CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No.149/GT/2018

Coram:

Shri P.K.Pujari, Chairperson
Dr. M.K.Iyer, Member
Shri I.S.Jha, Member

Date of Order: 28th January, 2020

In the matter of

Petition for approval of tariff of PARE Hydro Electric Power Plant (110 MW) for the period from COD to 31.3.2019

And

In the matter of

North Eastern Electric Power Corporation Ltd,
Brookland Compound, Lower New Colony,
Shillong-793003 **…..Petitioner**

Vs

1. Assam Power Distribution Company Limited
Bijulee Bhawan, Paltan Bazar, Guwahati – 781001

2. Meghalaya Energy Corporation Limited
Short Round Road, Lumjingshai, Shillong – 793001

3. Tripura State Electricity Corporation Ltd.
Bidyut Bhawan, North Banamalipur,
Agartala, 799001, Tripura

4. Power & Electricity Department
Govt. of Mizoram, P&E Office Complex, Electric Veng,
Aizawl – 796001

5. Manipur Power Distribution Company Ltd
Government of Manipur, Keishampet,
Imphal – 795001

6. Department of Power
Government of Arunachal Pradesh,
Bidyut Bhawan, Itanagar – 791111

7. Department of Power,
Government of Nagaland, Kohima – 797001

8. North Eastern Regional Power Committee
NERPC Complex, Dong Parmaw, Lapalang,
Shillong- 793006, Meghalaya

9. North Eastern Regional Load Despatch Centre
Dongteih, Lower Nongrah, Lapalang,
Shilling- 793006, Meghalaya **.....Respondents**

Parties present:

Shri M.G.Ramachandran, Senior Advocate, NEEPCO
Ms. Poorva Saigal, Advocate, NEEPCO
Shri Shubham Arya, Advocate, NEEPCO
Ms. Debjani Dey, NEEPCO
Ms. E. Pyrbot, NEEPCO
Shri K.Goswami, APDCL
Shri B.M.Saikia, APDCL

ORDER

The Petitioner, NEEPCO has filed this petition for approval of tariff of PARE hydroelectric power plant (2 x 55 MW) (hereinafter 'the generating station') for the period from anticipated COD till 31.3.2019 in terms of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations"). Thereafter, the Petitioner vide affidavit dated 19.3.2019 submitted the actual COD of the units as under:

Units	Actual COD
II	21.5.2018
I/ generating station	28.5.2018

Background

2. PARE hydroelectric project, in the State of Arunachal Pradesh, is a run of river project with pondage scheme executed by the Petitioner. The project will utilize the water from river Dikrong and tail race discharge of Ranganadi HEP, which is located about 5.0 km upstream from dam site of the project. The project involves construction of 63m high concrete gravity dam across Pare river

and a surface power house on the right bank of river Pare housing 2 units of 55 MW each. The project will generate 506.42 MU of Design Energy at 95% machine availability and 90% dependable year. The Environment Clearance along with R&R plan for project affected people had been accorded by the Ministry of Environment & Forests (MOEF), Government of India on 13.9.2006. The Memorandum of Agreement for execution and operation of the project was signed on 21.9.2006 between the Petitioner and the Govt. of Arunachal Pradesh. The Petitioner has entered into PPA dated 24.11.2006 with the beneficiaries of North Eastern States aggregating 181 MW.

3. The Investment Approval (IA) of the project was accorded by CCEA on 4.12.2008 with an approved project cost of ₹573.99 crore (at June 2007 Price Level), including Interest during Construction (IDC) of ₹67.66 crore and Finance Charges (FC) of ₹0.40 crore. The project was scheduled to be completed in a period of 44 months (i.e. August, 2012) from the date of IA.

4. The Revised Cost Estimate (RCE) at January 2013 Price Level amounting to ₹1128.38 crore, including IDC & FC was submitted by the Petitioner to Ministry of Power (MOP), GOI vide its letter dated 26.7.2013 for consideration and the MOP has forwarded the same to CEA on 10.10.2013. During the joint verification with CEA/CWC, the RCE was modified as the project commissioning schedule was changed from September 2014 to September 2015. After the modification, the RCE amount at January 2013 PL came to ₹1293.99 crore, including IDC & FC of ₹135.98 crore and proposed establishment cost of ₹252.50 crore. CEA had recommended RCE to MOP on 10.9.2014 for revised cost of ₹975.93 crore (at January 2013 PL) without IDC, FC & permissible total establishment cost. CEA had not finalized the establishment cost and requested MOP, GOI to decide the

total amount of establishment cost permissible. CEA on 30.10.2015 & 28.12.2015 had vetted the RCE amounting to ₹1262.27 crore at December 2014 PL including IDC & FC of ₹74.37 & ₹24.88 crore respectively. Thereafter, CEA on 26.9.2016 & 30.11.2016 had vetted the RCE amounting to ₹1337.76 crore at January 2016 PL, including IDC & FC of ₹114.71 crore & ₹31.05 crore respectively.

5. As regards the present status of RCE, the Petitioner has submitted that RCE for ₹1581.04 crore (including IDC & FC of ₹174.99 crore) at January 2016 price level with COD as December 2016 was submitted to MOP, GOI on 11.4.2016. It has also stated that CEA on 30.11.2016 has vetted the RCE for a total amount of ₹1337.76 crore, which comprises of ₹1192 crore as Hard cost and ₹145.76 crore towards IDC & FC. The Petitioner has further submitted that the MOP, GOI on 29.6.2017 had directed the Petitioner to prepare a revised report and the same was submitted on 21.7.2017. The Petitioner has stated that the total RCE amount stands at ₹1337.05 crore as on 13.7.2017, after excluding the audit & account charges for ₹ 0.71 crore. The Petitioner vide affidavit dated 25.6.2019 has informed that the RCE, at completion cost at May, 2018 PL is ₹1754.81 crore, which comprise of Hard cost ₹1502.99 crore and IDC & FC of ₹254.47 crore, which has been submitted to CEA on 9.8.2018 for vetting. The Petitioner has stated that an amount of ₹2.65 crore towards Infirm power has been deducted from the gross-block. Thereafter, the Petitioner vide affidavit dated 25.6.2019 has further submitted that the CEA on 20.2.2019 has vetted the completion cost for ₹1640.31 crore (Hard cost of ₹1402.27 crore) including IDC of ₹172.12 crore and FC of ₹65.92 crore. The Petitioner has also stated that FERV of ₹28.32 crore on account of repayment of KFW loan till COD has also been included in FC.

6. The Petitioner vide affidavit dated 25.6.2019 has claimed the following annual fixed charges:

(Rs in lakh)

	2018-19	
	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Return on equity	102.18	9068.21
Interest on loan	62.53	5383.27
Depreciation	80.42	7142.92
Interest on working capital	8.24	728.64
O&M expenses	63.38	5629.97
Total	**316.76**	**27953.01**

7. During the hearing of the petition on 6.2.2019, the Commission, based on the submissions of the Petitioner, had directed that the tariff @ ₹5/kWh, as decided in the NRPC meeting, shall continue to be charged by the Petitioner, till the determination of tariff by the Commission. Thereafter, the matter was heard on 14.5.2019 and the Commission directed the Petitioner to file certain additional information with copy to the Respondents and Shri H.M.Sharma, an Individual Consumer (Objector), with directions to complete pleadings in the matter. In compliance with the directions of the Commission, the Petitioner has filed the additional information. Reply has been filed by the Respondent, Assam Power Distribution Company Limited (APDCL) and the Petitioner has filed its rejoinder to the same. Though the Individual Consumer was granted permission to file his response to the petition, no response has been filed in the matter. 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 2018-19, on prudence check, as stated in the subsequent paragraphs.

8. The Petitioner has engaged M/s Aquagreen Engineering Management (P) Ltd. as Designated Independent Agency (DIA) for vetting of capital cost of the project and the DIA has submitted its report on 21.8.2015. In response to the directions

of the Commission vide ROP dated 14.5.2019, the Petitioner has clarified that the final report of DIA would be submitted in due course to the Commission.

Time and Cost Overrun

9. As stated, the IA of the project was accorded by CCEA on 4.12.2008. The project was scheduled to be completed in 44 months from the date of IA i.e. August 2012. However, the project has been commissioned in May, 2018 with a time overrun of 70 months from the schedule date of commissioning as per the IA. The Petitioner has submitted that the physical progress report was submitted by the Consultant, Shri S.K. Kaul to MOP, GOI vide his e-mail dated 19.2.2016 and the Director (HPM) vide his letter dated 28.3.2018 submitted the detailed progress report to MOP, after site visit and detailed discussions with the agencies working in the project area. The Petitioner in the amended petition has submitted that the project has experienced a time overrun of 70 months with respect to the original schedule. The Petitioner has also furnished reasons/ justification for the time overrun involved in the commissioning of the project along with bar chart indicating the delay in completion of the project. The major reasons for time overrun as furnished by the Petitioner vide affidavit dated 27.3.2019 are as under:

Sl. No.	Description	Months
1	Initial delay in awarding of contracts	8.84
2	Change in alignment of Diversion Tunnel and work stopped by the local people	1.94
3	a) Rain fall and construction of Trans Arunachal highway in the year 2011. b) Collapse in HRT Face-3. c) Inundation of Diversion Tunnel, Collapse in HRT d) Increase in Diversion tunnel length e) Rain fall and construction of Trans highway 2012	16.31
4	a) Rainfall and construction of Trans Arunachal highway in the year 2013. b) Rainfall and flooding of Dam Foundation area- during 2013	5.56
5	Additional time for increased excavation quantity of Dam	2.96

	(Quantity increased from 191123 Cum as per approved cost to 353294 Cum as per actual execution at site)	
6	a) Rainfall and construction of Trans Arunachal Highway in 2014. b) Overtopping of coffer Dam, flooding of dam area, removal of silt from from dam area etc	6.48
7	Rain fall, overtopping of coffer dams, flooding, removal of silt deposit etc. in the year 2015.	4.73
8	Delay due to additional reinforcement works in Dam during 2015	2.68
9	Rainfall, overtopping of dam, washed away of approach road to dam site during 2016, provision of shear key in dam etc	5.84
10	Negative Cash flow of the contractor and incapability to do works, additional reinforcement works in dam	3.30
11	Rainfall, overtopping of dam, land slide, poor approach road due to heavy rainfall	5.05
12	a) Reworks of trunion assembly, reinforcement works, concreting of trunion beam of block 5 because of damaged caused by flash flood and its cascading effects b) Construction of approach road to diversion tunnel outlet for plugging of Diversion tunnel	4.24
13	Seepage in diversion tunnel & its rectification works and consequential delay plugging of Diversion tunnel	2.07
Total		70

10. According to the Petitioner, the main reasons which hindered the entire project activities adversely are as under:

(a) Initial Delay in awarding of Contract: The delay in awarding the contract occurred as the price quoted by the bidders was very high compared to the approved cost estimate. Accordingly, retendering was done by splitting the works into four packages in order to reduce the cost. Thus, the LOI for Package-I (Civil works) could be issued only on 31.8.2009, after loss of 8.84 months from the date of CCEA clearance i.e. 4.12.2008.

