

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 200/MP/2020

Coram:

**Shri Jishnu Barua, Chairperson
Shri I. S. Jha, Member
Shri Arun Goyal, Member
Shri P. K. Singh, Member**

Date of Order: 29.11.2023

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of Additional Capital Expenditure on account of implementation of Flue Gas De-Sulphurization (FGD) System at NLC Tamil Nadu Power Limited (NTPL), 2 x 500 MW Thermal Power Station in compliance with the Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

NLC Tamil Nadu Power Limited,
First Floor, No.8, Mayor Sathyamurthy Road,
FSD, Egmore Complex of Food Corporation of India,
Chetpet, Chennai-600031, Tamil Nadu, India.

.....Petitioner

Vs.

1. Tamil Nadu Generation and Distribution Corporation Limited,
NPKRR Maaligai, 144, Anna Salai,
Chennai-600002.
2. APTRANSCO,
Vidyut Soudha, Gunadala, Eluru Road,
Vijayawada, Andhra Pradesh-520 004.
3. Southern Power Distribution Company of Andhra Pradesh Limited,
D. No:19-13-65/A, Srinivasapuram,
Tiruchanoor Road, Tirupathi (Andhra Pradesh)-517501.
4. Eastern Power Distribution Company of Andhra Pradesh Limited,
P&T Colony, Seetammadhara, Vishakapatnam (Andhra Pradesh)-503013.



5. TSTRANSCO,
Vidyut Soudha, Khairatabad,
Hyderabad-500082.
6. Northern Power Distribution Company of Telangana Limited,
H. No. 1 -1-504, Opp. NIT Petrol Pump,
Chaityanayapuri colony, Hanmkonda,
Warangal (Telangana)-506001.
7. Southern Power Distribution Company of Telangana Limited,
2nd Floor, H. No.6-1-50, Mint Compound,
Hyderabad-500063.
8. Power Company of Karnataka Limited,
KPTCL Complex, Kaveri Bhavan,
Bangalore-560009.
9. Bangalore Electricity Supply Company Limited,
Krishna Rajendra Circle,
Bangalore-560001.
10. Mangalore Electricity Supply Company Limited,
Corporate Office, MESCOM Bhavana, Bejai,
Kavoor Cross Road, Mangalore-575004.
11. Chamundeshwari Electricity Supply Company Limited,
Corporate Office No. CA 29,
Vijayanagar 2nd Stage,
Hinakal, Mysore -570017.
12. Gulbarga Electricity Supply Company Limited,
Main road, Gulbarga, Gulbarga -585102,
Karnataka.
13. Hubli Electricity Supply Company Limited,
Corporate office, P.B. Road,
Navanagar, Hubli-580025.
14. Kerala State Electricity Board Limited,
Vaidyuthi Bhavanam,
Pattom, Thiruvananthapuram-695004.
15. Puducherry Electricity Department,
137, NSC Bose Salai, Puducherry-605001.

.....Respondent(s)



For Petitioner : Ms. Anushree Bardhan, Advocate, NTPL
Ms. Surbhi Kapoor, Advocate, NTPL
Shri J. Subbiah, NTPL

For Respondents : Shri S. Vallinayagam, Advocate, TANGEDCO

ORDER

The Petitioner, NLC Tamil Nadu Power Limited (NTPL), has filed the instant petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of Additional Capital Expenditure (ACE) on account of implementation of Flue Gas De-Sulphurization (FGD) System at NTPL, 2 x 500 MW Thermal Power Station in compliance with the Ministry of Environment and Forests and Climate Change (hereinafter referred to as "MoEFCC"), Government of India Notification dated 7.12.2015.

2. The Petitioner has made the following prayers in the instant petition:

- (i) *Grant approval for additional capital expenditure for implementation of FGD system along with New Stack Bi-Flue Can with Borosilicate Lining & 5 MLD De-Salination Plant to comply Revised MoEF & CC Emission Standards.*
- (ii) *Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes towards reduction in Suspended Particulate Matter (SPM), NO_x, Specific Water Consumption and Mercury Emission, if required.*
- (iii) *Allow additional Auxiliary Power Consumption, additional O&M Expenses, Cost of Reagents etc as claimed in Para 15, 16 & 17 as per Regulation 76 "Power to relax" of Tariff Regulations 2019.*
- (iv) *Allow deemed availability of the Unit/Station on account of shutdown for the implementation of FGD system as per Regulation 76 "Power to relax" of Tariff Regulations 2019.*
- (v) *Pass such orders as deemed fit and necessary in the facts and circumstances of the case."*



Background

3. The background of the instant petition is as follows:

(a) The Petitioner is a Joint Venture of TANGEDCO and NLC India Limited and is a coal-based power-generating company supplying electricity to the Southern states.

(b) The MoEFCC notified the Environment (Protection) Amendment Rules, 2015 (MoEFCC Notification) on 7.12.2015, which mandates the existing thermal power plants, including NTPL and new thermal power plants, to comply with the revised emission standards (RES) as specified in the MoEFCC Notification. The amended norms prescribed by the MoEFCC Notification dated 7.12.2015 and 16.10.2017 are as follows:

Sl.No.	Industry	Parameter	Standards
1	2	3	4
"5A"	Thermal Power Plant (Water consumption limit)	Water consumption	<p>I. All Plants with Once Through Cooling (OTC) shall install a Cooling Tower (CT) and achieve specific water consumption up to a maximum of $3.5\text{m}^3/\text{MW}/\text{hr}$ within a period of two years from the date of publication of this Notification</p> <p>II. All existing CT-based plants reduce specific water consumption up to a maximum of $3.5\text{m}^3/\text{MW}/\text{hr}$ within a period of two years from the date of publication of this Notification Specific Water Consumption shall not exceed a maximum of $3.0\text{m}^3/\text{MWh}$ for new plants installed after the 1st January 2017 and these plants shall also achieve zero wastewater discharge</p> <p>III. Specific Water Consumption shall not exceed a maximum of $3.0\text{m}^3/\text{MWh}$ for new plants installed after the 1st January 2017 and these plants shall also achieve zero wastewater discharge";</p>
"5B"	Thermal Power Plant (Water consumption limit) using	Water consumption	Items I to III in column 4 in serial number 5A above shall not be applicable to the Thermal Power Plants using sea water"



