CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 501/MP/2019
Petition No. 502/MP/2019
Petition No. 66/MP/2020
Petition No. 267/MP/2020
Petition No. 414/MP/2020
Petition No. 496/MP/2020
Petition No. 499/MP/2020
Petition No. 501/MP/2020
Petition No. 510/MP/2020
Petition No. 545/MP/2020
and
Petition No. 553/MP/2020

Coram:

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

Date of Order: 17.11.2021

Petition No. 501/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Rihand Super Thermal Power Station Stage-II (1000 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
   {On Behalf of Jaipur Vidyut Vitran Nigam Limited (JVVNL),
   Ajmer Vidyut Vitran Nigam Limited (AVVNL) and
   Jodhpur Vidyut Vitran Nigam Limited (JdVVNL)}
   Vidyut Bhawan, Janpath,
   Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road, Kingsway Camp,
   Delhi-110009.

4. BSES Rajdhani Power Limited,
   2nd floor, B-Block, BSES Bhawan, Nehru Place,
   New Delhi-110019.

5. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110092.

6. Haryana Power Purchase Centre,
   Shakti Bhawan, Sector-VI, Panchkula,
   Haryana-134109.

7. Punjab State Power Corporation Limited,
   The Mall,
   Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
   Kumar Housing Complex Building-II, Vidyut Bhawan,
   Shimla-171 004.

9. Power Development Department,
   Government of J&K, Civil Secretariat,
   Srinagar.

10. Electricity Department (Chandigarh),
    Union Territory of Chandigarh,
    Additional Office Building, Sector-9 D,
    Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 502/MP/2019

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on installation of various Emission Control Systems at Tanda Thermal Power Station (440 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:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg,
Lucknow-226001.

…..Respondents

Petition No. 66/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on installation of various Emission Control Systems at Rihand Super Thermal Power Station Stage-III (1000 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:
NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,

7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
   {On Behalf of Jaipur Vidyut Vitran Nigam Limited (JVVNL),
   Ajmer Vidyut Vitran Nigam Limited (AVVNL) and
   Jodhpur Vidyut Vitran Nigam Limited (JdVVNL)}
   Vidyut Bhawan, Janpath,
   Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
   Grid Sub-station, Hudson Road, Kingsway Camp,
   Delhi-110009.

4. BSES Rajdhani Power Limited,
   2nd floor, B-Block, BSES Bhawan, Nehru Place,
   New Delhi-110019.

5. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110092.

6. Haryana Power Purchase Centre,
   Shakti Bhawan, Sector-VI, Panchkula,
   Haryana-134109.

7. Punjab State Power Corporation Limited,
   The Mall,
   Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
   Kumar Housing Complex Building-II, Vidyut Bhawan,
   Shimla-171 004.

9. Power Development Department,
   Government of J&K, Civil Secretariat,
   Srinagar.

10. Electricity Department (Chandigarh),

Union Territory of Chandigarh,
Additional Office Building, Sector-9 D,
Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 267/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Feroze Gandhi Unchahar Thermal Power Station Stage-I (2x210 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation (UPPCL),
Shakti Bhawan, 14, Ashok Marg,
Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
{On Behalf of Jaipur Vidyut Vitran Nigam Limited (JVVNL),
Ajmer Vidyut Vitran Nigam Limited, (AVVNL) and
Jodhpur Vidyut Vitran Nigam Limited (JdVVNL)}
Vidyut Bhawan, Janpath,
Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
Grid Substation, Hudson Road, Kingsway Camp,
Delhi-110009.

4. BSES Rajdhani Power Limited,

2nd floor, B-Block, BSES Bhawan, Nehru Place,
New Delhi-110019.

5. BSES Yamuna Power Limited,
Shakti Kiran Building, Karkardooma,
Delhi-110092.

6. Haryana Power Purchase Centre,
Shakti Bhawan, Sector-VI, Panchkula,
Haryana-134109.

7. Punjab State Power Corporation Limited,
The Mall,
Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
Kumar Housing Complex Building-II, Vidyut Bhawan,
Shimla-171 004.

9. Power Development Department (PDD-J&K),
Government of J&K, Civil Secretariat,
Srinagar.

10. Electricity Department (Chandigarh),
Union Territory of Chandigarh,
Additional Office Building, Sector-9 D,
Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 414/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on installation of various Emission Control Systems at National Capital Thermal Power Station (NCTPS), Dadri Stage-I (840 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:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. BSES Rajdhani Power Limited,
   2nd floor, B-Block, BSES Bhawan, Nehru Place,
   New Delhi-110019.

3. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110092.

4. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road, Kingsway Camp,
   Delhi-110009.

5. New Delhi Municipal Council,
   Palika Kendra Building,
   Opposite Jantar Mantar, Parliament Street
   New Delhi-110001. **…..Respondents**

Petition No. 496/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Feroze Gandhi Unchahar Thermal Power Station Stage-II (2 x 210 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,

NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
   {On Behalf of Jaipur Vidyut Vitran Nigam Limited (JVVNL),
   Ajmer Vidyut Vitran Nigam Limited (AVVNL) and
   Jodhpur Vidyut Vitran Nigam Limited (JdVVNL)}
   Vidyut Bhawan, Janpath,
   Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road, Kingsway Camp,
   Delhi-110009.

4. BSES Rajdhani Power Limited (BRPL),
   2nd floor, B-Block, BSES Bhawan, Nehru Place,
   New Delhi-110019.

5. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110092.

6. Haryana Power Purchase Centre,
   Shakti Bhawan, Sector-VI, Panchkula,
   Haryana-134109.

7. Punjab State Power Corporation Limited,
   The Mall,
   Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
   Kumar Housing Complex Building-II, Vidyut Bhawan,
   Shimla-171 004.

9. Power Development Department (PDD-J&K),
   Government of J&K, Civil Secretariat,
   Srinagar.

10. Electricity Department (Chandigarh),
Union Territory of Chandigarh,
Additional Office Building, Sector-9 D,
Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 499/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on installation of various Emission Control Systems at National Capital Thermal Power Station, Stage-II (980 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:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg,
Lucknow-226001.

2. Tata Power Delhi Distribution Limited,
Grid Substation, Hudson Road, Kingsway Camp,
Delhi-110009

3. BSES Rajdhani Power Limited,
2nd floor, B-Block, BSES Bhawan, Nehru Place,
New Delhi-110019.

4. BSES Yamuna Power Limited,
Shakti Kiran Building, Karkardooma,

Delhi-110092. **…..Respondents**

Petition No. 501/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Feroze Gandhi Unchahar Thermal Power Station Stage-III (1 x 210 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
   (On behalf of Discoms of Rajasthan)
   Vidyut Bhawan, Janpath,
   Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road, Kingsway Camp,
   Delhi-110009.

4. BSES Rajdhani Power Limited,
   2nd floor, B-Block, BSES Bhawan, Nehru Place,
   New Delhi-110019.

5. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110092.

6. Haryana Power Purchase Centre,

Shakti Bhawan, Sector-VI, Panchkula,
Haryana-134109.

7. Punjab State Power Corporation Limited,
The Mall,
Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
Kumar Housing Complex Building-II, Vidyut Bhawan,
Shimla-171 004.

9. Power Development Department (PDD-J&K),
Government of J&K, Civil Secretariat,
Srinagar.

10. Electricity Department (Chandigarh),
Union Territory of Chandigarh,
Additional Office Building, Sector-9 D,
Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 510/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Singrauli Super Thermal Power Station (2000 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan,14, Ashok Marg,
Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
(on behalf of DISCOMs of Rajasthan),
Vidyut Bhawan, Janpath,
Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
Grid Substation, Hudson Road, Kingsway Camp,
Delhi-110009.

4. BSES Rajdhani Power Limited,
2nd floor, B-Block, BSES Bhawan, Nehru Place,
New Delhi-110019.

5. BSES Yamuna Power Limited,
Shakti Kiran Building, Karkardooma,
Delhi-110092.

6. Haryana Power Purchase Centre (HPPC),
Shakti Bhawan, Sector-VI, Panchkula,
Haryana-134109.

7. Punjab State Power Corporation Limited,
The Mall,
Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
Kumar Housing Complex Building-II, Vidyut Bhawan,
Shimla-171 004.

9. Power Development Department (J&K),
Government of J&K, Secretariat,
Srinagar.

10. Electricity Department (Chandigarh),
Union Territory of Chandigarh,
Additional Office Building, Sector-9 D,
Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,

Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 545/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Rihand Super Thermal Power Station Stage-I (2x500 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited),
   (on behalf of DISCOMs of Rajasthan),
   Vidyut Bhawan, Janpath,
   Jaipur-302005.

3. Tata Power Delhi Distribution Limited,
   Grid Sub-station, Hudson Road, Kingsway Camp,
   Delhi-110009.

4. BSES Rajdhani Power Limited,
   2nd floor, B-Block, BSES Bhawan, Nehru Place,
   New Delhi-110019.

5. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma,
   Delhi-110092.

6. Haryana Power Purchase Centre,

Shakti Bhawan, Sector-VI, Panchkula,
Haryana-134109.

7. Punjab State Power Corporation Limited,
The Mall,
Patiala-147001.

8. Himachal Pradesh State Electricity Board Limited,
Kumar Housing Complex Building-II, Vidyut Bhawan,
Shimla-171 004.

9. Power Development Department (J&K),
Government of J&K, Secretariat,
Srinagar.

10. Electricity Department (Chandigarh),
Union Territory of Chandigarh,
Additional Office Building, Sector-9 D,
Chandigarh.

11. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand. **…..Respondents**

Petition No. 553/MP/2020

In the matter of:

Petition under Section 79 of the Electricity Act, 2003 read with Regulation 29 of the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2019 for approval of additional expenditure on account of installation of various Emission Control Systems at Feroze Gandhi Unchahar Thermal Power Station Stage IV (1 x 500 MW) in compliance with the Ministry of Environment and Forests and Climate Change, Government of India notification dated 7.12.2015.

And in the matter of:

NTPC Limited,
NTPC Bhawan,
Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **…. Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg,
   Lucknow-226001.

2. Rajasthan Urja Vika Nigam Limited,
   (On behalf of Discoms of Rajasthan)
   Vidyut Bhawan, Janpath,
   Jaipur-302005.

3. Haryana Power Purchase Centre,
   Shakti Bhawan, Sector-VI, Panchkula,
   Haryana-134109.

4. Power Development Department (PDD-J&K),
   Government of J&K, Civil Secretariat,
   Srinagar.

5. Electricity Department (Chandigarh),
   Union Territory of Chandigarh,
   Additional Office Building, Sector-9 D,
   Chandigarh.

6. Uttarakhand Power Corporation Limited,
   Urja Bhawan, Kanwali Road,
   Dehradun-248001, Uttarakhand. **…..Respondents**

For Petitioner : Shri Venkatesh, Advocate, NTPC
Shri Ashutosh K. Srivastava, Advocate, NTPC
Shri Suhael Buttan, Advocate, NTPC
Shi Abhiprav Singh, Advocate, NTPC
Shri Abhishek Nangia, Advocate, NTPC
Shri Neil Chatterjee, Advocate, NTPC
Ms. Mehak Verma, Advocate, NTPC
Shri Anant Singh, Advocate, NTPC
Shri Siddharth Joshi, Advocate, NTPC
Shri Rishub Kapoor, Advocate, NTPC
Shri Jayant Bajaj, Advocate, NTPC
Shri Nihal Bhardwaj, Advocate, NTPC
Shri Jatin Ghuliani, Advocate, NTPC
Ms. Swapna Sheshadari, Advocate, NTPC
Ms. Ritu Apurva, Advocate, NTPC
Shri A.S. Pandey, NTPC

Shri V. K. Garg, NTPC
Shri Ishpaul Uppal, NTPC

For Respondents : Shri Amit Kapur, Advocate, BRPL and BYPL
Shri Rahul Kinra, Advocate, BRPL and BYPL
Shri Anupam Varma, Advocate, BRPL and BYPL
Shri Aditya Gupta, Advocate, BRPL and BYPL
Shri Utkarsh Singh, Advocate, BRPL and BYPL
Shri Nitin Kala, Advocate, TPDDL
Shri Kunal Singh, Advocate, TPDDL
Shri Anand Shrivastava, Advocate, TPDDL
Ms. Priyansha Indra Sharma, Advocate, TPDDL
Shri Rahul Jajoo, Advocate, TPDDL
Ms. Suparna Srivastava, Advocate, PSPCL
Shri Tushar Mathur, Advocate, PSPCL
Ms. Megha Bajpeyi, BRPL
Shri Sameer Singh, BYPL
Shri S.E. SPA TC, UPPCL
Shri Manish Garg, UPPCL
Shri Brijesh Kumar Saxena, UPPCL
Ms. Shefali Sobti, TPDDL

ORDER

NTPC Limited (in short, 'NTPC) has filed the above-mentioned 11 (eleven) petitions under Section 79 of the Electricity Act, 2003 (hereinafter referred to as "the 2003 Act") read with Regulation 29 of 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) on account of installation of various Emission Control Systems (ECS) in compliance with the Environment (Protection) Amendment Rules, 2015 dated 7.12.2015 (hereinafter referred to as "the MoEFCC Notification") notified by the Ministry of Environment, Forests and Climate Change, Government of India (MoEFCC). 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. 501/MP/2019

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.
ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of mercury, specific water consumption, Particulate Matter, if required.
iii) Allow additional APC, Gross station heat Rate, additional water consumption, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
v) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 502/MP/2019

"i) Grant approval for undertaking implementation of above mentioned scheme in order to meet Revised Emission Standards i.r.t. SO_2.
ii) Grant liberty to approach Hon'ble Commission for undertaking implementation of remaining ECS.
iii) Grant liberty to file separate tariff petition for approval of supplementary tariff after implementation of revised emission standards schemes
iv) Allow the shutdown period required for installation and commissioning of ECS as deemed availability under Regulation 76 of Tariff Regulations 2019.
v) Direct the beneficiaries of the instant station to not consider the Supplementary variable charge for Merit Order Dispatch.
vi) Pass any other order as it may deem fit in the circumstances mentioned above."

Petition No. 66/MP/2020

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.
ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of Particulate matter, Mercury, specific water consumption etc, if required.

iii) Allow additional APC, additional water consumption, additional O&M Expenses, Cost of Reagents etc. as per Regulation 76 of the Tariff Regulations 2019, i.e., "Power to relax".

iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation 76 of the Tariff Regulations 2019, i.e., "Power to relax".

v) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 267/MP/2020

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.

ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of NOx, Particulate matter, Mercury, specific water consumption etc, if required.

iii) Allow additional APC, additional water consumption, additional O&M Expenses, Cost of Reagents etc. as per Regulation 76 of the Tariff Regulations 2019, i.e., "Power to relax".

iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation 76 of the Tariff Regulations 2019, i.e., "Power to relax".

v) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 414/MP/2020

"i) Grant approval for undertaking implementation of above mentioned scheme in order to meet Revised Emission Standards i.r.o SO_2.

ii) Grant liberty to approach Hon'ble Commission for undertaking implementation of Revised Emission Schemes on account of NOx, SPM, Mercury and specific water consumption, if required.

iii) Allow additional APC, additional O&M Expenses, Cost of Reagents, additional water consumption etc. as per Regulation 76 of the Tariff Regulations 2019 i.e. "Power to relax"

iv) Allow the shutdown period required for implementation of ECS as deemed availability under Regulation 76 of Tariff Regulations 2019 i.e. "Power to relax".

v) Allow the petitioner to file hard copies of the petition alongwith affidavit duly notarized, once normalcy is resumed.

vi) Pass any other order as it may deem fit and necessary in the circumstances mentioned above."

Petition No. 496/MP/2020

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.

ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of mercury, specific water consumption, NOx, if required.

iii) Allow additional APC, Gross station heat Rate, additional water consumption, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

v) Allow the petitioner to file hard copies of the petition alongwith affidavit duly notarized, once normalcy is resumed.

vi) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 499/MP/2020

"a. Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.

b. Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of mercury, specific water consumption, Particulate Matter, if required.

c. Allow additional APC, Gross station heat Rate, additional water consumption, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

d. Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

e. Allow the petitioner to file hard copies of the petition alongwith affidavit duly notarized, once normalcy is resumed.

f. Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 501/MP/2020

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.

ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of mercury, specific water consumption, Particulate Matter, if required.

iii) Allow additional APC, Gross station heat Rate, additional water consumption, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

v) Allow the petitioner to file hard copies of the petition alongwith affidavit duly notarized, once normalcy is resumed.

vi) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 510/MP/2020

"i) Grant approval for undertaking implementation of ECS scheme mentioned above in order to meet Revised Emission Standards.
ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of mercury, specific water consumption, Particulate Matter, if required.
iii) Allow additional APC, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
v) Allow the petitioner to file hard copies of the petition along with affidavit duly notarized, once normalcy is resumed.
vi) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 545/MP/2020

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.
ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of De-Nox, mercury, specific water consumption, Particulate Matter, if required.
iii) Allow additional APC, Gross station heat Rate, additional water consumption, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
v) Allow the petitioner to file hard copies of the petition along with affidavit duly notarized, once normalcy is resumed.
vi) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

Petition No. 553/MP/2020

"i) Grant approval for undertaking implementation of various schemes mentioned above in order to meet Revised Emission Standards.
ii) Grant liberty to approach Hon'ble Commission for approval of implementation of Revised Emission Schemes on account of mercury, specific water consumption, Particulate Matter, if required.
iii) Allow additional APC, Gross station heat Rate, additional water consumption, additional O&M Expenses, Cost of Reagents etc as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.
iv) Allow deemed availability of the station/unit on account of shutdown for the implementation of ECS as per Regulation-76 i.e. "Power to relax" of the Tariff Regulations 2019.

v) Allow the petitioner to file hard copies of the petition along with affidavit duly notarized, once normalcy is resumed.
vi) Pass such orders as deemed fit and necessary in the facts and circumstances of the present case."

3. The prayers made by the Petitioner are identical in the eleven petitions and the issues raised by the Respondents are also similar. Accordingly, a common order is issued in these petitions. The details of the petitions covered in the instant order are as follows:

Petition No. 501/MP/2019 - Rihand Super Thermal Power Station Stage-II (RSTPSS-II) (2x500 MW)

4. The Petitioner has sought approval of ACE on account of installation of various ECS at RSTPSS-II (COD: 1.4.2006) in compliance with the MoEFCC Notification. The petition was admitted on 27.2.2020 and order was reserved on 13.8.2021. Uttar Pradesh Power Corporation Ltd. (UPPCL), Respondent No.1, has filed its replies vide affidavits dated 27.1.2020, 13.5.2021 and 8.6.2021. The Petitioner has, vide affidavit dated 21.12.2020, filed rejoinder to UPPCL's reply of 27.1.2020. However, no rejoinder has been filed by the Petitioner for replies dated 13.5.2021 and 8.6.2021 of UPPCL. Tata Power Delhi Distribution Ltd. (TPDDL), Respondent No. 3, has filed its reply vide affidavit dated 24.6.2020 and has filed its Written Submissions vide affidavit dated 14.5.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. Punjab State Power Corporation Ltd. (PSPCL), Respondent No. 7, has filed its reply vide affidavit dated 13.11.2020 and has filed its Common Written Submissions vide affidavit dated 25.5.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. Rajasthan Urja Vika Nigam Limited (RUVNL), Respondent No. 2, has filed its reply vide affidavit

dated 9.11.2020 and the rejoinder has been filed by the Petitioner vide affidavit dated 25.2.2021. BSES Rajdhani Power Ltd. (BRPL), Respondent No. 4 and BSES Yamuna Power Ltd. (BYPL), Respondent No. 5, have filed their combined reply vide affidavit dated 14.6.2021 and have filed their Common note vide affidavit dated 3.9.2021. No rejoinder has been filed by the Petitioner to the replies of BRPL and BYPL. The Petitioner has filed replies to the queries raised in RoPs (record of proceedings)/ TV (technical validation) letters vide affidavits dated 27.5.2020, 9.4.2021, 31.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 502/MP/2019 - Tanda Thermal Power Station (TTPS) (4x110 MW)

5. The Petitioner has sought approval of ACE on account of installation of various ECS at TTPS (COD: 20.2.1998) in compliance with the MoEFCC Notification. The petition was admitted on 27.2.2020 and order was reserved on 13.8.2021. UPPCL has filed its replies vide affidavits dated 23.1.2020, 13.5.2021 and 8.6.2021 and the rejoinder to the reply dated 23.1.2020 has been filed by the Petitioner vide affidavit dated 12.10.2020 while no rejoinder has been filed by the Petitioner for replies of UPPCL dated 13.5.2021 and 8.6.2021. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 26.5.2020, 9.4.2021, 31.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 66/MP/2020 - Rihand Super Thermal Power Station Stage-III (RSTPSS-III) (2x500 MW)

6. The Petitioner has sought approval of ACE on account of installation of various ECS at RSTPSS-III (COD: 27.3.2014) in compliance with the MoEFCC Notification. The petition was admitted on 27.2.2020 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its replies vide affidavits dated 27.1.2020, 13.5.2021 and 8.6.2021 and the rejoinder to the reply dated 27.1.2020 has been filed by the Petitioner vide affidavit dated 21.12.2020 while no rejoinder has been filed by the Petitioner for replies of UPPCL dated 13.5.2021 and 8.6.2021. BRPL, Respondent No.4, has filed its reply vide affidavits dated 14.10.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. BRPL, Respondent No. 4 along with BYPL, Respondent No. 5, has also filed combined reply vide affidavit dated 14.6.2021 and have filed their Common note vide affidavit dated 3.9.2021. No rejoinder has been filed by the Petitioner to the combined replies of BRPL and BYPL. PSPCL, Respondent No. 7, has filed its reply vide affidavit dated 13.11.2020 and has filed its Common Written Submissions vide affidavit dated 25.5.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 7.4.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 28.4.2021. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 28.5.2020, 9.4.2021, 31.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 267/MP/2020 - Feroze Gandhi Unchahar Thermal Power Station Stage-I (FGUTPSS-I) (2X210 MW)

7. The Petitioner has sought approval of ACE on account of installation of various ECS at FGUTPSS-I (COD: 22.3.1989) in compliance with the MoEFCC Notification. The petition was admitted on 21.7.2020 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its replies vide affidavits dated 10.7.2020, 13.5.2021 and 8.6.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 27.8.2020 to the reply dated 10.7.2020 while no rejoinder has been filed by the Petitioner for replies dated 13.5.2021 and 8.6.2021. TPDDL, Respondent No. 3, has filed its reply vide affidavit dated 6.8.2020 and has filed its Written Submissions vide affidavit dated 14.5.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 27.8.2020. BRPL, Respondent No.4, has filed its reply vide affidavit dated 14.10.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. BRPL, Respondent No. 4 along with BYPL, Respondent No. 5, has also filed their combined reply vide affidavits dated 23.4.2021 and 14.6.2021 and have filed their Common note vide affidavit dated 3.9.2021 and no rejoinder has been filed by the Petitioner to the combined reply/ Common note filed by BRPL and BYPL. PSPCL, Respondent No. 7, has filed its reply vide affidavit dated 13.11.2020 and has filed its Common Written Submissions vide affidavit dated 25.5.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 6.4.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 22.4.2021. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide

affidavits dated 11.8.2020, 9.4.2021, 31.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 414/MP/2020 - National Capital Thermal Power Station (NCTPS), Dadri Stage-I (NCTPSS-I) (4x210 MW)

8. The Petitioner has sought approval of ACE on account of installation of various ECS at NCTPSS-I (COD 1.12.1995) in compliance with the MoEFCC Notification. The petition was admitted on 31.3.2021 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its reply vide affidavit dated 17.7.2020 and the rejoinder has been filed by the Petitioner vide affidavit dated 11.8.2020. TPDDL, Respondent No. 4, has filed its replies vide affidavits dated 28.7.2020, 23.4.2021 and has also filed Written Submissions vide affidavit dated 14.6.2021 and the rejoinders have been filed by the Petitioner vide affidavits dated 11.8.2020 and 28.4.2021. BRPL, Respondent No. 2, and BYPL, Respondent No. 3, have filed their combined reply vide affidavits dated 30.7.2020, 23.4.2021 and 14.6.2021 and have filed their Common note vide affidavit dated 3.9.2021 and the rejoinders has been filed by the Petitioner vide affidavits dated 11.8.2020 and 28.4.2021. However, no rejoinder has been filed by the Petitioner for reply of BRPL and BYPL dated 14.6.2021. BYPL, Respondent No. 3 has filed its reply vide affidavit dated 5.3.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 28.4.2021. BRPL, Respondent No. 2, has filed its reply vide affidavit dated 5.3.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 28.4.2021. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 9.4.2021, 31.5.2021 and 14.8.2021 and Written Submissions dated 13.8.2021.

