

S. no	Regulation	Proposed Amendment	Comments and Suggestions
1	General suggestion		We request the Hon'ble Commission to include Ammonia and other efficient technologies which CEA has already approved in principle for some projects.
			There are cost efficient technologies available which CEA has already approved in principle in some of the projects. Hence all parameters for such technologies may also be considered in addition to Limestone technology stated under the regulation.
2	Amendment to	"2.1. A new clause, namely, Clause (6a) shall be inserted	Please modify clause no. 2.1 as under;
	Regulation 3 of the Principal Regulations	after clause (6) of Regulation 3 of the Principal Regulations as under:"	"2.1. A new clause, namely, Clause ( <b>5a</b> ) shall be inserted after clause ( <b>5</b> ) of Regulation 3 of the Principal Regulations as under:
			[As per draft amendment description, clause (6a) to be added after clause (6) of regulation 3. The clause (6) is the definition of 'Auditor'. Since the new clause being added defines the 'Auxiliary Energy Consumption for emission control system', it should be added after clause (5) 'Auxiliary Energy Consumption' and its clause no. should be (5a)]
3	Amendment to Regulation 3 of the	2.4 Clause (48) of Regulation 3 of the Principal Regulations shall be substituted as under:	<ul> <li>a) In the definition of PLF, "athermal" and "thereoffor" may be corrected to "a thermal" and "thereof for" respectively.</li> </ul>
	Principal Regulations – Definition of 'Plant Load Factor'	- Definition of 'Plant (48) Plant Load Factor or (PLF) in relation to amerimal deperating station or unit thereoffor a given period means	<ul> <li>AUXen may be replaced with AUXe at both the places in line with definition of Auxiliary energy consumption for emission control system 'or' AUXe as proposed at SI. No 2.1 of the draft amendment.</li> </ul>
		generation during the period, expressed as a percentage of sent out energy corresponding to installed capacity in that period and shall be computed in accordance with the following formula:	Further, since there may be requirement of one ECS for meeting each revised parameter of emission norm (e.g. FGD for SOx, De-NOx for NOx, ESP for Particulate matter and ZLD for water norm) and they may not only have different auxiliary consumptions but may also be installed at different times and may be needed as per requirements of each plant, it is proposed to define an additional



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		PLF = 10000 x $\sum_{i=1}^{N} \frac{SGi}{[NxICx (100 - AUX_n - AUX_{en})]}$ % Where, IC = Installed Capacity of the generating station or unit in MW, SGi= Scheduled Generation in MW for the ith time block of the period, N = Number of time blocks during the period, AUXn= Normative Auxiliary Energy Consumption as a percentage of gross energy generation; and AUXen= Normative Auxiliary Energy Consumption for emission control system as a percentage of gross energy generation, wherever applicable."	<ul> <li>term "AUXen" which would be the normative auxiliary consumption of nth ECS required for meeting each norm. "AUXe" would, therefore, be defined as sum of all AUXen. The following formula may be inserted in the definition to bring further clarity.</li> <li>AUXe = ∑<sub>n=1</sub><sup>n</sup> AUXen , AUXen is Normative Auxiliary Energy Consumption in the nth emission control system as a percentage of gross energy generation;</li> <li>c) AUXen shall also include additional auxiliary power consumption of ESP [in case ESP refurbishment have been carried out to meet new SPM norms] and Auxiliary Power consumption of ZLD Plant in case ZLD is required to meet specific water consumption.</li> <li>d) It may be clarified whether separate energy meters will be required for measuring AUXen.</li> </ul>
4	Amendment to Regulation 3 of the Principal Regulations	<ul> <li>2.3 A new clause, namely, Clause (20a) shall be inserted after Clause (20) of Regulation 3 of the Principal Regulations as under:</li> <li>"(20a) "emission control system" means a set of equipment or devices required to be implemented in the coal or lignite based thermal generating station to meet the revised emission standards;"</li> </ul>	Reference to "Emission Control System" should be added to Regulations 19, 20, 21, 22 and 23
5	Amendment to Regulation 9 of the Principal Regulations – Application for determination of tariff	A new proviso, namely, Fourth Proviso shall be added to Clause (1) of Regulation 9 of the Principal Regulations as under: "Provided also that the generating company shall file an application for determination of supplementary tariff for the	It may kindly be appreciated that tariff determination process is an exhaustive process, which generally spans for 6-12 months after filing the Tariff / Change in Law Petition by a generating company. Hence, in absence of any provisional and/or adhoc and/or projected Supplementary Tariff, the generating company would not be able to secure any return on investment made on such Emission Control System for this intervening



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		emission control system installed in the coal or lignite based thermal generating station in accordance with these regulations not later than 60 days from the date of operation of such emission control system."	period of 6-12 months. However, the debt servicing obligations of the generation company to its lenders would start immediately after "Date of Operation" (ODe) of the Emission Control System. In absence of any provisional and/or adhoc and/or projected Supplementary Tariff, it would be extremely difficult for a generating company to discharge its debt-servicing obligations during this intervening period, which would severely affect its cash flows.
			Further, in the current challenging scenario, with a view to secure debt-servicing by the generating company, the lenders are increasingly insisting for a mechanism in terms of provisional and/or adhoc and/or projected Supplementary Tariff as a pre-requisite for lending, in absence of which, it would be extremely difficult for a generating company to achieve timely financial closure.
			In light of the above, we request the Hon'ble Commission to consider the following and make necessary provisions in the Regulation.
			a) In order to allow the generators to recover the fixed and variable costs associated with installation of FGD, immediately after commissioning, filling of application for determination of supplementary tariff may be allowed before 180 days from Scheduled Commissioning Date as per the project schedule of the entrusted Contractor for the job. Hon'ble CERC may kindly dispose of such petition and fix a provisional tariff within the next 4 months for each emission control system to be installed at the Generating Station for its multiple units. Such a provision will help generating company to recover cost incurred immediately on commissioning of the system.
			b) The provisional tariff may be based on provisional Capital Cost as per in- principle approval granted by Hon'ble Commission subject to final true-up after commissioning of all ECS for the Generating Station at the end of the current Control Period. With provisional Tariff in place, Generating Station will have determined fixed amount of monthly Supplementary Capacity Charges available to be billed for each emission control system as an when it gets commissioned (on pro-rata basis for balance part of the year) and Supplementary Energy Charges may be billed as per notified Regulations.



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			As and when an emission control system achieves COD, Generating Companies on pro-rata basis will bill the supplementary capacity charges for that ECS system without its linkage to peak/off peak hour or season for the current control period i.e. upto 31.03.2024.
			For illustration, if a generating station has two emission control systems to be installed, namely FGD system and in combustion System.
			CC = Prevailing Capacity Charges for the Station
			SCC1 = Supplementary Capacity Charges approved by Hon'ble Commission for FGD system
			SCC2 = Supplementary Capacity Charges approved by Hon'ble Commission for in combustion system
			So, after commissioning of FGD system, generating station would start recovering supplementary capacity charges approved against FGD system on prorata basis in addition to it prevailing capacity charges for the station
			i.e. Capacity Charges Billed = CC + SCC1 (prorata basis)
			Similarly, after commissioning of in combustion system, following capacity charges will be billed.
			i.e. Capacity Charges Billed = CC + SCC1 (prorata basis) + SCC2 (prorata basis)
			Regulation 42A, therefore, may be amended accordingly.
6	Amendment to Regulation 14 of the Principal Regulations	5.1 In Clause (2) of <b>Regulation 8</b> of the Principal Regulations	This appears to be a typographical error and it may be changed to:5.1 In Clause (2) of Regulation 14 of the Principal Regulations
	– Components of Tariff		



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7	Amendment of Regulation 15 of the Principal Regulations- Capacity Charge	6.2. In re-numbered Clause (1) of Regulation 15 of the Principal Regulations, the words "based on capital cost," shall be inserted after the words "communication system".	The components like (a) Operation and Maintenance expenses and (b) Interest on Working Capital of Annual Fixed Cost are not related to Capital cost. Hence, the insertion of words 'based on capital cost' may not be required.
8	Amendment of Regulation 15 of the Principal Regulations- Capacity Charge	<ul> <li>6.3. A new Clause, namely Clause (2) shall be added after there-numbered Clause (1) of Regulation 15 of the Principal Regulations as under:</li> <li>"15. (2) Supplementary Capacity Charges: Supplementary capacity charges shall be derived on the basis of the Annual Fixed Cost for emission control system (AFCe). The Annual Fixed Cost for the emission control system based on capital cost shall consist of the components as listed at (a) to (e) of Clause (1) of this Regulation."</li> </ul>	As stated above, the components like (a) Operation and Maintenance expenses and (b) Interest on Working Capital of Annual Fixed Cost are not related to Capital cost. Hence, reference of the words "based on capital cost" in the definition of Supplementary Capacity Charges need not be inserted. Further, we suggest that the following may be added after the proposed new Clause 15 (2): "Further provided the compensation of incidental charges including but not limited to loss of Capacity Charges due to shut down during Construction, penalty payable under PPA (if any), Loss of Ex-Bus Saleable Capacity, LTOA charges for reduced despatchable capacity & capacity etc. shall be compensated at actuals by adding the same losses as additional capital cost and shall be used in computation of tariff. Generators are free to approach the Commission for the same post Commercial Operation of the Emission Control System (FGD system). The allowed incidental expenses along with the applicable Carrying Cost would be recoverable from the beneficiaries based on the methodology as specified by the commission on case to case basis." Justification: a) There are no provisions in the existing regulations that address the incidental expenses associated with Emission Control System, such as Loss of capacity charges during Shut down, Loss of Revenue due to reduced Capacity on account of Increased Aux. etc. Therefore a separate provision is proposed to capture the same.



