CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 94/MP/2019,
Petition No. 459/MP/2019,
Petition No. 460/MP/2019,
Petition No. 461/MP/2019,
Petition No. 462/MP/2019,
and
Petition No. 463/MP/2019

Coram:

Shri P.K. Pujari, Chairperson
Shri I. S. Jha, Member
Shri P. K. Singh, Member

Date of Orders: 20.09.2021

Petition No. 94/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 14(3)(ii) and Regulation 8(3)(ii) of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2014 for approval of expenditure on installation of various Emission Control Systems as detailed in this Petition at Durgapur Steel Thermal Power Station (2x500 MW) in compliance of Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

Damodar Valley Corporation,
DVC Towers, VIP Road,
Kolkata-700052. **…. Petitioner**

Vs

1. Punjab State Power Corporation Limited,
   Inter-State Building Shed No. TI-A,
   Patiala-147001.

2. Tata Steel Limited,
   PGP Works, General Office (W-175),
   Jamshedpur-831001. **…..Respondents**

Petition No. 459/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with applicable Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of expenditure on installation of various Emission Control Systems as detailed in this Petition at Bokaro 'A' Thermal Power Station (1x500 MW) in compliance of Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

Damodar Valley Corporation,
DVC Towers, Maniktala,
Civic Tower, VIP Road,
Kolkata-700054. **…. Petitioner**

Vs

1. Punjab State Power Corporation Limited,
   Inter-State Building Shed No. TI-A,
   Patiala-147001. **…..Respondents**

Petition No. 460/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with applicable Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of expenditure on installation of various Emission Control Systems as detailed in this Petition at Koderma Thermal Power Station (2x500 MW) in compliance of Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

Damodar Valley Corporation,
DVC Towers, Maniktala,
Civic Tower, VIP Road,
Kolkata-700054. **…. Petitioner**

Vs

1. Haryana Power Generation Corporation Limited,
   Haryana Power Purchase Centre (HPPC),
   2nd Floor, Shakti Bhawan,
   Sector-6, Panchkula, Haryana-34109.

2. Bangalore Electricity Supply Company Limited (BESCOM),
Power Purchase, 2nd block,
2nd floor, Corporate Office,
K. R. Circle, Bangaluru-560001.

3. Chamundeshwari Electricity Supply Corporation Limited,
No. 29, Kaveri Gramin Road,
Vijay Nagar, 2nd Stage, HINKAL,
Corporate Office, Mysore-570009.

4. Gulbarga Electricity Supply Company Limited (GESCOM),
Corporate Planning, Station Road,
Kalaburagi, Karnataka-585102.

5. Hubli Electricity Supply Company Limited (HESCOM),
Navanagar, P. B. Road, Hubli-580025.

6. Mangalore Electricity Supply Company Limited (MESCOM),
4th floor, Paradigm Plaza,
A. B. Shetty Circle,
Mangaluru-575001.

7. Jharkhand Bijli Vitran Nigam Limited (JBVNL),
Jharkhand Urja Vikash Nigam Limited,
Engineering Building, HEC Complex,
P.O. Dhuruwa, Ranchi-834004. **…..Respondents**

Petition No. 461/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with applicable Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of expenditure on installation of various Emission Control Systems as detailed in this Petition at Mejia Thermal Power Station Unit 1 to 6 (4x210 MW + 2x250 MW) in compliance of Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

Damodar Valley Corporation,
DVC Towers, Maniktala,
Civic Tower, VIP Road,
Kolkata-700054. **…. Petitioner**

Vs

1. BSES Rajdhani Power Limited,
   PMG Office, 2nd Floor, B Block,
   Nehru Place, New Delhi-110019.

2. BSES Yamuna Power Limited,
   2nd Floor, Shakti Kiran Building,
   Karkardooma, New Delhi-110092.

3. Tata Power Delhi Distribution Limited,
   1st Floor, CENNET SCADA Building,
   Near PP-3 Grid, Pitampura, New Delhi-110034.

4. West Bengal State Electricity Distribution Company Limited,
   6th Floor, Vidyut Bhawan,
   D-J Block, Sector-II, Salt Lake,
   Bidhan Nagar, Kolkata-700091.

5. Jharkhand Bijli Vitran Nigam Limited (JBVNL),
   Jharkhand Urja Vikash Nigam Limited,
   Engineering Building, HEC Complex,
   P.O. Dhuruwa, Ranchi-834004. **…..Respondents**

Petition No. 462/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with applicable Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of Expenditure on installation of various Emission Control Systems as detailed in this Petition at Mejia Thermal Power Station Unit 7 & 8 (2x500 MW) in compliance of Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

Damodar Valley Corporation,
DVC Towers, Maniktala,
Civic Tower, VIP Road,
Kolkata-700054. **…. Petitioner**

Vs

1. BSES Yamuna Power Limited,
   2nd Floor, Shakti Kiran Building,
   Karkardooma, New Delhi-110092.

2. Haryana Power Generation Corporation Limited,
Haryana Power Purchase Centre (HPPC),
2nd Floor, Shakti Bhawan,
Sector-6, Panchkula, Haryana-34109.

3. Tata Steel Limited,
43, Chowringhee Road, Kolkata-700071.

4. Bangalore Electricity Supply Company Limited (BESCOM),
Power Purchase, 2nd block,
2nd floor, Corporate Office,
K. R. Circle, Bangaluru-560001.

5. Chamundeshwari Electricity Supply Corporation Limited,
No. 29, Kaveri Gramin Road,
Vijay Nagar, 2nd Stage, HINKAL,
Corporate Office, Mysore-570009.

6. Gulbarga Electricity Supply Company Limited (GESCOM),
Corporate Planning, Station Road,
Kalaburagi, Karnataka-585102.

7. Hubli Electricity Supply Company Limited (HESCOM),
Navanagar, P. B. Road, Hubli-580025.

8. Mangalore Electricity Supply Company Limited (MESCOM),
4th floor, Paradigm Plaza,
A. B. Shetty Circle,
Mangaluru-575001.

9. Jharkhand Bijli Vitran Nigam Limited (JBVNL),
Jharkhand Urja Vikash Nigam Limited,
Engineering Building, HEC Complex,
P.O. Dhuruwa, Ranchi-834004. **…..Respondents**

Petition No. 463/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with applicable Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of expenditure on installation of various Emission Control Systems as detailed in this Petition at Raghunathpur Thermal Power Station (2x600 MW) in compliance of Ministry of Environment and Forests and Climate Change, Government of India Notification dated 7.12.2015.

And in the matter of:

Damodar Valley Corporation,
DVC Towers, Maniktala,
Civic Tower, VIP Road,
Kolkata-700054. **…. Petitioner**

Vs

1. Punjab State Power Corporation Limited,
   Inter-State Building Shed No. TI-A,
   Patiala-147001.

2. Haryana Power Generation Corporation Limited,
   Haryana Power Purchase Centre (HPPC),
   2nd Floor, Shakti Bhawan,
   Sector-6, Panchkula, Haryana-34109.

3. West Bengal State Electricity Distribution Company Limited,
   6th Floor, Vidyut Bhawan,
   D-J Block, Sector-II, Salt Lake,
   Bidhan Nagar, Kolkata-700091.

4. Kerala State Electricity Board Limited,
   8th Floor, Vydyuthi Bhavanam, Pattom,
   Thiruvananthapuram-695004, Kerala. **...Respondents**

For Petitioner: Shri Venkatesh, Advocate, DVC
Shri Ashutosh K. Srivastava, Advocate, DVC
Shri Subrata Ghoshal, DVC

For Respondents : Ms. Swapna Seshadri, Advocate, PSPCL, HPPC
Shri Anand Ganesan, Advocate, PSPCL, HPPC
Ms. Ritu Apurva, Advocate, PSPCL, HPPC
Shri Amal Nair, Advocate, PSPCL
Shri Manoor Shoket, Advocate, TPDDL
Shri Kunal Singh, Advocate, TPDDL
Shri R. B. Sharma, Advocate, BRPL
Shri Megha Bajpeyi, BRPL
Ms. Shefali Sobti, TPDDL

ORDER

The Petitioner, Damodar Valley Corporation, has filed these six petitions under Section 79 of the Electricity Act, 2003 (hereinafter referred to as “the 2003 Act”) read with the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 (hereinafter referred to as “the 2019 Tariff Regulations”) for approval of Additional Capital Expenditure (ACE) required to be incurred for installation of various Emission Control Systems (ECSs) in compliance with the Environment (Protection) Amendment Rules, 2015 dated 7.12.2015 (hereinafter referred to as "the MoEFCC Notification") notified by Ministry of Environment and Forests and Climate Change (MoEFCC"), Government of India. The MoEFCC Notification mandates all Thermal Power Plants (TPPs) to comply with the revised Emission Control Norms (ECNs) as specified in the MoEFCC Notification.

2. The Petitioner has made the following prayers:

Petition No. 94/MP/2019

“a) Allow in principle Capital Cost of approximately Rs. 0.721 Crores/MW excluding expenditure of other De-NOx technologies like SNCR etc. for Durgapur STPS, required to be incurred by the Petitioner towards installation of the Emission Control System and other associated facilities for the Project.

b) Allow incremental auxiliary consumption of 1% to 1.1% for computation of tariff post commissioning of the Emission Control System and other associated facilities Durgapur STPS.

c) Allow incremental operation and maintenance cost of 10% of the capital cost for installation of Emission System and other associated facilities at Durgapur STPS.

d) Allow shutdown period required for installation and commissioning of Emission Control System at the Projects as Deemed Availability for payment of Capacity Charges.

e) Allow increased expenditure on water cost required for operation of the Emission Control Systems and other associated facilities at actuals.

f) Allow Procurement cost of Limestone for operation of Emission Control System at actuals.

g) Allow consumption cost of various reagents like Limestone/Urea/ammonia for operation of Emission Control Systems at actuals.

h) Allow to approach to this Hon’ble Commission for remaining Emission Control System which is not being implemented presently but may be required in future

based on actual assessment to comply revised environmental Norm.

i) Pass any such other and further reliefs as this Hon'ble Commission deems just and proper in the nature and circumstances of the present case."

Petition No. 459/MP/2019

"a) Allow in principle Capital Cost of 0.789 crores/MW excluding expenditure of other De-NOx technologies like SNCR etc. for BTPS 'A', required to be incurred by the Petitioner towards installation of the Emission Control System and other associated facilities for the Project.

b) Allow incremental auxiliary power consumption of approx.. 1% for computation of tariff post commissioning of the Emission Control System and other associated facilities BTPS 'A'.

c) Allow incremental operation and maintenance cost of 10% of total capital cost of the capital cost for installation of Emission System and other associated facilities at BTPS 'A'.

d) Allow shutdown period required for installation and commissioning of Emission Control System at the Projects as Deemed Availability for payment of Capacity Charges.

e) Allow increased expenditure on water cost required for operation of the Emission Control Systems and other associated facilities at actuals.

f) Allow Procurement cost of Limestone for operation of Emission Control System at actuals.

g) Allow consumption cost of various reagents like Limestone/Urea/ammonia for operation of Emission Control Systems at actuals.

h) Allow to approach to this Hon'ble Commission for remaining Emission Control System which is not being implemented presently but may be required in future based on actual assessment to comply revised environmental Norm.

i) Pass any such other and further reliefs as this Hon'ble Commission deems just and proper in the nature and circumstances of the present case."

Petition No. 460/MP/2019

"a) Allow in principle Capital Cost of 0.62 crores/MW excluding expenditure of other De-NOx technologies like SNCR etc. for KTPS, required to be incurred by the Petitioner towards installation of the Emission Control System and other associated facilities for the Project.

b) Allow incremental auxiliary power consumption of approx. 1% for computation of tariff post commissioning of the Emission Control System and other associated facilities at KTPS.

c) Allow incremental operation and maintenance cost of 10% of the capital cost for installation of Emission System and other associated facilities at KTPS.

d) Allow shutdown period required for installation and commissioning of Emission Control System at the Projects as Deemed Availability for payment of Capacity Charges.

e) Allow increased expenditure on water cost required for operation of the Emission Control Systems and other associated facilities at actuals.

f) Allow Procurement cost of Limestone for operation of Emission Control System at actuals.

g) Allow consumption cost of various reagents like Limestone/Urea/ammonia for operation of Emission Control Systems at actuals.

h) Allow to approach to this Hon'ble Commission for remaining Emission Control System which is not being implemented presently but may be required in future based on actual assessment to comply revised environmental Norm.

i) Pass any such other and further reliefs as this Hon'ble Commission deems just and proper in the nature and circumstances of the present case."

Petition No. 461/MP/2019

"a) Allow in principle Capital Cost of approx. 0.745 crors/MW for MTPS Unit # 4, 5 & 6 and approx. 0.705 crores /MW for MTPS U #1, 2 & 3 excluding expenditure of other De-NOx technologies like SNCR etc. for MTPS, required to be incurred by the Petitioner towards installation of the Emission Control System and other associated facilities for the Project.

b) Allow incremental auxiliary power consumption of approx. 1 % for computation of tariff post commissioning of the Emission Control System and other associated facilities MTPS.

c) Allow incremental operation and maintenance cost of 10% of the capital cost for installation of Emission System and other associated facilities at MTPS.

d) Allow shutdown period required for installation and commissioning of Emission Control System at the Projects as Deemed Availability for payment of Capacity Charges.

e) Allow increased expenditure on water cost required for operation of the Emission Control Systems and other associated facilities at actuals.

f) Allow Procurement cost of Limestone for operation of Emission Control System at actuals.

g) Allow consumption cost of various reagents like Limestone/Urea/ammonia for operation of Emission Control Systems at actuals.

h) Allow to approach to this Hon'ble Commission for remaining Emission Control System which is not being implemented presently but may be required in future based on actual assessment to comply revised environmental Norm.

i) Pass any such other and further reliefs as this Hon'ble Commission deems just and proper in the nature and circumstances of the present case."

Petition No. 462/MP/2019

"a) Allow in principle Capital Cost of 0.062 crores/MW excluding expenditure of other De-NOx technologies like SNCR etc. for MTPS, required to be incurred by the Petitioner towards installation of the Emission Control System and other associated facilities for the Project.

b) Allow incremental auxiliary power consumption of approx. 1% for computation of tariff post commissioning of the Emission Control System and other associated facilities at MTPS.

c) Allow incremental operation and maintenance cost of 10% of the capital cost for installation of Emission System and other associated facilities at MTPS Unit 7 & 8.

d) Allow shutdown period required for installation and commissioning of Emission Control System at the Projects as Deemed Availability for payment of Capacity Charges.

e) Allow increased expenditure on water cost required for operation of the Emission Control Systems and other associated facilities at actuals.

f) Allow Procurement cost of Limestone for operation of Emission Control System at actuals.

g) Allow consumption cost of various reagents like Limestone/Urea/ammonia for operation of Emission Control Systems at actuals.

h) Allow to approach to this Hon'ble Commission for remaining Emission Control System which is not being implemented presently but may be required in future based on actual assessment to comply revised environmental Norm.

i) Pass any such other and further reliefs as this Hon'ble Commission deems just and proper in the nature and circumstances of the present case."

Petition No. 463/MP/2019

"a) Allow in principle Capital Cost of 0.658 crores/MW excluding expenditure of other De-NOx technologies like SNCR etc. for RTPS, required to be incurred by the Petitioner towards installation of the Emission Control System and other associated facilities for the Project.

b) Allow incremental auxiliary power consumption of approx. 1% for computation of tariff post commissioning of the Emission Control System and other associated facilities at RTPS.

c) Allow incremental operation and maintenance cost of 10% of the capital cost for installation of Emission control System and other associated facilities at RTPS.

d) Allow shutdown period required for installation and commissioning of Emission Control System at the Projects as Deemed Availability for payment of Capacity Charges.

e) Allow increased expenditure on water cost required for operation of the Emission Control Systems and other associated facilities at actuals.

f) Allow Procurement cost of Limestone for operation of Emission Control System at actuals.

g) Allow consumption cost of various reagents like Limestone/Urea/ammonia for operation of Emission Control Systems at actuals.

h) Allow to approach to this Hon'ble Commission for remaining Emission Control System which is not being implemented presently but may be required in future based on actual assessment to comply revised environmental Norm.

i) Pass any such other and further reliefs as this Hon'ble Commission deems just and proper in the nature and circumstances of the present case."

3. The prayers made by the Petitioner are identical and reliefs sought are almost similar in all the six Petitions. Moreover, the issues raised by the Respondents are also identical. Accordingly, a common order is issued in these Petitions. The details of the Petitions covered in the instant order are as follows.

(i) Petition No. 94/MP/2019 - Durgapur Steel Thermal Power Station (DSTPS) (2x500 MW)

4. DSTPS-1 and 2 were put into commercial operation on 29.7.2011 and 23.3.2012 respectively. The Petitioner has sought approval of ACE required to be

incurred for installation of various ECS at DSTPS in compliance of the MoEFCC Notification. The petition was admitted on 30.5.2019 and the order was reserved on 1.6.2021. Punjab State Power Corporation limited (PSPCL), Respondent No.1, has filed its reply to the petition vide affidavit dated 17.7.2019. The Petitioner has filed its rejoinder vide affidavit dated 20.8.2019. The Petitioner has filed reply to the queries raised in Record of Proceedings (RoPs) dated 27.2.2020 and 1.6.2021 vide affidavits dated 18.3.2020 and 1.6.2021 respectively.

(ii) Petition No. 459/MP/2019 – Bokaro-A Thermal Power Station (BTPS-A) (1x500 MW)

5. BTPS-A was put into commercial operation on 22.3.2017. The Petitioner has sought approval of ACE on account of installation of various ECS at BTPS-A in compliance of the MoEFCC Notification. The petition was admitted on 27.2.2020 and the order was reserved on 1.6.2021. Punjab State Power Corporation limited (PSPCL), the only Respondent, has filed its reply to the petition vide affidavit dated 27.10.2020. The Petitioner has filed its rejoinder vide affidavit dated 16.12.2020. The Petitioner has filed reply to the queries raised in the RoPs dated 27.2.2020 and 1.6.2021 vide affidavits dated 27.4.2020 and 21.6.2021 respectively.

(iii) Petition No. 460/MP/2019 - Koderma Thermal Power Station (KTPS) (2x500 MW)

6. KTPS-1 and 2 were put into commercial operation on 18.7.2013 and 14.6.2014 respectively. The Petitioner has sought approval of ACE on account of installation of various ECS at KTPS in compliance of the MoEFCC Notification. The petition was admitted on 27.2.2020 and the order was reserved on 1.6.2021. Haryana Power Generation Corporation Ltd. (HPGCL), Respondent No. 1, has filed its reply vide affidavit 29.5.2020. However, no rejoinder has been filed by the

Petitioner. The Petitioner has filed reply to the queries raised in RoPs dated 27.2.2020 and 1.6.2021 vide affidavits dated 27.4.2020 and 21.6.2021 respectively.