(b) Change in alignment of Diversion Tunnel and work stopped by the local people: As per model studies, to accommodate plunge pool for energy dissipation from dam, the alignment of diversion tunnel was changed for which the works of diversion tunnel was kept on hold till finalization of alignment for which some time was lost. Moreover, the local people of project site forcefully stopped the works of diversion tunnel for 37 days demanding award of diversion tunnel to them.

(c) Main Approach Road (Trans Arunachal Highway)

(i) Doimukh- Hoj- Potin Road is the main approach road and lifeline of the project. The project is located between 15-18 Km from Doimukh and the stone quarry is located between Hoj and Potin village which is 17.5 Km from Dam site. The road was under up-gradation to Trans-Arunachal Highway under Prime Minister's special package for development of Arunachal from

middle of 2011 and is being executed by PWD department, Govt. of Arunachal Pradesh. Due to formation cutting for widening of the said road, in every monsoon season the road use to become very slushy as well as risky for plying of all type of vehicular movements resulting in complete stoppage of transportation of equipments, aggregates and other construction materials like cement and steel etc. required for the project. However, the situation improved in non-monsoon period and the progress of work could be geared up from mid of October to April only in every year starting from 2011 to 2014.

(ii) **Project internal Approach Road:** As the geology in project area is very fragile in nature, in every monsoon season due to rain fall, all the internal access road frequently used to be washed away in several locations and the same hindered progress of works.

(d) Delay in Completion of Diversion Tunnel (DT) & River Diversion: The DT could not be completed in time and therefore the river diversion could not be done as per schedule. This resulted in delay in starting and completion of excavation of river bed in the dam foundation area. The DT activities and River diversion could only be done on 5.3.2013. The main reasons for delay in completion of DT are on account of the following:

(i) Change in alignment of DT;

(ii) Increase in Length of DT by cut and cover for a length of 63.00 m.

(iii) Frequent law & order problems, causing panic amongst the work force thereby leading to attrition of works besides cumulative stoppage of works for more than 2 months by the local people.

(iv) The DT was inundated up to spring level by slush due to incessant rainfall and landslide on 15-16th July and 4-5th August, 2011. A huge quantity of muck accumulated at the outlet of DT and boring works could be resumed only on 20.10.2011 after a loss of 99 days. The DT was further inundated coupled with accumulation of slush for a depth of 1-1.25 m resulting in disruption of activities from mid of June, 2012 to end of July, 2012 and Overt lining could be resumed only on 31.7.2012. As the River water near DT outlet rose to alarming level posing threat to inundating of DT, the outlet was blocked on 14.9. 2012 in order to prevent ingress of water and all activities inside the DT were suspended as a precautionary measure. The Temporary barrier was removed on 29.10.2012 and the lining work could be started.

(e) Dam works

(i) Excavation Works: Due to delay in River Diversion work, the dam river bed excavation could be started only on 10.9.2013. Moreover, there has been a considerable increase in excavation quantity of dam due to change in

Geotechnical parameters necessitating revision of site slope. The excavation quantity has increased from 195845 Cum to 353294 Cum. The reasons for delay in completion of River bed excavation is due to some additional geotechnical investigation carried out in the river bed to finalize the level of dam foundation as per suggestion of Geological Survey of India. Due to conduction of 5 nos. of additional bore holes, Plate load tests and other geotechnical investigation carried out in River bed, considerable time has been lost in excavation works.

(ii) Concreting Works: The Concreting works could not be started in time due to following reasons:

i) Due to delay in excavation works as explained above.

ii) After completion of construction of U/s and D/s coffer Dams by 24.5.2013, River bed excavation was just started but due to onset of monsoon season, the excavation works had to be held up. The U/s Coffer Dam overtopped on 26.8.2013 and 6.9.2013. The excavation works could be resumed only at the end of November 2013.

iii) Additional requirement of construction of Upstream and downstream cut off walls for which special types of long boom hydraulic excavator had to be hired from external agency and considerable time has been lost to deliver the excavator at site.

iv) The Dam foundation area was made ready for concreting on May 2014 after necessary geological mapping by the Geologist from GSI but due to unseasonal heavy rain fall the U/s Coffer Dam was overtopped on 14.5.2014 and the Dam foundation area was completely inundated by water and concreting could not be started.

v) The upstream and downstream coffer Dam was overtopped for 8 times in the monsoon season of 2014 resulting in accumulation of 42000 Cum of silt in the dam foundation area. The silt could be completely removed in the last part of November 2014. The Dam concreting work has been started on 28.11.2014 after completion of necessary geological mapping by the Geologist from Geological Survey of India.

vi) The coffer Dams were overtopped due to heavy rainfall and high discharge in river for 11 times from June2015 to Sept 2015 and around 35000 cum of silt was deposited in the dam block area. The works of dam concreting was virtually stopped for 6 months. Slush clearance in block 5 and 7 took 2 months (i.e. October & November 2015) concreting work could be started in block 5 and 7 on 29.10.15. Slush clearance in other blocks could be completed only on 15.12.2015.

vii) During the year 2016, due to heavy rainfall and high discharge in the river, the dam overtopped on 23rd June, 4th July, 5th July, 7th July and 13th October 2016. Due to these overtopping and heavy rainfalls, the concreting works could not be carried out as per schedule. The approach road to dam site was washed away on 11th October 2016 and could be fully restored on 21.11.2016 but its cascading effect on progress of works continued upto January 2017 as most of the workmen left site due to stoppage of works due to overtopping of dam, rainfall and wash away of approach road.

viii) Heavy rain fall during 2016 resulted in breach of approach road to Dam near DT outlet on 11.10.2016 resulting in complete suspension of Dam concreting from 11.10.2016 to 13.10.2016. Restoration work of Road was undertaken, which was completed on 3.11.2016. Although concreting has started but progress was slow due to continuation of restoration work.

ix) The Dam approach was again eroded on 16.11.2016 and it was restored on 20.11.2016. Concreting work in the dam site area was stopped for those days and the consequential effect continued up to January, 2017.

x) Heavy rain during the months of April, 2017, May, 2017, June, 2017 (831.59 mm), July, 2017 (1018 mm), August, 2017 (467.69 mm), September, 2017 (441.46 mm) and October (373.27 mm) contributed significant loss of progress in dam concreting and hindered achievement of targeted financial progress. Especially, the rain during July, 2017 in and around the project area triggered landslide at various stretches of approach to project site affecting communication.

xi) Two flash floods passed over the dam construction site during July, 2017 when flood water spilled over the 3 spillways during 1st to 9th of July, 2017, where peak discharge was estimated to be around 1450 Cumec. Following damages were caused by the flood:

(a)Approach Road to Dam Area which facilitated dam concreting from the lower end was completely washed away at the diversion tunnel outlet.

(b)Collapse of Diversion Tunnel out let.

(c)Damage to reinforcement on the spillway bays (Block B5 & B7), Training Wall and Divide Wall (Block B7).

(d) Damage caused to scaffolding for Breast Wall of Block B6 and scaffolding of Trunion Beam (Block-5) washed away. Reinforcement in Trunnion beam had to be re worked.

xii) Huge seepage in Diversion Tunnel: The Diversion tunnel gate was lowered on 13.3.2018 and heavy seepage was observed from diversion tunnel when reservoir level reached spillway crest level. Water depth inside the tunnel was around 3 m above the invert level. Due to this leakage and its consequential effect considerable time was lost to plug the diversion tunnel which caused delay in commissioning of project.

(f) Head Race Tunnel (HRT): The boring of HRT started on 26.8.2010. The boring work is being done through three Faces which are Face- I, Face-II & Face-III. The entire length of tunnel passes through poor geology of Class- IV and encountered seepage of water for which desired progress of boring could not be achieved. Moreover, due to poor geology, a cavity was formed inside the Tunnel at Face-III at Ch- 92.5 m on 18.6.2011. During the course of restoration works, another collapse occurred on 26.8.2011 along with huge loose fall from crown and as a result of which the erected ribs in the restored zone have been twisted. As per the advice of Consultant, the restoration work by pipe roofing method was done and the Face could be restored after a loss of 10 months.

(g) Power house: There has been a considerable increase in excavation quantity of Power House due to poor geology necessitating revision of site slope. The excavation quantity increased from 81690 Cum as per DPR to 157570 Cum as per RCE. However, the Civil works of Power house could not be achieved due to reasons such as (i) Difficulties in transportation of aggregates to site due to poor condition of approach road, (ii) Frequent law & order problems from time to time, causing panic amongst the work force leading to attrition of works, (iii) Frequent bandh call in the area by various organizations due to political reasons of the state and (iv) Heavy and incessant rainfall throughout the past monsoon seasons.

11. The Petitioner has clarified that as the Civil fronts in Power House could not be made available in time due to various reasons as mentioned above, the Power House Electro-Mechanical equipments could not be erected as per schedule.

12. The Respondent APDCL in its replies has submitted the following:

(a) There is time overrun of 5 years and 9 months in commissioning of the project. It has also submitted that the Petitioner has submitted reasons of Time Overrun without submitting any documentary evidences in support of its claims, whereas the CEA in its letter had clearly mentioned certain guidelines to be followed by the Petitioner for timely commissioning of the project in close co-ordination with CEA/CWC/GSI for field investigations/ field study/cost control etc.

(b) It is clear from the submissions of the Petitioner that the delay is due to re-tendering process and the same is solely attributable to the Petitioner. It transpires that time extension were granted number of times to the contractor by the Petitioner without consideration of cost economics and proper justification. As the contractors were engaged by the Petitioner and time was extended by the Petitioner on its own, any delay due to contractors is attributable to the Petitioner.