Petition No. 496/MP/2020 - Feroze Gandhi Unchahar Thermal Power Station Stage-II (FGUTPSS-II) (2X210 MW)

9. The Petitioner has sought approval of ACE on account of installation of various ECS at FGUTPSS-II (COD: 1.1.2001) in compliance with the MoEFCC Notification. The petition was admitted on 21.8.2020 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its replies vide affidavits dated 11.8.2020 and 5.5.2021 and rejoinder to reply dated 11.8.2020 of UPPCL has been filed by the Petitioner vide affidavit dated 18.9.2020 while no rejoinder has been filed by the Petitioner for reply of UPPCL dated 5.5.2021. TPDDL, Respondent No. 3, has filed its reply vide affidavit dated 11.9.2020 and has filed its Written Submissions vide affidavit dated 14.5.2021. Rejoinder to reply of TPDDL has been filed by the Petitioner vide affidavit dated 18.9.2020. PSPCL, Respondent No. 7, has filed its reply vide affidavit dated 13.11.2020 and has filed its Common Written Submissions vide affidavit dated 25.5.2021. Rejoinder to reply of PSPCL has been filed by the Petitioner vide affidavit dated 4.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 6.4.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 27.4.2021. BRPL, Respondent No. 4, and BYPL, Respondent No. 5, have filed their replies vide affidavit dated 14.6.2021 and have filed their Common note vide affidavit dated 3.9.2021. No rejoinder has been filed by the Petitioner to replies of BRPL and BYPL. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 9.11.2020, 9.4.2021, 31.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 499/MP/2020 - National Capital Thermal Power Station, Stage-II (NCTPSS-II) (2X490 MW)

10. The Petitioner has sought approval of ACE on account of installation of various ECS at NCTPSS-II (COD: 31.7.2010) in compliance with the MoEFCC Notification. The petition was admitted on 21.7.2020 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its reply vide affidavit dated 17.7.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 27.8.2020. TPDDL, Respondent No. 2, has filed its reply vide affidavit dated 26.8.2020 and has filed its Written Submissions vide affidavit dated 14.6.2021. Rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. BRPL, Respondent No. 3, has filed its reply vide affidavit dated 13.10.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. BRPL, Respondent No. 3, and BYPL, Respondent No. 4, have filed their replies vide affidavit dated 14.6.2021 and have filed their Common note vide affidavit dated 3.9.2021. No rejoinder has been filed by the Petitioner to the replies of BRPL and BYPL. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 11.8.2020, 9.4.2021, 30.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 501/MP/2020 - Feroze Gandhi Unchahar Thermal Power Station Stage-III (FGUTPSS-III) (1X210 MW)

11. The Petitioner has sought approval of ACE on account of installation of various ECS at FGUTPSS-III (COD: 1.1.2007) in compliance with the MoEFCC Notification. The petition was admitted on 21.7.2020 and order was reserved on

13.8.2021. UPPCL, Respondent No.1, has filed its reply vide affidavit dated 16.7.2020 and has filed its written submissions vide affidavit dated 5.5.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 27.8.2020. TPDDL, Respondent No. 3, has filed its reply vide affidavit dated 6.8.2020 and has filed its Written Submissions vide affidavit dated 14.6.2021. In response, Rejoinder has been filed by the Petitioner vide affidavit dated 27.8.2020. PSPCL, Respondent No. 7, has filed its reply vide affidavit dated 13.11.2020 and has filed its Common Written Submissions vide affidavit dated 25.5.2021. In response, rejoinder has been filed by the Petitioner vide affidavit dated 4.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 6.4.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 27.4.2021. BRPL, Respondent No. 4, and BYPL, Respondent No. 5, have filed its replies vide affidavits dated 27.3.2021 and 14.6.2021 and have filed its Common note vide affidavit dated 3.9.2021. No rejoinder has been filed by the Petitioner in response to replies of BRPL and BYPL. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 10.8.2020, 9.4.2021, 31.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 510/MP/2020 - Singrauli Super Thermal Power Station (SSTPS) (5x200+2X500 MW)

12. The Petitioner has sought approval of ACE on account of installation of various ECS at SSTPS (COD: 1.5.1988) in compliance with the MoEFCC Notification. The petition was admitted on 21.7.2020 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its reply vide affidavit dated 17.7.2020 and has filed its written submissions vide affidavit dated 5.5.2021.

Rejoinder has been filed by the Petitioner vide affidavit dated 27.8.2020. TPDDL, Respondent No. 3, has filed its reply vide affidavit dated 26.8.2020 and has filed its Written Submissions vide affidavit dated 14.6.2021. Rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. BRPL, Respondent No. 4, has filed its reply vide affidavit dated 14.10.2020 and rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. PSPCL, Respondent No. 7, has filed its replies vide affidavits dated 13.11.2020 and 26.4.2021 and has filed its Common Written Submissions vide affidavit dated 25.5.2021. Rejoinder has been filed by the Petitioner vide affidavit dated 10.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 4.3.2021. No rejoinder has been filed by the Petitioner. BRPL, Respondent No. 4, and BYPL, Respondent No. 5, have filed their replies vide affidavits dated 27.3.2021 and 14.6.2021 and have filed its Common note vide affidavit dated 3.9.2021. No rejoinder has been filed by the Petitioner. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 11.8.2020, 25.3.2021, 30.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 545/MP/2020 - Rihand Super Thermal Power Station Stage-I (RSTPSS-I) (2x500 MW)

13. The Petitioner has sought approval of ACE on account of installation of various ECS at RSTPSS-I (COD: 1.1.1991) in compliance with the MoEFCC Notification. The petition was admitted on 31.3.2021 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its reply vide affidavit dated 25.8.2020 and has filed its written submissions vide affidavit dated 5.5.2021.

Rejoinder has been filed by the Petitioner vide affidavit dated 30.12.2020. PSPCL, Respondent No. 7, has filed its reply vide affidavit dated 13.11.2020 and has filed its Common Written Submissions vide affidavit dated 25.5.2021. Rejoinder has been filed by the Petitioner vide affidavit dated 13.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 4.1.2021 and rejoinder has been filed by the Petitioner vide affidavit dated 30.3.2021. TPDDL, Respondent No. 3, has filed its reply vide affidavit dated 23.4.2021 and has filed its Written Submissions vide affidavit dated 14.6.2021. Rejoinder has been filed by the Petitioner vide affidavit dated 24.4.2021. BRPL, Respondent No. 4, and BYPL, Respondent No. 5, have filed their common reply vide affidavit dated 14.6.2021 and no rejoinder has been filed by the Petitioner. The Petitioner has filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 9.4.2021, 30.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Petition No. 553/MP/2020 - Feroze Gandhi Unchahar Thermal Power Station Stage-IV (FGUTPSS-IV) (1x500 MW)

14. The Petitioner has sought approval of ACE on account of installation of various ECS at FGUTPSS-IV (COD 30.9.2017) in compliance with the MoEFCC Notification. The petition was admitted on 31.3.2021 and order was reserved on 13.8.2021. UPPCL, Respondent No.1, has filed its reply vide affidavit dated 2.9.2020 and has filed its written submissions vide affidavit dated 5.5.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 30.12.2020. RUVNL, Respondent No. 2, has filed its reply vide affidavit dated 4.1.2021 and the rejoinder has been filed by the Petitioner vide affidavit dated 30.3.2021. The Petitioner has

filed replies to the queries raised in RoPs/ TV letters vide affidavits dated 9.4.2021, 30.5.2021, 14.8.2021 and 3.9.2021 and Written Submissions dated 26.8.2021.

Background

15. Brief common facts, in the instant 11 petitions are as follows:

(a) In exercise of the powers conferred by Section 6 and Section 25 of the Environment (Protection) Act, 1986, MoEFCC vide its Notification No. S.O. 3305(E) dated 7.12.2015 has amended the Environment (Protection) Rules, 1986, introducing revised standards for emission of environmental pollutants to be followed by all existing and new TPPs. As per the MoEFCC Notification, all TPPs were mandatorily required to comply with the revised Emission Control Norms (ECNs) within a period of two years from the date of the MoEFCC Notification dated 7.12.2015. The deadline for compliance of the revised ECNs has been subsequently modified to 2022 vide the notification dated 1.4.2021 of MoEFCC. The amended 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 up to maximum of 3.5 m^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 up to maximum of 3.5 m^3/MWh within a period of two years from the date of publication of this notification.* ***III.*** *New plants to be installed after 1st January, 2017shall have to meet specific water consumption up to 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	*100mg/Nm^3*
		Sulphur Dioxide (SO_2)	*600 mg/Nm^3 (Units Smaller than 500 MW capacity units)* *200 mg/Nm^3 (for units having capacity of 500 MW and above)*
		Oxides of Nitrogen (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]#, up to 31st December, 2016*	

		Particulate Matter	*50 mg/Nm^3*
		Sulphur Dioxide (SO_2)	*600 mg/Nm^3 (Units Smaller than 500 MW capacity units)* *200 mg/Nm^3 (for units having capacity of 500 MW and above)*
		Oxides of Nitrogen (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 under construction".*

#amended vide Gazette Notification No.590 dated 7.3.2016

(b) 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 after 1.1.2004 up to 31.12.2016; and TPPs commissioned after 1.1.2017 were also specified. Subsequently, MoEFCC relaxed the norms of NO_x for TPPs commissioned during the period from 1.1.2004 and 31.12.2016 from 300 mg/Nm^3 that was stipulated in the MoEFCC Notification of 7.12.2015 to 450 mg/Nm^3 vide Notification G.S.R. 662(E) dated 19.10.2020.

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

(d) MoP in exercise of the power under Section 107 of the 2003 Act issued directions to the Commission vide letter dated 30.5.2018 to consider the additional cost implications due to the installation of ECS as a pass through in tariff.

(e) As compliance of the MoEFCC Notification required capital expenditure, the Petitioner filed Petition No. 98/MP/2017 for "in-principle" approval of the capital cost required for installation of ECS and other facilities in Singrauli STPS and Sipat STPS Stage-I. 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.*"

(f) On the basis of the directions of the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017, CEA vide letter dated 21.2.2019 on 'Operation Norms for Thermal Generating Stations for the Tariff Period 2019-2024' recommended various technologies to comply with revised ECNs as specified by the MoEFCC Notification.

(g) However, prior to recommendation of CEA dated 21.2.2019, the Petitioner had identified technologies such as Wet Limestone based FGD (WFGD) system suitable for its various generating stations to achieve the revised ECNs specified by MoEFCC. These technologies are in line with the technologies identified by CEA vide letter dated 21.2.2019. Accordingly, the Petitioner has filed the instant petitions for approval of ACE for implementation of ECS as per Regulation 29 of the 2019 Tariff Regulations.

(h) 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.

(i) 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.

(j) MoEFCC has extended the time limit, vide Notification No. 243(E) dated 1.4.2021, for implementation of the ECS to comply with the revised ECNs through the Environment (Protection) Amendment Rules, 2021. The said

Notification dated 1.4.2021 also provides for constitution of task force and environment compensation for operating the 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. "*

"

16. The Petitioner has filed the instant 11 petitions under the 2019 Tariff Regulations for approval of the capital cost for implementation of ECS. The Petitioner initially in the petition sought approval of additional APC (Auxiliary Power Consumption), Gross Station Heat Rate (GSHR), additional water consumption, additional O&M Expenses, cost of reagents and availability of the station/ unit on account of shutdown for the implementation of ECS under Regulation 76, i.e. “Power to Relax” of the 2019 Tariff Regulations as there were no specific provisions in this regard under the 2019 Tariff Regulations. During the pendency of the proceedings, the 2020 Amendment Regulations were notified by the Commission wherein specific provisions have been made which deal with some of the prayers made by the Petitioner. Accordingly, these prayers of the Petitioner shall be dealt with as per the provisions of the 2020 Amendment Regulations.

17. The Petitioner has submitted that due to COVID-19 pandemic and the subsequent lockdown across the country and restriction on movement of the persons, the Petitioner was unable to file affidavits in support of the petition, reply to RoPs and rejoinders as required under the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2010, and requested to allow it to file the affidavits after return of normalcy. It is observed that the Petitioner and the Respondents have filed the affidavits in support of the submissions made by them and, accordingly, the submissions made by the parties are considered in the petition.

Submissions of the Petitioner

18. The gist of the submissions made by the Petitioner in these petitions is as follows:

(a) In compliance of revised ECNs specified in the MoEFCC Notification dated 7.12.2015, the Petitioner is required to install various ECS in its generating stations.

(b) Regulation 29 of the 2019 Tariff Regulations provides for ACE on account of installation of ECS to meet the revised ECNs. The instant petitions are filed for approval for servicing the expenditure to be incurred in its various generating stations to comply with revised ECNs.

(c) The Petitioner has considered operating parameters recommended by CEA in its letter dated 21.2.2019 for working out indicative tariff. Normative parameters as per the 2019 Tariff Regulations are considered for working out indicative tariff based on the capital cost.

(d) The MoEFCC Notification mandates reduction in water consumption, particulate matter, SO_2, NO_x, and Mercury emission. The Petitioner has proposed to implement Dry Sorbent Injection FGD (DSIFGD) for reduction in SO_2 in TTPS and NCTPSS-I and WFGD in the remaining generating stations/ units. The Petitioner has proposed Combustion Modification, SCR and SNCR for NO_x control in the petition. The Petitioner has also proposed modification of the existing ESP (electro-static precipitator) to meet the new norm of 100 mg/Nm^3 in FGUTPSS-II. The details of ECS proposed in the subject generating stations/ units are as follows:

Petition No.	Generating station/ Unit Capacity (MW)	For control of SO_2	For control of NO_x	Modification of ESP
501/MP/2019	RSTPSS-II (2x500)	WFGD	CM/SNCR	-

502/MP/2019	TTPS (4x110)	DSIFGD	-	-
66/MP/2020	RSTPSS-III (2x500)	WFGD	CM/SNCR	-
267/MP/2020	FGUTPSS-I (2X210)	WFGD	-	-
414/MP/2020	NCTPSS-I (4x210)	DSIFGD	-	-
496/MP/2020	FGUTPSS-II (2X210)	WFGD	-	ESP
499/MP/2020	NCTPSS-II (2x490)	WFGD	CM/SCR/SNCR	-
501/MP/2020	FGUTPSS-III (1X210)	WFGD	CM/SNCR	-
510/MP/2020	SSTPS (5x200+2X500)	WFGD	-	-
545/MP/2020	RSTPSS-I (2x500)	WFGD	-	-
553/MP/2020	FGUTPSS-IV (1X500)	WFGD	CM/SNCR	-

(e) The norms specified for water consumption, particulate matter (except in case of FGUTPSS-II) and Mercury emission are being met by the instant generating stations/ units and, therefore, there is no proposal to install any ECS for the same. Therefore, liberty may be granted to approach the Commission as and when the work(s) pertaining to the same are taken up in future.

(f) CEA in its recommendations vide letter dated 21.2.2019 has recommended four technologies for reduction of SO_2 emissions, namely WFGD, Lime Spray Drier/ Semi-dry FGD, Dry Sorbent Injection (DSI) based FGD and Furnace Injection in CFBC Boilers.

(g) WFGD technology is a wet scrubbing process and it uses limestone or lime as a reagent. It is the most frequently selected technology for SO_2 reduction from coal-fired utility boilers. It removes SO_2 by scrubbing the flue gas with limestone slurry. Flue gas is treated in an absorber by passing the flue gas stream through a limestone or lime slurry spray where the gas flows upwards through the absorber counters current to the spray liquor flowing downward through the absorber. It is envisaged that it would reduce SO_2 emissions to

MoEFCC norms from current levels of around 1000 mg/Nm^3.

(h) The shut-down period required for installation of the WFGD system is approximately 30 to 45 days.

(i) There are two kinds of technologies for NO_X control (a) primary control technologies wherein the amount of NO_X produced in the combustion/ furnace zone is reduced by modifying fuel burners and (b) secondary control technologies that reduce NO_x present in the flue gas by injection of reagent (ammonia [NH3] or urea) in flue gas path where it reacts with NO_x to reduce it to N_2 and water.

(j) In De-NO_x Combustion Modification (CM) System, the normal burners installed in the unit boilers are to be replaced by Low-NO_x Burners (LNB). A LNB limits NO_x formation by regulating the temperature profiles of the fuel combustion by controlling the aerodynamic distribution and mixing of the fuel and air, thereby yielding reduced oxygen in the primary flame zone, which limits the flame temperature, which in turn limits thermal NO_x formation. Due to change in temperature profile of the furnace and heat transfer pattern, LNB retrofits lead to higher economizer inlet temperatures and increase in un-burnt carbon. This increases heat loss of boiler. Accordingly, the unit heat rate is anticipated to increase by around 0.8% on account of De-NO_x LNB retrofit.

(k) De-NO_x Selective Non Catalytic Reduction (SNCR) process involves injecting nitrogen-containing chemicals into the upper furnace or convective pass of a boiler within a specific temperature window without the use of a catalyst. There are different chemicals that can be used that selectively react with NO_x in the presence of oxygen to form molecular nitrogen and water, but the two most common chemicals are ammonia and urea. SNCR system to be installed in the instant generating stations is proposed to be based on urea. This system requires low capital cost, having moderate NO_x removal and it involves non-toxic chemical and it requires low energy injection. Further, due to

formation of water particles during NO_x reduction, it increases the wet loss of boilers leading to deterioration of Unit Heat Rate ranging about 0.1%-0.6%. The deterioration of Station Heat Rate due to installation of De-NO_x systems would be claimed by the Petitioner based on the actual performance of these systems.

(l) De-NO_x Selective Catalytic Reduction (SCR) process involves injecting nitrogen-containing chemicals into the upper furnace or convective pass of a boiler within a specific temperature window with the use of a catalyst. SCR process chemically reduces NO_x molecule into molecular nitrogen and water vapor. A nitrogen-based reagent such as ammonia or urea is injected into the furnace. SCR system proposed to be installed in instant generating stations is based on ammonia. The hot flue gas and reagent diffuse through the catalyst which is composed of active metals or ceramics with a highly porous structure. The reagent reacts selectively with NO_x in the presence of the catalyst and oxygen. The use of a catalyst results in two primary advantages of SCR technology - higher NO_x control efficiency and reactions within a broader temperature range. This system requires high capital cost, having high NO_x removal and involves toxic chemical. Due to formation of water particles during NO_x reduction, it increases the wet loss of boilers leading to deterioration of Unit Heat Rate by about 0.1%.