(iv) Petition No. 461/MP/2019 - Mejia Thermal Power Station Unit 1 to 6 (MTPS Units 1 to 6) (4x210 MW + 2x250 MW)

7. MTPS-1, 2, 3 and 4 (of 210 MW each) were put into commercial operation on March 1996, March 1997, September 1998 and 13.2.2005 respectively and MTPS-5 and MTPS-6 (of 250 MW each) were put into commercial operation on 29.2.2008 and 24.9.2008 respectively. The Petitioner has sought approval of ACE on account of installation of various ECS at MTPS in compliance of the MoEFCC Notification. The petition was admitted on 27.2.2020 and the order was reserved on 1.6.2021. BSES Rajdhani Power Limited (BRPL), Respondent No. 1, has filed its reply vide affidavit dated 14.10.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 24.11.2020. Tata Power Delhi Distribution Ltd. (TPDDL), Respondent No.3, has filed its reply vide affidavit dated 14.7.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 31.7.2020. TPDDL has also filed its Written Submissions on 13.7.2021 in Petition No.461/MP/2019. The Petitioner has filed reply to the queries raised in RoPs dated 27.2.2020 and 1.6.2021 vide affidavits dated 27.4.2020 and 21.6.2021 respectively. BRPL has also filed its reply vide affidavit dated 12.7.2021 to the additional information submitted by the Petitioner vide affidavit dated 21.6.2021. The Petitioner has also filed its rejoinder to BRPL's reply vide affidavit dated 29.7.2021.

(v) Petition No. 462/MP/2019 - Mejia Thermal Power Station Unit 7 and 8 (MTPS 7 and 8) (2x500 MW)

8. MTPS 7 and 8 were put into commercial operation on 2.8.2011 and 16.8.2012 respectively. The Petitioner has sought approval of ACE on account of installation of

various ECS at MTPS 7 & 8 in compliance of the MoEFCC Notification. The petition was admitted on 27.2.2020 and the order was reserved on 1.6.2021. None of the Respondents have filed reply in the matter. The Petitioner has filed reply to the queries raised in RoPs dated 27.2.2020 and 1.6.2021 vide affidavits dated 27.4.2020 and 21.6.2021 respectively.

(vi) Petition No. 463/MP/2019 - Raghunathpur Thermal Power Station (RTPS) (2x600 MW)

9. RTPS-1 and 2 were put into commercial operation on 31.3.2016. The Petitioner has sought approval of ACE on account of installation of various ECS at RTPS in compliance of the MoEFCC Notification. The petition was admitted on 27.2.2020 and order was reserved on 1.6.2021. Punjab State Power Corporation limited (PSPCL), Respondent No.1, has filed its reply to the petition vide affidavit dated 27.10.2020. The Petitioner has filed its rejoinder vide affidavit dated 16.12.2020. The Petitioner has filed reply to the queries raised in RoPs dated 27.2.2020 and 1.6.2021 vide affidavits dated 27.4.2020 and 21.6.2021 respectively.

Background

10. A brief background of the petitions is as under:

a) MoEFCC notified the Environment Protection Rules, 1986 (hereinafter referred to as "1986 Rules") on 23.5.1986 in exercise of powers conferred under Sections 6 and 25 of the Environment (Protection) Act, 1986 (hereinafter referred to as "1986 Act"), wherein the standards for emission or discharge of environmental pollutants from TPPs were prescribed.

b) MoEFCC amended the 1986 Rules on 3.1.1989 vide Notification No. S.O. 844(E) dated 19.11.1989, wherein the Particulate Matter emission norms for TPPs were prescribed.

c) MoEFCC vide the Notification No. S.O. 3305(E) dated 7.12.2015 has amended the 1986 Rules, revising and introducing the standards for emission of environmental pollutants to be followed by all existing and new TPPs. As per the MoEFCC Notification, all TPPs were required to comply with the revised norms within a period of two years from the date of MoEFCC Notification dated 7.12.2015. The deadline for compliance with the revised norms has been subsequently revised to 2022. The revised emission norms prescribed by the MoEFCC Notification dated 7.12.2015 are as follows:

"

Sr. No.	***Industry***	***Parameter***	***Standards***
1	***2***	***3***	***4***
"5A."	***Thermal Power Plant (Water consumption limit)***	***Water consumption***	*I. All plants with Once Through Cooling (OTC) shall install Cooling Tower (CT) and achieve specific water consumption upto maximum of 3.5m^3/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 3.5m^3/MWh within a period of two years fromthe date of publication of this notification.* ***III.*** *New plants to be installed after 1st January, 2017 shall have to meet specific waterconsumption upto maximum of 2.5 m^3/MWh and achieve zero waste water discharged";*
"25."	***Thermal Power Plant***	***TPPs (units) installed before 31st December, 2003****	
		Particulate Matter	*100 mg/Nm^3*
		Sulphur Dioxide (SO_2)	*600 mg/Nm^3 (Units Smaller than 500 MWcapacity units)* *200 mg/Nm^3 (for units having capacity of500MW and above)*
		Oxides of Nitrogen (NOx)	*600 mg/Nm^3*
		Mercury (Hg)	*0.03 mg/Nm^3 (for units having capacity of 500 MW and above)*
		TPPs (units) installed after [1st January, 2004]#, upto 31st December, 2016*	
		Particulate Matter	*50 mg/Nm^3*
		Sulphur Dioxide (SO_2)	*600 mg/Nm^3 (Units Smaller than 500 MWcapacity units)* *200 mg/Nm^3 (for units having capacity of500 MW and above)*
		Oxides of Nitrogen (NOx)	*300 mg/Nm^3*
		Mercury (Hg)	*0.03 mg/Nm^3*
		TPPs (units) to be installed from 1st January, 2017	
		Particulate Matter	*30 mg/Nm^3*
		Sulphur Dioxide (SO_2)	*100 mg/Nm^3*
		Oxides of Nitrogen (NOx)	*100 mg/Nm^3*
		Mercury (Hg)	*0.03 mg/Nm^3*

**TPPs (units) shall meet the limits within two years from date of publication of this notification.*
***Includes all the TPPs (units) which have been accorded environmental clearance and are underconstruction".*
#ammended vide Gazette Notification No.590 dated 7.3.2016

d) As per the MoEFCC Notification, water consumption norms for TPPs with Once Through Cooling (OTC), existing CT-based TPPs and new TPPs commissioned after 1.1.2017 were specified. Further, norms for particulate matter, Sulphur Dioxide (SO_2), Oxides of Nitrogen (NO_x) and Mercury (Hg) for TPPs commissioned before 31.12.2003, TPPs commissioned during 1.1.2004 and 31.12.2016 and TPPs commissioned after 1.1.2017 were also specified. Subsequently, MoEFCC relaxed the norms of NO_x for TPPs installed during the period from 1.1.2004 to 31.12.2016 from 300 mg/Nm^3 that was stipulated through the MoEFCC Notification of 7.12.2015 to 450 mg/Nm^3 vide Notification G.S.R. 662(E) dated 19.10.2020.

e) For implementation of ECNs notified by MoEFCC, the Central Electricity Authority (CEA) was entrusted with planning and coordination. CEA alongwith Regional Power Committees formulated a phasing plan upto 2024 which was subsequently reduced by 2022 as per revised action plan of Ministry of Power (MoP). Further, Hon'ble Supreme Court issued direction to complete the installation of ECS in highly polluted and densely populated area by December, 2021 and other stations latest by December, 2022.

f) Maithon Power Limited (MPL) filed Petition No. 72/MP/2016 before the Commission for "in-principle approval" of the capital cost to meet the revised ECNs in terms of the MoEFCC Notification. MPL had also sought certain incidental prayers which were in relation to the proposed costs to comply with the revised ECNs. The Commission vide order dated 20.3.2017 did not grant in-principle approval of costs as sought by MPL as the 2014 Tariff Regulations does not provide for granting in-principle approval. However, the Commission directed MPL to approach CEA for specific technology, associated costs and major issues to be faced in installation of the Flue-Gas Desulphurization (FGD) system.

g) NTPC on 26.4.2017 filed Petition No. 98/MP/2017 for in-principle approval of the capital cost required for installation of ECSs and other facilities in Singrauli STPS and Sipat STPSS-I, as it involved capital expenditure.

h) The Commission vide order dated 20.7.2018 in Petition No. 98/MP/2017 held that ACE for implementation of ECS as per the MoEFCC Notification is admissible under "change in law". The Commission further observed that it would require TPPs to identify suitable technology depending upon location of plant and existing level of emission and accordingly directed CEA to prepare guidelines regarding suitable technology, operation parameters, norms and other technical inputs. The relevant portion of the order dated 20.7.2018 is as follows:

> *"46. …..In all these situations, additional capital expenditure on change in law or compliance with any existing law" is allowed. Therefore, additional capital expenditure on implementation of the ECS in terms of the Notification dated 7.12.2015 shall be admissible after due prudence check, under Regulation 14 of the 2014 Tariff Regulations.*
>
> *47. The compliance of the revised norms specified under the MOEFCC Notification by these generating stations would require identification of suitable technology depending upon location of plant and existing level of emission from such plant. Moreover, the scope of work would also differ from plant to plant, depending upon the type of technology to be adopted……..*
>
> *48. Therefore, a mechanism needs to be devised for addressing the issues like identification of suitable technology for each plant for implementation of ECS, its impact on operational parameters and on tariff, and the recovery of additional capital and operational cost. The Commission in this regard directs the CEA to prepare guidelines specifying;*
>
> > *(a) Suitable technology with model specification for each plant, with regard to implementation of new norms;*
> >
> > *(b) Operational parameters of the thermal power plants such as auxiliary consumption, O&M expenses, Station Heat Rate etc., consequent to the implementation of ECS.*
> >
> > *(c) Norms of consumption of water, limestone, ammonia etc., required for operation of the plants after implementation of ECS.*
> >
> > (d) *Any other detailed technical inputs.*"

i) CEA *vide* its letter dated 10.4.2018 directed all generators to file a Detailed Project Report (DPR) with the concerned Regulatory Commission for approval of "change in law". Accordingly, the Petitioner has engaged NTPC and has prepared the required DPR.

j) On 30.5.2018, MoP issued directions under Section 107 of the 2003 Act directing the Commission to expeditiously consider the petitions pertaining to the MoEFCC Notification dated 7.12.2015 and further declared the said Notification as “change in law”.

k) On the basis of the directions of the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017, CEA vide its letter dated 20.2.2019 recommended various technologies for implementation of the MoEFCC Notification.

l) The Commission amended the 2019 Tariff Regulations vide the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2020 (hereinafter referred to as the “2020 Amendment Regulations”), wherein separate tariff stream for ECS including determination of capital cost, financial parameters and operational parameters were specified.

m) CEA on 7.2.2020 issued ‘Advice on FGD Technology selection for different unit size’. As per the Advisory, TPPs are required to select the appropriate FGD technology based on parameters like SO_2 removal efficiency, units’ size, balance plant life and the geographical location of TPPs.

n) MoEFCC has extended the time limit for installation of ECS, vide Notification dated 1.4.2021, to comply with the revised ECNs through the Environment (Protection) Amendment Rules, 2021. The Notification dated 1.4.2021 also provides for constitution of task force and environment compensation for operating TPPs beyond the specified timelines. The relevant portion of the Notification dated 1.4.2021 is as follows:

> *“*(i) A task force shall be constituted by Central Pollution Control Board (CPCB) comprising of representative from Ministry of Environment and Forest and Climate Change, Ministry of Power, Central Electricity Authority (CEA) and CPCB to categorise thermal power plants in three categories as specified in the Table-I on the basis of their location to comply with the emission norms within the time limit as specified in column (4) of the Table-I, namely: -*

Table-I

Sl. No.	***Category***	***Location/area***	***Timelines for compliance***	
			Non retiring units	***Retiring units***
(1)	*(2)*	*(3)*	*(4)*	*(5)*
1	*Category A*	*Within 10 km radius of National Capital Region or cities having million plus population[1].*	*Up to 31st December 2022*	*Up to 31st December 2022*
2	*Category B*	*Within 10 km radius of Critically Polluted Areas[2] or Non-attainment cities[2]*	*Up to 31st December 2023*	*Up to 31st December 2025*
3	*Category C*	*Other than those included in category A and B*	*Up to 31st December 2024*	*Up to 31st December 2025*

*[1] As per **2011** census of India.*
[2] As defined by CPCB.

*(ii) the thermal power plant declared to retire before the date as specified in column **(5)** of Table-I shall not be required to meet the specified norms in case such plants submit an undertaking to CPCB and CEA for exemption on ground of retirement of such plant:*

*Provided that such plants shall be levied environment compensation at the rate of rupees **0.20** per unit electricity generated in case their operation is continued beyond the date as specified in the Undertaking;*

*(iii) there shall be levied environment compensation on the non-retiring thermal power plant, after the date as specified in column **(4)** of Table-I, as per the rates specified in the Table-II, namely:-*

Table-II

Non-Compliant operation beyond the Timeline	*Environmental Compensation (Rs. per unit electricity generated)*		
	Category A	***Category B***	***Category C***
0-180 days	*0.10*	*0.07*	*0.05*
181-365 days	*0.15*	*0.10*	*0.075*
366 days and beyond	*0.20*	*0.15*	*0.10. ”*

”

Submissions of the Petitioner

11. The gist of the submissions made by the Petitioner in the instant petitions are as follows:

(a) It is mandatory for all TPPs to comply with the MoEFCC Notification. The initial assessment of the capital expenditure and operational expenditure for installation of various ECS in compliance of the revised ECNs is quite substantial. The Petitioner is required to arrange for substantial funds from outside sources as the quantum of investment required cannot be arranged internally. The regulatory certainty of these additional investments is critical to secure finance from financial institutions.

(b) MoEFCC Notification prescribing ECNs for TPPs are “change in law”

events. Accordingly, the Petitioner is required to be compensated in terms of Regulation 14(3)(ii) and Regulation 8(3)(ii) of the 2014 Tariff Regulations. The object of the said regulations is to ensure compensation to the party affected by such "change in law" events and to restore the affected party to the same economic position as if such "change in law" event has not occurred.

(c) To comply with ECNs, the Petitioner will be required to install ECSs which would involve (i) Additional Capital Expenditure (ACE), (ii) increase in Operation and Maintenance Expenses (O&M Expenses), (iii) increase in auxiliary energy consumption (AEC) of the power station, (iv) disruption in power generation during the installation of ECS and (v) issue of fixed cost recovery for shut down period.

(d) As per the MoEFCC Notification, the Petitioner is required to ensure that Mercury emissions are limited to 0.03 mg/Nm^3. It is a new condition and there is no mature/ commercial technology available to limit the Mercury emission. However, the norms specified for Mercury emission are already being met by the Petitioner and, therefore, there is no proposal to install any ECS for the same. The Mercury emissions are controlled at present by default through the existing emission control devices (such as ESPs, Bag Filters etc.) which are meant for control of other pollutants. The Petitioner may be permitted to approach the Commission, if any additional measures need to be implemented to control Mercury emissions.

(e) The Petitioner proposes to implement only (a) Wet Limestone based Flue Gas Desulpherisation (WFGD) system for SO_2 emission control and (b) Combustion Modification (CM) and Selective Non-Catalytic Reduction System (SNCR) for NO_X emission control.

(f) WFGD system consists of Flue Gas Duct System, Absorber System, Booster Fan, Limestone Handling System, Limestone Grinding System, Gypsum Dewatering System, Auxiliary Absorbent Tank, Process Water Storage and Pumping Scheme, Sump Pumps and associated electrical system, C&I and associated auxiliaries. Further, chimney line may also be required to

be done for accommodating FGD system. The hard cost proposed for installation of WFGD system is inclusive of capital expenditure, pre-operative expenses, designing, engineering, and project management cost but excludes Interest During Construction (IDC) and any other Incidental Expenditure During Construction (IEDC).

(g) The installation and operation of WFGD will lead to additional recurring cost towards O&M Expenses, disposal of waste and spares which is likely to be around 10% of the capital cost. AEC (auxiliary energy consumption) of the power stations is likely to increase in the range of 1% to 1.1%. There will also be expenditure related to consumption of limestone and additional water during operation of FGD.

(h) It is envisaged that installation of WFGD system would reduce SO_2 emission to less than 200 mg/Nm3 from the current levels and thereby comply with revised ECNs of the MoEFCC Notification.

(i) The Petitioner is required to install/ modify the existing De-NOx System i.e., carry out modification in combustion system and may be required to install SNCR system to meet the revised ECNs in respect of NOx.

(j) The minor Combustion Modification in tangential fired boiler to bring down NOx level up to 450 mg/Nm^3 will consist mainly of: (a) Wind box modification like air Nozzle, Coal Nozzle, port size modification, OFA (Over Fire Air) operation manual to pneumatic and (b) Combustion optimisation.

(k) Combustion Modification to bring down NO_x level will consist mainly of (i) for Wall fired boiler-Low NOx Burner and flue gas recirculation and (ii) for Tangential/ corner fired Boiler-Complete combustion system which includes coal nozzle, air Nozzle, wind box design, air staging and OFA, SOFA, Coal fineness by providing dynamic classifier etc.

(l) SCNR consists of Reagent Storage Tank, Circulation Module and Unloading Module, Dilution Water Module, Metering Module, Injector

Assemblies, Compressed Air System and associated Electrical System, C&I, and other associated auxiliaries.

(m) Installation of De-NOx system would also lead to additional cost towards O&M Expenses, increase in AEC and recurring cost of reagent which shall be intimated later on after finalisation of design philosophy for combustion modification and other De-NOx technologies like SNCR etc.

(n) There will be disruption in power generation during installation and commissioning of ECSs which is expected to be around 30 days per Unit for FGD installation and 35 days for combustion modification. Non-availability of the plant due to installation activities of the WFGD System or De-NOx System may be considered as "deemed availability" for payment of capacity charges.

(o) The actual procurement cost of limestone for operation of ECS may be allowed.

(p) The Commission in order dated 11.11.2019 in Petition No. 152/MP/2019, in MPL Vs TPDDL & Ors., accorded in-principle approval for ACE (including Capex and Opex) for meeting the revised ECNs in respect of SO_2. Also, the Commission in order dated 20.7.2018 in Petition No. No.98/MP/2017, NTPC Ltd. Vs. UPPCL & Ors., has declared the MoEFCC Notification as a "change in law" event, and passed consequential directions for the affected party. Hence, the Petitioner may also be appropriately granted relief for the admitted "change in law" event i.e. the MoEFCC Notification.

