

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 346/MP/2018**

**Coram:**  
**Shri P.K. Pujari, Chairperson**  
**Dr. M. K. Iyer, Member**  
**Shri I. S. Jha, Member**

**Date of order: 20<sup>th</sup> November, 2019**

**In the matter of:**

Petition under Section 79 (1) (b) of the Electricity Act, 2003 read with Regulation 14 (3) (ii) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014, Articles 1.1 (Change in law) and 6.12 of the Power Purchase Agreements seeking regulatory certainty with respect to treatment of such cost for mandatory installation of additional systems in compliance with the Environment (Protection) Amendment Rules, 2015 issued by the Ministry of Environment, Forest and Climate Change dated 7.12.2015 for thermal power stations.

**And**

**In the matter of:**

Udupi Power Corporation Ltd.  
1<sup>st</sup> Floor, Lotus Tower, No. 34,  
Devraja Urs Road, Race Course,  
Bangalore, Karnataka-560 001

**.....Petitioner**

Vs

1. Power Company of Karnataka Limited  
KPTCL Building, Kaveri Bhawan,  
K.G.Road,  
Bangalore-560 009

2. Gulbarga Electricity Supply Company Limited  
Main Road, Gulbarga,

3. Hubli Electricity Supply Corporation Limited  
Navanagar, Hubli- 580 025.

4. Chamundeshwari Electricity Supply Corporation Limited  
927, L.J. Avenue, New Kantharaj Urs Road, Saraswathipuram,  
Mysore-570 009.



5. Bangalore Electricity Supply Company Limited  
Krishna Rajendra Circle,  
Bangalore-560 009

6. Mangalore Electricity Supply Company Limited  
Paradigm Plaza, AB Shetty Circle,  
Mangalore-575 001

7. Punjab State Power Corporation Limited  
The Mall, Patiala-147 001.

....Respondents

**Parties Present:**

**For Petitioner** : Shri Hemant Sahai, Advocate, UPCL  
Shri Nitish Gupta, Advocate, UPCL  
Ms Jyotsna Khatri, Advocate, UPCL  
Shri Amit Mittal, UPCL

**For Respondents** : Shri M.G. Ramachandran, Senior Advocate, PCKL  
Shri Shikhar Saha, Advocate, PCKL  
Shri Arunav Patnaik, Advocate, PCKL  
Ms. Madhu Mali, PCKL  
Ms. Poorva Saigal, Advocate, PSPCL  
Shri Balaji Srinivasav, Advocate, BESCOM  
Shri Akash Chatterjee, Advocate, BESCOM

**ORDER**

The Petitioner, Udupi Power Corporation Ltd. (UPCL), has filed the present Petition under Section 79 of the Electricity Act, 2003 (hereinafter referred to as “the Act”) read with Regulation 14(3)(ii) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as the “2014 Tariff Regulations”), and Article 1.1 and Article 6.12 of the Power Purchase Agreements. The Petitioner has made the following prayers:

*“(a) Declare that the MoEF&CC Notification dated 7.12.2015 is an event of Change in Law under the provisions of the respective PPAs.*



*(b) Declare that additional capital cost and operational cost alongwith expenses on account of generation loss, reduction in efficiency, deterioration of heat rate and other expense specified at Para 15&16 shall be considered on actual basis for change in law relief in terms of PPAs provisions to ensure that the Petitioner is brought to the same economic position as if such Change in Law event has not occurred.*

*(c) Decide a suitable mechanism to compensate the Petitioner for Expenses mentioned in Prayer (b) above.*

*(d) Petitioner should be allowed to recover the Capacity Charges for the shutdown period.*

*(e) Petitioner should be allowed to recover the cost incurred in Start-up fuel during implementation of Environmental norms.”*

2. The Petitioner has set up a 1,200 MW Thermal Power Plant (hereinafter referred to as “Udupi Power Project”) consisting of two Units each of 600 MW (Units 1 and 2) in the State of Karnataka. Unit-wise Dates of Commercial Operation (COD) are as under:

Unit No.	Capacity	COD
1	600 MW each	11.11.2010
2		19.8.2012

3. The Petitioner has entered into a PPA dated 26.12.2005 with Respondents 2 to 6 (hereinafter referred to as “Karnataka Escoms”) for 90% of gross capacity (1,015 MW). Similarly, the Petitioner has entered into a PPA dated 29.9.2006 with Respondent No. 7, Punjab State Power Corporation Ltd. (hereinafter referred to as “PSPCL”) for 101.5 MW.



4. On 7.12.2015, Ministry of Environment, Forest and Climate Change Government of India (hereinafter referred to as “MoEF&CC”) notified the Environment (Protection) Amendment Rules, 2015 (hereinafter referred to as the “2015 MoEF&CC Notification”) that notified the “revised environmental norms”. As per the 2015 MoEF&CC Notification, all thermal power plants are mandatory required to comply with the revised environmental norms within two years of its issuance. Relevant portion of the 2015 MoEF&CC Notification is extracted as under:

*“S.O. 3305 (E).- In exercise of powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:-*

*1. (1) These rules may be called Environment (Protection) Amendment Rules, 2015.*

*(2) They will come into force from the date of their publication in the Official Gazette.*

*2. In the Environment (Protection) Rules, 1986, in Schedule-I,*

*(a) after serial number 5 and entries relating to thereto, the following serial number and entries shall be inserted, namely:-*

<i>Sr. No.</i>	<i>Industry</i>	<i>Parameters</i>	<i>Standards</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
<i>5A</i>	<i>Thermal Power Plant (Water consumption limit)</i>	<i>Water Consumption</i>	<i>I. All plants with Once Through Cooling (OTC) shall install Cooling Tower (CT) and achieve specific water consumption upto maximum of 3.5 m<sup>3</sup>/MWh within a period of two years from the date of publication of this notification.  II. All existing CT-based plants reduce specific water consumption upto maximum of 3.5 m<sup>3</sup>/MWh within a period of two years from the date of publication</i>



			<p>of this notification.</p> <p>III. New plants to be installed after 1<sup>st</sup> January 2017 shall have to meet specific water consumption upto maximum of 2.5 m<sup>3</sup>/MWh and achieve zero waste water discharged.”</p>
--	--	--	---

(b) for serial number 25, and the entries related thereto, the following serial numbers and entries shall be substituted:

Sr. No.	Industry	Parameters	Standards
1	2	3	4
25	Thermal Power Plant	<b>TPPs (Units) installed before 31<sup>st</sup> December, 2003*</b>	
		Particulate Matter	100 mg/Nm <sup>3</sup>
		Sulphur Dioxide (SO <sub>2</sub> )	600 mg/Nm <sup>3</sup> (Units smaller than 500 MW capacity units) 200 mg/Nm <sup>3</sup> (for units smaller having capacity of 500 MW and above)
		Oxides of Nitrogen (NO <sub>x</sub> )	600 mg/Nm <sup>3</sup>
		Mercury (Hg)	0.03 mg/Nm <sup>3</sup> (for Units having capacity of 500 MW and above)
		<b>TPPs (Units) installed after 1<sup>st</sup> January, 2003 upto 31<sup>st</sup> December 2016*</b>	
		Particulate Matter	50 mg/Nm <sup>3</sup>
		Sulphur Dioxide (SO <sub>2</sub> )	600 mg/Nm <sup>3</sup> (Units smaller than 500 MW capacity units) 200 mg/Nm <sup>3</sup> (for units smaller having capacity of 500 MW and above)
		Oxides of Nitrogen (NO <sub>x</sub> )	300 mg/Nm <sup>3</sup>
		Mercury (Hg)	0.03 mg/Nm <sup>3</sup>
		<b>TPPs (units) to be installed from 1<sup>st</sup> January, 2017**</b>	
		Particulate Matter	30 mg/Nm <sup>3</sup>
		Sulphur Dioxide (SO <sub>2</sub> )	100 mg/Nm <sup>3</sup>
		Oxides of Nitrogen (NO <sub>x</sub> )	100 mg/Nm <sup>3</sup>
Mercury (Hg)	0.03 mg/Nm <sup>3</sup>		

\*TPPs (units) shall meet the limits within two years from the date of publication of this notification.



*\*\* Includes all the TPPs (units) which have been accorded environmental clearance and are under construction.*

5. The instant Petition has been filed by the Petitioner for declaration that the 2015 MoEF&CC Notification is in the nature of Change in Law as per the Power Purchase Agreements and for the purpose of adjustment in tariff under the PPAs in order to offset the adverse financial consequences due to the revised environmental norms.

### **Submission of the Petitioner**

6. The Petitioner has mainly submitted as under:

(a) On 20.3.1997, the Petitioner was granted environmental clearance for its 1,000 MW (2 x 500 MW) generating station. Subsequently, amendments were issued on 25.1.1999 and 9.9.2009 respectively permitting enhancement of capacity to 2 x 507.5 MW and subsequently to 2 x 600 MW with specific condition to install Flue Gas Desulphurisation (hereinafter referred to "FGD") plant along with other conditions. Accordingly, the Petitioner installed FGD for 25% of the installed capacity.