	sea water		
"25	Thermal Power Plant	TPPs (Units) installed before 31.12.2003*	
		Particulate matter	100 mg/Nm ³
		Sulphur Dioxide (SO ₂)	600 mg/Nm ³ (Units Smaller than 500 MW capacity units) 200 mg/Nm ³ (for Units having capacity of 500 MW and above)
		Oxides of Nitrogen	600 mg/Nm ³
		Mercury (Hg)	0.03 mg/Nm ³ (for Units having a capacity of 500 MW and above)
		TPPs (Units) installed after 1.1.2004 up to 31.12.2016	
		Particular Matter	50 mg/Nm ³
		Sulphur Dioxide (SO ₂)	600 mg/Nm ³ (Units smaller than 500 MW capacity Units) 200 mg/Nm ³ (for Units having capacity of 500 MW and above)
		Oxides of Nitrogen (NO _x)	300 mg/Nm ³
		Mercury (Hg)	0.03 mg/Nm ³
		TPPs (Units) to be installed from 1.1.2017**	
		Particular Matter	30 mg/Nm ³
		Sulphur Dioxide (SO ₂)	100 mg/Nm ³
		Oxides of Nitrogen (NO _x)	100 mg/Nm ³
		Mercury (Hg)	0.03 mg/Nm ³

**TPPs (Units) shall meet the limits within two years date of publication of this Notification.*

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

(c) MoEFCC amended norms categorized the thermal power plants into three categories i.e. i) TPP's Units installed before 31.12.2003, ii) TPP's Units installed between 1.1.2004 to 31.12.2016, and iii) TPPs which are executed



after 1.1.2017 and the revised norms are different for the three categories.

- (d) The Unit-1 and Unit-2 of the Petitioner's generating station of 2X500 MW were commissioned on 18.6.2015 and 29.8.2015 respectively. Accordingly, both the Petitioner's units fall under the second category, "TPPs (Units) installed after 1.1.2004 up to 31.12.2016". Further, the MoEFCC vide Notification dated 19.10.2020, revised the NO_x limit to 450mg/Nm³ against the limit of 300mg/Nm³ for units commissioned after 1.1.2004 up to 31.12.2016 in the light of the Hon'ble Supreme Court order dated 8.7.2020 in I.A. No. 12493/2020. Accordingly, the revised norm in the case of the Petitioner in respect of SO₂ (Sulphur Dioxide) and NO_x (Oxides of Nitrogen) is 200 mg/Nm³ and 450 mg/Nm³, respectively.
- (e) The Commission, on 7.3.2019, notified the 2019 Tariff Regulations and Regulation 29 deals with ACE on account of revised emission standards.

4. The Petitioner has filed the instant petition under Regulation 29 of the 2019 Tariff Regulations for approval of the capital cost for implementation of ECS to comply with the RES. The Petitioner has made the following prayers:

- (a) Approve Additional Capital Expenditure (ACE) for implementation of FGD system along with New Stack Bi-Flue Can with Borosilicate Lining & 5 MLD De-Salination Plant in order to meet revised RES;
- (b) grant liberty to approach the Commission for approval of implementation of ECS on account of Suspended Particulate Matter (SPM), NO_x, specific water consumption and Mercury Emission in future, if required;
- (c) Allow Additional Auxiliary Power consumption;
- (d) Allow additional O&M Expenses;
- (e) Allow the cost of reagents; and
- (g) Allow deemed availability on account of the shutdown.

5. The Petitioner has sought approval of the ACE proposed/ incurred towards the implementation of the following technology to meet the RES:



- i. Wet Lime-Based FGD for Sulphur Di-oxide (SO₂) control
- ii. Additional 8.5 MLD De-Salination Plant for the FGD process
- iii. One No. New RCC Chimney with Bi-Flue Can with Borosilicate lining

6. This order is issued considering the submissions made by the Petitioner mainly in the petition and the subsequent affidavits dated 18.6.2021, 11.1.2022, and 10.6.2023, note dated 31.8.2023 and the written submission dated 13.9.2023, TANGEDCO's reply vide affidavit dated 27.8.2020 and subsequent affidavit dated 9.7.2021, Petitioner's rejoinder to TANGEDCO's replies vide affidavits dated 13.8.2020 and 20.7.2021, respectively, PCKL's reply vide affidavit dated 17.7.2021 and its subsequent affidavit dated 12.5.2023 and the Petitioner's rejoinder to PCKL's reply vide affidavits dated 26.7.2021 and 26.5.2023, respectively, in the matter.

RE-Maintainability of the Petition

7. TANGEDCO has submitted that as per Regulation 11 of the 2019 Tariff Regulations, for in-principle approval of Additional Capital Expenditure (ACE) on account of 'change in law' events or '*force majeure*' conditions, the Petitioner is required to file a petition only after prior notice to the beneficiaries or the long-term customers. Further, Regulations 29(2) of the 2019 Tariff Regulations stipulates that the Petitioner is required to share the proposal under Regulation 29(1) of the 2019 Tariff Regulations and the proposal has to contain the details of the proposed technology as specified by the Central Electricity Authority (CEA), the scope of work, phasing of expenditure, schedule of completion, estimated completion cost including foreign exchange component, if any, detailed computation of indicative impact on tariff to the beneficiaries, and any other information considered to be relevant by the generating company. TANGEDCO has



submitted that the Petitioner has not shared any information with the utilities. The Petitioner is also required to obtain prior approval of the Commission before undertaking the expenditures for meeting the RES. However, the Petitioner has proceeded to issue a Notice Inviting Tender (NIT) without the approval of the Commission. TANGEDCO has submitted that the regulations clearly stipulate that the work can be taken up after sharing the proposal with the beneficiaries and filing of a petition for undertaking such ACE, but the Petitioner has proceeded to award a contract for consultancy without following the procedure. Therefore, the petition is liable to be dismissed and not maintainable on the grounds of non-compliance with the terms and conditions of the 2019 Tariff Regulations.