(c) The comments of the Respondent on the item of work are as under:

Sl. No.	Work	Evidence	Views of Respondent APDCL
1	**Stone Quarry**	No evidence	For such a project, normally land is tied up/ allotted in initial stage based on the Requisition of the Project Developer. Petitioner seems to have failed to place proper requisition at the initial time of acquisition of land to AP Govt. As per stipulations under 4(i)(a) of CEA order dated 24.09.2007 non acquisition of land cannot be a reopener of Cost.
2	**Drawings**	-do-	It was the responsibility of the Petitioner to provide necessary drawings As per stipulations 4(i)(a) of CEA order dated 24.09.2007.
3	**Change in Design & Specification**		As per stipulation 4(ii) any additional expenditure for changes in design and specifications are to be absorbed by the Petitioner.
4 & 5	**Approach Road**	-do-	No increase in the cost of civil works unless it is on account of geological surprises as per CEA Letter dated 24.9.2007. Had the project construction works been as per original scheduled commissioning plan it would not have been an issue as the scheduled commissioning date was 4TH August' 2012. Anyway, as per submission of the Petitioner, the up-gradation of the Doimukh-Hoj-Potin main road under the Prime Minister's special package was started from 23RD May'2011 to 2ND October' 2012. Perhaps this is the main transportation road of the Petitioner from its Doimukh colony to its nearby

			Ranganadi HEP also since long back. So the Petitioner is accustomed with the environment as well as soil condition and nature of the road during the rainy and other season. Further, it is to be mentioned that the road condition worsens mainly during high hydro periods from July to September. Rest of the period the work should not get hampered if the Petitioner followed a proper planning for completion schedule with prudent engineering practice. The Petitioner is aware about the situation of Arunachal Pradesh (AP) where it has also other projects like Ranganadi HEP almost adjacent to the instant project. So it should have collected material stock well in advance for the monsoon season. Further, as per records submitted in this Petition, it is seen the Petitioner started interacting with the PWD, Govt. of AP from June' 2012. Under the above scenario in this case also the cause of delay is attributable to the Petitioner.
6	**Diversion Tunnel & River Diversion**	-do-	CEA order dated 24.09.2007 clearly mentioned under 4(ix) and 4(x) that no increase in civil works of the project shall be allowed at a later date on account of variation in the quantities of civil works except on account of geological surprises as approved by Expert Committee to be constituted by GOI. In absence of such approval from Expert Committee it cannot be part of project cost. The Respondent has already submitted that as per stipulation under Para 3(x) of Office Memorandum of CEA vide letter dated 24TH September' 2007, no increase in cost of civil works incurred at a later date on account of variation in quantities of civil works except on account of geological surprises as approved by the Expert Committee to be constituted by MOP, GOI shall be allowed to be part of the project cost. Also as per stipulation under Para 3(xi) of Office Memorandum of CEA vide letter dated 24TH September' 2007 that in case changes are made in design parameters during construction due site conditions or otherwise, the same should have been intimated and got concurred from the Authority before such changes are made by the Petitioner. But no such steps of the Petitioner are seen in this regard. Moreover, the reasons shown by the Petitioner in support of this claims are not supported by any documentary evidences from any third Agency like CEA, CWC, GSI.
7	**Dam works**	-do-	CEA in its letter dated 24TH September' 2007 clearly states under Para 2(i), 4(ii) and 4(x) that such expenditure are not to be considered for revision of project cost as these are attributable to the Petitioner. As submitted by the Petitioner the delay in River bed excavation was due to some additional geotechnical issues requiring investigations to be carried out by

			Geological Survey of India (GSI). Accordingly, the Petitioner took up the matter with GSI vide its Letters dated 19.02.2014, 24.11.2014 and 31.12.2014 which are available in this Petition from Page No. 40 to Page No. 63. Going by the stipulations of the CEA vide its Letter dated 24TH September' 2007 the Respondent is of the opinion that unless the said delay is not governed as per stipulations under Para 3(ii) and as per Para 3(ix), the delay seems to be attributable to the Petitioner and accordingly the cost overrun be borne by the Petitioner. Therefore, the Commission is prayed to adjudge the reason of delay in this regard whether it is attributable to the Petitioner or not. The concreting works referred herein are increase in cost of civil works prima facie due to mismanagement of the Petitioner. As such any increase in costs in this regard are to be borne by the Petitioner.
8	**Head Race Tunnel (HRT)**	-do-	Here also delay is attributable to Petitioner/its Contractor(s) going by the stipulations of CEA Letter dated 24TH September' 2007. In this case also it appears that the Petitioner did not follow the proper procedure as per stipulations of the CEA vide its Letter dated 24TH September' 2007. In case of such issues the Petitioner should have been in close contact with CEA/ CWC/ GSI and take suggestions accordingly as stipulated in the CEA Letter dated 24TH September' 2007 for smooth and timely commissioning of the Project. The Petitioner is supposed to provide the monthly status report of compliance of the conditions stipulated under Para 3 of CEA Letter dated 24TH September' 2007 to the Secretary CEA. Perhaps the Petitioner did not adhere to those stipulations resulting communication gap with the Authority which in turn affects the timely commissioning of the project. Thus there was 10 months' time overrun with the cost of loss of materials in this regard is also attributable to the Petitioner.
9	**Power House**	-do-	Reasons of delay in Power House works attributed to: a)Poor Geological necessitating revision of site slope b)Approach Road c)Frequent Law & Order, Bandh. d)Rainfall So far geological ground is concerned the CEA in its project approval order dated 24.09.2007 mentioned in Para 4(x) that any geological related civil works it must be approved by the Expert Committee to be constituted by the MOP, GOI for consideration in project cost. In absence of such committee it appears that there was no geological surprise. Same is the case with approach Road also. In connection with Law & order and Bandh issues, it is to mention that the residential area of Pare colony and Power House area are located in a lonely area, having least chances of any such disturbances. This submission seems to have

			no basis without any proof from the concerned Law & Order authorities. Rainfall issue in AP is also a known fact to NEEPCO. a)The Petitioner is accustomed with the environment and weather conditions of AP state as it owns three projects within AP. So it should have collected in advance the stockpiles of necessary materials required for every rainy season so that works does not hamper. b)The project and power house is located in an isolated area where possibility of happenings of frequent law and order situation has little chance unless the Petitioner or its Contractors do not give the chance by mishandling any issue. c)Same is the case in connection with the so called bandh calls. Frequent bandh calls in such isolated area on political grounds have very little chance unless it is justified. d)So far the claim of heavy and incessant rainfall throughout the past monsoon seasons (meaning the entire ten years of delay period) has little ground to believe unless it is substantiated with documentary evidences.
10	**Change in alignment of Diversion Tunnel and work stopped by local people**	-do-	As per stipulation under Para 3(x) of Office Memorandum of CEA vide letter dated 24TH September' 2007 there are specific guidelines that no increase in cost of civil works shall be allowed to the Petitioner at a later date on account of variation in quantities of civil works except on account of geological surprises as approved by the Expert Committee to be constituted by MOP, GOI. As per this provision no such increase in civil cost at a later date can be part of project cost, The Commission is therefore prayed not to entertain this claim of the Petitioner. So far the issue of work stopped by local people is concerned, the Respondent is of the opinion that the project site is already under the control of the Petitioner and in case there was any issues, the Petitioner could have approached the concerned District Authorities for necessary assistance and if followed timely action, the stoppage of work could have been averted. So it is totally management failure on the part of the Petitioner.

(d) The above clearly shows that the entire delay due to time & cost overrun is attributable to the Petitioner and its contractors.

(e) As the cost overrun is on account of time overrun due to reasons attributable to the Petitioner, the anticipated cost on completion or the capital cost as vetted by CEA cannot be the basis for tariff determination unless it is approved by the Competent authority, with prudence check, and exclusion of portion of capital cost escalation for reasons attributable to the Petitioner.

(f) At the time of TEC approval, it was stated that the additional expenditure required for changes in design as a result of investigation shall be absorbed by the Petitioner. Accordingly, tariff of the project may be determined on the basis of approved cost @ ₹573.99 crore, in absence of final approved capital cost of the project. Any claims of additional expenditure on account of time and cost overrun may not be admitted as the reasons for delay are attributable to the Petitioner and its contractors.

13. The Petitioner has objected to the aforesaid submissions of the Respondent and has denied that it has not submitted the requisite details as regards the time overrun. The Petitioner while stating that it has furnished detailed justifications for time & cost overrun along with documentary evidence has also submitted the following:

Sl. No.	Description	Months	Remark
1	Initial delay in awarding of contracts: The Design Consultancy tender and the EPC packages on Civil, Hydro mechanical & Electro mechanical works had to be retendered on account of extreme high rates, way beyond the estimated amount envisaged in the DPR. The retendering was done on separate packages instead of EPC, to reduce the costs. The details of retendering and cost saving is as below: a) The Design Consultancy cost came down to Rs. 17.42 from Rs. 65.43 Cr which was the offered price in the first tender.The sanctioned estimate in the DPR was Rs 5.65 crores. b) The EPC Tender for Civil & HM works was floated on 30.01.08 but due to high cost, the tender was cancelled on 23.02.09 and retendered on 25.03.2009 and work awarded on 31.08.2009. As a result of retendering, the work was awarded at Rs 323.94 crores instead of Rs 388.91 crores, offered in the first tender.	8.84	Retendering of all the packages had to be done to reduce the costs so as to ensure an affordable and consumer friendly tariff as per guidelines of the Section 9 of the CERC Regulations' 2014 as well as tariff guidelines enumerated under Section 61 of the Electricity Act' 2003. This delay therefore cannot be attributable to NEEPCO

Sl. No.	Description	Months	Remark
	The sanctioned estimate was Rs 244.81 crores. c) The Electro Mechanical work cost came down to Rs. 184.93 from Rs. 305.18 Cr after retendering. The sanctioned estimate was Rs 141.91 crores.		
2.	Change in alignment and increase in length of Diversion Tunnel and work stopped by the local people As per model studies, to accommodate plunge pool for energy dissipation, alignment of Diversion tunnel had to be changed leading to increase in length of the tunnel by 65m (from 270 m to 335 m) and the work was on hold till finalization of alignment. Further the local people forcibly stopped the works of diversion tunnel for 37 days demanding award of diversion tunnel works to them. (Model study report enclosed as **Annexure-D**).	1.94	Provision of Plunge pool for energy dissipation, was kept in the TEC issued by CEA. However, the cost of the same was not included in the DPR as it had to be designed through Model Study Report subsequent to issuance of TEC. As the Consultancy tender got delayed on account of cost saving, this delay cannot be attributable to NEEPCO.
3	f) Rain fall and construction of Trans Arunachal highway in the year 2011. The Trans-Arunachal Highway project was under PM's special package for development of Arunachal and works were underway from mid of 2011 **executed by PWD, Govt. of Arunachal Pradesh**. The Doimukh-Hoj-Potin Road which is a part of the Trans Arunachal Highway project, is the main approach road and lifeline of the Pare H.E Project. It is to mention that the Project is located between 15-18 Km from Doimukh and the stone quarry is located between Hoj and Potin village which is 17.5 Km from Dam site. Access to all these sites were affected as the approach road was under up-gradation. For widening of the road, formation cutting was resorted to and every monsoon the road became unusable for any vehicular movement. This lead to complete stoppage of transportation of manpower, equipment, aggregate and construction materials like cement, steel etc. Our communications with State PWD, District Administration, Ministry of Power, Govt. of India and Newspaper notifications and photographs in support of the same have already been submitted to the Hon'ble Commission on 28th March'2019. g) Collapse in HRT Face-3. The HRT face -3 had collapsed during construction due to Poor geology (Class- IV rock), seepage, loose fall and cavity formation on 18.06.11. Recurrence of collapse on 26.08.11 occurred during restoration. Face-3 could only be restored by adopting **Pipe Roofing Method** This **Pipe Roofing Method was approved by the Consultant to prevent recurrence of collapse & agreed to by the Design Wing of NEEPCO.** This additional work resulted in loss of 10 months. Reports of Geological Survey of India &	16.3	a) The delay was beyond the control of NEEPCO because the Trans-Arunachal highway project was executed by different agencies and which are not under the control of Pare HEP Project of NEEPCO. The time line of both the projects clashed, leading to unavoidable delay beyond the control of NEEPCO. b) This delay is on account of for poor geology not attributable to NEEPCO