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			<ul> <li>b) Such loss of capacity charge, LTOA charges, etc may be allowed to be recovered through either of the following methods:</li> <li>Lump sum Compensation to be paid in one go.</li> <li>equal instalments over a period of 6/12 months after COD of FGD.</li> <li>Through monthly tariff payment.</li> </ul>
9	Amendment of Regulation 18 of the Principal Regulations - Debt-Equity Ratio:	A new clause, namely Clause (6) shall be added after Clause (5) of Regulation 18 of the Principal Regulations as under: "(6) Any expenditure incurred for the emission control system during the tariff period as may be admitted by the Commission as additional capital expenditure for determination of supplementary tariff, shall be serviced in the manner specified in clause (1) of this Regulation."	<ul> <li>We request the Hon'ble Commission to consider the following and make necessary provisions in the Regulation:</li> <li>a) Taking into consideration the prevailing volatile financial market in India including stress in the banking sector, developers / IPPs are finding it difficult to raise finance from the banks.</li> <li>b) Therefore, in case a developer is forced to put incremental equity above normative level for installation of emission control system, the additional equity should not be considered as normative loan (as per Regulation 18 (1) of the Tariff Regulations) and RoE on the actual equity may be provided to the developer.</li> </ul>
10	Amendment of Regulation 21 of the Principal Regulations- Interest During Construction (IDC) and Incidental Expenditure during Construction (IEDC):	<ul> <li>9.2. A new clause, namely, Clause (6) shall be added after Clause (5) of Regulation 21 of the Principal Regulations as under:</li> <li>"(6) For the purpose of Clauses (4) and (5) of this Regulation, IDC on actual loan and normative loan infused shall be considered."</li> </ul>	<ul> <li>We support the proposed amendment as the same brings clarity with respect to normative loan and Normative IDC on account of it.</li> <li>However, the Hon'ble Commission may include that IDC on normative loan would be provided from the zero date of investment. Such incorporation would be in line with the terms of the Judgment passed by the Hon'ble Appellate Tribunal for Electricity dated 03.10.2019 in Appeal No. 231 of 2017.</li> <li>Accordingly, we propose the following change to Clause (6) as below:</li> <li>"(6) For the purpose of Clauses (1) to (5) of this Regulation, IDC on actual loan and normative loan infused shall be considered."</li> </ul>



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11	Amendment of Regulation 23 of the Principal Regulations- Initial Spares	10.1 A new Proviso, namely, Proviso (iii) shall be added after Proviso (ii) to Regulation 23 of the Principal Regulations as under: "(iii) Where the emission control system is installed, the norms of initial spares specified in this regulation for coal or lignite based thermal generating station as the case may be, shall apply."	The Hon'ble Commission may kindly clarify whether initial spares shall also be allowed in case emission control system is allowed by the Hon'ble Commission for an existing project.
12	Amendment of Regulation 30 of the Principal Regulation - Additional Capitalization on account of Revised Emission Standards:	<ul> <li>"29. Additional Capitalization on account of Revised Emission Standards:</li> <li>(5) Un-discharged liability, if any, on account of emission control system shall be allowed as additional capitalization during the year it is discharged, subject to prudence check."</li> </ul>	We request the Hon'ble Commission to add the following proviso after Clause (5): 'Provided that liabilities arising out of award of arbitration or for compliance of the directions or order of any statutory authority or order or decree of any court of law; with-in or after the Cut-off date shall be allowed on case to case basis subject to prudence check.' <u>Justification:</u> Provision 24 , 25 and 26 should be applicable to such undischarged liability, as some time payments will be released to the contractors/vendors late because of various other reasons like disputes etc.
13	Amendment of Regulation 30 of the Principal Regulation - Return on Equity	A new clause, namely, Clause (3) shall be added after Clause (2) of Regulation 30 of the Principal Regulations, as under: "(3) The return on equity in respect of additional capitalization due to emission control system shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or in the absence of actual loan portfolio of the generating station, the weighted average rate of interest of the generating company as a whole shall be considered;".	The draft proposes to remove the existing norms which provides for return on equity (post-tax) at the rate 15.5% on the equity infused for installation of additional facilities as required on account of any change in law event including the ongoing capital intensive projects to meet the revised emission norms as issued by MoEF vide notification 31.12.2017 and now stipulates to service such equity at the cost of borrowing from financial institution. We would like to draw attention of the Hon'ble Commission on following aspects which are relevant and noteworthy in this regard: a) <b>Dispensation in deviation to principle of Regulatory Certainty</b> : Hon'ble Commission may kindly appreciate the fact that Investment is undertaken by the Developer after evaluation the risk perception including regulatory certainty taking



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			in to account the regulatory framework prevailing at the given point in time and after having reasonable understanding of revenue flow from such investment over the useful life of the asset. Even lenders provide loan at different rates to different project developers only after understanding the risk involved in the investment and revenue to be earned by the project developer and its ability to service the loan. Hon'ble Commission only after due prudence check and considering inputs/suggestions received from all stakeholders notified CERC Tariff Regulations 2019 on 7.03.2019 thereby bringing clarity for all for holistic growth of the sector and any alteration to the notified norms frequently will adversely impact the sentiments of the investors/lenders. It is pertinent to mention that Electricity Act, 2003 and the National Tariff Policy as amended from time to time also specify for regulatory certainty. Even the key objective behind the idea of MYT framework is to ensure Regulatory certainty for all at least during the control period. In light of above mandates and considering settled position in law, the Hon'ble Commission being a quasi-judicial body is therefore required to ensure regulatory certainty for all. Any modifications now will defeat the entire policy framework.
			<ul> <li>b) Detrimental to investor sentiments, jeopardize the Capital Investment Plan for revised emission norms per-se and likely to increase the Tariff: It is further submitted that Based on such notified norms many Generators have already entered/going to enter into arrangements for funding the capital-intensive projects for installation of de-SOx, de-NOx and other required systems to meet the revised emission norms based on funding commitments as per the already notified Regulations in 2019. Any revision of financial norms, which results in less return would send a wrong signal and would be detrimental for investments in the country jeopardizing the investments required for meeting revised emission norms. At this juncture, it is also relevant to reproduce the findings of the Hon'ble Commission provided in the statement of Reasons to the CERC Tariff Regulations 2019 while allowing return on equity required to comply with Change in law event:</li> <li>10.1.2 The Commission has considered the stakeholders' comments/suggestions. The Commission is of the view that in cases where the additional capitalization has become necessary to comply with the 'Change in Law' event, normal rate of return of equity should</li> </ul>



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			be allowed instead of allowing rate of return on equity at weighted average rate of interest on actual loan portfolio. Therefore, first proviso to clause (2) of Regulation 30 has been revised suitably
			c) In view of above findings, it is submitted that compliance of emission norms would be requiring huge investment and in order to tie-up for financial arrangements amid huge NPAs in the power sector, it is crucial to have in place suitable norms which facilitate the funding and such curtailment would lead to delay in getting project funding and at higher costs. At present also, funding is available to only few Generators with increased interest rate, non-compliance of the emission norms, closure of thermal generating stations and ultimately leading to more NPAs, higher cost of generation and huge impact on sector and nation at large.
			d) In this regard it is further relevant to note that with such norms in place generating companies would prefer to increase debt component or theoretically even going for 100% debt financing. The increase in debt component in the project would increase the risk of the lenders resulting into increased interest rates. For the purpose of illustration, considering the existing debt/equity ratio of 70:30, cost of debt at 8.5% and Post Tax ROE at 15.5% the WACC woks out to 10.6%. With 100% debt financing when everyone would be needing it would not be less than 11% to 12% for long term loan. So ultimately it will increase the overall WACC increasing the Tariff and defeating the sole intent of reduction in Tariff by such dispensation. Further, increase in the interest rate will have compounding impact on Capital Cost with increase in IDC and thereby increased Capital Cost.
			e) With the power sector being a stressed sector and generators also being financially stressed in the process, no bank will agree to fund 100% of the cost of Revised Emission Norms. Even if banks agree to fund 100%, the financial ratios of the project company get jeopardized thereby crippling them further.
			f) It may also be noted that such amendment will bring discrimination among the generators who have entered into/finalised an agreement with lenders and agreed for equity component commitment basis the principal regulations and financial