8. In response, the Petitioner has submitted that TANGEDCO's contention that the Petitioner has proceeded to implement the RES dated 7.12.2015 without giving due notice to the beneficiaries is wrong. The Petitioner has submitted that the instant petition is for in-principle approval of ACE (on an estimated basis) on account of the implementation of FGD along with a New Stack Bi-Flue Can with Borosilicate Lining and Additional De-salination Plant in the Petitioner's generating station to meet the RES, under Regulation 29(1) of the 2019 Tariff Regulations. The Commission may approve the proposed ACE after due consideration of the reasonableness of the cost estimates, indicative tariff to the beneficiaries, etc. The Petitioner has filed the instant petition providing all details as laid down in Regulation 29(2) and (3) of the 2019 Tariff Regulations. The same is in the form of a proposal to the beneficiaries, including TANGEDCO, and they have sufficient opportunity to ascertain whether the proposal given by the Petitioner for implementing the RES is in line with the CEA guidelines and prudent utility practices. Subsequently, Regulation 29(4) of the 2019 Tariff Regulations, provides



for a separate petition to be filed after the completion of implementation of RES by the generating company. The Petitioner has taken the following steps towards implementation of RES dated 7.12.2015:

a. Steps taken vis a vis installation of Flue Gas De-sulphurisation (FGD) Plant:

The estimate was approved by the NTPL Board on 11.9.2018. Tender Specification and Commercial conditions were approved by the Sub-committee of Directors of the Petitioner on 6.2.2019. Qualifying Requirements (QR) were approved by the Sub-committee of Directors of the Petitioner on 6.2.2019. The NIT was floated on 2.3.2019. Bids were opened on 24.6.2019. BHEL and BGR Energy participated in the bidding. Techno Commercial Meeting (TCM) held at Corporate Office, Neyveli on 20.8.2019 and 21.8.2019. Specification changes based on the TCM approved on 25.10.2019. Letter of Award (LoA) was issued to qualified bidder BHEL on 18.4.2020 vide LoA No.: COCONTS/0009H/NTPL/FGD/2019 dated 18.4.2020 and BHEL accepted the LoA on 24.4.2020. The contract price for the complete scope of work would be ₹631.50 crore including all taxes and duties. The completion of Trial Operation and Performance Guarantee Tests of the Plant & Equipment is as follows:

- i. Completion of Trial Operation: Unit-1: Within 27 Months from the date of LoA and Unit-2: Within 33 Months from the date of LoA
- ii. Completion of Performance Guarantee Test: Unit-1: Within 30 Months from the date of LoA and Unit-2: Within 36 Months from the date of LoA.

b. Steps taken vis a vis Additional De-salination Plant:

The NIT was issued on 4.10.2019. The Pre-Bid meeting was conducted on 23.10.2019. 11 bidders participated in the Pre-Bid Meeting. Bids (Part-I) were opened on 14.2.2020. Four firms qualified. Approval for change in specification after TCM with the bidder, submitted to the Sub-committee of Directors of the Petitioner on 31.7.2020. The Sub-committee of Directors of the Petitioner deferred the proposal. An alternate route for the outfall piping system to be expedited and the proposal to be resubmitted for approval.



Later, vide affidavit dated 10.6.2023 the Petitioner submitted the following re-tendering process:

NIT was issued on 30.4.2022. The Pre-bid meeting was conducted on 18.5.2022 through VC. Eight (8) bidders participated in the Pre-bid Meeting. Bids were opened on 8.7.2022. Five bidders, namely, BHEL, BGRE, Thermax, Tecton and Triveni Engg. have submitted their Bids. Tecton emerged as RL1 Bidder. LoA for the construction of an Additional De-salination Plant was issued to Tecton on 17.5.2023 at the contract price of ₹90.55 crore excluding taxes & duties and ₹106.85 crore including taxes & duties.

c. Steps taken vis a vis Additional Chimney:

The Revised Tender No: CO/Conts/0010k/RT/NTPL/Additional Chimney/2020 by Domestic Competitive Bidding (DCB) route was floated on 1.7.2020. Pre-bid meeting was conducted on 15.7.2020. The bid was opened on 14.8.2020. LoA for construction of Additional Chimney with Borosilicate lined Bi-flue Can arrangement for FGD Plant was issued to BHEL on 18.11.2021 at the contract price of ₹72.03 crore excluding taxes & duties and ₹85.00 crore including taxes & duties.

9. The Petitioner has further submitted that the Petitioner has followed prudent utility practices for the implementation of the RES and it has not acted in any way contrary to the provisions of the 2019 Tariff Regulations.

10. We have considered the rival submissions. The main contention of TANGEDCO is that the Petitioner has not shared the proposal with the beneficiaries as required under the 2019 Tariff Regulations and hence the petition is not maintainable. On the contrary, the Petitioner has contended that it had followed prudent utility practices for the implementation of the RES as per the provisions of the 2019 Tariff Regulations. The instant petition is filed under Section 79 of the 2003 Act read with Regulation 29 of the



2019 Tariff Regulations for “in-principle” approval of ACE towards the installation of ECS in compliance with the MoEFCC Notification. TANGEDCO has contended that the instant petition is not maintainable as the Petitioner has not shared the proposal for the installation of ECS in the subject generating station as mandated under Regulations 29(1) of the 2019 Tariff Regulations. The 2019 Tariff Regulations provide for the procedure for claiming ACE on account of the implementation of ECS in Regulation 29, which is as follows:

“29. Additional Capitalization on account of Revised Emission Standards:

(1) A generating company requiring to incur additional capital expenditure in the existing generating station for compliance of the revised emissions standards shall share its proposal with the beneficiaries and file a petition for undertaking such additional capitalization.

(2) The proposal under clause (1) above shall contain details of proposed technology as specified by the Central Electricity Authority, scope of the work, phasing of expenditure, schedule of completion, estimated completion cost including foreign exchange component, if any, detailed computation of indicative impact on tariff to the beneficiaries, and any other information considered to be relevant by the generating company.

(3) Where the generating company makes an application for approval of additional capital expenditure on account of implementation of revised emission standards, the Commission may grant approval after due consideration of the reasonableness of the cost estimates, financing plan, schedule of completion, interest during construction, use of efficient technology, cost-benefit analysis, and such other factors as may be considered relevant by the Commission.

(4) After completion of the implementation of revised emission standards, the generating company shall file a petition for determination of tariff. Any expenditure incurred or projected to be incurred and admitted by the Commission after prudence check based on reasonableness of the cost and impact on operational parameters shall form the basis of determination of tariff.”

