rata reduction =(col.4xcol.3) / col.2
Unit-I	85.20	24.23	7919.92	2252.34
Unit-II/ generating station	87.56	25.60	8684.67	2539.14

## Initial Spares

34. Regulation 13 of the 2014 Tariff Regulations provides as under:

*"13. Initial Spares: Initial spares shall be capitalised as a percentage of the Plant and Machinery cost upto cut-off date, subject to following ceiling norms:*

- (a) Coal-based/lignite-fired thermal generating stations - 4.0%
  - (b) Gas Turbine/Combined Cycle thermal generating stations - 4.0%
- Provided that:*

*i. where the benchmark norms for initial spares have been published as part of the benchmark norms for capital cost by the Commission, such norms shall apply to the exclusion of the norms specified above:*

*iv. for the purpose of computing of initial the cost spares, plant and machinery cost shall be considered as project cost as on cut-off date excluding IDC, IEDC, Land Cost and cost of civil works. The transmission licensee shall submit the break-up of head wise IDC & IEDC in its tariff application."*

35. The COD of the Unit-II/ generating station is 29.8.2015 and accordingly, the cut-off date of the generating station is 31.3.2018. The total initial spares claimed by the petitioner upto the cut-off date of the generating station is ₹15065.64 lakh (₹9414.43 lakh as on COD + liability provision of ₹5651.21 lakh during the years 2016-17 and 2017-18).The total Plant and Machinery cost of the project including taxes and duties and transport as per Form-5B of the petition is ₹290385.34 lakh as on COD of the generating station and ₹336070.29 lakh as on cut off date (i.e. 31.3.2018). Further, the petitioner has capitalized initial spares amounting to ₹9414.43 lakh as on COD of the generating station. The initial spares of ₹9414.43 lakh capitalized works out to 3.24% of the Plant and Equipment cost up to COD and the same is within the ceiling limit of 4% specified under the said Regulations. Hence, the amount of initial spares claimed is allowed. The petitioner is however directed to furnish the details of initial spares

capitalized from COD upto the cut-off dateof the generating station at the time of truing-up of tariff in terms of the Regulation 8 of the 2014 Tariff Regulations.

#### **Infirm power**

36. The petitioner vide ROP of the hearing dated 2.8.2016 was directed to submit the details of infirm power injected in the grid by Units-I and II separately, till its COD along with the revenue earned from sale of infirm power, excluding fuel cost, and the details of fuel used from synchronization till COD along with expenditure on fuel for pre-commissioning activities. In response, the petitioner vide affidavit dated 2.9.2016 has submitted the details of infirm power injected in the grid by Units-I & II separately from synchronization to COD's of Units, revenue earned from sale of infirm power excluding fuel cost and the detail of fuel used from synchronization to COD for pre-commissioning activities as summarized under:

	<b>Unit</b>	<b>Unit-I</b>	<b>Unit-II</b>	<b>Total</b>
Consumption of coal	MT	149220	94785	244005.00
Landed cost of coal	₹/MT	3009.430	3553.76	
Fuel Cost (Coal)	₹	449067144.60	337162980.00	786230124.60
Consumption of oil (HFO)	KL	4190	5633	9823
Consumption of oil (LDO)	KL	1025	546	1571
Landed cost of HFO	₹/KL	34086.67	32792.58	
Landed cost of LDO	₹/KL	58946.66	57462.57	
Fuel cost (oil)	₹	203229157.40	216098816.93	419327974.33
Revenue from infirm power excluding fuel cost	₹	(-)365324983.88	(-)372756154.05	(-)738081137.93
Infirm power injected into the grid	MU	202.6127	126.6674	329.2801
<b>Revenue earned from sale of Infirm Power</b>	<b>₹</b>	<b>286971318.12</b>	<b>180505642.88</b>	<b>467476961.00</b>

37. It is observed from the above that the revenue from sale of infirm power, excluding fuel cost, from Units-I and II of the project till the COD of the generating station is (-)₹738081137.93. It is further observed that the revenue earned from sale of infirm power amounting to ₹4674.77 lakh has been adjusted in the capital cost. However, from the details of fuel cost, it is noticed that the total cash expenditure on fuel cost (coal+oil) is ₹12055.58 lakh, and whereas, the fuel cost as indicated in Form-5B is ₹19918.47 lakh. The petitioner has however not furnishedany explanation/justification for the said discrepancy in the fuel cost. In the absence of any explanation/clarification, we have in this order, considered the fuel cost of ₹12055.58 lakh instead of ₹19918.47 lakh. Accordingly, the fuel cost has been adjusted by (-)₹7862.89 lakh (19918.47-12055.58).

## Liquidated Damages

38. The petitioner has submitted that the LD amount of ₹27126.00 lakh has been recovered from different contractors on account of the delay in the execution of the project. Since the LD amount is to be shared between the petitioner and the beneficiaries on account of time overrun allowed, the LD adjustment is worked out as under:

(₹ in lakh)				
Total time overrun	Time overrun Allowed (months)	Time overrun disallowed (months)	Amount of total LD recovered	Pro-rata reduction =(col.5xcol.3)/ col.2
36.60	11	25.60	27126.00	8152.62

39. Based on the above discussions, the capital cost considered after adjusting the cost of establishment, LD recovered etc., as furnished in Form-5B by the petitioner, the capital cost of Unit-I and Unit-II/station works out as under:

Sl. No		2015-16	
		Unit-I (as on COD 18.6.2015)	Unit-II (as on COD 29.8.2015)
1.	Capital cost including IDC	307501.49	622416.97 (including capital cost of 307501.49 for Unit-I)
2.	IDC	66768.35	137915.00 (including ₹71146.65 for Unit-II)
3.	Capital Cost excluding IDC (1-2)	240733.14	484501.97
4.	Less: Pro-rata reduction on overhead expenses IEDC	2252.34	4791.48 (2252.34 for Unit-I&2539.14 for Unit-II)
5.	Less: Adjustment of LD recovered	0.00	8152.62
6.	Less: Pro-rata reduction of excess fuel cost	3850.92	7862.89 (3850.92 for Unit-I&4011.97 for Unit-II)
6.	Total Opening capital cost for purpose of tariff excluding, IDC, IEDC and adjustment of LD (3-4-5)	234629.88	463694.98