Sl. No.	Description	Months	Remark
	photographs in support have been already submitted to Hon'ble Commission on 28th March'2019. Further, Additional documents are enclosed in **Annexure-E** h) Inundation of Diversion Tunnel & Collapse in HRT Diversion tunnel was inundated up to Spring level by slush due to incessant rainfall and landslide on 15th, 16th July and 4th & 5th Aug 2011. Huge quantity of muck accumulated at the outlet of Diversion Tunnel and boring works could be resumed only on 20.10.11 after a loss of 99 days. The Diversion tunnel was further inundated coupled with accumulation of slush for a depth of 1.25 m resulting in disruption of activities of Diversion Tunnel from mid June 2012 to end of July 2012. Lining works could be resumed only on 31.07.12. As the River water near the Diversion Tunnel outlet rose to alarming levels, posing threat to inundate the Diversion tunnel, the outlet was blocked on 14th Sept 2012 to prevent ingress of water and all activities inside the Diversion Tunnel were suspended as a precautionary measure. The temporary barrier was removed on 29.10.12 and the lining work was re-started thereafter. Photographs, rainfall data is support of the same have already been submitted to Hon'ble Commission on 28th March'2019. i) Increase in Diversion tunnel length As per model studies, to accommodate plunge pool for energy dissipation, alignment of Diversion tunnel had to be changed and the work was on hold till finalization of alignment. The length of Diversion Tunnel increased by 65 m for providing for Cut and cover works.		c) This delay was on account of unprecedented heavy rainfall in Arunachal Pradesh and beyond the control of NEEPCO. d) This delay is to accommodate design requirement as per TEC and not attributable to NEEPCO.
4	c) Rainfall and construction of Trans Arunachal highway in the year 2013. d) Rainfall and flooding of Dam Foundation area-year -2013 **The Upstream Coffer Dam overtopped on 26.8.13 and 6.9.13**. The dam excavation could be resumed only by end of Nov 2013. Construction of Trans Arunachal Highway along with rainfall and flooding of dam block area during 2013 had resulted in a delay of 5.56 month. Photographs, rainfall data in support have already submitted to Hon'ble Commission on 28th March'2019.	5.56	a) This has been clarified at 3(a) above and the delay is beyond the control of NEEPCO. b) Delay not attributable to NEEPCO. This is mainly due to heavy rainfall in that area.
5	Additional time for increased excavation quantity of Dam Considerable increase in dam excavation quantity due to change in Geotechnical parameters necessitate revision of site slope. Excavation quantity increased from 195845 Cum to 353294 Cum. Some additional geotechnical investigation had to be carried out in the river bed to finalize the	2.96	This measures were necessitated to avoid differential settlements, sliding of dam and arresting of seepage through dam foundation as recorded ain clause D of Annexure-V of the TEC.

Sl. No.	Description	Months	Remark
	level of dam foundation as per suggestion of GSI. Due to introduction of 5 additional bore holes, Plate load tests and other geotechnical investigation carried out in River bed and considerable time (2.96 months) has been lost in excavation works (**Annexure-E**). Reports of Geological Survey of India, photographs have been already submitted to Hon'ble Commission on 28th March'2019. This aspect has been mentioned in clause D (Dam Design aspects) of Annexure V of TEC Reports.		
6	a) Rainfall and construction of Trans Arunachal Highway in 2014. b) Overtopping of coffer Dam, flooding of dam area, removal of silt from from dam area etc in 2014 **The upstream and downstream coffer Dams were overtopped 8 (eight) times** during monsoon in 2014 resulting in accumulation of 42000 Cum of silt in the dam foundation area. Silt could only be completely removed in the last part of Nov 2014 with best efforts. Documents in support of the same are enclosed in **Annexure-E.**	6.48	This delay due to excessive rain and consequent hindrance cannot be attributable to NEEPCO
7	Rain fall, overtopping of coffer dams, flooding, removal of silt deposit etc. in the year 2015. **Both coffer Dams were overtopped due to heavy rainfall and high discharge in river 11 (eleven) times** from June 2015 to Sept 2015 and around 35000 cum of silt had deposited in the dam block area. The works of dam concreting had virtually stopped for 6 months. Slush clearance in block 5 and 7 took 2 months (i,e. October & November 2015) and concreting work could be started in block 5 and 7 only on 29.10.15. Slush clearance in other blocks could be completed only on 15.12.15. Documents in support are enclosed in **Annexure-E.**	4.73	Delay due to excessive rainfall and consequent hindrance in progress of work and additional muck/debris removal cannot be attributable to NEEPCO.
8	Delay due to additional reinforcement works in Dam during 2015 Additional reinforcement of 7 layers had to be used in Dam foundation due to poor geology besides construction of Upstream and Downstream Cut off walls which were originally not part of the DPR. But this aspect has been mentioned in clause D (Dam Design aspects) of Annexure V of TEC. Cut off walls Upstream (7.5 x 1.5 x10m Depth) and downstream (4.5 x 2 x 5 m depth) were additional requirements due to the bad geology requiring special type long boom hydraulic excavator .This was beyond the original scope of work and was a necessary requirement for the dam construction. Documents in support are enclosed in **Annexure-E.**	2.68	This was a Dam Design requirement, as per TEC to be finalized in-situ during detailed design and could not be envisaged during formulation of the DPR. Therefore this delay cannot be attributable to NEEPCO.
9	Rainfall, overtopping of dam, washing away of approach road to dam site during 2016. Besides, Shear keys in dam blocks had to be introduced as per recommendation of Kfw, Germany (Funding Partner of the project) and also as per TEC. This was to avoid differential settlement of two adjacent dam blocks and this additional feature lead to	5.84	Nature's fury and Acts of God, as also introduction of Shear keys in dam blocks led to this delay and cannot be attributable to NEEPCO.

Sl. No.	Description	Months	Remark
	delay. Heavy rainfall during 2016 resulted in breach of approach road to Dam on 11.10.16 resulting in complete stoppage of Dam concreting. Road was restored on 03.11.16. The approach road was again eroded on 16.11.16 and it was restored on 20.11.16. Documents in support are enclosed in **Annexure-E.**		
10	Unprecedented heavy rainfall during the period April 17 to Oct'2017 hampering the works of Package-I (Civil Works). Unprecedented heavy rain during the months of April & May 2017, June 2017 (831.59mm), July 2017 (1018mm), August 2017 (467.69 mm), September 2017 (441.46 mm) and October (373.27 mm) contributed to significant loss of progress in dam concreting (crest level of Block –V had to be raised) and hindered achievement of targeted financial progress of the Package Contractor. This resulted in acute financial crisis due to which mobilization of requisite quantity of construction materials especially steel and cement was severely hampered. As a cascading effect, mobilization of quality manpower and requisite machinery was adversely affected. In this scenario, the Management of NEEPCO in order to arrest the stoppage of works and to ensure early completion of Package -1, decided to make direct payments to the vendors of M/s HCC to ensure supply of steel and cement for the balance works. NEEPCO also assured M/S HCC of all possible support to complete the balance works at the earliest. In addition to the above, there were severe law and order issues, time to time, which contributed to delay in progress of works. Rainfall data has been submitted to Hon'ble Commission on 28th March'2019. Documents in supports are enclosed in **Annexure-E.**	3.30	Nature's fury and Acts of God let to this delay and cannot be attributable to NEEPCO.
11	Rainfall, overtopping of dam, land slide, poor approach road due to heavy rainfall in the monsoon of 2017. The rains during July 2017 in and around the project area triggered landslides at various stretches of approach road due to which the project site was totally cut off, leading to disruption in carriage of material and manpower to the project site. **2 (Two) flash floods passed over the dam construction site during July 2017 when flood water spilled over the 3 spillways during 1st July to 9th of July 2017, where peak discharge was estimated to be around 1450 Cu-mecs. Approach Road to Dam Area which facilitated dam concreting from the lower end was completely washed away at the diversion tunnel outlet.** Documents in support are enclosed in **Annexure-E.**	5.05	Nature's fury and Acts of God let to this delay and cannot be attributable to NEEPCO
12	Delay in Hydro Mechanical works Because of unprecedented heavy rainfall during the period April to Oct'2017 hampering the works of Package-I and especially Block-V (Described in Sl. 10	4.24	Nature's fury and Acts of God let to this delay and cannot be attributable to NEEPCO

Sl. No.	Description	Months	Remark
	above) which contributed to significant loss of progress in dam concreting , the following works were delayed. a) The Trunion assembly works had to be redone along with reinforcement works and concreting of Trunion beam in Block V. This was because of the flash floods and subsequent cascading effects. b) Construction of approach road which was required for plugging of Diversion tunnel was delayed. c) Two flash floods passed over the dam construction site when flood water spilled over the 3 spillways during 1st July to 9th July'17, and the following impediments were caused by the flood: ▪ Approach Road to Dam Area totally damaged. ▪ Collapse of Diversion Tunnel out let. ▪ Damage to reinforcement on the spillway bays (Block B5 & B7), Training Wall and Divide Wall (Block B7). ▪ Damage caused to scaffolding for Breast Wall of Block B6 and scaffolding of Trunion Beam (Block-5) washed away. Reinforcement in Trunion beam had to be re-worked. Documents in support are enclosed in **Annexure-E**		
13	Seepage in diversion tunnel gate & its rectification works and consequential delay in plugging of Diversion tunnel On lowering of Diversion tunnel gate on 13.3.18 heavy seepage was observed from diversion tunnel when reservoir level reached spillway crest level. Water depth inside the tunnel was around 3 m above the invert level. Due to this leakage considerable time was lost to plug the diversion tunnel which contributed to the delay in commissioning of the project. The letter dated 28/3/18 (is enclosed in **Annexure-F**) from Director (HPM), CEA wherein this issue was addressed in the clause no. 2, 3, 4 &5. Documents in support are enclosed in **Annexure-E.**	2.07	As observed by Director (HPM), CEA in his site visit report 25th March'2018, Although Diversion Tunnel was constructed as per IS standard but coffer dam overtopped many times due to huge inflow in the rifer, reference is drawn to clause 6 (observation during the visit). Wherein it is stated " The coffer dams of PaHEP was over toppled many times in all the monsoon periods after the river diversion in the year 2013 and almost the entire monsoon season every year could not be utilized for dam concreting during the monsoon period of the years 2014-18" This delay is due to cascading effects of flash floods and unprecedented rainfall and beyond the control of NEEPCO.
T O T A L		70.0	As observed by Director (HPM), CEA in his site visit report 25th March'2018, Although Diversion Tunnel was constructed as per IS