11. As per the procedure laid down in Regulation 29 of the 2019 Tariff Regulations, a generating company intending to incur ACE towards the installation of ECS shall share its proposal with the Respondents and file a petition for undertaking ACE under Regulation 29(1) of the 2019 Tariff Regulations and as per Regulation 29(2), the proposal should contain the details of the proposed technology as specified by CEA and other



relevant information. The Commission may approve, on an application by the generating station, the proposed ACE towards the installation of ECS after a prudence check as provided in Regulation 29(3) of the 2019 Tariff Regulations. As per Regulation 29(4) of the 2019 Tariff Regulations, the generating station has to file a petition for determination of tariff after implementation of ECS.

12. It is observed that the Petitioner had initiated the action for installation of the FGD for a reduction in the SO₂ emissions on 11.9.2018 when the estimate for the same was approved by the Petitioner's Board of Directors. The Commission notified the 2019 Tariff Regulations on 7.3.2019, which came into force on 1.4.2019. Therefore, the mandate to share the proposal for any ACE due to RES with the beneficiaries arose only on 1.4.2019. Accordingly, the Petitioner could not have shared the proposal for the installation of FGD, which was initiated in 2018, with the beneficiaries. However, it is noticed that the Petitioner initiated the action for the installation of the Additional Desalination Plant and the Additional Chimney in the years 2019 and 2020 respectively and the Petitioner should have shared this proposal for the installation of the Additional Desalination Plant and the Additional Chimney with TANGEDCO in accordance with Regulation 29(1) of the 2019 Tariff Regulations. There is no explanation for this from the Petitioner except that it has followed prudent utility practices in the implementation of the RES. We are of the view that the Petitioner should have shared the proposal for the installation of ECS with the beneficiaries as envisaged under Regulation 29(1) of the 2019 Tariff Regulations before filing the instant petition for "in-principle" approval of ACE due to the implementation of ECS. At the same time, it is observed that Regulation 29(1) of the 2019 Tariff Regulations neither specifies any timeline for sharing of the proposal



and filing of the petition, nor does it provide for furnishing any comments or objections by the Respondents. As per the said Regulation, the Petitioner has to share the proposal for installation of ECS with the Respondents/ beneficiaries for their information prior to or at the time of filing the petition. In the instant case, the Petitioner has shared the proposal with the Respondents while filing the petitions. A copy of the petition is automatically served on the Respondents upon uploading the petition in the e-filing portal of the Commission. Therefore, we are unable to agree with the Respondents that the instant petition is not maintainable on this ground.

13. In this connection, we also notice that the Petitioner is a joint venture of NLC India Limited and TANGEDCO and one of the Directors in the Petitioner's Board is a nominee of TANGEDCO and that the Petitioner's Board, comprising the TANGEDCO's nominee, had approved the implementation of the FGD, Additional De-salination Plant and the Additional Chimney. Thus, TANGEDCO was involved in the various stages of approval implementation of the FGD, Additional De-salination Plant and the Additional Chimney in the Petitioner's generating station for reduction of the SO₂ emissions and was aware of the developments in this regard.

14. TANGEDCO has submitted that the Petitioner was aware of the notification dated 7.12.2015 of MoEFCC and it is mandatory for the Petitioner to comply with the same. However, the Petitioner has failed to take the necessary steps in time for the installation of the ECS. TANGEDCO has submitted that the Petitioner filed the instant petition on 23.1.2020 and has not given any explanation for not taking any action for four years and for not filing the petition within the stipulated three-year limitation. The claim of the



Petitioner in the year 2020 for inclusion of the cost to be incurred is time-barred. The Hon'ble Supreme Court held in the case of A.P. Power Coordination Committee Vs Lanco Kondapalli Ltd (2016) 3 SCC 468, (Para 31), that a claim coming before the Commission cannot be entertained or allowed if it is barred by limitation prescribed for an ordinary suit before the civil court. Therefore, the petition may be dismissed and the cost of implementing the FGD may be borne by the Petitioner and cannot be passed on to consumers through the utilities.

15. In response, the Petitioner has denied that it has not taken any steps during the four years and in support has submitted the following chronology of events:

- i. The COD of Unit 1 and Unit 2 is 18.6.2015 and 29.8.2015, respectively.
- ii. The MoEFCC Notification dated 7.12.2015 mandated all thermal power plants to comply with the RES as specified in the said notification.
- iii. In December 2017, the CEA issued the Standard Technical Specification for the retrofit of a Wet Limestone Based Flue Gas De-sulphurisation (WFGD) System in a Typical 2x500 MW Thermal Power Plant.
- iv. On 21.12.2017 LoA was issued to Development Consultants Private Limited (DCPL), Kolkata, for consultancy services to study the implementation of RES.
- v. On 28.3.2018, DCPL submitted a study report and recommended WFGD and an Additional De-salination Plant to cater to the needs of the FGD process and an Additional Bi-Flue Chimney with Borosilicate Lining for the Thermal Power plant.
- vi. Thereafter, on 30.5.2018, the Ministry of Power (MoP), in the exercise of its powers conferred under Section 107 of the Electricity Act, 2003, issued directions to the Commission to develop the appropriate regulatory mechanism in this regard.
- vii. The Commission vide order dated 20.7.2018 in Petition No. 98/MP/2017 gave liberty to NTPC to approach the Commission for in-principle approval of capital



cost, after consultation with CEA.

- viii. Thereafter, the Commission on 7.3.2019 notified the 2019 Tariff Regulations and Regulation 29 of the said regulation provided for ACE on account installation of ECS in compliance with RES.

16. Further, the Petitioner has relied upon the APTEL's judgment dated 15.2.2011 in Appeal No. 173/2009 (Tata Power Company Limited VS Maharashtra Electricity Regulatory Commission), where it was held that statutory expenses are uncontrollable factors and generators should be allowed for pass through of uncontrollable factors. The Petitioner has submitted that the contentions of TANGEDCO are devoid of merit and hence, may be rejected.