40. As against the above cash expenditure in Form 5B, the position based on the balance sheet of the generating station as on COD of both the units are as under:

(₹ in lakh)			
		As on COD of Unit-I	As on COD of station
A	Gross Block	335786.69	675263.38
B	CWIP	349319.21	17495.47
C	Un-discharged liabilities	48448.42	48029.37
D	<b>Cash Expenditure (A+B-C)</b>	<b>636657.48</b>	<b>644729.47</b>

41. In the balance sheet as on the COD of Unit-I (18.6.2015), as sum of Rs 180170.35 lakh has been shown under 'Revenue expenditure' transferred to CWIP. In the absence of head-wise details of this expenditure, Establishment, Audit and Accounts as per Form 5B has been considered under IEDC. The petitioner is directed to submit the details of such expenditure as shown in the balance sheet, with head-wise details at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

42. It is pertinent to mention that as against un-discharged liabilities as per balance sheet, the petitioner in Form 5B has indicated an amount of ₹106931.42 lakh as un-discharged liabilities and provisions, which is actually the difference between the RCE-II approved cost of ₹729348.39 lakh and the actual cash expenditure of ₹622416.97 lakh as on COD of the generating station (29.8.2015). The petitioner has claimed discharge of the said liabilities/provisions during the period from 2015-16 to 2017-18. These discharges have not been considered for the purpose of tariff and the same will be considered at the time of truing up of tariff. The funding for the project as per the balance sheet is as under:

(₹ in lakh)			
		<b>As on COD of Unit-I</b>	<b>As on COD of Station</b>
E	Share Capital	182940.00	182940.00
F	Share Application Money	5500.00	1461.60
G	Long Term Borrowing	432482.00	457497.00
H	Total fund raised (E+F+G)	<b>620922.00</b>	<b>641898.60</b>

### **Funding Gap**

43. It is observed that there is a funding gap as on the Cod of the units, between the cash expenditure and the project funding as above, and the same is as under:

(₹ in lakh)			
		<b>As on COD of Unit-I</b>	<b>As on COD of Station</b>
D	Cash Expenditure	636657.48	644729.47
H	Total fund raised	620922.00	641898.60
	Funding Gap (D-H)	15735.48	2830.87

44. No explanation has been furnished by the petitioner as regards the funding gap of ₹15735.48 lakh for Unit-I and ₹2830.87 lakh for Unit-II of the generating station. Accordingly, the gap in funding for Units-I and II have been considered as un-discharged liabilities and has been deducted from the capital cost allowed for the purpose of tariff as on the respective COD of the units of the generating station, in line

with the Commission's order dated 18.4.2017 in Review Petition No.28/RP/2016in Petition No. 198/GT/2013. As per balance sheet, an amount of ₹4.12 lakh for Unit-I and ₹2293.08 lakhs for Unit-II has been shown under Reserve and Surplus as negative entries. However, for the purpose of calculation of debt equity ratio, the above negative entries (accumulated loss) have not been considered, keeping the perpetuity factor in view, while determining the equity capital as on COD of Units-I and II.

### **IDC and Normative IDC**

45. As stated above, the schedule COD of the units have been shifted on account of time overrun in the declaration of commercial operation of the units. The petitioner has claimed normative IDC for the period from June, 2006 to February, 2009 by considering the rate of interest @ 11.10% p.a. applicable to the first drawl of loan. But, there was no actual loan for the generating station as well as the Petitioner Company as a whole prior to 31.3.2009. Hence, there is no weighted average rate of interest available in order to work out the Normative IDC prior to the actual drawl of the loan (31.3.2009). Therefore, no normative IDC has been allowed prior to the actual drawl of the loan. Similar view had been taken by the Commission in order dated 8.2.2016 in Petition No. 198/GT/2013 and the relevant portion of the said order is extracted as under:

*"51. The petitioner has claimed the notional IDC for the period from 2003-04 to 2007-08 by considering the rate of interest @ 10.75% p.a. applicable to the first drawl of loan. But, there was no actual loan for the station as well as the petitioner company as a whole before 26.6.2008. Hence, there was no weighted average rate of interest available to work out the notional IDC before the actual drawl of the loan (26.6.2008). Therefore, no IDC has been allowed before the actual drawl of the loan.*

*52. Further, Notional IDC has also been allowed up to the date of scheduled COD only. The apportionment of Notional IDC has been made as per apportionment of IDC. Accordingly, the total notional IDC of ₹1533.54 lakh has been allowed in the capital cost for the purpose of tariff."*

46. In line with the above, IDC and normative IDC allowed up to the date of scheduled COD is as under:

	(₹ in lakh)		
	<b>Unit-I</b>	<b>Unit-II</b>	<b>Total</b>
IDC allowed	25810.19	27147.95	<b>52958.13</b>
Normative IDC allowed	1415.24	1431.56	<b>2846.80</b>

47. Interest on normative loan is treated as income in the Financial Statement i.e. Profit & Loss A/c and Balance sheet by the petitioner as it forms part of capital cost for the purpose of allowing tariff.