Sl. No.	Description	Months	Remark
			standard but coffer dam overtopped many times due to huge inflow in the rifer, reference is drawn to clause 6 (observation during the visit). Wherein it is stated " The coffer dams of PaHEP was over toppled many times in all the monsoon periods after the river diversion in the year 2013 and almost the entire monsoon season every year could not be utilized for dam concreting during the monsoon period of the years 2014-18"

COST OVERRUN – Cost variation Analysis

Sl. No.	Reasons of variation	Cost Component (Rs in crore)	% increase in Cost		Description (Major reasons for increase in cost)
			of total increase of (Rs.1066.32 crore)	of sanctioned Cost (Rs. 573.99 crore)	
1	Under / Over estimation	316.91	29.27%	55.21%	• Increase in height of Coffer Dam • Increase in length of Diversion Tunnel (270m to 335m), • Reinforcement in Dam works. • Use of micro fine grouting • Increase in award cost of Electro/Mechanical package (Rs 149.70 Cr to 184.93 Cr)
2	Addition/ Deletion	386.91	36.28%	67.41%	Due to additional Items • Inclusion of Upstream and Downstream Cut Off Walls, • Protection of Diversion Tunnel outlet, • Restoration of collapse portion of HRT • Strengthening of Diversion Tunnel out let. • Construction of Plunge Pool. • Increase in Establishment. Cost etc.
3	Price Escalation	176.84	16.58%	30.81%	As per Contract provision, this was due to increase in cost of labour, materials (steel, cement etc) & POL etc

Sl. No.	Reasons of variation	Cost Component (Rs in crore)	% increase in Cost		Description (Major reasons for increase in cost)
			of total increase of (Rs.1066.32 crore)	of sanctioned Cost (Rs. 573.99 crore)	
4	Change in Scope	11.05	1.04%	1.93%	Positive variation has occurred due to change in alignment of the LILO line for evacuation of power from the project.
5	Others	4.64	0.44%	0.81%	Service Tax, Entry Tax, GST etc.
6	IDC & FC	169.98	15.94%	29.61%	IDC increase due to increase in project cost and delay in commissioning of project.
	TOTAL	**1066.32**	**100.00%**	**185.77%**	

14. As regards the contention of the Respondent that the project cost, as determined by the CEA shall be the final for the tariff, the Petitioner has clarified that the project cost at the time of clearance was ₹553.99 crore, which was only indicative. The Petitioner has also submitted that while preparing DPR financial analysis was made on budgetary offer / assumptions and inputs from the previous experience & were on the estimate basis only. Accordingly, the Petitioner has submitted that the completed cost arrived at, is on the basis of actual implementation of the project. The Petitioner has submitted that the total project cost vetted by the CEA on 13.5.2019 is at completion cost of ₹1656.74 crore including notional FERV as on COD, as submitted to the MOP, GOI.

Analysis & Decision

15. During the meeting of the RCC on 25.3.2019, CEA was requested to examine the delay in execution of the project. It was observed by the RCC that CEA / CWC can verify the progress & hindrance registers upto an extent to examine the delay. Accordingly, the Petitioner was directed to submit the quarter wise

progress report of the project to the CEA within a weeks' time. CEA has analysed the total time overrun of 70 months in execution of Pare HEP and submitted its observation to Ministry of Power vide letter dated 2.5.2019, as requested by RCC in its meeting dated 25.3.2019. CEA observations are as follows:

Sl. No.	Description	Scheduled date/ Start date	Actual date/ End date	Period of Delay as submitted by the Petitioner (in months)	Observations of CEA
1	Initial delay in awarding of contracts	4.12.2008	31.5.2009	8.84	Verified with LoI which was issued on 31.8.2009 and found in order. The delay in award was due to high rates quoted during bidding (verified from extracts of 167 Board Meeting of the Petitioner).
2 (a)	Change in alignment of Diversion Tunnel	28.4.2010	28.5.2010	1.00	Verified with hindrance register & revised drawings and found to be in order.
2 (b)	Work stopped by the local people	21.9.2010	28.10.2010	1.22	Verified with hindrance register and found in order.
3 (a)	Rain fall and construction of Trans Arunachal highway in the year 2011	23.5.2011	2.10.2011	4.10	Except initial 25 days, the remaining period is over lapped with collapse of HRT Face-Ill, at Sl.No. 3.
3 (b)	Collapse in HRT Face - 3.	18.6.2011	5.4.2012	9.60	Verified with reports and documents submitted by the Petitioner and found to be in order.
3 (c)	Inundation of Diversion Tunnel, Collapse in HRT.	15.7.2011	18.10.2011	3.17	Overlapped with Sl. No. 3(b) so not considered.
3 (d)	Increase in Diversion Tunnel length.	20.1.2012	24.4.2012	3.16	Initial 75 days is overlap with sl. No. 3(b) and remaining period is verified with revised drawings, revised salient features, and found to be in order.
3 (e)	Rain fall and Construction of Trans highway 2012.	20.4.2012	30.9.2012	5.47	Verified with Govt. of Arunachal Pradesh, notification in newspaper, various correspondences with Govt. of A.P and other documents submitted by the Petitioner. But exact quantification in terms of time is not feasible.

Sl. No.	Description	Scheduled date/ Start date	Actual date/ End date	Period of Delay as submitted by the Petitioner (in months)	Observations of CEA
	Sub Total delay for Sl. No.3 after deducting overlap period.			**16.31**	
4 (a)	Rainfall and construction of Trans Arunachal highway in the year 2013.	22.5.2013	7.10.2013	5.56	Except initial 3 days, the remaining period overlaps with Sl. No. 4(b).
4 (b)	Flooding of Dam Foundation area- year 2013	25.5.2013	7.11.2013	5.56	Verified with various correspondences, reports and documents submitted by the Petitioner.
	Sub Total delay for Sl. No.4 after Deducting overlap period.			**5.56**	
5	Additional time for increased excavation quantity of Dam (Quantity increased from 191123 Cum as per approved cost to 353294 Cum as per actual execution at site)	20.1.2014	20.4.2014	2.96	Verified with documents submitted and found in order. Exact quantification in term of time is not feasible.
6 (a)	Rainfall and construction of Trans Arunachal Highway in 2014.	15.5.2014	30.9.2014	4.60	Overlapped with Sl. No. 6(b) so not considered
6 (b)	Overtopping of coffer Dam, flooding of dam area, removal of silt from dam area etc.	15.5.2014	28.11.2014	6.48	Verified with various reports and document submitted by the Petitioner and found to be in order. Also verified tour report of Sh. S.K. Kaul, Consultant.
	Sub Total delay for Sl. No.6 after Deducting overlap period.			**6.48**	
7	Rain fall, overtopping of coffer dams, flooding, removal of silt deposit etc. in the year 2015.	7.6.2015	29.10.2015	4.73	Verified with documents and found in order. A report in this regards was submitted to CEA vide NEEPCO letter dated 10.6.2015.
8	Delay due to additional reinforcement works in Dam during 2015.	1.11.2015	12.4.2016	2.68	Verified with documents and found in order. Exact quantification in term of time is not feasible.

Sl. No.	Description	Scheduled date/ Start date	Actual date/ End date	Period of Delay as submitted by the Petitioner (in months)	Observations of CEA
9	Rainfall, overtopping of dam, washed away of approach road to dam site during 2016, provision of shear key in dam, quantity deviation etc.	13.4.2016	21.11.2016	5.84	Exact quantification In term of time is not feasible.
10	Negative Cash Flow of the contractor and incapability to do works, additional reinforcement works in dam.	22.11.2016	5.4.2017	3.30	Verified with documents and found in order. However, exact quantification in term of time is not feasible.
11	Rainfall, overtopping of dam, land slide, poor approach road due to heavy rainfall.	06.04.2017	5.10.2017	5.05	Exact quantification is not feasible.
12	a. Reworks of trunion assembly, reinforcement works, concreting of trunion beam of block 5 because of damaged caused by flash flood and its cascading effects. b.Construction of approach road to diversion tunnel outlet for plugging of Diversion tunnel.	1.11.2017 20.1.2018	25.1.2018 10.3.2018	4.24	Verified with documents and reports and found in order.
13	Seepage in diversion tunnel & its rectification works and consequent delay plugging of Diversion tunnel.	13.3.2018	5.5.2018	2.07	Verified with documents, reports, and found in order. Director (HPM), CEA also visited the site in Mar.'18 & submitted tour report for way forward for expeditious completion of the project.
	TOTAL			**70.0**	

16. As regards time overrun, CEA in the said report has observed as under:

"Lessons learnt
1. The Diversion Tunnel of Pare HEP and most of the other HEP's is designed as per IS standards for passing the non-monsoon floods. The coffer dams of Pare HEP was over topped many times in all the monsoon periods after the river diversion in the year 2013 and so almost the entire monsoon season every year could not be utilized for dam concreting during the monsoon period of the years 2014-18. The diversion flood design for hydro-projects where dam is the critical component

needs review and the developers need to review the design of the diversion scheme considering the increase in cost of the project due to time overrun, cost of removing silt from worldng area and cost of dewatering the dam pit area vis-a-vis cost of providing enhanced diversion structure of passing monsoon floods (say 1 in 10 yeai- monsoon flow)

2. It has been noticed that there was initial delay due to delay in award of works as a result of high prices (w.r.t. estimates) quoted by bidders. The bidding price of each project not only depends on cost estimates as per BoQ, but other factors like law & order conditions, remoteness of the project, conditions of roads/infrastructure, type of bidding (Turnkey/EPC/Item-rate), geology of the area, works in hand with contractor etc. It was noticed that in case of Pare HEP the bids at the 1st instance were rejected due to high prices quoted by the bidders. After re-tendering also not much effect has been noticed. It is therefore, suggested that if participation is good (at least 3-4 bids received) then the bids may be finalized based on judgement and reasons for high price as submitted by bidder. Further, negotiation may be resorted with LI bidder to reduce the quoted price."