17. We have considered the rival submissions. TANGEDCO has submitted that the Petitioner's claim for 'in-principle approval' in the year 2020 is time-barred and it may not be allowed, and the cost of installation of ECS should be borne by the Petitioner and cannot be passed on to consumers through the utilities. We have gone through the chronology of events submitted by the Petitioner. It is observed that the Petitioner commissioned its units in June and September 2015. The MoEFCC issued the RES for TPPs in December 2017, and CEA issued the technical specifications for TPPs in December 2017, thereafter, the Petitioner initiated action by placing the LoA to DCPL for a study on the implementation of ECS on 21.12.2017, which was submitted by DCPL on 28.3.2018. Thereafter, the cost estimate towards the installation of the FGD and the issue of LoA was approved by the Board of Directors in 2018 and, accordingly, the Petitioner issued the LoA for implementation of the FGD, Additional De-salination Plant and the Additional Chimney in the Petitioner's generating station in 2020, 2022 and 2021



respectively. It is observed that the delay in the issue of NoA in the case of the additional de-salination plant was due to rebidding due to technical reasons. The identification of suitable ECS to comply with RES, subsequent calling of bids, selection of L1 bidder and placing of NoA as per the procedure laid down and approval of the Board of Directors is a long-drawn process. We have perused the chain of events and it is observed that the Petitioner initiated action after the technical specifications were issued by CEA in 2017 and placed the NoAs starting from 2000 to 2022. As pointed out by TANGEDCO, the Petitioner took a long time to issue the NoA. We are of the view that the Petitioner could have gone through this process from the identification of suitable technology to the issue of NoA and installation of ECS in a shorter time period. Taking into consideration that the Petitioner had to conduct re-bidding in case of the additional de-salination and the process of identification of technology to installation of ECS, which includes approval of the Petitioner's Board, involves various agencies, we condone the time taken by the Petitioner. Accordingly, we do not agree with TANGEDCO's contention that the Petitioner should bear the ACE, on account of the installation of ECS, as there is a delay on the part of the Petitioner, especially when MoEFCC has extended the time limit for installation of ECS, vide Notification 1.4.2021, to comply with the RES and the also provided for levy of environment compensation in case of any delay in implementation of the ECS by the generating stations beyond the specified timelines. Accordingly, TANGEDCO's plea for dismissal of the petition and direction to the Petitioner to bear the capital cost of ECS is rejected.

Submissions of the Petitioner

18. The Petitioner, based on the capital cost of ECS discovered through competitive



bidding and the operating parameters recommended by CEA in its letter dated 20.2.2019 for working out the indicative tariff. The normative parameters considered for computing supplementary tariff on the capital cost, phasing of funds and operating parameters are as follows:

SI. No.	Description	Data
1	Capital Cost for FGD (₹668.5 crore including GST @ 18%), New Bi-Flue Can Chimney and additional 5 MLD De-Salination Plant (₹149.86 crore including 18% GST)	818.36
2	Normative Specific Limestone/ Reagent Consumption (kg/kWh)	0.0128
3	Rate of Limestone (₹/Ton)	3000
4	Additional Auxiliary Power Consumption (APC) (FGD & De-Salination Plant)	1.2 %
5	Additional O&M (including New Bi-Flue Can Chimney and 5 MLD De-Salination Plant)	6% of capital cost
6	Shutdown Period for each Unit for connecting flue gas duct with FGD system & Chimney	15 days

19. Based upon the above details, the indicative supplementary tariff impact due to implementation of FGD to comply with RES is - Fixed Cost (FC): 26.60 Paise/kWh, Variable Cost (VC): 7.80 Paise/kWh (1st year) and Fixed Cost (FC): 26.51 Paise/kWh, Variable Cost (VC): 7.80 Paise/kWh (levelized).

20. The Petitioner vide affidavit dated 18.6.2021 has submitted the past 3 years' SO₂ and NO_x emissions levels to the pollution control board and the same is as follows:

Year	SO ₂ (mg/Nm ³)		NO _x (mg/Nm ³)	
	Unit 1	Unit 2	Unit 1	Unit 2
2018	267.56	226.92	224.03	317.39
2019	448.34	363.32	450.97	383.73
2020	266.66	371.73	302.71	392.74

21. On the basis of the submissions made by the Petitioner, the following three issues



arise for our consideration as part of the prudence check (a) Selection of suitable ECS, (b) Approval and the bidding process and (c) Capital cost and cost break-up of WFGD System of the identified ECS. We deal with them in the following paragraphs.

Selection of suitable ECS

22. The gist of the submissions made by the Petitioner are as follows:

I. Wet Flue Gas De-sulphurization System (WFGD) (for SO₂ control)

(a) FGD system includes supply, installation and commissioning of equipment/system viz. Absorbers, Pumps, Vibrating Feeders, Conveying Systems, Wet Ball Mills, Storage Tanks, Cyclones, Fans/ Blowers/ Compressors, Controls & Instrumentation (C&I) System etc.

(b) The Petitioner started the implementation process of FGD to comply with the Revised MoEFCC Emission Standards pertaining to the SO₂ control system immediately after the Notification. Since the time needed is much more in comparison to other schemes and, pre-award activities such as identification of suitable proven technology based on the geographical location of the station, identification of vendors, engineering, tendering, location survey etc. consume a substantial amount of time, DCPL was appointed as consultant for FGD on 21.12.2017. Further, the Petitioner prepared specifications and proceeded to issue NIT for FGD based on Wet Limestone Technology.

(c) Regulation 29 provides that the technology adopted by the generator for implementing various schemes to comply with new emission standards shall be as specified by the CEA. CEA, in its "Standard Technical Specification for retrofit of WFGD system in a typical 2 x 500 MW Thermal Power Plant" issued in December 2017, published specifications only for WFGD. The Consultants after conducting a study of the options of Wet Limestone based FGD (WFGD) system, Dry FGD system, Ammonia based FGD system and Sea Water based FGD system, recommended the WFGD system for SO₂ control due to the



following reasons:

- (i) WFGD is a mature technology being adopted in all plants in India as of today
 - (ii) CEA has also recommended the use of the WFGD system in their standard specification
 - (iii) Ammonia-based FGD plant is yet to be proven for adoption in large units having more than 500 MW
 - (iv) Ammonia being hazardous has to be handled carefully
 - (v) Dry FGD system is adaptable for units of smaller units of smaller sizes
 - (vi) Sea Water FGD may require a huge quantum of additional seawater intake and corresponding outfall system and permissions from various statutory authorities.
- (d) Therefore, the Petitioner selected the WFGD system. WFGD system is a wet scrubbing process which uses limestone or lime as a reagent and this technology is most frequently selected for SO₂ reduction from coal-fired utility boilers. WFGD system removes SO₂ by scrubbing the flue gas with limestone slurry. Flue gas is treated in an absorber by passing the flue gas stream through a limestone or lime slurry spray. In typical absorber design, the gas flows upward through the absorber counter current to the spray liquid flowing downward through the absorber.
- (e) After the commissioning of the Wet Limestone FGD, the outlet SO₂ from each unit is envisaged as 150 mg/Nm³.

