

Annexure-1: MB Power (Madhya Pradesh) Limited's comments/ suggestions on the Staff Paper on Compensation Mechanism towards "Change In Law" on account of compliance with Revised Emission Standards notified by MoEF&CC.

1) No Provision with respect to grant of provisional and/or adhoc and/or projected Compensation.

Our Comments: The Staff Paper provides for determination of Compensation (in terms of Supplementary Tariff) only after installation of Emission Control Systems ("ECS") and no enabling provision has been kept for grant of provisional and/or adhoc and/or projected Compensation for the period between Date of Operation ("ODE") of the ECS till the date of determination of Compensation thereof by the Hon'ble Commission.

It may kindly be appreciated that such Compensation determination, being an exhaustive process, may span across 6-12 months after ODe of the ECS. Hence, in absence of any provisional and/or adhoc and/or projected Compensation, the generating companies would not be able to secure any revenue during such intervening period of 6-12 months. However, the debt servicing obligations of the generation companies to their lenders would start immediately after ODe of the ECS. In absence of any provisional and/or adhoc and/or projected Compensation, it would be extremely difficult for any generating company to discharge its debt-servicing obligations during such intervening period, which would severely affect its cash flows.

Further, in the current challenging scenario, with a view to secure debt-servicing by a generating company, the lenders are increasingly insisting for a mechanism in terms of provisional and/or adhoc and/or projected Compensation as a pre-requisite for lending, in absence of which, it would be extremely difficult for any generating company to achieve timely financial closure. Such a delay in achieving financial closure, would eventually lead to breach of permissible timelines prescribed by MoEF&CC, GoI for installation of ECS, for absolutely no fault of generating companies.

Hence it is earnestly requested that based on the estimated/ projected CAPEX to be incurred towards installation of ECS, the Hon'ble Commission may kindly grant a provisional and/or adhoc and/or projected Compensation (@ say 90% of the estimated Compensation) 2-3 months before ODe of the ECS which may subsequently be trued up on the basis of actual

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ECS CAPEX. This will be a win-win proposition for the all stake holders viz. the lending institutions, generating companies, Discoms etc. as:

- This would enable the generating companies to secure the return on investment made by them towards ECS, right from the first day of its operation, thereby facilitating them to honor their debt-servicing obligations in a timely basis.
- Further, this will also prevent accumulation of substantial arrears Discoms/ Beneficiaries in terms of Supplementary Tariff and Carrying Cost thereof during such intervening period of 6-12 months, which may otherwise impair their cash-flows on account of a substantial accrued liability.

2) Para 3.1 of the Staff Paper – Compensation on account of loss of revenue due to shut-down of an operating project during installation of ECS

Our Comments: The Staff Paper has not proposed any mechanism for computation of compensation towards loss of revenue suffered by a generating company during the period of project shutdown for integration of ECS with its existing and operating generating project and has left the same to be decided by the Hon'ble Commission on case-to-case basis after installation of ECS.

It may kindly be appreciated that in its Order dated 23.04.2020 in Petition No. 446/MP/2019, this Hon'ble Commission has directed its staff to issue a Staff Paper dealing with overall tariff implications on account of installation of ECS. The relevant excerpts of this Order are reproduced hereunder:

“40. We have approved provisional capital cost and other costs related to installation of FGD system that is likely to provide enough comfort to financial institutions. However, we recognize that certainty of stream of cash flow in form of tariff is likely to give further comfort to these financial institutions and that it is also equally important for the procurers as well as sellers to know the tariff implications on account of installation of FGD system.

41. Therefore we direct staff of the Commission to float a staff paper at the earliest on the issue of compensation mechanism and tariff implications on account of the 2015

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Notification in case of those thermal power plants where the PPA does not have explicit provision for compensation mechanism during the operation period and the PPA requires the Commission to devise such mechanism, inviting comments from all the stakeholders."

[Emphasis Supplied]

Therefore, in compliance of the above directions of this Hon'ble Commission, the Staff Paper should have considered all aspects of tariff implications/ impact on account of installation of ECS. It is to be appreciated that loss of revenue during the period of project shutdown for integration of ECS with the existing and operating generating project is an important aspect having a significant tariff implications and hence such a significant aspect cannot be left un-addressed at this juncture.