## **Additional Capital Expenditure**

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

*"14.(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*

49. The petitioner vide ROP of the hearing dated 29.9.2016 was directed to furnish the details of additional capital expenditure from COD of the generating station till 31.3.2019. In response, the petitioner vide affidavit dated 4.11.2016 has submitted the details of additional capital expenditure for the period 2016-18 as under:-

	(₹ in lakh)	
	2016-17	2017-18
Additional compressor 3 nos.	65.00	200.00
Mini JCB/ Robot	20.00	30.00
Construction of additional Silos civil works	50.00	450.00
Mercury analyser 2 nos.	0.00	43.20
Generator rotor	0.00	500.00
Exciter	0.00	1500.00
SF6 gas analyser	0.00	25.00
CEMS (Continuous emission monitoring system)	43.50	72.00
PPM Meter	0.00	5.00
H2 Leak detector	0.00	5.00
Special dust control equipment	100.00	100.00
Additional makeup line and one more set of makeup and outfall pump	0.00	2500.00
<b>Total additional capital expenditure</b>	<b>278.50</b>	<b>5430.00</b>

50. The petitioner was directed to furnish detailed justification of the additional capital expenditure along with relevant clauses of Regulation 14 of the 2014 Tariff Regulations under which the claims have been made. However, the petitioner has not furnished the said information. It is observed that the petitioner has claimed total additional capital expenditure of ₹278.50 lakh in 2016-17 towards Additional compressor (3 nos), Mini JCB/ Robot, Construction of additional Silos civil works, CEMS Continuous

Emission Monitoring System (CEMS) and Special dust control equipment. It has also claimed total expenditure of ₹5430.00 lakh in 2017-18 towards Additional compressor (3 nos), Mini JCB/ Robot, Construction of additional Silos civil works, Mercury analyser(2 nos), Generator rotor, Exciter, SF6 gas analyser, CEMS, PPM Meter, H2 Leak detector, Special dust control equipment and additional makeup line and one more set of makeup and outfall pump without any proper justification. The petitioner has also not submitted as to whether the assets like Generator Rotor, LP/HP rotor etc are in the nature of spares or whether these assets are required to replace the existing rotors due to breakdown. The cut-off date of the generating station is 31.3.2018. Thus, the claim of the petitioner which are in the nature of tools and tackles, minor assets and capital addition is allowed for the period 2016-18 considering the fact that the assets claimed are within the cut-off date of the generating station. The petitioner is however directed to submit detailed justification along with relevant clauses/ documentary evidence in respect of the claim for additional capitalization at the time of truing up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations and the same may get revised in accordance with law.

### **Reasonableness of Capital Cost**

51. The comparison of the capital cost with the bench mark capital cost is discussed as under:

		(₹ in lakh)
A	Hard Cost up to COD (i29.8.2015)	463694.98
B	Cost per MW up to COD (29.8.2015)	4.64 Cr/MW
C	Total Capital expenditure allowed up to cut off date	5708.5
D	Excess initial Spares during 2016-18	1622.83
D	Total hard cost up to cut off date (31.3.2018) (A+C-D)	467780.65
<b>E</b>	<b>Cost per MW up to cut-off date (i.e. 31.03.2018)</b>	<b>4.68 Cr/MW</b>

52. The benchmark hard cost as specified by the Commission in Order dated 4.6.2012 for thermal power stations with coal as fuel at December,2011 Price level with 2 units of 500MW each is ₹4.71 cr/MW. The hard cost of the generating station as on COD (29.8.2015) and as on cut-off date (31.3.2018) is ₹463694.98lakh (₹4.64cr/MW) and ₹467780.65 lakh (₹4.68 cr/MW)respectively. The hard cost as on cut-off date of the generating station including the projected additional capitalisation is ₹4.68 cr/MW and the same is lower than the benchmark hard cost. Although, the generating station has special features viz(a) Desalination plant (b) Shore un-loader and (c) Offshore conveyor, the hard cost is lower than benchmark hard cost. It is therefore evident that the hard cost of the generating station

(Unit- I & Unit-II) up to cut-off date (31.3.2018) is reasonable. However, the actual hard cost up to the cut-off date can only be worked out/assessed after the end of the tariff period when capitalization of expenditure would be on actuals.

### **Capital Cost**

53. Based on the above, the capital cost approved in respect of the generating station for the period 2014-19 is as under:

	2015-16		2016-17	2017-18	2018-19
	18.6.2015 to 28.8.2015 (Unit-I)	29.8.2015 to 31.3.2016 (Units I & II)			
Opening Capital cost excluding IDC and Normative IDC	234629.88	463694.98	-	-	-
IDC allowed	25810.19	52958.13	-	-	-
Normative IDC allowed	1415.24	2846.80	-	-	-
Less: unexplained funding gap	15735.48	2830.88	-	-	-
Opening Capital Cost	246119.82	516669.04	516669.04	516947.54	522377.54
Additional capital expenditure allowed	0.00	0.00	278.50	5430.00	0.00
<b>Capital Cost as on 31<sup>st</sup> March of the year</b>	<b>246119.82</b>	<b>516669.04</b>	<b>516947.54</b>	<b>522377.54</b>	<b>522377.54</b>

### **Debt Equity Ratio**

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

*“19. Debt-Equity Ratio: (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 utilization 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 the 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 ratio 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 modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.

55. The debt and equity position as per the balance sheet as on both the CODs is as under:

	(Rs in lakh)	
	18.6.2015	29.8.2015
Share Capital	182940.00	182940.00
Share Application Money	5500.00	1461.60
Long Term Borrowing	432482.00	457497.00
Capital expenditure (after deducting the funding gap)	620922.00	641898.60

56. It is observed that there is share application money amounting to `5500.00 lakh and `1461.60 lakh respectively pending for allotment. Though, the same has been utilized toward expenditure of project, the same was not converted into share capital as on COD. As such, the same cannot be treated as part of equity and has been considered as debt for the calculation of debt equity ratio for the purpose of tariff.

Accordingly, the debt-equity ratio is worked out as under:

	(Rs in lakh)	
	18.6.2015	29.8.2015
Equity (Share capital)	182940.00	182940.00
Share application money (i)	5500.00	1461.60
Long Term Borrowing (ii)	432482.00	457497.00
Debt (i+ii)	437982.00	458958.60
Debt%	70.54%	71.50%
Equity%	29.46%	28.50%

## Return on Equity

57. 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.