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			closure for the project is completed compared to generators who are in discussion or yet to complete the financial closure. The generators having made equity commitment anticipating return of 15.5% will unnecessarily get lower return for reasons not attributable to them compared to legitimate recovery as promised in the main regulations. In other words, it will be like going back on promise made under the principal regulations attracting the doctrine of promissory estoppel. As stated above, it will also bring discrimination amongst generators taking informed decision now based on this amendment compared to those having financial closure done/committed.
			g) It would be unfair that while new projects being approved shall get the higher rate of return 15.5% (including the equity required to meet the expenses for environmental systems), the existing projects – undergoing retrofitting of FGD/SCR/SNCR shall be fetching lower returns.
			h) In fact, we request the Hon'ble Commission to recognize that the risks of equity investment in the emission control equipment are far higher for the existing generating plants as the original OEM of BTG package will not take any responsibility for deterioration of plant performance and the entire risk of system integration is completely on the original developer. We suggest the Hon'ble Commission may be pleased to consider that existing plants shall be allowed an additional 1% return on equity investments for environmental systems.
			Considering the above facts, therefore, it may not be appropriate to modify the clause by way of proposing amendment to reduce the ROE on investment of FGD equivalent to the weighted average cost of debt.
14	Amendment of Regulation 30 of the	In the first proviso under Clause (2) of Regulation 30 of the Principal Regulations, the words "excluding additional	In line with the existing regulations, RoE should be allowed at 15.5% on the lower of actual or normative equity in the capital structure even after the cut-off date
	Principal Regulation - Return on Equity	capitalization due to Change in Law," shall be deleted and at the end of the said proviso, the words and expressions "or in the absence of actual loan portfolio of the generating	Many a time generator cannot complete some of the balance works because of reason beyond their control for which they should not be penalized.
		station or the transmission system, the weighted average	Therefore, it is requested that the existing Regulation 30 to exempt Additional



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		rate of interest of the generating company or the transmission licensee, as the case may be, as a whole, shall be considered;" shall be added.	capitalization due to change in law may be continued.
15	Amendment of Regulation 32 of the Principal Regulations- Interest on loan capital:	<ul> <li>13.1. A new clause, namely, Clause (5a) shall be inserted after Clause (5) of Regulation 32 of the Principal Regulations as under:</li> <li>"(5a) The rate of interest on loan for emission control system shall be the weighted average rate of interest of actual loan portfolio of the emission control system or in the absence of actual loan portfolio, the weighted average rate of interest of interest of the generating company as a whole shall be considered."</li> </ul>	We request the Hon'ble Commission to consider the weighted average rate of interest of the generating company or the transmission licensee, as the case may be, as a whole or the weighted average rate of interest on last outstanding actual loan portfolio of the generating station, as applicable, in absence of actual loan portfolio of the generating station.
16	Amendment of Regulation 33 of the Principal Regulations – Depreciation :	A new clause, namely, Clause (9) shall be added after Clause (8) of Regulation 33 of the Principal Regulations as under: "(9) The depreciation of the emission control system shall be computed from its date of operation for the balance useful life or extended life of the generating station, as the case	We request that Clause (9) may be re-worded as follows: '(9) The recoverable depreciation of the emission control system shall be computed at 90% of the capital cost from its date of operation and will be fully recovered in the balance useful life or balance extended life of the generating station or the balance long term PPA tenure, whichever is lower.'
		may be."	Since most of the plants are already operational for more than 5-10 years and balance life is significantly less, Lenders shall expect the loan against emission control systems to be recovered during the remunerative period of the plant. Depreciation amount is used to repay the loan amount. In order to ensure that loan repaying ability of the generators shall not be affected and funding will not be a constraint for installing such emission control system, it is important that depreciation allowed is higher during the balance life/PPA term so that the entire depreciation is recovered within the balance life/PPA validity duration.
			For the sake of clarity, depreciation rates of the Emission Control System (against number of years of balance useful life/PPA duration) may also be specified in Appendix 1 (Depreciation Schedule) of the Principal Regulations.



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S. no 17	Regulation Amendment of Regulation 34 of the Principal Regulations - Interest on Working Capital:	<ul> <li>Proposed Amendment</li> <li>A new clause, namely, Clause (aa) shall be inserted after Clause (a) of Regulation 34 of the Principal Regulations as under:</li> <li>"(aa) For emission control system of coal or lignite based thermal generating stations: <ul> <li>(i) Cost of limestone or reagent towards stock for 20 days corresponding to the normative annual plant availability factor.</li> <li>(ii) Receivables equivalent to 45 days of supplementary capacity charge and supplementary energy charge for sale of electricity calculated on the normative annual plant availability factor.</li> <li>(iii) Operation and maintenance expenses in respect of emission control system for one month.</li> </ul> </li> </ul>	<ul> <li>We request the Hon'ble Commission to consider the following and make necessary provisions in the Regulation:</li> <li>a) For computation of Interest on Working Capital, the Hon'ble Commission has considered cost of only limestone or reagent only and not other essential consumables like chemicals etc. Such chemicals may also be considered.</li> <li>b) While calculating interest on working capital, apart from cost of limestone, reagent and chemicals towards stock of 20 days, advance payment for 30 days towards cost of limestone, reagent and chemical stock for generation corresponding to the normative annual plant availability factor, may be allowed.</li> <li>c) Maintenance spares may be considered at 30% of operation and maintenance expenses in respect of emission control systems.</li> <li>Justification:</li> <li>a) The consumption and replenishment of stock is a continuous process and in</li> </ul>
		month. (iv) Maintenance spares @ 20% of operation and maintenance expenses in respect of emission control system."	<ul> <li>order to maintain the same, the generators will be required to pay in advance or immediately upon daily receipt for the reagents to have timely loading, transportation and unloading at the site. For a typical unit size of 210/250/300 MW, one rake of limestone/reagent will be sufficient to meet 60 days of consumption. Limestone procurement and transport by partial rake loading to meet consumption for less than 60 days will not be economical as it shall increase transportation expenses. Hence an average 30 days working capital for limestone may be considered.</li> <li>b) Further, Regulation 34 of CERC Tariff Regulations, 2019 on working capital provides as under:         <i>"Interest on Working Capital:</i>         (1) The working capital shall cover:         (a) For Coal-based/lignite-fired thermal generating stations:         </li> </ul>



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			(i) Cost of coal or lignite and limestone towards stock, if applicable, for 10 days for pit-head generating stations and 20 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;
			(ii) Advance payment for 30 days towards cost of coal or lignite and limestone for generation corresponding to the normative annual plant availability factor;
			(iii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;
			(iv) Maintenance spares @ 20% of operation and maintenance expenses including water charges and security expenses;
			(v) Receivables equivalent to 45 days of capacity charge and energy charge for sale of electricity calculated on the normative annual plant availability factor; and
			(vi) Operation and maintenance expenses, including water charges and security expenses, for one month.'
			If we compare the working capital provided for generating station vis-à-vis emission control system then we can clearly identify that point (ii) Advance payment for 30 days towards cost of coal or lignite and limestone/reagent for generation corresponding to the normative annual plant availability factor has escaped attention of the Hon'ble Commission in respect of emission control system. As it is clear from statement of reasons, Hon'ble Commission has proposed the similar component of working capital for emission control system.
			c) We are suggesting 30% Spares as technology of FGD is new and very few players have installed FGD & therefore sufficient data is not available at present. CERC may proceed with 30% for present Tariff period and may revisit this during



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			next tariff period based on the experience of current tariff period.
18	Amendment of Regulation 35 of the Principal Regulations- Operation and Maintenance Expenses	Sub-Clause(7) of Clause (1) of Regulation 35 of the Principal Regulations along with its proviso shall be substituted as under: "(7) The operation and maintenance expenses on account of emission control system in coal or lignite based thermal generating station shall be 2% of the admitted capital	Estimation of O&M expenses on account of emission control system is presently a difficult exercise due to the lack of available data and experience. However, most of our members feel that the proposed norm of 2% of admitted capital expenditure (excluding IDC & IEDC), appears to be on the lower side, on the basis of limited data that is presently available. This is especially because O&M expenses of emission control system on a stand-
		expenditure (excluding IDC & IEDC) as on the date of its operation, which shall be escalated annually at the rate of	alone basis, may require additional cost involvement over the power plant due to following:
	3.5% during the tariff period ending on 31st March 2024:	3.5% during the tariff period ending on 31st March 2024:	a. Thermal power plants predominantly have electromechanical devices (though there are several small chemical facilities) whereas Wet Limestone FGD is primarily a large chemical based plant with higher wear and tear entailing higher operation and maintenance cost.
			<ul> <li>b. Degradation of equipment as the whole system operates in corrosive environment. This may pose major challenges for the generators to ensure availability of emission control system.</li> </ul>
			c. Higher maintenance cost as a sizeable number of equipment installed for the emission control system is likely to be imported and imported spares are sensitive to forex fluctuations.
			d. Implementation of emission control system at existing plants setup may require additional infrastructural support to facilitate smooth operation (for example installation of a dedicated road and gate for trucks carrying gypsum - similar to separate dedicated gates with security personnel that have to be maintained in power plants for ash movement.).
			e. Insurance cost in the tune of <b>0.5%</b> of admitted capital cost.
		Further, it is also felt that it may be preferable to consider O&M expenses in terms of Rs Lakh/MW on unit size basis, as has been done in Clause Clause 35 (1)(1) at Page 70 of the CERC Tariff Regulations 2019-24.	



