Annexure

Comments/Observation of CEA on the Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019

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1.	----	**General Comment**	The costs associated with flexible operation may be accounted for in the Tariff Regulations 2019-24.Suitable provisions may be incorporated for compensatingconventional generators mainly thermal plants, for bearing higher O&M expenses and loss in efficiency, consequent to ramp up/down of generation to integrate the variable and intermittent renewable generation.	As per National Electricity Plan, India has targeted to have 175 GW of RES Installed capacity out of the total projected installed capacity of 479 GW by 2021-22. This RE based capacity which is inherently variable and intermittent in nature would contribute to about 20 % of the total Energy Generation by 2021-22. The flexible operation of conventional power plants in order to counter the intermittency of renewable generation becomes inevitable.Coal fired power plants are generally designed for base load operation and significant amount of investment is required for flexible operation both in terms of capital and in terms of operational expenditure.Due to RE based generation, conventional generation would be required to significantly ramp up/down their generation during operation on daily basis. **This may lead to loss in efficiency and higher O&M expenses for the conventional generators mainly thermal plants.**
2.	----	**General Comment**	Framing of necessary regulations to adopt ToD (Differential) Tariff for hydro would encourage development of hydro in general and pumped storage schemes in particular. However, no such provision has been introduced in the present draft Regulations,2019, for Hydro generating stations while there is a provision for	Hydro projects and Pumped Storage Projects both have the ability of instantaneous start, stop and load variation (i.e. operating capability at base load, peak load or part load as per requirement), thereby ideally suited for peaking and balancing operation for improving the reliability of power system especially in light of large renewable capacity

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			recovery of Peak period Capacity Charge and Off-peak period Capacity Charge for Thermal Generating Stations.	addition envisaged in coming years. The Tariff Policy, 2016 notified on 28.01.2016, provides for Differential Tariff structure i.e. Time-of-Day Tariff introducing differential rate of fixed charges for peak and off-peak hours, for generating stations within 2 years of notification.
3.	----	**General Comment**	Developers of the hydro projects, with the consent of beneficiaries, may be given flexibility to opt for levelised tariff for useful life of 40 years based on final norms for the period 2019-24 and an agreed tariff profile.	Presently, most of the Discoms are reluctant to sign PPA for hydro projects due to high initial tariff. However, hydro power is essential for balancing, peaking and energy security considerations. Our proposal will allow a tariff profile comfortable to the beneficiaries such a back loaded tariff with price increasing every year by 2%. During a meeting held in Ministry of Power recently, Banks were willing to modulate loan repayment schedule to suit such tariff profile.
4.	----	**General Comment**	It is suggested that the provisions of the CERC (Standards of Performance of Transmission Licensees) Regulations 2012 should also be included in the terms and conditions of Tariff Regulations for 2019-24 and the compensation should be through a regulatory mechanism instead of States/DICS applying for the same.	The CERC (Standards of Performance of Transmission Licensees) Regulations, 2012 is intended to regulate undue outages in the Transmission system and also provides compensation to the affected utilities/Designated ISTS Customers (DICs). However, it is seen that this Regulation is not being used by the utilities/DICs, though there are incidences of reduction in load/generation due to outages of the transmission elements.
5.	**Page 6/ 3(14)**	**3. <u>Definitions</u>** **(14)** '**Cut-off Date**' means the last day of the calendar month after three years from the date of commercial operation of the project	It is suggested to amend the subject items of Clause as under: "(14) '**Cut-off Date**' means the last day of the calendar month after **two years** from the date of commercial operation of the project except for the rehabilitation and resettlement	The cut-off date should not be extended beyond the period of two years from the date of commercial operation of the project, as is mentioned in the existing CERC Tariff Regulations 2014-19. Once a plant has achieved commercial operation it means that all the main plant equipment and auxiliary

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			(R&R) expenses in case of hydro generating station; Provided that the cut-off date may be extended by the Commission if it is proved on the basis of documentary evidence that the capitalisation could not be made within the cut-off date for reasons beyond the control of the project developer;"	systems including Balance of Plant, such as Fuel Oil System, Coal Handling Plant, DM plant, pre-treatment plant, fire-fighting system, Ash Disposal system and any other site specific system have been commissioned and are capable of full load operation of the generating units on sustained basis. Ideally all the necessary systems have to be completed before the date of commercial operation itself. However, there might be some balance works which might be pending and for this purpose, two years is more than sufficient. Increasing the cut-off date from two years to three years shall lead to inefficiency and undue burden on the ultimate consumers. Hence, the suggestion has been made. An exception to the above situation is the case of rehabilitation and resettlement (R&R) expenses in case of hydro generating stations, which is stated to entail a period beyond two years of date of commercial operation and sometimes even extending to a time frame of nearly ten(10) years.
6.	**Page 21/ 3(79)**	**3. <u>Definitions</u>** **(79) '*Useful life*'** in relation to a unit of a generating station, integrated mines, transmission system and communication system from the date of commercial operation shall mean the following…………… **(d) AC and DC sub-station: 25 years** **(e) Gas Insulated Substation**	It is suggested to amend the subject items of Clause as under: "The '**Useful life**' of AC and DC substation/GIS substation is 25 years. Provided that the useful life for AC and DC substations and GIS for which Notice Inviting Tender is floated on or after 01.04.2014 shall be considered as 35 years; Provided further that the extension of life of the projects beyond the completion of their useful life shall be decided by the	The existing CERC Tariff Regulations for 2014-19 mandate that the useful life for AC and DC substations and GIS for which Notice Inviting Tender is floated on or after 01.04.2014 shall be considered as 35 years. It further provides that the extension of life of the projects beyond the completion of their useful life shall be decided by the Commission. It is suggested that the above provision should be continued as these substations are expected

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		(GIS) : 25 years	Commission;”	to have a life of more than 35 years with advancement in technology having contributed to increase in service life of major equipment / material of substation / transmission lines.
7.	**Page 21/ 3(79)**	**3. <u>Definitions</u>** **(79) ‘Useful life**’ in relation to a unit of a generating station, integrated mines, transmission system and communication system from the date of commercial operation shall mean the following………….. **(f) Hydro generating station including pumped Storage hydro generating stations: 40 years**	Considering Design life of 35 years for Hydro power plant, cost capitalization of life extension works should be allowed in case it is required so before 40 years.	As per CEA Technical Standards for construction of Electrical Plants and Electric Lines Regulations, Design life in Hydro power plants for civil works is 100 years whereas for E&M works, it is 35 years only. This is with consideration of the high content of silt and quartz in the water as per Indian Geological conditions specifically in the Himalayan belt.
8.	**Page 21/ 3(79)**	**3. <u>Definitions</u>** **(79) ‘Useful life**’ in relation to a unit of a generating station, integrated mines, transmission system and communication system from the date of commercial operation shall mean the following………….. **(g) Transmission line (including HVAC & HVDC) : 35 years**	The useful life of **transmissionlines** may be increased to at least **40 years**instead of 35 years.	Over the years the advancement in technology has contributed to increase in service life of major equipment / material of transmission lines. Therefore, the enhancement in useful life of transmission line may be considered to match with new/ advancement in technology.
9.	**Page 21/ 3(79)**	**3. <u>Definitions</u>** **(79) ‘Useful life**’ in relation to a unit of a generating station, integrated mines, transmission	It is opined that 15 years useful life is a long period for communication system and may be reduced to **10 years**.	The suggestion is in line with the fact that communication technology is fast changing and accordingly to match with the new technology, the associated communication