17. Accordingly, CEA has concluded the following with regard to time overrun:

a) The reasons for time overrun are generally found in order.

b) It has been observed that delay due to heavy rainfall, design change, poor cash flow of the contractor etc. is difficult to quantify in terms of time overrun.

c) HRT was not in critical path, however, delays in HRT have been accounted for consideration in calculating time overrun since any activity, which remains unattended, may become critical at last stage.

d) It is advised that the developers may submit the reasons and calculations for time overrun during the construction period of the project and delay, if any, during a financial/calendar year may be got periodically checked by CEA on annual basis."

18. As per the direction of the 2nd Standing Committee meeting dated 28.12.2017, the project was scheduled to be commissioned in April, 2018 and the Petitioner was directed to submit the RCE at a completion cost by May, 2018. The project cost of ₹1640.31 crore was vetted by CEA on 25.2.2019, with the breakup as follows:

Description	Amount (in crore)
Civil Works	1103.60
E&M Works	298.67
Total Hard Cost	1402.27
IDC	172.12
FC	65.92
Total	**1640.31**

19. Also, FERV of ₹28.38 crore on account of repayment of KFW loan till COD has been considered in FC in the vetted project cost by the CEA. As per IA, the project cost accorded by CCEA on 4.12.2008 is ₹573.99 crore, including IDC & FC and the capital cost claimed by the Petitioner upto the COD of the generating station (28.5.2018) is ₹1686.19 crore as per breakup details as under:

Description	**Amount** (in crore)
Hard Cost	1434.31
IDC	172.12
FC	37.53
FERV	44.80
Hedging Cost	0.02
Revenue from sale of Infirm Power	(-) 2.59
Total	**1686.19**

20. CEA vide letter dated 13.5.2019 has submitted the revised capital cost of the project as ₹1656.74 crore (₹1640.31 crore vetted at completion level) including notional FERV as on COD to MOP, GOI. The Hard cost of the project considered by the Petitioner is same as CEA vetted cost of ₹1402.27 crore.

21. We have considered submissions of the parties along with the detailed analysis of time and cost overrun carried out by CEA. Regulation 10(2) of the 2014 Tariff Regulations inter alia provides that the Commission may issue guidelines for vetting of the capital cost of the hydro- electric projects by an independent agency or expert and in that event, the capital cost as vetted by the said agency or expert may be considered by the Commission while determining tariff for the hydro generating station. As stated, while the DIA has furnished its initial report on time and cost overrun, the final report is still awaited. The Petitioner is therefore directed to furnish the same at the time of truing-up exercise of tariff.

22. We notice that in the RCC meeting held on 25.3.2019, the CEA was requested to examine the time over run and Cost overrun of the project. It was also observed by RCC that CEA / CWC can verify the progress & hindrance, in order to examine delay in project execution works. The Petitioner has submitted the detailed reports of the incidents occurred in the project area such as coffer dam overtopping, flash flood, agitation by locals, geological surprises encounter during execution, diversion tunnel seepage etc. In terms of this, CEA has carried out the detailed activity-wise analysis of time overrun in respect of issues such as coffer dam overtopping, flash flood, agitation by locals, geological surprises encounter during execution, diversion tunnel seepage & outfall collapsed, etc. Based on this, the CEA in its recommendations has observed that the reasons for time overrun are in order and has accordingly justified the time overrun of 70 months involved in the completion of the project.

23. Further, in the RCC meeting held on 25.3.2019, detailed discussions were held on the CEA vetted cost of ₹1640.31 crore, at completion level. Also, RCC has suggested to CEA to incorporate the tentative price escalation while approving the sanctioned cost. Accordingly, CEA on 13.5.2019 has vetted the revised project cost of ₹1656.74 crore, including notional FERV of ₹16.43 crore, as on COD of the generating station, and recommended the same to the MOP, GOI. CEA has vetted the project cost based on the directions of the Standing Committee on time and cost overrun of MOP, GOI.

24. It is observed that CCEA has accorded IA based on the recommendations of CEA. Further, as stated earlier, at the request of RCC, CEA has analysed and justified the time and cost overrun of 70 months in completion of the project. Accordingly, the recommendations of CEA as regard time and cost overrun is

accepted and we hold that the time overrun of 70 months in execution of project is not attributable to the Petitioner and is therefore condoned. Accordingly, the CEA vetted cost of the project of ₹1656.74 crore including ₹16.43 crore notional FERV, at completion level is allowed for the purpose of tariff. In the event of the RCE being approved by MOP, GOI, the same shall be furnished to the Commission. Accordingly, the project cost allowed by the Commission for purpose of tariff is as follows:

Description	**Amount** *(in crore)*
Civil Works	1103.60
E&M Works	298.67
Total Hard Cost	1402.27
IDC	172.12
FC	65.92
Notional FERV	16.43
Total	**1656.74**

Capital Cost

25. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (2) of Regulation 9 provides as under:

> *"9(2) 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."

26. The Petitioner has claimed capital cost of the project vide Form 1(i) (Statement showing claimed capital cost), Form 5B (Break-up of capital cost) and Form 9E (Statement of capital cost) as detailed under:

As per Form 1(i)

(₹ in lakh)

	2018-19	
	21.5.2018 to 27.5.2018	28.5.2018 to 31.3.2019
Opening Capital Cost	84439.05	168618.62
Add: Addition during the year/period	-	2368.00
Less: Decapitalisation during the year/period	-	-
Less: Reversal during the year/period	-	-
Add: Discharges during the year/period	-	1031.64
Closing Capital Cost	**84439.05**	**172018.26**

As per Form 5B

(₹ in lakh)

	Actual capital expenditure as on 28.5.2018 (actual COD)
a. Capital cost without IDC, FC, FERV & Hedging Cost	**143431.35**
b. (i) IDC	17211.91
(ii) FC	3752.09
(iii) FERV	4480.22
(iv) Hedging Cost	2.52
c. Total of IDC, FC, FERV, HC (i+ii+iii+iv)	**25446.74**
Less: revenue from sale of infirm power	259.47
Capital cost including IDC, FC, FERV & Hedging Cost (a+c)	**168618.62**

As per Form 9E

(₹ in lakh)

	As on COD of Unit-II (21.5.2018)	As on COD of Unit- I (28.5.2018)	As on 31.3.2019
a) Closing Gross Block Amount as per books	**84439.05**	**168878.09**	**170952.78**
b) Amount of IDC in (a) above	-	-	-
c) Amount of FC in (a) above	-	-	-
d) Amount of FERV in (a) above	-	-	-

e) Amount of Hedging Cost in (a) above	-	-	-
f) Amount of IEDC in (a) above	-	-	-
g) Amount of Un-discharged capital liabilities in (a) above	386.83	386.83	663.35
Gross block on cash basis (a-g)	**84052.22**	**168491.26**	**170289.43**

27. As stated, the Petitioner vide affidavit dated 26.6.2019 has furnished the revised tariff forms and has prayed to approve tariff based on the revised capital cost as on COD of the units/ station. However, the Petitioner has not furnished the audited capital cost as on COD of the Unit-II/ station COD (as on 21.5.2018 and 28.5.2018 respectively). The Petitioner has only furnished audited sheet of liability flow of main plant assets. It is noticed that the Petitioner has claimed Hard cost of the project of ₹143431.35 lakh in Form-5B as on COD, which is in excess than the Hard cost vetted by CEA for ₹140227.00 lakh. Accordingly, we restrict the Hard cost of the generating station to ₹140227.00 lakh, as on COD and same is allowed for the purpose of tariff. Similarly, the Petitioner has not furnished the capital cost as on COD of Unit-II i.e. as on 21.5.2018 vide Form-5b. The Petitioner has also not indicated the undischarged liabilities as on COD of the generating station, but has indicated undischarged liabilities as on 30.6.2018. From perusal of Form-5B, there is lack of clarity in the presentation as to whether the capital cost of ₹168618.62 lakh as on 28.5.18, is on cash basis or accrued cost. It is however noticed that the Petitioner, in form 1(i), has considered ₹168618.62 lakh as cash cost, while as per form 9E, the said cost is inclusive of undischarged liability.

28. The Petitioner, vide ROP of the hearing dated 14.5.2019 was directed to furnish the explanation for variation in capital cost as per various tariff forms, but the Petitioner has not furnished the same. Accordingly, the capital cost of ₹168618.62 lakh claimed by the Petitioner has been considered on accrual basis.

Interest During Construction (IDC)

29. The Petitioner has claimed IDC amounting to ₹17211.19 lakh as on COD of the generating station. In response to the directions of the Commission, the Petitioner has furnished the loan agreements along with details pertaining to drawls, repayment and rate of interests etc. Based on this, IDC has been worked out and allowed as claimed by the Petitioner.

30. The Petitioner has not furnished the claimed amounts of IDC and other soft cost components as on COD of Unit-II (21.5.2018) in the prescribed format. Though the Petitioner was directed to submit the revised Form 9E indicating all the details such as undischarged liabilities, IDC, FC, FERV & IEDC as on COD of each unit, it has not complied with the same. Hence, the calculated IDC has been allocated to Unit-I on the basis of the installed capacity. The IDC allowed as above, is subject to revision at the time of truing-up of tariff. The Petitioner is therefore directed to furnish, on affidavit, the amount of unit-wise allocated IDC included in the capital cost as on COD of the units/ station balance sheet, since the first infusion of funds till COD of each unit, at the time of truing-up exercise.

Financing Charges (FC)

31. The Petitioner has claimed an amount of ₹3752.09 lakh toward FC as on the COD of the generating station (28.5.2018). The Petitioner vide ROP of the hearing dated 14.5.2019 was directed to furnish Auditor's certificate with respect to the FC claimed along with the break up and documentary evidences. In response, the Petitioner vide affidavit dated 25.6.2019 has furnished the certificate of the Chartered Accountant in practice, along with the party-wise

break up and the documentary evidence of the same. Accordingly, FC claimed by the Petitioner has been allowed, subject to truing-up exercise.

Foreign Exchange Rate Variation (FERV)

32. The Petitioner has claimed an amount of ₹4480.22 lakh towards loss on account of FERV as on COD of the generating station. The Commission has directed the Petitioner to furnish statement of FERV calculation duly certified by Auditor, and the Petitioner, in compliance to the said direction, has submitted the certificate of the Chartered Accountant in practice vide its affidavit dated 25.6.2019. It is noticed that the FERV certificate furnished by the Petitioner, is in respect of FERV as on 31.3.2019 instead of the COD i.e. 28.5.2018. Based on the certificate, FERV has been allowed as ₹2804.14 lakh as against the amount of ₹4480.22 lakh claimed by the Petitioner. The Petitioner is however directed to submit, on affidavit, the calculation and documentary evidence in support of FERV as on COD of the units, duly certified by Auditor, at the time of truing-up of tariff.