(m) SNCR and SCR demonstration pilot tests are being conducted at NTPC generating stations and implementation of SNCR shall be taken up based on the reports of SNCR pilot tests.

(n) With the implementation of Combustion Modification System, NO_x emission is anticipated to come down to below 400 mg/Nm^3 and with the installation of SNCR, it is envisaged that the level of NO_x emission shall come down to below 300 mg/Nm^3.

(o) The shut-down period required for installation of Combustion Modification System and SNCR is approximately 45 to 60 days and 15 days

respectively.

(p) The existing ESP installed in FGUTPSS-II was originally designed for 150 mg/Nm^3 at the ESP outlet. The ESP collection efficiency had deteriorated due to ageing even after carrying timely overhauls. Accordingly, it is necessary to carry out ESP modification in order to meet the new SPM norm of 100 mg/Nm^3. ESP modification is being carried out by increasing collecting surface area. The collecting area is being increased by increasing the height of collecting plate from 13.50 meter to 14.00 meter (total no of collecting plates per unit is 5568). In order to accommodate these changes, certain internal parts require replacement and rectifier transformers of higher rating are also being installed. Additional Pass and/ or Additional Fields (rows) are not envisaged at this stage. After carrying out the above-said ESP modifications, no change in operating parameters is envisaged. However, liberty may be granted to approach the Commission for relaxation of the same based on the actuals, if any.

(q) With the installation of revised ECS, there would be requirement of additional manpower for operation and maintenance of these systems, spares pertaining to these systems etc. on sustained basis. Accordingly, the Petitioner has to incur additional O&M Expenses on account of implementation of ECS. In case of thermal generating stations, the norms of O&M Expenses have been fixed (in lakh/MW) based on actual O&M Expenses of different stations in the last five years. As FGD system and other ECS were not installed at various generating stations, the expenditure on account of them was not considered while framing the norms. Further, the actual O&M Expenses data on account of FGD system and other ECS is not available. Therefore, as has been provided in case of new hydro stations, a norm in relation to percentage (%) of capital cost may be considered. In case of large hydro stations, O&M norm of 3.5% of capital cost has been provided in the 2019 Tariff Regulations. Since proportion of plant and machinery is more in FGD system/ other ECS, norm for additional

O&M Expenses @4% of capital cost per annum may be considered and the same has been considered to compute the indicative tariff.

(r) The Commission may allow additional APC over and above the normative APC for the generating stations covered in the instant petitions due to implementation of ECS. Further, additional capital expenditure and associated costs such as increased water charges, cost of chemicals/ reagents (limestone) on account of implementation of ECS may be allowed.

(s) Units have to be taken under shutdown for about 45 days for each unit for implementation of ECS and stabilization of the same would take some more time. During the period of shut-down of unit, there would be loss of availability of the generating station and would lead to under-recovery of Annual Fixed Charges (AFC). Accordingly, the shutdown period of unit for implementation of these ECS in compliance of MoEFCC Notification may be treated as deemed availability under Regulation 76 of the 2019 Tariff Regulations.

(t) Additional GSHR over and above the normative GSHR for the station may be allowed due to implementation of ECS.

(u) The Petitioner will file separate supplementary tariff petitions in terms of Regulations 29(4) of the 2019 Tariff Regulations based on actual and projected expenditure, as the case may be, and normative operating parameters/ norms as specified in the 2019 Tariff Regulations and subsequent notification for reagent consumption, etc.

Maintainability

19. The Respondents have submitted that the instant petitions are not maintainable for the reasons that (a) the Petitioner has not complied with the procedure laid down in the 2019 Tariff Regulations, (b) there is non-submission of CEA's case specific recommendations, (c) the MoEFCC Notification is not applicable

to old/ retiring plants, (d) the Petitioner has not submitted present emission levels of the generating stations and (e) there is delay in award of contracts. The issues raised by the Respondents and the clarifications given by the Petitioner are dealt in the following paragraphs.

a. Non-compliance of Regulation 29 of the 2019 Tariff Regulations

20. The Respondents have contended that the Petitioner has not shared the proposal for installation of ECS in the subject generating stations/ units with the Respondents as mandated in Regulation 29 of the 2019 Tariff Regulations. Similar submissions by different respondents are not being repeated for sake of brevity. The submissions made by the Respondents in this regard in the instant petitions are as follows:

(a) UPPCL in Petition No. 501/MP/2020, Petition No. 499/MP/2020 and Petition No. 510/MP/2020 has submitted that a generating company is required to share its proposal for incurring ACE towards compliance of revised ECNs with the Respondents as per Regulation 29 of Tariff Regulation 2019 and, thereafter, file a Petition before the Commission with computation of indicative tariff along with other relevant details. The Petitioner has not followed the procedure as laid down in Regulation 29 of the 2019 Tariff Regulations. Though MoEFCC issued Notification on 7.12.2015, the Board of Directors (BoD) of the Petitioner took decision to implement FGD system on 22.3.2017 i.e. after a gap of 1 year and 4 months. NIT (notice inviting tender) was issued on 19.8.2019 and NoA (notification of award) was issued on 18.2.2020 after 6 months. NIT was issued after 3 years and 9 months from the date of the MoEFCC Notification. HAd BoD of the Petitioner taken an early decision, NIT and NoA could have been issued by 30.9.2016 and 1.1.2017 respectively. Delay in taking decision to implement FGD system and issuance of NIT has resulted into huge escalation in prices.

(b) BRPL in Petition No. 66/MP/2020 and Petition No. 496/MP/2020 has submitted that it has been requesting for information pertaining to ACE and its impact on tariff due to installation of FGD system since 2017. BRPL on various occasions through correspondence dated 13.9.2017, 22.6.2018, 8.20219 and 11.2.2019 had sought for the details regarding installation of FGD. However, the Petitioner did not share the details and directly filed the petitions under Regulation 29 of the 2019 Tariff Regulations. This issue was also raised by BRPL in October 2018 during 40th Technical Coordination Sub-committee (TCC) hosted by NRPC and asked to share the proposal and cost-benefit analysis. The Petitioner has not provided the information as required under Regulation 29(3) of the 2019 Regulations. BRPL has made the following submissions:

(i) The Petitioner should have submitted the views of the beneficiaries after obtaining the same by sharing the proposal with them. As the Petitioner has not done so, the instant petitions are premature.

(ii) The Petitioner did not provide information to the Respondents despite assuring to do so in its letter dated 25.2.2019. The purported proposal was shared with the beneficiaries by letter dated 3.9.2020 only after the Commission directed the Petitioner to share the proposal with the beneficiaries.

(iii) The installation of ECS has been under process long after the 2019 Tariff Regulations came into force. Therefore, the Petitioner cannot resort to order dated 20.7.2018 in Petition No. 98/MP/2017 to aver that the Petitioner proceeded on the basis of the said order.

(iv) Only in case of NCTPSS-I, RSTPSS-III, RSTPSS-II and NCTPSS-II the bidding process had started before the notification of the 2019 Tariff Regulations. A different approach needs to be adopted for the generating stations where the bidding process took place (i) before the

notification of the 2019 Tariff Regulations and (ii) after the enactment of the 2019 Tariff Regulations.

(v) Some of the instant petitions are not covered by the order dated 28.4.2021 in Petition No. 335/MP/2020 & Ors. wherein the Commission granted “in-principle” approval to various generating stations of NTPC for installation of ECS under Regulation 11 of 2019 Tariff Regulations. In some of the cases, the Petitioner has started the installation process and the same has been underway for almost 2 years since the notification of the 2019 Tariff Regulations. Having willfully failed to adhere to the requirements of the 2019 Tariff Regulations, the Petitioner is not entitled to the reliefs as prayed. If reliefs are allowed, despite the Petitioner failing to adhere to statutory prescription, then the same would render prudence check under the principles of Section 61 of the 2003 Act read with the Regulation 29 of the 2019 Tariff Regulations otiose.

(vi) The delay in implementing the FGD system is on account of the Petitioner and the additional burden caused on account of the same cannot be fastened upon the consumers in the form of increased tariff. It is only on account of the delay by the Petitioner that the useful life in case of some of the instant generating stations/ units has come to an end.

(vii) Regulation 29 of the 2019 Tariff Regulations specifically mandates taking an “in-principle” approval with the required details and after sharing the proposal with the beneficiaries. No post facto approval is envisaged. This is specifically done as the installation of ECS will have a significant impact on the tariff to be charged from the consumers. Sharing of the proposal with the Discoms/ beneficiaries before filing the petition has been made mandatory, as the beneficiaries are best placed to see the financial implications of the proposal on the consumers and advise accordingly. If the generating company undertakes implementation of ECS

without obtaining the approval of the Commission, the same has to be at their own risk and costs.

(viii) The Petitioner is trying to shield its wrongdoing of not sharing the proposal with the beneficiary prior to floating the bids by deliberately trying to misinterpret the Regulation 29 of the 2019 Tariff Regulations. In case the Petitioner's interpretation is accepted, the same would be against consumer interest and would enable generators to seek post facto approval of their expenses without consultations, which cannot be allowed.

(ix) The Petitioner cannot take recourse of proceedings before various judicial bodies to take shelter as regards non-compliance of the regulations.

(x) The Petitioner has wrongly relied on the principle of 'substantial compliance' to state that it has complied with substantial part of the 2019 Tariff Regulations and provided all information to the beneficiaries.

(xi) Section 7 of the 2003 Act mandates that the generating station has to comply with the technical standards specified by CEA under Section 73(b) of the 2003 Act. The principles of Section 7 of the 2003 Act have been disregarded by the Petitioner while proceeding with ECS installation.

(xii) Section 79(3) of the 2003 Act requires the Commission to follow the principle of natural justice and transparency as a governing principle while discharging its function. The Petitioner cannot circumvent the judicial process established by the Commission by failing to provide the information/ documents sought by the Commission.

(xiii) It is settled law that when the law provides something to be done in a particular manner, then it has to be done in that manner alone. The Petitioner has erroneously contended that no prejudice has been caused to the Respondents on account of the Petitioner not following the mandate of Regulation 29 of the 2019 Tariff Regulations and not sharing the information with the beneficiaries on time.

(xiv) As per the MoEFCC Notification, the initial timeline for compliance of revised ECNs was within a period of two years, i.e. by 6.12.2017. The Petitioner did not undertake any action for installation of ECS within that period. Therefore, the Central Pollution Control Board (CPCB) was constrained to issue an order on 11.12.2017 directing the Petitioner to complete ECS installation by 31.12.2019. The Petitioner did not complete the installation even by 31.12.2019. CPCB issued a show-cause notice on 31.1.2020 and imposed penalty on 8.5.2020. However, the Hon'ble Supreme Court stayed the order for recovery of non-compliance fee. The Petitioner started completing the work with respect to installation of ECS only after the interference of CPCB.

(xv) The Petitioner has failed to comply with the mandate of Regulation 29(3) of the 2019 Tariff Regulations for installation of ECS. As per Section 61(b), (c), (d) and (e) of the 2003 Act, for 'in-principle' approval or 'final' approval of the capital cost, a generator is required to follow the provisions of the 2003 Act and the Regulations. As per Section 61(c) of the 2003 Act, the Commission has to consider the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments. Therefore, the said section includes the benchmark for the 'cost benefit analysis' as categorically sought by the Commission under Regulation 29(3) of the 2019 Tariff Regulations which the Petitioner failed to provide.

(c) PSPCL in Petition No. 501/MP/2019, Petition No. 66/MP/2020, Petition No. 267/MP/2020, Petition No. 496/MP/2020, Petition No. 510/MP/2020 and Petition No. 545/MP/2020 has submitted that any ACE towards ECS installation may be allowed only if a petition is filed by the generating company in accordance with the procedure prescribed under Regulation 29 of the 2019 Tariff Regulations to be passed through in tariff after a prudence check based on the reasonableness of its cost and its impact on the operational parameters. The provision for sharing of proposal has been made in order to minimize the impact on tariff, which is all the more necessary in case of generating stations whose units have already completed their useful life where the generating company and the beneficiaries should come to an understanding upfront with regard to extension of life beyond the useful life of the generating station. However, the Petitioner has not followed the above prescribed procedure before filing of the present petition. Further, the proposal containing details of proposed technology as specified by CEA, the complete scope of work, phasing of expenditure and detailed computation on its impact on tariff etc. has not been shared by the Petitioner with the Respondents and, thus, the Petition has not been filed with the comments of the beneficiaries on such proposal. The Petitioner has sought to justify such non-sharing by citing time constraint in implementing the requirements under the MoEFCC Notification. However, the same is not a sufficient reason for bypassing the regulatory provisions. Subsequently, when the Petitioner has shared its proposal for installation of ECS with the PSPCL, it did not disclose the details of recovery of cost of ECS by way of depreciation for the generation projects where useful life has already expired and also does not disclose the details of the tendering process for ECS implementation. In any case, having already filed the petitions for installation of ECS and the matter being sub-judice before the Commission, the sharing of proposal is inconsequential at this stage.

(d) TPDDL has made submissions in Petition No. 501/MP/2019, Petition No. 267/MP/2020, Petition No. 496/MP/2020 and Petition No. 501/MP/2020.

TPDDL has submitted that the Petitioner has failed to comply with the mandatory procedural requirements of sharing the proposal under Regulation 29 of the 2019 Tariff Regulations and this has been observed by the Commission in its RoPs and as such, approval may not be granted under Regulation 29 of the 2019 Tariff Regulations. IFBs (Invite for Bids) and the Board approvals for awarding FGD package were after the 2019 Tariff Regulations came into effect. Accordingly, the Petitioner should have followed the mandatory requirements under Regulation 29 of the 2019 Tariff Regulations. The Petitioner is required to share its proposal for ACE for compliance of the revised ECNs with the beneficiaries and file a petition before the Commission for undertaking such ACE. The Petitioner is required to fulfill both requirements and one is not a substitute for the other. Subsequent sharing of the proposal cannot be said to fulfill the requirement under Regulation 29 of the 2019 Tariff Regulations. The facts in the present set of petitions are materially different from the facts considered by the Commission in order dated 28.4.2021 in Petition No. 335/MP/2020 & Ors. and, hence, order dated 28.4.2021 is not applicable to the instant petitions. Just because TPDDL was a party to the Petition No. 98/MP/2017 is not equivalent to the Petitioner having shared the proposal as per Regulation 29(1) of the 2019 Tariff Regulations. The purpose behind sharing of a proposal is not to make the beneficiaries aware but to seek their assent with regard to such proposal.

(e) RUVNL in Petition No. 267/MP/2020 and Petition No. 501/MP/2020 has submitted that the instant petitions lack in providing material particulars relevant for adjudication of the issue regarding ECS implementation. The Petitioner has no prior experience or data related to additional costs associated with operation of FGD and other ECS related to NO_x, SPM, Mercury, specific water consumption, cost of reagents and additional water consumption.

21. The consolidated clarifications given by the Petitioner regarding compliance of Regulation 29 of the 2019 Tariff Regulations are as follows:

(a) The MoEFCC Notification for the first time introduced norms for SO_2 and NO_x emission for all TPPs in the country. As per the said notification, all the existing and under construction TPPs were to comply with the new norms by 31.12.2017. Therefore, the Petitioner immediately started planning for implementation of various ECS required to be installed in its generating stations.

(b) ECS for SO_2 and NO_x was new to TPPs. Various technologies available to control SO_2 and NO_x emission were not in operation or readily available in the country. The Petitioner identified certain technologies for ECS on preliminary basis which were in use worldwide. The Petitioner also decided to visit coal-based TPPs in various countries where such technologies were reliably operating. Accordingly, teams were formed and sent to various power plants in March 2016 to observe and learn about challenges involved in respect of operation and maintenance of the plants and availability of vendors/ spares on long term basis.

(c) The Petitioner, on 26.2.2016, made a presentation before CEA, MoP and MoEFCC indicating the challenges and issues involved in the implementation of various ECS within the given timeline. As retrofitting of FGD/ De-NO_x technologies would take about 32 months after award, the Petitioner requested to relax the norms for the units commissioned prior to 2003 and to review the chimney height norm in view of reduced emissions after installation of ECS.

(d) Subsequently, the Petitioner took steps for identification of technologies suitable for various unit sizes and Indian coal. Phasing of implementation of the ECS Systems in various units/ stations was also planned.

(e) A meeting was conducted by the Secretary, MoP on 14.9.2016 and it was decided that retrofitting would be in phased manner with newer units first and older units afterwards considering the cost and to avoid power shortage.

Accordingly, the Petitioner took approval of the interim internal plan for implementation of ECS from its BoD on 22.3.2017.

(f) The Petitioner proceeded to prepare specifications of various ECS and at the same time surveyed various stations for preparing ECS equipment's layout. The site surveys, layout preparation, equipment sizing/ requirements take considerable amount of time. As the layout in each unit and station are different and the equipment/ systems have to be retrofitted in a defined space, it takes more time.

(g) In a meeting on 1.9.2017 of the Secretary, MoP and the Secretary, MoEFCC, action plan for implementation up to 2022 was considered and stakeholders were asked to give their phasing plan. After receipt of the phasing plan from all stakeholders including the Petitioner, CPCB issued project-wise ECS implementation and the date was notified in December 2017.

(h) In the meantime, the Petitioner published NIT for installation of FGD system for 27000 MW in Lots, mainly for new units, in June and July 2017. Considering the request of the Petitioner and other factors, MoEFCC changed the norm for chimney height *vide* Notification dated 28.6.2018. Accordingly, the Petitioner had to reconsider the design/ specification for generating stations where NIT was to be published. The site surveys and ECS lay out finalization for other generating stations (about 25000 MW in Lots) took considerable amount of time. Therefore, NIT was published in August 2019.

(i) The Petitioner being one of the largest power generating companies in the country owning 23 TPPs requires additional time to finalize the engineering designs. There was no imprudence on part of the Petitioner and there was no delay in taking up the implementation of ECS.

(j) The MoEFCC Notification was to be complied by all TPPs in the country within two years from the date of notification. For installation of ECS,

substantial capital expenditure is required and, therefore, the Petitioner approached the Commission through Petition No. 98/MP/2017 for approval of the expenditure. The Commission vide its order dated 20.7.2018 observed that ACE on implementation of ECS in terms of the MoEFCC Notification will be admissible under "*change in law*" after due prudence check. The Respondents were also party to the said petition. The progress of work was not only being monitored in all RPCs, wherein all stakeholders were kept aware of it, but also by Hon'ble Supreme Court which issued direction to complete the installation of ECS in highly polluted and densely populated area by December 2021 and in other stations latest by December 2022. The complete installation of ECS in a station from pre-award activities to erection and commissioning of the systems would take at least 3 years. Accordingly, the Petitioner proceeded for tendering and awarding FGD systems as early as possible in a phased manner through a transparent competitive bidding process in order to comply with the norms within the time frame. These developments took place during the 2014-19 tariff period. By the time, the Commission notified the 2019 Tariff Regulations, the progress of activities with reference to the installation of ECS were at different stages pertaining to pre-award activities, NIT regarding competitive bidding etc.

(k) After the issuance of the 2019 Tariff Regulations, the Petitioner filed the instant petitions seeking approval of ACE towards installation of ECS and shared the details of various ECS, technology selection, indicative cost and tariff etc. with the Respondents.

(l) Regulation 29(1) of the 2019 Tariff Regulations does not specify the stage at which the proposal for ACE has to be shared with the beneficiaries for ECS to be implemented in the generating station(s). The Petitioner has shared the proposal with beneficiaries vide its letter dated 2.9.2020. Even otherwise, on the date of the filing of the petitions, the petitions along with its Annexure were served upon the respondents. Therefore, the Petitioner has duly complied with the Regulation 29(1) and (2) of the 2019 Tariff Regulations.

(m) Moreover, the Petitioner had impleaded all the Respondents in the Petition No. 98/MP/2017 with the objective to keep the beneficiaries informed about ACE the Petitioner would incur to meet the revised ECNs. The Respondents have been given ample opportunity to present their objections.

(n) The purpose of contemporaneous intimation is to ensure transparency in the process of ECS installation. The Respondents' contention that as per Regulation 29(1) of the 2019 Tariff Regulations, prior to any bidding carried out by the Petitioner, prior consent, ratification, consultation with beneficiaries is required, is bereft of logic and reasoning as the words 'prior approval', 'prior consultation' or even 'intimation' before ECS bidding has to be carried out, is not envisaged in the regulations.

(o) The Petitioner has fulfilled the substantial requirement of the Regulation by its conduct in Petition No. 98/MP/2017 and further by sharing its proposal and other information as sought by the Commission. Sufficient opportunity in terms of Section 79(3) of the 2003 Act has also been provided by the Commission and no irregularity or imprudence has been made out by the Respondents.

(p) Relying on the judgment of Commissioner of Central Excise, New Delhi v. Hari Chand Shri Gopal and Ors., (2011) 1 SCC 236 on doctrine of substantial compliance, the Petitioner has submitted that the essence of Regulation 29 of the 2019 Tariff Regulations in all aspects have been complied with and all information as envisaged under Regulation 29(2) of the 2019 Tariff Regulations have been provided to Respondents.

(q) In Petition No. 98/MP/2017, the Petitioner had categorically averred that once the MoEFCC Notification is declared as "*change in law*", the Petitioner will proceed to implement the same once regulatory certainty is

granted by the Commission. Therefore, the beneficiaries were always informed about the intent of the Petitioner to comply with the revised ECNs.