(b) The 2015 MoEF&CC Notification dated 7.12.2015 has issued revised environmental norms and all thermal power plants, including Udipi Power Project, are required to comply with these norms within a period of two years from the date of Notification. The revised environmental norms as compared to norms as per the environment clearance granted to Udipi Power Project is tabulated as under:

<b>For TPP (units) installed after 1<sup>st</sup> Jan 2003 upto 31<sup>st</sup> Dec 2016</b>			
<b>Sr No.</b>	<b>Particulars</b>	<b>Norms specified in EC dated 1.9.2011</b>	<b>Parameter as per Revised Norms, 2015</b>
1	Particulate Matter	50 mg / Nm <sup>3</sup>	50 mg / Nm <sup>3</sup>
2	Sulphur Dioxide (SO <sub>2</sub> )	None	• Unit Size < 500 MW: 600 mg / Nm <sup>3</sup>



			• Unit Size > 500 MW: 200 mg / Nm <sup>3</sup>
3	Oxides of Nitrogen (NO <sub>x</sub> )	None	300 mg / Nm <sup>3</sup>
4	Mercury (Hg)	None	0.03 mg / Nm <sup>3</sup>
5	Water Consumption Limit	None	3.5 m <sup>3</sup> / MWh*

\*MoEF&CC vide its Notification dtd. 28.6.2018 has relaxed norms for Water Consumption Limit and therefore the Stipulation in this regard as per Notification dated 07.12.2015 are not applicable for Udipi TPS

(c) A special meeting on preparation of phasing plan for implementation of revised environmental norms for thermal power plants issued by MoEF&CC was held on 18.9.2017 at SRPC, Bengaluru. In the said meeting, phasing plan for implementation of norms for the Petitioner's generating station was revised to 31.3.2022 and 30.6.2022 for Unit-I and Unit-II respectively.

(d) Subsequently, Central Pollution Control Board ("CPCB") vide letter dated 11.12.2017 addressed to the Petitioner issued directions to the Petitioner for compliance with the revised environmental norms.

(e) The Petitioner had appointed Tata Consulting Engineers ("TCE") to prepare a Feasibility Report ("FR") for abatement of various emission parameters to comply with the new norms. The estimated capital cost and annual operating expenditure for environment protection measures as per FR is as under:

Parameter as on Effective Date	Parameters as per Amendment Rules	Primary Schemes to be implemented to meet the revised environmental norms	Total Capital Cost Estimate (Rs. Crore)	Annual Operating Expenditure (Rs Cr / Year)
<b>Suspended Particulate Matter (SPM)</b>				
150 – 350 mg / Nm <sup>3</sup>	50 g / Nm <sup>3</sup>	No additional abatement measures required for both Units	-	-
<b>Sulphur Dioxide (SO<sub>2</sub>)</b>				



Parameter as on Effective Date	Parameters as per Amendment Rules	Primary Schemes to be implemented to meet the revised environmental norms	Total Capital Cost Estimate (Rs. Crore)	Annual Operating Expenditure (Rs Cr / Year)
None	Unit Size < 500 MW: 600 mg / Nm <sup>3</sup>  Unit Size > 500 MW: 200 mg / Nm <sup>3</sup>	Limestone slurry sorbent based, wet type FGD with forced oxidation, having minimum SO <sub>2</sub> absorption efficiency of 95% is required for both Units	899	107
<b>Nitrogen Oxide (NO<sub>x</sub>)</b>				
None	a. / Nm <sup>3</sup>	Combustion Tuning and SNCR is required for both units	195	25
<b>Total</b>			<b>1,094</b>	<b>132</b>

(f) Apart from the above mentioned capital cost related to primary schemes, capital cost of Rs. 227 crore is estimated towards initial spares, Engineering & Project Management expenses, transportation & insurance charges, pre-operative expenses and contingency margin, etc. These costs are exclusive of Rs. 441 crore estimated towards taxes and duties, IDC and financing cost.

(g) A non-exhaustive list of estimated additional capital and operational expenses for implementation and operation of the schemes is as under:

- i. Additional Capital Expenditure (Rs. 1,094 crore for all Units exclusive of initial spares, Engineering & Project Management expenses, transportation & insurance Charges, pre-operative expenses and contingency margin, taxes and duties, IDC & financing cost, etc.);
- ii. Additional operational expense (Rs. 132 crore for 1<sup>st</sup> year of operation);
- iii. Increase in Auxiliary Energy Consumption (all units);
- iv. Loss of generation during implementation of various schemes (all units); for recovery of Capacity Charges during shutdown period;



- v. Penalty under PPAs for shortfall in Availability and other consequences (all units);
- vi. Start-up cost, efficiency loss during start-up and shut down during implementation (all units) for which the Petitioner be allowed to recover the cost incurred in start-up fuel;
- vii. PoC charges if applicable during shutdown/ implementation; and
- viii. Deterioration in Station Heat Rate.

(h) Since, the amendment/ change of environmental norms have been notified subsequent to effective date under the PPA, it fulfills all the criteria of being a change in law. Article 6.12 of the PPA provides for adjustment of tariff in case of change in law. As the change in law event would require the Petitioner to make significant additional investments to meet the revised environmental norms, the Petitioner is entitled to be compensated as per the provisions of the PPA.

(i) The Petitioner is entitled to be brought to the same economic position as if such change in law had not occurred. The Hon'ble Supreme Court in its judgment dated 11.4.2017 in Civil Appeals 5399-5400 of 2016 has observed that if there is any change in consent, approval or license available or obtained for the project, otherwise than for the default of the seller, which results in any change in any cost of the business of selling electricity, then the said seller will be governed by the change in law provisions of the PPA.

(j) The Commission in a similar case in the matter of Coastal Gujarat Power Ltd v. GUVNL has also approved 2015 MoEF&CC Notification to be in the nature of Change in Law vide order dated 17.9.2018 in Petition No. 77/MP/2016.

(k) Ministry of Power, Government of India in its letter dated 30.5.2018 has issued directions to the Commission under Section 107 of the Act to



facilitate smooth implementation of the revised environmental norms as per 2015 MoEF&CC Notification. The Ministry has stated that 2015 MoEF&CC Notification is of the nature of change in law.

(l) In terms of the directions of Ministry of Power dated 27.8.2018 with regard to pass-through of any change in domestic duties, levies, cess and taxes under change in law, once a change in law is allowed, the same will apply to all the cases ipso facto and no additional Petition is required to be filed.

(m) Given the substantial impact of implementing the schemes, it is essential that there is certainty of regulatory treatment of these additional costs. Approval of the Commission is critical for arranging funds from lenders in order to comply with the revised environmental norms notified by MoEF&CC on 7.12.2015. Otherwise, compliance with the 2015 MoEF&CC Notification would be virtually impossible.

7. The Petition was admitted on 8.1.2019 and notices were issued to the Respondents to file their replies. Power Company of Karnataka Limited (PCKL) vide affidavit dated 31.1.2019 and Punjab State Power Corporation Ltd (PSPCL) vide affidavit dated 1.2.2019 have filed their replies.

### **Reply by Respondents**

8. PCKL and PSPCL, vide their replies dated 31.1.2019 and 1.2.2019 respectively, have raised similar contentions and have mainly submitted as under:

(a) The present Petition is not maintainable as there is no provision for in-principle approval under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as the 2009 Tariff Regulations) or the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter



referred to as the 2014 Tariff Regulations). In this context, the Commission in its order dated 20.3.2017 in Petition No. 72/MP/2016 filed by Maithon Power Ltd. held that Regulations 14(3) and 8(3) of the 2014 Tariff Regulations do not provide for “in-principle” approval of the capital expenditure, and held that the Petition was not maintainable. The Commission reiterated this view in its order dated 20.7.2018 in Petition No. 98/MP/2017 relating to NTPC generating stations. The obligation of the Petitioner to comply with revised environmental norms is not subject to any in-principle approval by the Commission.

(b) Annexure of the PPA provides description of the facility which *inter-alia* states as under:

***“Each boiler will be provided with a separate Flue Gas Desulphurisation FGD) plant. The FGD will utilise lime to absorb sulphur di-oxide (SO<sub>2</sub>) in the flue gas. The flue gas volume through FGD will be controlled by a suitable fan control and damper arrangement.***

*Salient features*

**8. Flue Gas Desulphurisation Unit: One for each unit**

*The PPA also provides that “the Annexure to this Agreement form a part of this Agreement and will be of full force and effect as though they were expressly set out in the body of this Agreement.”*

Thus, the Petitioner was required to install FGD even prior to revised environmental norms.

(c) The Petitioner has not given any reason as to why the FGD was installed only to the extent of one fourth of the installed capacity and not to the full extent as was required under the PPA. Further, the Petitioner has not placed on record any direction of MoEF&CC to install “FGD for 25% of the installed capacity” in contravention to the explicit stipulation in the PPA.

(d) Both the environment clearances dated 20.3.1997 and 1.9.2011 had a condition for installation of FGD plant. The environment clearance dated 9.9.2009 also provided for a condition that wet limestone type FGD unit with 85% efficiency of removal of SO<sub>2</sub> shall be installed. Further, Karnataka State



Pollution Control Board (KSPCB) in its consent dated 9.12.2011 provided for the conditions of continuous operation of FGD plant to control SO<sub>2</sub> emissions and usage of low NOx burner.

(e) Therefore, the Petitioner for its plant of 2X600 MW at Udupi was under an obligation to install FGD unit as well as equipment for control of NOx emissions not only under the PPA but also under various environmental clearances given by the authorities. Accordingly, there is no 'Change in Law' in respect of conditions already covered under the PPA, the environment clearances and approvals of the Karnataka State Pollution Control Board. The contractual and statutory compliances that the Petitioner was required to do before the 2015 MoEF&CC Notification cannot be termed as 'Change in Law'.