(q) The capital cost towards installation of ECS and other associated facilities shall be claimed as per actual expenditure and the entire process shall be carried out in a transparent manner.

(r) A separate supplementary tariff petition will be filed in terms of Regulation 29(4) of the 2019 Tariff Regulations based on actual and projected expenditure, normative operating parameters/ norms as specified in the 2019 Tariff Regulations and subsequent notification for reagent consumption, etc.

(s) CEA had published the standard technical specification in December 2017 for retrofitting of WFGD system for a typical 2 x 500 MW TPP. Also, CEA in its letter dated 24.2.2021 has acknowledged that the earlier cost estimation is approximately three years old and the cost of FGD installation has increased due to increase in demand for FGD equipment, shortage of indigenous manufacturing capacity, import restrictions, etc. and it requires to be revised.

(t) The Commission in order dated 11.11.2019 in Petition No. 152/MP/2019, order dated 23.4.2020 in Petition No. 446/MP/2019 and order dated 6.5.2020 in Petition No. 209/MP/2019 has already recognised that the cost provided by CEA was indicative in nature and that the cost of FGD has increased due to various factors.

(u) The Petitioner is Central Public Sector Utility guided by the directions/ guidelines issued by the Central Government. The Petitioner followed the policy as per its Delegation of Power (DoP) in the Competitive Bidding process and for award of FGD. The Petitioner is obligatory to follow transparent processes, being answerable to statutory authorities like Comptroller and Auditor General of India, Central Vigilance Commission etc. It is certified that bidding and award has been carried out in a fair and transparent manner as per Delegation of Power ("DOP") of DVC which is in line with GoI guidelines.

12. During the hearing on 1.6.2021, the learned counsel for the Petitioner narrated the process of tendering and awarding FGD systems. The gist of the submissions made by the learned counsel for the Petitioner during the hearing is as follows:

(a) The Environment Clearance (EC) in case of the generating stations/ units covered in Petition No. 94/MP/2019, Petition No.459/MP/2019, Petition No.460/MP/2019, Petition No.461/MP/2019, Petition No.462/MP/2019 and Petition No.463/MP/2019 was granted on 27.11.2006, 30.3.2007, 23.6.2005, (14.9.1995 and 12.11.2001), 10.2.2004 and 18.10.2007 respectively.

(b) Petition No. 94/MP/2019 was filed prior to the notification of 2019 Tariff Regulations and the other petitions are filed after the notification of the 2019 Tariff Regulations. However, the process for installation of ECS was initiated in all these petitions in the 2014-19 tariff period.

(c) NIT was floated for Durgapur, Bokaro A, Koderma, Mejia Unit 1 to 6, Mejia Unit 7&8 and Raghunathpur on 12.9.2018, 4.10.2018, 4.10.2018, 31.10.2019, 4.10.2018 and 4.10.2018 respectively. For all the projects, NIT was floated during the 2014-19 tariff period except for the Mejia project, where the NIT was floated on 31.10.2019 i.e. during the 2019-24 tariff period.

(d) The Commission vide order dated 20.3.2017 in Petition No. 72/MP/2016 filed by Maithon Power Limited for "in-principle approval" of the capital cost to meet the revised ECNs, observed that the 2014 Tariff Regulations do not provide for granting in-principle approval and directed Maithon Power Limited to approach CEA to decide specific optimum technology, associated costs and other issues in installation of the FGD system.

(e) The Commission vide order dated 20.7.2018 in Petition No. 98/MP/2017, declared MoEFCC notification dated 7.12.2015 as "change in law" event and observed that the expenditure incurred on the basis of the guidelines notified by the CEA would be considered for approval of capital cost. The Petitioner has filed the instant petitions on the basis of the order dated 20.7.2018.

(f) The Petitioner floated NIT from 12.9.2018 onwards for its various projects in order to meet the stringent timeline for installation of FGD system.

(g) In 2018, the Petitioner submitted FR along with the tender documents of DSTPS to CEA for its observation. NTPC (consultant of DVC) recommended WFGD system for installation in DSTPS as the same was a proven technology recommended by CEA. Accordingly, after considering the feasibility of the said

technology for each of its plants, the Petitioner adopted WFGD technology for all of its stations.

(h) On 12.10.2018, the Petitioner issued NIT with technical specification for its 500 MW and 600 MW projects for reduction of NO_x in its generating stations.

(i) On 26.11.2018, a meeting of officials of CEA, the Petitioner and NTPC was held and in the said meeting, observations were made by CEA on proposal for installation of WFGD system for DSTPS.

(j) On 27.11.2018, the Petitioner wrote a letter to CEA apprising about complying with CEA's observation for installation of WFGD system for DSTPS and sought clarification with respect to other power plants of the Petitioner.

(k) Pursuant to letter dated 27.11.2018, CEA gave 'No Objection' to the Petitioner regarding the tendering process and award of contract for ECS in the Petitioner's power plants on 28.11.2018.

(l) Thereafter, Notice of Award (NoA) was issued for its various power plants for supply of plant & equipment and for work of providing all services for installation of WFGD system.

Maintainability

13. PSPCL, HPGCL and BRPL have contended that the instant petitions are not maintainable for the reasons that (a) the Petitioner has not followed the procedure laid down in the Tariff Regulations, (b) the MoEFCC Notification has to be applied on a case to case basis, (c) non-submission of the present emission levels of the generating stations does not allow the Petitioner to claim ACE towards installation of ECS, and (d) there is non-submission of case-specific recommendations from CEA. The issues raised by the Respondents and the clarifications given by the Petitioner are dealt in the following paragraphs.

- *Petitioner has not followed the procedure laid down in the Tariff Regulations*

14. PSPCL, in Petition No. 94/MP/2019, has submitted that the Petitioner has not followed the process laid down in the 2014 Tariff Regulations. The Petitioner cannot claim a "change in law" event and call upon the Commission to adjudicate such claim and pass on the tariff to the beneficiaries. The Petitioner is bound by the Tariff Regulations and, therefore, the Petitioner has to make a claim in accordance with the 2014 Tariff Regulations. The Commission is also bound by the Tariff Regulations as held by the Hon'ble Supreme Court in the case of PTC Vs. CERC.

15. BRPL has, in Petition No.461/MP/2019, submitted that IFB (invitation for bids) in case of MTPS Units 1 to 6 was issued on 31.10.2019 and BRPL was informed of the same by way of the petition that was filed on 18.11.2019. The purported proposal was shared with the beneficiaries including BRPL on 27.4.2020 i.e. after 5 months of filing the petition and after 21 months of notification of the 2019 Tariff Regulations. The Petitioner has failed to provide any cogent reasons or justification for delay in sharing the proposal with the beneficiaries. Regulation 29(1) of the 2019 Tariff Regulations mandates a generating station that proposes to incur expenditure for installation of ECS to share the proposal as per Regulation 29(2) of the 2019 Tariff Regulations with the beneficiaries and thereafter to file a petition before the Commission seeking approval of the same under Regulation 29(3) of the 2019 Tariff Regulations. However, the Petitioner has shared the proposal after filing of the petition. This is contrary to requirement under Regulation 29(2) of the 2019 Tariff Regulations. In such a situation, if the Petitioner undertakes the process of implementation of ECS, the same has to be at its own risk and costs. The sole defence taken by the Petitioner in this regard is the stringent timelines for

implementing ECS in terms of the MoEFCC Notification. If the stand of the Petitioner is accepted, it would render Regulation 29 of the 2019 Tariff Regulations redundant.

16. TPDDL in its Written Submissions, in Petition No.461/MP/2019, submitted that IFB and LoA (letter of award) in case of MTPS Units 1 to 6 was issued after the 2019 Tariff Regulations came into effect. Therefore, the Petitioner should have followed the mandatory requirements under Regulation 29 of the 2019 Tariff Regulations. Moreover, the Petitioner has not submitted the details of the capex estimates. As such, approval may not be granted under Regulation 29 of the said Regulations.

17. In response to a query of the Commission on whether the Respondents were consulted on the proposed ACE, the Petitioner vide affidavit dated 21.6.2021 has submitted that the Petitioner had served copy of the petition seeking in-principle approval for expenditure before inviting the tenders. Therefore, the beneficiaries were aware of the cost implication. The requirement of sharing the proposal for installation of ECS for meeting the revised ECNs with the beneficiaries was introduced in the 2019 Tariff Regulations, which were notified in March 2019 and is effective since 1.4.2019 i.e. much after the Petitioner had initiated action for installation of ECS for meeting the revised ECNs in compliance with the MoEFCC Notification. Therefore, the Petitioner could not have shared the proposal for installation of the ECS with the beneficiaries in 2017 or 2018, as the provision of sharing such proposal was mandated only in the 2019 Tariff Regulations. Further, the Petitioner has shared the proposal for installation of ECS with the beneficiaries on the directions of the Commission. The Petitioner has provided all the details of

bidding process being undertaken by the Petitioner and the Respondent were given due opportunity to respond to it. Therefore, the requirement of serving the proposal with the Respondent has been complied with. It is mandatory to comply with the MoEFCC Notification and any non-compliance of the MoEFCC Notification, statutorily provided under Section 15 and 16 of the 1986 Act, would lead to punitive action. Further, the progress of the implementation of revised ECNs is monitored by Hon'ble Supreme Court. As the progress of the Petitioner Company was not only monitored by MoEFCC but also the Hon'ble Supreme Court, the Petitioner had to take all actions necessary to implement ECS to comply with the revised ECNs as early as possible. Further, the Petitioner, as a prudent utility, had informed the Respondents of all the steps taken by the Petitioner as and when directed by the Commission.

18. We have considered the submissions of the Respondents and the clarifications given by the Petitioner. The instant petitions are for in-principle approval of ACE towards installation of ECS in compliance of the MoEFCC Notifications. It is observed that Petition No. 94/MP/2019 has been filed under Section 79 of the 2003 Act read with Regulation 14(3)(ii) and Regulation 8(3) of the 2014 Tariff Regulations claiming the MoEFCC Notification as a "change in law" event. The remaining five petitions are filed under the 2019 Tariff Regulations. PSPCL has contended in Petition No.94/MP/2019 that the Petitioner has not complied with the provisions of the 2014 and BRPL and TPDDL have contended in Petition No.461/MP/2019 that the Petitioner has not complied with Regulation 29 of the 2019 Tariff Regulations.

19. The Commission has specified the procedure for claiming ACE on account of implementation of ECS for compliance with the revised ECNs in Regulation 29 of the 2019 Tariff Regulations, which provides 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."*

20. As per the procedure prescribed under Regulation 29 of the 2019 Tariff Regulations, a generating company intending to incur ACE towards installation of ECS shall share its proposal with the Respondents/ beneficiaries and file a petition for undertaking ACE under Regulation 29(1) of the 2019 Tariff Regulations. The proposal has to contain the details of the proposed technology as specified by CEA and other relevant information under Regulation 29(2) of the 2019 Tariff Regulations. On an application by the generating station, the Commission may approve ACE towards the implementation of ECS after prudence check as per Regulation 29(3) of the 2019 Tariff Regulations. As per Regulation 29(4) of the 2019 Tariff Regulations,

the generating station after implementation of the revised ECS shall file a petition for determination of tariff.

21. It is observed that the Petitioner had initiated action for implementation of ECS in compliance of the MoEFCC Notifications in the 2014-19 tariff period. IFBs were issued in case of five generating stations covered in the Petition No. 94/MP/2019, Petition No. 459/MP/2019, Petition No. 460/MP/2019, Petition No. 462/MP/2019 and Petition No. 463/MP/2019 in the 2014-19 tariff period. However, in case of MTPS Units 1 to 6, IFB was issued on 31.10.2019 in the 2019-24 tariff period. The details are given in the table below:

Petition No.	Generating station/ unit Capacity (MW)	Date of issue of IFB	Date of issue of NoA
94/MP/2019	DSTPS (2X500)	12.9.2018	15.7.2019
459/MP/2019	BTPS-A (1X500)	4.10.2018	15.7.2019
460/MP/2019	KTPS (2X500)	4.10.2018	15.7.2019
461/MP/2019	MTPS Units 1 to 6 (4X210+2x250)	31.10.2019	22.2.2021
462/MP/2019	MTPS Units 7&8 (2X500)	4.10.2018	15.7.2019
463/MP/2019	RTPS (2x600)	4.10.2018	15.7.2019

22. The requirement of sharing the proposal for implementation of the ECS with the Respondents/ beneficiaries was introduced in the 2019 Tariff Regulations, which were notified in March 2019 and became effective on 1.4.2019. Therefore, the Petitioner could not have shared the proposal for installation of ECS in five of its generating stations with the Respondents/ beneficiaries before issuing IFBs or placing LoAs as the mandate for sharing such proposal was introduced in the 2019 Tariff Regulations.

23. However, in the case of MTPS Units 1 to 6 covered in the Petition No. 461/MP/2019, the IFB was issued on 31.10.2019 and subsequently, the NoA was issued 22.2.2021, which were during the 2019-24 tariff period. Therefore, the

Petitioner should have shared the proposal for installation of ECS with the Respondents/ beneficiaries as mandated in Regulation 29(1) of the 2019 Tariff Regulations. However, the Petitioner failed to share the proposal for installation of ECS with the Respondents/ beneficiaries and has not given any satisfactory explanation for not doing so. At the same time, we observe that Regulation 29(1) of the 2019 Tariff Regulations does not provide for or specify any timeline between sharing of the proposal and filing of petition, nor does it provide for furnishing any comments or objections by the Respondents/ beneficiaries. Therefore, as per this Regulation, it is clear that 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.

24. We observe that though the Petitioner had failed to share the proposal for installation of ECS with the Respondents/ beneficiaries as per Regulation 29(1) of the 2019 Tariff Regulations, the Petitioner has subsequently shared the proposal with the Respondents/ beneficiaries on the directions of the Commission. Moreover, a copy of the petition is automatically served on the beneficiaries immediately after the petition is uploaded in the e-filing portal of the Commission. We are of the view that it would have been appropriate if the Petitioner had shared the details of the proposal with the beneficiaries as envisaged in Regulation 29(1) of the 2019 Tariff Regulations before filing the petition in case of MTPS Units 1 to 6 for in-principle approval of ACE due to implementation of the ECS. However, we are unable to agree with the Respondents that the instant Petitions are not maintainable on this ground. The Petition was filed in 2019 and was admitted on 27.2.2020 and therefore, the proposal of the Petitioner stood shared with the Respondents for more than a

year, when the order in the Petition was reserved by the Commission on 1.6.2021 after detailed hearing on the matter. Therefore, we are of the view that it would not serve any purpose other than delaying the implementation of ECS. Further, the Petitioner would not be able to comply with the timelines specified in the MoEFCC Notification and directions of the Hon'ble Supreme Court. Therefore, we set aside the contentions of the beneficiaries as regards maintainability of the petitions.

- *MoEFCC Notification has to be applied on a case to case basis*

25. In Petition No. 459/MP/2019 and Petition No. 463/MP/2019, PSPCL has submitted that the Commission has already held in several cases that the MoEFCC Notification is a "change in law" event. PSPCL has submitted that Central Pollution Control Board (CPCB), the Jharkhand State Pollution Control Board (JSPCB) and West Bengal State Pollution Control Board (WBPCB) have prescribed certain standards for SO_2 and NO_x emissions even before the MoEFCC Notification came into being, which are required to be complied by the generating stations for obtaining EC. Therefore, applicability of the MoEFCC Notifications to a particular generating station has to be seen on a case to case basis and it cannot be applied to all generating stations uniformly. PSPCL has submitted that BTPS-A and RTPS, which are using sub-critical technology, have already achieved the norms prescribed in the MoEFCC Notification. PSPCL has submitted that MoP issued a direction under Section 107 of the Act that MoEFCC Notification is a "change in law" event. However, the said direction does not apply to TPPs which were required to comply with the norms at the time of Environment Clearance (EC). Therefore, the Petitioner should have given the norms prevailing as on the cut-off date or the date of commissioning of the units to ascertain whether the norms prescribed in the

MoEFCC Notification amount to “change in law” event. However, the Petitioner has not furnished the actual emission profile of BTPS-A and RTPS as on the cut-off date or on the date of commissioning of its units and the present emission levels. Therefore, the Petitioner cannot claim the MoEFCC Notification as “change in law” event without producing the emission levels. PSPCL has further submitted that emission norms were already prescribed before the MoEFCC Notification in ‘Standard Technical Specification for Main Plant Package of Sub-critical Thermal Power Project (2x500 MW or above)’. Therefore, it was the Petitioner’s responsibility to comply with the norms and if it has failed to do so, cost towards ECS cannot be now recovered from the consumers. The EC issued by MoEFCC mandates the Petitioner to maintain a separate fund for implementation of environmental protection measures and the Petitioner should furnish the details of the funds thus created. HPGCL has submitted that KTPS is already complying with the norms stipulated by the MoEFCC Notification and has also made submissions similar to the submissions made by PSPCL in its reply.

26. In response, the Petitioner vide affidavit dated 21.6.2021, has submitted the present SO_2 emission level certified by competent authority and has also submitted the details of the NO_x and SO_2 emission levels during the past three years, which was submitted by it to the Pollution Control Board. The Petitioner has further submitted that no specific emission norms applicable at the point of emission i.e. at chimney level, were specified for SO_2 and NO_x before 2015 MoEFCC Notification. Further, in terms of the EC dated 30.3.2007 and 18.10.2007 for BTPS-A and RTPS respectively, only the ambient air quality standards are to be monitored. The ambient air quality is different from emission norms which were specified for the first time for

SO_2 and NO_x in the MoEFCC Notification. Therefore, the Petitioner was not subjected to SO_2 and NO_x emission norms before issuance of the MoEFCC Notification. The Petitioner has further submitted that the issue of compliance of SO_2 and NO_x levels before MoEFCC Notification was considered by APTEL in its judgement dated 28.8.2020 in Appeal No. 21 and 73 of 2019 in the case TSPL v. PSPCL & Ors. ("TPSL Judgment") wherein similar EC conditions were there as in the case of BTPS-A and RTPS. APTEL has categorically distinguished between the requirement to provide space for FGD installation and the requirement to install FGD equipment. In the present case, the requirement is merely to provide space for FGD installation and it is incorrect to state that the same mandated installation of FGD by DVC. As regards PSPCL's contention that SO_2 and NO_x norms were already prescribed for the Petitioner and, therefore, funds were required to be earmarked for the purpose of compliance with environmental norms, the Petitioner has submitted that APTEL in judgement dated 28.8.2020 held that in none of the documents, based on which EC were issued, there was mandate for installation of FGD system and no separate fund was directed to be earmarked for FGD system installation and/ or SNCR system. The Petitioner has submitted that similarly, in the present case, there was no stipulation with regard to earmarking of funds for installation of FGD system in the EC. In the absence of specific norms, the Petitioner could not have anticipated the financial impact of FGD system installation. Further, if there was any breach of the EC conditions by the Petitioner, the relevant authorities could have taken appropriate measures by not renewing the EC. However, there is nothing on record to show that any such measures have been taken by the environmental authorities. Therefore, the contention of PSPCL in this regard is liable to be rejected.