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		system and communication system from the date of commercial operation shall mean the following…………… **(h) For communication system: 15 years**		equipment needs to be replaced.
10.	**Page 25 / 6**	**6. Treatment of mismatch in date of commercial operation:**	The Scheduled Commercial Operation Date (SCOD) of Generator and associated transmission system may be same in case the generator is getting connected with an existing ISTS point. In cases, where ISTS point has to be created for providing grid inter-connection to the generator, the SCOD of transmissions system has to be earlier than the generator SCOD. The above aspects may be specified in the Tariff Regulations for clarity. It may further be clarified that the aspect of mismatch would be considered with respect to the SCOD of the generating station and the transmission system, as the case may be.	The suggestion is in line with Clause 7.0(1) of the Tariff Policy which stipulates as under: *“Ensuring optimal development of the transmission network ahead of generation with adequate margin for reliability and to promote efficient utilization of generation and transmission assets in the country.”* The suggested linkage of mismatch with the respective SCOD will entail a fair degree of commitment.
11.	**Page 25 / 6(1)**	**6. Treatment of mismatch in date of commercial operation:** **(1)** In caseof mismatch of the date of commercial operation of the generating station and the transmission system, the treatment of the transmission charges shall be determined as under: ……………………………..	The stated stipulations regarding delay by generating company and transmission licensee are applicable to projects whose tariff is to be determined under Section 62 of the Act. There is a need to have separate Regulations regarding compensation for delay covering generation and transmission projects under Section 62 as well as Section 63 of the Act.The basic philosophy of compensation needs to be the same irrespective of the fact that the projects are under Section 62 or 63 of the Act.	It is clear from Clause 2 of the said draft CERC Tariff Regulations,2019, that these Regulations are applicable to generating companies and transmission licensee whose tariff is to be determined under Section 62 of the Electricity Act, 2003.However, with the requirement of procuring power and transmission service through competitive bidding, very few projects will now come up under Section 62 of the Act. Further, there may be many a situation where a generation project may be covered under Section 62 of the Act while transmission project may be coming under Section 63 or vice versa and

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				Clause 6 shall also not be applicable in such cases. Therefore, there is a need to have separate Regulations regarding compensation for delay covering generation and transmission projects under Section 62 as well as Section 63 of the Act.In fact, in a meeting held on 26.10.2018 in Ministry of Power on the SBD for TBCB for transmission projects, representative of CERC had agreed for specific Regulations regarding compensation for delay and therefore, the idea of having Implementation Agreement as part of SBD for TBCB has been dropped.
12.	**Page 26 / 6(1)(b)**	**6. Treatment of mismatch in date of commercial operation:** **(1)** In caseof mismatch of the date of commercial operation of the generating station and the transmission system, the treatment of the transmission charges shall be determined as under: …………………………….. **(b)**Where the associated transmission system has not achieved the commercial operation as on the date of commercial operation of the concerned generating station or unit thereof, the transmission licensee shall make alternate arrangement for the evacuation from the generating station at its own cost, failing which, the transmission licensee shall be	The stated Clause and its Proviso make a reference to applicable transmission charges of the region. Since, there are no regional transmission charges in the present PoC regime, there is a need to modify/amend this Clause appropriately.	There are no regional transmission charges in the present PoC regime.

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		liable to pay the transmission charges to the generating company at the rate of the applicable transmission charges of the region as determined in accordance with the Sharing Regulations till the transmission system achieves the commercial operation.		
13.	**Page 26 / 6(2)**	**6. Treatment of mismatch in date of commercial operation:** **(2)** In caseof mismatch of the date of commercial operation of the transmission system and the transmission system of other transmission licensee, the treatment of the transmission charges shall be determined as under: ……………………………..	The subject Clause lacks clarity and therefore may be redrafted and if required, an illustration may be included. Further, the compensation is stated to be the transmission charges of the affected transmission licensee, which may turn out to be unfair for the licensees executing smaller transmission system.	It is possible that one transmission licensee may be making available only a bay costing few crores of Rupees whereas the other transmission licensee may be constructing a transmission line costing hundreds of crores of Rupees. It would be unfair and undesirable to ask the licensee making bay, to compensate other licensee for its transmission charges. This would enhance the risk burden of transmission licensee executing smaller transmission system and may lead to restrained participation and higher tariff under TBCB route.
14.	**Page 34/ 9(3)**	**9.<u>Application for determination of Tariff</u>** **(3)** In case of emission control system required to be installed in existing generating station as per revised emission standards, the application shall be made for determination of supplementary tariff (fixed charges or variable charges or both) based on the actual capital expenditure duly certified by the Auditor.	Appropriate timeline may be specified for submission of application for determination of supplementary tariff and removal of deficiencies in the application, may be explicitly stipulated. Also, the relevant tariff filing forms may be added in the draft Regulations in case of installation of emission control system in the existing generating station.	The suggestion is for the purpose of brevity and comprehensiveness of the said Regulations.
15.	**Page 38/**	**13. Truing up of tariff for the**	It would be appropriate to suggest a	The stipulation of timeline will ensure a time

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	13(3) (1st Proviso)	**period 2019-24** **(3) 1st Proviso** Provided that if the actual additional capital expenditure falls short of the projected additional capital expenditureallowed under provisions of Chapter 7 of these Regulations, the generating company or the transmission licensee, as the case may be, shall not be required to file any interim true up petition for this purpose and shall refund to the beneficiaries or the long term customers, as the case may be, the excess tariff recovered corresponding to the projected capital expenditure not incurred under intimation to the Commission at the bank rate as on 1st April of the respective years.	reasonable timeline for the said exercise of refund to be undertaken and effected by the generating company or transmission licensee, as the case may be.	bound compliance by the generating company or transmission licensee, to avoid any slow response to the disadvantage of the concerned beneficiaries.
16.	**Page 41/ 16**	**16. <u>Variable Charges or Energy Charges</u>** : Energy charges shall be derived on the basis of the landed fuel cost(LFC) or variable cost of a generating station (excluding hydro) and shall consist of the following cost: (a) Landed Fuel Cost of primary fuel; and (b)Cost of secondary fuel oil consumption	In line with Clause 46, the cost of reagents should also be included in Variable Charges under Clause 16.	Clause 46 of the draft CERC Regulations stipulates that the variable cost in respect of the thermal generating stations shall comprise landed cost of primary fuel, Cost of secondary fuel oil consumption and cost of reagents on account of implementation of the revised emission control standards.

