

**Environmental Standards for TPPs notified on December 07, 2015, comments on the representations received from various stakeholders**

Sl. No.	Comments	CPCB Clarification
<b>Association of Power Producers</b>		
1.	The standards should not be applicable for the power plants installed prior to the notification of revised standards on 07.12.2015 considering limitations related to space constraints, technical issues & financial implications etc.	<p>The above concerns raised are not justified as the standards were revised considering all aspects including availability of technology and achievability within the existing plants without any add-on technology except installation of FGD system for control SO<sub>2</sub> for the plants (unit size more than 500 MW and above) installed during January 01, 2004 to December 31, 2016 for which a condition was included in environmental clearance that space shall be provided for installation of FGD, if required in future. Besides, retrofitting of ESPs (in some cases) may also be required. Similarly, plants to be commissioned from January 01, 2017 can also implement the standards by making suitable modifications. Lenders will have to consider the financial aspect as it has now become a statutory requirement after the notification.</p> <p>For vintage plants it will be rather easier to implement either by replacing the unit with new one or retrofitting the existing one, if life is there as most of them have out lived their useful life.</p> <p>Regarding financial implications, it is submitted that improvement in environmental conditions by adopting cleaner and best available technologies cannot be linked with financial aspects. If we see the pollution load from power sectors that contribute about 90 % of total industrial emissions in terms of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> &amp; NO<sub>x</sub>.</p> <p>Two year time has been given for making</p>

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		necessary retrofitting in existing plants which is adequate to address all the issues related to availability of technology as well as shorting out issues related to tariff with CERC.
2.	The standards are developed without adequate ground work lacking detailed studies and are very stringent compared to World Bank norms	<p>It is not correct that standards are lacking ground work and developed without detailed study. The standards were developed considering the present level of emissions and their achievability and availability of technology. The draft standards have been formulated by CPCB after consultation with stakeholders including industry. The standards were discussed thoroughly in the Expert Committee meeting held at MOEF&amp; CC on October 16, 2015 prior to that a presentation was made in the month of March 2015 before the Secretary, MoEF&amp; CC on the proposed norms in which representatives from Ministry of Power, NTPC, CEA participated. The proposed standards were also uploaded at website of MoEF&amp;CC for public consultations. The comments received were reviewed by committee at MoEF&amp; CC before final presentation in Expert Committee.</p> <p>Regarding standards are more stringent than World Bank norms, In this regard it is to state that World Bank has not given standards, it has provided guidelines for emission and effluent. The notified standards are comparable to countries like EU, US and China.</p>
3.	Exemption of plant using sea water for installing cooling tower ( CT) and achieving water consumption limit	CPCB in its comments has stated that coastal coal/lignite based TPPs are excluded from the limit of water consumption. MoEF&CC may issue a clarification in the matter.
4.	Retrofitting CT in existing plants (other than plants using sea water) will result in higher heat rate and partial loading	Most of the existing plants are vintage and having higher heat rate & low efficiency and more than 25 yrs old. Such plants should be replaced with new higher efficiency plants.



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		Besides, cooling towers would reduce impingement and entrainment mortality, closed-cycle cooling results in a variety of potential site-specific environmental and social impacts that include noise, salt drift, and visible plumes and fogging, safety issues, and impacts to terrestrial vegetation and wildlife.
5.	Water consumption for the plants other than the plant using sea water has been finalised based on EC granted.	Water consumption can be revised by optimising use of water. In fact three plants in the country which are based on zero discharged concept and water consumption is comparable with the limit as notified.
6.	Retrofitting of ESPs in vintage plants ( plants installed prior to December 2003) and plant commissioned during Janaury01, 2004 to upto December 31, 2016 will be difficult due to space problem	In vintage plants where space is constraint, there are options are available. 1. Specific collection Area of ESP can be augmented by increasing the size of field vertically. 2. last two fields of ESP can be converted into bag filter that will improve the efficiency of ESP. such modification can be done in two yrs time along with retrofitting of plant.
7.	Retrofitting of FGD in older plant (prior to 2003 ) will not be possible to meet the emission limit of 600 mg/Nm <sup>3</sup> . Besides coal linkage is fixed and coal quality cannot be changed.	Retrofitting of FGD in older plant( prior to 2003 ) will require only unit size of 500 MW and above which have already been asked to keep space provision for installation of FGD in future if needed. Smaller units are old and in-efficient like Rajghat, Badarpur, Harduaganj, Obra, Amarkanatak, Panki etc. These units should be phased out/ replaced with new units wherever is possible.
8.	Meeting the NOx limit of 600/300 mg/Nm <sup>3</sup> will also not feasible as dependent on boiler/firing system	Data collected from number of pants showed that NOx from vintage as well as new plants is varying from 150-500 mg/Nm <sup>3</sup> . Further reduction is possible only by adopting better balancing of firing system or optimisation of boiler operation. Thus, achieving the limit of upto 300 mg/Nm <sup>3</sup> may not require any add on technology like SCR/SNCR
9.	Meeting limit of 200 mg/Nm <sup>3</sup> in the pants installed during Janaury01, 2004	Two year time would be sufficient to make retrofit of FGD in operational plant if planned in