27. We have considered the submissions of the Respondents and the clarifications given by the Petitioner. PSPCL and HPGCL have contended that CPCB, JSPCB and WBSPCB have already prescribed the norms for SO_2 and NO_x emission levels and, therefore, the MoEFCC Notification cannot be held to be a "change in law" event universally and has to be examined on a case to case basis. The Petitioner has submitted that at the time of granting EC for BTPS-A and RTPS, only the ambient air quality standards were mentioned, which are different from emission norms notified under the MoEFCC Notification. The Petitioner has contended that SO_2 and NO_x norms were specified in the MoEFCC Notification for the first time and, therefore, it amounts to "change in law" and it is mandatory for all TPPs, including the Petitioner, to comply with the norms. The Commission taking into consideration Regulation 3(9) of the 2014 Tariff Regulations and MoP directions contained in letter dated 30.5.2018 (under Section 107 of the 2003 Act) held, in order dated 20.7.2018 in Petition No. 98/MP/2017, that the MoEFCC Notification is a "change in law" event. The relevant portions of the order dated 20.7.2018 is as follows:

> *"38. As per the definition, "adoption, amendment, modification, repeal or re-enactment 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."*
>
> *"43. MoP in its directions under section 107 of the 2003 Act has recognised that the MOEFCC Notification requiring compliance of Environment (Protection) Amendment Rules, 2015 dated 7th December, 2015 is of the nature of Change in law event with*

two exceptions namely, where 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 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.

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."

28. As the MoEFCC Notification has already been held as "change in law" event by the Commission, the issue left for our consideration is whether any norms for SO_2 and NO_x emissions were in existence at the time of commissioning of the generating stations and whether any emission norms were specified while granting EC by the concerned Pollution Control Board. We have perused the EC certificates dated 30.3.2007 and 18.10.2007 issued by MoEFCC for BTPS-A and RTPS. It is observed that as per ECs issued, the Petitioner is only required to monitor the ambient air quality standards in and around the generating stations and no norms were prescribed for SO_2 and NO_x emissions. Therefore, PSPCL's and HPGCL's contention that norms were prescribed for SO_2 and NO_x emissions even before the MoEFCC Notifications and that applicability of the MoEFCC Notification has to be verified on case to case, cannot be sustained.

29. PSPCL and HPGCL have further contended that the Petitioner is required to earmark separate funds for the purpose of implementation of environmental protection norms. The Petitioner has contended that these issues have already been decided by APTEL in its judgement dated 28.8.2020 in Appeal No.21 of 2019 and Appeal No.73 of 2019. The Petitioner has contended that issues raised by PSPCL and HPGCL in BTPS-A and RTPS are similar to the issues settled by APTEL in

judgement dated 28.8.2020 and, hence, the said judgement is applicable in case of BTPS-A and RTPS.

30. We have considered the submissions made by PSPCL, HPGCL and the Petitioner. APTEL in judgement 28.8.2020 has held that there was no mandate for installation of FGD and earmarking separate funds for installation of FGD system and SNCR system. The relevant portion of the judgement dated 28.8.2020 is as follows:

> *"124. It is seen that based on the Expert Appraisal Committee report, ECs were granted. In both the reports Expert Appraisal Committee while granting recommendation for ECs did not state anything with regard to earmarking of funds towards installation of FGD for SO2 and any suitable system to control NOx emissions. Out of total cost of the project of Rs.8000 Crores, a sum of Rs. 461 Crores was earmarked for the existing environmental protection measures so far as Appellant-TSPL's project is concerned. As far as the Appellant-NPL is concerned, the total cost of the project was about Rs.5500 Crores, which included Rs. 410.10 Crores for environment protection measures. In none of the documents, based on which ECs were provided, there is no mandate for installation of FGD and no separate fund was directed to be earmarked for FGD installation and/or SNCR system."*

31. Further, the EC certificates issued to BTPS-A and RTPS, regarding earmarking of funds, provides as follows:

> *"(xix) Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. This cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year wise-expenditure should be reported to the Ministry."*

32. As per the above provision in the EC certificates, the Petitioner is required to earmark funds only for implementation of environmental protection measures. We are of the view that the funds are to be earmarked for the implementation of environmental protection measures existing at the time of issue of ECs and the provision does not envisage earmarking funds for norms that may be prescribed in future. Therefore, we are not able to agree with the contention of PSPCL and

HPGCL that the Petitioner was required to earmark separate funds for installation of FGD system and De-NOx system.

33. On perusal of the ECs issued to BTPS-A and RTPS, it is observed that the Petitioner is only required to provide space for FGD unit and the ECs do not mandate installation of FGD. The relevant portion of the ECs is as follows:

> *"Space provision shall be made for Fuel Gas De-sulphurisation (FGD) unit, if required at a later stage."*

34. As the ECs mandated only provision of space for installation of FGD, if required at a later stage, the Petitioner was obliged to provide space accordingly and thus, not become eligible for compensation for land for the purpose of installation of FGD.

- *Non-submission of the present emission levels of the generating stations*

35. PSPCL and HPGCL have contended that the Petitioner has not submitted the SO_2 and NO_x emission levels as on the date of commissioning of the generating stations and the present levels of emission to understand the emissions levels achieved by the Petitioner. Therefore, the Petitioner should be directed to submit the same. The Commission directed the Petitioner, vide Record of Proceedings dated 1.6.2021, to submit the SO_2 and NO_X emission levels as on date and during the last three years in case of the instant generating stations. The Petitioner has submitted SO_2 levels certified by the competent authority and SO_2 and NO_x emissions levels during the past three years as submitted to the respective Pollution Control Boards. We have perused SO_2 and NO_X emission levels of the generating stations and it is observed that the SO_2 emission levels of the instant generating stations are more than the norms prescribed in the MoEFCC Notifications. In the case of NO_x, there

has been gradual increase in the emission levels over the last three years and in 2020, it is more than the norms prescribed in the MoEFCC Notification. Therefore, there is a requirement for installation of ECS to comply with the norms specified in the MoEFCC Notification.

- *Recommendations of CEA have not been submitted by the Petitioner*

36. The Petitioner has submitted that it has selected WFGD system for its generating stations as it is the most appropriate technology and it is in line with the CEA norms and also meets the SO_2 emission norms stipulated by MoEFCC. The same was also recommended by NTPC, the Petitioner's consultant. Accordingly, in 2018, the Feasibility Report (FR) along with the complete tender documents for the DSTPS of 2x500 MW was submitted by the Petitioner to CEA for their observation. On 26.11.2018, a meeting of officials of CEA, the Petitioner and NTPC was held and on 27.11.2018, the Petitioner wrote a letter to CEA apprising about complying with CEA's observations made during the meeting of 26.11.2018 for installation of WFGD system for DSTPS. Thereafter, CEA gave go-ahead to the Petitioner regarding the tendering process and award of contract for ECS in the Petitioner's power plants. The Petitioner has submitted that in line with the above clearance of CEA, the tendering and bidding process was started for installation of WFGD in the generating stations of the Petitioner.

37. PSPCL has submitted that the Petitioner has not placed on record the plant-specific recommendations issued by CEA for installation of WFGD System. TPDDL has submitted that the Petitioner has suggested that the Commission departed from its earlier view taken in the matter of Maithon Power Limited (MPL) and did not

relegate NTPC to CEA for project specific approval of technology but directed CEA to evolve guidelines and operational parameters to meet the revised ECNs. The Commission had directed CEA to evolve guidelines and the guidelines are merely indicative to undertake a prudence check and not a substitute for the project specific recommendation of CEA. TPDDL has submitted that it is evident that the Commission directed NTPC to consult CEA on specific project as in the case of MPL. TPDDL has submitted that while granting liberty to NTPC to approach the Commission for approval of additional expenditure, the Commission had specifically observed that NTPC may do so after a project specific consultation with CEA, which is the main technical body, on adoption of specific ECS technology and the cost for the same. TPDDL has further contended that MPL had subsequently consulted CEA specifically for its project and filed Petition No. 152/MP/2019 for grant of in-principle approval of the additional expenditure for installing and operating ECS. Taking into consideration the express recommendations of CEA in case of MPL, the Commission passed order dated 11.11.2019 partly allowing MPL's Petition. However, in the present case, the Petitioner despite being similarly placed as compared to MPL has filed the petition without having specifically consulted CEA for its Mejia project and without having any specific recommendations of CEA.

38. TPDDL has further submitted that the Petitioner has not considered CEA's advice to conduct "life cycle cost-benefit analysis" while choosing from the available FGD technologies. CEA has also recommended evaluation of various factors for optimum selection of technology for a TPP. None of the factors have been provided by the Petitioner or considered by the Petitioner. Since the Petitioner has not followed the consultative process or mentioned any project specific CEA

recommendations or shared the critical details of the competitive bidding process with the procurers, there is a serious risk that the prudent process to determine the most competitive price has not taken place.

39. In response, the Petitioner has submitted that the Petitioner has filed its additional affidavit on 3.6.2020 and provided detailed justifications regarding the bidding process conducted by DVC and in particular the concurrence received from CEA for initiating the process of WFGD system installation. NTPC has recommended WFGD system as the same is a proven technology duly recommended by CEA. Feasibility Report was submitted to CEA along with tender documents for DSPTS and CEA gave a go-ahead by recording that the Petitioner had addressed all the observations raised by CEA and was advised to consider CEA's observations/ discussions on an outline basis and take up installation of WFGD system in other power stations. Accordingly, the Petitioner has proceeded to issue NIT for installation of WFGD on the basis of transparent competitive bidding process and in complete adherence to the recommendations of CEA.

40. BRPL in Petition No. 461/MP/2019 has submitted that the Petitioner has not provided the technical report approved by CEA.

41. We have considered the submissions of PSPCL, TPDDL and BRPL and the clarifications given by the Petitioner. The Respondents have contended that the Petitioner has not submitted the project specific recommendations of CEA. It is observed that CEA has been entrusted with the planning and coordination of implementation of ECS for compliance with the MoEFCC Notification. The Commission in order dated 20.3.2017 in Petition No. 72/MP/2016 directed CEA to

decide specific optimum technology and the associated costs of installation of FGD system in case of MPL. Later, the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017, filed by NTPC, directed CEA to prepare guidelines regarding suitable technology, operation parameters, norms and other technical inputs. Accordingly, CEA vide its letter dated 21.2.2019 has specified the parameters to be considered for selection of technology, CAPEX, OPEX and AEC for ECS for reduction in SO_2 emissions, which are applicable for TPPs in general.

42. In the instant cases, with regard to selection of technology, the Petitioner has throughout acted on the advice of CEA. It submitted Feasibility Report to CEA along with tender documents for DSTPS and CEA gave a go-ahead by recording that the Petitioner had addressed all the observations raised by CEA and was advised to consider CEA's observations/ discussions on an outline basis and take up installation of WFGD system in other power stations. Accordingly, CEA gave a go ahead to the Petitioner regarding the tendering process and award of contract for ECS in Petitioner's power plants. The Petitioner has submitted that in line with the above clearance of CEA, the tendering and bidding process was started for installation of WFGD system in the generating stations of the Petitioner. Further, the Petitioner has shared the details of the transparent bidding process. As such, the Petitioner has followed the consultative process or shared the critical details of the competitive bidding process with the procurers. As observed above, the Commission itself moved away from project specific recommendations of CEA to general guidelines to be issued by CEA. In fact, the operating norms have been notified by the Commission vide first amendment to the 2019 Tariff Regulations based on the CEA's recommendations itself. We also observe that the Petitioner has undertaken

all due prudent process to determine the most competitive price. As such, we are of the view that there is no need for plant specific recommendations.

43. In view of the above discussions and findings, we are of the view that instant petitions filed by DVC are maintainable. Having held that the petitions are maintainable, we discuss the various prayers of the Petitioner in the subsequent paragraphs.

Analysis and Decision

44. As stated above, the Petitioner has made similar prayers in the six Petitions and they are as follows: (A) approve ACE for undertaking implementation of ECS in order to meet revised ECNs; (B) allow additional AEC of 1% to 1.1% (C) allow additional O&M Expenses @ 10%; (D) allow shutdown period as deemed availability for payment of capacity charges; (E) allow increased expenditure of water cost; (F) allow procurement cost of limestone and actual consumption cost of reagents; and (G) grant liberty to approach Commission for approval of implementation of remaining ECS in future, if required. As the prayers made by the Petitioner are similar in nature they are dealt together in the following paragraphs.

(A) ACE for implementation of ECS

45. The Petitioner has sought in principle approval of ACE towards implementation of ECS in order to meet revised ECNs as per the MoEFCC Notifications. The Petitioner has proposed WFGD technology for control of SO_2 in all the generating stations covered in the instant six petitions. The Petitioner had proposed Combustion Modification as the primary measure and SNCR as the secondary measure to control NO_x emissions initially in the petition. Later, with the

revision of norms for NO_x emissions from 300 mg/Nm^3 to 450 mg/Nm^3, the Petitioner is claiming ACE only towards installation of Combustion Modification. The Petitioner has considered the capital cost of ECS discovered through competitive bidding and certain other operating parameters to arrive at the indicative supplementary tariff. The Commission for the purpose of prudence check and on the basis of the concerns raised by the beneficiaries/ Respondents during the proceedings in these petitions, directed the Petitioner to submit certain information pertaining to the capital cost claimed towards ECS, the proposed technology for control of NO_x emissions, the indicative supplementary tariff and other parameters considered by the Petitioner for the subject generating stations. ACE claimed for implementation of ECS is specific to a generating station and it is accordingly dealt separately for each generating station. The petition wise claims made by the Petitioner for the subject generating stations are given in the following paragraphs.

46. Claims of the Petitioner in Petition No. 94/MP/2019 with regard to ACE in respect of DSTPS (2x500 MW) are as under:

(a) As per the MoEFCC Notification, the Petitioner is required to keep SO_2 emissions from below 200 mg/Nm^3 for units equal to or larger than 500 MW. Taking into consideration the quality of coal being fired at DSTPS, SO_2 emission is expected to be in the range of 2242.47 mg/Nm^3 (VWO condition), which is higher than the norm specified. Accordingly, as per recommendations of CEA, WFGD system is being implemented for control of SO_2 emission in DSTPS.

(b) On 12.9.2018, the Petitioner floated IFB in public domain on Domestic Competitive Bidding (DCB) format. The Petitioner invited online bids on a Two-Stage Bidding system, with Stage-I being Techno-Commercial Bid and Stage-II being Price Bid followed by e-reverse auction from eligible bidders.

(c) L&T, Vadodara emerged as the successful bidder and was awarded the two contracts vide NoA dated 15.7.2019 after approval of its Board in its 641st meeting held on 25.6.2019.

(d) The first award of contract pertains to supply of Plant & Equipment for the installation of WFGD system and the second pertains to providing all services i.e., inland transportation, insurance, installation, testing & commissioning and guarantee tests of supply of FGD System Package.

(e) As per the Notification of MoEFCC of October 2020, the Petitioner is required to ensure that NO_x emission is limited to 300 mg/Nm^3 for DSTPS. To comply with the aforesaid norm and ensure that NOx emission always stays below the specified norm with any variation in coal quality in future, the Petitioner is required to install/ modify De-Nox System i.e., carry out modification of Combustion System and may have to install Selective Non-Catalytic Reduction System (SNCR).

(f) The break-up of the capital cost claimed by the Petitioner for WFGD system implementation is as follows:

Generating station & capacity (MW)	CEA indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC & FC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
DSTPS (2 x 500 MW)	40.50	43.60	4127.00	1545.00	7855.93	13527.93	57172.00

Note : 1. IDC has been calculated based on present market ROI of 8.25%;
2.Total cost claimed is based on awarded EPC cost along with calculated IDC and contingency cost (IEDC). Earlier project cost was based on estimated EPC cost along with contingency and IDC calculated at that time; and
3. Hard cost claimed is based on awarded EPC cost. However, the contract has provision for price variation clause (PVC).

(g) CEA had notified the indicative hard cost in February 2019. The hard cost discovered by the Petitioner through open tender followed by e-reverse auction is largely in line with CEA's indicative cost. The estimated hard cost claimed by

the Petitioner is ₹43.60 lakh/MW and the total cost claimed by the Petitioner is ₹57172 lakh.

(h) As regards reduction in NOx, the Petitioner on 12.10.2018 issued NIT with Technical Specification (along with the conditions of contract) for five of its 500 MW and 600 MW Projects.

(i) BHEL was declared as successful bidder for supply of plant and machinery and services for the work of Combustion Modification Package (De-NO_x) for DSTPS, MTPS (Units 7 & 8), KTPS, BTPS-A and RTPS Ph.-1 @ `1.56 lakh/MW excluding GST and total cost of ₹86.72 crore including GST for five plants. Accordingly, NoA was issued to BHEL on 17.7.2019 for the aforementioned five plants.

(j) The material for the Combustion Modification Package (De-NOx) is expected to be dispatched by supplier by the end of July 2021 for Unit 1 and June 2021 for Unit 2. Depending on the overhauling schedule of the plant, the installation is expected to be completed by March 2023.

(k) Subsequent to the award of contract for installation of WFGD system on 15.7.2019, L&T Vadodara started the process for installation of WFGD system. 28% of supply and 17% of services have been completed. Installation of FGD system, considering the effect of pandemic, is expected to be completed in case of Unit No. 1 in the 2nd quarter of 2022-23 and for Unit No. 2, in the 3rd quarter of 2022-23.

47. Claims of the Petitioner in Petition No. 459/MP/2019 with regard to ACE in BTPS-A (1x500 MW) are as under:

(a) BTPS-A was commissioned on 22.3.2017. EC was granted to BTPS-A on 30.3.2007.