(r) The consequences of non-compliance of the MoEFCC Notification leads to penal action under Section 6 of the Environment Protection Act, 1986 read with Rule 3 of the Environment Protection Rules, 1986.

(s) IFB for installation of FGD system in NCTPSS-I, NCTPSS-II, RSTPSS-II and RSTPSS-III was issued by the Petitioner much prior to the notification of the 2019 Tariff Regulations. Thus, for those generating stations, the governing regulations are 2014 Tariff Regulations and not the 2019 Tariff Regulations. The prior consultation/ approval from beneficiaries or any discussion was not proposed either in the 2014 Tariff Regulations or in the order dated 20.7.2018 in Petition No.98/MP/2017. In any event, the changes in law are to be complied with by generating companies and the 2014 Tariff Regulations provided that the impact of *"change in law"* would be given in the truing up proceedings.

(t) All the relevant details with respect to the subject generating stations/ units have already been indicated in the petitions and subsequent submission dated 28.5.2020. Further, subsequent to notification of 2020 Amendment Regulations, the Petitioner has shared the details of ECS being implemented at various generating stations/ units with all the Respondents. The Petitioner has shared indicative supplementary tariff on account of ECS implementation considering RoE, depreciation, O&M Expenses, etc. as per the 2020 Amendment Regulations.

(u) NCTPSS-I and NCTPSS-II are located in the Delhi-NCR and the Petitioner was directed to comply with the directions by 31.12.2019 issued by CPCB in its letter dated 11.12.2017. In order to comply with the revised ECNs, the Petitioner proceeded for implementation of FGD immediately after the notification as installation takes considerable time due to pre-award activities such as identification of suitable proven technology based on the geographical

location of the station, identification of vendors, engineering, tendering, location survey etc. These activities consume substantial time. Further, to meet the stringent deadline, the Petitioner prepared specifications and proceeded for tendering vide NIT dated 12.6.2018 for identifying and installation of DSIFGD in two generating stations/ units before the notification of the 2019 Tariff Regulations. Given the strict timelines for ECS implementation to comply with the prescribed environmental norms, the Petitioner proceeded with the filing of the present petition and sharing the proposal simultaneously in the form of the instant petition.

(v) The progress of activities with reference to the installation of ECS schemes were at different phases pertaining to pre-award activities, NIT regarding competitive bidding etc. Subsequent to the issuance of 2019 Tariff Regulations, the Petitioner filed the petitions as per Regulation 29 of the 2019 Tariff Regulations for approval of the same incorporating the selection of technology in line with CEA guidelines, tentative/ awarded capital cost, tentative supplementary tariff etc. and sharing the proposals by serving the petitions on the respective Respondents.

(w) In addition to compliance with the MoEFCC Notification, the progress of the work was also being monitored by the Hon'ble Supreme Court. The non-compliance of revised ECNs would have resulted in revocation of environmental clearance, which in turn would have affected the beneficiaries and consumers. The combined NIT for FGUTPSS-I, FGUTPSS-II and FGUTPSS-III was called on 28.9.2018, which was much before issuance of the 2019 Tariff Regulations. The bid opening date for techno-commercial bid for LOT-3 was 14.2.2019. Price bid for FGUTPSS-I, FGUTPSS-II and FGUTPSS-III was invited on 8.5.2019. However, the bid was annulled on 29.5.2019 as the price quoted by L1 bidder was higher than the estimated cost. NIT for re-tendering of FGD package for FGUTPSS-I, FGUTPSS-II and FGUTPSS-III was done under LOT-4 on 19.8.2019. The bid opening date for techno-commercial

bid for LOT-4 was 21.10.2019. The price bid for FGUTPSS-I, FGUTPSS-II and FGUTPSS-III was invited on 13.1.2020 and contract was awarded to L1 bidder, GEPIL, on 7.2.2020 and NoA was issued on 18.2.2020. Therefore, the bidding process was initiated before the issuance of the 2019 Tariff Regulations. It is incorrect to state that the Petitioner had not taken any active steps till the issue of IFB. The prudency of the Petitioner in discovering the best price is reflected from the fact that the bidding process was annulled thrice as the prices discovered seemed higher than the estimated cost. Therefore, the Petitioner has carried out all the prudent steps and activities required for installation of FGD system in a timely and cost-effective manner.

22. We have considered the submissions of the Petitioner and the Respondents. The instant petitions are filed under Section 79 of the 2003 Act read with Regulation 29 of the 2019 Tariff Regulations for "in-principle" approval of ACE towards installation of ECS for reduction of emission of SO_2, NO_x and Particulate Matter (in Petition No. 496/MP/2020) in compliance of the MoEFCC Notification. The Respondents have contended that the instant petitions are not maintainable as the Petitioner has not shared the proposal for installation of ECS in the subject generating stations/ units as mandated under Regulations 29(1) of the 2019 Tariff Regulations.

23. The 2019 Tariff Regulations provides for the procedure for claiming ACE on account of implementation of ECS in Regulation 29, which is extracted 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."

24. 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 and file a petition for undertaking ACE under Regulation 29(1) of the 2019 Tariff Regulations. As per Regulation 29(2) of the 2019 Tariff Regulations, the proposal has to contain the details of the proposed technology as specified by CEA and other relevant information. The Commission may approve, on an application by the generating station, the proposed ACE towards installation of ECS after prudence check as provided in Regulation 29(3) of the 2019 Tariff Regulations. As per Regulation 29(4) of the 2019 Tariff Regulations, the generating station shall file a petition for determination of tariff after implementation of ECS.

25. The Petitioner had initiated action for implementation of ECS in the subject generating stations/ units in compliance of the MoEFCC Notification in the 2014-19

tariff period taking into consideration the stringent timelines and the fact that the installation of ECS is being monitored by the Hon'ble Supreme Court. IFB and NoA in case of RSTPSS-II, TTPS, RSTPSS-III, NCTPSS-I, NCTPSS-II, FGUTPSS-IV were issued in the 2014-19 tariff period and in case of FGUTPSS-I, FGUTPSS-II, FGUTPSS-III, SSTPS and RSTPSS-I, they were issued during 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
501/MP/2019	RSTPSS-II (2X500)	31.07.2017	18.09.2018
502/MP/2019	TTPS (4x110)	20.06.2018	02.11.2018
66/MP/2020	RSTPSS-III (2X500)	31.07.2017	18.09.2018
267/MP/2020	FGUTPSS-I (2X210)	19.08.2019	18.02.2020
414/MP/2020	NCTPSS-I (4X210)	12.06.2018	26.10.2018
496/MP/2020	FGUTPSS-II (2X210)	19.08.2019	18.02.2020
499/MP/2020	NCTPSS-II (2X490)	29.11.2017	01.02.2018
501/MP/2020	FGUTPSS-III (1X210)	19.08.2019	18.02.2020
510/MP/2020	SSTPS (5x200+2X500)	19.08.2019	18.02.2020
545/MP/2020	RSTPSS-I (2x500)	24.04.2020	-
553/MP/2020	FGUTPSS-IV (1X500)	31.07.2017	16.10.2018

26. It is observed that the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017 has already held that ACE due to "*change in law*" or compliance with any existing law" is allowable and, therefore, ACE due to installation of ECS in compliance with the MoEFCC Notification, which is a "*change in law*" event shall be admissible after due prudence check under Regulation 14 of the 2014 Tariff Regulations. The Petitioner has submitted that taking into consideration the observations of the Commission in order dated 20.7.2018, the stringent timelines specified in the MoEFCC Notification and the fact that the compliance of the revised ECNs is being monitored by the Hon'ble Supreme Court, the Petitioner had initiated

and taken substantial action for installation of ECS for meeting the revised ECNs in during the 2014-19 tariff period.

27. The requirement of sharing the proposal for implementation of ECS with the Respondents was introduced in the 2019 Tariff Regulations, which were notified in March 2019 and became effective on 1.4.2019, wherein under Regulation 29(1) of the 2019 Tariff Regulations, the Petitioner is required to share the proposal for installation of ECS with the Respondents and file a petition before the Commission. In case of RSTPSS-II, TTPS, RSTPSS-III, NCTPSS-I, NCTPSS-II and FGUTPSS-IV, where IFB and NoA were issued before notification of the 2019 Tariff Regulations, the Petitioner could not have shared the proposal with the beneficiaries. In case of FGUTPSS-I, FGUTPSS-II, FGUTPSS-III, SSTPS and RSTPSS-I, the Petitioner had issued IFB and NoA in the 2019-24 tariff period after notification of the 2019 Tariff Regulations and, therefore, the Petitioner should have shared the proposal for installation of ECS with the Respondents in these cases 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 and the Petitioner 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 the petition, nor does it provide for furnishing any comments or objections by the Respondents. As per the said Regulation, the Petitioner has to share the proposal for installation of ECS with the Respondents/ beneficiaries for their information prior to or at the time of filing the

Petition. We note that the Petitioner has shared the proposal with the Respondents while filing of the petitions, and other details at 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 as per our SOP.

28. In view of the foregoing, we are of the view that it would have been appropriate for the Petitioner to share the details of the proposed installation of ECS with the Respondents as envisaged in Regulation 29(1) of the 2019 Tariff Regulations before filing the instant petition for “in-principle” approval of ACE due to implementation of ECS. However, we are unable to agree with the Respondents that the instant Petitions are not maintainable on this ground alone.

29. The instant petitions were filed in 2019 and 2020 and were admitted on 21.7.2020 and the order was reserved on 13.8.2021 after detailed hearing. The Respondents were given sufficient time and opportunities to raise their concerns. Therefore, we are not able to agree with the Respondents that the instant petitions should be rejected and the Petitioner should file fresh petitions following the procedure laid down in Regulation 29(1) of the 2019 Tariff Regulations as 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 don’t accept the objections of the Respondents regarding the compliance of Regulation 29(1) of the 2019 Tariff Regulations.

b. Non-submission of CEA Recommendations

30. The Petitioner has submitted that WFGD system is being installed in nine of the subject generating stations/ units and DSIFGD in two generating stations/ units for control of SO_2 emission levels as these are the most appropriate technologies and are in accordance with the CEA recommendations and also meet SO_2 emission norms stipulated by MoEFCC. The Respondents have contended that the Petitioner has not submitted the recommendations of CEA regarding the technology to be adopted by the Petitioner for its generating stations/ units. Submissions being similar in some cases, they have not been repeated for sake of brevity. The submissions made by the Respondents in this regard are as follows:

(a) UPPCL in Petition No. 502/MP/2019 has submitted that the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017 observed that identification of suitable technology is dependent upon location of the plant and existing level of emission. However, the Petitioner has not annexed the copy of Environmental Clearance (EC) for the instant station. UPPCL in Petition No. 66/MP/2020 and Petition No. 267/MP/2020 has submitted that CEA in its recommendations dated 21.2.2019 has given factors to be taken into consideration while selecting the technology for reduction in SO_2 emission levels. However, none of the factors stated by CEA are dealt by the Petitioner in the petitions. The Petitioner has placed LoA without waiting for CEA's recommendations and has not complied with directions in the order dated 20.7.2018 in Petition No. 98/MP/2017.

(b) UPPCL, RUVNL and TPDDL in Petition No. 496/MP/2020, Petition No. 501/MP/2020, Petition No. 414/MP/2020, Petition No. 499/MP/2020, Petition No. 510/MP/2020 and Petition No. 545/MP/2020 have submitted that the Petitioner has an aggregate thermal capacity of about 60000 MW at different

generating stations located across India. The criteria for selection of the technology at each generating station would be different and plant-specific depending on quality of coal, existing emission technology, location of the plant, balance useful life of the plant, space availability, availability of reagents at its location etc. The selection of technology is an intricate matter of science and engineering, normally not comprehensible to a person concerned with the business of distribution of electricity. The Commission directed CEA vide order dated 20.7.2018 in Petition No. 98/MP/2017 to prepare guidelines specifying suitable technology with model specification for each plant with regard to the norms on emission control, operational parameters such as auxiliary consumption, O&M Expenses, station heat rate etc. consequent to the implementation of ECS. Therefore, in view of the direction issued to CEA in Petition No. 98/MP/2017, it would be appropriate to consider the recommendations made by CEA and issue guidelines for selection of technology for emission control as mandated by MoEFCC.

(c) PSPCL in Petition No. 66/MP/2020 has submitted that the petition has been filed in non-compliance of the order dated 20.7.2018 in Petition No. 98/MP/2017 and it lacks the particulars relevant for adjudication of the issue regarding ECS implementation. In order to claim the ACE towards installation of ECS it is imperative for the Petitioner to submit the suitable technology for each of generating plants and its impact on the operational parameters and on tariff.

(d) PSPCL in Petition No. 545/MP/2020, Petition No. 267/MP/2020, Petition No. 496/MP/2020 and Petition No. 501/MP/2020 has submitted that the Commission had directed the Petitioner to specifically consult CEA with respect to adoption of specific technology and finalizing costs, the Petitioner has failed to obtain any project specific approval from CEA and has based its entire petition on the indicative parameters provided by the CEA in its various guidelines issued on the subject. The said guidelines themselves provide that the same are only indicative in nature and as such, in order to enable the

Commission to allow prudently incurred cost to the Petitioner, it is imperative for the Petitioner to have a project specific report/ approval from CEA with regard to the use of the specific technology and the cost involved therein. The Petitioner has not provided the basis on which the cost of the technology has been ascertained so as to demonstrate that the same is optimum in nature and has been arrived at by adopting the prevalent industry practices. In the absence of the above material particulars, the claims of the Petitioner for allowance of ACE towards installation of the FGD system cannot be adjudicated.

(e) PSPCL in Petition No. 510/MP/2020 has submitted that the Petitioner has merely provided a self-certification in the nature of IA accorded by BoD. The Petitioner has failed to place on record life cycle cost benefit analysis so as to demonstrate as to why a technology with large foot print, high capital expenditure and reagent purity has been chosen for SSTPS whose useful life is over.

(f) PSPCL has submitted that the Petitioner has also failed to provide as to why the same technology is being applied for all the generating stations of the Petitioner, even though the criteria of selection of technology at each generating station would be different and would depend on various factors which are plant specific such as quality of coal, existing emission technology available, location of the plant, balance useful life, space available for installation, availability of reagents at its location, disposal of by-products emerging out of the technology etc.

(g) BRPL in Petition No. 66/MP/2020, Petition No. 414/MP/2020, Petition No. 499/MP/2020, Petition No. 267/MP/2020 and Petition No. 496/MP/2020 has submitted that the Petitioner has failed to provide any certificate from competent authority to show that it has complied with the requirements of CEA. The Petitioner ought to have considered plant-specific requirements for life cycle costing keeping CAPEX in consideration. The Petitioner ought to have

appreciated that Section 79(3) of the 2003 Act requires the Commission to follow the principles of natural justice and transparency while discharging its function. The Petitioner cannot circumvent the established judicial process by failing to provide the information/ documents sought by the Commission, which are critical in adjudication.

(h) BRPL in Petition No. 414/MP/2020 has submitted that the Petitioner has installed DSI based FGD in all its units in NCTPSS-I and has claimed that the technology selection is as per the CEA Guidelines. NCTPSS-I has a total capacity of 840 MW with 4 units of 210 MW each and COD was 1.12.1995. However, in case of Kahalgaon-I, covered in Petition No. 522/MP/2020, of similar unit capacity (4X210) and similar COD of 1.8.1996, the Petitioner has selected WFGD system. The Petitioner has claimed that the technologies are in compliance of the CEA Advisory in both the stations and are best suited and most cost efficient. No basis or justification for the variation in technologies for similar stations has been provided. Therefore, the Petitioner should obtain a certificate regarding the technology from an expert technical body like CEA.

(i) TPDDL in Petition No. 501/MP/2019, Petition No. 267/MP/2020, Petition No. 496/MP/2020, and Petition No. 501/MP/2020 has submitted that the Petitioner has failed to mention the project specific consultation/ recommendation of CEA. TPCCL referred to Petition No. 152/MP/2019 wherein Maithon Power Limited (MPL) consulted CEA specifically for its project and thereafter filed Petition No. 152/MP/2019 for grant of “in-principle” approval for ACE for installing and operating ECS. The Petitioner has also not explained as to why no project specific recommendation were sought from the CEA in compliance with the Commission’s order dated 20.7.2018 in Petition No. 98/MP/2017. Since the Petitioner has not mentioned the basis on which cost of technology has been ascertained nor it has shared critical details of the competitive bidding process with the procurers or mentioned any project specific CEA recommendations, there is a serious risk that the prudent process

to determine the most competitive price has not taken place. This is also evident from the fact that the costs sought by the Petitioner are considerably higher than the indicative costs recommended by CEA even after adjusting the same for efflux of time and price.

(j) TPDDL in Petition No. 499/MP/2020 and Petition No. 510/MP/2020 has submitted that though the Petitioner has an aggregate thermal capacity of approximately 60000 MW at different generating stations located across the country, the Petitioner has filed a similar proposal for all its generating stations which points to the fact that the Petitioner has finalized a particular technology and is now applying the same across the board, which is clearly in contravention of the CEA recommendations. Prudence check may be carried out to ensure that the selection of technology is in accordance with norms under CEA recommendations. Though the Petitioner has submitted the information regarding basis for selection of WFGD technology, it has failed to submit a certificate to the effect that FGD technology adopted would meet the evaluation criteria as indicated by CEA in the recommendations and that it would also meet the SO_2 emission norms specified by MoEFCC Notification.

(k) RUVNL in Petition No. 267/MP/2020 and Petition No. 545/MP/2020 has submitted that the Petitioner has not complied with the order dated 20.7.2018 in Petition No. 98/MP/2017 and the indicative tariff is high.

31. The clarifications given by the Petitioner in response to the Respondents' contention regarding non-submission of plant specific recommendations from CEA are as follows:

(a) CEA vide letter dated 21.2.2019 has issued recommendations on operating norms for TPPs which include norms for DSIFGD which is applicable for TTPS. The main reagent for DSIFGD system is Sodium bicarbonate ($NaHC0_3$) i.e. baking soda. DSIFGD system is generally used for small size

units with low SO_2 removal requirements. The removal efficiency of DSIFGD system is less when compared to WFGD systems and semi-dry FGD systems. However, DSI has lower capital cost and shorter construction time. Therefore, DSIFGD system is suitable for units to comply with SO_2 emission limit of 600 mg/Nm^3. Accordingly, DSIFGD has been selected for units of TTPS considering the factors recommended by CEA.

(b) Following the CEA Advisory dated 7.2.2020 and the balance life of FGUTPSS-I, FGUTPSS-II and FGUTPSS-III, WFGD technology has been selected for control of SO_2. CEA in its "Standard Technical Specification for Retrofit of WFGD system in a typical 2x500 MW thermal power plant" has recommended that for compliance of emission norm of 200 mg/Nm^3, the required SO_2 removal efficiency of FGD system to be installed has to be in the range 90-95%. WFGD technology with its worldwide footprint, abundance of suppliers, being safer technology, having lower cost for reagent consumption and its suitability for high PLF units is the most suitable technology. The adoption of same technology for most units provides an added advantage in terms of operating cost in respect of spares, tie-up of reagent suppliers etc. Accordingly, WFGD technology for SO_2 removal and R&M of ESP to bring down SPM emission levels in FGUTPSS-II have been considered.

(c) DSIFGD technology is the best suited for NCTPSS-I. DSIFGD technology requires low capital expenditure (approx. ₹0.12 crore/MW for NCTPSS-I) as compared to other technologies. The per unit fixed charges is only 0.06 ₹/kWh, which is minimal compared to other FGD technologies. The variable charges are directly linked with the reagent consumption which depends upon the Plant Load Factor (PLF), unit size and SO_2 removal efficiency. Due to smaller unit size, low PLF and low SO_2 removal efficiency requirement in the instant station, the reagent consumption is also lower. DSIFGD system requires lower gestation period and is, thus, favorable for compliance of stringent timeline to implement ECS in the instant station.

Besides, it offers optimal water requirement. The selection criteria are in alignment with the selection criteria given in CEA advisory dated 7.2.2020. The principles decided by the Commission in its order dated 20.7.2018 in Petition No. 98/MP/2017 as well as the guidelines notified by CEA thereafter have been taken into account while deciding the technology.

(d) Taking into consideration the remaining useful life of 15 years in case of NCTPSS-II, the Petitioner has preferred installation of WFGD system and it is in line with the recommendations of CEA Advisory dated 7.2.2020.

(e) Petition No. 98/MP/2017 was filed by the Petitioner during the 2014-19 tariff period seeking the Commission's approval of expenditure on installation of various ECS in its thermal generating stations to comply with the MoEFCC Notification. While disposing of the said petition, the Commission did not grant in-principle approval of ACE towards ECS implementation as there was no provision in the 2014 Tariff Regulations. Accordingly, the Commission directed CEA to issue guidelines for ECS and that CEA issued the same with respect to the selection of technologies, base cost for FGD and operating parameters. The technology selection, operating norms etc. of the generating stations/ units is in line with the CEA guidelines. These developments took place during the 2014-19 tariff period and prior to the issuance of the 2019 Tariff Regulations. The provision for approval of ACE on account of revised ECNs has been provided under Regulation 29 of the 2019 Tariff Regulations. Accordingly, the Petitioner has filed the instant petitions as per Regulation 29 of the 2019 Tariff Regulations for "in principle" approval of the ACE towards installation of ECS in compliance of revised ECNs incorporating the technology in line with CEA guidelines.