II. Additional 8.5 MLD De-Salination Plant for the WFGD process

- (a) The Petitioner has proposed an Additional De-salination plant of 8.5 MLD for the Supply, Installation and Commissioning of Equipment, Controls & Instrumentation (C&I) Systems etc.
- (b) At the time of the Project Engineering Stage, an FGD system was not required; Therefore, the Existing De-salination Plant (20 MLD) consisting of 3 x 270 m³/hr Sea Water Reverse Osmosis (SWRO) Skids, designed and installed on



- the project site. Two SWRO Skids are in operation to cater for the needs of De-Mineralized Water for two Boilers, service water & fire water requirements and one SWRO Skid is kept in Stand-by mode.
- (c) The 3rd SWRO Skid is brought into service intermittently during regeneration of resins in any one of the 4 Condensate Polishing Units (CPU) at the main plant, regeneration of resins in any one of the 2 mixed beds at the de-salination plant, opening of the blow down to maintain water chemistry regime in Boilers, periodical maintenance in any of the operational SWRO skids and during start-up & shut down of the units.
- (d) As the 3rd SWRO Skid (270 m³/hr) is also brought into service intermittently to meet various water requirements of the plant, it is not possible to supply water to the FGD System from the existing De-salination plant continuously as the water requirement to FGD process is 300 m³/hr. Therefore, an Additional De-salination Plant (SWRO) of capacity 360 m³/hr (8.5 MLD) having two streams of each 60% capacity (2 x 180 m³/hr) has been proposed to cater the needs of the FGD process continuously.
- (e) Initially, the Petitioner has submitted that the water requirement for the FGD process is to be met through a separate De-Salination plant. Therefore, an additional De-Salination Plant of 5 MLD capacity for service water requirements of the proposed FGD is to be carried out through a separate contract. Later, the Petitioner, in its rejoinder to TANGEDCO's reply, has submitted that inadvertently the capacity of the Additional De-salination Plant was mentioned as 5 MLD instead of 8.5 MLD in the petition and has prayed to take the same correction on record.

III. One No. New RCC Chimney with Bi - Flue Can with Borosilicate lining

The Petitioner has opted for one number of RCC Chimney of 150 meters, in height and 7.53 meters, in diameter with an MS Bi-Flue Can lined with borosilicate from 45 meters height to the top of the flue can with exit flue gas



velocity of 16.5 m/sec and Installation & Commissioning of Control & Instrumentation (C&I) System for monitoring emission.

- (a) CEA, in its specification, has recommended providing a New Wet Stack for FGD or to utilize the existing stack after providing the necessary borosilicate lining. As per the Electric Power Research Institute (EPRI) wet stack design guide, the velocity of the flue gas treated by WFGD should be limited to 18.3 m/sec in order to avoid any carryover of sulphuric acid. However, the exit flue gas velocity is above the limiting value of 18.3 m/s in the existing Bi-Flue Can Chimney. Therefore, the Petitioner has opted for a new RCC Chimney.

23. TANGEDCO has submitted that the Petitioner has proposed to install an Additional De-salination Plant of 8.5 MLD capacity for the service water requirement of the FGD. TANGEDCO has submitted that the Petitioner has not explained the need for an Additional De-salination Plant of 8.5 MLD capacity for the FGD Plant. The Petitioner has neither elaborated on the capacity of the present de-salination plant, the requirement of service water per day for the proposed FGD system and the need for an additional plant of 8.5 MLD capacity nor specified any water charges. TANGEDCO has also requested to dismiss the Petitioner's claim of installation of an Additional De-salination Plant in the absence of proper justification.

24. In response, the Petitioner has reiterated its submissions and further submitted that there is no annual maintenance in the de-salination plant and therefore, breakdown maintenance and preventive maintenance works are carried out by stopping one of the 3 Skids. It is not possible to cater to the needs of the FGD process continuously from the existing De-salination Plant. Therefore, the Petitioner has proposed to install an Additional De-salination Plant of 8.5 MLD capacity.



25. We have considered the submission of the Petitioner and TANGEDCO. As per the RES issued by MoEFCC, the norm applicable in the case of the instant generating station is 200 mg/Nm³. As per the submissions made by the Petitioner, the SO₂ emissions during 2018, 2019 and 2020 in Unit-1 were 267.56 mg/Nm³, 448.34 mg/Nm³, 266.66 mg/Nm³ and in Unit-2 it was 226.92 mg/Nm³, 363.32 mg/Nm³ and 371.73 mg/Nm³ respectively. Thus, the SO₂ emission levels from the generation station are more than the norms of MoEFCC. Therefore, the Petitioner is required to install ECS to comply with the RES notified by MoEFCC. Accordingly, the Petitioner has proposed WFGD, an additional RCC Chimney with a Bi-Flue Can with Borosilicate lining and an additional 8.5 MLD desalination plant to meet the water requirement for the WFGD process in order to control the SO₂ emission levels and to comply with the RES of MoEFCC. As regards WFGD, the Petitioner has submitted that it is a time tested technology adopted widely in the country, it is better than the other technologies available, and it is most suitable for the Petitioner's generating station. The Petitioner has further submitted that CEA, in December 2017, in its technical specifications for a typical 2x500 MW "Thermal Power Plant", has recommended WFGD, and it is also recommended by the Consultant appointed by the Petitioner after thorough study.

26. As regards the additional chimney proposed by the Petitioner, the Petitioner has submitted that an additional RCC chimney is proposed as the exit flue gas velocity in the existing Bi-Flue Can Chimney is above the limiting value of 18.3 m/s as per the CEA recommendation and EPRI design guide. The Petitioner has further submitted that it has been designed specifically taking into consideration the requirements of the Petitioner's generating station and it meets the specification recommended by CEA and EPRI. As



regards the proposal for installation of an additional de-salination plant of 8.5 MLD capacity, the Petitioner has submitted that the existing de-salination plant consists of 3 SWRO Skids and two of them are in operation to cater to the needs of d3-mineralized water for two boilers, service water and fire water requirements and the third SWRO is kept in standby mode. The third SWRO is brought into service intermittently to meet the water requirements of the plant and it is not possible to supply water to the WFGD system proposed, which requires a continuous water supply. Therefore, the Petitioner has proposed an additional de-salination plant of 8.5% MLD to meet the water requirement for the WFGD process.