(b) As per the MoEFCC Notification, the Petitioner is required to keep SO_2 emissions below 200 mg/Nm^3 for units equal to or larger than 500 MW. Taking into consideration the quality of coal being fired at BTPS-A, SO_2 emission is

expected to be in the range of 1667 mg/Nm^3 as per design condition, which is more than the norm specified. FGD system is being implemented for control of SO_2 emission.

(c) On 4.10.2018, the Petitioner floated IFB for BTPS-A in public domain on DCB format. The Petitioner invited online Bids on a Two Stage Bidding system, with the Stage-I being Techno-Commercial Bid and Stage-II being Price Bid followed by e-Reverse Auction from eligible Bidders.

(d) Techno Electric & Engineering Co. Ltd., Kolkata emerged as the successful bidder and was awarded two contracts vide NoA dated 15.7.2019 after approval of its Board.

(e) The first award of contract pertains to supply of Plant and Equipment for the installation of FGD system and the second award of contract pertains to providing all services i.e., inland transportation, insurance, installation, testing & commissioning and guarantee tests of supply of FGD System Package.

(f) The installation of FGD system is expected to take approximately 27 months starting from the time NTP is issued to the contractor.

(g) As per the latest Notification of MoEFCC of October 2020, the Petitioner is required to ensure that NO_x emission is limited to 450 mg/Nm^3 for BTPS-A. To comply with the aforesaid norm and ensure that NO_x emission always stays below the specified norm with any variation in coal quality in future, the Petitioner is required to install/ modify De-NOx System i.e., carry out Modification in combustion system and may have to install SNCR system which is used to reduce NO_x emissions.

(h) The break-up of the capital cost claimed for installation of WFGD system is as follows:

Generating Station & Capacity (MW)	CEA indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC & FC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
BSTPS (500 MW)	40.50	62.50	2638.00	1105.00	5621.18	9364.18	40593.00

Note: *1. IDC has been calculated based on present market ROI of 8.25%;*
2.Total cost claimed is based on awarded EPC cost along with calculated IDC and contingency cost (IEDC).Earlier Project cost was based on estimated EPC cost along with contingency and IDC calculated at that time; and
3. Hard cost claimed is based on awarded EPC cost. However, the Contract has provision for price variation clause (PVC)

(i) CEA had notified the indicative hard cost for FGD system in February 2019. The hard cost discovered by DVC through open tender followed by e-reverse auction is largely in line with CEA's indicative cost. The estimated hard cost claimed by the Petitioner is ₹62.50 lakh/MW and the total cost claimed by the Petitioner is ₹40593 lakh. The capital cost given by CEA is only indicative cost and the estimated cost has increased due to efflux of time and other uncontrollable factors. Further, BTPS-A is a single unit configuration with all the common facilities of multiple units configuration.

(j) As regards reduction in NOx, the Petitioner on 12.10.2018 issued NIT with Technical Specification (along with the conditions of contract) for five of its 500 MW and 600 MW Projects.

(k) BHEL was declared as successful bidder for supply of plant and machinery and services for the work of Combustion Modification Package (De-NO_x) for DSTPS, MTPS (Units 7 & 8), KTPS, BTPS-A and RTPS Ph.-1 @ ₹1.56 lakh/MW excluding GST and total cost of ₹86.72 crore including GST for five plants. Accordingly, NoA was issued to BHEL on 17.7.2019 for the aforementioned five plants.

(l) Subsequent to the award of contract for installation of FGD system on 15.7.2019, Techno Electric Engineering & Co. Ltd., Kolkata started the process for installation of FGD system at the instant station. At present, 22% of Supply

and 5% of services have been completed. Considering the effect of pandemic on the instant project, it is expected to be completed by 4th quarter of 2022-23.

48. Claims of the Petitioner in Petition No. 460/MP/2019 with regard to ACE in respect of KTPS (2x500 MW) are as under:

(a) EC was granted to KTPS on 23.6.2005. KTPS Unit-1 was commissioned on 18.7.2013 and KTPS Unit-2 was commissioned on 14.6.2014.

(b) Taking into consideration the quality of coal being fired at KTPS, SO_2 emission is expected to be in the range of 2231 mg/Nm^3 as per design condition, which is far more than the norm specified. WFGD system is being implemented to control SO_2 emission.

(c) On 4.10.2018, the Petitioner floated IFB for the purpose of installation of FGD in four of its projects including KTPS (2 x 500 MW). The bids were invited by the Petitioner by issuing IFB in public domain on DCB format. The Petitioner invited online bids on a Two Stage Bidding system, with the Stage-I being Techno-Commercial Bid and Stage-II being Price Bid followed by e-Reverse Auction from eligible Bidders. A Pre-Bid discussion was held on 23.10.2018 with different prospective bidders.

(d) Thermax Ltd. emerged as the successful bidder on the basis of its bids and was awarded two contracts vide NoA dated 15.7.2019 after the approval of its Board.

(e) The first contract pertains to supply of Plant and Equipment for the installation of FGD system and the second contract pertains to providing all services inland transportation, insurance, installation, testing & commissioning and guarantee tests of supply of FGD System Package.

(f) The installation of FGD system is expected to take approximately 27 months for Unit-1 and 30 months for Unit-2 from the date of issue of NTP to the contractor.

(g) The Petitioner is required to ensure that NO_x emission is limited to 450 mg/Nm^3 in case of KTPS. To comply with the aforesaid norm and ensure that NO_x emission always stays below the specified norm with any variation in coal quality in future, the Petitioner is required to install/ modify De-NOx System by carrying out modification in combustion system and may also install SNCR system.

(h) The break-up of the capital cost claimed for FGD system is as follows:

Generating Station & Capacity (MW)	CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC & FC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
KPTS (2 x 500 MW)	40.50	47.10	4456.00	1668.00	8481.35	14605.35	61724.00

Note: *1. IDC has been calculated based on present market ROI of 8.25%;*
2.Total cost claimed is based on awarded EPC cost along with calculated IDC and contingency cost (IEDC). Earlier Project cost was based on estimated EPC cost along with contingency and IDC calculated at that time; and
3. Hard cost claimed is based on awarded EPC cost. However, the Contract has provision for price variation clause (PVC)

(i) The hard cost discovered through open tender followed by e-reverse auction is largely in line with CEA's indicative cost. The estimated hard cost claimed by the Petitioner is ₹47.10 lakh/MW and the total cost claimed by the Petitioner is ₹61724 lakh. The cost given by CEA is indicative cost and the estimated cost is higher than the CEA indicative cost due to efflux of time and other uncontrollable factors.

(j) As regards reduction in NOx, the Petitioner issued NIT with Technical Specification for its 500 MW and 600 MW Projects. The intent of the said Technical Specification was to reduce NOx emission during the Combustion process (by either modifying the existing wind box or replacing with a new redesigned wind box along with separate over fired air dampers). Accordingly, the Petitioner invited bids for NOx Package for its five projects. In addition to the cost claimed for NOx reduction, the capital cost for installation of FGD system has been provided separately.

(k) NIT was issued on 12.10.2018 for installation of De-NOx system on 19.3.2019. The price bid was opened followed by reverse e-auction and BHEL was declared as successful bidder for supply of plant and machinery and services for the work of Combustion Modification Package @ ₹1.56 lakh/ MW excluding GST and the total is ₹86.72 crore including GST for five plants.

(l) At present, 80% of the materials have been dispatched by the supplier and the balance is expected to be dispatched by the end of June 2021. Considering the impact of the pandemic and overhauling schedule of the plant, the installation is expected to be completed by March 2023.

(m) Thermax Ltd. has started the process for installation of FGD system at the instant station. At present, 23% of Supply and 20% of Services have been completed and considering the effect of pandemic, (i) Unit No. 1 is expected to be completed by 2nd quarter of 2022-23 and (ii) Unit No. 2 is expected to be completed by 3rd quarter of 2022-23.

49. Claims of the Petitioner in Petition No. 461/MP/2019 with regard to ACE in respect of MTPS 1 to 6 (4x210 MW + 2x250 MW) are as under:

(a) MTPS Unit 1 was commissioned in March 1996l Unit 2 in March 1997; Unit 3 in March 1998; Unit 4 in October 2004; Unit 5 in October 2007 and Unit 6 was commissioned in March 2007. EC was granted to MTPS Units-1, 2 and 3 on 14.9.1995, to Unit 4 on 12.11.2001 and to Units- 5 and 6 on 10.2.2004.

(b) Taking into consideration the quality of coal being fired at MTPS, SO_2 emission is expected to be in the range of 1718 mg/Nm^3 as per design condition for combined Units-1, 2 and 3 and in the range of 1813 mg/Nm^3 as per design condition for combined Units-4, 5 and 6, which is far more than the norm specified.

(c) NTPC recommended WFGD system for the installation at aforesaid Petitioner's project as the same is a proven technology duly recommended by

CEA. In view of recommendation by NTPC, the Petitioner has adopted WFGD technology for MTPS Units-1 to 6.

(d) On 31.10.2019, the Petitioner floated IFB for MTPS (4x210 MW + 2x250 MW) in public domain on DCB format. The Petitioner invited online bids on a Two Stage Bidding System, with the Stage-I being Techno-Commercial bid and Stage-II being price bid followed by reverse e-auction from eligible bidders. L&T emerged as the successful bidder on the basis of its bids and was awarded two contracts vide NoA dated 22.2.2021 after approval from the Board of the Petitioner Company in its 647th Meeting held on 13.2.2021.

(e) The first award of contract pertains to supply of Plant and Equipment for the installation of FGD system and the second award of contract pertains to providing all services i.e. inland transportation, insurance, installation, testing & commissioning and guarantee tests of supply of FGD System Package.

(f) The installation of FGD system is expected to take approximately 32 months for Unit 4, 5 and 6 and 35 months for Unit 1, 2 and 3 months starting from the date of issue of NTP to the contractor.

(g) The capital cost claimed for installation of FGD is as follows:

Unit and Capacity (MW)	CEA indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC & FC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other cost claimed* (₹ lakh)	Total costs claimed (₹ lakh)
MTPS Units 1 to 6 4x 210 MW + 2x 250 MW	45.00	57.00	8539.00	2704.00	13751.00	34204.00	110600.00

Note: *1. IDC has been calculated based on present market ROI of 8.25%;*
2. Total cost claimed is based on awarded EPC cost along with calculated IDC and contingency cost (IEDC). Earlier project cost was based on estimated EPC cost along with contingency and IDC calculated at that time;
3. Hard cost claimed is based on awarded EPC cost. However, the contract has provision for price variation clause (PVC); and
*******Total other cost claimed includes ₹9210 lakh of opportunity cost.*

(h) The estimated hard cost claimed by the Petitioner is ₹57 lakh/MW and the total cost claimed by the Petitioner is ₹110600 lakh. The deviation from the

cost recommended by CEA is due to the reason that CEA has provided an indicative cost and the estimated cost has increased due to efflux of time and other uncontrollable factors.

(i) As per the MoEFCC Notification, the Petitioner is required to ensure that NO_x emission is limited to 600 mg/Nm^3 for Units 1 to 3 as their commissioning date was prior to 31.12.2003 and 450 mg/Nm^3 for Units 4, 5 and 6 as their commissioning date is after 1.1.2004 and before 31.12.2016. Installation of De-NO_x system for MTPS Units-1, 2 and 3 has not been envisaged at present. However, to comply with the aforesaid norm and ensure that NO_x emission always stays below the specified norm with any variation in coal quality in future, the Petitioner is required to install/ modify De-NO_x System i.e., carry out modification in combustion system at MTPS Unit 4, 5 and 6 and may have to install SNCR system which is used to reduce NO_x emissions.

(j) The Petitioner issued NIT on 7.11.2019 for reduction in NO_x with Technical Specification (along with the conditions of contract).

(k) BHEL was awarded the contract on 30.9.2020 for the supply of plant and machinery and services for the work of the Combustion Modification Package (De-NO_x) @ ₹3.08 lakh/MW excluding GST and total of ₹37.29 crore excluding GST for five units (Three units of MTPS (1x210 MW+2x250MW) and two units of CTPS of 250 MW each). Thereafter, the process for installation of De-NO_x system at the MTPS Unit 4, 5 and 6 was commenced. At present, Detailed Engineering has been completed and manufacturing has started. The expected date of completion considering the impact of pandemic and Unit overhauling schedule is March 2023.

(l) The cost of installation of De-NO_x system is estimated to be approximately ₹0.037 crore/MW for minor modification for MTPS Units 4, 5 and 6 with a shutdown period of approximately 35 days for each unit for installation of combustion modification system. Cost of combustion tuning for MTPS Units 1, 2, 3 will be submitted later. The De-NO_x System will also incur additional

recurring cost towards O&M, APC, recurring costs of reagent and shutdown of unit for about 35 days.

(m) L&T started the process for installation of WFGD system at the instant station. At present, basic engineering has been completed and Geotechnical investigation is in progress. The expected date of completion of installation of WFGD after considering the impact of pandemic is March, 2024.

50. Claims of the Petitioner in Petition No. 462/MP/2019 with regard to ACE in respect of MTPS 7 & 8 of 1000 MW (2x500 MW) are as under:

(a) MTPS Unit 7 was commissioned on 30.9.2010 and Unit 8 was commissioned on 26.3.2011. EC was granted to these MTPS Units on 5.1.2007.

(b) As per the MoEFCC Notification, the Petitioner is required to keep SO_2 emissions below 200 mg/Nm^3 for units equal to or larger than 500 MW. Taking into consideration the quality of coal being fired at MTPS, SO_2 emission is expected to be in the range of 1667 mg/Nm^3 as per design condition, which is far more than the revised norm specified.

(c) On the basis of the recommendations of NTPC and CEA, the Petitioner has adopted WFGD technology for reducing SO_2 emissions and it would meet SO_2 emission norms as stipulated in the MoEFCC Notification.

(d) On 4.10.2018, the Petitioner floated IFB for MTPS Unit No. 7 and 8 (2 x 500 MW) for installation of the FGD system. The bids were invited by the Petitioner on DCB format.

(e) L&T emerged as the successful bidder and was awarded two contracts vide NoA dated 15.7.2019, after approval of its Board, pertaining to supply of Plant & Equipment for the installation of FGD system and to provide all services inland transportation, insurance, installation, testing & commissioning and guarantee tests of supply of FGD System Package.

(f) The installation of FGD system is expected to take approximately 27 months for Unit 7 and 30 months for Unit 8 starting from the time NTP is issued to the contractor.

(g) The capital cost claimed for installation of WFGD system is as follows:

Unit and Capacity (MW)	CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC & FC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
MTPS Units 7 & 8 2 x 500 MW	40.50	45.60	4311.00	1614.00	8206.77	14131.77	59725.00

Note: *1. IDC has been calculated based on present market ROI of 8.25%;*
2.Total cost claimed is based on awarded EPC cost along with calculated IDC and contingency cost (IEDC). Earlier Project cost was based on estimated EPC cost along with contingency and IDC calculated at that time; and
3. Hard cost claimed is based on awarded EPC cost. However, the contract has provision for price variation clause (PVC)

(h) CEA had notified the indicative hard cost in February 2019. The hard cost discovered by DVC through open tender followed by e-reverse auction is largely in line with CEA's indicative cost. The estimated hard cost as claimed by the Petitioner is `45.60 lakh/MW and the total cost claimed by the Petitioner is `59725 lakh. The reason for deviation from cost recommended by CEA is due to efflux of time and other uncontrollable factors.

(i) As per the Notification of MoEFCC of October 2020, the Petitioner is required to ensure that NO_x emission is limited to 300 mg/Nm^3 for these MTPS units. Therefore, to comply with the aforesaid norm and to ensure that NO_x emission always stays below the specified norm, the Petitioner is required to install/ modify De-NO_x System i.e., carry out modification in combustion system and may have to install SNCR system.

(j) For installation of De-NO_x system, NIT was issued on 12.10.2018 with Technical Specification for its 500 MW and 600 MW Projects. The intent of the said Technical Specification was to reduce NO_x emission during the combustion process (by either modifying the existing wind box or replace with a new redesigned wind box along with separate over fired air dampers).

Accordingly, the Petitioner invited bids for NO_x package for its five Projects. In addition to the cost claimed for reduction of NO_x, the capital cost for installation of FGD system has been provided separately and distinctly.

(k) BHEL was declared as successful bidder for supply of plant and machinery and services for the work of Combustion Modification Package (De-NO_x) for BTPS-A, MTPS (Units 7 and 8), KTPS, DTPS and RTPS Ph.-1 @ ₹1.56 lakh/MW excluding GST and total cost of ₹86.72 crore including GST for five plants. NoA was issued to BHEL for the aforementioned five plants on 17.7.2019.

(l) The shutdown period for installation of combustion modification system is approximately 35 days for each unit.

(m) The Combustion Modification Package (De-NO_x) in MTPS Unit 8 has been installed and the PG Test is yet to take place. However, for MTPS Unit 7 the material was expected to be dispatched by the end of June 2021. Considering the impact of pandemic and overhauling schedule of the Unit, the expected date of completion is March 2023.

(n) L&T, Vadodara has started the process for installation of FGD system at the instant station. At present, 29% of supply and 28% of services have been completed and the expected date of completion for Unit No. 7 is by 2nd Quarter of 2022-23 and Unit No. 8 is expected to be completed by 3rd Quarter of 2022-23.

51. Claims of the Petitioner in Petition No. 463/MP/2019 with regard to ACE in respect of RTPS (2x600 MW) are as under:

(a) RTPS Unit-1 and RTPS Unit-2 were commissioned on 31.3.2016. EC was granted to RTPS on 18.10.2007.

(b) As per the MoEFCC Notification, the Petitioner is required to keep SO_2 emissions below 200 mg/Nm^3 for units equal to or larger than 500 MW. SO_2 emission is expected to be in the range of 1935 mg/Nm^3 as per design

condition, on the basis of quality of coal being fired at RTPS, which is far more than the norm specified. Therefore, to comply with the aforesaid norm, the Petitioner is required to install FGD system to reduce excess of SO_2 from units.

(c) IFB was floated on 4.10.2018 for installation of WFGD system based on DCB format. L&T, Vadodara emerged as the successful bidder and was awarded the two contracts vide NoA dated 15.7.2019 after approval of its Board.

(d) The first award pertains to supply of Plant & Equipment for the installation of FGD system and the second pertains to providing all services i.e., inland transportation, insurance, installation, testing & commissioning and guarantee tests of supply of FGD System Package.