58. 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.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis.

59. It is observed from the annual reports of the Petitioner Company that no tax has been paid for the year 2015-16. As such, the Return on Equity has not been allowed to be grossed up with the MAT rate though claimed by the petitioner. Accordingly, Return on Equity has been computed as under:

	2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
	18.6.2015 to 28.8.2015 (Unit-I)	29.8.2015 to 31.3.2016 (Units I &II)				
Gross Normative Equity	72513.39	147249.79	147249.79	147333.34	148962.34	
Addition due to Additional Capitalization	0.00	0.00	83.55	1629.00	0.00	
Closing Equity	72513.39	147249.79	147333.34	148962.34	148962.34	
Average Equity	72513.39	147249.79	147291.56	148147.84	148962.34	
Return on Equity (Base Rate )	15.500%	15.500%	15.500%	15.500%	15.500%	
Tax rate for the year	0.000%	0.000%	0.000%	0.000%	0.000%	
Rate of Return on Equity (Pre Tax )	15.500%	15.500%	15.500%	15.500%	15.500%	
<b>Return on Equity (Pre Tax)</b>	<b>2211.06</b>	<b>13469.73</b>	<b>22830.19</b>	<b>22962.92</b>	<b>23089.16</b>	

### Interest on loan

60. 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 Decapitalization 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 up to 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 re-financing.*

*(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.*

61. Interest on loan has been worked out as mentioned below:

- (a) The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of respective year applicable to the project;
- (b) Depreciation allowed for the period has been considered as repayment;
- (c) The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest calculated.

62. Necessary calculations for interest on loan are as under:

	2015-16		2016-17	2017-18	2018-19
	18.6.2015 to 28.8.2015 (Unit-I)	29.8.2015 to 31.3.2016 (Units I &II)			
Gross Loan- opening	173606.43	369419.25	369419.25	369614.20	373415.20
Cumulative Repayments up to Previous Year	0.00	2530.76	18465.85	44693.87	71066.74
Net Loan-Opening	173606.43	366888.49	350953.40	324920.33	302348.46
Addition due to drawl	0.00	0.00	194.95	3801.00	0.00
Repayment	2530.76	15935.09	26228.02	26372.87	26510.66
Net Loan-Closing	171075.67	350953.40	324920.33	302348.46	275837.80
Average Loan	172341.05	358920.95	337936.87	313634.39	289093.13
Rate of Interest	9.986%	9.986%	9.986%	9.986%	9.986%
<b>Interest on loan</b>	<b>3385.50</b>	<b>21152.14</b>	<b>33745.70</b>	<b>31318.90</b>	<b>28868.26</b>

## Depreciation

63. 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 or 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 upto 31.3.2014 from the gross depreciable value of the assets.*

*(7) The generating company or the transmission license, 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."*

64. The weighted average rate of depreciation claimed as per regulation above is 5.227% for the period from 18.6.2015 to 28.8.2015 and 5.226% for the period from 29.8.2015 to 31.3.2016 and 5.075% for the period from 2016-17 to 2018-19 and the same has been considered. Necessary computations in support of depreciation are as under:

	2015-16		2016-17	2017-18	2018-19
	18.6.2015 to 28.8.2015 (Unit-I)	29.8.2015 to 31.3.2016 (Units I &II)			
Gross Block as on COD	246119.82	516669.04	516669.04	516947.54	522377.54
Additional capital expenditure during 2014-19	0.00	0.00	278.50	5430.00	0.00
Closing gross block	246119.82	516669.04	516947.54	522377.54	522377.54
Average gross block	246119.82	516669.04	516808.29	519662.54	522377.54
Rate of Depreciation	5.227%	5.226%	5.075%	5.075%	5.075%
Depreciable value	221507.84	465002.13	465127.46	467696.28	470139.78
Remaining depreciable value	221507.84	462471.38	446661.61	423002.42	399073.04
<b>Depreciation</b>	<b>2530.76</b>	<b>15935.09</b>	<b>26228.02</b>	<b>26372.87</b>	<b>26510.66</b>

### Operation & Maintenance expenses

65. Regulation 29 (1) (a) of the 2014 Tariff Regulations provides the year-wise O & M expense norms for coal based thermal generating units as under:

	(₹ in lakh/MW)				
	2014-15	2015-16	2016-17	2017-18	2018-19
O & M expenses Norms for 500 MW	16.0	17.01	18.08	19.22	20.43

66. In terms of the above regulations, the petitioner has claimed O&M expenses as under:

	2015-16	2016-17	2017-18	2018-19
	18.6.2015 to 28.8.2015 (Unit-I)	29.8.2015 to 31.3.2016 (Units I & II)		
	8505.00	17010.00	18080.00	19220.00
				20430.00

67. The normative O&M claimed by the petitioner in terms of the 2014 Tariff regulations is in order and hence allowed.

### Additional O&M expenses for desalination plant

68. The petitioner has prayed for review of the normative O&M expenses and has submitted that total additional O&M expenses of `22.08 crore per annum would be required for treating sea water to soft water on account of the following additional features:

	(₹ in crore)
Desalination Plant –(chemical, filters, membrane)	8.00
Shore un-loader	5.25
Offshore Conveyor	5.77

69. In justification of the same, the petitioner has submitted that various chemicals are required for production of RO water and Filters and Membranes are required to be replaced periodically during RO production. It has submitted that the cost of chemicals for producing the RO water is expected to be ₹4.00 crore per year and the replacement cost of Filters and Membranes is expected to be ₹4.00 crore per year inclusive of Salaries and Wages of the manpower deployed. Accordingly, it has submitted that an additional cost of ₹8.00 crore per year, towards O&M cost on account of desalination plant is expected to be incurred. The petitioner has also submitted that an estimated 4.5 MT of Coal through 100 Shiploads per annum is going to be handled through this infrastructure. The petitioner has added that the annual additional expenses for O&M of Shore unloader is ₹5.25 crore & Offshore Conveyor system up to Plant is ₹5.77 crore. As regards Bottom ash disposal, the petitioner has submitted that it has to be transported to a distance of 27 to 35 KM from the project site and considering the daily requirement of 15360 Tons of coal with 34% Ash content, it is estimated that around 1000 tons of bottom ash has to be disposed with another 4000 tons through dry ash disposal system. The petitioner has stated that the contract for safe disposal of Bottom Ash to the distant location was awarded for 6 months at a value of ₹1.53 crore and the annual value works out to ₹3.06 crore.