33. The total capital cost vetted by CEA for ₹165674.00 lakh includes an amount of ₹1643.00 lakh towards notional FERV, which is required to be taken into account at the time of determination of tariff of the project as indicated by CEA. The Petitioner was directed to furnish the details pertaining to notional FERV of ₹1643 lakh and the Petitioner vide its affidavit dated 22.8.2019 has submitted as under:

> *"As per the prevailing Accounting Standards (Ind AS 21), the total amount of FERV (loss/gain) as on date of COD is to be capitalised. As per the Accounting Standard, the FERV is calculated after revaluing the liability of the loan at exchange rates existing as on COD. In this manner, the total FERV amount of Rs. 44.81 crores was capitalised on COD. However, CEA instructed NEEPCO to work out the FERV incurred on actual loan repayments and the notional FERV on account of revaluation of loan liability as on COD. Thus, NEEPCO worked out an amount of Rs. 28.38 crores as actual FERV and Rs. 16.43 crores as notional FERV.*

However, NEEPCO requested CEA to ignore the this difference as the Project Cost accounted in the books of the Corporation includes a total FERV of Rs. 44.81 crores without any such break up. In this regard, the letter No 18/20/2019/HPA/547 dated 13.05.2019 of CEA may please be referred wherein it is stated that for determination of tariff of the project on completed cost, the Hon'ble CERC shall consider notional FERV as on COD thereby leading the capital cost to Rs 1656.74 crores. Copy of C.E.A letter no 18/20/2019/HPA/547 dated 13.05.2019."

34. It is observed that the Petitioner has not clarified whether the amount of notional FERV is included in FERV claimed amounting to ₹4480.22 lakh nor has furnished any calculations in support of the notional FERV claimed. Though the Petitioner was directed to furnish the reconciliation between the loan amounts as per balance sheets and those as per the calculation of FERV, the same has not been furnished. In view of this, no prudence check of the notional FERV of ₹1643.00 lakh could be made and hence the same has not been allowed. However, the claim of the Petitioner shall be considered based on the detailed calculation of FERV and notional FERV, the reconciliation of the loan balances as per books with those considered in FERV calculation, duly certified by Auditor, to be furnished at the time of truing-up of tariff.

Un-discharged liabilities

35. As per Form 5B, the un-discharged liability is ₹1333.69 lakh as on 30.6.2018 duly certified by Chartered accountant in practice. The un-discharged liability as per Form 9E as on COD of the units (21.5.2018 and 28.5.2018) is ₹386.83 lakh each. In response to the directions of the Commission, the Petitioner vide its affidavit dated 25.6.2019 has submitted the statement of asset-wise, party-wise details of liability, duly certified by the Chartered Accountant in practice. In terms of this, the liability position as on COD of the generating station is ₹386.83 lakh. This has been considered for the purpose of tariff. The Petitioner is however directed to furnish the reconciliation statement between the un-

discharged liabilities claimed with those as per the audited station balance sheet as on the COD of each unit, duly certified by Auditor, at the time of truing-up of tariff.

Initial Spares

36. The Petitioner in Form 5B, has not claimed any initial spares as on COD of the generating station, in terms of Regulation 13 (c) of the 2014 Tariff Regulations. The Petitioner is however directed to furnish the details of capitalization of initial spares at the time of truing-up exercise.

Sale of Infirm Power

37. It is noticed that the revenue of ₹259.47 lakh earned by the Petitioner has been indicated by sale from infirm power as on COD of the generating station. Considering the fact that the adjustment of revenue generated from sale of infirm power in capital cost is a requirement in terms of the 2014 Tariff Regulations. Accordingly, the same is being considered and adjusted in the capital cost as on COD of the generating station. In absence of any information about the revenue from sale of infirm power as on COD of Unit-II (21.5.2018), the same has been considered as 50% of the total amount of ₹259.47 lakh i.e. ₹129.74 lakh.

Hedging cost

38. The Petitioner has claimed an amount of ₹2.52 lakh as on the COD of the generating station towards hedging cost. The Petitioner has however not furnished any details in respect of the Hedging cost in Form 4 of the petition. Accordingly, the hedging cost claimed has not been allowed. The Petitioner is directed to furnish details of the said claim at the time of truing-up exercise.

Capital cost allowed for the purpose of tariff

39. Based on the discussions above, the capital cost allowed as on COD of Unit II/ generating station for the purpose of tariff is as under:

(₹ in lakh)

	21.5.2018	**28.5.2018**
	COD of Unit-II	**Station COD**
(a) Capital cost excluding IDC, FC, FERV and hedging cost	70113.5	140227
(b) IDC	8605.95	17211.91
(c) NIDC	0.00	0.00
(d) FC	1876.05	3752.09
(e) FERV	1402.07	2804.14
(f) Hedging cost	0.00	0.00
Total Capital Cost (a+b+c+d+e+f)	**81997.57**	**163995.14**
Less: Un-discharged liability	386.83	386.83
Less: Revenue from sale of infirm power	129.74	259.47
Opening Capital cost allowed	**81481.00**	**163348.84**

Additional Capital Expenditure

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

"14. Additional Capitalization and De-capitalization:

(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."

41. The details of additional capital expenditure claimed by the Petitioner for the year 2018-19, on accrual basis, are as under:

(₹ in lakh)

	2018-19	
	(21.5.2018 to 27.5.2018)	(28.5.2018 to 31.3.2019)
Add: Additions during the year	-	2368.00
Add: Discharges during the year	-	1031.64
Total additional capital expenditure	-	3399.64

42. The Petitioner has claimed the hard cost of the project as ₹143431.35 lakh as on COD. However, the hard cost considered and allowed by the Commission as on COD, in para 27 above, is ₹140227.00 lakh. Accordingly, the additional capital expenditure of ₹2368 lakh claimed by the Petitioner is not allowed. However, with regard to discharges, the Commission in para 39 of this order, has identified / allowed an amount of ₹386.83 lakh as un-discharged liability, as on COD of the generating station (as per Form 9E). As such, the claim for ₹1031.64 lakh as discharged during the year has been restricted to ₹386.83 lakh. In view of this, the capital cost allowed for the purpose of tariff is as under:

(₹ in lakh)

	2018-19	
	21.5.2018 to 27.5.2018	28.5.2018 to 31.3.2019
Opening capital cost	**81481.01**	**163348.84**
Add: Addition during the year	0.00	0.00
Add: Discharges during the year	0.00	386.83
Closing capital cost	**81481.01**	**163735.67**

Debt-Equity Ratio

43. 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."

44. As per Form-6, the Petitioner has claimed the debt equity ratio of 70:30. The financial package as on COD of the generating station is as under:

(₹ in lakh)

	Amount	Percentage (%)
Total Debt	115971.62	70
Total Equity	49702.12	30
Total funds	**165673.74**	**100**

45. As per Form-14, the actual debt equity, as on COD, is as under:

(₹ in lakh)

	Amount	Percentage (%)
Total Debt	115878.45	84.89
Total Equity	20620.25	15.11
Total funds	**136498.70**	**100**

46. The Commission vide ROP of the hearing dated 14.5.2019 had directed the Petitioner to furnish, amongst others, the following:

> *"(i) Reconciliation between the project expenditure as per Form 14A and sources of funds as per Form 14;*
>
> *(ii) Explanation as regards applying the debt equity ratio of 70:30 for calculation of RoE and Interest on normative loan, despite of the DER as per Form 14 being 85:15"*

47. In response, the Petitioner, after reconciliation of Forms-14 and 14A has submitted the reconciled statement in Form-14A. It is observed from the reconciliation statement that apart from the equity funding from GOI, funding has also been made through internal resources of the Petitioner. With respect to applying the debt equity ratio of 70:30 for calculation of RoE and Interest on normative loan, despite the debt-equity ratio of 85:15, the Petitioner has submitted as under:

> *"The Project has been approved with a DER of 70:30 with Equity to be funded by the Government of India. The Government of India will release Equity up to 30% of the Revised Cost Estimate (Completion Cost) upon approval of the same. For according approval of the Revised Cost Estimate (Completion Cost) by the CCEA/PIB the same is under examination by the Revised Cost Committee.*
>
> *As on the date of submission of relevant data, NEEPCO had received CEA vetting of the Revised Cost Estimate (Completion Cost). In this regard, it is informed*

that in the Form 14 actual release of Equity of Rs. 206.2025 crores has been shown, which is less than the eligible Equity. The eligible Equity considering 30% of the CEA vetted Project Cost of Rs. 1640.31 crores would be Rs.492.093 crores. The balance Equity shall be received once the Revised Cost Estimate (Completion Cost) is approved and the DER will be maintained at 70:30."

48. The Respondent APDCL has submitted that the debt-equity ratio of 70:30 is the ceiling norm. It has stated that if the equity actually deployed is less than 30% of the project cost, then the actual equity is to be considered and in case of excess equity than 30%, the excess quantity be treated as normative loan. The Respondent has sought confirmation from the Petitioner as to whether the debt-equity ratio is 70:30 claimed is 85:15 on the basis of Form-14. The Respondent has therefore prayed that the debt-equity ratio may be determined as per provisions of Regulation 19 of the 2014 Tariff Regulations.

49. The matter has been considered. Based on the clarification submitted and the reconciliation furnished by the Petitioner, the debt equity ratio of 70:30 has been considered. This is subject to revision based on truing-up exercise. The Petitioner is directed to furnish the actual amount of equity received from GOI along with Auditor certificate with regard to infusion of fund through internal sources, at the time of truing-up exercise.

Return on Equity

50. 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.

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

25. 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."

52. The Petitioner has claimed MAT rate of 2018-19 for grossing up of ROE. In terms of the above regulation, effective tax rate is required to be considered on the basis of actual tax paid during the financial year. As such, the tax rate claimed by the Petitioner, on projection basis, has not been considered for the purpose of tariff. As the effective tax rate has not been furnished by the Petitioner, we deem it proper to allow the grossing up of RoE on projected basis, with the MAT rate applicable for 2013-14 as per methodology adopted by the Commission. The Petitioner is however directed to furnish, on affidavit, the detailed calculation of the effective tax rate, duly certified by Auditor and supported by tax audit report for the respective years, at the time of revision of tariff based on truing-up exercise in terms of Regulation 8 of the 2014 Tariff Regulations. Return on Equity has been computed as under:

(₹ in lakh)

	2018-19	
	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Gross Notional Equity	24444.30	49004.65
Addition due to additional capital expenditure	0.00	116.05
Closing equity	24444.30	49120.70
Average equity	24444.30	49062.68
Return on equity (Base Rate)	16.500%	16.500%
Tax rate for the year	20.9605%	20.9605%
Rate of Return on equity	20.876%	20.876%
Return on equity (pro-rata)	**97.87**	**8642.84**

Interest on Loan

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

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

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

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

54. The salient features for computation of interest on loan is as under:

a) The opening gross normative loan as on COD of each unit has been arrived at in accordance with Regulation 26 of the 2014 Tariff Regulations.

b) 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.

c) The repayment for the period considered equal to the depreciation allowed for that period.

d) The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest.