(e) The capital cost claimed for installation of WFGD system is as follows*:*

Generating Station & Capacity (MW)	CEA indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC & FC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
RTPS 2 x 600 MW	37.00	39.50	4488.00	1680.00	8542.37	14710.37	62168.00

Note:*1. IDC has been calculated based on present market ROI of 8.25%;*
2. Total cost claimed is based on awarded EPC cost along with calculated IDC and contingency cost (IEDC). Earlier Project cost was based on estimated EPC cost along with contingency and IDC calculated at that time; and
3. Hard cost claimed is based on awarded EPC cost. However, the Contract has provision for price variation clause (PVC).

(f) The hard cost discovered through DCB is largely in line with CEA indicative cost. The estimated hard cost claimed by the Petitioner is ₹39.50 lakh/MW and the total cost claimed by the Petitioner is ₹62168 lakh. The reason for deviation of cost from the CEA benchmark cost is due to efflux of time and other uncontrollable factors.

(g) The installation period of WFGD system is approximately 27 months for Unit-1 and 30 months for Unit-2 starting from the time NTP is issued to the contractor.

(h) As per the latest Notification of MoEFCC of October 2020, the Petitioner is required to ensure that NO_x emission is limited to 450 mg/Nm^3 for RTPS. To comply with the aforesaid norm and ensure that NO_x emission always stays below the specified norm with any variation in coal quality in future, DVC is required to install/ modify De-NO_x System i.e., carry out modification in combustion system at RTPS and may have to install SNCR system.

(i) For reduction of NO_x emissions, NIT was issued on 12.10.2018 with Technical Specification for its 500 MW and 600 MW Projects. The intent of the said Technical Specification was to reduce NO_x emission during the combustion process (by either modifying the existing wind box or replace with a new redesigned wind box along with separate over fired air dampers). Accordingly, the Petitioner invited bids for NO_x package for its five Projects.

(j) BHEL was declared as successful bidder for supply of plant and machinery and services for the work of Combustion Modification Package (De-NO_x) for BTPS-A, MTPS (Units 7 and 8), KTPS, DSTPS and RTPS Ph.-1 @ ₹1.56 lakh/MW excluding GST and total cost of ₹86.72 crore including GST for five plants. NoA was issued to BHEL for the aforementioned five plants on 17.7.2019.

(k) The installation period of De-NO_x system is approximately 35 days for each unit. Installation of De-NO_x would also involve recurring cost like O&M Expenses, increase of APC, cost of reagent and shutdown of unit, which depends on design philosophy for combustion modification and other De-NO_x technologies like SNCR, etc.

(l) The materials for the Combustion Modification Package (De-NO_x are expected to be dispatched by supplier by the end of June 2021 for Unit 1 and July 2021 for Unit 2. Further, considering the impact of pandemic and overhauling schedule of the plant, the installation is expected to be completed by March 2023.

(m) L&T, Vadodara has started the process for installation of FGD system at the instant station. At present, 23% of Supply and 20% of Services have been completed and considering the effect of pandemic on the instant Project, Unit No. 1 is expected to be completed by 3rd quarter of 2022-23 and unit No. 2 is expected to be completed by 4th quarter of 2022-23.

52. On the basis of the claims made by the Petitioner, the following three issues arise for our consideration (a) suitability of the ECS selected by the Petitioner, (b) approvals and the bidding process, and (c) the capital cost of the identified ECS, which are dealt in the following paragraphs.

(a) Suitability of the ECS selected by the Petitioner

53. The Petitioner has submitted that WFGD is the most appropriate technology to control SO_2 emissions for its generating stations. For control of NOx emissions, the Petitioner had initially proposed Combustion Modification System and SCR/ SNCR. However, on revision of norms for NO_x emissions in October 2020 by MoEFCC from 300 mg/Nm^3 to 450 mg/Nm^3, the Petitioner has submitted that Combustion Modification System is sufficient to meet the NO_x emissions.

54. The Petitioner has submitted that on the basis of the directions of the Commission in order dated 20.7.2018 in Petition No.98/MP/2017, CEA has recommended the following four technologies to comply with revised SO_2 emission norms:

(a) Wet Limestone based FGD;

(b) Lime Spray Drier/ Semi-dry Semi FGD;

(c) Dry Sorbent Injection based FGD; and

(d) Furnace Injection in CFBC Boilers.

55. The Petitioner has submitted that WFGD System is better than the Dry Type FGD, Ammonia Based FGD and Sea Water FGD system for the following reasons:

(a) In case of Dry Sorbent Injection/ Dry type FGD, SO_2 removal efficiency is low (typically 30%- 50%) which can be increased to 70%, but with very high consumption of reagent. The reagent utilization is very low when compared to WFGD System leading to high operational expenses. These technologies are preferable for unit size of 60 MW-250 MW range since the reagent cost in this technology is relatively higher than Wet Limestone and Ammonia based FGD. It is suitable for units running on low PLF and units with balance operating life of 7-9 years. Further, DSI based technologies have considerably low CAPEX ($1/4^{th}$) and very less APC ($1/10^{th}$) compared to Wet Limestone and Ammonia based FGD technologies.

(b) There are very few providers of Ammonia based FGD technology when compared to WFGD technology leading to less competition. Also, storage and handling of aqueous ammonia is potentially risky/ hazardous when compared to handling of limestone. Further, Ammonia based FGD Technologies are preferable for units of size below 500 MW. Though Ammonia based FGD technologies have approximately 10% less CAPEX and APC when compared to WFGD and by-product of Ammonia based FGD technologies, i.e. Ammonium Sulphate is easily saleable, handling and availability of Ammonia, are of concern.

(c) Sea Water FGD system is suitable only for coastal power stations as sea water is required for de-sulphurisation process. The subject generating stations are not located near the coast and, hence, this technology was not considered.

56. The Petitioner has further submitted that WFGD technology based on limestone slurry as reagent is most versatile and suitable for any unit size. It has large footprint and relatively higher CAPEX and reagent purity issues when compared to Ammonia based and dry type FGD technologies. The Petitioner has

submitted that the WFGD technology has been selected over other technologies due to the following reasons:

(a) It has been used successfully around the world;

(b) It is capable of very high SO_2 removal efficiency (around 98%);

(c) The process operates with very low Ca/S molar ratio, typically in the range of 1 to 1.1, which brings down the operating cost, particularly when sorbent utilization is vital to plant economics;

(d) The by-product of the process i.e. gypsum is easily marketable and helps to bring down the operating cost;

(e) It is best suited for high PLF stations;

(f) There are many of technology providers, leading to advantage on competitive bidding process.

57. The Petitioner has submitted that it selected WFGD system for its generating stations as it is the most appropriate technology and it is in concurrence with the CEA norms and also meets the SO_2 emission norms stipulated by MoEFCC. The same was also recommended by NTPC, the Petitioner's consultant. The Petitioner has also submitted that CEA has cleared installation of WFGD for the instant generating stations and accordingly the Petitioner initiated the tendering and bidding process for installation of WFGD systems in the generating stations of the Petitioner.

58. BRPL has submitted that CEA recommended DSI based FGD or Ammonia based FGD for units size less than 500 MW. However, the Petitioner has proposed and installed WFGD in case of Mejia TPS (4x210 MW + 2x 250 MW) where the unit size is less than 500 MW. As per the CEA Advisory dated 7.2.2020, selection of FGD technology is as per the capacity of the unit size, balance useful life, PLF and other factors and not as per the total capacity of the generating station or economies

of scale. All efforts should have been taken to reduce the tariff for the consumers. BRPL has submitted that the Petitioner has also failed to provide the certificate from the Competent Authority to the effect that the ECS technology selected is as per the recommendations made by CEA. The Petitioner has just stated that WFGD system is the appropriate technology for the instant stations. The Petitioner should have obtained a certificate from CEA regarding selection of ECS technology, after conducting a proper audit of ECS proposed to be installed.

59. As regards BRPL's contention that as per CEA advisory, DSI based FGD or Ammonia based FGD are preferable for units with size less than 500 MW, the Petitioner has submitted that its consultant, NTPC has recommended WFGD technology for installation at MTPS Units 1 to 6 as the same is a proven technology duly recommended by CEA. The Petitioner has further submitted that WFGD technology was selected by the Petitioner for MTPS Units 1 to 6 over other technologies because of its advantages over other technologies (listed in earlier paragraph of this order).

60. As regards BRPL's contention that all efforts should be taken to reduce the tariff for the consumers, the Petitioner has submitted that the Petitioner has always worked keeping in mind the interest of the end consumers. Accordingly, the Petitioner has selected WFGD technology which was approved by CEA. Further, the operational cost of other technologies is very high and not even implementable in the present units. Moreover, by-product of WFGD system i.e., gypsum is a saleable commodity, and it will further reduce the operational cost. The Petitioner has further submitted that in order to reduce the cost, it has combined three units of MTPS to

treat flue gas in a single Absorber thereby discharging the treated flue gas to the atmosphere through a single chimney. Accordingly, only two absorbers and two chimneys will be installed. The Petitioner has also submitted that to further reduce the costs, a common facility consisting of Limestone Handling System, Gypsum De-watering System and its storage has been envisaged with a common room for all six units. Therefore, the Petitioner has taken all possible measures to reduce the tariff impact of WFGD system installation.

61. We have considered the submission of the Petitioner and BRPL. The Petitioner has submitted that WFGD system is proposed to be installed in all its six generating stations to keep SO_2 emission levels within the norms prescribed in MoEFCC. WFGD system is being installed on the advice of its consultants, NTPC, and the same has also been approved by CEA. BRPL has submitted that CEA has recommended DSI technology for reduction of SO_2 emissions for generating stations of less than 250 MW capacity. However, the Petitioner has adopted WFGD technology for MTPS Units 1 to 6 of 4X210 MW and 2X250 MW. The Petitioner has submitted that WFGD technology is adopted in case of MTPS Units 1 to 6 as the operational cost of other technologies is high and not even implementable. The Petitioner has submitted that three units of MTPS have been combined to treat flue gas in a single absorber thereby discharging the treated flue gas into the atmosphere through a single chimney. Therefore, only two absorbers and two chimneys are installed for six units thereby reducing the cost. The Petitioner has further submitted that common facility consisting of Limestone Handling System, Gypsum De-watering System and its storage has been envisaged for all six units to reduce the cost. The Petitioner has also submitted that WFGD technology has been

selected in view of its advantages over other technologies, like DSI/Dry type FGD and Ammonia Based FGD Technologies. The Petitioner has selected WFGD technology for MTPS Units 1 to 6 as it is successfully implemented around the world, easy availability, suitable for high PLF stations and capable of high SO_2 removal. It is further observed that the Petitioner has combined some of the facilities to reduce the overall cost. The Petitioner has adopted WFGD technology for reduction of SO_2 emissions in MTPS Units 1 to 6 and DTPS taking into consideration various factors and has taken steps to reduce the cost of WFGD systems. Accordingly, we find no reason to interfere with choice of the Petitioner to use WFGD technology for reduction of SO_2 emissions in MTPS Units 1 to 6.

62. The Petitioner has adopted WFGD technology in case of the generating stations/ units covered in the other four petitions covered in the instant order. The Petitioner has issued IFBs in case of five out of the six generating stations before the CEA's letter dated 21.2.2019 prescribing general norms for WFGD for reduction of SO_2. Though the Petitioner had issued IFBs in five of the generating stations before the CEA's letter dated 21.2.2019, WFGD system proposed by the Petitioner is in line with the CEA Advisory. CEA has recommended four types of technologies for control of SO_2 emissions and the Petitioner has selected WFGD technology for all the generating stations under the instant petitions. The Petitioner has explained the advantages of WFGD over other FGD systems. Also, WFGD system is suited for generating stations/ plants which are of 500 MW and above and it is observed that in 4 of the 6 subject generating stations, the unit size is 500 MW and above. Taking into consideration the justification given by the Petitioner, we approve the Petitioner's

proposal for implementation of the same in the generating stations covered in the instant six petitions.

63. The Petitioner has further submitted that in furtherance of the Hon'ble Supreme Court's order dated 5.8.2019, MoEFCC vide its Notification dated 19.10.2020 has revised NO_x norms from 300 mg/Nm^3 to 450 mg/Nm^3. Accordingly, the Petitioner is seeking approval of cost of implementation of Combustion Modification Package only.

64. The Petitioner has submitted that minor Combustion Modification in tangential fired boiler to bring down NO_x level up to 450 mg/Nm^3 will consist mainly of: (a) Wind box modification - Like air Nozzle, Coal Nozzle, port size modification, OFA (Over Fire Air) operation from manual to pneumatic; and (b) combustion optimisation - Combustion Modification to bring down NO_x level will consist mainly of (i) For Wall fired boiler- Low NO_x Burner and flue gas recirculation and (ii) For Tangential/ corner fired Boiler- Complete combustion system which includes coal nozzle, air Nozzle, wind box design, air staging and OFA, SOFA, Coal fineness by providing dynamic classifier etc. The Petitioner has also explained about SNCR but we are not including the Petitioner's submissions in this regard as the Petitioner has dropped the proposal to implement SNCR.

65. BRPL, in Petition No. 461/MP/2019, has submitted that the Petitioner has failed to provide details of the cost towards installation of Combustion Modification and reasons for installation of Combustion Modification in the instant station. In response, the Petitioner has submitted that MTPS Unit-4, Unit-5 and Unit-6 were commissioned on 13.2.2005, 29.2.2008 and 24.9.2008 respectively and these units

must comply with the revised NO_x emission norm of 450 mg/Nm^3. As the emission levels in case of MTPS Unit-4, Unit-5 and Unit-6 are higher than the prescribed norms, there is a need for installation of Combustion Modification for reduction in NO_x emissions.

66. We have considered the submissions of BRPL and the Petitioner. Initially the Petitioner had proposed Combustion Modification System and SNCR for reduction of NO_x emissions. Later, the proposal for implementation of SNCR was dropped with the revision of emission norms for NO_x for TPPs installed during the period 1.1.2004 to 31.12.2016 from 300 mg/Nm^3 to 450 mg/Nm^3. The Petitioner has now proposed implementation of only Combustion Modification System to meet the revised NO_x emission norms in case of DTPS, BSTPS-A, KTPS, RTPS and MTPS Units 4 to 8. The Petitioner has further stated that the Combustion Modification proposed would meet the norms prescribed in the MoEFCC Notifications. The Petitioner has submitted that De-NO_x is not required in case of MTPS Unit-1, Unit-2 and Unit-3. The Petitioner has proposed installation of Combustion Modification System only in the generating units/ plants where it is required. We, therefore, approve the installation of Combustion Modification System for reduction in the NO_x emissions.

(b) Approvals and the bidding process

67. BRPL has submitted that the Petitioner has failed to provide the certificate from the competent authority stating that the bidding and award of the work has been carried out in a fair and transparent manner as per the applicable GOI guidelines. Instead, the Petitioner has self-certified the bidding process and stated that the bidding process was conducted in a fair and transparent manner.

68. The Petitioner has submitted that MoEFCC Notification dated 7.12.2015 amended the existing norms related to emission of SPM and water consumption and introduced new norms for emission of SO_2, NO_x and Mercury for TPPs. The Petitioner has further submitted that its power stations meet ECNs with respect to Mercury. Pursuant to the MoEFCC notification, CEA has published the standard technical specification in December 2017 for retrofitting of WFGD in a typical 2X500 MW power plant. Pursuant to above, NIT (Two Stage tendering through DCB) was floated by the Petitioner. FR (feasibility report) along with all the tendering documents for the projects having units 2x500 MW was submitted by Petitioner to CEA for their observation. NTPC, DVC's consultant, recommended installation of WFGD system in DSTPS as the same is proven technology duly recommended by CEA. In view of the above recommendations, the Petitioner has adopted WFGD technology for DSTPS and for the other projects as well. Thereafter, the Petitioner went through various stages of selection of technology on the basis of efficiency, capital and operating costs, location of plant, reliability, availability of suppliers, supply chain and disposal, etc. The Petitioner went through the pre-award activities like detailed engineering, NIT approval and publication of IFB, etc. The online bids were called under DCB on Two Stage Tendering with the Stage-I being Techno-Commercial Bid and Stage-II being Price Bid followed by e-Reverse Auction from eligible Bidders. The bidders were evaluated and those found qualified in the First stage were asked to submit price bids through e-tendering portal. The price bids were opened on e-reverse auctions. Based on the price bids, L-1 was considered for award of contract. IFBs for installation of FGD system in the subject generating stations in the instant six petitions were issued over a period from 12.9.2018 to

31.10.2019. The Petitioner's Board of Directors approved the award of FGD package. The Petitioner has further submitted and certified that bidding and award has been carried out in a fair and transparent manner as per Delegation of Power of DVC which is in line with GoI guidelines.

69. From the process followed by the Petitioner, we observe that due process has been followed from identification of the suitable technology to issue of NoA to the selected L1 bidders and the approval of the Petitioner's Board of Directors has been obtained. Therefore, we are of the view that the bidding process and award of contract has been carried out in a fair and transparent manner.

(c) Capital cost of identified ECS

70. The Petitioner has claimed the following capital cost towards implementation of WFGD System to control SO_2 and Combustion Modification to control NO_x emissions in the subject generating stations:

(₹ in lakh)

Petition No. & Generating station/ unit Capacity MW)	CEA indicative hard cost	Hard cost claimed	Total IDC claimed	Total IEDC claimed	Total taxes and duties claimed	Total other costs claimed	Total costs claimed	De-NO_x (CM) lakh/MW
94/MP/2019 {DSTPS-I (2X500 MW)}	40.50	43.60	4127.00	1545.00	7855.93	13527.93	57172.00	1.56
459/MP/2019 {BTPS-A (1X500 MW)}	40.50	62.50	2638.00	1105.00	5621.18	9364.18	40593.00	1.56
460/MP/2019 {KTPS (2X500 MW)}	40.50	47.10	4456.00	1668.00	8481.35	14605.35	61724.00	1.56
461/MP/2019 {MTPS Units 1 to 6 (4X210 MW+ 2X250 MW)}	45.00	57.00	8539.00	2704.00	13751.00	34204.00	110600.00	3.08*
462/MP/2019 {MTPS-7&8 (2X500 MW)}	40.50	45.60	4311.00	1614.00	8206.77	14131.77	59725.00	1.56
463/MP/2019 {RTPS- (2X600 MW)}	37.00	39.50	4488.00	1680	8542.37	14710.37	62168.00	1.56

*for Units 4, 5 & 6

71. The Petitioner has submitted that due to efflux of time, there has been deviation in the per MW hard cost claimed by the Petitioner from CEA estimated per MW hard cost. The cost provided by CEA was only indicative in nature and does not represent the actual procurement cost. The Petitioner has submitted that the Commission in order dated 11.11.2019 in Petition No. 152/MP/2019, order dated 23.4.2020 in Petition No. 446/MP/2019 and order dated 6.5.2020 in Petition No. 209/MP/2019 has already recognised that the cost provided by CEA was indicative in nature and that the cost of WFGD system has increased due to various factors. CEA in its letter dated 24.2.2021 has acknowledged that the earlier cost estimation is approximately three years old and the cost of WFGD system installation has increased due to increase in demand for WFGD equipment, shortage of indigenous manufacturing capacity, import restrictions, etc. and it requires to be revised. The Petitioner has further submitted that the actual capitalisation may vary after the implementation of FGD.