70. The petitioner was directed vide ROP of the hearing dated 2.8.2016 to furnish the details of the actual O&M expenses of the generating station from COD to till date. In response, the petitioner vide affidavit dated 2.9.2016 has submitted that the total O&M expenses from COD (29.8.2015) to 31.7.2016 is ₹18989.75 lakh. The petitioner has also claimed expenses for consumables (i.e chemicals, filters, and membranes) to be used for the additional desalination plant. It is observed that the actual O&M expenditure incurred by the petitioner for the period 29.8.2015 to 31.7.2016 (approx 11 months) is ₹18989.75 lakh which is higher than the O&M expense norm of ₹17010 lakh applicable for the period 2015-16. However, the petitioner has commissioned similar desalination plant and has claimed additional O&M expenses of ₹4.70 crore in 2015-16.

71. The respondent, KSEBL has submitted that there is no provision in the 2014 Tariff Regulations to claim O&M expenses over and above the same allowed under Regulation 29. It has further submitted that the Commission had allowed normative O&M expenses considering the past actual performance of various plants and has also duly factored the inflation at the rate of 6.35% over and above the normative O&M expenses. The respondent has stated that any expenses incurred beyond the O&M norms specified in the regulation may be absorbed by the petitioner from the profit earned by them. Accordingly, it has prayed that the Commission may clarify that the O&M cost is not allowed over and above the rate specified under Regulation 29 of the 2014 Tariff Regulations.

72. The respondent, TANGEDCO has submitted that it is evident from the Statement of Reasons (para 29.39) annexed to the 2014 Tariff Regulations that the Commission had already taken into consideration the site specific issues while determining the norms for O&M expenses in respect of thermal generating stations. Accordingly, it has prayed that the prayer of the petitioner may be rejected.

73. The matter has been examined. It is observed that the plant is located near sea coast and thus there will be no water charges, as water will be made available from sea itself. In addition, the O&M expenses for RO desalination plant is allowed separately as normative O&M for meeting the water requirement of the plant. Considering the location of the plant, an amount of ₹22.08 crore per annum (which works out to ₹2.208 lakh/MW/year), claimed by the petitioner is too high in comparison to the amount of ₹468.84 lakh (which works out to ₹0.312 lakh/MW/year) for 2015-16 claimed by Vallur Thermal Power Project of NTECL which has 3 x 500 MW units as compared to 2 x 500 MW units of this generating station. In view of this, the Operation & Maintenance expenses claimed by the petitioner including consumables are restricted to an amount of ₹0.312 lakh/MW/year (₹312.56 lakh) at this stage. The O&M expenses for RO desalination plant allowed as above is subject to truing-up of tariff and the petitioner is directed to place on record all relevant information/justification comparing the claim for chemicals filters & membranes etc. with respect to the Vallur Thermal Power Project of NTECL. The normative O & M expenses does not include additional features like desalination plant, chemicals, filters and membranes used for the same. Hence, expenses on desalination plant is allowed separately.

## Water charges

74. Regulation 29(2) of the 2014 Tariff Regulations provide as under:

*"29 (2) The Water Charges and capital spares for thermal generating stations shall be allowed separately:*

*Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:*

*Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization"*

75. As per Regulations 29(2) of the 2014 Tariff Regulations, water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. However, the petitioner has not claimed water charges on projection basis during the year 2015-19. Accordingly, the same has not been considered. The total O&M expenses including additional expenses for desalination plant and water charges allowed is as under:

	(₹ in lakh)				
	2015-16		2016-17	2017-18	2018-19
O&M Expenses allowed	18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016			
O&M Expenses allowed	1673.11	10038.69	18080.00	19220.00	20430.00
Additional O&M expenses for desalination plant allowed	61.49	184.46	312.56	312.56	312.56
Water Charges allowed	0.00	0.00	0.00	0.00	0.00
<b>Total O&amp;M Expenses allowed</b>	<b>1734.60</b>	<b>10223.15</b>	<b>18392.56</b>	<b>19532.56</b>	<b>20742.56</b>

## Additional O&M due to CISF Security Force

76. The petitioner has submitted that the generating station is very near to the sea coast and hence, there is a risk of intrusion. It has also submitted that CISF is a premier multi-skilled security agency of the country, mandated to provide security to Industrial zone including this generating station and the deployment of the force would be completely at the cost of the petitioner. It has further submitted that the expenditure of ₹14.70crore proposed to be incurred for providing certain infrastructure facilities such as residential accommodation to the force, vehicles etc. is included in the project cost & revenue expenditure and has not been included in the Operation & Maintenance expenses claimed. In our view,

the revenue expenditure due to deployment of security forces has been included in the normative O&M expenses under the 2014 Tariff Regulations and hence there is no reason to consider the claim of the petitioner. The petitioner shall meet such expenses from the normative O&M expenses admissible to the generating station. Accordingly, the claim of petitioner for revenue expenditure towards deployment of CISF security is not justified and is accordingly disallowed.