It may further be appreciated that the basic purpose of the Staff Paper is to give predictability to the generating companies, lenders and the procurers under PPAs about the potential impact of installation of ECS in terms of additional compensation to the generating companies. **As such, it is felt that the principles/ mechanism for working out the compensation on account of loss of revenue suffered by a generating company during the period of project shutdown for integration of ECS with its existing and operating generating project needs to be addressed at this juncture only and the Staff Paper may duly address this aspect after considering the comments/ suggestions/ concerns of the various stakeholders.**

In this regard, it is requested based on various parameters like type of technology adopted by ECS (both SO₂ and NO_x), size of generating unit etc., a normative shut-down period of at least 30 days for each unit of a generating project towards installation of ECS be allowed, during which the associated generating unit be considered as "Deemed Available". This will be in consonance with the Principle of Restitution upheld by the Hon'ble Supreme Court and the Hon'ble APTEL, which has also been duly acknowledged by this Hon'ble Commission in the present Staff Paper

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3) Para 4.3 of the Staff Paper - Recovery of Depreciation:

Our Comments:

- a) The Staff Paper has standardized the useful life of the associated ECS as 25 Years for all the generating projects and has accordingly proposed recovery of Depreciation towards ECS CAPEX @ 3.6 % per annum (considering salvage value as 10% and allowing recovery of balance 90% ECS CAPEX over a useful life of 25 Years: $90\%/25=3.6\%$ per annum).
- b) This standardized recovery of Depreciation @ 3.6% per annum is irrespective of the balance useful life of the associated generating project post installation of ECS. This standardization is premised on the erroneous assumption that all the generating projects shall continue to operate efficiently for 25 years post installation of ECS, irrespective of their actual years in operation at the time of ODe of associated ECS. As such, the Staff Paper considers the following generating projects at par for the purpose of recovery of Depreciation towards ECS CAPEX:
 - i. A new generating project in which ECS is being installed along with project construction and both project & ECS have a balance life of 25 Years post project COD.
 - ii. An existing generating Project which has been under operations for (say) 5 years at the time of ODe of the associated ECS.
 - iii. An existing generating Project which has been in service for (say) 15 years at the time of ODe of the associated ECS.
- c) To add on to the woes of the generating companies, the Staff Paper has restricted recovery of Depreciation (@ 3.6% per annum) only over the balance life of the PPA, irrespective of the balance life of the generating project/ ECS.
- d) Such an arbitrary assumption and skewed approach has no rational and basis whatsoever and such a fallacious methodology to standardize recovery of Depreciation of ECS CAPEX for all the generating projects is not only against the basis principles of recovery of depreciation, but also undermines the Principle of Restitution upheld by the Hon'ble Supreme Court and the

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Hon'ble APTEL, which has also been duly acknowledged by this Hon'ble Commission in the present Staff Paper.

- e) The proposed methodology for recovery of Depreciation of ECS CAPEX would leave the generators at a severe financial disadvantage, as opposed to the Principle of Restitution, as the generators would neither be able to contract new PPAs in the absence of any bids nor recover the actual CAPEX incurred towards installation of ECS.
 - f) **This anomaly needs to be addressed to ensure that the recovery of Depreciation of ECS CAPEX is not standardized across the board and is rather linked to the actual remaining life of the associated generating project and PPA to ensure that the Compensation on account of this "Change in Law" event adequately restores the affected generating company to the same economic position if such "Change in Law" had not occurred.**
 - g) **As such, recovery of Depreciation of ECS CAPEX for every generating project under all its existing PPAs be linked to NPV in such a way that NPV of such a generating project including the ECS CAPEX under a PPA is same as that prior to incurrence of such CAPEX for that PPA considering the same rate of discount (return).**
- 4) **Para 4.3 of the Staff Paper – Cost of Capital employed for ECS:**

Our Comments:

- a) No differentiation has been made under the Staff Paper between the Equity and Debt components in terms of Rate of Return. The Return on Equity ("**RoE**") has been merged in the cost of capital. This is a significant deviation from the existing principles of supplementary tariff computation and is not in consonance with either the provisions of PPA or with the Principle of Restitution laid down by the Hon'ble Supreme Court and the Hon'ble APTEL as duly acknowledged by this Hon'ble Commission in the present Staff Paper. Such a proposed approach clearly fails to take into consideration the basic principle of tariff computation that Equity component has a much higher risk and hence opportunity cost for any generating company. As such, a generating company is entitled to due RoE, while computing the

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compensation in terms of Supplementary Tariff. Hence the rate of Return on Equity should be in line with the rate as per the Tariff Regulations of this Hon'ble Commission.