(f) The obligation to install FGD was existing and was required to be fulfilled by the Petitioner even if the 2015 MoEF&CC Notification had not been notified. There is therefore, no 'change in law' insofar as Udupi Power Project is concerned when the 2015 MoEF&CC Notification came to be notified. Reference in this regard may be made to the Commission's order dated 27.6.2016 in Petition No. 270/GT/2014 wherein the Commission held that in case of a subsisting obligation on the part of the generator to install certain works, the enactment of a Regulation subsequent to the same incorporating the obligation to do the same work does not constitute as ground for 'change in law' within the meaning of Regulation 14 of the 2014 Tariff Regulations.

(g) There is no stipulation that the FGD is to be installed only for 25% of the capacity even in the Commission's order dated 25.10.2005 in Petition No. 40 of 2005 for grant of in-principle approval of the project cost. The order dated 25.10.2005 provides cost of FGD as Rs. 140 crore (excluding civil works)/Rs. 150 crore (including civil works).



(h) The Commission, in its order dated 20.2.2014 in Petition No. 160/GT/2012 for determination of tariff for Udupi Power Project for the control period 2009-14, has relaxed the norms to allow for an increase in the auxiliary consumption on account of installation of FGD (amongst other assets).

(i) The extent of FGD and treatment of gas is dependent on the grade of coal used. If the Petitioner had installed an FGD with 85% efficiency, considering the high grade coal being used and low sulphur content as confirmed by the Petitioner in its half yearly compliance report to MoEF&CC, there would have been no requirement to install another FGD unit at this stage.

(j) Even the Ministry of Power letter dated 30.5.2018 to the Commission states that 2015 MoEF&CC Notification is of the nature of change in law event except for TPPs where such requirement of pollutions control system was mandated under the environment clearance of the plant or envisaged otherwise before the notification of amendment rules.

(k) Additional capitalization, if any, is admissible only to the extent that any change/ modification/ upgrading in equipment is required over and above the equipment which ought to have been installed pursuant to the extant norms prescribed under the environment clearances.

(l) The calculations made in the TCE Report are on the basis of theoretical details as the sulphur content is estimated for design coal as 0.8% & for worst coal as 1.2%. However, as per compliance report for April-2016 to September-2016 and April-2018 to September-2018, the Petitioner has informed the pollution control authorities that the sulphur content in the coal utilized in this period is 0.35% and 0.36% respectively. The Petitioner is also under an obligation to provide sampling portholes for monitoring the stack



emissions. Therefore, the Petitioner ought to carry out measurement of SO<sub>2</sub> & NO<sub>x</sub> as per actuals and provide the details.

(m) As per 'EPCA Report No. 81: Recommended actions and schedule for the expeditious implementation of New Emission standards for Thermal Power Plants' dated 14.2.2018, Udupi Power Project is compliant with norms for emission of NO<sub>x</sub> prescribed by the 2015 MoEF&CC Notification. Therefore, no additional capitalisation is required for meeting the revised environmental norms for NO<sub>x</sub> emissions.

(n) As per the Centre for Science and Environment also, there is no requirement for installation of SNCR in existing boilers. Low NO<sub>x</sub> burners, burner modification and combustion optimisation will be sufficient for attaining the new norms. Udupi Power Project already has low NO<sub>x</sub> burners with Over Fire Air which regulates the NO<sub>x</sub> emission and the same is sufficient for meeting the norms. Therefore, there is no further requirement of abatement.

(o) The Petitioner's decision to restrict the equipment only to 25% capacity is deliberate. The Petitioner has failed to carry out the said scope of work fully before COD. In terms of the provisions of additional capitalisation under the 2009 Tariff Regulations and the 2014 Tariff Regulations, capitalization of such works cannot be allowed after the cut-off date.

(p) The Petitioner's cost estimates are highly excessive. Based on the report prepared by Tata Consulting Engineers, the estimated cost for FGD is Rs. 899 crore i.e., Rs. 0.74 crore/ MW. If the costs towards initial spares, Engineering & Project Management expenses, transportation & insurance charges, pre-operative expenses and contingency margin, etc. are considered, the total cost works out to Rs. 1.3 crore/ MW. For combustion tuning and SNCR for nitrogen oxide the amount claimed is Rs. 195 crore i.e., Rs. 0.16 crore/ MW. Therefore, the total cost for FGD, combustion tuning and SNCR works out to approx. Rs 1.5 crore/ MW. The above amounts are



exorbitant compared to the rate discovered in the tenders invited by NTPC towards providing FGD. Even as per the CEA, the ceiling for the FGD is 0.4 crore per MW.

9. PSPCL in its reply dated 1.2.2019 has additionally submitted that the obligations of PSPCL to take electricity from the Petitioner is subject to conditions precedent of the PPA and due approval of the purchase by the Punjab State Electricity Regulatory Commission (PSERC). In this regard, PSPCL has filed Petition No. 41 of 2018 before PSERC under Section 86(1)(b) of the Act seeking approval of the PPA dated 29.9.2006 entered into with the Petitioner.

#### **Rejoinder of the Petitioner**

10. The Petitioner, vide its rejoinders dated 13.2.2019 to reply filed by PCKL and PSPCL, has submitted as under:

(a) The contention of the Respondents that the present Petition has been filed seeking in-principle approval of the Commission for the cost to be incurred for compliance of the amended rules is denied. The Petitioner has only approached the Commission seeking declaration of 2015 MoEF&CC Notification as an event under Change in Law.

(b) On 19<sup>th</sup> March 1996, Site Clearance for Establishment was granted by Karnataka State Pollution Control Board (KSPCB). Under Condition 9 of the Site Clearance, the requirement was *“The industry apart from providing two chimneys of 275 meters and Electrostatic Precipitator (ESP), it should provide de-sulphurisation system for flue gas emission and control emission of SO<sub>2</sub> and other air pollutants.”* Further, the condition related to FGD as per the environmental clearance dated 20.3.1997 was *“2.i) All the conditions stipulated by the Karnataka State Pollution Control Board vide their letter dated 19<sup>th</sup> March, 1996 and 18<sup>th</sup> October, 1996 should be strictly*



*implemented including the installation of Flue Gas Desulphurisation (FGD) Plant.”* Therefore, there was no condition related to the SO<sub>2</sub> emission limits. Accordingly, the Petitioner was expected to design the FGD plant to meet the National Ambient Air Quality Standards, 1994 (“NAAQS”).

(c) The Consent for Establishment (CFE) was granted by Karnataka State Pollution Control Board (KSPCB) under Water and Air Act to the Petitioner on 31.8.2005. The Petitioner started designing the plant and started construction based on design conceptualized for meeting various statutory requirements at that point of time. In the said CFE, with respect to installation of FGD, KSPCB has specified that FGD shall be installed to meet the National Ambient Air Quality Standards as stipulated in the Schedule VII of the Rule 3(3B) of Environment (Protection) Rules, 1986.

(d) Therefore, the existing FGD installed is for meeting the SO<sub>2</sub> concentration in ambient air as stipulated in NAAQS, whereas FGD proposed to be installed now pursuant to 2015 MoEF&CC Notification, is for achieving the limits specified for SO<sub>2</sub> concentration in emission in flue gas. The existing FGD is designed to meet the limits specified in NAAQS, i.e. SO<sub>2</sub> concentration in ambient air of 80µg/m<sup>3</sup> for 24 hours average. Sample Monitoring reports submitted to SO<sub>2</sub> concentration in Ambient Air clearly shows that existing FGD emissions is always within limit of 80 µg/m<sup>3</sup>. The Petitioner has been complying with the NAAQS. However, the SO<sub>2</sub> concentration in emission of the flue gas with the present FGD has always been more than 200 mg/Nm<sup>3</sup>.

(e) FGD capacity of 25% of the total installed capacity of the plant was sufficient to meet the standards as per conditions stipulated in CFE dated 31.8.2005. The cost approved towards FGD by the Commission in its order dated 25.10.2005 in Petition No. 40 of 2005 was corresponding to 25% of installed capacity. The cost of FGD of Rs. 150 crore (including civil works) is a part of total EPC cost discovered through International Competitive



bidding and the same was approved by the Commission after prudence check. The cost of FGD varies with the type of technology chosen. Further, the cost of Rs. 150 crore which was allowed by the Commission towards installing the FGD system has already been incurred by Petitioner and is rightly allowed by the Commission as per the Commission`s Tariff Regulations.

(f) For the purpose of designing and construction of power plant, the conditions specified in the CFE dated 31.8.2005 constitute the reference point for ascertaining any change in law at a subsequent date. There were no norms for SO<sub>x</sub> emission applicable in CFE dated 31.8.2005 and the norms for SO<sub>x</sub> emission has only been brought out by 2015 MoEF&CC Notification i.e. after the effective date i.e. 26.12.2006. Therefore, 2015 MoEF&CC Notification qualifies as a change in law event. The reliance placed on the Commission`s order dated 27.6.2016 in 270/GT/2014 is misplaced.