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			Therefore, our suggestions in this regard are:
			<ul> <li>a) For the initial few years (till the end of the control period), O&amp;M expenses may be allowed at 5% of the admitted capital expenditure (excluding IDC &amp; IEDC), or at actuals, whichever is lower.</li> </ul>
			<ul> <li>b) Based on actual data, the norms for the next control period may be framed accordingly. Ideally, O&amp;M expenses may preferably be considered in terms of Rs Lakh/MW on unit size basis, based on actual data.</li> </ul>
19	Amendment of Regulation 35 of the Principal Regulations- Operation and	Provided that income generated from sale of gypsum or other by-products shall be reduced from the operation & maintenance expenses."	Simultaneous commissioning of similar limestone-based emission control systems by majority of the generators in 2022 may pose a challenge for marketability of Gypsum as a by-product. Presently the production and demand of industrial gypsum is limited. However, once the FGDs of the thermal power plants are commissioned it would change the supply chain of gypsum due to sudden high availability of gypsum.
	Maintenance Expenses	Maintenance Expenses	With the glut of chemically produced gypsum as by-product of FGDs, it is entirely possible that there may not be many takers and this environmentally hazardous gypsum would need to be disposed through environmentally-safe measures, which would involve significant expenses. Many power plants may have to spend monies on handling and disposing/utilizing Gypsum.
			While Hon'ble CERC provides for reduction of income from sale of Gypsum, it does not provide for sharing the cost in case power plants are not able to dispose-off the Gypsum. Therefore, Hon'ble CERC may either provide for Procurers bearing the disposal cost as well along-with revenue from Gypsum as a pass-through element in toto OR alternatively, may consider leaving the revenue/cost of disposal from Gypsum totally with power plant.
20	Amendment of Regulation 42 of the Principal	21.1. In the proviso under the formula under Clause (2) of Regulation 42 of the Principal Regulations, the words "or installation of emission control system, as the case may be"	The impact of this proposed Amendment is that when plant is under shutdown outage for installation of FGD, only O&M Expenses & Interest on Loan component of Capacity Charges shall be allowed to be recovered.
	Regulations- Computation and Payment of Capacity	shall be inserted after the words "Renovation and Modernisation".	We request the Hon'ble Commission to consider and allow the following provisions in the Regulations:



S. no	Regulation	Proposed Amendment	Comments and Suggestions
	Charge for Thermal Generating stations:	21.2 Clause (5) of Regulation 42 of the Principal Regulations along with the proviso of the said clause shall be substituted as under:- "(5) The Plant Availability Factor for a Month ("PAFM") shall be computed in accordance with the following formula: $PAFM = 10000 \times \sum_{i=1}^{N} \frac{DCi}{[N \times IC \times (100 - AUX_n - AUX_{ex})]} \%$ Where, AUXn = Normative auxiliary energy consumption in percentage; AUXen =Normative auxiliary energy consumption for pollution control system as a percentage of gross energy generation, wherever applicable; DCi = Average declared capacity (in ex-bus MW), for	<ul> <li>a) Full capacity charges should be paid when plant is under shutdown for interconnection of emission control system with the flue gas system of the plant and deemed Plant availability at normative level should be considered for recovery of tariff as installation of emission control system is under Change in Law and during the period of installation, the generator still needs to service the debt.</li> <li>b) Further, the availability of the unit may suffer during stabilization period of 6 months post commissioning of FGD as the plant O&amp;M engineers have no experience of operating the FGD plant. Hence, while calculating plant Annual PAF for that particular year and during stabilization period, availability loss due to shut down for interconnection of emission control system/ FGD related forced outages post commissioning may be allowed to be excluded from calculation of actual availability for recovery of fixed costs.</li> <li>Justification</li> <li>a) Incorrect Comparison of outage period under Renovation and Modernisation (R&amp;M) equivalent to outage required for installation of Emission Control</li> </ul>
		bCl – Average declared capacity (in ex-bas MW), for the ith day of the period i.e. the month or the year as the case may be, as certified by the concerned load dispatch centre after the day is over; IC = Installed Capacity or (MW) of the generating station; N = Number of days during the period;	<b>Systems</b> : Renovation and Modernisation of the Generating Units are normally taken up after completion of the useful life when as such there is no or only small liabilities exist which it are required to be serviced. Importantly, it is undertaken as decided by the parties for life extension of the Plant to extend benefits of lower tariff to beneficiaries thereafter. The investors, therefore, would have received the envisaged return/depreciation/interest during the entire useful life of the Project in case of R&M done after useful life but since ECS are being installed during useful life the envisaged return/depreciation/interest would need to be provided during shutdown. So, treatment of Tariff as provided in the extant Regulation is accepted by the parties in case of R&M whereas the outages required for installation of Emission Control Systems is on account of a Change in Law event to comply with revised emission norms and is not attributable to the generator. Hence, it would not be correct to corelate the two outages and to extend the treatment of tariff as is done in case of R&M to the shutdown period required for installation of emission



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			control system. The Hon'ble Commission may also appreciate that if part of that outage is subsumed in the Annual Outage we are saving burden on the consumer to that extent and whatever further optimization is required in shutdown will be carried out in discussion with all beneficiaries and Regional Load Despatch centres. Also, R&M Shutdowns are generally for longer and continuous duration, whereas shutdown for installation of ECS shall be for shorter duration and intermittently for each Unit/ECS installed.
			b) Depriving Generating Companies from full recovery of Fixed Charges will be in deviation to the settled principle for compensation on account of change in law event: In catena of judgments, it has been decided to fully compensate the party for any hardships arising on account of Change in Law event such that it is reinstated to same economic position as if change in Law event has not occurred. However, amending extant regulations to only deprive the legitimate recovery of the Generators will cause significant financial damage to Generators for reasons not attributable to them and will be bad in law and will send a wrong signal in the sector which is already overburdened with stressed/idle assets. Though, Generators are obligated to minimize the outage duration in discussion with beneficiaries and co-ordination with respective RLDCs/SLDC but under recovery of fixed charges on account of outage period which is required due to change in law event and not caused by Generators will be unfair and will not be in consonance with the objective of the Electricity Act and Tariff Policy which prescribes for regulatory certainty and to balance the interests of all stakeholders and not be solely concerned with consumer interests.
			c) Also, it is abundantly clear from enabling Regulations under the CERC Tariff Regulations 2019 that any costs arising on account of any uncontrollable reasons after due prudence check shall be allowed to be trued-up and same has to be passed onto the beneficiaries under the cost-plus method. Hon'ble Commission has already in catena of Orders acknowledged the promulgations of revised norms to be a change in law event and, therefore, costs arising on account of it need to be passed on as per the existing law. Amending the existing law subsequently to



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S. no	Regulation	Proposed Amendment	Comments and Suggestions
			reduce the quantum of costs is not in consonance with the legislative intent of the Act nor the Tariff Regulations 2019 which is binding on all stake holders.
			d) <b>Contrary to earlier reasoning and objective behind extant Regulation</b> : Notwithstanding above comments, it is also important to understand the idea behind the existing Regulation which provides for allowance of O&M expenditure and Interest on Loan only for the shutdown period availed for the purpose of Renovation and Modernisation. In this regard, it is crucial to extract the relevant portion of the statement of Reasons to CERC Tariff Regulations 2009 which provides the reasoning for the same:
			"…Commission's Views
			34.7 As regards payment of capacity charges during renovation & modernisation period, beneficiaries have suggested to limit the capacity charges to Interest on Loan and part of O&M expenses, while some of the stakeholders have suggested to include the depreciation as part of capacity charges during renovation & modernisation period, to facilitate the repayment. In this regard, it may be noted that renovation & modernisation will be generally carried out at the fag end of the useful life or after completion of useful life and hence, the generating company or transmission licensee would have recovered substantial part of depreciation on original fixed cost and at that stage, there is unlikely to be any repayment obligation remaining corresponding to the loan for original project cost. Therefore, the Commission is of the view that the provision in draft Regulations in this regard is appropriate and does not warrant any change. However, in case actual loans are outstanding and repayment is to be made, the Commission shall consider the matter on a case to case basis on receipt of an application.