(f) WFGD system is being installed in NCTPSS-II comprising of 2X490 MW units as it is the optimum technology for De-SO_x and most versatile and prominent for any unit size based on CEA advisory. The Petitioner has adopted

DSIFGD system for NCTPSS-I and the proposal for the same has been shared with the Respondents. Therefore, the contention of the Respondent that the Petitioner has not selected plant specific technology for SO_2 removal and has implemented similar technology in all stations contrary to CEA recommendations has no merit.

(g) RSTPSS-I consists of 2 units of 500 MW capacity each. Therefore, WFGD technology has been adopted which is in line with the CEA advisory dated 7.2.2020.

32. We have considered the submissions of the Respondents and the clarifications given by the Petitioner. The Respondents have contended that the Petitioner has not submitted project-specific recommendations of CEA. CEA has been entrusted with the planning and coordination of implementation of ECS in 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 in case of Maithon Power Limited. Later, the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017, filed by the Petitioner, 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 recommended the parameters to be considered for selection of technology, capital expenditure, operational expenditure and APC for ECS for reduction in SO_2 emissions, which are applicable for TPPs in general. Further, 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 in the 2020 Amendment Regulations based on the

CEA's recommendations. We are of the view that the norms recommended by CEA vide its Advisories dated 21.2.2019 and 7.2.2020 are applicable to all TPPs including the generating stations covered in the instant petitions and there is no need for plant-specific recommendations. At the same time, we would also like to point out that wherever plant specific recommendations are given by CEA, the same needs to be followed by concerned generating stations/ units.

c. Norms not applicable to retiring plants

33. The Respondents have contended that the MoEFCC Notification regarding the revised ECNs are not applicable to the retiring units and which have completed their useful life. The submissions made by the Respondents in this regard are as follows:

(a) TPDDL in Petition No. 267/MP/2020 and Petition No. 496/MP/2020 has submitted that FGUTPSS-I and FGUTPSS-II have completed their useful life or are about to complete their useful life. In terms of the 2019 Tariff Regulations, a generating company has to specifically seek extension of the life of a station beyond its useful life of 25 years and the determination of tariff for the same has to be with consent of the procurer/ beneficiary. Regulation 17 of the 2019 Tariff Regulations provides that procurers/ beneficiaries and the generating company may come to an arrangement for procuring power in respect of TPPs that have completed their useful life. The said Regulation also gives the beneficiaries the right of first refusal. As per the Notification of MoEFCC dated 31.3.2021, Category-A TPPs retiring before 31.12.2022 and Category B&C TPPs retiring before 31.12.2025 are not required to meet the specified norms and such plants are required to submit an undertaking to CPCB and CEA for exemption on the ground of retirement of such plant. Environment compensation of ₹0.20 per unit has to be paid by the generator in case their operation is continued beyond the date specified in the undertaking. Any such environment compensation should

be borne solely by the Petitioner and not passed on to the Respondents. The Petitioner is seeking additional expenditure to be incurred on account of installation of various ECS for these plants, the Petitioner ought to have consulted and obtained consent of the Respondents on extension of useful life of the plant and the period over which the capital cost of ECS shall be recovered by way of depreciation. The Petitioner must justify by independent studies/ reports, the maximum extended period of life (beyond 25 years) without compromising on the efficiency of the generation station/ unit. As the Petitioner has failed to provide the requisite information and not obtained consent for extension of the useful life of the subject plants, ACE claimed towards ECS should not be allowed.

(b) TPDDL has submitted that CEA in its recommendations has observed that balance useful life of the generating station/ unit is an important criterion for selection of appropriate technology. Therefore, if a generating station/ unit has completed or is about to complete its useful life or has become inefficient, there is no justification to extend its life beyond the useful life on the basis of installation of FGD system and burden the consumers. Recovery of ACE beyond the useful life of the plant may not to be permitted unless the Petitioner comes to an arrangement and obtains the consent of the Respondent.

(c) TPDDL has submitted that NCTPSS-I has already recovered most of its capital cost and depreciation. Hence, the Petitioner must be put to strict proof on the necessity of injecting ACE into an old generating station. Being an old generating plant, the variable cost is high due to which the cumulative PLF achieved in the past years has been on the lower side.

(d) TPDDL has submitted that the useful life of NCTPSS-I, RSTPSS-I and SSTPS has already expired on 30.11.2020, 31.12.2016 and 30.4.2013 respectively and the Petitioner has failed to produce any evidence to show that these generating stations will run after expiry of useful life. Approval of ACE

towards ECS cannot be considered as automatic extension of the useful life of the aforesaid generating stations as the statute prescribes a different route for the same and the life extension cannot be sought through installation of ECS.

(e) TPDDL has submitted that when useful life of generating station/ unit is already over, then the beneficiaries have the option of exercising their right to exit PPA as per the MoP Guidelines dated 22.3.2021. Further, the regulatory rights provided under Regulations 17(1) and 17(2) of the 2019 Tariff Regulations are independent and may also be exercised by the Respondents. It is the duty of the Petitioner to provide an appropriate proposal to the Respondents in line with the 2019 Tariff Regulations to enable the beneficiaries to exercise its regulatory and statutory rights.

(f) TPDDL is not liable to pay any amount to the Petitioner as there is no subsisting PPA between the Petitioner and TPDDL insofar as NCTPSS-I, RSTPSS-I and SSTPS are concerned. Any claim raised by the Petitioner pursuant to installation of FGD will not only be in contravention of the 2003 Act but also the Indian Contracts Act, 1860. Since the useful life of the aforesaid three power plants has already expired, the Petitioner is required to seek an extension of the useful life of these power plants pursuant to Regulation 27 of the 2019 Tariff Regulations.

(g) TPDDL has submitted that it is not liable to schedule any power from NCTPSS-I as the said issue is pending adjudication before the Hon'ble Delhi High Court in WP (C) 10026 of 2020 and has been partly heard by the Hon'ble High Court. Therefore, the adjudication of the rights and liabilities, if any, arising out of the present petition is subject to outcome of the aforesaid Writ Petition pending before the Hon'ble Delhi High Court or any other subsequent proceedings thereto. The MoEFCC Notification dated 31.3.2021 has exempted TPPs declared to retire before 31.12.2022 and 31.12.2025 depending on the category determined by the task force from meeting the revised ECNs.

(h) TPDDL in Petition No. 510/MP/2020 has submitted that SSTPS has already completed its useful life and is currently operating beyond its useful life by incurring need-based R&M under Special Allowance (SA) dispensation as per the provisions of the Tariff Regulations. Although the useful lives of NCTPSS-I, RSTPSS-I and SSTPS is over, the Petitioner has not taken the requisite consent from the beneficiary as required under Regulation 33(10)(c) of the 2019 Tariff Regulations.

(i) PSPCL in Petition No. 267/MP/2020 has submitted that the units in FGUTPSS-I were commissioned on 21.11.1988 and 21.3.1989 and they have completed their useful life of 25 years on 21.11.2013 and 21.3.2014 respectively. They have been granted SA (Special Allowance) since 2014-15 and, therefore, are not eligible for any upward revision of its capital cost and any relaxation in approved operational norms. The Petitioner has also not provided details of SA received by it and its use in funding the installation of ECS beyond the useful life of the generating station.

(j) PSPCL has submitted that FGUTPSS-II is about to complete its useful life and by the time ECS is installed, it would have completed its useful life. RSTPSS-I and SSTPS have completed their useful life. The Petitioner has submitted that in order to recover depreciation through the supplementary tariff on account of ECS in stations of different vintages, the Petitioner has considered minimum extended useful life of 5 years or balance useful life of the station, whichever is higher. As per Regulation 33(10) of the 2019 Tariff Regulations and the Staff Paper on Mechanism for Compensation for Competitively Bid Thermal Generating Stations for *"change in law"* on account of Compliance of the Revised Emission Standards of the MoEFCC, the depreciation of ECS proposed to be installed by the Petitioner is liable to be spread over the period prescribed in the above said regulation.

(k) PSPCL in Petition No. 510/MP/2020 has submitted that the Petitioner claimed deprecation for ECS to be spread over a period of 10 years for all kinds of TPPs, de-hors their remaining useful life which is contrary to Regulation 33(10) of the 2019 Tariff Regulations.

(l) PSPCL has submitted that CEA has proposed retirement of SSTPS during 2022-27 in National Electricity Plan. As such, there is no basis for the Petitioner to claim balance useful life of another 10 years, especially when no consent has been obtained either from CEA or from the Respondents to run the plant beyond 2027.

(m) BRPL has submitted that the Notification of MoEFCC dated 31.3.2021 has exempted TPPs, declared to retire between 31.12.2022 and 31.12.2025 depending on the category determined by the task force, from meeting the revised ECNs. Further, the guidelines dated 22.3.2021 of MoP gives discoms/ beneficiaries the right to exit from the allocation of the generating stations which have completed 25 years of useful life. The Petitioner has not placed any studies on record to show that the subject generating stations/ units will run for at least 10 years. The Petitioner has not filed any petition for extension of life and there is no order of the Commission extending the useful life of the plants about to retire.

(n) BRPL has submitted that CEA has already identified FGUTPSS-I and NCTPSS-I for closure on or before 2027. Therefore, the Petitioner cannot claim balance useful life of another 10 years when no consent has been taken from CEA to run it beyond 2027. If it is the closed by CEA in 2027, the Petitioner would try to recover the balance unrecovered depreciation from its beneficiaries thereby unfairly increasing the cost of power which is to be passed on to the consumers of the beneficiaries.

(o) BRPL has submitted that the Petitioner has not submitted any studies to show that RSTPSS-I will run for at least 10 years. No petition has been filed

by the Petitioner for extension of life and there is no order of the Commission extending the useful life of RSTPSS-I.

(p) BRPL and TPDDL in Petition No. 545/MP/2020 have submitted that if there is an extension of the useful life of the generating station, then financial implications must be taken into consideration before granting the approval of the installation of WFGD system. The Petitioner has not placed on record the consent of the beneficiaries in cases where the useful life of the plant has been completed.

(q) BRPL has submitted that NCTPSS-I has completed its useful life and BRPL has already exercised its right of first to refusal to continue with the PPA. It has stopped scheduling power from the subject station as on 30.11.2020. The issues relating to discontinuance of supply of power are being considered by the Commission in Petition No. 60/MP/2021 and Petition No. 65/MP/2021 and orders are reserved in the said petitions.

(r) BRPL has submitted that the Petitioner is seeking to increase the useful life of the generating stations/ units under the garb of getting approval of ACE towards ECS. The Petitioner has failed to understand the following:

(i) ECS installation in a generating station/ unit is to make it compliant with the MoEFCC Notification and does not in any manner increase their operational life. The extension of the useful life cannot be automatically extended by filing a Petition under Regulation 29 of the 2019 Tariff Regulations.

(ii) Extension of useful life can only be done by filing a Petition under Regulation 27 of the 2019 Tariff Regulations for which consent of the beneficiaries is mandatory. There cannot be any automatic extension of the 'useful life' of a generating station without consent of the beneficiaries.

(iii) In case the FGD system is installed and the useful life is not extended, then the expense towards FGD system will be at the sole risk and cost of the generator.

(s) RUVNL has made similar submissions as TPDDL, PSPCL and BRPL and they are not repeated to avoid duplication.

34. The Petitioner in response to the contentions of the Respondents regarding the applicability of the revised ECNs to retiring generating stations/ units made the following submissions:

(a) The installation of ECS to comply with the revised ECNs in accordance with MoEFCC Notifications is mandatory as it is a "*change in law*" event.

(b) Though FGUTPSS-I has completed 25 years of its useful life, because of good O&M practices adopted by the Petitioner, it meets the normative availability specified under the Tariff Regulations. During 2019-20, this generating station achieved 89.42% availability which establishes the fact that it is being optimally operated. The Petitioner conducts periodical studies in all its generating stations/ units and based on the outcome of the studies, various need-based R&M activities are done. In case of generating stations/ units where the useful life is over or is towards the fag end of its useful life, adequate investment is required to match the life of 'ECS equipment' and the Petitioner is availing SA for the same. The fact that generating station has completed its useful life of 25 years does not mean that no capital and revenue expenditure is to be incurred on such generating stations. Substantial ACE, renovation and modernization etc. have been undertaken by the Petitioner over the years and such expenditure will also be incurred for the future which needs to be serviced by the beneficiaries of electricity in order to ensure uninterrupted supply of power. As regards extension of useful life, the useful life for recovery of 90% depreciation will be decided by the Commission as per the applicable

regulations after filing of Petition under Regulation 29(4) of the 2019 Tariff Regulations for determination of tariff of ECS after installation of the same. As there are provisions for operating generating stations beyond the useful life and treatment of cost of ECS, there is no reason to retire FGUTPSS-I. Substantial investment has been made by the Petitioner in the instant station which is a national asset. The recovery of the depreciation and repayment of loan is almost complete for the instant station and therefore, until and unless the instant station is optimally utilised and exhausted, it should not be retired as the same would be against the interest of the consumers. The 2020 Amendment Regulations provide for recovery of depreciation over a period of 10 years at least. The determination of tariff considering the recovery of depreciation over a longer duration will prevent the tariff shock to the beneficiaries.

(c) TPDDL has relied on Regulation 17 of the 2019 Tariff Regulations which provides for special provisions for tariff for TPPs which have completed 25 years. Regulation 17 of the 2019 Tariff Regulations has no application to the instant cases and TPDDL has gone beyond the scope of the instant petition. There cannot be a mandate on a party to agree on an arrangement. Either the arrangement is placed as an obligation in law or is left to the free will of the parties to agree or not to agree. If there is no agreement between the parties, it is open to the parties to enforce their respective rights and obligations in a manner provided by law. Regulation 17 of the 2019 Tariff Regulations is not an exit option for the Respondents to demand special terms and conditions for selective generating stations. Regulation 17 of the 2019 Tariff Regulations is applicable when both parties agree to special conditions for recovery of tariff as determined under the regulations. The fact that the generating station has completed its useful life of 25 years from declaration of commercial operation does not mean that no capital and revenue expenditure is to be incurred on such generating station.

(d) The Petitioner has availed SA under applicable provisions of the Tariff Regulations after the useful life of the generating stations/ units for carrying out R&M activities. Substantial expenditure is incurred for carrying out life extension R&M activities. As per CEA estimates for carrying out comprehensive life extension R&M activities, an expenditure of about ₹2 to 3 crore/MW is required. Minimum and essential R&M works are carried out under SA of ₹9.5 lakh/MW/Year. Thus, for a period of operation of about 10-11 years, total amount allowed for operation beyond useful life is about ₹1 crore/MW. The generating stations/ units that have already completed their useful life are proposed to be run till the Petitioner is able to carry out required R&M activities through SA in order to sustain performance. The installation of ECS is mandatory in order to comply with new environment norms and not R&M as life extension activity. The instant petition is for approval of ACE on account of ECS installation as per Regulation 29 of the 2019 Tariff Regulations. Therefore, the contention of the Respondents to seek details of SA for use in ECS installation is not tenable.

(e) The reliance placed by TPDDL on the letter dated 19.8.2016 to infer that the residual life of the instant station is less than 10 years is wrong and incorrect. The letter dated 19.8.2016 to Secretary, MoP deals with the observations of Forum of Regulators (FoR) for exemption of retiring stations from the purview of MoEFCC Notification dated 7.12.2015. Later, a phased FGD implementation plan prepared by CEA, in consultation with various stakeholders in 36th NRPC, was submitted to MoEFCC on 13.10.2017. Based on the directions of MoEFCC, CPCB had issued directions to all TPPs to ensure compliance of the revised timelines as per the phasing plan. The Petitioner was directed by CPCB vide letter dated 11.12.2017 to ensure FGD implementation. TPDDL has misunderstood the observations of FoR which were for discussion. The discussion in FoR cannot override the MoEFCC Notification and specific directions issued vide CPCB vide letter dated 11.12.2017 for FGD implementation.

(f) TPDDL has contended that the Petitioner is required to obtain the consent of the beneficiaries under Regulation 33(10)(c) of the 2019 Tariff Regulations for continuation of the generating stations beyond its useful life. This issue has already been raised by TPDDL in the proceedings filed by it before the Hon'ble Delhi High Court (W.P Nos. 10026/2019 and 4127/2020) which is part heard. Therefore, TPDDL cannot be permitted to raise the same issue simultaneously in the present proceedings. Any decision in the Writ Petitions filed by TPDDL will have their own consequences and cannot be raised as a defense in a petition which seeks ACE towards compliance of the MoEFCC Notification as a *"change in law"* event and needs to be carried on by Petitioner irrespective of resolution of other commercial issues between the parties. As NCTPSS-I is in the vicinity of the Delhi NCR region and on the watch list of all environmental agencies, it was imperative for the Petitioner to conform to the MoEFCC Notification and implement ECS in a stringent timeline. Further, as per the orders passed by CPCB and Hon'ble Supreme Court, ECS has to be implemented in a stringent timeline in NCTPSS-I.

(g) As regards consent of beneficiaries, as per Regulation 33(10)(c) of the 2019 Tariff Regulations, only in case of extension of life beyond 10 years mutual consent is required, while for extension of life up to 10 years, no mutual consent is required.

(h) TPDDL referring to the 2021 Amendment to the MoEFCC Notification has contended that retiring units are exempted from the MoEFCC Notification. The 2021 Amendment is applicable for stations which are retiring after 31.12.2022. The 2021 Amendment specifically states that generating stations/ units have to give in writing for exemption from complying with the MoEFCC Notification and pay the penalty. There is no option of applying or not complying with the revised ECNs.

(i) CPCB issued directions to install ECS by December 2019 in plants in Delhi NCR and by December 2022 in other areas in phased manner. The progress of work is monitored in RPCs where the Respondents are participants. The 2020 Amendment Regulations has specified 15 years to recover ACE through depreciation for generating stations which have been in operation for more than 15 years. Therefore, any expenditure made by the Petitioner in order to comply with the MoEFCC Notification would be scrutinised by the Commission and the same would be allowed in the tariff only if the same is considered to be prudent. The 2019 Tariff Regulations provides for operating the generating stations/ units beyond the useful life and treatment of cost of ECS. Therefore, there is no reason to retire the old units as substantial investment has been made by the Petitioner.

(j) Regulation 17 and Regulation 29 of the 2019 Tariff Regulations are independent. The interpretation of Regulation 17 of the 2019 Tariff Regulations is sub-judice before the Commission in Petition No. 60/MP/2021 and Petition No. 65/MP/2021 filed by BYPL and also before the Hon'ble Delhi High Court in Writ Petitions Nos. 10026 of 2019 and 4167 of 2020 filed by TPDDL. Any decision on the same would not affect the interpretation of Regulation 29 of the 2019 Tariff Regulations as contended by BRPL and BYPL.

(k) BYPL has declared that it will not pay any additional expenditure as it has opted out of the PPA and SPPA as per Regulation 17 of the 2019 Tariff Regulations. Accepting the argument of BYPL would mean that a generating company cannot claim its tariff or revisions of the same even if such revisions are caused due to "*change in law*" since there may be commercial disputes pending between the generating company and its beneficiaries.

(l) The Petitioner being a prudent utility has planned essential R&M works availing SA as provided in the Tariff Regulations. The generating stations/ units that have already completed their useful life are proposed to be run till the

Petitioner is able to carry out required R&M activities through SA in order to sustain performance and other considerations such as phasing of old units as recommended by CEA.

(m) The Commission has already notified the 2020 Amendment Regulations wherein additional time of 10 years has been granted for recovery of capital expenditure through depreciation. Therefore, when there are provisions for operating the generating stations beyond the useful life and treatment of cost of ECS, there is no reason to retire them.

(n) As regards the contention of the Respondents that the Petitioner must submit undertaking to CPCB and CEA for units retiring, only the power plants which are declared to retire before the specified date are required to submit an undertaking to CPCB and CEA for exemption on ground of retirement of such plant.

(o) There is no requirement under the MoEFCC Notification or the MoP Guidelines dated 22.3.2021 to seek any consent from the beneficiaries for the purpose of installing ECS.

35. We have considered the submissions of the Petitioner and the Respondents. The Respondents have contended that as per the MoEFCC Notification dated 31.3.2021, it is not mandatory to implement ECS in the retiring plants and that installation of ECS in old and retiring plants or which have completed their useful life would increase the financial burden on the Respondents and the consumers. The Respondents have contended that installation of ECS does not amount to automatic extension of life of the generating stations/ units and that life extension is possible only with the consent of the beneficiaries. The Respondents have also submitted that they have the right to refuse the extension of PPA on expiry of the term of PPA and

the issue is already pending before the Commission and the Hon'ble High Court of Delhi and the same will be based on the outcome of the said cases.

36. As regards the concerns expressed by the Respondents regarding depreciation, we would like to clarify that the same will be dealt as per Regulation 33(10) of the 2019 Tariff Regulations.

37. As regards the Respondents contention that it is not mandatory to install ECS in case of retiring units as per Notification of MoEFCC dated 31.3.2021, it is observed that as per the said Notification, a task force shall be constituted by CPCB comprising of the representatives of MoEFCC, MoP, CEA and CPCB to categorize TPPs into non-retiring units and retiring units upto 2025 on the basis of their location. The retiring TPPs are not required to comply with the revised ECNs if they submit an undertaking to CPCB and CEA for exemption on the ground of retirement of the plant and further they may be allowed to continue beyond the date specified in the undertaking on payment of environment compensation of ₹0.20 per unit of electricity. The non-retiring units are required to pay environmental compensation as specified in the Notification. The relevant portion of the MoEFCC Notification dated 31.3.2021 is extracted hereunder:

> *"* (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.* ”

”

38. Accordingly, the task force has to categorize TPPs into retiring or non-retiring TPPs. No document has been produced by the Respondents to show that TTPS, NCTPSS-I, FGUTPSS-I, SSTPS and RSTPSS-I have been categorized by the task force as retiring units as prescribed in the said Notification. Though TTPS, NCTPSS-I, FGUTPSS-I, SSTPS and RSTPSS-I have completed the useful life, it is mandatory to install ECS to control the emission levels as provided in the MoEFCC Notification

unless it is decided otherwise by the task force set up vide the above-quoted Notification of MoEFCC.