(g) The Respondents are trying to mislead the Commission by bringing intermediary environment clearance dated 9.9.2009 which was further amended by environment clearance dated 1.9.2011. A bare perusal of the aforesaid environment clearance dated 1.9.2011 sets out that there is no condition pertaining to the FGD to be installed with 85% efficiency for removal of SO<sub>2</sub>. The Respondent has quoted "*wet limestone type FGD unit with 85% efficiency of removal of SO<sub>2</sub> shall be installed*" from the environment clearance dated 9.9.2009 which is incorrect as the Petitioner has designed, engineered, procured and installed FGD as per CFE dated 31.8.2005.

(h) As regards reliance on half yearly compliance report indicating usage of high grade of coal and low Sulphur content coal, the Sulphur content varies with shipment to shipment and the same has also been recognized by PCKL in its recent tender document for long term coal procurement



wherein it has specified that Sulphur content should not exceed 0.8%. Therefore, contention of the Respondent that FGD is not required at this stage and FGD needs to be designed for guaranteed coal specifications, is baseless.

(i) The reliance of the Respondents on the extract of Ministry of Power letter dated 30.5.2018 is not correct as the said letter in para 5.2 also provides that if there is any installation to meet the new environment norms, it is of the nature of Change in law. Further, the Commission has already declared the same notification as a change in law event in its order dated 20.7.2018 in Petition No. 98/MP/2017.

(j) None of the clearances issued to Udupi Power Project have stipulated any limit for NO<sub>x</sub> emission. The applicable standards were NAAQS for ambient air. The Petitioner has installed Boilers with Low NO<sub>x</sub> Burners and Over Fire Air (OFA) system. With these, the range of NO<sub>x</sub> concentration in the flue gas emission is in the range of 150-400 mg/Nm<sup>3</sup>. For continuous compliance of the 2015 MoEF&CC Notification dated 7.12.2015, the present system is inadequate. Hence, as per CPCB direction dated 11.12.2017, SCR/SNCR needs to be installed to meet the specified emission limits.

(k) The Contention that the Petitioner has failed to carry out scope of work completely before the cut-off date and, therefore, such additional capitalization on this count cannot be allowed in terms of the 2009 Tariff Regulations and the 2014 Tariff Regulations, is denied. The capitalization sought by the Petitioner is to meet the revised environmental norms notified on 7.12.2015 by MoEF&CC. These revised environmental norms are covered under "Change in law" in terms of Regulation 3(9)(b) of the 2014 Tariff Regulations and the relief under Change in Law is provided under additional capital expenditure in terms of Regulation 14 of the 2014 Tariff



Regulations which has been approved by the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017 in the case of NTPC.

(l) The contention of the Respondents that the Petitioner's cost estimates are excessive or that there is any wrong calculation in report prepared by TCE is denied. Cost of FGD varies with the type of technology chosen. Cost specified by the Petitioner in the Petition is rough estimate and is subject to change based on the price discovered through International Competitive Bidding. Once the technology is firmed up by CEA, the Petitioner will start tendering process for installation of FGD to comply with the revised environmental norms specified in the 2015 MoEF&CC Notification.

(m) Every thermal plant is unique in some way or the other. In the present case, Udupi Power Project is a coastal plant and a cost comparison to a plant of NTPC or that of any other power plant is not tenable/ justified. Further, the cost incurred by the Petitioner will be subject to prudence check of the Commission and the Respondent's argument of exorbitant estimate is pre-mature at this stage.

(n) The additional auxiliary consumption allowed by the Commission in its order dated 20.2.2018 in Petition No. 160/GT/2012 is based on the auxiliary power consumption of the existing capacity of FGD achieved during the performance guarantee test. However, the additional auxiliary consumption sought by Petitioner in the present Petition relates to the capacity that will be installed to comply with revised environment norms.

#### **Additional submissions by PCKL**

11. The Respondent, PCKL, vide its additional submission dated 14.3.2019 has submitted that the Petitioner has failed to bring on record any material to substantiate its claim of installation of FGD for 25% of the installed capacity. PCKL



has further submitted that the contention of the Petitioner that in the final environment clearance dated 1.9.2011, there is no requirement to install FGD for 85% efficiency on the ground that at the time Unit I was already operational (COD- 11.11.2010) and Unit II was nearing completion (COD- 19.8.2012), is not sustainable. Therefore, the mandatory condition applicable as per the environment clearance dated 9.9.2009 in force required installation of FGD unit with 85% efficiency. PCKL has pointed out that in response to the direction of the Commission, the Petitioner had submitted information regarding the design parameters of FGD in its letter dated 29.7.2005 wherein 85% SO<sub>2</sub> removal efficiency was stipulated. As per the design parameters submitted by the Petitioner, if FGD with 85% efficiency had been installed, the plant with inlet SO<sub>2</sub> of 1484 mg/Nm<sup>3</sup> would have an outlet SO<sub>2</sub> of 223 mg/Nm<sup>3</sup>. Accordingly, it has been contended that if the Petitioner had complied with the requirement to install FGD as was stipulated in the environment clearance dated 9.9.2009 at the time of setting up the plant, the only change that would have been required for the Petitioner to comply with the 2015 MoEF&CC Notification would be a change in the specification of coal. In this regard, PCKL has submitted that as per PPA dated 26.12.2005, the permissible limit for sulphur content (Air Dried) in coal being used is 0.3% to 0.8%. But as per compliance report for April-2016 to September-2016 and April-2018 to September-2018 submitted by the Petitioner to the pollution control authorities, the sulphur content in the coal utilized in this period is 0.35% and 0.36% respectively. PCKL has further relied on the Lol dated 10.9.2004 issued to BHEL and has submitted that the scope of work included the Wet Flue



Gas Desulphurization system. However, there was no stipulation that FGD would be installed only for 25% of the installed capacity. PCKL has denied the Petitioner's reliance on Consent for Establishment dated 31.8.2005 as date of reference for change in law contending that installation of FGD was mandated as far back as in the environment clearance dated 20.3.1997 issued by MoEF&CC. PCKL has also denied the contention of the Petitioner that it was required to install FGD only to be able to comply with the NAAQS. In this regard, PCKL has argued that the Petitioner could meet NAAQS even without installation of FGD, considering the specifications of coal required to be used.

**Rejoinder by the Petitioner to additional submissions made by PCKL**

12. The Petitioner vide its two rejoinders both dated 13.5.2019 to the additional submission made by PCKL has submitted that the effective date of the PPA is 26.12.2006 and any notification revising the emission standards for compliance of which, the Petitioner has to incur additional capitalization, will be a "change in law" event in terms of the PPA. In this regard, the Petitioner has submitted the following table of various emission norms applicable to Udupi Power Project prior to effective date (26.12.2006) and the norms applicable as per 2015 MoEF&CC Notification:

S.No.		SO <sub>2</sub>		NO <sub>x</sub>	
		Ambient Air Quality Standards	Stack Emission	Ambient Air	Stack Emission
1.	Environment (Protection) Rules, 1986	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
2.	1996, KSPCB site clearance	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	



S.No.		SO <sub>2</sub>		NOx	
		Ambient Air Quality Standards	Stack Emission	Ambient Air	Stack Emission
3.	National Ambient Air Quality Standards (NAAQS), 1994 notified by Central Pollution Control Board (CPCB)	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
4.	1997, Environment Clearance issued by MoEF	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
5.	KSPCB, Consent for establishment dated 31.08.2005	FGD needs to be installed as per Schedule VII of the Rule 3(3B) of EP rules. <b>80 µg/m<sup>3</sup></b> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	-
6.	MOEF Norms as per notification dated 07.12.2015 (Thermal Power plants which have been installed between 1st January 2003 to 31st December 2016)		200 mg/NM <sup>3</sup>		300 mg/NM <sup>3</sup>
1.	Environment (Protection) Rules, 1986	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
2.	1996, KSPCB site clearance	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
3.	National Ambient Air Quality Standards (NAAQS), 1994 notified by Central Pollution Control Board (CPCB)	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
4.	1997, Environment Clearance issued by MoEF	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
5.	KSPCB, Consent for establishment dated 31.08.2005	FGD needs to be installed as per Schedule VII of the Rule 3(3B) of EP rules. <b>80 µg/m<sup>3</sup></b> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	-



S.No.		SO <sub>2</sub>		NO <sub>x</sub>	
		Ambient Air Quality Standards	Stack Emission	Ambient Air	Stack Emission
6.	MOEF Norms as per notification dated 07.12.2015 (Thermal Power plants which have been installed between 1st January 2003 to 31st December 2016)		200 mg/NM <sup>3</sup>		300 mg/NM <sup>3</sup>

13. The Petitioner has relied on the above table and has submitted that prior to 2015 MoEF&CC Notification, FGD was required to be installed only for meeting ambient air quality norms. However, there were no prescribed standards for SO<sub>2</sub> and NO<sub>x</sub> for stack emissions. The norms for SO<sub>2</sub> in stack emission have been introduced through 2015 MoEF&CC Notification. Further, the emission standards as specified in the PPA were much higher than that was stipulated in 2015 MoEF&CC Notification.

14. The Petitioner has submitted that the new emission norms can only be met by undertaking construction of a new FGD system as the present system at the power plant has been designed and developed keeping in mind the emission norms provided in the Consent for Establishment dated 31.8.2005, which were applicable on effective date of PPA. The Petitioner has submitted that the prevailing norm as on 31.8.2005 was NAAQS and the existing FGD system of 25% of installed capacity was sufficient to comply with the standards as stipulated in NAAQS. The existing FGD system has to be completely demolished and a new FGD has to be established.