- b) **As such, it is strongly proposed that in line with the principles of Tariff Regulations of this Hon'ble Commission, Cost of Capital Employed be duly apportioned between Debt & Equity components in the ratio of 70:30 and post-tax RoE of 15.5% be allowed on the Equity component.**
- c) Further, the Staff Paper proposes to restrict Weighted Average Rate Of Interest ("WAROI") on Debt/ Loan at SBI MCLR (for one year tenor) plus 350 basis points. This assumption fails to take into consideration the fact that there is a sizeable of existing generating projects where the actual WAROI would substantially higher than SBI MCLR (for one year tenor) plus 350 basis points owing to their credit rating / financial metrics. Hence, such proposed capping of WAROI would invariably lead to under-recovery of cost of capital employed, which is against the Principle of Restitution laid down by the Hon'ble Supreme Court and the Hon'ble APTEL as duly acknowledged by this Hon'ble Commission in the present Staff Paper. **Accordingly, it is requested that WAROI on the Debt component be allowed on actual basis without any capping/ linking it to SBI MCLR.**

5) Para 4.13 of the Staff Paper – Additional O&M Expenses

Our Comments: Estimation of O&M expenses on account of ECS is presently a difficult exercise due to the lack of available data and experience. However, proposed capping of such O&M expenses @ 2% of ECS CAPEX (excluding IDC & FERV) is on the lower side on the basis of limited data that is presently available. This is especially because O&M expenses of ECS on a standalone basis would require additional cost involvement on account of the following:

- Thermal generating projects 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 O&M Expenses.

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- Degradation of equipment as the whole system operates in corrosive environment. This may pose major challenges for the generators to ensure availability of ECS.
- Higher maintenance cost as a sizeable number of equipment installed for the ECS likely to be imported and imported spares are sensitive to FERV fluctuations.
- Implementation of ECS in the existing generating projects may require additional infrastructural support to facilitate smooth operation
- Recurring annual insurance costs of ECS which is almost of the order of 0.5% of ECS CAPEX.

Accordingly, it is requested that for the first year of operation of ECS, additional O&M Expenses be allowed @ at-least 4% of the ECS CAPEX with an annual escalation of 5%

6) Para 4.14 of the Staff Paper – Additional Interest on Working Capital

Our Comments:

- a) While, the Staff Paper has listed the components of Working Capital, however the normative Rate of Interest on Working Capital has not been mentioned. **Accordingly, it is suggested that for avoidance of any doubts, normative Rate on Interest on Working Capital may be duly mentioned and kept in line with the Rate of Interest on Working Capital mandated under CERC Tariff Regulations, 2019.**
- b) Currently, there is uncertainty about the availability and location of limestone as also constraints in its transportation/ logistics since the limestone is essentially transported by road. **In view of these uncertainties and constraints associated with procurement and transportation of limestone, it is requested that stocking period of limestone be increased from proposed 20 days to 30 days.**

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7) **No Provision with respect to compensation on account of Gypsum (by-product of ECS) disposal.**

Our Comments: Simultaneous commissioning of similar limestone-based ECS by a majority of the generating projects in the year 2022 would pose a challenge for disposal of Gypsum (ECS by-product). As it is, Gypsum has a quite a low demand in the market and with high availability of Gypsum post commissioning of a sizeable ECS capacity from the year 2022 onwards, Gypsum demand would further shrink, making Gypsum disposal a challenging proposition. As such, this environmentally hazardous Gypsum would necessitate adoption of safe measures for Gypsum disposal thereby entailing significant expenses by generating projects towards safe storage and disposal of Gypsum.

However, the Staff Paper does not address this concern. It may kindly be appreciated that since safe storage and disposal of Gypsum (ECS by-product), shall have a significant tariff implication on account of ECS installation, hence it becomes imperative that the Staff Paper duly addresses this important aspect. As such, is it earnestly requested that a normative handling, storage and disposal charges of Gypsum (say Rs 150/tonne) be allowed to the generating companies, while finalizing the principles of compensation.