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	to upto December 31, 2016 would require FGD	time and implemented with a sprit.  Sea water based FGD proposed to be exempted from water consumption limit.
10.	Requirement lime stone and generation & disposal of Gypsum from a unit size of 500 MW which need to studied in detail through a feasibility study.	Lime stone require for a unit size of 500 MW would be about 25000 metric tonne annually considering coal requirement of 2.6 million tonne which result in will generate about 37000 metric tonnes of gypsum (based on 0.5 % S in coal). The gypsum may used in the manufacturing of cement, boards tiles etc. Hence, generation of gypsum and disposal may not be a problem whereas the plant size of same capacity generates about 1.04 million tonnes of flyash which is gainfully utilised at number of plants in the country. Therefore, no separate study is needed at this stage.
11.	Emission limit of particulate matter of 30 mg/Nm <sup>3</sup> may not be feasible to achieve with present ESP technology	Emission limit of particulate matter less than 30 mg/Nm <sup>3</sup> is being achieved in the country in many operating plants with high efficiency Hybrid ESPs. Thus, achieving 30 mg/Nm <sup>3</sup> may not be difficult for new plant. In fact after installation FGD the emission of particulate will be further reduced.
12.	There is no guarantee that after implementation of FGD, limit of 100 mg/Nm <sup>3</sup> for SO <sub>2</sub> can be complied.	The coal configuration scenarios given in the APP representation does not reflect ground reality. In case of plants using Indian coal, low flue gas velocity (19 m/s) is taken for assessment of SO <sub>2</sub> emission whereas in case of imported coal, it being taken as 27 m/s. However, as per EC conditions minimum velocity is mentioned as 25 m/s. Besides for estimating SO <sub>2</sub> emission 100 % conversion is considered whereas as per USEPA, it is 95%. Moreover, FGD can be designed for higher efficiency also. Hence, the notified limit can be achieved with properly designed FGD.
13.	Meeting of NO <sub>x</sub> emission limit of 100 mg/Nm <sup>3</sup> with SCR using ammonia may	SCR is a proven technology is being adopted worldwide. A power plant can handle storage of



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	not be feasible. The storage of ammonia may cause hazards.	ammonia as it already used for flue gas conditioning by number of plants in India. Hence, comments do not have any merit.
<b>UltraTech Cement</b>		
14.	Requested MoEF&CC issuing separate standards for captive power plants associated with cements plants due to (i) to meet the standards, FGD has to be installed, the FGD require a plot of 50x 60m, (ii) most of cement plants are in remote area where water shortage is acute and these plants have installed Air Cooled Condensers, (iii) FGD require a very high grade lime stone which is not available in the country, (iv) therefore the SO <sub>2</sub> standards may be relaxed for plants less than 35 MW and (v) TPPs to be installed after 1 <sup>st</sup> January 2017, NO <sub>x</sub> and SO <sub>2</sub> standards may be relaxed for plants less than 35 MW	<p>The observations made by UltraTech may be clarified as:</p> <p>Existing captive power plants are required to meet the emission limit of 600 mg/Nm<sup>3</sup> which may not be a problem as most of these plants are based on CFBC technology having inbuilt lime injection provision along with coal. The plants have pulverised fired boilers may adopt dry FGD technology wherever it is needed.</p> <p>As for as new plants to be commissioned after 1<sup>st</sup> January , 2017 may adopt CFBC technology for the captive power plant having capacity less than 35 MW which has inbuilt advantage of lime injection in dry form along with coal.</p>
<b>Cement Manufacturers Association</b>		
15.	Requested that captive TPP associated with cement plants should have been considered separately for prescribing the standards. While adopting the new technology, the TPPs are using different types of coal (including pet coke) which not under their control. (i) to meet the standards, FGD has to be installed, the FGD, (ii) most of cement plants are in remote area where water shortage is acute and these plants have installed Air Cooled Condensers which consumes 10 times less water (iii) FGD require a very high grade lime stone which is not available in the country whenever available the same is used, (iv) therefore the SO <sub>2</sub> standards may be relaxed for plants less than 35 MW	<p>The observations made by CMA may be clarified as:</p> <p>Existing captive power plants are required to meet the emission limit of 600 mg/Nm<sup>3</sup> which may not be a problem as most of these plants are based on CFBC technology having inbuilt lime injection provision along with coal. The plants have pulverised fired boilers may adopt dry FGD technology wherever it is needed.</p> <p>Further, it is essential that plants using petcoke necessarily install FGD to meet the SO<sub>2</sub> emission limit as sulphur content in petcoke is as high as 7% whereas sulphur content in Indian coal is varying from 0.2 to 0.5 %.</p> <p>As for as new plants to be commissioned after</p>