39. The Respondents have contended that installation of ECS would not automatically extend the life of the generating stations/ units and that the life extension is possible only with the consent of the beneficiaries and that the Respondents have the right to refuse the extension of PPA on expiry of the term of PPA. The parties have referred to provisions of Regulation 17 as well as Regulation 28 related to Special Allowance in the 2019 Tariff Regulations. In our view, provisions of Regulation 17 (related to agreement between the generating company and its beneficiaries) or Regulation 28 (related to Special Allowance) and Regulation 29 (dealing with approval for installation of ECS) are independent provisions in the 2019 Tariff Regulations. In the instant petition, we are not concerned with provisions of Regulation 17 or Regulation 28 of the 2019 Tariff Regulations. The Respondents and the Petitioner have also mentioned about Petition No. 60/MP/2021 and Petition No.65/MP/2021 that was filed by BRPL and BYPL that involved interpretation of Regulation 17 of the 2019 Tariff Regulations. The same have been disposed of by the Commission by order dated 1.7.2021. As stated earlier, we do not find any need to discuss findings in those petitions. Needless to mention, any liability for payment of tariff, irrespective of installation of ECS, is contingent upon subsisting PPA between the parties.

d. *Non-submission of emission levels*

40. UPPCL in Petition No. 502/MP/2019, Petition No. 267/MP/2020, Petition No. 496/MP/2020, Petition No. 414/MP/2020, Petition No. 510/MP/2020 and Petition No. 501/MP/2020 and BRPL in Petition No. 501/MP/2020 and Petition No. 66/MP/2020 have submitted that the Petitioner has not furnished the Environmental Clearance and existing emission levels of emission which has a direct bearing on the amount of the capital cost to be allowed for the installation of FGD technology.

41. In response, the Petitioner has furnished the following information:

(a) In TTPS, the average value of SO_2 level in the existing stack emission is around 950 mg/Nm^3. The maximum value could go up to around 1100 mg/Nm^3 depending on coal quality. The Petitioner has certified that after successful operationalization of DSIFGD system, TTPS are expected to meet the required SO_2 emission norms.

(b) In FGUTPSS-I, the average value of SO_2 level in existing stack emission is around 1000 mg/Nm^3. The maximum value goes up to around 1300 mg/Nm^3 depending on coal quality etc.

(c) In RSTPSS-II and RSTPSS-III, the value of SO_2 level in existing stack emission is in the range of 850-1400 mg/Nm^3. After successful operationalization of FGD system, RSTPSS-III is expected to meet the required SO_2 emission norms.

(d) In NCTPSS-I, the value of SO_2 level in stack emission was ranging between 669-1367 mg/Nm^3 during 2018-19 i.e. prior to implementation of FGD system. However, the present SO_2 emission level is 470-530 mg/Nm^3 i.e. within the prescribed limit after implementation of FGD system.

(e) In FGUTPSS-II and FGUTPSS-III, the average values of SO_2 level in existing stack emission are around 1000 mg/Nm^3. The maximum value goes up to around 1300 mg/Nm^3 depending on coal quality etc. After successful operationalization of FGD system, FGUTPSS-II and FGUTPSS-III are expected to meet the required SO_2 emission norms.

(f) In FGUTPSS-IV, the average value of SO_2 level in the existing stack emission is around 1050 mg/Nm^3. The maximum value could go up to around 1350 mg/Nm^3 depending on coal quality.

42. We have considered the submissions of the Respondents and the Petitioner. The Respondents have contended that the Petitioner has not submitted the present emission levels to ascertain the requirement of ECS. As per the submissions of the Petitioner, the present emission levels of SO_2 are higher than the norms prescribed in the MoEFCC Notification. Therefore, there is a requirement for installation of ECS in the instant generating stations/ units of the Petitioner in order to bring down the SO_2 emission levels to the norms prescribed by MoEFCC. The current emission levels are only required to establish whether there is requirement of ECS or not for meeting the stipulated norms. In the instant cases, the need for FGD system is established as the existing SO_2 emission levels as submitted by the Petitioner for these stations are on higher side. However, ECSs including WFGD/ DSI based FGD are not designed based on current emission levels but are designed for emissions corresponding to worst coal likely to be encountered during the operation of plant. Considering the fact that the thermal generating units are allowed to blend imported coal which may have high Sulphur content, FGD systems need to be designed for higher inlet SO_2 concentration in place of current level SO_2 emissions as reported in

the range of 800-1400 mg/NM^3 by various generating stations being dealt in this petition. CEA in its document titled “Standard Technical Specification for Retrofit of Wet Limestone Based Flue Gas Desulphurisation (FGD) System in a Typical 2 X 500 Mw Thermal Power Plant” has indicated that WFGD system should be designed for worst coal (with 0.5% sulphur content) with corresponding inlet SO_2 concentration of 1800 mg/Nm^3. Further, CEA has indicated that guaranteed outlet SO_2 concentration shall be fixed at 150 mg/Nm^3 against the norm of 200 mg/Nm^3 i.e. with a margin of 50mg/Nm^3. This translates into FGD efficiency of around 92% {(1800-150)x100/1800) which can be met by WFGD system.

43. At the same time, we understand the concerns expressed by the Respondents as SO_2 removal efficiency can be tested only when the inlet emission level is considered at the stage of design and manufacture of the system and without considering the same, ECS cannot be designed. Though the Petitioner has not specifically responded to this concern of the Respondents, we are of the view that the emission level corresponding to worst coal is an essential parameter, which would have been necessarily considered while selecting, designing and manufacturing the system for removal of SO_2. In this regard, it is also observed that the Petitioner has selected WFGD and DSIFGD technology on the basis of the various parameters prescribed by CEA to bring down the present emission level of SO_2 in the subject generating stations/ units.

e. Delay in award of contracts

44. UPPCL has submitted that the Petitioner could have avoided the delay of about 3 years from the date of issuance of the MoEFCC Notification in implementing ECS by taking timely approval of its BoD and issuance of NIT. The approval of its BoD, invitation of tenders and issuance of LOA could have been completed within one year from the date of MoEFCC Notification. However, due to the delay on the part of the Petitioner the cost of ECS has gone up and useful life of some of the generating stations/ units has expired. Further, the Petitioner has not given details of the time schedule within which the work is to be completed and whether there would be any time over-run and consequent cost over-run in implementation of the FGD system.

45. BRPL has submitted that due to inaction of the Petitioner, the tenders were issued after a delay of more than 3 years from the date of issue of the MoEFCC Notification. Any delay in implementing the FGD system is on account of the Petitioner and the additional burden caused on account of the same cannot be fastened upon the consumers in the form of increased tariff.

46. In response, the Petitioner made detailed submissions regarding the various steps it has taken from the date of issue of MoEFCC Notification to issue of IFBs and installation of ECS in various TPPs. The Petitioner has submitted that there was no imprudence on part of the Petitioner and there was no delay in taking up the implementation of ECS. The Petitioner has submitted that being a huge thermal

power producer it has to undergo various stages in implementation of the norms specified by MoEFCC which takes time and there is no imprudence on its part. The Petitioner has submitted that in order to comply with the said Notification, it took various prompt steps. Moreover, the installation of FGD system in the Petitioner's TPPs is being monitored by the Hon'ble Supreme Court, CPCB and MoEFCC.

47. We have considered the submissions of the Petitioner. It is observed that as per the MoEFCC Notification dated 7.12.2015, the Petitioner was required to install ECS within two years i.e. by December, 2017. The Petitioner initiated steps to implement ECS in its TPPs within the prescribed timeline. The Petitioner filed Petition No. 98/MP/2017 for approval of ACE towards installation of ECS in Singrauli STPS and Sipat STPS Stage-I and the Commission vide order dated 20.7.2018 held that ACE towards installation of ECS is admissible under "*change in law*" after prudence check. The Commission further directed CEA to prepare guidelines regarding suitable technology, operation parameters, norms and other technical inputs. Accordingly, CEA vide letter dated 21.2.2019 recommended various technologies for implementation of the MoEFCC Notification. Though the Petitioner had initiated action for implementation of ECS soon after the MoEFCC Notification, we understand that the process involving conceptualization, identification of technology, bidding, installation and commissioning of ECS is a long drawn process. Needless to mention, the Petitioner being a Central PSU has to follow CVC guidelines in awarding tenders and it takes time. Further, we are of the view that it cannot be said

that there was delay on the part of the Petitioner especially when MoEFCC has subsequently revised timelines for implementation of ECS to December 2022.

f. Other issues

48. UPPCL in Petition No. 502/MP/2019 has submitted that the polymer fiber, which is the key raw material for DSIFGD system, is proprietary product. The demand for polymer fiber may increase substantially and may put pressure on its availability and price. UPPCL in Petition No. 267/MP/2020 and RUVNL in Petition No. 66/MP/2020 have submitted that the Petitioner may be directed to undertake demand-supply assessment in respect of limestone availability and also to enter into long term contracts in case need arises. UPPCL in Petition No. 502/MP/2019 and Petition No. 267/MP/2020 has submitted that the Commission has rightly reduced the RoE in Regulation 30(2) in the 2019 Tariff Regulations in respect of ACE post cut-off date. This essentially recognizes the basic fundamental principle that there is no risk element in respect of ACE associated with ongoing projects. However, the Commission has excluded ACE on account of *"change in law"*. ACE on account of *"change in law"* should be considered on same footing as other ACE beyond cut-off date. UPPCL in Petition No. 502/MP/2019 has submitted that the Petitioner should clarify why corporate tax of 34.94% has been considered from the 6th year onwards and MAT rate of 17%. UPPCL has submitted that as FGUTPSS-I has completed its useful life and the impact on fixed charges is high, the Petitioner should conduct Residual Life Assessment Study (RLA) which would help in assessing time period over which this expenditure would be recovered.

49. In response, the Petitioner has submitted that the key raw material for DSIFGD and WFGD systems is sodium bi-carbonate and hydrated lime respectively. Both the raw materials are readily available in the country and their availability and price is not expected to be an issue.

50. We have considered the submissions of the Respondents and the Petitioner. We are not going into the issues of RoE, Corporate Tax, GST and MAT rate raised by the Respondents in this order as the subject petitions are for in-principle approval of ACE towards installation of ECS. The Respondents can raise relevant issues in petition to be filed by the Petitioner under Regulation 29(4) of the 2019 Tariff Regulations after installation of ECS.

51. In view of the above discussions, we hold that the instant petitions filed by the Petitioner, NTPC, are maintainable.

Prayers of the Petitioner

52. We now take up the prayers of the Petitioner in the instant petitions. The Petitioner has prayed to (a) approve undertaking implementation of ECS in order to meet revised ECNs; (b) grant liberty to approach the Commission for approval of implementation of ECS on account of Mercury, water consumption and particulate matter in future, if required; (c) allow additional APC; (d) allow additional GSHR; (e) allow additional water consumption; (f) allow additional O&M Expenses; (g) allow cost of reagents; and (h) allow deemed availability on account of shutdown. The prayers (other than approval of ACE for implementation of ECS) are common and

similar in all the petitions and, hence, they are dealt together. As regards ACE for implementation of ECS, they being generating station/ unit specific, are dealt with individually and separately.

Approval for undertaking implementation of ECS and incurring Additional Capital Expenditure (ACE)

53. The Petitioner has sought approval for undertaking implementation of ECS in order to meet revised ECNs. The Petitioner has proposed wet limestone based FGD system for control of SO_2 in nine generating stations and DSI based FGD system in the remaining two generating stations. It has proposed Combustion Modification System as the primary measure and SCR/ SNCR as the secondary measure to control NO_2 emissions in case of some of the generating stations. Initially, the Petitioner had considered the capital cost of ECS discovered through competitive bidding and certain other operating parameters to arrive at the indicative supplementary tariff in the petition. The beneficiaries/ Respondents raised their concerns on various issues like identification of suitable ECS, effectiveness of the identified ECS, investment approval (IA), bidding process and the capital cost of ECS identified in the instant eleven petitions and similar other petitions filed by the Petitioner. Accordingly, the Commission for the purpose of prudence check and on the basis of the concerns raised by the beneficiaries/ Respondents, directed the Petitioner to submit certain information at various stages of the present proceedings. The capital cost claimed towards ECS, the proposed technology for control of NO_x, the indicative supplementary tariff and other parameters considered by the Petitioner are different for the subject generating stations. The claims made by the Petitioner

for the subject generating stations covered in the instant petitions are as given in the following paragraphs.

Petition No. 501/MP/2019 - RSTPSS-II

54. The claim made by the Petitioner in Petition No.501/MP/2019 in respect of RSTPSS-II are as follows:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as follows:

Sl. No.	Description	FGD	SNCR	Combustion Modification System	Remarks
1	Capital Cost	₹494.41 crore	₹50 crore (without tax/ IDC etc.)	₹17.53 crore	SNCR implementation will be decided based on pilot test report.
2	Normative Specific Limestone/ Reagent Consumption (kg/kWh)	0.0133 (Limestone)	0.0015 (Urea)	Nil	
3	Additional APC	1%	0.2%	Nil	
4	Additional O&M	4% of capital cost			
5	Shutdown Period	30-45 days for each unit	15 days for each unit	45 to 60 days for each Unit	
6	Increase in GSHR		9.44 Kcal/kwh	18.87 Kcal/kwh	0.8% increase: due to Combustion Modification, 0.4-0.6% increase: due to SNCR

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 21.53 paise/kWh; Variable Cost (VC): 5.73 paise/kWh (1st year) and FC: 19.38 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 4 paise/kWh is anticipated due to increased APC and Station Heat Rate.

(c) BoD of the Petitioner in its 444th meeting held on 22.3.2017 approved planning and tendering of ECS to comply with the MoEFCC Notification. The proposal to award the contracts for the FGD package was approved in the 463rd meeting held on 8.9.2018. The Investment Approval (IA) to undertake the implementation of FGD system was also approved in the same meeting.

(d) Invitation for Bids ("IFB") for installation of WFGD system at the instant station was issued by the Petitioner on 31.7.2017. Mitsubishi Hitachi Power Systems India Ltd. (MHPSIL) emerged as the successful bidder (L1) and was awarded the contract for installation of FGD system. Accordingly, on 18.9.2018, Notification of Award ("NoA") was issued to MHPSIL. MHPSIL has started the process for installation of FGD system and at present the civil works is in progress at the instant station.

(e) MoEFCC vide Notification dated 19.10.2020 has revised the emission norm of 300 mg/Nm^3 for NO_x to 450 mg/ Nm^3. Accordingly, only CM is proposed to be implemented as primary system of De-NO_x to bring the level of NO_x emission below 450 mg/Nm^3 and the secondary De-NO_x system of SNCR proposed initially will not be implemented.

(f) Implementation of the primary De-NO_x system of CM in the instant station has been awarded to BHEL through Competitive Bidding Route for ₹17.53 crore.

(g) As SNCR is not being implemented in the instant station, the tariff of ECS as proposed may get reduced assuming all other parameters remain same.

(h) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
40.50 (2x500 MW)	38.33	2680.35	1356.93	***	6899.64	-	49441.28

******* *Extra rupee liability due to FERV if any shall be claimed based on actuals*

Petition No. 502/MP/2019 - TTPS

55. The Petitioner has made the following claims in Petition No. 502/MP/2019 in respect of TTPS:

(a) ACE of ₹56.89 crore towards implementation of DSI based FGD system and following indicative supplementary tariff impact on account of estimated ACE:

Sl. No.	Particulars	Tariff (Paise/kWh)
1	Supplementary Fixed Cost	7.07
2	Supplementary Variable Cost	29.14
	Total Supplementary Cost (1+2)	**36.21**

(b) The Petitioner has considered the following operating parameters for working out the indicative supplementary tariff:

Sl. No.	Particulars	Value
1	Rate of interest	8.75%
2	Life of the ECS	5.79 years
3	Depreciation	90% of Capital Cost
4	Normative Specific Reagent ($NaHCO_3$) Consumption	10 g/kWh
5	Additional APC	0.3%
6	Additional O&M Cost	4% of Capital Cost
7	Shutdown period	15 days per unit

(c) DSI based technology is selected for SO_2 reduction, using Sodium Bicarbonate (NaHCO3) as the reagent. The reagent consumption in DSI system is directly linked with the loading of the unit (PLF).

(d) This DSI based FGD system was initially envisaged to be installed at Badarpur Thermal Power Station (BTPS). However, due to sudden closure of BTPS as per DPCC directions, it was planned to be utilised at TTPS.

(e) TTPS meets emission norms for NO_x specified by MoEFCC. Therefore, De-NO_x system has not been proposed.

(f) BoD in its 444th meeting held on 22.3.2017 gave its approval for planning and tendering of ECS to comply with the MoEFCC Notification.

(g) IFB for installation of DSIFGD system was issued on 20.6.2018 and the bid opening/ closing date was 25.7.2018.

(h) K C Cottrell Co. Ltd., Korea emerged as the successful bidder. Accordingly, NoA was issued on 2.11.2018. K C Cottrell Co. Ltd. has started the process for installation of DSIFGD system and at present the process of erection is in progress in two units and tendering for award of DSIFGD system for balance two units is in progress.

(i) The break-up of the capital cost claimed by the Petitioner for DSIFGD system installation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
45.00 (110 MW)	10.46	78.00	183.00	***	828.00	1089.00	5689.00

*** *Extra rupee liability on account of FERV, if any shall be claimed based on actuals*

Petition No. 66/MP/2020 – RSTPSS-III

56. The Petitioner has made the following claims in Petition No. 66/MP/2020 in respect of RSTPSS-III:

(a) Capital cost and operating parameters for computing the indicative supplementary tariff:

Sl. No.	Particulars	FGD	Combustion Modification System	SNCR	Remarks
1	Capital Cost	₹494.41 crore	₹17.53 crore	₹50 crore (without tax/ IDC etc.)	SNCR implementation will be decided based on Pilot Test report.
2	Normative Specific Limestone/ Reagent Consumption (Kg/kwh)	0.0133 (Limestone)	Nil	0.0015 (Urea)	
3	Additional APC	1%	Nil	0.2%	
4	Additional O&M	4% of capital cost			
5	Shutdown Period	45 days	60 days	15 days	
6	Increase in GSHR*		19.12 Kcal/kwh	9.56 Kcal/kwh	0.8% increase: due to CM System, 0.4-0.6% increase: due to SNCR

** Increased Heat Rate for SNCR systems to be submitted later.*

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 17.71 paise/kWh; Variable Cost (VC): 5.73 paise/kWh (1st year) and FC: 15.97 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 5 paise/kWh is anticipated due to increased APC and GSHR.

(c) Emission norms with respect to NO_x as per the MoEFCC Notification was 300 mg/Nm^3. Accordingly, the Petitioner had sought approval of ACE on account of CM and SNCR. However, the norm of 300 mg/Nm^3 was revised by MoEFCC vide its Notification dated 19.10.2020 to 450 mg/Nm^3. Accordingly, only CM is proposed to be implemented as primary system of De-NO_x to bring the level of NO_x emission below 450 mg/Nm^3 and SNCR proposed initially is not being implemented.

(d) BoD in its 444th meeting held on 22.3.2017 gave its approval for planning and tendering of ECS to comply with the MoEFCC Notification. BoD in its 463rd meeting held on 8.9.2018 approved the proposal to award the contracts for the FGD package and in the same meeting accorded IA to undertake implementation of FGD system.

(e) IFB for installation of WFGD system was issued by the Petitioner on 31.7.2017. MHPSIL emerged as the successful bidder and on 18.9.2018, NoA was issued to MHPSIL for installation of WFGD system. MHPSIL has started the process for installation of FGD system and at present, the civil works are in progress.

(f) The award for installation of CM system was awarded to BHEL through Competitive Bidding Route for ₹17.53 crore.

(g) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
40.50 (2x500 MW)	38.33	2680.35	1356.93	***	6899.64	-	49441.28

********* *Extra rupee liability due to FERV if any shall be claimed based on actuals*

Petition No. 267/MP/2020 – FGUTPSS-I

57. The Petitioner has made the following claims in Petition No. 267/MP/2020 in respect of FGUTPSS-I:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff in the petition are as under:

Sl. No.	Particulars	FGD
1	Capital Cost	₹330.85 crore
2	Normative Specific Reagent Consumption (kg/kWh)	0.019 (Limestone)

3	Additional APC	1%
4	Additional O&M	4% of Capital Cost
5	Shutdown Period	30-45 days for each unit

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation ECS in order to meet revised ECNs is Fixed Cost (FC): 39.61paise/kWh; Variable Cost (VC): 3.17 paise/kWh (1st year) and FC: 36.73 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 5 paisa/kWh is anticipated due to increased APC.

(c) BoD in its 444th meeting held on 22.3.2017 gave its approval for planning and tendering of ECS to comply with the MoEFCC Notification. In the 481st meeting held on 7.2.2020, BoD approved the proposal to award the contracts for FGD package. In the same meeting, BoD accorded IA to undertake implementation of FGD system.