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17.	**Page 43/ 17(1)**	**17. <u>Debt-Equity Ratio</u>** (1) For new projects, the debt-equity ratio of 70:30 as on date of commercial operation shall be considered. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.	Substantial reduction in tariff is expected as we move from debt-equity ratio of 70:30 to 80:20. However, since Tariff Policy stipulates debt-equity ratio of 70:30, the Commission may consider giving incentive for new projects for having a debt proportion greater than 70%. This will benefit developer as well as beneficiaries. A detailed note on the subject considering an example for Hydro Projects, is attached separately for appropriate consideration.	The suggested mechanism will be a win-win situation for both the project developer as well as the beneficiaries.
18.	**Page 46/ 18(2)**	**18. <u>Capital Cost</u>** (2) The Capital Cost of a new project shall include the following…………..	The capital cost of a new project shall also include the capital expenditure incurred on collection and disposal of by-products of emission control methods (e.g. Gypsum in case of Wet FGD).	This would be necessary in view of implementation of the revised emission norms.
19.	**Page 65/ 30(2)**	**30. <u>Return on Equity</u>** (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 stations with pondage. Provided that: i. Return on equity in respect of additional capitalization after cutoff date within or beyond the original scope shall be computed	1. **The proposed Return on Equity (RoE) of 15.5% needs to be reviewed due to the following reasons**: (i) The macro-economic conditions as well as market conditions are different from that prevailing in 2014, when previous Tariff Regulations were finalized. In the Statement of Reasons pertinent to Tariff Regulations for 2014-19 period, the Commission had found cost of equity in the range of 13-15% and therefore had decided to stipulate RoE of 15.5%. Now, in the Explanatory Memorandum for the Tariff Period 2019-14, it is mentioned that cost of equity for regulated entities is found in the range of 12-15%. It is a common regulatory practice worldwide to fix norms/benchmarks on the basis of “best values” for customer. At the most	In order to encourage peaking/ balancing operation of the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating stations with pondage, it is proposed to allow RoE of 16.5% only in case the stations exhibit peaking capability.

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		at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system;	norms/benchmarks can be fixed on average basis. However, there appears to be no justification for fixing norms on the basis of "worse values", particularly in view of the Section 61(d) of the Act, which provides that the Commission, while specifying the terms and conditions for determination of tariff, shall be guided by the principle of "safeguarding of consumer's interest and at the same time, recovery of cost of electricity in a reasonable manner". (ii) One reason for specifying RoE on higher side could be to attract investment. However, this rationale is also not applicable in present situation. The National Electricity Plan(NEP) prepared by CEA indicates that materialization of existing capacity of conventional generation which is under construction will be more than sufficient to meet the requirement of additional generation capacity till 2022. Further, during the period 2022-27 also, hydro capacity of about 12,000 MW and coal based capacity of about 46000 MW will be required in addition to anticipated commissioning of RE and Nuclear capacity. Also, most of the coal based capacity in future is likely to be on the basis of tariff based competitive bidding. (iii) In April 2017, CERC had brought out the Tariff Regulations for Renewables where RoE has been fixed at the rate of 14%. The country needs more investment in RE sector not only to achieve policy	

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			goals but also to ensure better environment for the citizens of the country. Therefore, RoE prescribed for conventional generation should not exceed that prescribed for conventional generation. (iv) The experience of competitive bidding so far has generally led to discovery of lower tariffs as compared to those projects whose tariff is determined under Section 62 of the Act. This inter-alia indicates that expectations of developers in terms of RoE is lower than what has been prescribed in the Draft CERC Tariff Regulations. 2. Another important factor to be taken into account is the risk faced by various types of power projects. There is a case for higher RoE for hydro projects considering the significant construction risk and also since the country needs investment in hydro power (particularly storage, pondage and pumped storage type) for balancing requirement of RE generation. Coal based thermal generation and transmission projects are generally having lower risk and therefore RoE for them may be reviewed. 3. Further, since delay in projects result in time overruns due to increase in IDC & price escalation, so the ROE may be made differential commensurate with the time overrun incurred in the project. Example- a) Projects commissioned in time - Incentive	

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			of 0.5% on RoE b) Projects commissioned within 25% time overrun - Penalty of 0.25% on ROE c) Projects commissioned with more than 25% time overrun- Penalty of 0.5% on RoE. 4. In order to ensure that projects entitled to have rate of RoE equal to 16.50 % (storage type hydro generating stations including pumped storage hydro generating stations and run of river generating stations with pondage), actually operate so as to provide peaking support, an appropriate penalty mechanism based on certification by RPCs may be introduced.	
20.	**Page 71/ 33(3)& 33(5)**	**33. <u>Depreciation</u>** **(3)**The salvage value of the asset shall be considered as 5% and depreciation shall be allowed up to maximum of 95% of the capital cost of the asset. **(5)**Depreciation shall be calculated annually based on Straight Line Method and at rates specified in **Appendix-I** 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	The Commission has proposed to reduce the salvage value of the assets from 10% to 5%, thereby increasing the depreciable value of assets from 90% to 95%, in line with the provisions of the Companies Act, 2013. Further, the useful life of hydro generating station has been extended from 35 years to 40 years. However, the Commission has kept the rate of depreciation unchanged from present value of 5.28% for major equipment, which is applicable for initial 12 years. The Commission may consider reducing the rate of depreciation from 5.28% and enhance the period of its applicability from 12 years in view of availability of long-term loans. The projects, which have achieved financial closure may be exempted from this change. An incentive mechanism for developers to opt for long term debt should	It is a fact that now loans of longer tenure are available, which will be helpful in reducing tariff for initial years. This in turn will help generating companies in the present scenario (particularly for hydro generating stations), when Discoms are reluctant to sign long-term PPAs to avoid liability of fixed charges. In a meeting held with Banks in the Ministry of Power on 10.01.2019, the Banks had expressed willingness to provide long-term loan. Most of the projects under Section 62 of the Act will be owned by CPSUs, which generally do not draw project specific loans but draw loans on the strength of their balance sheet. In view of the availability of longer tenure loans, the period of 12 years for calculating the major depreciation part may be increased as per the available loan tenure. Therefore, the rate of depreciation may be reduced from 5.28% and

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		spread over the balance useful life of the assets.	be introduced in compliance to para 5.8 of the tariff Policy 2016.	the period of its applicability be enhanced from 12 years.
21.	**Page 76/ 35**	**35. Operation and Maintenance Expenses** As per the Explanatory Memorandum, CERC has proposed O&M expenses based on the actuals for past years as per prevailing practice of fixing O&M expenses. The Commission has worked out the Escalation rate based on the five -year average of WPI & CPI for FY 2013-14 to FY 2017-18. Considering the 60:40 weightage for WPI and CPI respectively, the escalation rate for thermal stations and transmission has been worked out to 3.20% for the period of 2019-24. Similarly, considering the 75:25 weightage for WPI and CPI respectively, the escalation rate for hydro stations has come to 4.70%. The O&M expenses of hydro stations for first year has been retained same as 2.5% of the original project cost but excluding cost of R&R, IDC and IEDC.	The Commission may consider specifying escalation rates at periodic intervals say, every 6 months. The Commission, in any case is periodically publishing the escalation rates for competitively bid projects.	CPI and WPI may show significant variability over a period of 5 years. Therefore, applying escalation based on past 5 years WPI and CPI, for next 5 years period may not be reasonable.
22.	**Page 78/ 35(1)(6)**	**35. Operation and Maintenance Expenses** **(1)Thermal Generating Stations** **(6)** The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall	Expenses incurred by generators which utilize treated sewage water from nearby Sewage Treatment Plant (STP) should be considered as part of Water Charges and allowed separately to the thermal power plants.	As per para 6.2(5) of the Tariff Policy, dated 28.01.2016 notified by Government of India, it is mandatory for the Thermal Power Plants to use treated sewage water from the nearby STPs located within 50 km. radius. Hence, the cost on account of use of treated sewage