55. Accordingly, interest on loan has been worked out as under:

(₹ in lakh)

	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Gross Normative Loan	57036.70	114344.19
Cumulative Repayment upto Previous year	0.00	77.66
Net loan-opening	57036.70	114266.52
Repayment during the year	77.66	6858.74
Addition due to additional capitalization	0.00	270.78
Net loan-closing	56959.04	107678.57
Average Loan	56997.87	110972.54
Weighted average rate of interest on loan	5.52%	5.52%
Interest on loan (pro-rata)	**60.34**	**5169.07**

Depreciation

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

"27. Depreciation:

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

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

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

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

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

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

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

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

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system: Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

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

(7) The generating company or the transmission 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."

57. Accordingly, depreciation has been calculated as under:

(₹ in lakh)

	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Gross Block	81481.00	163348.84
Opening Gross Block	0.00	386.83
Additional capitalization	81481.00	163735.67
Closing gross block	81481.00	163542.25
Rate of Depreciation	4.970%	4.970%
Depreciable Value	73332.90	147188.03
Remaining Depreciable Value	73332.90	147110.36
Depreciation (pro-rata)	**77.66**	**6858.74**

O&M expenses

58. Regulation 29 (3) (d) of the 2014 Tariff Regulations provides as under:

> *"a. xxxxx*
> *b. xxxxx*
> *c. xxxx*
>
> *d. In case of the hydro generating stations declared under commercial operation on or after 1.4.2014, operation and maintenance expenses shall be fixed at 4% and 2.50% of the original project cost (excluding cost of rehabilitation & resettlement works) for first year of commercial operation for stations less than 200 MW projects and for stations more than 200 MW respectively and shall be subject to annual escalation of 6.64% per annum for the subsequent years."*

59. The COD of the generating station is 28.5.2018. The project cost as on the cut-off date of the generating station (31.3.2021) is not available. Considering the fact that the completion cost of ₹163735.67 lakh has been allowed, the same is considered for the purpose of calculation of O&M expenses. The Petitioner has submitted that expenditure towards Rehabilitation and Resettlement as on station COD of Unit–II (21.5.2018) is ₹1821.57 lakh and the same is considered for calculation of the allowable O&M expenses. Based on the above, the O&M expenses allowed for the period 21.5.2018 to 31.3.2019 is worked out as under:

(₹ in lakh)

	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Capital cost considered as on COD of Units/station	81481.01	163735.67
Less: R&R expenses	1821.57	1821.57
Capital cost for the purpose of O&M expenses	79659.44	161914.10
Annualized O&M expenses @ 4% of above	3186.38	6476.56
Number of days	7	308
O&M expenses allowed for the period	**61.11**	**5465.16**

Interest on working capital

60. Sub-section (c) of Clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

> *"28. Interest on Working Capital:*
> *(1) The working capital shall cover*

(c) Hydro generating station including pumped storage hydro electric generating Station and transmission system including communication system:

(i) Receivables equivalent to two months of fixed cost;

(ii) Maintenance spares @ 15% of operation and maintenance expense specified in regulation 29; and

(iii) Operation and maintenance expenses for one month."

61. Accordingly, Receivables considering two months of fixed cost is worked out and allowed as under:

(₹ in lakh)

21.5.2018 to 27.5.2018	28.5.2018 to 31.3.2019
50.82	4472.84

62. Maintenance spares @ 15% of the O&M expenses is worked out and allowed as under:

(₹ in lakh)

21.5.2018 to 27.5.2018	28.5.2018 to 31.3.2019
9.17	819.77

63. O&M expenses (one month) is allowed as under:

(₹ in lakh)

21.5.2018 to 27.5.2018	28.5.2018 to 31.3.2019
5.09	455.43

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

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

65. In terms of the above regulations, the Bank Rate of 12.20% (Base Rate as on 1.4.2018 + 350 Basis Points) has been considered by the Petitioner. This has been considered in the calculation for the purpose of tariff. Accordingly, Interest on working capital is allowed as under:

(₹ in lakh)

	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Maintenance Spares	9.17	819.77
O & M expenses	5.09	455.43
Receivables	50.82	4472.84
Total	65.08	5,748.05
Interest on working capital @ 12.20% *(pro-rata)*	**7.94**	**701.26**

Fixed Charges

66. Based on the above, the fixed charges approved for the generating station is summarized as under:

(₹ in lakh)

	21.5.2018 to 27.5.2018	**28.5.2018 to 31.3.2019**
Return on Equity	97.87	8642.84
Interest on Loan	60.34	5169.07
Depreciation	77.66	6858.74
Interest on Working Capital	7.94	701.26
O & M Expenses	61.11	5465.16
Total (pro-rata)	**304.92**	**26837.06**

Operational Norms

67. The operational norms claimed by the Petitioner for the purpose of tariff are as under:

Normative Annual Plant Availability Factor (NAPAF) for recovery of fixed charges and for incentive	85%
Auxiliary Energy Consumption (AEC)	1%
Local Area Development Fund	1%

Normative Annual Plant Availability Factor (NAPAF)

68. As stated, the generating station is a run of the river with pondage type hydroelectric project. Regulation 37 (1) of the 2014 Tariff Regulations provides as under:

(a) Storage and Pondage type plants with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of up to 8%, and where plant availability is not affected by silt: 90%

(b) In case of storage and pondage type plants with head variation between full reservoir level and minimum draw down level is more than 8% and when plant availability is not affected by silt, the month wise peaking capability as provided by the project authorities in the DPR (approved by CEA or the State Government) shall form basis of fixation of NAPAF.

69. In terms of the above regulation, NAPAF is 90%. Further, in terms of Regulation 37(3) of the 2014 Tariff Regulations, an allowance of 5% has been stipulated for the difficulties in North East Region. Accordingly, NAPAF of 85% is allowed for the generating station for the period 2018-19.

Auxiliary Energy Consumption (AEC)

70. Regulation 37 (6) (a) of the 2014 Tariff Regulations provides as under:

"(6) Auxiliary Energy Consumption (AUX):
(a) Surface hydro generating stations

(i) with rotating exciters mounted on the generator shaft: 0.7%"

(ii) with static excitation system: 1.00%

71. The AEC of 1% claimed by the Petitioner is in order and accordingly the same has been allowed.

Enhancement of O&M expenses

72. The Petitioner has submitted that the salary/wage revision of its employees of the Petitioner is due with effect from 1.1.2017. The Petitioner has also submitted that the escalation of 6.64% provided in O&M expenses would not cover the enhanced employee cost with effect from 1.1.2017. Accordingly, the Petitioner has sought the enhancement in O&M expenses, with effect from 1.1.2017, towards the increased salary, on account of its revision from 1.1.2017, as per actual payments, whenever made by it. The Petitioner has submitted that the Commission may, in exercise of its power under Regulation 54 & 55 of the 2014 Tariff Regulations (Power to relax) allow the same.

73. The Respondent APDCL in its reply affidavit has submitted that had the Project been commissioned within the scheduled commissioning date, it would have been a win-win situation for both sides. It has pointed out that because of failure of the Petitioner to bring the machines in time, the Respondent is deprived from its share of power from the project and it had to purchase that quantum from the short term markets at higher tariff, thereby incurring financial losses. The Respondent has contended that further booking of additional funds for enhanced O&M Expenses for revision of salary/ wage of its employees with effect from 1.1.2017 would amount to additional financial burden for the Respondent. Accordingly, the Respondent has prayed that the Petitioner may meet up such fund of employees cost from its corporate fund.

74. The matter has been examined. On this issue, the Commission in the Statement of Reasons to the 2014 Tariff Regulations has observed as under:

"29.26 Some of the generating stations have suggested that the impact of pay revision should be allowed on the basis of actual share of pay revision instead of normative 40% and one generating company suggested that the same should be considered as 60%. In the draft Regulations, the Commission had provided for a normative percentage of employee cost to total O&M expenses for different type of generating stations with an intention to provide a ceiling limit so that it does not lead to any exorbitant increase in the O&M expenses resulting in spike in tariff. The Commission would however, like to review the same considering the macro economics involved as these norms are also applicable for private generating stations. In order to ensure that such increase in employee expenses on account of pay revision in case of central generating stations and private generating stations are considered appropriately, the Commission is of the view that it shall be examined on case to case basis, balancing the interest of generating stations and consumers"

75. Accordingly, the prayer of the Petitioner for enhancement of O&M expenses, if any, due to pay revision, may be examined by the Commission on a case to case basis, subject to the implementation of pay revision as per DPE guidelines and the filing of an appropriate application by the Petitioner in this regard.

Design Energy (DE)

76. CEA while granting Techno-Economic Clearance of the project has approved the DE of 506.424 GWh. The month-wise breakup of DE is as under:

Months	10 days monthly DE	DE (Energy with 95% installed capacity)
May	I	17.87
	II	18.72
	III	15.87
June	I	19.48
	II	25.08
	III	25.08
July	I	25.08
	II	25.08
	III	19.95
August	I	24.02
	II	25.08
	III	20.42
September	I	12.74
	II	12.32
	III	17.24
October	I	9.67
	II	8.07
	III	11.03
November	I	14.81
	II	13.48
	III	9.10
December	I	8.81
	II	8.59
	III	10.14
January	I	8.77
	II	8.09
	III	9.97
February	I	8.07
	II	7.96
	III	5.32
March	I	7.89
	II	9.69
	III	11.28
April	I	11.33
	II	11.08
	III	9.24
Total		**506.424**

77. The Petitioner shall submit details based on the actual audited expenditure as on COD of the units/station and additional capital expenditure, if any, at the time of truing-up exercise.

Application Fee and Publication Expenses

78. The Petitioner has sought reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2018-19. The Petitioner has deposited the filing fees for the period 2018-19 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The Petitioner has also submitted that it has incurred charges towards publication of the tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations, the Petitioner is entitled to recover filing fees and the expenses incurred on publication of notices directly from the respondents / beneficiaries on pro-rata basis on production of documentary proof. Excess amount, if any, shall be adjusted against the petition to be filed for the next tariff period.

79. The fixed charges approved for the period 2018-19 are subject to revision based on truing-up exercise in terms of Regulation 8 of the 2014 Tariff Regulations. The tariff recovered by the Petitioner shall be adjusted against the tariff determined by this order.

80. Petition No. 149/GT/2018 is disposed of in terms of the above.

Sd/-	*Sd/-*	*Sd/-*
(I.S.Jha)	**(Dr. M.K. Iyer)**	**(P.K.Pujari)**
Member	**Member**	**Chairperson**