27. The Petitioner has selected the WFGD, additional chimney and the additional de-salination plant taking into consideration the requirements of the generation station and as they are the most suitable technology for the reduction of SO₂ emissions of the Petitioner's generating station. It is observed that the Petitioner's Board has also approved the proposed ECS and it is as per the CEA's recommendations. In view of the above, we approve the installation of WFGD, an additional chimney and an additional de-salination plant in Petitioner's generating station.

Approval and the Bidding Process

28. The Petitioner has submitted that the Petitioner has carried out Domestic Competitive Bidding (DCB) in adherence to the 'Make in India Policy' by the Government of India for the WFGD system, Additional De-salination Plant and Bi-Flue Can Chimney and the additional de-salination plant. The Petitioner has made the following submissions in respect of the bidding, identification of the L1 bidders and issue of NoA:

(a) Initially, the estimated cost for implementation of WFGD was ₹668.50 crore



(including GST @ 18%). WFGD system is to be implemented in both units of the Petitioner, which would take about 27 months and 33 months for implementation from the date of award for the first unit and second unit, respectively. Later vide affidavit dated 11.1.2022, the Petitioner submitted that for implementation of FGD, LoA was issued to BHEL on 18.4.2020. The contract price for FGD implementation is ₹535.17 crore, excluding taxes & duties and ₹631.50 crore including taxes & duties. The contract price is amended by pruning down the price of mandatory spares. The amended price of FGD is ₹527.03 crore excluding taxes & duties and ₹621.90 crore including taxes and duties and the approval of the Board of Directors is submitted vide affidavit dated 11.1.2022.

- (b) For Additional De-salination Plant NIT was floated on 30.4.2022. Five bidders, namely, BHEL, BGRE, Thermax, Tecton and Triveni Engg submitted their bids. Tecton emerged as the L1 bidder. Therefore, the LoA for the construction of the Additional De-salination Plant was issued to Tecton on 17.5.2023. The contract price of the Additional De-salination Plant is ₹90.55 crore excluding taxes & duties and ₹106.85 crore including taxes & duties. (LoA receiving and an acceptance from Tecton is submitted vide affidavit dated 10.6.2023)
- (c) Revised tender by DCB route was floated on 3.7.2020 for an additional chimney. Two bidders participated in the bid and both qualified. After the opening of the bid, BHEL qualified as an L1 bidder. LoA was issued to BHEL on 18.11.2021 with a contract price is ₹72.03 crore excluding taxes & duties and ₹85.00 crore including taxes & duties. (LoA receiving and an acceptance from BHEL is submitted vide affidavit dated 11.1.2023)

29. We have considered the submission of the Petitioner. The Petitioner has submitted that the entire process, from the identification of the suitable technology to the Notice of Award (NoA) to the selection of the bidders, have has been done in a fair and transparent manner. The Petitioner has submitted that BHEL has been awarded the tender for the WFGD system and Additional Chimney, whereas TECTON has been awarded the tender



for an Additional De-salination Plant. The Petitioner has submitted the approval of the amended price of WFGD by its Board of Directors in its 101st meeting on 23.6.2021, vide affidavit dated 11.1.2022. The Petitioner has also submitted the LoA receiving and acceptance from Tecton and BHEL for Additional De-salination Plant and an additional Chimney vide affidavits dated 10.6.2023 and 11.1.2023, respectively. In view of the above, we hold that the Petitioner has carried out the bidding process in a fair and transparent manner and it has the approval of the Petitioner's Board of Directors.

Cost Break-up of WFGD System

30. The Petitioner, vide affidavit dated 10.6.2023, has claimed the following capital cost/ACE towards the installation of ECS to control the SO₂ emissions in compliance with the RES issued by MoEFFC:

(a) The break-up of the capital cost of the WFGD System including Additional Chimney submitted vide affidavit dated 11.1.2022 is as follows:

(₹ in lakh)									
Unit No.	Capacity (MW)	CEA's indicative hard cost (per MW)	Hard cost claimed (per MW)	Total IDC claimed	Total IEDC claimed	Total FERV claimed	Total taxes & duties claimed	Total other costs claimed	Total costs claimed
1	500	40.50	59.91	2165.36	381.99	0.00	5391.59	0.00	37892.24
2	500	40.50	59.91	2165.36	381.99	0.00	5391.59	0.00	37892.24

(b) The break-up of capital cost for Additional De-salination Plant submitted vide affidavit dated 10.6.2022 is as follows:



(₹ in lakh)

Package	Hard Cost	Hard cost claimed (per MW)	Total IDC claimed	Total IEDC claimed	Total FERV claimed	Total taxes & duties claimed	Total other costs claimed	Total costs claimed
Additional De-salination Plant	9055.08	9.06	507.04	-	-	1629.92	-	11192.04

31. TANGEDCO has submitted that the Petitioner has proposed to incur a huge expenditure of ₹786.87 crore for the installation of ECS systems including an Additional De-salination plant. CEA, in the guidelines, has stated that the indicative cost based on open competitive bidding is around ₹40.50 lakh through open competitive bidding for 500 MW Units for the projects already awarded. The Petitioner has indicated a cost of ₹631.50 crore for the FGD system and ₹155.37 crore towards the New stack and Additional De-salination plant. The total expenditure works out to an additional ₹786.87 crore, which is nearly double the indicative amount recommended by CEA. TANGEDCO has submitted that the cost may be restricted to the norms provided by CEA.