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		be allowed separately after prudence check:		water should be allowed as part of Water Charges.
23.	**Page 80& 81 / 35(3)(a)**	**35.<u>Operation and Maintenance Expenses</u>** **(3) Transmission System** **(a)** [The Table inter-alia indicates Normative Value for sub-station Bays (Rs Lakh per bay) <u>AND</u> Normative Value for Transformers (Rs Lakh per MVA)]	(i) The normative O&M expenses admissible for the transmission system should also include reactive compensation devices (Reactors, SVC/STATCOM) and Fault Current Limiters. (ii) The normative O&M expenses indicated for substation bays (Rs lakhs / bay) and for transformers (Rs lakhs / MVA) appear to be on higher side considering the cost of elements in bays (i.e bay cost) and cost of transformer at different voltage levels. The O&M expenses should be in the range of 3-4% of the cost of assets. Since majority of ISTS system is leveled at 400 kV, it is suggested that weightage of O & M charges of bays of 765kV, 220 kV,132kV should be based on 400kV level or alternatively, the methodology of 2014-19 Tariff Regulation may be continued. (iii) For the HVDC bipolesystems, the O &M expenses may be specified depending upon use of Metallic Return/Multi-terminal/VSC based technology/cables.	(i) The number of reactive compensation devices (Reactors, SVC/STATCOM) and Fault Current Limiters, has gone up in the Grid, hence O&M expenses for the same are required to be considered. (ii) The methodology for calculation of O&M costs has been modified. Now the bays and transformers have been separated. It is found that the O & M cost for 765 kV system has increased more than double, however the total O & M cost of the system has decreased. This does not seem to be in order. (iii) The O &M expenses for the HVDC bipolesystems would vary depending upon use of Metallic Return/Multi-terminal/VSC based technology/cables.
24.	**Page 82/ 35(3)(a) (3rd Proviso)**	**35. <u>Operation and Maintenance Expenses</u>** **(3) Transmission system** **(a) Third Proviso** "Provided also that the O&M expenses for the GIS bays and transformers shall be allowed as worked out by multiplying 0.70	It is not understood why the O&M expenses for the GIS transformers shall be worked out by multiplying 0.70 of the O&M expenses of the normative O&M expenses for transformers.	The maintenance requirement for transformers should remain same independent of AIS or GIS installation.

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		of the O&M expenses of the normative O&M expenses for bays and transformers.”		
25.	**Page 84/ 36(1)**	**36. Input Price for variable charges:** **(1)** Where the generating company has the arrangement for supply of coal or lignite from the integrated mine(s) allocated to one or more of its generating station as end use project, the variable charge component of tariff of the generating station shall be determined based on the input price of coal or lignite, as the case may be, from such integrated mines in accordance with these regulations.	In case a generating company is required to set-up a Coal Washery to get washed coal from its integrated coal mine in line with the guidelines of MoEF&CC, then the cost associated with the coal washery should also be considered while considering the inputprice of coal sourced from the integrated mine.	The cost of coal washing is to be incurred for compliance with the guidelines of MoEF&CC, hence are to allowed for as a pass-through in the tariff.
26.	**Page 92/ 47**	**47. Components of Landed cost of Primary Fuel:**The landed cost of primary fuel for any month shall include base price or input price of fuel corresponding to the grade and quality of fuel and inclusive of statutory charges as applicable, transportation cost by rail or road or any other means, and loading, unloading and handling charges.	The landed cost of coal should also include the Coal washing charges, wherever applicable.	As per the notification dated 2nd January 2014,of Ministry of Environment, Forests and Climate Change, Govt. of India, all power plants located at a distance of 500 km and beyond from the pit heads or located in urban areas, environmentally sensitive and critically polluted areas, irrespective of distance (except pit head stations), must use coal with ash content less than 34%. This requires all such power plants to use washed coal to bring down the ash content below 34%. Therefore, the landed cost of coal should also include the coal washing charges,wherever applicable.
27.	**Page 100/ 52(2)(a)**	**52.Computation and Payment of Energy Charge for Thermal Generating**	The computation of Energy Charge Rate (ECR) includes limestone consumption only. Apart from limestone, the ECR should also	The consumption of all reagents, as applicable, for the respective coal and lignite fired stations, should be reasonably accounted

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		Stations **(2) Energy Charge Rate(ECR)** **(a) For coal based and lignite fired stations:** (Formula for computation of ECR in Rs./kWh on ex-power plant basis)	include consumption of other reagents, referred under Clause 50(2), as applicable.	for in computation of the respective Energy ChargeRate (ECR).
28.	**Page 101/ 52(2)**	**52.Computation and Payment of Energy Charge for Thermal Generating Stations** **(2) Energy Charge Rate(ECR)** The Formula for computation of ECR in Rs./kWh on ex-power plant basisutilizes Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations less 85 Kcal/Kg on account of variation during storage at generating station;	The said loss of GCV is not on account of storage alone but loss of GCV measured from Coal sample taken from Wagon top till the point of firing. This loss of GCV is mainly due to following 3 factors: i. Effect of moisture in GCV of coal samples taken from wagon top ii. Loss in GCV during coal storage inside power plant. iii. Reduction in GCV during handling inside power plant.	Indication of an absolute value for reduction in GCV of coal on account of storage etc., can be a debatable issue.
29.	**Page 102/ 52(2) Proviso**	**52.Computation and Payment of Energy Charge for Thermal Generating Stations** **(2) Energy Charge Rate(ECR)** **<u>Proviso</u>** Provided that energy charge rate for a gas or liquid fuel based station shall be adjusted for open cycle operation based on certification of Member Secretary of respective Regional Power Committee for the open cycle operation during the	The aspect of heat rate degradation etc. for part loading also needs to be clarified for gas or liquid fuel based station.	This Proviso indicates for adjustment of energy charges for open cycle operation of gas & liquid fuel based generating station. The effect of heat rate degradation etc. in the event of part loading also needs to be clarified herein.