72. PSPCL, TPDDL and BRPL have raised their concerns on Petitioner claiming higher cost of WFGD than the CEA recommended cost.

73. The gist of the submissions made by PSPCL in Petition No. 94/MP/2019, Petition No.459/MP/2021 and Petition No.460/MP/2021 is as follows:

(a) The Power Purchase Agreement (PPA) between PSPCL envisages a situation wherein both the parties are at liberty to review the PPA. Accordingly, PSPCL has rights to protect its interests depending on the cost of electricity which will be demanded by the Petitioner including but not limited to the result of the present petition.

(b) The Petitioner has stated that the capital cost claimed for installation of WFGD system include capital expenditure, pre-operative expenses, designing, engineering and Project Management Cost and it excludes contingency, opportunity cost and IDC. However, basis/ explanation for arriving at the capital cost has not been given by the Petitioner. The Petitioner has not placed on record the plant specific recommendations of CEA for installation of WFGD. The Petitioner has not placed on record or carried out a cost benefit analysis of the selected technology out of the available technologies for reduction of SO_2 emissions. The Petitioner is simply seeking approval of a figure without DPR by CEA. Even the Feasibility Report (FR) is an internal document and has not been prepared by any third party.

(c) The installation cost of WFGD claimed by the Petitioner is higher than the CEA norm and there is no logic for the Petitioner to maintain such a high claim without any reason. The recurring costs on account of installation of WFGD claimed by the Petitioner are not tenable at this preliminary stage at and thus may not be entertained.

74. The gist of the submissions made by TPDDL is as follows:

(a) The Petitioner has not provided the cost break-up of the main FGD package, electrical power supply package, waste-water treatment, fire protection and detection, spares, engineering, project management and contingency reserve etc. The competitive bidding was not done in consultation with the lead procurer as required under the general advisory of CEA. DPR simply states the cost is based on estimates received from prospective bidders without mentioning any further details.

(b) Any consideration of costs at this stage should be subject to checks for prudency, reasonableness and true-up of actual costs.

(c) The Petitioner has not provided cost break-up, details of the competitive bidding process, and the price discovered based on such bidding, the project

specific recommendations and/or cost estimates of CEA for the cost claimed in the prayer for installation of FGD and De-NOx system.

(d) The Petitioner has not provided any explanation for the cost difference between CEA's capex estimate and that of the Petitioner. Therefore, this disparity between the CEA estimate and the Petitioner's estimate in the capex must not be allowed in its present form or must at least be subjected to a strict prudence check.

75. The gist of the submissions made by BRPL regarding cost of WFGD is as follows:

(a) The Petitioner has failed to provide any reason for the increase in the hard cost and has merely provided the total cost towards FGD system installation. The Petitioner has not shared the reasons/ explanation for the increase in estimated cost. The cost estimates were issued by CEA in February 2019. NIT for MTPS Units 1 to 6 was issued by the Petitioner on 31.10.2019, 8 months after the CEA estimates. Therefore, the Petitioner cannot claim that due to passage of time and on account of inflation, the cost estimates have changed. The delay in installation of FGD system is solely on account of the Petitioner and now it cannot seek to pass on the tariff burden on the consumers on account of its own delay.

(b) The Petitioner is interpreting CEA’s letter dated 24.2.2021 to its own benefit. On technological aspect, Petitioner claims that it has adhered to the terms of the CEA Advisory. However, on the costing aspect, the Petitioner claims that the CEA Advisory is indicative and is not binding on the Petitioner.

(c) The reliance placed by the Petitioner on orders dated 11.11.2019 in Petition No. 152/MP/2019, order dated 23.4.2020 in Petition No. 446/MP/2019 in case of Sasan Power Ltd., order dated 6.5.2020 in Petition No. 209/MP/2019 in case of Sembcorp Energy India Ltd. is misplaced. The Petitioner has failed to appreciate that in Petition No. 446/MP/2019, Sasan Power Ltd. had sought additional capex of ₹0.61 crore per MW against CEA’s indicative cost of

₹0.41 crore per MW. However, the Commission in order dated 23.4.2020 had allowed an additional capex of ₹0.42 crore per MW for FGD system subject to true-up, while holding that the remaining cost shall be allowed as per actuals. Accordingly, the Commission may allow the hard cost as indicated by CEA.

(d) The averment of the Petitioner that CEA's cost is indicative and the additional expenditure be allowed at a later stage is denied and disputed. CEA costs are not merely indicative as it factors the overall requirements for implementation of FGD. The Petitioner has failed to provide any details as regards the escalations in the cost of materials due to passage of time.

76. The Petitioner has given clarifications to all the submissions made by Respondents. As the clarifications given by the Petitioner in response to the comments and queries of the Respondents are repetitive in nature, they have been summed up together as follows:

(a) The PPA provides liberty to the parties to mutually review the terms of PPA. The review of PPA is not related to the present cost claimed by the Petitioner, as substantial investment is required to carry out the capital works in order to meet the revised norms prescribed by MoEFCC. Moreover, such a sizeable financial impact will ultimately be borne by the consumers in tariff. The parties cannot make any decisions with respect to such costs by mutually reviewing the PPA at the risk of jeopardising the consumer interest at large. Therefore, the parties cannot circumvent the regulatory scanner of the Commission by agreeing to review the terms of the PPA. The contention of PSPCL regarding PPA is not relevant to the instant petition.

(b) It has provided detailed break-up of cost with respect to installation of WFGD system (along with the associated cost) in the petition and has also annexed the FR. The FR provides a detailed approximate cost of WFGD system installation and it is an estimate prepared for approval of approximate cost of WFGD System and, hence, does not contain package wise break-up. The Commission has considered the estimated cost without package wise

break-up in a similar case in order dated 23.4.2020 in Petition No. 446/MP/2020 of Sasan Power Ltd. and the same was approved by the Commission by making necessary moderations in the cost. The present approval is in the nature of an in-principle approval and the same is subject to the prudence check by the Commission.

(c) The Petitioner will get an exact idea of the package wise cost of FGD as and when the bidding process is completed. The same would be submitted before the Commission for the fixation of tariff and allowance of cost in this regard.

(d) As regards deviation from CEA's recommended cost, the same has already been addressed by the Commission in order dated 11.11.2019 in Petition No.152/MP/2019 and order dated 23.4.2020 in Petition No. 446/MP/2019, wherein it was held that the cost provided by CEA was only indicative in nature and does not represent the actual procurement cost.

(e) The Petitioner had made efforts to find the most economical cost estimates. However, due to efflux of time and other uncontrollable factors, the cost estimates arrived at is higher than CEA's indicative hard cost.

(f) As regards the contention that there was only 8 months gap between the CEA's cost estimates and the issue of IFB by the Petitioner in case of MTPS, the bid was opened on 26.6.2020 i.e. 16 months after the CEA's cost estimate. Therefore, relating the cost discovered in the bidding process with CEA's cost estimate is misconceived.

(g) NIT for WFGD technology cannot be finalized within a month or two. Due to the strict deadlines of the MoEFCC Notification, there was a high demand for implementation of the WFGD technology as all the power plants across the country had to achieve the revised emission norms before the deadline. This also increased the cost of the WFGD technology.

(h) CEA vide its letter dated 24.2.2021 has itself acknowledged that the earlier cost estimation is approximately three years old and the cost of FGD installation has increased due to various reasons specified therein. CEA has sought latest tendering cost for different size and technology from TPPs in the country.

(i) The common facility in case of generating stations with multiple units can be used for variety of purposes for which otherwise additional expenses would have to be incurred. This was planned to reduce the cost and thereby benefit the end consumers.

(j) The discovery of price is done through a transparent process of competitive bidding and the same would be subject to prudence check by the Commission.

77. We have considered the contentions of PSPCL, TPDDL and BRPL and the clarifications of the Petitioner. The instant order covers six petitions pertaining to five generating stations and it includes four types of units of 210 MW, 250 MW, 500 MW and 600 MW. CEA has recommended WFGD hard cost of ₹45.00 lakh/MW for 210 and 250 MW units, ₹40.50 lakh/MW for 500 MW units and ₹37.00 lakh/MW for 600 MW units. It is observed that the hard cost of WFGD system claimed by the Petitioner in case of all the five generating stations is higher than the capital cost recommended by CEA.

78. The Petitioner has submitted that the capital cost recommended by CEA is only indicative in nature and it cannot be compared to the capital cost discovered through transparent competitive bidding process. The Petitioner has submitted that capital cost of WFGD system claimed by the Petitioner as ACE is more than the CEA recommended cost due to reasons such as efflux of time, increase in demand for WFGD and shortage of indigenous manufacturing capacity. The Respondents

have submitted that the Petitioner has not submitted the CEA's project specific recommendations, DPR/ FR, cost break-up of the WFGD package, details of bidding process, reasons for variation in the capital cost claimed and that the capital cost of WFGD should be restricted as in the case of other companies.

79. PSPCL has contended that the PPA with the Petitioner provides for review of the PPA by both the parties and accordingly, it has rights to protect its interest depending on the cost of the electricity after installation of ECS. The Petitioner has submitted that the PPA cannot be reviewed by the parties mutually at the cost of the interest of the consumers. We are of the view that the rights and liabilities of the parties to the PPA cannot be raised in a petition for in-principle approval of ACE for installation of ECS to comply with the MoEFCC Notifications. Therefore, we are not inclined to go into those issues in the instant order and the parties are at liberty to take suitable action as per the provisions of law.

80. We have already dealt with the issue of CEA's project specific recommendations and the bidding process earlier in this order. It is also observed that the Petitioner has submitted the DPR/ FR and cost break-up of the capital cost of the WFGD and De-NOx systems in response to queries in the RoPs.

81. As regards the variation in the hard cost of WFGD system, BRPL has submitted that in the case of MTPS Units 1 to 6, there was only eight months' gap between the CEA's recommendations and the issue of IFB by the Petitioner and therefore, efflux of time cannot be a reason for such higher hard cost. We observe that as stated by CEA itself, the cost provided by CEA in its letter dated 21.2.2019 was only indicative in nature and discovered through open competitive bidding for

the projects already awarded. We also observe that CEA in its letter dated 24.2.2021 has acknowledged that the earlier cost estimation in its letter dated 21.2.2019 is approximately three years old and the cost of WFGD system installation has increased due to increase in demand for WFGD equipment, shortage of indigenous manufacturing capacity, import restrictions, etc. and it requires to be revised. In view of these facts, BRPL's objection in this regard is set aside.

82. BRPL, referring to the Commission's earlier orders in case of MPL, Sasan Power Ltd. (SPL) and Sembcorp Energy India Ltd., has contended that capital cost of WFGD system should be restricted to the CEA's indicative cost in case of the Petitioner. The Commission in order dated 11.11.2019 allowed the capital cost of FGD claimed by MPL recognising the fact that the cost considered by CEA is indicative in nature and the cost claimed by MPL was discovered based on open competitive bidding. In order dated 23.4.2020 in case of Sasan Power Ltd., the Commission observed that there is hardly any difference in the capital cost claimed by Sasan Power Limited and the cost recommended by CEA. In order dated 6.5.2020, in case of Sembcorp Energy India Ltd., the Commission allowed the CEA indicative cost on provisional basis subject to prudence check of the actuals after the commissioning of the FGD. The Commission has allowed the capital cost of FGD system as claimed by MPL and Sasan Power Limited and in case of Sembcorp Energy India Ltd., allowed it on provisional basis subject to prudence after commissioning of FGD system recognising the fact that the CEA recommended cost is indicative in nature and there was no disallowance of the capital cost claimed.

83. The Respondents have contended that the Petitioner has not provided the detailed reasons for the deviation in the per MW hard cost claimed by the Petitioner for installation of WFGD system from the CEA estimated per MW hard cost. The Petitioner has submitted that the deviation is due to efflux of time and various other uncontrollable factors. Due to strict timeline for implementation of ECS, there was high demand for WFGD systems and it led to increase in the capital cost of the WFGD. The Petitioner has submitted that all efforts were made to find the most economical cost. The Petitioner has also submitted that the CEA recommended capital cost is indicative in nature and it cannot be compared with the cost recovered through transparent bidding process. The Petitioner has submitted that the Commission in the case of MPL, Sasan Power Limited and Sembcorp has already recognised that the CEA recommended cost is indicative in nature. Moreover, CEA has also acknowledged that the capital cost recommended for FGD systems is approximately three years old and that the capital cost of FGD installation has increased due to increase in demand for FGD equipment, shortage of indigenous manufacturing capacity, import restrictions, etc. and it requires to be revised.

84. The per MW hard cost of WFGD system claimed by the Petitioner is more or less similar to the hard cost claimed by NTPC and approved by the Commission vide order dated 28.4.2021, as shown in the table below. The hard cost of WFGD claimed by the Petitioner ranges from ₹39.50 lakh/MW to ₹62.50 lakh/MW depending upon the size of the plant. IFBs were issued by DVC in case of five of the petitions in 2018 and in case of MTPS Units 1 to 6 in 2019. It is observed that the price discovered by DVC through IFBs issued in the year 2018 is almost identical to

the price discovered by NTPC during the same period, except in the case of BSTPS-A, where there is only one unit.

NTPC			DVC		
Petition Number	**Date of issue of IFB**	**Hard cost of FGD per MW claimed by NTPC (₹ in lakh)**	**Petition Number and Generating Station/Unit**	**Date of issue of IFB**	**Hard cost of FGD per MW claimed by Petitioner (₹ in lakh)**
509/MP/2020	31.7.2017	48.24	94/MP/2019 DTPS	12.09.2018	43.60
516/MP/2020	31.7.2017	48.24	459/MP/2019 BSPTS-A	4.10.2018	62.50
526/MP/2020	31.7.2017	40.27	460/MP/2019 KTPS	4.10.2018	47.10
512/MP/2020	30.6.2017	40.27	461/MP/2019 MTPS-Units 1 to 6	31.10.2019	57.00
335/MP/2020	28.9.2018	45.21	462MP/2019 MTPS-Units 7 & 8	4.10.2018	45.60
519/MP/2020	28.9.2018	45.21	463/MP/2019 RTPS	4.10.2018	39.50
338/MP/2020	28.9.2018	42.32	-	-	-
521/MP/2020	28.9.2018	38.07	-	-	-
339/MP/2020	24.4.2020	40.38	-	-	-

85. The Commission in order dated 23.4.2020 in Petition No. 446/MP/2019 and order dated 6.5.2020 in Petition No.209/MP/2019 has already observed that the hard 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. In the instant cases, the cost claimed by the Petitioner is discovered through competitive bidding process and the same has been duly approved by the Board of Directors of the Petitioner. Taking into consideration that the per MW hard cost suggested for FGD system by CEA is indicative in nature; that the cost claimed by the Petitioner is discovered through a competitive bidding process; that the cost recommended by CEA is more than two-three years old; and that CEA has already recognised the need for revising the cost recommended by it earlier, we approve the hard cost claimed by the Petitioner as given in paragraph 70 above towards

installation of WFGD system. The hard cost towards Combustion Modification System discovered through a competitive bidding process are also approved.

86. Besides the hard cost towards installation of WFGD and De-Nox systems, the Petitioner has also claimed IDC, IEDC, FERV, taxes and duties and other costs. As the instant petitions are for “in-principle” approval of ACE towards installation of ECS to comply with the MoEFCC Notification, the Petitioner’s claim for the same is not considered in this order and these claims would be considered on case to case basis on petitions to be filed by the Petitioner for determination of tariff after implementation of ECS as provided under Regulation 29(4) of the 2019 Tariff Regulations.

(B) Additional Auxiliary Energy Consumption (AEC)

87. The Petitioner has submitted that installation of FGD system will lead to increase in AEC of its generating stations in the range of 1 % to 1.1% and has accordingly prayed for grant of incremental AEC for computation of tariff post installation of ECS and other associated facilities at it various generating stations.

88. PSPCL, in Petition No. 459/MP/2019 and 463/MP/2019, has submitted that the Petitioner’s claim for increase in AEC on account of installation of FGD system is not tenable at this preliminary stage. TPDDL in Petition No. 461/MP/2019 has submitted that CEA in recommendations dated 21.2.2019 has estimated AEC to be a maximum of 1% for FGD operations, which has also been recognised by the Commission in its order in case of Sasan Power Limited. TPDDL has further submitted that the Commission added sub-clause (f) to Regulation 49(E) of the 2019 Tariff Regulations vide 2020 Amendment Regulations allowing additional

AEC of 1% for WFGD system. The increase sought by the Petitioner in AEC may be considered at the appropriate stage in accordance with the above-mentioned regulation. BRPL in Petition No. 461/MP/2019 has submitted that the Petitioner has not submitted the details.

89. We have considered the submissions of the Petitioner and PSPCL, TPDDL and BRPL. The Petitioner's claim for additional AEC on account of installation of FGD shall be dealt in accordance with Regulation 49(E)(f) of the 2019 Tariff Regulations.

(C) Additional O&M Expenses

90. The Petitioner has submitted that with the installation of various ECS to meet the revised ECNs, there will be recurring cost towards O&M Expenses/ disposal of waste and spares which is likely to be around 10% of the capital cost and the same may be allowed.

91. PSPCL has submitted that the claim of the Petitioner for the recurring cost on account of installation of FGD system i.e. additional cost towards O&M expenses around 10% of the capital cost is not tenable at this preliminary stage and thus cannot be entertained. TPDDL has submitted that the Petitioner has claimed O&M Expenses @10% of capex amounting to ₹97.31 crore annually and no break-up and/ or explanation has been provided. CEA in its report for CGPL had considered O&M Expenses @2% of the base capex and the rate has been considered by the Commission in various orders. The Petitioner's claim of additional O&M Expenses @10% may not be allowed at this stage and the Petitioner may claim the same on actual basis at the time of tariff fixation. BRPL has submitted that the Petitioner may

be directed to provide the details of O&M Expenses claimed. BRPL has further submitted that the Petitioner should consider O&M Expenses @2% of capital cost for the first year which may be gradually increased to 3.5% till 31.3.2024.