### **Operational Norms**

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

Maximum Design heat rate applicable	Kcal./Kwhr.	2255.17
Target Availability	%	85.00
Target Availability for recovery for fixed Cost	%	83.00
Auxiliary Energy Consumption	%	5.25
Gross Station Heat Rate	kCal/kWh	2351.25
Specific Fuel Oil Consumption	ml/kWh	0.50

### **Normative Annual Plant Availability Factor**

78. Regulation 36(A)(a) of the 2014 Tariff Regulations provides the target availability of the generating station as under:

#### **(A) Normative Annual Plant Availability Factor (NAPAF)**

*(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.*

79. The petitioner has considered the Target availability of 83% during the period 2014-19. The Commission due to shortage of domestic coal supply has relaxed target availability norm to 83% for first 3 years from 1.4.2014 and the same shall be reviewed after 3 years. Hence, in view of the above provision, the target availability of 83% is allowed for the period 2014-15 to 2016-17 and 85% for the period 2017-18 & 2018-19 in terms of the Regulation 36(A)(a) of the 2014 Tariff Regulations.

### **Gross Station Heat Rate (GSHR)**

80. Regulation 36 (C)(b) (i) of the 2014 Tariff Regulations provides as under:

*(C) Gross Station Heat Rate*

*(b) New Thermal Generating Station achieving COD on or after 1.4.2014*

(i) Coal-based and lignite-fired Thermal Generating Stations

$$= 1.045 \times \text{Design Heat Rate (kCal/kWh)}$$

Where the Design Heat Rate of a generating unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating (Kg/cm <sup>2</sup> )	150	170	170	247
SHT/RHT (0C)	535/535	537/537	537/565	65/593
Type of BFP	Electrical Driven	Turbine Driven	Turbine Driven	Turbine Driven
Max Turbine Heat Rate (kCal/kWh)	1955	1950	1935	1850
Min. Boiler Efficiency				
Sub-Bituminous IndianCoal	0.86	0.86	0.86	0.86
Bituminous ImportedCoal	0.89	0.89	0.89	0.89
<b>Max Design Unit Heat Rate (kCal/kWh)</b>				
Sub-Bituminous Indian Coal	2273	2267	2250	2151
Bituminous ImportedCoal	2197	2191	2174	2078

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate of the nearest class shall be taken:

Provided also that where unit heat rate has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency:

Provided also that where the boiler efficiency is below 86% for Subbituminous Indian coal and 89% for bituminous imported coal, the same shall be considered as 86% and 89% respectively for Sub-bituminous Indian coal and bituminous imported coal for computation of station heat rate:

Provided also that maximum turbine cycle heat rate shall be adjusted for type of dry cooling system:

Provided also that if one or more generating units were declared under commercial operation prior to 1.4.2014, the heat rate norms for those generating units as well as generating units declared under commercial operation on or after 1.4.2014 shall be lower of the heat rate norms arrived at by above methodology and the norms as per the Regulation 36(C)(a)(i):

Provided also that for Generating stations based on coal rejects, the Commission will approve the Design Heat Rate on case to case basis.

81. The petitioner has furnished the design turbine cycle heat rate and boiler efficiency as 1932 kcal/kWh and 85.67% respectively. Accordingly, the unit design heat rate worked out from the data furnished by petitioner is 2255.165 kcal/kWh (1932/0.8567)

82. In terms of Regulation 36(C)(b)(i) of the 2014 Tariff Regulations, for the new Thermal Generating Station achieving COD on or after 01.04.2014, the Gross Station Heat Rate = 1.045 x Design Heat Rate (kcal/kWh) (1.045x2255.165 = 2356.65 kcal/kWh). Provided that the design heat rate shall not exceed

the maximum design unit heat rates depending upon the pressure and temperature ratings of the units as specified by the CERC, where design heat rate for plants having temperature and pressure rating nearer to NTPL plant using sub bituminous coal is given as maximum 2250 kcal/kwh. The Design heat rate of 2255.165 kCal/kWh for this generating station is higher than the ceiling design heat rate of 2250 kcal/kwh. In view of this, the ceiling design heat rate of 2250 kcal/kwh has been considered as the 'design heat rate'. Thus, by taking the multiplying factor of 1.045 the applicable Station Heat rate is 2351.25 kcal/kwh ( $1.045 \times 2250$ ). Accordingly GSHR of 2351.25 kcal/kWh is considered for the purpose of tariff.

### **Auxiliary Power Consumption**

83. Regulation 36(E)(a)(i) of the 2014 Tariff Regulations provides for Auxiliary Power Consumption (APC) as under:

#### **(E) Auxiliary Energy Consumption**

(a) Coal-based generating stations except at (b) below:

	<b><i>With Natural Draft cooling tower or without cooling tower</i></b>
(i) 200 MW series	8.5%
(ii) 300/330/350/500 MW and above	
Steam driven boiler feed pumps	5.25%
Electrically driven boiler feed pumps	7.75%

*Provided further that for thermal generating stations with induced draft cooling tower, the norms shall be further increased by 0.5%*

84. The APC considered by the petitioner is 5.25% for this generating station and the same is as per the above regulations. However, the petitioner in this petition has sought for review of the normative APC of 6.25% to include the consumption for additional systems like Offshore conveyor system for coal transportation from mine to sea and from sea to the nearest Tuticorin port, two (2)nos of electrically operated Shore un-loader installed for unloading of coal from the ship and to transfer coal from ship's hold to materials handling conveyor of the jetty, and for the electrical equipment installed for the desalination plant for RO production. Accordingly, the APC requirement on account of above as submitted by the petitioner is as under:

1. Cross country conveyor system	- 8.567 MW @66% = 5.655 MW
2. Shore Un-loader	- 1.805 MW @66% = 1.192 MW
3. Desalination plant	- 4.831 MW @64% = 3.092 MW

85. The total additional auxiliary consumption works out to 9.939 MW~10 MW. Accordingly, the petitioner has considered an additional load of 9.939 MW for calculating APC for the generating station of 2x500MW capacity which works out to 1% (approx) of Installed Capacity. (i.e. additional 1 % of APC). In our view, the generating station has special features like Coal Transportation from port to project and also additional electrical equipment's installed towards desalination of sea water through RO system, for which there will be additional APC for running these additional systems. Moreover, the Commission had not considered the special features like desalination of sea water, coal conveying system from port to station etc., in the APC norms specified under the 2014 Tariff Regulations. In this background, we are of the considered view that this generating station should be allowed the APC of 6.25% as a special case, in terms of the prayer of the petitioner. Accordingly, the APC of 6.25 % is allowed. However, the petitioner is directed to furnish the details of the actual APC, PLF of the generating station from the COD of Unit-II till 31.3.2019 at the time of truing up of tariff, in terms of Regulation 8 of the 2014 Tariff Regulations.