(d) IFB for installation of FGD system was issued on 19.8.2019 and the bid opening/ closing date was 23.9.2019. GE Power India Limited (GEPIL) emerged as the successful bidder. NoA was issued on 18.2.2020 to GEPIL for FGD system installation. GEPIL has started the process for installation of FGD system and at present, the process of engineering and ordering of equipment is in progress.

(e) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
45.00 (210 MW)	65.71	2884.80	1103.00	***	4968.00	-	36555.80

******** *Extra rupee liability due to FERV if any shall be claimed based on actuals*

Petition No. 414/MP/2020 – NCTPSS-I

58. The Petitioner has made the following claims in Petition No.414/MP/2020 in respect of NCTPSS-I:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as under:

Sl. No.	Particulars	FGD
1	Capital Cost	₹99.39 crore
2	Normative Specific Reagent Consumption (kg/kWh)	0.010 (NaHCO3)
3	Additional APC	0.14%
4	Additional O&M	4% of Capital Cost
5	Shutdown Period	15 days per unit

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is Fixed Cost (FC): 6.78 paise/kWh; Variable Cost (VC): 29.47 paise/kWh (1st year) and FC: 6.36 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 1 paise/kWh is anticipated due to increased APC.

(c) DSI based FGD is selected for SO_2 emission control using Sodium Bicarbonate (NaHCO3) as the reagent. The reagent consumption in DSIFGD system is directly linked with PLF.

(d) BoD in its 444th meeting held on 22.3.2017 gave their approval for planning and tendering of ECS to comply with the MoEFCC Notification.

(e) IFB was issued by the Petitioner on 12.6.2018. MELCO India Private Limited emerged as the successful bidder. Accordingly, IA was accorded to the proposal for implementation of DSIFGD system on 12.10.2018.

(f) NoA was issued on 26.10.2018 to MELCO India Private Limited for FGD system installation at the instant station. NCTPSS-I being in the vicinity of Delhi NCR, ECS had to be installed on immediate basis. Accordingly, ECS was installed as follows:

Units	Date of COD	25 years from COD	Date of operationalization of ECS
Unit-I	1.1.1993	3.12.2017	31.12.2019
Unit-II	1.2.1994	31.1.2019	27.12.2019
Unit-III	1.4.1995	31.3.2020	27.7.2020
Unit-IV	1.12.1995	30.11.2020	14.7.2020

(g) No ECS is proposed for NO_x reduction in the instant station.

(h) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
45.00 (4x210 MW)	8.15	280.00	242.00	***	1232.00	-	8603.00

******* *Extra rupee liability due to FERV shall be claimed based on actuals*

Petition No. 496/MP/2020 – FGUTPSS-II

59. The Petitioner has made the following claims in Petition No.496/MP/2020 in respect of FGUTPSS-II:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as under:

Sl. No.	Description	FGD	ESP R&M	Remarks
1	Capital Cost	₹365.59 crore	₹55.66 crore	

2	Normative Specific Limestone/ Reagent Consumption (kg/kWh)	0.019 (Limestone)	Nil	
3	Additional APC	1%	Nil	
4	Increase in GSHR	Nil	Nil	
5	Additional O&M	4% of capital cost		
6	Shutdown Period	30-45 days	20 days	

(b) The indicative supplementary tariff due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 54.49 paise/kWh; Variable Cost (VC): 3.20 paise/kWh (1st year) and FC: 47.28 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 5 paise/kWh is anticipated due to increased APC and Station Heat Rate.

(c) BoD of the Petitioner in its 444th meeting held on 22.3.2017 approved planning and tendering of ECS to comply with the MoEFCC Notification. The proposal to award the contracts for the FGD package was approved in the 481st meeting held on 7.2.2020.

(d) IFB for installation of FGD system at the instant station was issued by the Petitioner on 19.8.2019. After following the transparent bidding process, GE Power India Limited (GEPIL) emerged as the successful bidder.

(e) NoA was issued on 18.2.2020 to GEPIL for FGD system installation at the instant station. GEPIL has started the process for installation of FGD system at the instant station. At present, the process of engineering and ordering of equipment is in progress.

(f) The instant station is meeting the norms specified by MoEFCC for NO_x. Therefore, De-NO_x system has not been proposed for the instant station.

(g) The Petitioner has proposed ESP for reduction of particulate matter.

(h) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
45.00 (210 MW)	65.71	2884.80	1103.00	***	4968.00	8955.80	36555.80

*** *Extra rupee liability on account of FERV, if any shall be claimed based on actuals*

Petition No. 499/MP/2020 – NCTPSS-II

60. The Petitioner has made following submissions in Petition No. 499/MP/2020 in respect of NCTPSS-II:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as follows:

Sl. No.	Description	FGD*	SNCR	De-NO_x Combustion Modification System	Remarks
1	Capital Cost	₹559.08 crore	₹50 crore (without tax/ IDC etc.)	₹17.08 crore	SCNR implementation will be decided based on pilot test report.
2	Normative Specific Limestone/Reagent Consumption (kg/kWh)	0.0142 (Limestone)	0.0015 (Urea)	Nil	
3	Additional APC	1%	0.2%	Nil	
4	Additional O&M	4% of capital cost			
5	Shutdown Period	45 days	15 days	60 days	
6	Increase in GSHR*		9.53 kCal/kwh	19.06 kCal/kwh	0.8% increase: due to De-Nox combustion, 0.4-0.6% increase: due to SNCR

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 19.58 paise/kWh; Variable Cost (VC): 5.84 paise/kWh (1st year) and FC: 18.77 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 11 paise/kWh is anticipated due to increased APC and Station Heat Rate.

(c) The emission norms for NO_x as per the MoEFCC Notification was 300 mg/Nm^3. Accordingly, the Petitioner had sought approval of ACE for installation of CM system and SNCR for NO_x emission control. The norm of 300 mg/Nm^3 was revised by MoEFCC vide Notification dated 19.10.2020 to 450 mg/Nm^3. Accordingly, only CM system is being implemented to bring the level of NO_x emission below 450 mg/Nm^3 and SNCR proposed initially is not implemented.

(d) The sub-committee of BoD in the 255th meeting held on 31.1.2018 approved the proposal to award the contracts for the FGD package. Further, BoD in 456th meeting held on dated 31.1.2018, accorded IA to undertake implementation of FGD system.

(e) BoD in its 444th meeting held on 22.3.2017 approved planning and tendering of ECS to comply with the MoEFCC Notification. In 255th meeting of the sub-committee of BoD dated 31.1.2018, the proposal to award the contracts for the FGD package was approved.

(f) IFB for installation of FGD system was issued by the Petitioner on 29.11.2017. After following the transparent bidding process, Bharat Heavy Electricals Ltd (BHEL) emerged as the successful bidder. Accordingly, on 1.2.2018, NoA was issued to BHEL for FGD system installation. BHEL has started the process for installation of FGD system at the instant station. At present, the erection and installation of equipment is in advance stage.

(g) CM System has been already installed in NCTPSS-II for which ₹17.08 crore has been claimed in the instant petition.

(h) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
40.50 (500 MW)	49.40	3052.00	17.39	***	8529.00	-	62757.00

******** *Extra rupee liability due to FERV if any shall be claimed based on actuals*

Petition No. 501/MP/2020 – FGUTPSS-III

61. The Petitioner has made following claims in Petition No.501/MP/2020 in respect of FGUTPSS-III:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as follows:

Sl. No.	Description	FGD	SNCR	Combustion Modification System	Remarks
1	Capital Cost	₹165.42 crore	₹45.15 crore (without tax)	₹5.73 crore	SCNR implementation will be decided based on pilot test report.
2	Normative Specific Limestone/ Reagent Consumption (kg/kwh)	0.019 (Limestone)	0.002 (Urea)	Nil	
3	Additional APC	1%	0.2%	Nil	
4	Additional O&M	4%			
5	Shutdown Period	30-45 days	15 days	45 to 60 days	
6	Increase in GSHR		9.72 kCal/kwh	19.44 kCal/kwh	0.8% increase: due to Combustion Modification, 0.4-0.6% increase: due to SNCR

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 40.76 paise/kWh; Variable Cost (VC): 16.44 paise/kWh (1st year) and FC: 36.81 paise/kWh (levelized). A further increase in Energy Charge Rate and per

unit Fixed Charge (@85% scheduled generation) of the station by about 12 paise/kWh is anticipated due to increase in APC and Station Heat Rate.

(c) The emission norms for NO_x as per the MoEFCC Notification was 300 mg/Nm^3. Accordingly, the Petitioner sought approval of ACE for installation of CM system and SNCR for NO_x emission control. The norm of 300 mg/Nm^3 was revised by MoEFCC vide Notification dated 19.10.2020 to 450 mg/Nm^3. Accordingly, only CM system is being implemented to bring the level of NO_x emission below 450 mg/Nm^3 and SNCR proposed initially is not implemented.

(d) BoD in its 444th meeting held on 22.3.2017 gave its approval for planning and tendering of ECS to comply with the MoEFCC Notification. In the 481st meeting held on 7.2.2020, BoD of the Petitioner approved the proposal to award the contracts for the FGD package. IFB for installation of FGD system was issued by the Petitioner on 19.8.2019 and the bid opening/closing date was 23.9.2019.

(e) IFB for installation of FGD system at the instant station was issued to GEPIL on 19.8.2019 by the Petitioner and NoA was issued to GEPIL on 18.2.2020. GEPIL has started the process for installation of FGD system at the instant station and at present the process of engineering and ordering of equipment by the Vendor is in progress.

(f) Installation of CM system for the instant station has been awarded to L&T through Competitive Bidding Route at ₹5.73 crore.

(g) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
45.00 (210 MW)	65.71	1440.80	551.00	***	2484.00	4475.80	18275.80

**** Extra rupee liability on account of FERV, if any shall be claimed based on actuals*

Petition No. 510/MP/2020-SSTPS

62. The Petitioner has made following claims in Petition No. 510/MP/2020 in respect of SSTPS:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as follows:

Sl. No.	Description	FGD	Remarks
1	Capital Cost	₹1327.59 crore (with tax/IDC etc.)	Already Awarded
2	Normative Specific Limestone/ Reagent Consumption (kg/kwh)	0.016 for 500 MW units and 0.020 for 200 MW units (Limestone)	-
3	Additional APC	1%	-
4	Additional O&M	4%	
5	Shutdown Period	45 days for each unit	

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 32.44 paise/kWh; Variable Cost (VC): 2.75 paise/kWh (1st year) and FC: 30.20 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 2 paise/kWh is anticipated due to increased APC.

(c) BoD in its 444th meeting held on 22.3.2017 approved planning and tendering of ECS to comply with the MoEFCC Notification. The proposal to award the contracts for the FGD package was approved in the 481st meeting held on 7.2.2020 and in the same meeting, BoD accorded IA to undertake implementation of FGD system.

(d) IFB for installation of WFGD system was issued on 19.8.2019. PES Engineering Private Ltd. emerged as the successful bidder. Accordingly, NoA was issued on 18.2.2020 to PES Engineering Private Ltd. for FGD system

installation at the instant station. PES Engineering Private Ltd. has started the process for installation of FGD system and at present, the process of engineering and ordering of equipment is in progress.

(e) No scheme for NO_x reduction is proposed.

(f) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 25.3.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
45.00 (200 MW) 40.50 (500 MW)	49.90	11973.00	2994.00	***	17968.00	-	132759.00

******* *Extra rupee liability due to FERV if any shall be claimed based on actuals*

Petition No. 545/MP/2020-RSTPSS-I

63. The Petitioner has made following claims in Petition No. 545/MP/2020 in respect of RSTPSS-I:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as under:

Sl. No.	Description	FGD
1	Capital Cost	₹674.07 crore
2	Normative Specific Limestone/ Reagent Consumption (Kg/kwh)	0.014 (Limestone)
3	Additional APC	1%
4	Additional O&M	4% of capital cost
5	Shutdown Period	45 days
6	Increase in GSHR	-

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet the revised ECNs is - Fixed Cost (FC): 33.27 paise/kWh; Variable Cost (VC): 2.31 paise/kWh (1st year) and Fixed Cost (FC): 30.99 paise/kWh (levelized). A further increase in Energy

Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 3 paise/kWh is anticipated due to increased APC and Station Heat Rate.

(c) BoD in its 444th meeting held on 22.3.2017 approved the planning and tendering of ECS to comply with the MoEFCC Notification. IFB for installation of FGD system was issued by the Petitioner on 24.4.2020. The process of bidding for FGD system is under progress for the instant station and the same is yet to be concluded and work is yet to be awarded.

(d) No scheme for NO_x reduction is proposed to be installed in the instant Station.

(e) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)*	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
40.50 (500 MW)	51.60	4995.60	1829.06	***	9300.30	-	67407.00

** Tentative, # shall be provided on actuals at the time of tariff determination*

Petition No. 553/MP/2020 – FGUTPSS-IV

64. The Petitioner has made following claims in Petition No. 553/MP/2020 in respect of FGUTPSS-IV:

(a) Capital cost and operating parameters considered for computing the indicative supplementary tariff are as under:

Sl.	Description	FGD	SCR	Combustion	Remarks

No.				Modification System	
1	Capital Cost	₹355.00 crore	₹175.00 crore (approx.)	₹10.00 crore (approx.)	SCR implementation will be decided based on pilot test report.
2	Normative Specific Limestone/ Reagent Consumption (kg/kwh)	0.014 (Limestone)	0.001 (Ammonia)	Nil	
3	Additional APC	1%	0.3%	Nil	Total APC (Additional): 1.3%
4	Additional O&M	4% of capital cost			
5	Shutdown Period	45 days	15 days	45 to 60 days	
6	Increase in GSHR		2.38 kCal/kWh	19.07 kCal/kWh	0.8% increase: due to Combustion Modification, 0.1% increase: due to SCR

(b) The indicative supplementary tariff (without considering the impact on GSHR) due to installation of ECS in order to meet revised ECNs is - Fixed Cost (FC): 31.71 paise/kWh; Variable Cost (VC): 7.65 paise/kWh (1st year) and FC: 30.94 paise/kWh (levelized). A further increase in Energy Charge Rate and per unit Fixed Charge (@85% scheduled generation) of the station by about 9 paise/kWh is anticipated due to increased APC and Station Heat Rate.

(c) The emission norm with respect to NO_x as per the MoEFCC Notification is 100 mg/Nm^3. Therefore, the Petitioner sought approval of ACE on account of installation of CM System and SCR for NO_x emission control. The technology of NO_x reduction has been adopted as per the recommendations of CEA. However, the matter for revision of NO_x emission norms for the stations/ units commissioned on or after 1.1.2017 (where SCR is envisaged) is sub-judice before the Hon'ble Supreme Court and installation of the same will depend

upon the outcome of the apex court judgment. Accordingly, only CM system is implemented and installation of SCR scheme will be taken on the basis of the outcome of the Hon'ble Supreme Court judgement.

(d) BoD in its 444th meeting held on 22.3.2017 gave its approval for planning and tendering of ECS to comply with the MoEFCC Notification. BoD approved the proposal to award the contracts for the FGD package in the 260th meeting of the sub-committee on 13.10.2018. Further, in 465th meeting on 13.10.2018, BoD accorded IA to undertake implementation of FGD system.

(e) IFB for installation of FGD system at the instant station was issued on 31.7.2017. GEPIL emerged as the successful bidder. Accordingly, on 16.10.2018, NoA was issued to GEPIL for FGD system installation. GEPIL has started the process for installation and at present the erection and installation of equipment is in progress.

(f) Installation of CM system has been awarded through Competitive Bidding Route at ₹10 crore.

(g) The break-up of the capital cost claimed by the Petitioner for FGD system implementation, vide affidavit dated 9.4.2021, is as follows:

CEA's indicative hard cost (₹ lakh per MW)	Hard cost claimed (₹ lakh per MW)	Total IDC claimed (₹ lakh)	Total IEDC claimed (₹ lakh)	Total FERV claimed (₹ lakh)	Total taxes & duties claimed (₹ lakh)	Total other costs claimed (₹ lakh)	Total costs claimed (₹ lakh)
40.50 (500 MW)	59.0	4144.00	885.00	***	5310.00	-	39839.00

********* *Extra rupee liability due to FERV if any shall be claimed based on actuals*

Approvals and the bidding process

65. TPDDL in Petition No. 501/MP/2019 has submitted that the Petitioner has not shared any details of the competitive bidding process with the procurers. TPDDL in Petition No. 501/MP/2019, Petition No. 267/MP/2020, Petition No. 496/MP/2020 and

Petition No. 501/MP/2020 has submitted that the Petitioner has not placed on record the decision of competent authority confirming that the ECS technology selected is the best suited cost-effective technology in terms of CEA's Advisory dated 7.2.2020 or the recommendations of the Bid Evaluation Committee which are critical for the purposes of ascertaining transparency in selection of the bidder and discovery of most competitive price. TPDDL in Petition No. 414/MP/2020, Petition No. 499/MP/2020 and Petition No. 510/MP/2020 has submitted that the Petitioner has failed to share the necessary factors of NIT as well as its concluding aspects such as competitive costs received by the Petitioner, lowest rate, gestation time, additional auxiliary consumption, additional associated cost, requirement of additional manpower, useful life etc. on the basis of which the decision for selection of the technology was made.

66. UPPCL in Petition No. 502/MP/2019 has submitted that the Petitioner has submitted that the DSI based FGD system initially envisaged to be installed at Badarpur Thermal Power Station (BTPS) is being utilized in TTPS for two units. UPPCL has requested to check the technical and financial aspects regarding transfer of contract from BTPS to TTPS and why there is delay in tendering for balance two units and whether deadline specified by CEA would be met.

67. The contentions of UPPCL in Petition No. 501/MP/2019, Petition No. 66/MP/2020, Petition No. 267/MP/2020, Petition No. 496/MP/2020, Petition No. 501/MP/2020, Petition No. 545/MP/200, Petition No. 414/MP/2020 and Petition No. 499/MP/2020 are similar. Further, RUVNL in Petition No. 496/MP/2020, Petition No.

501/MP/2020 and Petition No. 510/MP/2020 has also made similar submissions. The gist of the submissions of UPPCL and RUVNL are as follows:

(a) The Petitioner has not shared critical factors of NIT and its concluding aspects on the basis of which the technology is selected.

(b) The Petitioner has not submitted any prior approval obtained by it either from BoD or any other competent authority for undertaking an investment on WFGD system and R&M of ESP. The Petitioner has sought approval of the investment proposal without any proof that the cost ascertained by it is optimum in nature and arrived at through any method widely recognized for determination of such cost. As such, the proposal is not in accordance with Section 61 of the 2003 Act and may be subjected to strict scrutiny.

(c) The Petitioner is required to submit the details of present status of implementation of FGD.

68. PSPCL in Petition No. 66/MP/2020 has submitted that the Petitioner has not submitted the details of the competitive bidding process conducted to ensure that capital cost arrived is optimum. PSPCL in Petition No. 267/MP/2020 and Petition No. 496/MP/2020 has submitted that details of the competitive bidding process conducted to arrive at the capital cost claimed has not been submitted by the Petitioner and as such, additional burden is being sought to be passed on to the consumers without proper justification for the same. In the absence of the material particulars, the claims of the Petitioner for allowance of ACE towards installation of FGD system cannot be adjudicated.

69. PSPCL in Petition No. 501/MP/2020 and Petition No. 510/MP/2020 has submitted that no details of the competitive bidding process conducted by the

Petitioner to arrive at the claimed capital cost has been submitted and as such, additional burden is being sought to be passed on to the consumers without proper justification for the same.

70. The contentions of BRPL in Petition No. 501/MP/2019, Petition No. 66/MP/2020, Petition No. 267/MP/2020, Petition No. 496/MP/2020, Petition No. 501/MP/2020, Petition No. 510/MP/2020, Petition No. 545/MP/2020, Petition No. 414/MP/2020 and Petition No. 499/MP/2020 are similar and they are as follows:

(a) The Petitioner has not complied with Regulation 29 of the 2019 Regulations and has not provided detailed proposal, technical report approved by CEA, cost benefit analysis for identification of technology, etc.

(b) The Petitioner was specifically directed to provide the certificate from competent authority. However, instead of complying with the directions, the Petitioner has first tried to self-certify the technology that it has adopted and, thereafter, merely said that there is no competent authority in this regard. The Petitioner cannot wriggle out of its obligations to provide the certificate by stating that the same is not specifically provided in the 2019 Tariff Regulations despite the categorical direction passed by the Commission.

(c) CEA is a statutory body constituted under Section 70 of the 2003 Act. Under Section 73 of the 2003 Act, CEA is entrusted with the responsibility of specifying the technical and safety standards for construction of power plants. CEA has issued guidelines as per the directions of the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017 and the Petitioner claims to have adhered to them. Therefore, the Petitioner should obtain a certificate from CEA regarding the selection of the ECS technology after conducting a proper audit of ECS proposed to be installed.

(d) The Petitioner has failed to provide the recommendation of the Bid Evaluation Committee and has instead provided the minutes of its 465th, 463rd and 481st Board meetings dated 13.10.2018, 8.9.2018 and 7.2.2020, respectively, wherein BoD accorded IA for WFGD technology.

(e) The bid evaluation committee recommendation is an important document to ascertain if the bidding process was conducted in a fair and transparent manner while awarding the contract to the successful vendor. However, instead of providing the bid evaluation committee report, the Petitioner has self-certified that the bidding process was conducted in a fair and transparent manner.

