



CAG

Citizen consumer and civic Action Group

# Energy and Environment

Uneasy Convergence?

The Case of Flue Gas Desulphurisation

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# Introduction

- Ministry of Environment, Forest and Climate Change notified the revised parameters vide its Notification dated 07.12.2015 which provided for revised parameters for water consumption, particulate matters, Sulphur Dioxide, Oxides of Nitrogen and Mercury in respect of thermal power plants
- To be installed by 2022 for 414 units across the country

Date of Installation	PM	SO <sub>2</sub>	NO <sub>x</sub>	Mercury (Hg)
Before 31-12 2003	100 mg/Nm <sup>3</sup>	600 mg/Nm <sup>3</sup> for <500MW 200 mg/Nm <sup>3</sup> for >=500MW	600 mg/Nm <sup>3</sup>	0.03 mg/Nm <sup>3</sup> for >=500MW
After 01-01-2003 & Upto 31-12-2016	50 mg/Nm <sup>3</sup>	600 mg/Nm <sup>3</sup> for <500MW 200 mg/Nm <sup>3</sup> for >=500MW	300 mg/Nm <sup>3</sup>	0.03 mg/Nm <sup>3</sup>
On or after 01-01-2017	30 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>	0.03 mg/Nm <sup>3</sup>

Technology in vogue – Flue gas desulphurisation (FGD) – a process to remove sulphur dioxide from the flue gas and other slurry using limestone – converts to gypsum

Other - Selective Catalytic convertors, Electrostatic Precipitators

Dry and Wet FGD technologies are available - Latter is supposed to be more suitable and uses

Latest news – Government set to dilute for TPPs 2003-16 – to 450 gm/Nm<sup>3</sup>

- CPCB issued notice for extension of the scheme to 2022
- CPCB - applicable to Captive power plants
- Ministry of Power tried to dilute the environment provisions – denied
- Supreme Court take cognisance in December 2018 and directs to implement within 28 months
  - Delhi and rest of india have different timelines
  - Latest report July 2019 - some technologies do not match

# Ministry of Power

- In May 2018
- Change of law
  - Except when PPAs are after Dec 2015
  - EC has made pollution control systems as mandatory
- Additional capex and additional costs to be considered as pass through by SERC
- CERC pass through and develop regulatory mechanism - impact on tariff

# Broad set of cost components

- Costs of installation - .40 lakhs per MW
- Increased auxillary consumption/Increased generation costs
- O&M Cost 10% of CAPEX
- Shutdown period compensation - 6 months
- Increase in Water consumption - wet FGD
- Procurement Costs of limestone/reagents
- Space requirement

# Estimated Costs (CSTEP)

- For Emission control systems - INR 0.5–1 crore/MW.
- For control measures applicable in different vintage and capacities of power plant units, total investment till 2030 will be around INR 3,96,200 crore.
- Over 60% of this accounts for upfront costs.
- The generation tariff will increase by INR 0.25–0.75/kWh (21–25%).

# CEA's Plan

## FGD phasing plan

Year	Capacity (MW)	No. of units
2018	500.0	1
2019	11,950.0	29
2020	24,560.0	47
2021	61,447.5	165
2022	61,934.5	172
<b>Total</b>	<b>160,092.0</b>	<b>414</b>

Source: CEA

- About 72 GW TPPs not in a position to install – space constraint not included
- May have to be shut down – old plants
- May not affect the grid but demand peak ratio – may become a problem

# CERC

- Maithon Power Vs Others 2017
  - NTPC Vs others July 2018
  - Agrees with the Change in Law
    - SASAN UMPP – pass through based on competitive bidding
    - Mundra
  - Passed the responsibility to CEA
- (a) Suitable technology with model specification for each plant, with regard to implementation of new norms;
- (b) Operational parameters of the thermal power plants such as auxiliary consumption, O&M expenses, Station Heat Rate etc., consequent to the implementation of ECS.
- (c) Norms of consumption of water, limestone, ammonia etc., required for operation of the plants after implementation of ECS.
- (d) Any other detailed technical inputs.

# CERC

## Latest Tariff Regulations March 2019

“(3) In case of emission control system required to be installed in existing generating station or unit thereof to meet the revised emission standards, an application shall be made for determination of supplementary tariff (capacity charges or energy charge or both) based on the actual capital expenditure duly certified by the Auditor.”

# Reaction of SERCs

- No appetite for tariff increase at the state level
- Deeper Scrutiny of EC/emissions etc

Punjab ERC - Talwandi  
Sabo Power Limited  
Vs Punjab State

Power Corporation  
Limited 12/2018

- SERC have relied on the Environmental clearance (EC) where provision for FGD denotes that the TPP has to have budgetary allocation for FGD

- Clause (xxv) of the Environmental Clearance is quoted below:
- “(xxv) Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break- up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.”

- Jharkhand
  - Tata Power Vs Tata Steel 2018
  - The absence of provision for in-principle approval of capital cost in the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2015
- Maharashtra ERC in its Tariff order for MSPGCL - 12/2017
  - Suggested going to the grants or capital subsidies rather than burdening consumers...
  - (this has been picked up by Haryana ERC)

# Reactions of DISCOMs

- They have started analysing emission data of generating companies to highlight discrepancies – higher the emission more investment in FGD – disputing the worst case - gold plating
- Capital expenditure not needed and tariff burden.

# Key Takeaways

- Regulators have started incorporating environmental costs in tariff regulations
- Linking Power Purchase Agreement with Environmental Costs – “Change in Law”
- DISCOMs have woken up to the fact environmental pollution have costs!

# More needs to be done

- Efficacy of capital expenditure on environment mitigation measures needs to be incorporated in regulatory
  - Not only costs but environmental standards/compliance and to be regularly checked by SERC and CERCs against investments
  - Incorporating environmental costs and standards in Power Purchase Agreements as a hedge against costs
  - Environmental Compliance to be incorporated in tariff orders