15. As regards PCKL's reliance on environment clearance dated 9.9.2009, the Petitioner has submitted that PCKL is reading the said environment clearance in isolation. It has been contended by the Petitioner that the said environment clearance dated 9.9.2009 was superseded by environment clearance dated 1.9.2011 which has superseded all earlier environment clearances and the 2011 environment clearance does not provide for any condition pertaining to installation of FGD with 85% of efficiency. Further, the Petitioner has submitted that, in any case, the Petitioner has undertaken engineering, planning and installation of FGD as per the PPA dated 25.12.2005, as per which the effective date comes out to be 25.12.2006. Therefore, any amendments/ changes in emission norms requiring the Petitioner to incur additional capitalization after the effective date (i.e. 26.12.2006) is a Change in Law event.

16. As regards contention of PCKL regarding cost approved in the order dated 25.10.2005, the Petitioner has submitted that after in-principle approval of the Commission in its order dated 25.10.2005 in Petition No. 40 of 2005, based on the requirements of meeting emission standards, detailed designing was done and appropriate FGD capacity was installed to meet the applicable emission standards. The Petitioner has submitted that PCKL in proceedings in Appeals No. 108, 122, 119 of 2014 and 18 of 2013 filed against the orders of the Commission dated 20.2.2014 and 24.12.2012 in Petition No. 160/GT/2012 has raised the issue that the 'in principle' capital cost accepted by this Commission should be the ceiling capital cost for determination of tariff. However, the said contention was rejected by APTEL vide judgment dated 15.5.2015. The Petitioner has clarified



that while the judgment of the APTEL has been challenged by the parties before the Hon'ble Supreme Court, there is no stay of the said order of APTEL. Therefore, the issue raised by the Respondents is presently closed and cannot be agitated. The Petitioner has contended that order dated 20.2.2014 overrides the order dated 25.10.2005 and this issue cannot be raised now in these proceedings. It has been contended that any upward/ downward revision on the emission norms after effective date will be certainly covered under Change in Law provisions of the PPA and, consequently compensation thereto has to be paid to the Petitioner. As regards Lol issued to BHEL, the Petitioner has contended that since the capital cost submitted by the Petitioner has undergone detailed prudence check of the Commission, it cannot be challenged at this stage. If allowed, it will tantamount to opening the proceedings in original tariff petition of Udupi Power Project. The Petitioner has further submitted that the establishment of a higher capacity FGD, beyond the extant norms, would have resulted in increased capital cost and such an action would be against prudent utility practices.

#### **PCKL's response to Rejoinders filed by the Petitioner**

17. The Respondent, PCKL has filed its response dated 31.5.2019 to the rejoinders filed by the Petitioner. PCKL has relied on Petition No. 40 of 2005 filed in April 2005 and the letter dated 27.9.2005 to contend that the specifications of the FGD had been finalized before the issuance of Consent for Establishment dated 31.8.2005. It has been stated that in-principle cost of the project including 100% FGD was arrived at based on *inter alia* the letter dated 27.9.2005 filed by the Petitioner in Petition No. 40 of 2005.



18. PCKL has contended that the reliance placed by the Petitioner on the Consent for Establishment dated 31.8.2005 is merely an afterthought to cover up its failure to comply with the conditions imposed on it under the PPA as well as multiple consents and approvals. PCKL has submitted that the table produced by the Petitioner in its rejoinder is misleading since the NAAQS has no bearing on the requirement to install FGD, as that was a separate requirement emanating from the PPA as well as the environment related clearances. It has been submitted that the Petitioner, like every other establishment in the country, is under an obligation that its activities do not cause a disruption in the National Ambient Air Quality Standards prescribed under Rule 3 (3B) of the Environment (Protection) Rules, 1986. NAAQS are to be maintained in an area collectively by all establishments. Since all thermal power plants in the country have always been under an obligation to maintain NAAQS, there was no special obligation imposed on the Petitioner for which FGD had to be installed.

19. PCKL has submitted that during the proceedings before the Commission in Petition No. 160/GT/2012, the Petitioner had failed to provide any break up for the costs of each equipment due to which the Commission had determined the cost to the Petitioner on the sole basis of the costs as per its earlier order granting in-principle approval dated 25.10.2005 in Petition No. 40 of 2005. Therefore, till date the contents of the order dated 25.10.2005 are the only break-up value available for all regulatory purposes. PCKL has submitted that the failure of the Petitioner to provide cost break up at the time of Petition No. 160/GT/2012 ought not to be used to its advantage at this stage.



20. PCKL has further submitted that even though the work was not executed by BHEL, the DPR prepared for the purpose formed the base for awarding the contract to Lanco Infratech Limited (LITL). The Petitioner had awarded the said works to LITL which is a group company of Lanco (erstwhile owner of Udupi project) through fraudulent practices. PCKL has submitted that even as per the Petitioner's own submission, when the designing process to ascertain the specifications of the FGD required was done only after the conclusion of Petition No. 40 of 2005, it is not conceivable how the cost estimate in Petition No. 40 of 2005 was based on the requirement of FGD of 25%.

21. The Petition was heard on 16.7.2019. The Petitioner and the Respondents, PCKL and PSPCL have filed their respective written submissions dated 31.7.2019 and have reiterated their submissions from their respective pleadings.

### **Analysis and Decision**

22. We have considered the submissions made by the Petitioner and the Respondents. The Respondents have challenged the maintainability of the Petition on the ground that there is no provision for in-principle approval under the 2009 Tariff Regulation or the 2014 Tariff Regulations. The Respondents have also submitted that the Commission in its order dated 20.3.2017 in Petition No. 72/MP/2016 filed by Maithon Power Ltd. ("MPL") has held that Regulations 14(3) and 8(3) of the 2014 Tariff Regulations do not provide for "in-principle" approval of the capital expenditure, and that the Petition was not maintainable. The



Respondents have submitted that the Commission reiterated the same view in its order dated 20.7.2018 in Petition No. 98/MP/2017 relating to generating stations of NTPC. We observe that the Commission has dealt with the issues raised by the Respondents regarding in-principle approval of capital expenditure in the order dated 20.7.2018 in Petition No. 98/MP/2017 as under:

*34. Since the 2014 Tariff Regulations specified by the Commission do not contain any provision for in-principle approval, the Commission by order dated 20.3.2017 had rejected the prayer of MPL for grant of in-principle approval of the expenditure towards "Abstract schemes" for compliance with the MOEFCC Notification dated 7.12.2015. The Commission in the said order directed MPL to approach Central Electricity Authority with regard to the specific optimum technology, associated cost and major issues to be faced in installation of revised environmental norms and to approach MOEFCC for phasing of the implementation of the different environmental measures. The Commission also directed the Petitioner therein to file application at the appropriate stage based on the approval of CEA and directions of MoEFCC. In other words, the Commission had granted liberty to MPL to approach the Commission once the cost factors including technology and implementation schedules are decided in consultation with CEA and MOEFCC respectively.*

*35. It is pertinent to mention that under the 2009 Tariff Regulations as well as 2014 Tariff Regulations, there are provisions for approval of the capital expenditure and additional capital expenditure "projected to be incurred". Karcham Wangtoo Hydro Corporation Limited approached the Commission for determination of tariff (under the name of Jaiprakash Power Venture Limited/ Himachal Baspa Power Company Limited) for determination of tariff after commercial operation of the project and the Commission approved its tariff for the period 2014-19 vide order dated 30.3.2017 in Petition No. 434/GT/2014. In case of MPL, it was required to approach the Commission after consultation with CEA and MOEFCC for approval of the projected capital expenditure for implementation of the environmental norms as notified by MOEFCC. Thus, though the Commission did not accord in-principle approval for capital cost in MPL case (in Petition No. 72/MP/2016), the Commission had granted liberty to MPL to approach the Commission after consultation with CEA and MOEFCC.*

*36. In the light of the above discussion, we decide that in the absence of provisions for in-principle approval of capital cost in the 2014 Tariff Regulations, the first prayer of the Petitioner for grant of in principle approval of the capital cost and other expenditure for implementation of ECS cannot be granted. However, liberty is granted to the Petitioner to approach the Commission after consultation with CEA in project specific cases with regard to adoption of specific technology and finalising the cost, as stated in paragraph 48(i) of this order.*

*44. In our view, the MOEFCC Notification dated 7.12.2015 requiring the thermal generating stations to implement the revised environmental norms amounts to*



*“Change in Law” in accordance with the 2014 Tariff Regulations as well as the Policy directions issued by the MoP under section 107 of the Act.”*

23. Thus, the Commission held that there being no provision for in-principle approval in the 2014 Tariff Regulations, the prayer of the Petitioner therein as regards in-principle approval of costs and other expenditure was not granted. Also while granting liberty to the Petitioner therein, namely NTPC, the Commission has also declared the 2015 MoEF&CC Notification as an event of Change in Law in the aforesaid order.