8) **Annexure-1 of the Staff Paper – Additional Auxiliary Energy Consumption**

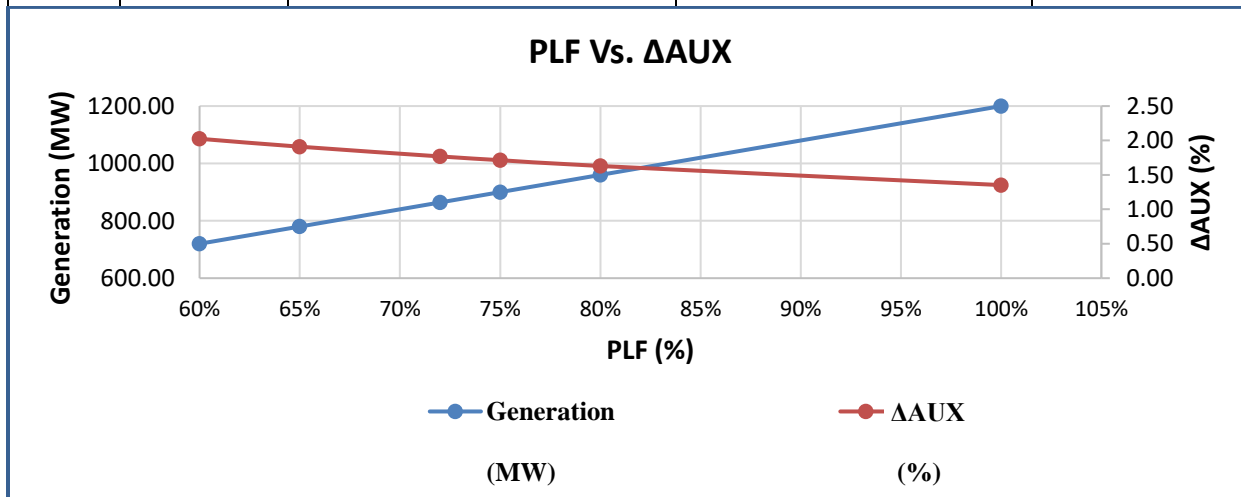
Our Comments: Additional Auxiliary Energy Consumption (“ Δ AUX”) on account of installation of Wet Limestone based FGD System is proposed to be just 1% under the Staff Paper. However, as per the discussions held with various technical experts and as also evident from the technical bids submitted by various OEMs for installation of Wet Limestone based FGD System, the Auxiliary Energy Consumption due to installation/ operation of Wet Limestone based FGD System has a negative/ inverse correlation with the PLF of the generating project. **As such, this Δ AUX shall vary in the range of 1.35% to 2% corresponding to the respective PLF range of 100% to 60% as detailed out hereunder.**

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Various technical bids submitted by different OEMs for installation of Wet Limestone based FGD System unanimously indicate variation of Δ AUX with respect to flow of Flue Gas (i.e. Boiler Load) , which shall be fed to the FGD System for removal of SO₂.

Accordingly, for a typical 1200 MW coal based thermal generation project, Flue Gas flow has been derived with respect to the PLF as per design calculations of the Boiler OEM and a graph has been plotted for PLF (%), Generation (MW) and Δ AUX (%) as under, which clearly demonstrates an inverse correlation between Δ AUX and PLF.

PLF (%)	Generation (MW)	Using Trendline Equation of Load Vs Gas Flow Graph	Using Trendline Equation of Gas Flow Vs Δ AUX Graph	$\frac{(\Delta\text{AUX}) \times 100}{(1000 \times \text{MW})}$
		Flue Gas Flow (kNm ³ /h)	Δ AUX (kwh/h)	Δ AUX (%)
100%	1200.00	1995	16226	1.35
80%	960.00	1668	15642	1.63
75%	900.00	1580	15427	1.71
72%	864.00	1526	15282	1.77
65%	780.00	1397	14898	1.91
60%	720.00	1302	14580	2.03



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As clearly evident from above, due to installation/ operation of Wet Limestone based FGD System, the Additional Auxiliary Energy Consumption (Δ AUX) of a generating project **shall increase in the range of 1.35% to 2% corresponding to the respective PLF range of 100% to 60%, which is way higher than the proposed Δ AUX of 1%. As such, limiting Δ AUX to mere 1% would lead to substantial under-recovery by the generating companies. Accordingly, it is sincerely requested to allow Δ AUX of at-least 2% for Wet Limestone based FGD System.**

9) **No Provision with respect to Degradation of Gross Station Heat Rate due to installation of ECS**

Our Comments: The Staff Paper has failed to address an important aspect related to degradation of Gross Station Heat Rate ("**GSHR**") of a generating project due to installation of De-NOx System, which is an essential component of ECS.

As per the discussions held with various technical experts and OEMs, due to installation of De-NOx 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 De-NOx System shall lead to substantial under recovery by the generating companies. Accordingly, it is sincerely requested that 1% increase in the existing normative GSHR on account of installation of De-NOx System be allowed.

10) **Annexure-1 of the Staff Paper – Norms of consumption of reagent (Limestone).**

Our Comments: Formula for specific limestone consumption mentioned under Para 2(1)(a):

- a) Units of specific limestone consumption are mentioned as g/kWh which is not dimensionally correct and the same may be corrected as kg/kWh.

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- b) The constant value 35.2 in the relation for K ($35.2 \times \text{Design SO}_2 \text{ Removal Efficiency} / 96\%$) may be checked and re-verified. We feel the value of K should be 3.52 and not 35.2.
- c) The Staff Paper mandates that the limestone purity shall not be less than 85%. It may kindly be appreciated that the limestone purity depends on the source of limestone over which generating company has absolutely no control. Further limestone with 85% purity would not be available all the time. As such, it is requested that no normative limestone purity be mandated under the Staff Paper at this juncture and the same may be reviewed at a later stage.