### **Specific Oil Consumption**

86. Regulation 36(D)(a) of the 2014 Tariff Regulations, provides for Secondary fuel oil Consumption of 0.50 ml/kWh for coal-based generating stations. Hence, the Secondary fuel oil Consumption considered by the petitioner is as per norms and is allowed.

### **Interest on Working Capital**

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

*"28 (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 Component and Energy Charges in working capital**

88. The petitioner has claimed cost for fuel component and Energy charges in working capital based on ‘as received’ GCV of coal and secondary fuel procured and burnt for the preceding three months of March, 2015, April 2015 and May, 2015 in respect of Unit-I (for the period 18.6.2015 to 28.8.2015) and for the preceding three months of June, 2015, July, 2015 and August, 2015 in respect of Unit-I and Unit-II (for the period from 29.8.2015 to 31.3.2019) as under:

	2015-16		2016-17	2017-18	2018-19	(₹in lakh)
	Unit-I	Unit-II/ station				
Cost of Coal towards stock	5903.80	11966.27	11966.27	11966.27	11966.27	
Cost of Coal towards Generation	5903.80	11966.27	11966.27	11966.27	11966.27	
Cost of Secondary fuel oil 2 months	72.19	144.38	143.98	143.98	143.98	

89. It is observed that the “as received” GCV of the coal furnished by the petitioner is same as “as billed” GCV of coal during the preceding three months. The petitioner in Form-15 has furnished “as billed” GCV and “as received” GCV of domestic coal as 3040 kCal/kg with price of 2562.12 ₹/MT for preceding 3 months from COD of Unit-I. Similarly, in case of Unit-II/generating station, “as billed” and “as received” GCV of coal during the preceding three months has been furnished by the petitioner as 3700 kCal/kg for domestic coal with average price of 2597 ₹/MT. It is observed that there is substantial difference in the value of preceding 3 months GCV of coal, prior to the COD of Units-I and II, even though there is negligible difference in the price of coal. We understand that the price of coal is not directly proportional, however, it appears that in case of Unit-I “as billed” GCV of 3040 kCal/kg is incorrect. However, as the petitioner has not clarified as to whether it had installed the equipment’s/

infrastructure required for taking sample of coal as per the Commission's order dated 25.1.2016 in Petition No.283/GT/2014, we have considered "as billed" & "as received" GCV of coal as 3700 kCal/kg (preceding 3 months from COD of Unit-II/Station). Further, for measurement of "as received" GCV of coal, the petitioner is directed to furnish detailed information on the infrastructure installed for measuring "as received" GCV of coal.

90. Accordingly, the cost for fuel components in working capital have been computed at 83% NAPAF for the years 2015-16 and 2016-17 and at 85% NAPAF for the year 2017-18 and 2018-19 based on 'as received' GCV of coal and price of coal procured and secondary fuel oil for the preceding three months from June, July, and August, 2015 in respect of COD of Unit-I and Unit-II of the generating Station is as under:

	2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
	18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				
Cost of Coal for stock- 30 days	1149.31	6895.89	11684.70	11966.26	11966.26	
Cost of Coal for Generation-30 Days	1149.31	6895.89	11684.70	11966.26	11966.26	
Cost of Secondary fuel oil 2 months	20.28	113.37	191.57	196.19	196.19	

### Energy Charge Rate

91. As stated, the computation of energy charges and fuel component (coal cost) in working capital for the period 2014-19 period is based on "as received" GCV of coal as claimed by the petitioner. The petitioner has considered the actual blending ratio as indicated in Form-15 for domestic and imported coal for arriving at the energy charge rate for the generating station. The petitioner has claimed Energy Charge Rate (ECR) of 205.00 Paise/kWh for Unit-I in 2015-16 and 207.60 Paise/kWh for the period from 2015-16 to 2018-19 based on the weighted average price, GCV of coal (as received basis) & Oil procured and burnt for the preceding three months. The Energy Charge Rate (ECR) is worked out based on operational norms specified in 2014 Tariff Regulations and on "as received" GCV of coal for preceding 3 months i.e. June, 2015, July, 2015 and August, 2015 in respect of the generating station for the period from COD of Unit-I as under:

	Unit	2015-19
--	------	---------

Capacity	MW	1000
Weighted average Gross Station Heat Rate	Kcal/kWh	2351.250
Auxiliar Energy Consumption	%	6.25
Weighted average GCV of oil (as fired)	Kcal/lit	10000
Weighted average GCV of Coal (as received)	Kcal/kg	4651.66 for Station
Weighted average price of oil	Rs/KL	33930.69 for Unit-I 31617.86 for Unit-II/ station
Weighted average price of Coal	Rs/MT	3876.51 for Unit-II/ station
<b>Rate of Energy Charge ex-bus</b>	<b>Paise/kWh</b>	<b>210.372 for Unit-II/ station</b>

92. The difference between the Energy charges claimed and allowed is on account of the fact that while the petitioner has considered the APC of 5.25 %, the Commission had allowed the APC of 6.25% for reasons stated in this order.