24. As far as the present Petition is concerned, it is observed that the scope of the present Petition is limited to seeking declaration of 2015 MoEF&CC Notification as an event under Change in Law. It is further observed that the Petitioner has not sought in-principle approval of the capital expenditure in the present Petition but has sought declaration that additional capital cost and operational cost along with expenses on account of generation loss, reduction in efficiency, deterioration of heat rate and other expenses shall be considered on actual basis for change in law relief in terms of provisions of the PPAs to ensure that the Petitioner is brought to the same economic position as if such Change in Law event has not occurred. Accordingly, we hold that the present Petition is maintainable.

25. Having held that the Petition is maintainable, the issue that emerges for our consideration is whether the 2015 MoEF&CC Notification requiring the thermal power plants to implement the revised environmental norms amounts to Change in Law in respect of Udupi Power Project.



26. The Petitioner has submitted that the 2015 MoEF&CC Notification is covered under the Change in Law provisions of the PPA and Change in Law provisions of the 2014 Tariff Regulations. As regards consideration of 2015 MoEF&CC Notification under Change in Law as per 2014 Tariff Regulations, the Commission in the order dated 20.7.2018 in Petition No. 98/MP/2017 has decided as under:

*“37. The Petitioner has claimed that the Notification of MOEFCC dated 7.12.2015 is covered under Change in Law provisions of 2014 Tariff Regulations. Change in Law has been defined in Regulation 3(9) of the 2014 Tariff Regulations as under:*

*“3(9) “Change In Law” means occurrence of any of the following events:*

*enactment, bringing into effect or promulgation of any new Indian law; or*

*adoption, amendment, modification, repeal or re-enactment of any existing Indian law; or*

*change in interpretation or application of any Indian law by a competent court, Tribunal or Indian Governmental Instrumentality which is the final authority under law for such interpretation or application; or*

*change by any competent statutory authority in any condition or covenant of any consent or clearances or approval or licence available or obtained for the project; or (e) coming into force or change in any bilateral or multilateral agreement/treaty between the Government of India and any other Sovereign Government having implication for the generating station or the transmission system regulated under these Regulations.”*

38. As per the definition, “adoption, amendment, modification, repeal or reenactment of any existing Indian Law” is covered under Change in Law. The Environment (Protection) Rules, 1986 have been notified by the Central Government in exercise of the power vested under sections 6 and 25 of the Environment Protection Act, 1986. Rule 3 of the Environment (Protection) Rules provides for Standards for emissions or discharge of environmental pollutants. Through the Environment (Protection) Amendment Rules, 2015 notified by the Central Government vide Notification dated 7.12.2015, the standards of emission of environmental pollutants to be followed by the thermal power plants have been revised. Since the Central Government has revised the standards of emissions of environmental pollutants in exercise of its power under the Environment Protection Act, 1986, the said notification is covered under Change in Law in terms of Regulation 3(9)(ii) of the 2014 Tariff Regulations. The revised standards are mandatory in nature and are to be complied with within a stipulated timeframe.”



27. The Respondents have relied on the Commission`s order dated 27.6.2016 in Petition No. 270/GT/2014 to contend that the 2015 MoEF&CC Notification is not covered under `change in law` in terms of provisions of the 2014 Tariff Regulations. The Respondents have submitted that in case of subsisting obligation on the part of the generator to install certain works, the enactment of a Regulation subsequent to the same incorporating the obligation to do the same work does not constitute as grounds for `change in law` within the meaning of Regulation 14 of the 2014 Tariff Regulations. The relevant portion of the said order dated 27.6.2016 is extracted as under:

*“Augmentation of Fire Fighting system*

*16. The petitioner has claimed `280.00 lakh in 2015-16 towards augmentation of Fire Fighting system under Regulation 14(3)(ii) and 14(3)(iii) of the 2014 Tariff Regulations. The petitioner in its justification has submitted that the expenditure is to comply with existing regulations of CEA (Technical Standard for construction of Electric Plant & Electric lines) Regulations, 2010 notification issued on 20.8.2010 and CEA (safety requirement of construction, O&M of Electric plants & Electric lines) Regulations, 2011 notification dated 24.11.2011. The petitioner further submitted that this is also recommended by Dy. Commandant of CISF (Ministry of Home Affairs) vide letter dated 15.7.2014.*

***17. We have examined the submission of the petitioner. It is observed that the petitioner has not established that the augmentation of a firefighting system is due to any change in law. A proper well equipped fire fighting system was the requirement in any thermal power station even prior to the CEA safety standards which came in the year 2010. Therefore CEA Regulations, 2010 cannot be said to be a Change-in-law. Further, the plant was operating with the existing fire fighting system since its COD. In addition, the petitioner has not furnished any supportive document or Order or notification which suggests that the letter from Deputy Commandant CISF is due to advice or direction from the Appropriate Government/ agency. Hence, the claim under Regulation 14(3)(iii) towards security and safety of plant cannot be entertained under this regulation. Accordingly, expenditure of `280.00 lakh in the year 2015-16 for augmentation of a firefighting system is not allowed. However, the petitioner has been allowed compensation allowance for meeting such type of capital expenditure and the same should be met from the said allowance.”***



28. It is noted that NTPC had filed Review Petition No. 36/RP/2016 seeking review of the above decision of the Commission with regards to augmentation of Fire Fighting System. In the order dated 27.1.2017 in Review Petition No. 36/RP/2016, the Commission has held as under:

*“11. After considering the claim of the petitioner, the Commission in order dated 27.6.2016 disallowed the additional capital expenditure under Regulations 14(3)(ii) and 14(3)(iii) of the 2014 Tariff Regulations. The petitioner has submitted that Regulation 12(5) of the CEA Regulations 2010 requires thermal generating station to be equipped with comprehensive/automatic fire detection alarm and fire protection system and since these requirements were not existing earlier, the petitioner has installed the same by augmentation of the fire fighting system. The petitioner has submitted that the Commission has also not considered the other part of the Regulation 14(3) (ii) which provides for compliance of existing law which is the CEA Regulations, 2010 in the present case. None of the respondents have filed any reply. The submission of the petitioner is not acceptable. It is observed that the Units-I & II of the generating station have achieved COD during the years 2002 and 2003 respectively and hence, the CEA Regulations, 2010 and the CEA Regulations, 2011 cannot be made applicable to the existing generating station of the petitioner. There is also no mention in the said regulation to claim this status existing as on date of the notification of the CEA. In this background it was observed that the petitioner had not established the fact that the augmentation of the fire fighting system in CHP was due to any change in law and was therefore, disallowed in order dated 27.6.2016. Similarly, clause 4(2)(3) of the CEA Regulations (Safety provisions relating to owner), 2011 though applicable to the existing electrical plants and electric lines, is limited to obtaining the accreditation of electric plants and electric lines (IS-18001 certification) within two years from the date of coming into force. Moreover, the petitioner had not furnished any justification or documentary evidence to substantiate that the fire fighting system was necessary for which certification is to be obtained by the petitioner in respect of the generating station. Accordingly, in our view there is no error apparent on the face of the order and prayer of the petitioner for review of the order dated 27.6.2016 under Regulation 14 (3) (ii) of the 2014 Tariff Regulations fails.”*

29. In the above case, NTPC had failed to establish the need for augmentation of Fire Fighting system as an event of change in law in the above Petition. However, in the present case, the Commission has held 2015 MoEF&CC Notification as an event of change in law. Therefore, the above order is not applicable to the present case.



30. Ministry of Power, Government of India, in exercise of its powers conferred under Section 107 of the Act has issued directions to the Commission vide letter dated 30.5.2018. The said letter is extracted as under:

*"No. 23/22/2018-R&R  
Government of India  
Ministry of Power*

\*\*\*

*Shram Shakti Bhawan, Rafi Marg,  
New Delhi, 30<sup>th</sup> May, 2018*

To,

*The Chairperson,  
Central Electricity Regulatory Commission,  
Chanderlok Building,  
Janpath, New Delhi-110001*

*Subject: Mechanism for Implementation of New Environmental Norms for Thermal Power Plants (TPP) supplying power to distribution licensees under concluded long term and medium term Power Purchase Agreement (PPA).*

Sir,

*Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the Environment (Protection) Amendment Rules, 2015 on 7th December, 2015 thereby introducing revised emission standards for Thermal Power Plants (TPPs). The revised emission standards are applicable to existing as well as upcoming TPPs. To meet the revised emission standards, the TPPs would have to install or upgrade various emission control systems like Flue-gas desulfurization (FGD) system, Electro-Static Precipitators (ESP) system etc.*

*2. As per implementation plan prepared by Central Electricity Authority (CEA), the existing TPPs are required to comply with the new emission standards by the year 2022.*

*3. Implementation of revised emission standards would face challenges relating to stringent timelines, availability of suppliers and technology, shut down for longer periods, and revenue loss during shutdown. It would also have significant implications on the tariff agreed under the long term and medium term power purchase agreement (PPA) due to additional infrastructure and operational cost on account of large scale installations, renovations & retrofitting of existing plant and machinery to meet revised emission norms.*

*4. In view of the nature of cost involved in implementation of revised standards of emission and the provisions of Power Purchase Agreement, there is a need to develop the appropriate regulatory framework specifying the mechanism or enabling guidelines for providing regulatory certainty to the TPPs about recovery of*



such additional costs through tariff. It is important to ensure implementation of the revised standards of emission for TPPs for controlling pollution level in the larger public interest.