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		month.		
30.	**Page 103/ 52(4)**	**52.Computation and Payment of Energy Charge for Thermal Generating Stations** **(4)**Where the biomass fuel is used for blending with coal, the landed price of biomass fuel shall be worked out based on normative consumption as specified in these regulations or actual consumption, whichever is lower, and landed price discovered at the receiving end of the generating station, inclusive of taxes and duties as applicable.	The sub-clause refers to normative consumption of biomass fuel for blending with coal. The applicable values for the same needs to be indicated.	This is required for clarity of the issue.
31.	**Page 114/ 56 (2)**	**56. Computation and Payment of Transmission Charge for Inter-State Transmission System and communication system** **(2)** The Transmission charge (inclusive of incentive) payable for a calendar month for transmission system or part shall be computed for each region separately for AC and DC system	For HVDC bi-pole links and HVDC back-to-back Stations, the reference % for incentive has been changed from 96% to 97.5%. It is suggested thatno incentive may be provided for the HVDC back to back stations.	With the all India becoming one grid, the HVDC back to back stations are kept in bypass mode, hence, there is no justification for having any incentive for HVDC back to back stations.
32.	**Page 115/ 56(2)(a)**	**56. Computation and Payment of Transmission Charge for Inter-State Transmission System and communication system**	(i) The term '**ACM**' is not defined. (ii) The Cut-off Availability is mentioned as 99% whereas the CERC Communication Regulations mandate the communication availability to be maintained at 99.9%.	(i) The term '**ACM**' may be defined for more clarity. (ii) The consistency in approach needs to be maintained in the various Regulations of CERC.

Sr. No.	Page No. / Clause No. of Regulation	Provision in Draft CERC Regulation	Comments of CEA	Rationale
		(2) <u>For Communication System</u>: a) For ACFM ≤ 99.00% AFC x (NDM/NDY) x (ACM/99.00%)		
33.	**Page 116/ 56(4)**	**56. Computation and Payment of Transmission Charge for Inter-State Transmission System and communication system** **(4)** The Normative Availability of Communication System (NACF) for communication system or part shall be computed for each region separately : $NACF = \sum_{i=1}^{N} (\boldsymbol{A_i})$	(i) The stated formula of NACF should be corrected as under: $NACF = (1/N) \times \sum_{i=1}^{N} (\boldsymbol{A_i})$ (ii) The last para in reference to '**Ai**'needs clarity andmay be replaced as under: Availability of ith Channel (A_i) shall be arrived as under: $\boldsymbol{A_i = \frac{(B_T - B_{Ni})}{B_T} \times 100}$ where, $\mathbf{B_T}$is Total number of time-blocks in a month; $\mathbf{B_{Ni}}$is the total number of time-blocks, in which ith channel was not available after considering deemed availability status as certified by Member Secretary,RPC, for outage time of communication system elements (i.e, channels) due to Acts of God and Force Majeure events beyond the control of the communication provider; $\mathbf{B_{Ni} = B_{ANi} - B_{Gi}}$ where, $\mathbf{B_{ANi}}$**is** absolute number of time-blocks in which the ith channel was 'not available' on account of any reason after due consideration	(i) The overall division by 'N' was inadvertently missed out in the formula. (ii) The last para in reference to '**Ai**'needs more clarity, hence it is proposed to incorporate the description given in the "Guidelines on Availability of Communication System" for ISTS issued by National Power Committee(NPC) of CEA.

Sr. No.	Page No. / Clause No. of Regulation	Provision in Draft CERC Regulation	Comments of CEA	Rationale
			of the provision that any outage of duration less than or equal to one(1) minute in a time-block shall be treated as deemed available provided such outages are not more than 10 times in a day; $\mathbf{B_{Gi}}$ is number of time-blocks out of $\mathbf{B_{ANi}}$ in which ith channel was 'not available' on account of Acts of God and Force Majeure events beyond the control of the communication provider as certified by Member Secretary, RPC.	
34.	**Page 118/ 59(A)(a) Proviso**	**59. <u>Norms of operation for thermal generating station</u>** **(A) Normative Quarterly Plant Availability Factor (NQPAF)** **(a)** For all thermal generating stations, except those covered under clauses (b), (c), (d), & (e) - 83%. **Provided that for the purpose of computation of Normative Quarterly Plant Availability Factor, annual scheduled plant maintenance shall not be considered.**	The stated **Proviso** may be deleted.	The reasonable period of annual scheduled plant maintenance and forced outages is already considered while specifying the Normative Quarterly Plant Availability Factor (NQPAF).
35.	**Page 121/ 59(C)(a)(i) Note 3**	**59. <u>Norms of operation for thermal generating station</u>** **(C) Gross Station Heat Rate** **(a) Existing Thermal Generating Station** **(i)** For existing Coal-based Thermal Generating Stations,	The admissibility of heat rate compensation has been referred only for existing Coal based thermal generating stations. The same needs to be clarified for other coal/ lignite based stations and gas based stations also.	It has been noted from the subject Regulation 6.3B of the Grid Code that the stated heat rate compensation is applicable for coal/lignite nad gas based Central Generating Station or inter-State Generating Station. Hence, the stipulation in Draft Tariff Regulations should be made consistent with the relevant provision of Grid Code.

<table>
<tr><th>Sr. No.</th><th>Page No. / Clause No. of Regulation</th><th>Provision in Draft CERC Regulation</th><th>Comments of CEA</th><th>Rationale</th></tr>
<tr><td></td><td></td><td>other than those covered under clauses (ii) and (iii) below:
……………
Note 3The normative gross station heat rate above is exclusive of the compensation specified in Regulation 6.3 B of the Grid Code. The generating company shall, based on unit loading consider the compensation in addition to the normative gross heat rate above.</td><td></td><td></td></tr>
<tr><td>36.</td><td>Page 121/ 59(C)(a)(iii)</td><td>59. <u>Norms of operation for thermal generating station</u>
(C) Gross Station Heat Rate
(a)Existing Thermal Generating Station
(iii)For Thermal Generating Stations of Damodar Valley Corporation (DVC):
<table><tr><td>Bokaro TPS</td><td>2,700 kCal/kWh</td></tr><tr><td>Chandrapura TPS (Unit 1 to 3)</td><td>3,000 kCal/kWh</td></tr><tr><td>Durgapur TPS</td><td>2,750 kCal/kWh</td></tr></table></td><td>Relaxed heat rate has been referred for Unit- 1 to 3 of Chandrapura TPS. However, Unit- 1 & 2 of the said station have already been retired and reference to the same can be deleted. Further, capacity of the plant and unit nos. in respect of various stations for relaxed parameters at the beginning of the tariff period under Clause 59, should be indicated for clarity.</td><td>This would ensure clarity on the extent of applicability of the relaxed parameters.</td></tr>
</table>

<table>
<tr><th>Sr. No.</th><th>Page No. / Clause No. of Regulation</th><th>Provision in Draft CERC Regulation</th><th>Comments of CEA</th><th>Rationale</th></tr>
<tr>
<td>37.</td>
<td>Page 123/ 59(C)(b)(i) Two Tables under 1st Proviso</td>
<td>59. <u>Norms of operation for thermal generating station</u>
(C) Gross Station Heat Rate

(b) New Thermal Generating Station achieving COD on or after 1.4.2009:
(i) For Coal-based and lignite-fired Thermal Generating Stations:
1.05 x Design Heat Rate (kCal/kWh)
Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