93. Accordingly, the Energy charges for 2 months on the basis of "as received" GCV of coal for the purpose of interest on working capital is worked out as under:

2015-16		2016-17	2017-18	2018-19	(₹in lakh)
18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				(₹in lakh)
2357.22	14135.01	23885.54	24461.10	24461.10	

94. Based on the above, the fuel component and energy charges in working capital are allowed as under:

	2015-16		2016-17	2017-18	2018-19	(₹in lakh)
	18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				(₹in lakh)
Cost of Coal for 60 days	2298.63	13791.77	23369.40	23932.51	23932.51	
Cost of Secondary fuel oil 2 months	20.28	113.37	191.57	196.19	196.19	
Energy Charges for 2 months	2357.22	14135.01	23885.54	24461.10	24461.10	

### Maintenance spares

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

2015-16		2016-17	2017-18	2018-19	(₹in lakh)
18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				(₹in lakh)
1701.00	3402.00	3616.00	3844.00	4086.00	

96. Regulation 28(1)(a)(iv) of the 2014 Tariff Regulations provides for Maintenance spares @ 20% of the Operation & Maintenance expenses. Accordingly, maintenance spares @ 20 % of the O&M expenses, including water charges, is allowed as under:

2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				
346.92	2044.63	3678.512	3906.512	4148.512	

#### O & M Expenses (1 month)

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

2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				
708.75	1417.50	1506.67	1601.67	1702.50	

98. Regulation 28(a)(vi) of the 2014 Tariff Regulations, provides for Operation and Maintenance expenses for one month for coal-based generating stations. Accordingly, the O&M expenses (1 month) allowed for the purpose of working capital is as under:

2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
18.6.2015 to 28.8.2015	29.8.2015 to 31.3.2016				
144.550	851.929	1532.713	1627.713	1728.546	

99. Accordingly, Interest on working capital is worked out and allowed as under:

	2015-16		2016-17	2017-18	2018-19	(₹ in lakh)
	18.6.2015 to 28.8.2015 (1 Unit)	29.8.2015 to 31.3.2016 (Both Units)				
O&M expense	144.55	851.93	1532.71	1627.71	1728.55	
Receivables (Fixed Charges)	1756.85	10941.95	18466.37	18328.05	18169.42	
Receivables (Variable Charges)	463.71	8341.97	23885.54	24461.10	24461.10	
Maintenance Spare	346.92	2044.63	3678.51	3906.51	4148.51	
Secondary Fuel oil cost	20.28	113.37	191.57	196.19	196.19	
Fuel Stock	2298.63	13791.77	23369.40	23932.51	23932.51	
<b>Total Working Capital</b>	<b>5030.94</b>	<b>36085.62</b>	<b>71124.11</b>	<b>72452.07</b>	<b>72636.28</b>	
Interest Rate	13.50%	13.50%	13.50%	13.50%	13.50%	

<b>Interest on Working Capital</b>	<b>679.18</b>	<b>4871.56</b>	<b>9601.75</b>	<b>9781.03</b>	<b>9805.90</b>
------------------------------------	---------------	----------------	----------------	----------------	----------------

### Annual Fixed Charges

100. The annual fixed charges for the period 2015-19 approved for the generating station is summarized as under:

(₹ in lakh)

	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
	<b>18.6.2015 to 28.8.2015 (1 Unit)</b>	<b>29.8.2015 to 31.3.2016 (Both Units)</b>		
Return on Equity	2211.06	13469.73	22830.19	22962.92
Interest on Loan	3385.50	21152.14	33745.70	31318.90
Depreciation	2530.76	15935.09	26228.02	26372.87
Interest on Working Capital	679.18	4871.56	9601.75	9781.03
O & M Expenses	1734.60	10223.15	18392.56	19532.56
<b>Total</b>	<b>10541.10</b>	<b>65651.67</b>	<b>110798.23</b>	<b>109968.28</b>
				<b>109016.54</b>

Note: All figures under each head have been rounded. The figure in total column in each year is also rounded. As such, the sum of individual items may not be equal to the arithmetic total of the column

### Month to Month Energy Charges

101. Sub-clause (a) of clause (6) of Regulation 30 of the 2014 Tariff Regulations provides as under:

*"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"*

102. The petitioner shall compute and claim the Energy Charges on month to month basis from the beneficiaries based on the above formulae read with Commission's order dated 25.1.2016 in Petition No. 283/GT/2014. The GCV of coal needs to be measured from the sample collected at the jetty for considering 'as received' basis in terms of provision of para 5 (sampling from ship during loading or unloading) and para 8 (sampling from loaded ships) of IS 436(Part-1/Section-1) -1964.

103. The Commission in order dated 19.2.2016 in Petition No. 33/MP/2014 (TPDDL v NTPC & anr)

had directed as under:

*"The respondents shall introduce help desk to attend to the queries and concerns of the beneficiaries with regard to the energy charges. The contentious issues regarding the energy charges should be sorted out with the beneficiaries at the senior management level, preferably at the level of Executive Directors."*

Accordingly, in line with the above decision, help desk shall be introduced by the petitioner and contentious issues if any, which arise in respect of energy charges for this generating station shall be sorted out with the beneficiaries at the Senior Management level

#### **Application Fee and Publication Expenses**

104. The petitioner has sought the reimbursement of filing fees and the expenses incurred for publication of notices for application of tariff for the period 2015-19. The petitioner has deposited the tariff filing fees of ₹13200000/- each for the period 2015-17 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The petitioner has also incurred charges towards publication of the said tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 6.1.2016 in Petition No.232/GT/2014, the petitioner shall be entitled to recover the filing fees (*pro-rata to the contracted capacity*) and the expenses incurred on publication of notices directly from the respondents. 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.

105. The annual fixed charges approved for the period 2015-19 shall be adjusted against the interim tariff allowed vide order dated 13.10.2015 and is also subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

106. Petition No. 135/GT/2015 is disposed of in terms of the above.

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

-Sd/-  
**(A.S Bakshi)**  
Member

-Sd/-  
**(A.K.Singhal)**  
Member

-Sd/-  
**(Gireesh B Pradhan)**  
Chairperson