5. After considering all aspects and with due regard to the need for safeguards against environmental hazards, and accordingly to ensure timely implementation of new environment norms, the Central government has decided that-

5.1 The MOEFCC Notification requiring compliance of Environment (Protection) Amendment Rules, 2015 dated 7th December, 2015 is of the nature of Change in law event except in following cases:

(a) Power purchase Agreements of such TPPs whose tariff is determined under section 63 of the Electricity Act 2003 having bid deadline on or after 7th December, 2015; or

**(b) TPPs where such requirement of pollutions control system was mandated under the environment clearance of the plant or envisaged otherwise before the notification of amendment rules;**

5.2 The additional cost implication due to installation or up-gradation of various emission control systems and its operational cost to meet the new environment norms, after award of bid or signing of PPA as the case may be, shall be considered for being made pass through in tariff by Commission in accordance with the law.

5.3 The respective TPPs may approach the Appropriate Commission for approval of additional capital expenditure and compensation for additional cost on account of this Change in law event in respect of the Power Purchase Agreement entered under section 62 or section 63 of the Electricity act 2003.

5.4 For the TPPs that are under the purview of the Central Commission, the Commission shall develop appropriate regulatory mechanism to address the impact on tariff, and certainty in cost recovery on account of additional capital and operational cost, under concluded long term and medium term PPAs for this purpose.

6. The Central Government, in exercise of the power conferred under section 107 of the Electricity Act 2003 issues directions to the Central Electricity Regulatory Commission to implement the above decision of the Government. This direction is being issued to facilitate the smooth implementation of revised emission standards of the Environment (Protection) Amendment Rules, 2015 dated 7th December, 2015 for Thermal Power Plants in the larger public interest.

7. This issues with the approval of Minister of State (IC) for Power and NRE.

Yours faithfully  
Sd/-  
(Ghanshyam Prasad)  
Chief Engineer”



31. Ministry of Power has issued directions under Section 107 of the Act to facilitate the smooth implementation of the revised environmental norms under the 2015 MoEF&CC Notification for thermal power plants. Section 107 of the Act provides as under:

*“107 (1) In discharge its functions, the Central Commission shall be guided by such directions as matter of policy involving public interest as the Central Government may give to in writing.”*

Thus, in terms of provisions of Section 107 of the Act, the Commission is to be guided by the policy directions issued by the Central Government.

32. Para 5.4 of the aforesaid directions issued by Ministry of Power under Section 107 of the Act provides as under:

*“5.4 For the TPPs that are under the purview of the Central Commission, the Commission shall develop appropriate regulatory mechanism to address the impact on tariff, and certainty in cost recovery on account of additional capital and operational cost, under concluded long term and medium term PPAs for this purpose.”*

33. In case of the Petitioner, the applicable emission norms prevailing before coming into force of the 2015 MoEF&CC Notification were the National Ambient Air Quality Standards (NAAQS) as stipulated in the Schedule VII of the Rule 3(3B) Environment (Protection) Rules, 1986. Through the 2015 MoEF&CC Notification dated 7.12.2015, the standards of emission of environmental pollutants to be followed specifically by the thermal power plants have been notified separately for the first time. Therefore, the above decision of the Commission (in Petition No. 98/MP/2017) as regards the 2015 MoEF&CC Notification being change in law in



terms of Regulation 3(9)(b) of the 2014 Tariff Regulations, is applicable in case of Udupi Power Project also.

34. The Petitioner has stated that the Udupi Power Project meets some of the revised environment norms and, accordingly, the Petitioner has not claimed the relief under Change in Law on account of revised norms for Water Consumption Limit, Particulate Matters and Mercury. The Petitioner has submitted that since MoEF&CC vide its Notification dated 28.6.2018 has relaxed norms for Water Consumption Limit, the stipulation in this regard as per the 2015 MoEF&CC Notification is not applicable for Udupi Power Project.

35. In respect of revised parameters of SO<sub>2</sub> and NO<sub>x</sub> introduced through the 2015 MoEF&CC Notification, the Petitioner has submitted the following snapshot of Change in Law claims in respect of Udupi Power Project:

Parameter as on Effective Date	Parameters as per Amendment Rules	Primary Schemes to be implemented to meet the Amended Rules
<b>Sulphur Dioxide (SO<sub>2</sub>)</b>		
None	Unit Size < 500 MW: 600 mg / Nm <sup>3</sup>  Unit Size ≥ 500 MW: 200 mg / Nm <sup>3</sup>	<ul style="list-style-type: none"> <li>Limestone slurry sorbent based, wet type FGD with forced oxidation, having minimum SO<sub>2</sub> absorption efficiency of 95% is required for both Units</li> </ul>
<b>Nitrogen Oxide (NO<sub>x</sub>)</b>		
None	300 mg / Nm <sup>3</sup>	<ul style="list-style-type: none"> <li>Combustion Tuning and SNCR is required for both units</li> </ul>

36. As regards abatement of SO<sub>2</sub>, the Respondents have mainly contended that the provisions of the PPA, environment clearances dated 20.3.1997, 9.9.2009 and 1.9.2011 stipulated installation of FGD for the Udupi Power Project. They



have also submitted that the environment clearance dated 9.9.2009 stipulated that wet limestone type FGD unit with 85% efficiency of removal of SO<sub>2</sub> shall be installed. The Respondents have also contended that FGD only for 25% of the installed capacity was never envisaged either in the PPA, consents/ clearances granted by various authorities or order of the Commission dated 25.10.2005 in Petition No. 40 of 2005 for grant of in-principle approval of the project cost.

37. As regards NO<sub>x</sub>, the Respondents have relied on the 'EPCA Report No. 81: Recommended actions and schedule for the expeditious implementation of New Emission standards for Thermal Power Plants' dated 14.2.2018 to contend that Udupi Power Project is compliant with norms for emission of NO<sub>x</sub> prescribed by the 2015 MoEF&CC Notification and submitted that Udupi Power Project already has low NO<sub>x</sub> burners with Over Fire Air which regulates the NO<sub>x</sub> emission and the same is sufficient for meeting the revised environmental norms as per the recommendation of Centre for Science and Environment. Therefore, there is no further requirement of abatement as regards NO<sub>x</sub>.

38. We have gone through the submissions made by the Petitioner and the Respondents. Unit 1 and Unit 2 of the Udupi Power Project achieved COD on 11.11.2010 and 19.8.2012 respectively. The relevant extract of various consents/ clearances granted prior to environment clearance dated 9.9.2009 are extracted as under:

KSPCB Site Clearance for Establishment dated 19.3.1996 (Condition 9)



*“The industry apart from providing two chimneys of 275 meters and Electrostatic Precipitator (ESP), it should provide desulphurisation system for flue gas emission and control emission of SO<sub>2</sub> and other air pollutants.”*

EC dated 20.3.1997

*“2.i) All the conditions stipulated by the Karnataka State Pollution Control Board vide their letter dated 19th March, 1996 and 18th October, 1996 should be strictly implemented including the installation of Flue Gas Desulphurisation (FGD) Plant.”*

KSPCB Consent for Establishment dated 31.8.2005

*“III AIR POLLUTION CONTROL*

*B) Boiler emission*

*ii) For control of SO<sub>2</sub>, of Flue Gas De-sulphurization unit shall be installed to meet the **National Ambient Air quality standards** as stipulated in the Schedule VII of the Rule 3(3B) EP Rules.”*

*Annexure 4 of the PPA dated 26.12.2005 with PCKL*

*“Each boiler will be provided with a separate Flue Gas Desulphurisation (FGD) plant. The FGD will utilise lime to absorb sulphur di-oxide (SO<sub>2</sub>) in the flue gas. The flue gas volume through FGD will be controlled by a suitable fan control and damper arrangement.*

**Salient features**

**8. Flue Gas Desulphurisation Unit: One for each unit”**

39. In light of the aforementioned provisions of the consents and PPA, it is beyond doubt that FGD was stipulated for the project since 1996. However, the capacity for which FGD needed to be installed was neither deliberated in the environment clearance granted in 1997 nor in the KSPCB Site Clearance for Establishment dated 19.3.1996. However, KPSCB consent for establishment dated 31.8.2005 specified that Flue Gas De-sulphurization unit shall be installed to meet the National Ambient Air Quality Standards (NAAQS) as stipulated in the Schedule VII of the Rule 3(3B) Environment (Protection) Rules, 1986. Further, the Commission accorded in-principle approval for project cost of Udupi Power Project



vide order dated 25.10.2005 in Petition No. 40 of 2005 and the Petitioner entered into PPA with Karnataka Escoms on 26.12.2005. Therefore, we find merit in the submission of the Petitioner that the prevailing norms based on which FGD had to be designed was National Ambient Air Quality Standards (NAAQS) as stipulated in the Schedule VII of the Rule 3(3B) Environment (Protection) Rules, 1986 in terms of the condition stipulated in Consent for Establishment dated 31.8.2005.