<u>Second Table</u>
<table>
<tr><td>Pressure Rating (Kg/cm^2)</td><td>247</td><td>247</td><td>270</td><td>270</td></tr>
<tr><td>SHT/ RHT (^0C)</td><td>537/ 565</td><td>565/ 593</td><td>593/ 593</td><td>600/ 600</td></tr>
<tr><td>Type of BFP</td><td>Turbine Driven</td><td>Turbine Driven</td><td>Turbine Driven</td><td>Turbine Driven</td></tr>
<tr><td>Max Turbine Heat Rate (kCal/ kWh)</td><td>1900</td><td>1850</td><td>1810</td><td>1800</td></tr>
<tr><td colspan="5">Min. Boiler Efficiency</td></tr>
<tr><td>Sub-Bituminous Indian Coal</td><td>0.86</td><td>0.86</td><td>0.865</td><td>0.865</td></tr>
<tr><td>Bituminous Imported Coal</td><td>0.89</td><td>0.89</td><td>0.895</td><td>0.895</td></tr>
</table>
</td>
<td>a) In the two Tables below the 1st Proviso, reference of 'Maximum Design Unit Heat Rate' should be mentioned after the item/figures on Minimum Boiler Efficiency. Further, two sets of Boiler Efficiencies varying as per turbine inlet steam parameters have been indicated in the second table viz. 86% & 86.5% for domestic coal and 89% & 89.5% for Imported Coal. However, in the text (3rd Proviso) following the said Heat Rate Tables, only one set of boiler efficiency (86% and 89%) has been referred to. In our opinion, Boiler Efficiency should be independent of turbine inlet steam parameters.

b) The Maximum Turbine Cycle heat rate for 270 kg/cm^2, 600/ 600 deg C parameters (ultra- supercritical unit) has been indicated as 1800 kcal/kWh. However, the draft amendments to CEA Regulations on Technical Standards for Construction of Electrical Plants and Electric Lines, consider Maximum Turbine Cycle Heat Rate for ultra-supercritical and supercritical units as 1790 kCal/kWh and 1830 kCal/kWh (reduced from 1850 kCal/kWh) respectively.

c) As per Turbine Cycle Heat Rate and Boiler Efficiency values indicated in second table, the Maximum Design Unit Heat Rate value of 2222 kCal/kWh should be corrected to 2209 kCal/kWh.</td>
<td>The suggestion is based on factual technical position.</td>
</tr>
</table>

<table>
<tr><th>Sr. No.</th><th>Page No. / Clause No. of Regulation</th><th>Provision in Draft CERC Regulation</th><th>Comments of CEA</th><th>Rationale</th></tr>
<tr><td></td><td></td><td><table><tr><td>Sub-Bituminous Indian Coal</td><td>2222</td><td>2151</td><td>2105</td><td>2081</td></tr><tr><td>Bituminous Imported Coal</td><td>2135</td><td>2078</td><td>2034</td><td>2022</td></tr></table></td><td>Further, the value of 2105 kCal/kWh corresponds to Boiler Efficiency of 86% and not the Bolier Efficiency of 86.5% as indicated in the Table for Sub-Bituminous Indian Coal.</td><td></td></tr>
<tr><td>38.</td><td>Page 125/ 59(C)(b)(i) 5th Proviso</td><td>59. <u>Norms of operation for thermal generating station</u>
(C) Gross Station Heat Rate
(b) New Thermal Generating Station achieving COD on or after 1.4.2009:
(i) For Coal-based and lignite-fired Thermal Generating Stations:
1.05 x Design Heat Rate (kCal/kWh)
5th Proviso
Provided also that maximum turbine cycle heat rate shall be adjusted for type of dry cooling system.</td><td>The impact of dry cooling system as applicable on Heat Rate needs to be indicated.</td><td>The draft Regulations mention that maximum turbine cycle heat rate shall be adjusted for type of dry cooling system. However, the impact of dry cooling system on Heat Rate is not specified.</td></tr>
</table>

<table>
<tr><th>Sr. No.</th><th>Page No. / Clause No. of Regulation</th><th>Provision in Draft CERC Regulation</th><th>Comments of CEA</th><th>Rationale</th></tr>
<tr><td>39.</td><td>Page 127/ 59(D)(c)</td><td>59. <u>Norms of operation for thermal generating station</u>
(D)Secondary fuel oil consumption
(c)For Coal-based generating stations of DVC:
<table><tr><td>Bokaro TPS</td><td>1.5 ml/kWh</td></tr><tr><td>Chandrapur TPS</td><td>1.5 ml/kWh</td></tr><tr><td>Durgapur TPS</td><td>2.4 ml/kWh</td></tr></table></td><td>The proposed specific oil consumption norm of 1.5 ml/kWh for Chandrapur TPS may be reviewedconsidering the actual specific oil consumption of the station (now having 1x130MW+2x250MW capacity) during 2017- 18.</td><td>The suggestion is in view of the fact that the two (2) old 130 MW units of Chandrapur TPS have already been retired in 2017.</td></tr>
<tr><td>40.</td><td>Page 127/ 59(E)(a)</td><td>59. <u>Norms of operation for thermal generating station</u>
(E)Auxiliary Energy Consumption
(a)For Coal-based generating stations except at (b) below:
<table><tr><th>S. No.</th><th>Generating Station</th><th>With Natural Draft cooling tower or without cooling tower</th></tr><tr><td>(i)</td><td>200 MW series</td><td>8.50%</td></tr><tr><td>(ii)</td><td>300/330/350/500 MW series</td><td></td></tr><tr><td></td><td>Steam driven boiler feed pumps</td><td>5.75%</td></tr><tr><td></td><td>Electrically driven boiler feed pumps</td><td>8.00%</td></tr><tr><td>(iii)</td><td>600 MW and above</td><td></td></tr><tr><td></td><td>Steam driven boiler feed pumps</td><td>5.75%</td></tr><tr><td></td><td>Electrically driven boiler feed pumps</td><td>8.00%</td></tr></table></td><td>(a) The figures indicated under item (ii) & (iii) in the Table on auxiliary energy consumption are same. As such, difference in the items (ii) and (iii) is not well understood.

(b) The difference in auxiliary energy consumption of the plant/unit on account of change from Steam Turbine Driven BFP to Electrical Motor Driven BFP has been reduced from the present 2.5% to 2.25%. This needs to be reviewed.