92. In response, the Petitioner has submitted that the additional O&M Expenses are claimed on account of installation of FGD system as per the MoEFCC Notification, which has been held to be a 'change in law' and, therefore, O&M Expenses should be allowed as claimed by it.

93. The Petitioner has submitted that the approval of pre-operative expenses, designing, engineering and project management cost sought is estimated/ anticipatory in nature. In principle approval may be granted subject to true-up based on actual expenses. The Petitioner has submitted that higher O&M Expenses are claimed on account of the design and vintage of the plant.

94. We have considered the submissions of the Petitioner, PSPCL, TPDDL and BRPL. The Commission has provided for O&M Expenses @2% of the capital cost of ECS by amending Regulation 35(1) of the 2019 Tariff Regulations through 2020 Amendment Regulations. Accordingly, the Petitioner's claim of additional O&M Expenses on account of installation of ECS shall be dealt on an application to be filed by the Petitioner under Regulation 29(4) of the 2019 Tariff Regulations as specified in Regulation 35(1)(7) of the 2019 Tariff Regulations, which provides as follows:

> *"(7) The operation and maintenance expenses on account of emission control system in coal or lignite based thermal generating station shall be 2% of the admitted capital expenditure (excluding IDC & IEDC) as on the date of its operation, which shall be escalated annually at the rate of 3.5% during the tariff period ending on 31st March 2024:*

Provided that income generated from sale of gypsum or other by-products shall be reduced from the operation & maintenance expenses."

(D) Deemed availability on account of shutdown

95. The Petitioner has submitted that there will be disruption in power generation during installation and commissioning of FGD system which is expected to be one month per unit of FGD system installation. The Petitioner has prayed that non-availability of the generating station due to installation of FGD system may be considered as "deemed availability" for payment of capacity charges.

96. PSPCL has submitted that the Petitioner's plea for considering non-availability of the generating station for one month per unit for installation of FGD system as "deemed availability" for payment of capacity charges forms a part of a separate proceeding and cannot be a subject matter relating to the MoEFCC Notification. Therefore, no decision is necessary on this aspect at this stage. There cannot be any advance ruling on the issue of actual implementation of ECS at this stage. The Petitioner should align the installation of FGD with its annual overhaul and maintenance works and no separate period of shut down may be allowed. TPDDL has submitted that the Petitioner's plea for exclusion of the shutdown period for calculation of availability for recovery of fixed charges cannot be considered at this stage. The Commission has already observed in the order dated 11.11.2019 in Petition No. 152/MP/2019 (MPL Vs. TPDDL) and order dated 23.4.2020 in Petition No. 446/MP/2019 (SPL Vs. MPPMCL) that the generators in consultation with beneficiaries will plan the interconnection of FGD system with the main plant by synchronizing it with the 'annual overhaul' so as to minimize the additional downtime required for FGD system interconnection. The Petitioner should obtain

the consent of the beneficiaries before undertaking shutdown for construction, installation and commissioning of ECS. BRPL has submitted that the Petitioner has stated that the units will have to be taken under shut-down of about 35 days for implementation of each unit for ECS and the stabilization of the same would take further more time and thus sought that the shutdown period may be treated as deemed available to allow it to recover the Annual Fixed Charges even when the beneficiaries will not be getting any power. BRPL has further submitted that the Commission has taken a conscious decision to not allow such deemed availability during the shutdown period in the 2019 Tariff Regulations as well as in the 2020 Amendment Regulations. As such the prayer is liable to be rejected. Further, said prayers can only be granted in a petition under Regulation 29(4) of the 2019 Tariff Regulations and not in the present petition.

97. In response, the Petitioner has submitted that the requirement of installation of FGD and associated systems is on account of the MoEFCC Notification, which have been held to be a 'change in law'. Once 'change in law' is established, the compensation must follow so that it is restored to the same economic position as held by the Tribunal in judgment dated 13.4.2018 in Appeal 210 of 2017, *Adani Power Ltd. v. CERC.* Further, the Tribunal in Appeal No. 21 and 73 of 2019 in the *case TSPL v. PSPCL & Ors.* directed Commission to devise a mechanism for payment of additional cost and other expenses in relation to procurement, installation, commissioning, operation and maintenance of FGD system for SO_2 reduction as approved by the concerned authority, after prudence check. Accordingly, the Petitioner is entitled to the charges for deemed availability during the shutdown period owing to installation of FGD and associated systems. The

Petitioner has submitted that the Commission has not denied opportunity cost/ deemed availability and has only suggested that generators shall plan the inter-connection of FGD system with the plant during the annual overhaul. The Petitioner has submitted that the Commission has observed that the opportunity cost would be considered on the basis of the actual number of days of shutdown after prudence check and whether the generator has tried to synchronize the interconnection of FGD system with annual overhaul. The Petitioner has submitted that it is not possible to assess the exact impact of charges payable during shutdown. The Petitioner has also submitted that in case the installation of FGD system is not completed during the annual overhaul, then the Petitioner may be allowed to raise the claim of "deemed availability" at an appropriate stage. The Petitioner has submitted that the Commission in its recent order dated 28.4.2021 in Petition No. 335/MP/2020 & Ors has held that the Petitioner and the beneficiaries shall plan and synchronize the inter-connection of FGD package with the plant with the annual overhaul and the Petitioner's request for "deemed availability", will be decided on a case-to-case basis. The Petitioner has submitted that the 2019 Tariff Regulations does not prohibit the Petitioner to claim cost of shutdown. The Petitioner is regulated by the Commission under Section 79(1)(a) of the Act and as per the law laid down by the Hon'ble Supreme Court in PTC India vs. CERC & Ors., (2010) 4 SCC 603, the absence of a Regulation does not debar the Commission to act in conformity with the provisions of the Act. In this case, the payment of 'deemed generation' and other associated cost would ensure continuous recovery of costs by the Petitioner as enshrined under Section 61 of the Act. The Commission in its order dated 5.11.2018 passed in Petition No. 172/MP/2016 has recognized the aforesaid

principle and has granted relief even when the Regulations were silent on a particular issue. The Petitioner has further submitted that the Petitioner would endeavour to align the work of implementation during the annual maintenance program as per the schedule decided in RPC forum. The Petitioner has submitted that it is making sincere efforts to comply with the revised emissions standards as per the revised notified time frame for all its generating stations with a minimum disturbance in power generation and supply. It has further submitted that the Commission vide 2020 Amendment Regulations has allowed the generating company to recover O&M Expenses and interest on loan for the shutdown period due to installation of ECS. The Petitioner's claim may be considered by the Commission when petition under Regulation 29(4) of the 2019 Tariff Regulations is filed by the Petitioner.

98. We have considered the submissions of the Petitioner and the Respondents, PSPCL, TPDDL and BRPL. The Commission in order dated 22.6.2020 in Petition No. 168/MP/2019 and order dated 28.4.2021 in Petition No. 335/MP/2020 & Ors has already held that Petitioner and the beneficiaries shall plan and synchronize the inter-connection of FGD package with the plant with the annual overhaul. As regards the Petitioner's prayer for considering the loss of availability of the generating station/ unit as "deemed availability" we are not inclined to dwell on this issue at this stage as we are of the view that the Petitioner's prayer for considering the shutdown period for implementation of ECS as "deemed availability" has to be dealt on a case to case basis.

(E) Additional water consumption charges

99. The Petitioner has submitted that the quantum of water consumption would increase after the installation of WFGD system and has claimed the cost of additional water consumption under Regulation 76 i.e. “Power to relax” of the 2019 Tariff Regulations.

100. PSPCL has submitted that the Petitioner’s claim is premature and it is not tenable and may not be entertained. TPDDL has submitted that there is no specific provision for allowing the Petitioner’s claim of additional cost towards consumption of water on installation of the WFGD system and it is covered in the O&M cost which may be claimed by the Petitioner on actual basis at the time of tariff fixation. TPDDL has further submitted that capex and opex, which is recurring in nature, should be annualized so as to avoid tariff shock to the end customers. BRPL has submitted that the Petitioner’s claim to allow additional water consumption by invoking the ‘Power to Relax’ under Regulation 76 of the 2019 Tariff Regulations is legally untenable. The Petitioner has failed to provide the details of the additional cost towards water consumption. Regulation 76 enables the Commission to relax any of the provisions of the 2019 Regulations for reasons to be recorded in writing. However, the Petitioner has not submitted the provision of the 2019 Tariff Regulations which has to be relaxed and the reason for relaxation.

101. In response, the Petitioner has submitted that installation of ECS is mandated under the MoEFCC Notification. The Commission and the Tribunal in various cases held that the compliance with MoEFCC Notification amounts to ‘change in law’.

Therefore, the Petitioner has to be compensated and entitled for additional expenses due to implementation of FGD system on the basis of the principle of restitution.

102. We have considered the Petitioner's claim and the submissions of PSPCL, TPDDL and BRPL. However, we are not inclined to go into the details at this stage as the instant petition is for approval of additional capital expenditure required to be incurred by the Petitioner for installation of ECS in compliance of the MoEFCC Notification. The Petitioner's claim for additional water consumption on account of installation of FGD system shall be dealt on an application to be filed by the Petitioner under Regulation 29(4) of the 2019 Tariff Regulations in accordance with the norms specified by MoEFCC as provided under Regulation 35(1)(6) of the 2019 Tariff Regulations, which is as follows:

> ***"35 Operation and Maintenance Expenses:***
>
> ***(1) Thermal Generating Station:*** *Normative Operation and Maintenance expenses of thermal generating stations shall be as follows:*
>
> *(6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:*
>
> *Provided that water charges shall be allowed based on water consumption and considering the norms of specific water consumption notified by the Ministry of Environment, Forest and Climate Change depending upon type of plant and type of cooling water system, subject to prudence check. The details regarding the same shall be furnished along with the petition;"*

(F) Procurement cost of limestone and consumption cost of reagents

103. The Petitioner has prayed for allowing actual procurement cost of limestone and actual consumption cost of various reagents like limestone/ urea/ ammonia for operation of ECS. The Petitioner has submitted that the WFGD system is based on using limestone or lime as a reagent, which involves a wet scrubbing process and the FGD technology is the most frequently selected for SO_2 reduction from coal-fired

utility boilers. Accordingly, the Petitioner has also claimed the procurement cost of limestone used for operation of ECS as well consumption cost of chemical reagents (lime stone/ ammonia/ urea) on account of implementation of ECS in the instant stations.

104. PSPCL has submitted that the claim of the Petitioner for allowing the recurring cost on account of installation of FGD system i.e. additional cost towards cost of reagent is not tenable at this preliminary stage and thus cannot be entertained. TPDDL has submitted that the claim of the Petitioner for procurement and consumption of chemicals/ reagents is not maintainable as there is no specific provision for the same and they are all covered in the O&M Expenses, which may be claimed by the Petitioner on actual basis at the time of tariff fixation. TPDDL has further submitted that capex and opex should be annualized in such a manner so as to avoid tariff shock to the end customers. BRPL has submitted that the prayer of the Petitioner for claiming cost of reagent is legally untenable under Regulation 76 of the 2019 Tariff Regulation. BRPL has further submitted that Regulation 76 of the 2019 Tariff Regulation enables the Commission to relax any of the provisions of the 2019 Regulations for reasons to be recorded in writing. The Petitioner has not submitted which provision of the 2019 Regulations has to be relaxed and the reasons for seeking such relaxation.

105. In response, the Petitioner has submitted that it is entitled to cost of limestone and reagents like limestone/ urea/ ammonia on account of installation of ECS in compliance of the MoEFCC Notification, which have been held to be a ‘change in law’ and compensation must follow on the basis of the principle of restitution. The

Petitioner has further submitted that it is entitled to actual additional expenses on account of implementation of FGD system and has prayed the Commission to take a suitable view.

106. We have considered the submissions of the Petitioner and the Respondents, PSPCL, TPDDL and BRPL. The Commission has amended Regulation 43 of the 2019 Tariff Regulations pertaining to "Computation and Payment of Energy Charge for Thermal Generating Stations" by introducing Regulation 43(1a), through 2020 Amendment Regulations, providing for cost of reagent consumption. Therefore, the Petitioner's claim for actual cost of limestone and reagents shall be dealt in accordance with Regulation 43(1a) of the 2019 Tariff Regulations.

(G) Liberty to approach the Commission

107. The Petitioner has submitted that the MoEFCC Notification mandates revised ECNs for water consumption, mercury and particulate matter, installing cooling tower (only in DSTPS) besides SO_2 and NO_x control measures. The generating stations of the Petitioner meet the norms in respect of water consumption, mercury and particulate matter as stipulated by the MoEFCC Notification. Therefore, no claim has been made in respect of them. However, the Petitioner has sought liberty to approach the Commission as and when the generating stations are unable to meet those norms and work pertaining to the same is required to be undertaken in future.

108. PSPCL has submitted that there cannot be any in-principle approval at this stage without even showing any additional cost that may be incurred. The generating stations of the Petitioner already comply with the revised norms for Mercury emissions. Therefore, no liberty to approach the Commission may be granted on this

aspect. Haryana Power Generation Corporation Ltd. (HPGCL), in Petition No. 460/MP/2019, has made submissions identical to PSPCL. BRPL has submitted that the Petitioner's prayer to approach the Commission in future shows that even after this huge capital investment, the Petitioner may not be able to meet the requirements of the MoEFCC Notification and it raises serious doubt about the time frame of implementation of new environmental norms. BRPL has further contended that the Petitioner cannot apprehend and seek liberty to approach the Commission in future without providing any data. The Petitioner cannot proceed for implementation of ECS in tranches and then seek liberty for approval of remaining ECS in the present Petition. TPDDL has contended that the Petitioner has not sought specific approval of additional cost on account of the revised emission norms for mercury emission, particulate matter and water consumption. TPDDL has submitted that it reserves its right to submit its response qua these aspects as and when the Petitioner makes any claim for the same.

109. In response, the Petitioner has submitted that it has not provided additional cost on account of the revised norms for mercury emission. A specific submission in this regard has been made in the petition and it has been prayed that liberty may be granted to the Petitioner to approach Commission, if any additional measures need to be implemented. The liberty has been sought as it is expected that pollutants such as particulate matter and mercury emission may be controlled by existing ECS (such as Electrostatic Precipitators, Bag Filters, etc.). However, if the Petitioner assesses that the same would not be sufficient to limit the pollutants it will approach the Commission for cost approval of the technology required for controlling emission for such pollutants.

110. We have considered the submissions of the Petitioner, PSPCL, HPGCL, BRPL and TPDDL. In case any petition is filed for specific approval of additional cost on account of the revised emission norms for mercury emission, particulate matter, water consumption and De-NOx by the Petitioner in future, the same shall be dealt in accordance with the applicable laws.

Treatment of Gypsum

111. PSPCL has submitted that FGD system proposed to be used by the Petitioner produces gypsum as a by-product and it has commercial value and is saleable in the market. Therefore, the revenue earned by the Petitioner from the sale of gypsum should also be quantified by the Petitioner. However, the Petitioner has not given the details in the petition. The Petitioner may be directed to prepare and furnish a report, in consultation with CEA, and to give an indicative cost of the revenue it would earn from the sale of gypsum. PSPCL has submitted that the Commission in separate proceedings before it has made observation towards saleability of gypsum. TPDDL has submitted that the revenue earned through sale of gypsum should be duly subtracted from the O&M Expenses.

112. The Petitioner, in response, has submitted that the Commission may take a suitable view on the revenue earned through sale of gypsum as and when the FGD system is operational. The Petitioner has submitted that it is outside the scope of the present petition and the same may be rejected at this stage as extraneous.

113. We have considered the submissions of the PSPCL and TPDDL on the adjustment of the revenue earned on sale of gypsum and the clarification given by the Petitioner. The concerns raised by the Respondents shall be considered by the

Commission in the petition that is required to be filed by the Petitioner on completion of the installation of ECS under Regulation 29(4) of the 2019 Tariff Regulations.

Summary

114. In view of the discussion in the foregoing paragraphs, the Commission observes that:

(a) The process from the stage of identification of FGD package to NoA was with the approval of the Petitioner's Board of Directors and as per the procedure laid down under its DoP and the bidding has been carried out in a fair and transparent manner.

(b) The Petitioner has identified and proposed WFGD systems for reduction in the SO_2 emissions taking into consideration the effectiveness, availability and cost of the WFGD systems, size of the plants, operational expenses and availability of the reagents.

(c) The costs claimed by the Petitioner towards installation of WFGD system have been discovered through a competitive bidding process and the hard costs claimed by the Petitioner for WFGD system is higher than the indicative cost recommended by CEA, for which justifications have been submitted by the Petitioner and the reasons for the same have been enumerated in the order.

115. Therefore, we accord "in-principle approval" of ACE under Regulation 11 of the 2019 Tariff Regulations towards installation of WFGD systems for control of SO_2 emissions (hard cost for WFGD system). We also accord "in-principle approval" for installation of Combustion Modification System for emission control of NO_x in all the six generating stations.

116. In terms of above deliberations, the details of the "in-principle approval" of hard cost of FGD and capital cost of CMS are as follows:

Petition Number	Generating station/ unit capacity (MW)	Hard cost of WFGD System (₹ in lakh)	Hard cost of CMS (₹ in lakh)
94/MP/2019	DTPS-I (2X500)	43.60	1.56
459/MP/2019	BSTPS- (1X500)	62.50	1.56
460/MP/2019	KTPS (2X500)	47.10	1.56
461/MP/2019	MTPS Unit 1 to 6 (4X210+2x250)	57.00	3.08*
462/MP/2019	MTPS Units 7&8 (2X500)	45.60	1.56
463/MP/2019	RTPS (2x600)	39.50	1.56

* for Units 4, 5 and 6

117. We have not considered the Petitioner's claim of total capital cost towards installation of FGD, which apart from hard cost includes IDC, IEDC, FERV, taxes and duties and other costs. These claims excluding hard cost would be considered on case to case basis on petitions to be filed by the Petitioner for determination of tariff after implementation of ECS as provided under Regulation 29(4) of the 2019 Tariff Regulations. Accordingly, the Petitioner is directed to file separate petitions for determination of tariff after implementation of the revised ECS as provided in Regulation 29(4) of the 2019 Tariff Regulations.

118. The instant order disposes of Petition No. 94/MP/2019, Petition No. 459/MP/2019, Petition No. 460/MP/2019, Petition No. 461/MP/2019, Petition No. 462/MP/2019 and Petition No. 463/MP/2019 in terms of the above discussion and findings.

sd/-	**sd/-**	**sd/-**
(P. K. Singh)	**(I. S. Jha)**	**(P. K. Pujari)**
Member	**Member**	**Chairperson**