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		1st January, 2017 may adopt CFBC technology for the captive power plant having capacity less than 35 MW which has inbuilt advantage of lime injection in dry form along with coal.
<b>Sanghi Cement</b>		
16.	Sought separate limits or <b>new norms for water consumption</b> from the water consumption prescribed for their plant located at Kutch on western coast and using sea water	CPCB in its comments has stated that coastal coal/lignite based TPPs are excluded from the limit of water consumption. MoEF&CC to may issue a clarification in the matter.
<b>Coastal Gujarat Power Limited</b>		
	Requested for exemption from prescribed water consumption norms for existing Ultra Mega Power Projects based on sea water cooling including UMPP Mundra	CPCB in its comments has stated that coastal coal/lignite based TPPs are excluded from the limit of water consumption. MoEF&CC to may issue a clarification in the matter.
<b>National Thermal Power Corporation</b>		
18.	<p>Stated that its commitments to comply with the recently prescribed standards for TPPs has following constraints for redressal:</p> <p>(a) Exemption of norms related to SO<sub>2</sub> for units commissioned after 2003</p> <p>(b) For units commissioned after 2003, the utilities may be allowed to approach MoEF&amp;CC for relaxation in SO<sub>x</sub> norms wherever some constraints in feasibility exist</p> <p>(c) Norms of NO<sub>x</sub> level 100mg/Nm may be only for the units which are ordered after the issue of</p>	<p>The constraints raised by NTPC for redressed as under:</p> <p>(a) When the plant commissioned prior to 2003 can meet the limit of 600 mg/Nm<sup>3</sup> then plants commissioned after 2003 ( less than 500 MW size) can also meet the same. Besides, the limit of 200 mg/Nm<sup>3</sup> can be met by the plants having unit size of 500 MW and above as space provision has already made for the same.</p> <p>(b) MoEF&amp; CC can be approached for technological solution not for relaxation of limit.</p> <p>(c) May not be relaxed as it possible to meet the limit of 100 mg/Nm<sup>3</sup> by applying proven technology already being</p>



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	<p>notification and norms may be re-assessed based on the actual results of Derao plant to be done in any new project</p> <p>(d) For units commissioned after 2003, norms may be revised to 450mg/Nm<sup>3</sup> as it can be done without installing SCR</p> <p>(e) Conversion of existing units to closed cooling system may not be insisted upon as it will reduce the turbine efficiency thereby increasing the coal consumption and CO<sub>2</sub> emission and implementation will be quite difficult due space constraints. All units in future, except for coastal stations shall be with closed cycle cooling.</p> <p>(f) The implementation may be staggered and a period for 5-10 years be given for implementation as being done in some other countries like South Africa</p> <p>(g) Compliance of environmental norms may be considered on station level and not on unit level.</p> <p>(h) Review of Chimney height keeping in view of stringent norms of SO<sub>x</sub>, NO<sub>x</sub> and SPM</p>	<p>implemented in other countries like China, Korea &amp; Japan.</p> <p>(d) NO<sub>x</sub> emission limit of 300 mg/Nm<sup>3</sup> can be met with low NO<sub>x</sub> burners and tuning/balancing of combustion in boilers without applying add on technology</p> <p>(e) Most of the plants which are based on once through system are inefficient and having higher heat rate and also outlived their useful life thereby consuming more coal comparing to units having higher efficiency and lower heat rate and having higher CO<sub>2</sub> emission. Conversion from from OTC to CT should be considered in those units which are efficient and have residual life other inefficient old units should be phased out in phased manner after consultation with central electricity authority.</p> <p>(f) Power companies should come with action plan and firm schedule and otherwise two years time is sufficient if timely action is initiated by the power companies. Even if more time period is required MoEF &amp; CC may consider the same based on physical and financial commitment by the Power Companies.</p> <p>(g) In general compliance is considered at plant level but if some of the units are not meeting the standards then plants are directed to take corrective action. In any case, each unit should meet the standards as specified.</p> <p>(h) Chimney height for the plants already constructed may not be changed, thus in this case no review of chimney height is needed. However, in case of the new plants</p>

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		the present stack height seems to be adequate and comparable to stack height provided by the plants constructed in China and other developed countries. Stack height always plays a role of second line of defense whenever there is a failure of control systems.

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