(c) The admissibility of additional auxiliary energy consumption for part loading of coal and gas based stations needs to be indicated.</td><td>An appropriate technical explanation is required to be incorporated in the draft Regulations on the cited issues and modifications be made accordingly in line with the technical reasoning.</td></tr>
<tr><td>41.</td><td>Page 129/ 59(E)(d)(i)</td><td>59. <u>Norms of operation for thermal generating station</u>
(E)Auxiliary Energy Consumption
(d)For Lignite fired thermal</td><td>The relaxed auxiliary energy consumption table at d(iii) on Page 129 indicates auxiliary energy consumption for TPS-I (Expansion) of NLC as 8.5%. However, as per the cited</td><td>This aspect needs to be reviewed for maintaining consistency of approach in the Regulations.</td></tr>
</table>

<table>
<tr><th>Sr. No.</th><th>Page No. / Clause No. of Regulation</th><th>Provision in Draft CERC Regulation</th><th>Comments of CEA</th><th>Rationale</th></tr>
<tr><td></td><td></td><td>generating stations
(i) For all generating stations with 200 MW sets and above:
The auxiliary energy consumption norms shall be 0.5 percentage point more than the auxiliary energy consumption norms of coal-based generating stations at (E)(a) above.</td><td>criterion at (d)(i), the admissible auxiliary energy consumption for lignite based TPS-I (Expansion) of NLC should be 9.0%. As such, TPS-I (Expansion) of NLC may be deleted from table of Auxiliary Energy Consumption at d(iii) on Page 129.</td><td></td></tr>
<tr><td>42.</td><td>**Page 133 / 60(6)**</td><td>**60. Norms of operation for hydro generating stations:**
(6) Auxiliary Energy Consumption (AEC):
<table>
<tr><th>Type of Station</th><th>AEC</th><th></th></tr>
<tr><th></th><th>Installed Capacity above 200 MW</th><th>Installed Capacity upto 200 MW</th></tr>
<tr><td>**Surface HEP**</td><td></td><td></td></tr>
<tr><td>Rotating Excitation</td><td>0.7%</td><td>0.7%</td></tr>
<tr><td>Static</td><td>1.0%</td><td>1.2%</td></tr>
<tr><td>**Underground HEP**</td><td></td><td></td></tr>
<tr><td>Rotating Excitation</td><td>0.9%</td><td>0.9%</td></tr>
<tr><td>Static</td><td>1.2%</td><td>1.3%</td></tr>
</table></td><td>The Auxiliary Energy Consumption norm could beconsidered as below:
i. Hydro Power plants with Surface Power house:
Below 200 MW: 1%
Above 200 MW: 0.8%

ii. Hydro Power plants with Underground Power house:
Below 200 MW: 1.2%
Above 200 MW: 1%

iii. Hydro Power plants having additional heating load in extremely cold places: **2.5%**</td><td>It is observed that Auxiliary energy consumption has been linked with Installed capacity of Hydro Power stations. However, it is felt that based on the data sought by CEA from CPSUs, the auxiliary energy consumption norm could be as stated herein.</td></tr>
<tr><td>43.</td><td>**Page 133 / 61**</td><td>**61.Normative Annual Transmission System Availability Factor (NATAF)**
<u>For incentive consideration</u>:
(1) AC system: 98.50%</td><td>It is suggested that NATAF for incentive consideration in respect of AC system be increased to 99.00% from the proposed 98.50%.</td><td>Transmission charges have increased manifold. The operation and maintenance has become easier due to advancement in technology. The incentive should be commensurate with the efforts required to maintain availability. The suggestion is based on actual data.</td></tr>
</table>

Sr. No.	Page No. / Clause No. of Regulation	Provision in Draft CERC Regulation	Comments of CEA	Rationale
44.	**Page 138/ 65 Note3 (1st Proviso)**	**65. Billing and Payment of charges** **Note 3 (1st Proviso)** In cases where the site of a hydro project is awarded to a developer, by the State Government by following a two stage transparent process of bidding, **the 'free energy' shall be taken as 13%, in addition to energy corresponding to 100 units of electricity to be provided free of cost every month to every project affected family for a period of 10** years from the date of commercial operation of the generating station	As per **Hydro Power Policy 2008**, 100 units of electricity per month should be provided by the project developer to each Project Affected Family (PAF) and this policy does not make any distinction between Private Developer and Public Sector Undertakings.	This Clause may be suitably modified in line with the**Hydro Power Policy 2008.** The Policy aims to provide a level playing field to all the stakeholders.
45.	**Page 141/ 70(1)**	**70. Sharing of gains due to variation in norms:** **(1)** The generating company or the transmission licensee shall workout gains based on the actual performance of applicable Controllable parameters as under: i) Station Heat Rate ii)Secondary Fuel Oil Consumption iii)Auxiliary Energy Consumption; and, i) Re-financing, Re-structuring of Loans or otherwise change in Interest Rate of Loan.	In line with Clause 46 and Clause 50(2), the Reagent Consumption should also be included as a Controllable parameter under Clause 70(1).	Clause 46 of the draft CERC Regulations stipulates that the variable cost in respect of the thermal generating stations shall comprise landed cost of primary fuel, cost of secondary fuel oil consumption and cost of reagents on account of implementation of the revised emission control standards. Further, Clause 50(2) of the draft CERC Regulations specifies the normative consumption of reagents. Accordingly, the Reagent Consumption also needs to be considered as a Controllable parameter.
46.	**Page 143/ 72**	**72. Sharing of Non-Tariff Income:**	It is suggested that the Income, if any, from sale of coal washery rejects, gypsum, ash	The suggestion is in line with the fact that input costs on account of coal/lignite, reagents

Sr. No.	Page No. / Clause No. of Regulation	Provision in Draft CERC Regulation	Comments of CEA	Rationale
		The non-tariff income in case of generating station and transmission system on account of following shall be shared in the ratio of 50:50 with the beneficiaries and the long term customer on annual basis: a)……………..	etc., may also be included as part of Non-Tariff Income for sharing in the stated ratio.	etc. are being allowed for in the tariff, hence the sale of related by-products also need to be accounted for.
47.	**Page 157/ Appendix-II**	**Procedure for Calculation of Transmission System Availability Factor for a Month**	The factor for STATCOM may be included in the formula for calculation of Availability of Transmission system.	Though STATCOM is mentioned as an element of the transmission system, but the relevant factor for the same has not been included in the formula for calculation of Availability of Transmission System.
48.	**Page 159 / Appendix-II 6(i)**	**Appendix-II:** **Procedure for Calculation of Transmission System Availability Factor for a Month** **6.** Outage time of transmission elements for the following contingencies shall be excluded from the total time of the element under period of consideration. (i) Outage of elements due to acts of God and force majeure events beyond the control of the transmission licensee. However, onus of satisfying the Member Secretary, RPC that element outage was due to aforesaid events and not due to design failure shall rest with the transmission licensee A reasonable restoration time for	It is suggested that the Clause may be amended as under: "(i) Outage of elements due to acts of God and force majeure events…………………… **Member Secretary, RPC, may consult other transmission licensees or any expert for estimation of reasonable restoration time.** Circuits restored through ERS (Emergency Restoration System) shall be considered as available;"	In the event of outage of elements, the transmission licensee which is being investigated, may not provide impartial inputs regarding the event. Hence, the Member Secretary,RPC, may seek the advice of other transmission licensees or any expert.