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			e) The Hon'ble Commission may appreciate that renovation and modernisation is normally carried out at the fag end or after completion of useful life as stated in above excerpts of SOR and by then the project developer ought to have recovered all or substantial part of the fixed charges. Therefore, only O&M expenses and interest on loan has been allowed with a caveat to allow depreciation on case to case basis, if any. However, contrary such premise, such limitation on the recovery of fixed charges has been proposed to be extended for plants which may be in different stages of their useful life and are yet to recover substantial part of the return against the equity invested in the project and depreciation on the fixed assets. Further, apart from interest on loan, principal repayment towards outstanding loan is also required to be made as also acknowledged by the Hon'ble Commission in the analysis (quoted above) and, therefore, recovery of both Depreciation and Return on Equity is essential for the generators to service their obligations and avoid any cascading effect on Lenders and sector at large. The Hon'ble Commission may further appreciate the fact that in case where station has more than one unit, if one Unit is under shutdown for commissioning of ECS the other unit(s) and the generating station is operational and, hence, no obligations as such will reduce for the generating station as far as Annual Fixed Cost is concerned.
			f) Further, as stated above, these generating units are in operation and, accordingly, have kept stock of primary and secondary fuels, consumables, spares for maintenance etc for continuously running the plant. Therefore, denying Interest on working Capital as allowed under extant Regulations will not be in conformity with the extant regulations and the premise/basis on which Interest on working capital is allowed as part of fixed charges. Also, Generators are ought to service the interest on working capital loan and any under recovery on interest on working capital will significantly hamper the capability of generators to service their interest obligation to lenders towards working capital loan and will impair the liquidity position of the utilities.



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			<ul> <li>g) We would also like to draw the kind attention of the Hon'ble Commission to the settled law that rights cannot be taken away by new legislation or amendment: This settled law is based on the <i>legal maxim nova constitution futuris forman imponere debet non prateritis</i> which means "a new law ought to regulate what is to follow, not the past".</li> <li>h) The Hon'ble in the backdrop of the principles laid down in tariff Regulations had allowed a capital cost for the project and thereby assured to have a return for useful life of the project basis the terms and condition laid down in Regulations. However, changing the set of rules in between to squeeze the return is impacting the bonafide rights/claim of the project developer and is against the settled law. Whatever law is made it should not hamper the legitimate return of the developer assured in the beginning.</li> <li>In light of above submissions, it most respectfully submitted that Hon'ble Commission should retain the existing proviso under Clause (2) of Regulation 42 and a separate provision for recovery of full Annual Fixed Charge for the number</li> </ul>
21	Amendment of Regulation 42 of the Principal Regulations- Computation and Payment of Capacity Charge for Thermal Generating stations:	21.2 Clause (5) of Regulation 42 of the Principal Regulations along with the proviso of the said clause shall be substituted as under:- "(5) The Plant Availability Factor for a Month ("PAFM") shall be computed in accordance with the following formula: $PAFM = 10000 \times \sum_{i=1}^{N} \frac{DCr}{[WxICx(100-AUX_{R}-AUX_{ex})]} \%$ Where, AUXn = Normative auxiliary energy consumption in percentage;	of days of shutdown period on pro-rata basis may be specified The AUXen is for individual component of Emission Control System such as AUXe1 for FGD, AUXe2 for NOx etc. whereas, as per our understanding AUXe is the sum of all such AUXen. This clarity needs to be brought out in the definition of AUXe provided at SI. No 2.1 of the draft amendment. Hence, in the above, the AUXen should be replaced by AUXe, where AUXe = $\sum_{n=1}^{\infty} AUXen$ , AUXen is Normative Auxiliary Energy Consumption for 'n <sup>th</sup> ' component of the emission control system as a percentage of gross energy generation; The same has also been considered in 25. Amendments of Regulation 49 of the Principal Regulations



S. no	Regulation	Proposed Amendment	Comments and Suggestions
		AUXen =Normative auxiliary energy consumption for pollution control system as a percentage of gross energy generation, wherever applicable;	<ul> <li>25.1. A new sub-clause, namely, sub-clause (bb) shall be inserted after sub-clause (b) of Clause (E) of Regulation 49 of the Principal Regulations as under:</li> <li>"(bb) Auxiliary Energy Consumption (AUXe) on account of emission control system of thermal generating stations:</li> </ul>
22	New Regulation 42A to be added in the Principal Regulations - Computation and Payment of Supplementary Capacity Charge for Coal or Lignite based Thermal Generating Stations	<ul> <li>"42A. Computation and Payment of Supplementary Capacity Charge for Coal or Lignite based Thermal Generating Stations:</li> <li>(1) The fixed cost of emission control system shall be computed on annual basis based on the norms specified under these regulations and recovered on monthly basis The supplementary capacity charge shall be recovered under two segments of the year, i.e. High Demand Season (period of three months) and Low Demand Season (period of remaining nine months), and within each season in two parts viz., Supplementary Capacity Charge for Peak Hours of the month and Supplementary Capacity Charge for Off- Peak Hours of the month as follows:</li> <li>Provided that within a Season, the shortfall in recovery of Supplementary Capacity Charge for cumulative Off-Peak Hours derived based on NAPAF, shall be allowed to be off- set by over-achievement of PAF, if any, and consequent notional over-recovery of Capacity Charge for cumulative Peak Hours in that Season:</li> </ul>	<ul> <li>We request the Hon'ble Commission to consider the following provisions in final regulations:</li> <li>(1) The fixed cost of emission control system shall be computed on annual basis based on the norms specified under these regulations and recovered on monthly basis The supplementary capacity charge shall be rocovered under two segments of the year, i.e. High Demand Season (period of three months) and Low Demand Season (period of romaining nine months), and within each season in two parts viz., Supplementary Capacity Charge for Peak Hours of the month and Supplementary Capacity Charge for Peak Hours of the month and Supplementary Capacity Charge for Off Peak Hours of the software derived based on NAPAF, shall be allowed to be off set by over achievement of PAF, if any, and consequent notional over recovery of Capacity Charge for cumulative Peak Hours in that Season:</li> <li>Provided further that within a Season, the shortfall in recovery of Supplementary Capacity Charge for cumulative Peak Hours in that Season:</li> <li>Provided further that within a Season, the shortfall in recovery of Supplementary Capacity Charge for cumulative Peak Hours in that Season:</li> </ul>
		Provided further that within a Season, the shortfall in recovery of Supplementary Capacity Charge for cumulative Peak Hours derived based on NAPAF, shall not be allowed to be off-set by over-achievement of PAF, if any, and consequent notional over-recovery of Supplementary	<ul> <li>Justification:</li> <li>a) Since the Generating stations across the country would be implementing the emission control system in the next two/three years and the shutdowns would be in phases so as to ensure the Grid stability. This would have an impact on the</li> </ul>



S. no	Regulation	Proposed Amendment	Comments and Suggestions
		Capacity Charge for cumulative Off-Peak Hours in that Season.	respective station's peak and off-peak periods resulting into impact on cumulative availability for the station.
			b) Further, since commissioning and operation of emission control system in India is at nascent stage, unforeseen outages during stability period at least for a year is unavoidable and has been accepted in case when super thermal technology was first introduced in the country. With time and experience the same should stabilise. Accordingly, having strict availability regulations for peak and off peak hours is not desirable. Hon'ble Commission may further appreciate that commissioning of emission control system inevitably will happen in between the year and at different time of the year for different components for the different Units, thus, it would be difficult for a generating station to cover-up the losses during reduced number of days within one season and also to schedule during peak and off-peak.
			c) Further, capacity charges towards emission control system should be uniform through-out the year (without any bifurcation of Peak & Off-Peak) based on the cumulative availability as on Date, the reason being is that the Loan Instalments are uniform and there is no peak or Off peak EMI.The emission control system will anyways operate irrespective of the high demand or low demand period and therefore linking capacity charges to high or low demand period may not be justified.
23	New Regulation 42A to be added in the Principal Regulations	"42A. Computation and Payment of Supplementary Capacity Charge for Coal or Lignite based Thermal Generating Stations:	It is suggested to have Supplementary Capacity Charges for ECS (SCC) to be defined as summation of Capacity charges for each emission control system installed at the generating station.
	- Computation and Payment of Supplementary Capacity Charge for Coal or Lignite based Thermal Generating		SCC for ECS system = $\sum_{n=1}^{n} SCCn$ , SCCn is Capacity Charges for 'n <sup>th</sup> ' component of the emission control system to be installed for the station having one or multiple generating Units;
	Stations		Further, In order to simplify the procedure for determination of Supplementary Tariff and recovery of Tariff as an when ECS achieves COD, it is suggested to determine