32. PCKL has submitted that the Petitioner has proposed to incur a huge expenditure of ₹599.06 crore for the installation of FGD with the construction of an Additional Chimney, whereas the indicative hard cost as per the CEA's guideline is ₹40.5 lakh/MW excluding taxes and duties for 500 MW capacity group. The capital cost claimed by the Petitioner is 47.925% higher than the CEA indicative hard cost. Therefore, the cost of WFGD may be limited to the benchmark cost fixed by CEA and the cost over and above the base cost may be disallowed. The operating cost (OPEX) of FGD will be dependent on reagent cost (if any), cost of additional water consumption, O&M manpower cost, APC of FGD, by-product handling and revenue earned through disposal of by-product (if any) etc. PCKL has submitted that the existing environmental related funds by the sale of fly



ash and by-products should be exhausted first for expenditure towards ECS installations, and only the remaining capital costs have to be claimed by the Petitioner under this mechanism. Revenue through the sale of such by-products should be adjusted periodically in the supplementary energy charges through proper disclosure and certified documents. Therefore, the cost of FGD may be limited to the benchmark cost fixed by CEA and disallowed over and above the base cost fixed by CEA.

In response to TANGEDCO's and PCKL's reply, the Petitioner has submitted that as per the CEA Norms, the recommended capital cost for installation of WFGD is ₹40.50 lakh/MW for 500 MW Units and is only indicative in nature and discovered through Open Competitive Bidding for the projects already awarded. The approval of ACE on account of the implementation of the FGD system will be after due consideration of the reasonableness of the cost estimates, financing plan, schedule of completion, interest during construction, use of efficient technology, cost-benefit analysis and such other factors considered by the Commission. The Petitioner has opted for the WFGD system for SO₂ control based on various factors suggested by the consultant viz., mature technology, CEA recommendation, Safety, etc. The Petitioner has floated the tender for 'Installation of FGD System at the Petitioner's Plant' through International Competitive Bidding. Subsequently, the tender was cancelled and floated through Domestic Competitive Bidding due to the 'Make in India Policy' initiative by the Government of India. The Petitioner has submitted that the contract price of FGD and the additional chimney has been discovered from the domestic market. The number of bidders available for the installation of FGD and its associated packages is less in the Domestic Market. As the competition is less, the awarded price, even after reverse bidding, is higher than the



indicative cost by CEA. The Petitioner has further submitted that the income generated from the sale of gypsum or other by-products will be reduced from the operation and maintenance expenses as per Regulation 35(1)(7) as notified vide the 2019 Tariff Regulations. Therefore, the contentions of TANGEDCO and PCKL are baseless.

33. We have considered the submissions of the Petitioner, TANGEDCO and PCKL on the cost of ECS claimed by the Petitioner. The Petitioner has claimed a hard cost of ₹59.91 lakh/MW (without GST) towards the installation of the WFGD system including an additional chimney and ₹9.06 lakh/MW for additional de-salination plant in its 2x500 MW Plant against the CEA recommended hard cost of ₹45.00 lakh/MW. TANGEDCO and PCKL have submitted that the Petitioner's claim is higher than the CEA recommended cost and therefore, may be limited to the benchmark cost fixed by CEA. In this regard, the Petitioner has contended that the CEA norms are only indicative in nature, and the claims made by the Petitioner are based on the price discovered through Open Competitive Bidding. The Petitioner has also submitted that as the competition in the domestic market is less, the awarded price, even after reverse bidding, is higher than the indicative cost of CEA. PCKL has further contended that the Petitioner should adjust the revenue through the sale of by-products periodically in the supplementary energy charges, to which the Petitioner has already stated that the same will be adjusted as provided in the 2019 Tariff Regulations. Therefore, we do not go into this contention of PCKL.

34. As regards the cost of ECS claimed by the Petitioner, it is observed that the Commission has already recognized in the order dated 23.4.2020 in Petition No.



446/MP/2019 and the order dated 6.5.2020 in Petition No. 209/MP/2019 that the cost recommended by CEA is indicative in nature and that it is not possible to indicate the exact cost that can be discovered through a competitive bidding process. The hard cost of ₹59.91 lakh/MW claimed by the Petitioner towards the installation of WFGD and an additional chimney and the hard cost of ₹9.06 lakh/MW claimed towards additional de-salination plant, is more than the CEA recommended cost. However, the same has been discovered through the Domestic Competitive Bidding process and has been duly approved by the Board of Directors of the Petitioner. Taking into consideration that the per MW hard cost suggested for the WFGD system by CEA is indicative in nature, the cost recommended by CEA is more than two-three years old and the CEA has already recognised the need for revising the cost recommended by it earlier and that the cost claimed by the Petitioner is discovered through a competitive bidding process, we approve the hard cost of ₹59.91 lakh/MW towards the installation of WFGD and additional chimney and the hard cost of ₹9.06 lakh/MW towards additional de-salination plant as claimed by the Petitioner in order to meet SO₂ emission norms.

Liberty to approach the Commission

35. The Petitioner has submitted that the MoEFCC Notification mandates revised ECNs for specific water consumption, suspended particulate matter (SPM) and mercury emission, besides SO₂. As the Petitioner's plant meets the norms in respect of water consumption, mercury and particulate matter as stipulated by the MoEFCC Notification, no claim has been made in respect of them in the instant petition. However, the Petitioner has sought liberty to approach the Commission if the Petitioner's plant is unable to meet those norms and work(s) pertaining to the same is required to be undertaken in future.



36. We have considered the submissions of the Petitioner. Any claim made by the Petitioner in future towards control of water consumption and for installation of ECS for control of mercury emissions and particulate matter, would be dealt with as per the applicable laws and regulations.

37. It is observed that the Petitioner has also claimed a grant of additional Auxiliary Power consumption, additional O&M Expenses, cost of reagents and deemed availability on account of shutdown due to the installation of ECS under Regulation 76 (Power to Relax) of the 2019 Tariff Regulations. These claims are contested by TANGEDCO and PCKL. As the instant petition is for in-principle approval of the capital cost/ACE towards the installation of ECS in the Petitioner's generation station in compliance with the RES issued by MoEFCC, we are not considering the Petitioner's claim for grant of additional APC, additional O&M Expenses, cost of reagents and deemed availability on account of shutdown in this order will be considered as per the applicable regulations and laws in the petition to be filed by the Petitioner for determination of supplementary tariff under Regulation of 29(4) of the 2019 Tariff Regulations after implementation of ECS.

38. This order disposes of Petition No. 200/MP/2020 in terms of the above discussions and findings.

sd/-
(P. K. Singh)
Member

sd/-
(Arun Goyal)
Member

sd/-
(I. S. Jha)
Member

sd/-
(Jishnu Barua)
Chairperson