Sr. No.	Page No. / Clause No. of Regulation	Provision in Draft CERC Regulation	Comments of CEA	Rationale
		the element shall be considered by Member Secretary, RPC and any additional time taken by the transmission licensee for restoration of the element beyond the reasonable time shall be treated as outage time attributable to the transmission licensee. **Member Secretary, RPC may consult the transmission licensee or any expert for estimation of reasonable restoration time**. Circuits restored through ERS (Emergency Restoration System) shall be considered as available;		
49.	**Page 158/ Appendix II 3 (a)**	**<u>Appendix-II</u>: Procedure for Calculation of Transmission System Availability Factor for a Month** **3.** The weightage factor for each category of transmission elements shall be as under: **(a)**For each circuit of AC line – Number of sub-conductors in the line (NSC) multiplied by ckt-km.	In the stated Clause, theSurge Impedance Loading(SIL) has been replaced by Number of sub-conductors in the line for calculation of Availability Factor of Transmission System, therefore, **Appendix-III** on Page 161 is not relevant and may be deleted.	There is no reference to SIL of AC Lines in Draft Tariff Regulations, hence **Appendix-III**is not required.
50.	**Page 164/ Appendix-IV**	**Formulae for Calculation of Availability of Each Category of Transmission Elements**	The formula for calculation of Availability of STATCOM may also be included.	Though STATCOM is mentioned as an element of the transmission system in **Appendix-II**of the Draft Regulations, but the relevant formula for calculation of Availability of STATCOM has not been specified.

Views of CEA with an example for Hydro Projects on Clause 17 : Debt-Equity Ratio

CERC Proposal

CERC proposes to continue with existing approach of Debt-Equity ratio as 70:30 as provided in Tariff Regulations, 2014.

Observations of CEA

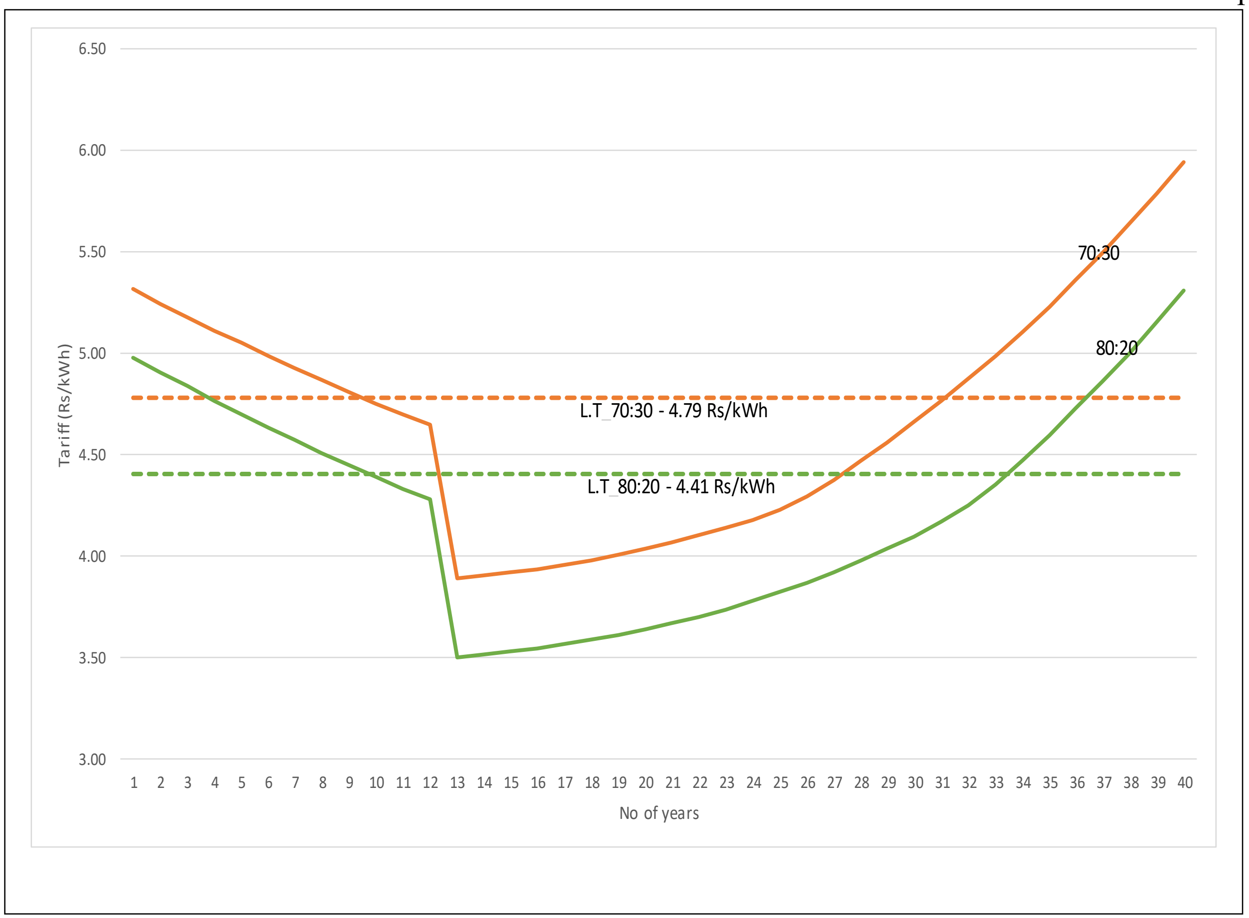
Some of the reasons mentioned in the Explanatory Memorandum for maintaining Debt-Equity ratio of 70:30 are as under:

(i) The Tariff Policy stipulates Debt-Equity ratio of 70:30.

(ii) The proposal for modifying debt-equity ratio to 80:20 from the existing norm of 70:30 may not be sustainable as financial institutions/banks may not be willing to finance such high proportion of the capital cost of a project, particularly, in the wake of rising bad loans and NPA from the sector

(iii) Higher debt will increase IDC and interest cost burden and consequentially the cost of project resulting in higher cost of power.

First of all, as far as cost of power i.e. tariff is concerned, a higher proportion of debt will lead to significant reduction in tariff. Results of tariff estimation for a hydro project based on the norms proposed in the Draft Regulations for the period 2019-24 and with debt-equity ratio of 70:30 and 80:20 are shown in the chart below. The increase in IDC has also been taken into account for tariff estimation with debt-equity ratio of 80:20.



It may be seen that there is significant reduction in tariff with debt-equity ratio of 80:20 as compared to that of 70:30. As far as reluctance of the FIs/ Banks to have higher exposure to power sector is concerned, even in the past, many projects, in the state sector as well as in private sector have been developed with debt proportion higher than 70%. Further, due to reduced requirement of capacity addition, the absolute investment itself will reduce and this in turn will reduce exposure of Banks/FIs to power sector in absolute terms. Therefore, it is suggested that the Commission may consider introducing incentive to increase proportion of debt up to 80%, for the projects for which financial closure is yet to be attained.

An illustrative calculation has been done for the above mentioned hydro project, where an incentive of 0.05% increase in RoE for every percentage increase in proportion of debt over 70% has been considered. The results are tabulated below:

Debt Equity Ratio	Levelized Tariff (Rs/kWh)	Incentive for higher proportion of debt (0.05% additional RoE for every percentage increase in proportion of debt over 70%)	Levelized Tariff (with incentive as mentioned in column 3) (Rs/kWh)
(1)	(2)	(3)	(4)
70:30	4.79	0.0%	4.79
72:28	4.72	0.1%	4.73
74:26	4.64	0.2%	4.67
76:24	4.57	0.3%	4.60
78:22	4.49	0.4%	4.53
80:20	4.41	0.5%	4.45

It may be seen that such an incentive scheme is beneficial to both - the procurers as well as generating companies.

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