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S. no	Regulation	Proposed Amendment	Comments and Suggestions
			provisional tariff for each emission control system to be installed at the Generating Station for its multiple units based on provisional Capital Cost subject to final true-up after commissioning of all ECS for the Generating Station. With provisional Tariff in place, Generating Station will have Supplementary Capacity Charges to be billed for each emission control system as an when it gets commissioned (on prorata basis) and Energy Charges billed as per notified Regulations.
			As and when an emission control system achieves COD, Generating Companies on prorate basis will bill the capacity charges for that ECS system.
			For illustration, if a generating station has two emission control system to be installed, namely FGD system and in combustion System.
			CC = Prevailing Capacity Charges for the Station
			SCC1 = Supplementary Capacity Charges approved by Hon'ble Commission for FGD system
			SCC2 = Supplementary Capacity Charges approved by Hon'ble Commission for in combustion system
			So, after commissioning of FGD system, generating station would start recovering capacity charges approved against FGD system on prorate basis in addition to it prevailing capacity charges for the station
			i.e. Capacity Charges Billed = CC + SCC1 (prorata basis)
			Similarly, after commissioning of in combustion system, following capacity charges will be billed.
			i.e. Capacity Charges Billed = CC + SCC1 (prorata basis) + SCC2 (prorata basis)
24	New Regulation 42A to be added in the Principal Regulations	(3) Any under-recovery or over-recovery of Supplementary Capacity Charge as a result of under-achievement or over- achievement, vis-à-vis the NAPAF in Peak and Off-Peak	We request the Hon'ble Commission to add the following new clause: <u>New suggested clause (3.1)</u> Further, in case if the generator is not able to



S. no	Regulation	Proposed Amendment	Comments and Suggestions
	- Computation and Payment of Supplementary Capacity Charge for	Hours of a Season (High Demand Season or Low Demand Season, as the case may be) shall not be adjusted with under-achievement or over-achievement, vis-à-vis the NAPAF in Peak and Off-Peak Hours of the other Season:	Despatch its capacity due to the reasons not attributable to it or in case of Force majeure affecting the DISCOMS/Beneficiaries, then Beneficiaries would be liable to pay the Capacity charges equivalent to Monthly Loan instalments payable by Generator for such period.
	Coal or Lignite based Thermal Generating		Justification:
	Stations		a) In a particular scenario of Forced and extended Shutdown like (situation prevailing due to COVID-19 crisis), the Generators may not be available fully or Discoms may invoke Force majeure Clauses of their respective PPAs to avoid the payments. It would further deteriorate the already poor financial condition of Generators. Therefore, Generators should be eligible to be paid at-least equal to 85% of the amount payable to Banks and other fixed costs which are not avoidable by the Generators for such period. While balance amount if any can be deferred for payment during the later months after such events is ceased to exist.
25	Amendment of Regulation 43 of the Principal	23.4. A new sub-clause, namely, sub-clause (aa) shall be inserted after sub-clause(a) of clause (2) of Regulation 43 of the Principal Regulations as under:	It is suggested that proposed amendment including the formulae for computation of supplementary ECR may be suitably revised as under:
	Regulations- Computation and	"(aa) Supplementary ECR for coal and lignite based thermal generating stations:	(aa) Supplementary ECR for coal and lignite based thermal generating stations:
	Payment of Energy Charge and	Supplementary ECR = ( $\Delta$ ECR) + (SRC x LPR / 1000)	Supplementary ECR = (Δ ECR) + (SRC x LPR / 1000)/(1-(AUXn + AUXe))
	Supplementary Energy Charge for Coal or	Where,	Where,
	Lignite based Thermal Generating Stations	(∆ ECR) =Difference between ECR with revised auxiliary consumption with emission control system equivalent to (AUXn + AUXen) and ECR with normative auxiliary	$(\Delta \text{ ECR})$ = Difference between ECR with revised station gross heat rate & auxiliary consumption after installation of emission control system and ECR with station heat rate & normative auxiliary consumption as specified in these regulations and revised;
		consumption as specified in these regulations and revised;	AUXn = Normative Auxiliary Energy Consumption in percentage as applicable without emission control equipment;
		SRC = Specific reagent consumption on account of revised emission standard (in gm /kWh);	AUXe = $\sum_{n=1}^{n} AUXen$ , AUXen is Normative Auxiliary Energy Consumption in the
		LPR = Weighted average landed price of reagent for	Nth emission control system as a percentage of gross energy generation;



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S. no	Regulation	Proposed Amendment	Comments and Suggestions
		emission control system (in Rs/kg)".	SRC = Actual reagent consumption on account of revised emission standard (in gm/kWh)
			<ul> <li><u>Justification:</u></li> <li>a) The Formula has been revised in line with the formulae given in the CERC Tariff Regulations 2019 when ECR is computed on ex-power plant basis. Further, definition of AUXn is reiterated for clarity whereas AUXen has been replaced with AUXe as per definition provided in the draft amendment for Auxiliary Energy Consumption for emission control system.</li> </ul>
			b) Reasons for Impact in Normative Station Heat Rate: Emission Control System will have impact on the Station Heat Rate of the generating unit(s). Hence, the normative SHRs of the generating unit(s) should also be adjusted appropriately. The 'in-combustion control system' which is one of the most suited method for abatement of NOx upto range of 450mg/Nm3 is sensitive to operational aspects and majorly impacts the boiler efficiency. Boiler efficiency will reduce due to increased unburnt carbon loss after implementation of 'In Combustion Control Technology'.
			Also, in case of SNCR system, because the water from the urea solution evaporates in the boiler, the boiler efficiency decreases. Consequently, more fuel needs to be burned to maintain the required steam flow. Reference document w.r.t. SNCR system may be downloaded from following link:
			https://www3.epa.gov/ttn/ecas/docs/SNCRCostManualchapter7thEdition2016.pdf
			The same has been highlighted by all the bidders for installation of In-Combustion control system for limiting NOx emissions. It is understood that the adverse impact on boiler efficiency would vary in the range of 0.8% to 1.8% depending on the site condition as per the discussions with vendors.
			Hence, in view of above, it is suggested that the Hon'ble Commission may provisionally consider the impact of 1.01% on Normative Station Heat Rate



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			i.e. (SHR/(1-1%)) due to reduction boiler efficiency by 1% while finalizing the Regulations subject to true-up.
			c) As the available data on actual consumption of limestone/other reagents in Indian conditions is limited, the normative values may be arrived after 5 years of operation by generators and during that period the actual consumption values needs to be considered during the stabilization of the systems. Similarly, the NOx control system is still at the pilot stage and as such fixing guidelines for specific consumptions of reagent at this stage would be premature.
26	Regulation 49 (C) of the Principal Regulation – Norms of operation – Gross Station Heat Rate		While evaluating the impact of installation/ operation of Emission Control System on the normative norms of operation of a thermal generation project, the Hon'ble Commission has failed to address an important aspect related to degradation of Gross Station Heat Rate (GSHR) of a generation project due to installation of DeNOx System, which is an essential component of Emission Control System. Accordingly, no normative increase in GHSR of a generation project on account of installation of DeNOx system has been allowed in the draft Regulations, 2020.
			However, as per the discussions held with various technical experts and as also evident from the technical bids submitted by various OEMs for installation of DeNOx System, due to installation of DeNOx System, the combustion pattern of Boiler will change which will invariably result in increase in combustibles in the fly ash as well as bottom ash. Such an increase in unburnt combustibles shall consequently reduce the Boiler Efficiency thereby increasing the existing GSHR of the thermal generation projects by more than 1%.
			As such, not allowing any normative increase in GSHR due to installation of DeNOx System shall lead to substantial under recovery of Supplementary Tariff by the generating company. Accordingly, it is sincerely requested that 1% increase in the existing normative GSHR of the thermal generation projects (under Clause (C) of Regulation 49 of the Principal Regulations), on account of installation of DeNOx System be approved by this Hon'ble Commission while finalizing these Regulations.



S. no	Regulation	Proposed Amendment	Comments and Suggestions
27	Amendments of Regulation 49 of the Principal Regulations - Norms of operation for thermal generating station	A new sub-clause, namely, sub-clause (bb) shall be inserted after sub-clause (b) of Clause (E) of Regulation 49 of the Principal Regulations as under: "(bb) Auxiliary Energy Consumption (AUXe) on account of emission control system of thermal generating stations:	Since CEA after examining the project specific facts and design has recommended certain operational parameters for some of the Generating Stations, it is suggested to revise the wordings of the proposed amendment "bb" as following: "(bb) Auxiliary Energy Consumption (AUXe) on account of emission control system of thermal generating stations should be as per project specific recommendations provided by CEA and in case no norms have been given by CEA following norms will be considered subject to true-up at actuals:
28	Amendments of Regulation 49 of the Principal Regulations - Norms of operation for thermal generating station	A new sub-clause, namely, sub-clause (bb) shall be inserted after sub-clause (b) of Clause (E) of Regulation 49 of the Principal Regulations as under: "(bb) Auxiliary Energy Consumption (AUXe) on account of emission control system of thermal generating stations:	The proposed Aux. Energy Consumption (AEC) for wet limestone based FGD system has been considered as 1% of gross generation, which in our view, appears to be low. We suggest that the Hon'ble Commission may allow 1.2% of gross generation at full load, with an additional 0.5% AEC for unit size of 210/250/300 MW or lower. Further, the norms should take into account the inverse correlation between AUXe and PLF, and factor in low PLF operations of TPPs while framing the AEC norms.
		<ul> <li>Wet Limestone based FGD system (without Gas to Gas heater ) – 1.0 % AUXen (as % of gross generation)</li> <li>Provided that where the technology is installed with Gas to Gas heater, AEC specified as above shall be increased by 0.3% of gross generation</li> </ul>	Further, the Regulation-6B of the IEGC 4th amendment Regulations, 2016 provides for adjustment of norms of operation (HR, AEC etc.) for part load operations of the power plant systems other than emission control system. This provision of the IEGC is required to be amended to incorporate part-load adjustment of Aux Energy Consumption for emission control systems proposed in these draft regulations. Accordingly, a suitable footnote also needs to be added at the end of clause (E) of the Regulation 49 of the Principal Regulations.
		"	Rationale: CEA has approved Auxiliary Energy Consumption on account of wet limestone based FGD system (without gas to gas heater) as 1.15% in the case of Maithon Power Limited and it may be higher for other projects based on plant specific requirements, such as:



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			<ul> <li>Additional power consumption required on account of cooling water sourced from existing plant system for the new equipment.</li> </ul>
			<ul> <li>Additional power consumption required on account of pumping and treatment of makeup water to emission control system from the existing plant water system.</li> </ul>
			<ul> <li>c) Existing plants will require additional auxiliary consumption on account of various common services for emission control system.</li> </ul>
			<ul> <li>d) Due to acute scarcity of water at various locations, emission control system will entail installation of RO plant / ZLD Crystallizer system. Operation of such system will require additional auxiliary consumption.</li> </ul>
			e) Uncertainty over purity of lime stone and sulphur content of coal - while the auxiliary power increase will be dependent on the quality of limestone actually received as well as the coal quality and both are uncontrollable factors for generators. Additional energy consumption may be required to meet the statutory emission limit based on actual operating conditions and plant PLF.
			<ul> <li>f) Economy of scale plays a key factor on account of consumption of common facility for emission control system.</li> </ul>
			g) Auxiliary consumption of emission control system will depend on operating plant load factor of units, hence we request Hon'ble commission to allow a suitable compensation on account of degradation of auxiliary power consumption (APC) if PLF is reduced below normative PLF.
			h) Although the limestone purity of 85% has been mentioned in CERC draft amendment document, however, based on purity of limestone available in the selected sources for the plant, FGD system has been designed considering the limestone purity of 80%. Hence the limestone crushing, handling & slurry preparation system, limestone slurry feeding system, recirculation pumping system, gypsum dewatering system and other associated pumping system shall be designed considering the same (i.e. with limestone purity of 80% and corresponding generation of by-product). So, consequently the capacity of all the



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			mentioned system/sub-systems shall be higher. As a result this will lead to considerable increase in FGD auxiliary power consumption.
			<ul> <li>Due to the layout constraints &amp; system requirements considering wind buffeting effect and corrosive plume downwash aspects, the new wet stacks are required to be located at a sufficient distance away from the existing structures/ stack. Thus, the flue gas needs to be conveyed to a larger distance, which will in turn increase the pressure drop in the duct leading to increased booster fan power consumption.</li> </ul>
			j) The FGD waste water generated requires to be treated in a new waste water treatment plant for better water recovery/reutilization. This waste water treatment plant will consist of clarifiers, filters and RO systems, which needs significant auxiliary power consumption to operate.
			<ul> <li>While designing the booster fans, an additional pressure drop of 100 mmwc had been considered to take care of pressure losses due to future installation of De- NOx system. Hence this additional head shall contribute to more booster fan power consumption.</li> </ul>
			<ol> <li>Additional primary crushing system along with screening &amp; conveying systems for milling &amp; handling 200-250 mm size available limestone further adds to total the auxiliary power consumption for FGD system.</li> </ol>
			m) It is pertinent to mention that since limestone consumption and Aux. Energy Consumption is dependent on SO2 Removal efficiency. Therefore, if the SO2 removal efficiency is lower or will be lower due to degradation, it will lead to higher Aux. Energy Consumption and higher limestone consumption. In view of above, it is essential to factor in the same while specifying norms for Aux. Energy Consumption & Limestone consumption.
			n) Further, if plant is under shut down for short period like 10-15 days then Aux Power for agitators and recirculation system to be provided i.e the requirement for use to same lime slurry. During shut down, entire slurry has to transport to blow done area and all the slurry has to stir to avoid solidification. This is not only



S. no	Regulation	Proposed Amendment	Comments and Suggestions
			waste of entire slurry but also increasing Lime cost & Aux. Power. In case of solidification entire sump has to clean for future use.
29	Amendments of Regulation 49 of the Principal Regulations - Norms of operation for thermal generating station	A new sub-clause, namely, sub-clause (bb) shall be inserted after sub-clause (b) of Clause (E) of Regulation 49 of the Principal Regulations as under: "(bb) Auxiliary Energy Consumption (AUXe) on account of emission control system of thermal generating stations: (1) For reduction of emission of sulphur dioxide:	<ul> <li>a) It appears that the proposed Amendment has not considered Efficient Ammonia-Based Desulfurization Technology (EADS) as one of the efficient technologies available for emission control. It is requested that Hon'ble Commission may consider the same for inclusion in this amendment.</li> <li>b) For Dry Sorbent Injection System (using Sodium bicarbonate) – AUXen may be considered as 0.5%</li> <li>[Reason:] It is understood that Auxiliary Energy Consumption for Dry Sorbent Injection System will be in the range of 0.5% to 0.6% as per discussion with vendors and, hence, Auxiliary Energy Consumption of 0.5% is requested to be considered provisionally with true-up at actuals as suggested above.</li> <li>c) For Sea Water based FGD system (without Gas to Gas heater) – AUXen may be considered as 0.9%</li> <li>[Reason:] The Auxiliary Energy Consumption for Sea Water based FGD System is estimated to be higher and, therefore, it requested to provisionally set the norms of 1.2% (including Gas-Gas Heater) as set by Hon'ble MERC in its MYT Regulations 2019 for FGD system subject to true-up at actual. Hence, reducing 0.3% for Gas-Gas Heater, auxiliary energy consumption of 0.9% is proposed to be considered for sea water based FGD system (without Gas to Gas Heater)</li> </ul>
30	Amendments of Regulation 49 of the Principal Regulations - Norms of operation for thermal generating station	<ul> <li>A new sub-clause, namely, sub-clause (bb) shall be inserted after sub-clause (b) of Clause (E) of Regulation 49 of the Principal Regulations as under:</li> <li>"(bb) Auxiliary Energy Consumption (AUXe) on account of emission control system of thermal generating stations:</li> <li></li></ul>	<ul> <li>a) Selective Non-Catalytic Reduction system – 0.05%</li> <li>[Reason:] It is estimated that based on the tentative electrical load list and considering nature of service of these loads i.e. continuous/ intermittent or emergency the likely consumption works to 0.06% of the Gross Generation. Detail load list and workings for likely Auxiliary consumption is enclosed as Annexure 2 for kind reference. However, for SNCR system the same works out to 0.05%, and, hence, the same is proposed to be considered provisionally subject to true-up based on actuals.</li> </ul>



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S. no	Regulation	Proposed Amendment	Comments and Suggestions
			<ul> <li>b) Selective Catalytic Reduction system – 0.3%</li> <li>[Reason:] As per the EPA document No. EPA/452/B-02-001 (Section- 4, NOx controls) as also referred by Hon'ble CEA while recommending norms mentions requirement of Auxiliary Power Consumption of 0.3% for Selective Catalytic Reduction system. Relevant portion extracted below:</li> <li><i>"In all cases, SCR systems require additional electric power for the ID fan equivalent to approximately 0.3 percent of the plant's electric output"</i></li> <li>Hence, Auxiliary consumption of 0.3% may be considered provisionally subject to true-up based on actuals.</li> </ul>
			Since Auxiliary Consumption degrades with decrease in PLF due to lower scheduling or in case of RSD, it is proposed that additional normative auxiliary consumption may be allowed for every 5% PLF range lower than 85% in the same proportion of normative auxiliary consumption proposed above as has been allowed in Order dated 06.04.2016 on account of every 5% reduction in PLF.
			[Necessary provision for Impact on SHR needs to be inserted] – 1.01% x Normative Station Heat Rate. As elaborated earlier, Emissions Control System will have impact on the Normative Station Heat rate of the generating unit(s). Hence, the normative SHRs of the generating unit(s) should also be adjusted appropriately. In particular, as stated above, in-combustion control system for NOx abatement will have substantial impact of about 1.01% of Heat Rate, Hence, a suitable provision need to be inserted under main Regulations to provisionally allow such impact subject to true-up.
31	Amendments of Regulation 49 of the Principal Regulations - Norms of operation	A new clause, namely Clause (F) shall be added after Clause (E) of Regulation 49 of the Principal Regulations as under: " <b>(F) Norms for consumption of reagent:</b> (1)The normative	<ul> <li>We request the Hon'ble Commission to consider the following and make necessary provisions in the Regulation</li> <li>a) In our humble opinion. we appreciate that the Hon'ble Commission has already allowed the landed price of such reagents applying applicable statutory charges</li> </ul>