40. Subsequently, MoEF&CC notified the Environment (Protection) Amendment Rules, 2015 whereby all thermal power plants were required to comply with the revised norms on or before 7.12.2017. A comparison of the prevailing norms i.e. NAAQS as on 31.8.2005 and norms prescribed in 2015 MoEF&CC Notification is as under:

S.No.		SO <sub>2</sub>		NO <sub>x</sub>	
		Ambient Air Quality Standards	Stack Emission Standards	Ambient Air	Stack Emission
1.	Environment (Protection) Rules, 1986 (Schedule VII of the Rule 3(3B) of EP rules)	80 µg/m <sup>3</sup> (24 hours Average)	-	80 µg/m <sup>3</sup> (24 hours Average)	
2.	MOEF Norms as per notification dated 07.12.2015 (Thermal Power plants which have been installed between 1st January 2003 to 31st December 2016)		200 mg/Nm <sup>3</sup>		300 mg/Nm <sup>3</sup>

41. The Petitioner has submitted that Udupi Power Project was mandated to only meet Ambient Air Quality Standards as per NAAQS. However, vide 2015 MoEF&CC Notification, for the first time the norms for control of emission of SO<sub>2</sub>



and NOx in stack emissions has been introduced. The Petitioner has submitted that Ambient Air quality criteria require measurement of concentration of pollutants in the air, typically referred to, as outdoor air or Ambient Air. However, the stack emission norms were introduced only on 7.12.2015. The monitoring for stack emission is carried out for emission or exit gases (flue gas) from Chimney/ Stack/ Flue (Source) of any plant process. This is also called stationary or point source of emission. Therefore, the standards and monitoring methods of Ambient Air and stack emissions are different. The Petitioner has submitted that the existing FGD is designed to meet the limits specified in NAAQS 1994 i.e. SO<sub>2</sub> concentration in ambient air of 80 µg/m<sup>3</sup> for 24 hours average. Further, the Petitioner has installed boilers with Low NOx burners and Over Fire Air (OFA) system to meet the NOx norms of 80ug/m<sup>3</sup> for 24 hours average in residential, rural and other area as prescribed by NAAQS. With these systems, the range of NOx concentration in the flue gas emission is in the range of 150-400 mg/Nm<sup>3</sup>.

42. Sample Monitoring reports submitted by the Petitioner vide its rejoinder dated 13.2.2019 with respect to SO<sub>2</sub> and NOx emission in Ambient Air shows that existing emission is within limit of 80 µg/m<sup>3</sup>. Therefore, The Petitioner has been complying with the NAAQS 1994. However, the Petitioner has submitted that SO<sub>2</sub> and NOx concentration in emission of the flue gas with the present FGD has always been more than 200 mg/Nm<sup>3</sup> and 300 mg/Nm<sup>3</sup> respectively. In this regard, the Petitioner has placed on record the compliance reports for ambient air quality and reports of SO<sub>2</sub> concentration in flue gas emission along with its rejoinder dated 13.2.2019. Based on the reports submitted by the Petitioner, we observe that the



Petitioner was required to installed emission control systems in terms of the above condition to comply with National Ambient Air Quality Standards as stipulated in Schedule VII of the Environment (Protection) Rules, 1986. The Respondents have relied upon EPCA report and submitted that since the Udupi Power Project is meeting the emission norms, there is no need to install SCR/ SCNR for abatement of NOx. However, the Petitioner has submitted that the EPCA report relied upon by the Respondents had analyzed the data pertaining to NOx as collected by CPCB in Annexure 4 of the report is for a particular period (February 2018). However, the thermal power plants have to always meet the revised norms in various operating conditions including conditions of low Plant Load Factors and range of coal grades. This is recognized by TCE in its FR as under:

*“The units are equipped with Low NOx burners with Over Fire Air (OFA) supply from front and rear of furnace walls. By operating the units with proper synchronization of the existing Low NOx Burners and OFA dampers with regulated supply of optimal amount of excess air, a minimum NOx reduction efficiency of 40% (Source: US EPA), can be achieved.*

*Thus, to summarize, the plant should run with the tuned and synchronized operation of low NOx burners & Over-Fire Air with regulated supply of optimal amount of excess air. Moreover, Selective Non-Catalytic (SNCR) system is recommended as the suitable technology for post combustion control of NOx emissions, which would treat the flue gas with the required reduction efficiency, to achieve the permissible emission limits at all loads and given range of coals. The outcomes of the pilot study being conducted by NTPC for suitability of this technology with Indian coal may also be considered before installation of the SNCR.”*

43. In light of the above discussion, we are of the opinion that on account of the 2015 MoEF&CC Notification, the Petitioner is affected by Change in Law event which may require the Petitioner to undertake augmentation of FGD and installation of SNCR for abatement of SOx and NOx emissions. However, the



Petitioner should decide the technology for abatement of emission of SO<sub>2</sub> and NO<sub>x</sub> in consultation with CEA while keeping the Respondents informed.

44. To meet NAAQS, the Petitioner has stated to have installed FGD of 25% of the installed capacity. The Commission granted in-principle approval of the project cost of Udupi Power Project vide order dated 25.10.2005 in Petition No. 40 of 2005. Cost of FGD considered in the said order is Rs. 150 crore (Including civil works) or Rs. 140 crore (excluding civil works). In this regard, the Respondents have submitted that the claim of the Petitioner that the in-principle cost allowed of Rs. 150 crore was only towards 25% FGD is patently erroneous. The Respondents have argued that after obtaining in-principle approval for 100% FGD, it is now not open for the Petitioner to claim that it had installed FGD for only 25% of installed capacity. According to the Petitioner, the cost approved towards FGD system by the Commission was only towards the 25% i.e. Rs. 150 crore (including Civil works) which is part of total EPC cost discovered through International Competitive Bidding and approved by the Commission after prudence check. The Petitioner has contended that if FGD were installed for 100% capacity, the same would not have been allowed during prudence check as there was no reason to burden the procurers with the installation of a system which was not required as per the extant norms. In this regard, we observe that the Petitioner in Petition No. 160/GT/2012 while claiming the additional capital cost corresponding to upgraded capacity of 1200 MW has submitted as follows with regard to air and flue gas system:

*“ 99. The additional cost of Rs. 109.25 crores claimed against this item consist of two components namely i) increase in flue gas desulphurization plant capacity and ii) increase*



*in chimney diameter. The capacity of the FGD system increase from 765,000 cubic meters of flue gas flow per hour to 900,000 cubic meters.*

*This enhancement is also necessary from the larger perspective of environmental protection. The chimney diameter increase is necessitated due to increase in flue gas flow due to augmentation of capacity. GOK has agreed to Rs.29.56 crores.”*

45. It is observed from the “Stack Emission Monitoring Report” submitted by the Petitioner that total flue gas flow is in the range of 2440598 Nm<sup>3</sup>/hour. As such, this total flue gas flow mainly depends on unit loading. It is observed that unit loading is not mentioned in the emission reports. However, from the combined reading of the submission at para 44 above and the “Stack Emission Monitoring Report”, it can be concluded that the existing FGD was designed only to treat a part of the total flue gas flow. Further, this fact was in the knowledge of Government of Karnataka which after much deliberation allowed a part of the additional capital cost claimed by the petitioner for capacity augmentation of FGD corresponding to 1200 MW. In view of this, Karnataka ESCOMs cannot deny that they were not aware of the fact that FGD to treat only a part of the Flue gas has been envisaged by the Petitioner right from the conceptual stage.

46. Therefore, the subject cost of Rs. 14.78 lakh/MW allowed for the Petitioner’s project cannot, in any manner, suffice for installing 100% capacity FGD as contended by the Respondents. In light of this discussion, we are unable to accept the contention of the Respondents and note that the Petitioner has only established FGD for treatment of a part of flue gases and there shall be a requirement of augmentation/ new FGD system. Accordingly, the Petitioner may consult CEA regarding proper course of action for augmentation of FGD capacity as required.



47. The Respondent, PCKL has pointed out that the design parameters of FGD submitted by the Petitioner in its letter dated 29.7.2005 stipulated installation of FGD with 85% SO<sub>2</sub> removal efficiency. PCKL has contended that if FGD with 85% efficiency had been installed, the plant with inlet SO<sub>2</sub> of 1484 mg/Nm<sup>3</sup> would have an outlet SO<sub>2</sub> of 223 mg/Nm<sup>3</sup>. Accordingly, the only change that would have been required for Udipi Power Project to comply with the 2015 MoEF&CC Notification would be a change in the specification of coal. The Petitioner has submitted that while the design parameters may indicate FGD of 85% SO<sub>2</sub> removal efficiency, the generator may treat a part of the total volume of the flue gases to meet the extant environment norms. In the present case, Udipi Power Project has been taking only 25% of the total volume of the flue gases to meet the NAAQS. Due to revised environmental norms notified by MoEF&CC in 2015, the Petitioner has to augment its FGD capacity as the notification stipulates stringent emission norms to be measured at stack level.

48. As regards the remaining prayers of the Petitioner regarding requirement of additional capital and operating expenditure, suitable mechanism of compensation, recovery of capacity charges during shut down period and recovery of cost incurred in start-up fuel during implementation of environmental norms, the Petitioner is directed to implement the revised norms in consultation with CEA and approach this Commission for determination of increase in cost and/or revenue expenditure on account of implementation of revised norms in accordance with the Guidelines to be issued by CEA and the mode of recovery of the same through monthly tariff. Accordingly, the Petitioner is directed to approach the CEA to firm-



up the technology to be used for installation of FGD and for compliance with revised environmental norms as stipulated by the 2015 MoEF&CC Notification.

49. The Petition No. 346/MP/2018 is disposed of in terms of the above.

Sd/-  
**(I.S.Jha)**  
**Member**

sd/-  
**(Dr. M.K. Iyer)**  
**Member**

sd/-  
**(P.K. Pujari)**  
**Chairperson**