S. no	Regulation	Proposed Amendment	Comments and Suggestions
	for thermal generating station	consumption of specific reagent for various technologies for reduction of emission of sulphur dioxide shall be as below: 	and transportation cost. However, the Hon'ble Commission may consider to allow the consumption/quantity of reagent at actual. There is a dearth of reagent consumption data for FGDs specifically for Indian conditions and further, the specific reagent consumption would vary with many factors such as particular FGD technology, normative station heat rate, GCV of coal, Sulphur content of coal, purity of reagent, design SO2 removal efficiency of the ECS, stoichiometric molar ratio of reagent consumption etc. Therefore, we feel that normative values may have to be arrived at after 5 years of operation and during that period the actual consumption values need to be considered.
			<ul> <li>b) Purity of limestone will not be in control of the generators. Major portion of the domestic limestone is having purity less than 85%. It is a fact that limestone purity varies from region to region. Availability of the quality limestone is limited for plants in the eastern region. Generators may have to opt for low quality limestone – based on local availability. Hence ceiling of limestone purity at a minimum of 85% may not be practical to accommodate such huge requirement of limestone for emission control systems in India, and this cap may be removed.</li> </ul>
			c) A measure of Sulphur percentage in coal is required to find out the normative consumption of reagent as proposed by the Hon'ble Commission. It may be clarified that the Sulphur content would be on 'as received' basis, in order to avoid any confusion. In the definition of "GCV as Received" under Clause 31 of Regulation 3 of the Principal Regulations, the options for place of collection of sample and testing requirements have been specified. Similar clarity may be given for measurement of Sulphur content in percentage (S). Further, testing charges for Sulphur percentage in coal may be allowed as a pass-through item.



S. no	Regulation	Proposed Amendment	Comments and Suggestions
32	Amendments of Regulation 49 of the Principal Regulations - Norms of operation for thermal generating station	<ul> <li>25 (2) The normative consumption of specific reagent for various technologies for reduction of emission of oxide of nitrogen shall be as below:</li> <li>(a) For Selective Non Catalytic Reduction (SNCR) System: The specific urea Consumption of SNCR system shall be 1.2 gm per kWh at 100% purity of urea.</li> <li>(b) For Selective Catalytic Reduction (SCR) System: The specific ammonia consumption of SCR system shall be 0.6 gm per kWh at 100% purity of</li> </ul>	<ul> <li>We request the Hon'ble Commission to consider the following and make necessary provisions in the Regulation</li> <li>a) It may be specified that reagent consumption indicated is for reducing NOx emission to &lt;300 mg/Nm3 from the base level achieved after 'In Combustion Modification'. Further, specific urea consumption will depend on NOx value achieved during 'In Combustion Modification'. In case NOx value achieved during 'In Combustion Modification is 450 mg/Nm3, specific urea consumption will be 1.55 gm / KWH. In case NOx value achieved during 'In Combustion Modification shall be 1.30 gm/KWH.</li> <li>b) Ammonia is also used in SNCR system beside Urea. Hence, it is requested to specify ammonia specific consumption value for SNCR System</li> <li>c) For SCR System, for aqueous ammonia, specific consumption can be factored and indicated in this value based on purity of aqueous ammonia</li> </ul>
33	Amendments of Regulation 69 of the Principal Regulations – Recovery of cost of hedging or Foreign Exchange Rate Variation (FERV)	-none-	New insertion is proposed:         (3) For avoidance of doubt it is clarified that provisions of clause 69 of the Principal regulations will also be applicable for cost towards emission control systems.         Justification:         Above insertion may be incorporated for abundant clarity. The commission in its order 446/MP/2019 (Sasan Power Ltd.) has allowed FERV and other expenses at actuals and the same benefit may be extended to others.
34	Annexure -I PART 1 FORM- 16A Details of Reagent for Computation of		<ul> <li>We request the Hon'ble Commission to consider the following and make necessary provisions in the Regulation</li> <li>a) Transit and handling loss of limestone may be allowed as transportation of limestone will entail transit losses similar to coal.</li> <li>b) Handling cost, charges for third party sampling and applicable statutory charges</li> </ul>



S. no	Regulation	Proposed Amendment	Comments and Suggestions
	Supplementary Energy Charge Rate		for lime stone may be allowed.
	J		c) Limestone sampling, Testing and Analysis charges may be allowed as a pass through item in limestone procurement.
35	Additional submission		a) It is suggested that a common guideline/ policy on merit order scheduling be considered which can be followed by thermal plants across the country without having the possibility of being backed down on account of having higher ECR due to emission control system expense initially as long as most of the generators have implemented the same for their Generating Station.
			Further, such policy/provision in the Regulations will be in-line with the proposed recommendations regarding incentives to Thermal Power Plants for early installation of Pollution Control Equipment given by the Central Electricity Authority vide letter dated 26.09.2018 and Ministry of Power (MoP) direction dated 30.7.2019, issued u/s 107 of the Act to Hon'ble Commission to address similar concern. Key excerpts of the direction u/s 107 of the Act is reproduced below for ready reference:
			"3. The Phasing of the implementation of the new environmental norms has been reviewed. Accordingly, it is directed that the impact of operating costs incurred in the implementation of new Environmental Norms shall not be considered for Merit Order Despatch of Coal Based Thermal Power Stations till 31.12.2022. For this purpose, CERC shall advise a methodology of supplementary tariff determination separately from normal tariff so that installation of FGD/other ECS has no bearing on the merit order dispatch till 31.12.2022."
			<ul> <li>b) Cost recovery may be provided for Lime stone / reagent consumption during an estimated 3 month trial operation of emission control systems prior to declaration of date of commissioning.</li> </ul>
			c) Actual additional auxiliary consumption of the unit during the trial operation period of emission control systems prior to declaration of date of commissioning may be considered in the Regulations.



Regulation	Proposed Amendment	Comments and Suggestions
		<ul> <li>Recovery of opportunity costs pertaining to loss of revenue during shut down and permanent loss of revenue due to reduced ex-bus capacity due to increased Auxiliary Consumption – these aspects may be duly considered by the Commission.</li> </ul>
		<ul> <li>Pre-operating expenses and expenditure towards project management and engineering services may be considered at actuals.</li> </ul>
		f) The project execution phase from date of placement of order till commissioning of FGD may be considered as 30 months. Suitable incentive clauses of 70%:30% sharing of cost savings between generators and beneficiaries for achieving plant commissioning before the above period on account of savings from IDC
		g) A provision may be added in the amendment with regard to Requisite modification in the LTA. The modification may be granted on account of reduction in the Net Capacity of the generating station due to increase in Auxiliary Consumption in regard to DeSOx/ DeNOx system installation. In this regard, it may be noted that in Petition no. 92/MP/2015 dated 08.03.2019, the Commission has clarified as under:
		"150the Commission is of the view that relinquishment on account of auxiliary consumption and overload capacity shall not require payment of compensation payable towards such relinquishment."
		h) The Tariff Regulations, 2019 define "Generating Station" and "Generating Unit or Unit". A number of equipment systems will be installed for meeting the revised emission standards. The definitions of "Auxiliary Power Consumption of emission control system" may be renamed as "Auxiliary Power Consumption of a emission control system" to highlight that there can be multiple systems being commissioned at a different point of time. Similar amendment may be proposed for "Date of Operation". The proposed amendments at various places in the draft, including in the definition of "Emission Control System", may clearly acknowledge its multiplicity and its commissioning at various points of time.
	Regulation	Regulation       Proposed Amendment         Image: Constraint of the second



S. no	Regulation	Proposed Amendment	Comments and Suggestions
	Additional Submission : FGD implementation for projects without PPAs		<ul> <li>Due to lack of certainty about cost recovery for additional capital expenditure for installation of FGD, projects without PPAs will face difficulties with financing of FGD installation. Moreover, during the declared implementation period till 2022, such projects with FGD installed will have to sell power at a higher cost than the projects without FGD. This would lead to a situation where these projects with FGD would not get cleared on IEX or on DEEP.</li> <li>To address this issue, the following may be introduced:</li> <li>a) For open capacity being sold on IEX or through DEEP, the bidding would be without considering FGD costs. An additional FGD installation reimbursement cost notified by CERC (based on the benchmark costs for FGD by CEA) will be collected from all the procurers on per unit basis and paid to the generators with FGD.</li> <li>b) In case of medium-term contracts through DEEP portal, the generator who commissions the FGD during the tenure of the contract - may be reimbursed on and from the date of compliance to SOx norms. The total tariff on account of FGD – fixed and variable costs per unit, as determined for similar capacity units under Section 62 may be allowed.</li> </ul>