(f) The Petitioner has failed to justify the cost benefit analysis of only conducting a domestic bidding and not for international bidding. The Petitioner has failed to appreciate that in international bidding, the domestic bidders are not excluded and would only improve the quality of bids and also make the prices comparable to the international market. International bidding would have increased the competition and would have invited more bidders. The reliance placed by the Petitioner on order dated 1.11.2019 in Petition No. 152/MP/2019 (MPL v. TPDDL) wherein price discovered through domestic bidding was allowed by the Commission for FGD system and order dated 28.4.2021 in Petition No. 335/MP/2020 & Ors. wherein the Commission observed that the bidding process was undertaken with the approval of BoD as part of the procedure laid down under its Delegation of Power, is misplaced. The Commission did not give any specific findings on whether the Petitioner should have conducted DCB or ICB in order dated 1.11.2019 in Petition No. 152/MP/2019. As regards the order dated 28.4.2021 in Petition No. 335/MP/2020, the facts of the said case are different from the present matters.

(g) The details of technical scope of works have not been furnished by the Petitioner like whether the Petitioner has considered new stack. Further, the

Petitioner has not clarified whether there is any additional scope covered by the Petitioner other than scope considered by CEA. The Petitioner has failed to provide any specific details of the entire timeline of the Board approvals, processes, documents etc. and has even failed to give a completion schedule.

71. The gist of the clarifications given by the Petitioner regarding the contentions of the Respondents on approvals and bidding process are as follows.

(a) The award of contract for installation of FGD system in FGUTPSS-I was placed on 18.2.2020 on GEPIL and it has started the process of installation of FGD system. At present, the process of engineering and ordering of equipment by the vendor is in progress. The basic engineering and finalisation of layout works have already been completed and the civil works have already started. However, due to pandemic, the works are progressing at slow pace. The commissioning schedule of FGD system in FGUTPSS-I is December 2022.

(b) DSI based FGD technology is the most cost-effective technology for TTPS. Therefore, DSI based FGD system is being installed in TTPS to meet new norm for SO_2. The DSI based FGD system was envisaged for BTPS. However, due to sudden closure of BTPS as per DPCC directions, it was planned to be utilised at TTPS. Accordingly, IFB for installation of DSI based FGD system was invited for two units of TTPS on 20.6.2018 through ICB. Two bids were received and K C Cottrell Co. Ltd. emerged as the successful bidder and NoA was issued on 2.11.2018. Copies of IFB and NoA were submitted vide affidavit dated 9.4.2021. The transfer of DSIFGD system from BTPS to TTPS happened at the planning stage. Accordingly, IFB was called for TTPS and, thereafter, NoA was awarded for TTPS. IFB for ICB for installation of DSI based FGD system at TTPS was called on 20.6.2018, which was before issuance of the 2019 Tariff Regulations. The bidding process for TTPS started well before the issuance of the 2019 Tariff Regulations.

(c) NIT for implementation of FGD system for RSTPSS-II and RSTPSS-III were clubbed together in one package and domestic bids were invited to get better competitive price. Five bids were received from the domestic bidders. MHPSIL was awarded the contract at a total estimated cost of ₹988.82 crore approx. There is provision for escalation in prices in the awarded contract. The cost of the FGD package's awarded value is apportioned in the MW ratio. Accordingly, FGD package's awarded value for the instant station works out to ₹383.31 crore (excluding IDC, IEDC etc.) on pro rata basis.

(d) For generating units of smaller size like those in FGUTPSS-I, FGUTPSS-II and FGUTPSS-III, WFGD technology has been adopted taking into consideration the balance life of depreciation of asset, operating PLF of station, worldwide footprint of technology, availability of suppliers in abundance, availability of post-installation maintenance and spares, availability and possibility of common tie-up of reagent as per location etc. FGD technology has been selected on the basis of the comparative cost benefit analysis of such technologies.

(e) Regulation 3(40) of the 2019 Tariff Regulations stipulates competent authority for purpose of investment approval. The said term has not been carried forward to Regulation 29 of the 2019 Tariff Regulations. The selection of technology was carried on the basis of internal study of the Petitioner and is also compliant with the CEA recommendations. Neither the MoEFCC Notification nor the Commission's Regulations provide for a competent authority whose approval is a prerequisite for filing a Petition under Regulation 29 of the 2019 Tariff Regulations. There is no such competent authority to provide such certification for the purpose of approving that the bidding has been carried out in a fair and transparent manner. The Petitioner is controlled by the Government of India and is complying the norms laid down by CAG (Comptroller and Auditor General of India) and the statutory auditors.

(f) The prices have been discovered through transparent competitive bidding process. The prices discovered are reasonable for the unit size and the actual expenditure, duly certified by the auditors, will be submitted at the time of filing the petition for determination of supplementary tariff in terms of Regulation 9(3) of the 2019 Tariff Regulations.

(g) The Petitioner has furnished all details pertaining to the technicalities of NIT with respect to RSTPSS-I RSTPSS-II, RSTPSS-III, FGUTPSS-I, FGUTPSS-II, FGUTPSS-III, FGUTPSS-IV, NCTPS-DS-I, NCTPSS-II and SSTPS.

(h) The estimates are prepared based on the works/ material to be consumed and existing market rates of the works/ material cost. Other factors such as location and layout of the system are also considered while preparing estimates.

(i) ICB was adopted for installation of FGD system in respect of Lot-1A stations since projects/ generating stations selected under Lot-1A were implemented under Mega Power Project Policy of Government of India. Accordingly, these stations qualified for deemed export benefits. Under this policy, the units and its auxiliaries supplied by the international vendor for execution of projects were exempted from customs duty and excise duty so that the overall project cost could be less. However, the successful bidders in ICB in case of all the projects under LoT-1A were domestic vendors. Further, most of these domestic bidders also had technology transfer arrangement with established international vendors. Accordingly, for generating stations not covered under the Mega Power Project Policy, DCB was adopted as Customs Duty could be avoided, thus bringing down the overall cost of the FGD system installation. Based on the experience of ICB, response from domestic players, discovery of competitive cost etc., it was decided to utilize the competitiveness

shown by these players further and subsequently DCB was adopted for other projects in subsequent lots.

72. We have considered the submissions of the Petitioner and the Respondents. The Respondents have contended that the Petitioner has not submitted the details of the bidding process as directed by the Commission and has not produced the certificate from competent authority regarding suitability and effectiveness of ECS technology adopted by the Petitioner as directed by the Commission and has assumed itself to be the competent authority. The Respondents have contended that the competent authority is CEA.

73. We note that the Petitioner's BoD considered the revised ECNs notified by MoEFCC pertaining to SO_2 and NO_x in its 444th meeting held on 22.3.2017 and approved the "Proposal for interim Environmental Action Plan for meeting the New Emission Norms (notified by MoEFCC on 7/12/2015)" and gave approval for planning and tendering of ECS to comply with MoEFCC Notification. Thereafter, the Petitioner went through various stages of selection of technology on the basis of removal efficiency of pollutants, 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 bids were called under DCB and the bidders were evaluated and those found qualified in the first stage were asked to submit price bids through e-tendering portal. Based on the price bids, the L1 bidder was considered for award of contract. IFBs for installation of WFGD system and DSIFGD system in the subject generating

stations/ units covered in the instant eleven petitions were issued during 31.7.2017 and 24.4.2020. The Board of Directors of the Petitioner approved the award of FGD packages and granted IA in their 463rd, 456th, 465th and 481st meetings held on 8.9.2018, 31.1.2018, 13.10.2018 and 7.2.2020, respectively. Accordingly, the Petitioner issued NoA for installation of SO_2 to the L1 bidders on 18.9.2018, 1.2.2018, 2.11.2018, 16.10.2018, 26.10.2018, and 18.2.2020. The said details are as follows:

Petition No.	Generating station/unit Capacity (MW)	BoD Meeting Number and date of approval of the proposal for FGD	Date of issue of IFB	BOD Meeting Number and date of approval of award of FGD	BOD Meeting Number and date of IA for FGD	Date of issue of NoA
501/MP/2019	RSTPSS-II (2x500)	444th 22.03.2017	31.07.2017	463rd 08.09.2018	463rd 08.09.2018	18.09.2018
502/MP/2019	TTPS* (4x110)	444th 22.03.2017	20.06.2018			02.11.2018**
66/MP/2020	RSTPSS-III (2x500)	444th 22.03.2017	31.07.2017	463rd 08.09.2018	463rd 08.09.2018	18.09.2018
267/MP/2020	FGUTPSS-I (2X210)	444th 22.03.2017	19.08.2019	481st 07.02.2020	481st 07.02.2020	18.02.2020
414/MP/2020	NCTPS-DS-I (4x210)	444th 22.03.2017	12.06.2018			26.10.2018
496/MP/2020	FGUTPSS-II (2X210)	444th 22.03.2017	19.08.2019	481st 07.02.2020	481st 07.02.2020	18.02.2020
499/MP/2020	NCTPSS-II (2x490)	444th 22.03.2017	29.11.2017	456th 31.01.2018	456th 31.01.2018	01.02.2018
501/MP/2020	FGUTPSS-III (1X210)	444th 22.03.2017	19.08.2019	481st 07.02.2020	481st 07.02.2020	18.02.2020
510/MP/2020	SSTPS (5x200+2X500)	444th 22.03.2017	19.08.2019	481st 07.02.2020	481st 07.02.2020	18.02.2020
545/MP/2020	RSTPSS-I (2x500)	444th 22.03.2017	24.04.2020	yet to be awarded	yet to be awarded	-
553/MP/2020	FGUTPSS-IV (1X500)	444th 22.03.2017	31.07.2017	465th 13.10.2018	465th 13.10.2018	16.10.2018

** Bidding took place for only two units and NoA issued for only two units*

74. We have also perused the extracts of the various meetings of the Petitioner's BoD submitted by the Petitioner. It is observed that the process from identification of the suitable technology to issue of NoA to the L1 bidders was with the approval of the

Petitioner's BoD. The Petitioner has also certified that bidding and award has been carried out in a fair and transparent manner as per Delegation of Power (DoP) of the Petitioner and it is in line with the Government of India guidelines. NoA has been issued by the Petitioner in case of all the subject generating stations, except in case of two units of TTPS and RSTPSS-I, and installation is completed in some generating stations/ units and in some cases the work is under progress.

75. As regards the other contention that the Petitioner has not submitted the certificate from the competent authority, the Petitioner has submitted the Minutes of the Meetings of its BoD approving the installation of ECS in its generating stations and has also stated on affidavit that ECS proposed by the Petitioner would comply with the norms prescribed in the MoEFCC Notification. There being no competent authority specifically defined in the 2019 Tariff Regulations or the MoEFCC Notification, approval of the Petitioner's BoD and affidavit submitted by the Petitioner is sufficient.

76. The Respondents have further contended that the Petitioner should have adopted ICB which would have attracted more bidders and competitive prices, instead of DCB. It is observed that the Petitioner initially adopted ICB and subsequently adopted DCB. The successful bidders in case of ICB were domestic vendors and most of them had international tie-ups. Further, the prices received and discovered through DCB were competitive. As the price discovered through DCB is competitive, we do not find any infirmity in Petitioner adopting DCB instead of ICB based on its initial experience.

a. Suitability of FGD technology

77. The Respondents have raised their concerns on the suitability of the technology selected by the Petitioner for control of the SO_2 emissions in the subject generating stations/ units and their submissions in brief are as follows:

(a) RUVNL in Petition No. 501/MP/2019 and in Petition No. 267/MP/2020 has submitted that the norms like Sulphur content in coal, availability of reagent, SO_2 removal efficiency requirement of plant given by CEA in its letter dated 21.2.2019 for SO_2 reduction has not been considered by the Petitioner. The Petitioner issued NoA on 18.9.2018 just two months after the issue of order in Petition No. 98/MP/2017 without waiting for CEA to issue guidelines. It would be appropriate for the Commission to consider the recommendations made by CEA and issues guidelines for selection of technology for ECS as mandated by MoEFCC as well as the manner the cost discovery will be made.

(b) UPPCL in Petition No. 502/MP/2019 has submitted that in TTPS, the Petitioner adopted DSI based FGD technology and gave two reasons for selecting the technology. However, the Petitioner has not substantiated both these assertions with any facts.

(c) PSPCL in Petition No. 66/MP/2020, Petition No. 267/MP/2020, Petition No. 510/MP/2020, Petition No. 496/MP/2020 and Petition No. 545/MP/2020 has submitted that though the Petitioner has made elaborate submissions on the process involved in SO_2 removal with the use of the WFGD technology, it has failed to place on record the “Life Cycle Cost benefit analysis” to demonstrate as to why a technology with “large foot print, relatively higher CAPEX and reagent purity” has been chosen for the subject generating station and has proceeded to award the contract for its implementation at a cost which is higher than the CEA recommended cost.

(d) TPDDL in Petition No. 267/MP/2020, Petition No. 496/MP/2020, Petition No. 499/MP/2020, Petition No. 501/MP/2020, Petition No. 545/MP/2020 and Petition No. 510/MP/2020 has submitted that CEA has advised generating units to conduct a "life cycle cost-benefit analysis" while choosing from the available FGD technologies. No such analysis was conducted at the time of filing the petition and it was only done on the directions of the Commission. CEA has also recommended that factors such as coal quality, unit size and number of units, space availability at plant, availability of reagent, disposal of by-product and balance plant life etc. need to be evaluated on a case to case basis since every plant has specific requirements. As none of the above mentioned factors have been furnished by the Petitioner, there is no prudent basis to verify the reasonableness of the selected ECS technology.

(e) TPDDL in Petition No. 499/MP/2020 has submitted that the Petitioner has failed to provide the certificate from competent authority to the effect that the ECS technology selected is as per the recommendations made by CEA and is the best suited cost-effective technology. The Petitioner has submitted that DSI based FGD is in consonance with the CEA Norms and would meet the evaluation criteria dated 7.2.2020 and the SO_2 emission norms as stipulated in the MoEFCC Notification. However, the Petitioner has failed to justify that DSI based FGD is the best suited for NCTPS-DS-I. The directions issued to CEA in order dated 20.7.2018 in Petition No. 98/MP/2017 and the recommendations made by CEA be considered for selection of technology.

(f) BRPL in Petition No. 267/MP/2020 and Petition No. 501/MP/2020 has made the following submissions:

(i) The Petitioner has failed to place on record the "Life Cycle Cost benefit analysis". Life cost benefit analysis will enable to ascertain whether incurring such huge expenditure is reasonable and justifiable for a plant, which is at the fag-end of its life and is completing 25 years like NCTPS-DS-I.

(ii) Instead of providing the cost benefit analysis for FGD technologies, the Petitioner has provided one-sided and arbitrary figures to show that incremental increase in tariff is least in the case of WFGD technology. The purpose of carrying out cost benefit analysis is to make an informed decision regarding the selection of the appropriate FGD technology in consultation with the beneficiaries.

(iii) The Petitioner has failed to show any study showing that it has chosen the FGD technology on the basis of the parameters laid down by the CEA in its Guidelines.

(iv) The Petitioner has also failed to provide as to why the same technology is being applied across the board for the generating stations, even though the criteria of selection of technology at each generating station would be different and would depend on various factors which are plant specific such as quality of coal, existing emission technology available, location of the plant, balance useful life, space available for installation, availability of reagents at its location, disposal of by-products emerging out of the technology etc.

(g) The submissions of BRPL in Petition No. 414/MP/2020, Petition No. 499/MP/2020 and Petition No. 501/MP/2019 are similar and the gist of submissions are as follows:

(i) The Petitioner has failed to place on record the "Life Cycle Cost benefit analysis" so as to demonstrate as to why a technology with a large foot print, relatively higher capital expenditure and reagent purity has been chosen and has also proceeded to award the contract for its implementation for which no relevant details have been provided.

(ii) Smaller units of less than 500 MW are only required to meet SO_2 norms of 600 mg/Nm^3 and not 200 mg/Nm^3. Further, CEA has also prescribed different technologies for stations with less balance useful life

and low PLF. Accordingly, high CAPEX intensive technologies for such stations are not suited and other technologies should be considered.

(iii) The Petitioner has failed to provide any certification or document to show that the DSI based FGD is the appropriate technology for NCTPS-DS-I. The instant station has a total capacity of 840 MW with 4 units of 210 MW each and COD was 1.12.1995. However, in Kahalgaon Stage-I which has a similar unit capacity and number of units and also similar COD of 1.8.1986, the Petitioner has awarded WFGD. The Petitioner has claimed that the technologies are in compliance with the CEA Advisory and are best suited and most cost efficient. But the Petitioner has not submitted the basis or justification for the variance in technologies.

(h) UPPCL and RUVNL in Petition No. 414/MP/2020, Petition No. 499/MP/2020, Petition No. 501/MP/2020, Petition No. 510/MP/2020, Petition No. 545/MP/2020 and Petition No. 553/MP/2020 have stated that factors like Sulphur content in coal, balance plant life, availability of reagent, space requirement are to be considered while selecting the technology for emission control as prescribed by CEA. The Petitioner is required to show the factors which were considered for selection of the technology in the subject generating stations/ units.

78. The gist of the clarifications given by the Petitioner in response to the contentions of the Respondents regarding suitability of the technology selected by the Petitioner to comply with the norms notified by MoEFCC are as follows:

(a) CEA in its advisory dated 7.2.2020 had recommended that DSI based FGD and Ammonium based FGD technologies are preferable for units' size less than 500 MW, while for units' size of 500 MW and above, WFGD technology is most suited.

(b) While selecting FGD technology for control of SO_2 in a generating station/ unit, the Petitioner had considered the unit size, geographical location, age of units, availability of space, coal quality, etc. as indicated in the CEA Advisory dated 7.2.2020.

(c) DSI based FGD technology is preferable for small units. WFGD technology is the most versatile and prominent technology for any unit size. Ammonium based FGD technology is yet to be proven w.r.t. Indian coal containing relatively low Sulphur, high ash and low calorific value etc. Also, handling 99.8% anhydrous ammonia pose safety threat and is not preferable for densely populated area. Moreover, there are limited suppliers of Ammonium based FGD systems. Therefore, the Petitioner has preferred installation of WFGD Technology. CEA vide its letter dated 20.2.2019 on 'Recommendations on Operation Norms for thermal generating stations' pertaining to implementation of new environmental emission control measures in TPP's has stated that WFGD system is most widely used FGD system for removal of SO_2 from flue gases in TPPs.

(d) RSTPSS-I consists of two units of 500 MW capacity and WFGD technology being the most versatile and prominent for any unit size, same has been chosen.

(e) DSI based FGD technology is suitable for TTPS comprising of 4X110 MW units and having remaining useful life of about five years. DSI based FGD system requires less capex (about 10-75% of WFGD system) which would avoid tariff shock during the fag end of the plant life. The present level of SO_2 is in the range of about 700-900 mg/Nm^3 which is to be brought to below 600 mg/Nm^3. The removal efficiency of DSIFGD system is about 50-60% which is adequate for the instant station. Further, DSIFGD system has lower capital cost and smaller construction time and needs less space.

(f) The Respondents contentions regarding cost benefit analysis have no meaning for such works which are necessary to be carried out for compliance of law. The implementation of FGD system would improve the emission levels, benefitting the environment and society. As regards the reasonableness of capital cost of ECS, the same has been discovered through competitive bidding process and it is a competitive price. The selection of efficient and suitable technology for the instant stations has been carried out after detailed and comparative study of different technologies available worldwide and in light of CEA advisory dated 7.2.2020. The cost benefit analysis was conducted among the technologies suitable for the instant stations and WFGD technology and DSI based FGD technology are the most cost-effective technology for the subject generating stations/ units.

(g) FGUTPSS-IV was commissioned on 30.9.2017. Accordingly, the revised emission norms specified by the MoEFCC Notification for SO_2 emission is 100 mg/Nm^3. In order to bring down the current SO_2 emission levels within the norms specified by the MoEFCC Notification, WFGD system is being implemented in the instant station taking into consideration the criteria laid down by CEA and it is in line with the recommendations of CEA in its advisory dated 7.2.2020.

(h) There is no competent authority to provide certification for the purpose of approving that the bidding award has been carried out in a fair and transparent manner.

(i) For NCTPS-DS-I, DSI based FGD technology is the most cost-effective technology.

(j) In case of FGUTPSS-I, FGUTPSS-II and FGUTPSS-III which are of size of 5 x 210 MW, WFGD technology has been adopted taking into consideration the balance life of asset, depreciation, operating PLF of station, worldwide footprint of technology, availability of suppliers, availability of post

installation maintenance and spares, availability and possibility of common tie-up of reagent as per location etc.

79. On the basis of the directions of the Commission in order dated 20.7.2018 in Petition No. 98/MP/2017, CEA vide letter dated 21.2.2019 on 'Operation Norms for Thermal Generating Stations for the Tariff Period 2019-2024' 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.

80. The Petitioner has adopted the WFGD system in nine out of the eleven generating stations/ units covered in the instant order and DSI based FGD in case of TTPS and NCTPS-DS-I. The Petitioner has submitted that NoA was issued in case of some of the subject generating stations/ units before the issue of the Advisory. However, the technology adopted by the Petitioner is in compliance with the recommendations issued by the CEA vide letter dated 21.2.2019 and CEA Advisory dated 7.2.2020. The reasons given by the Petitioner for selecting WFGD technology for nine of the generating stations/ units are as follows.

(a) In case of DSI/ 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 low when compared to wet limestone based FGD system leading to high operational expenses.

(b) There are very few providers of Ammonia based FGD technology when compared to the WFGD leading to less competition in competitive bidding

process. The 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 below 500 MW. Though Ammonia based FGD technologies have approximately 10% less CAPEX and APC when compared to wet limestone based FGD systems and by-product of Ammonia based FGD technologies, i.e. Ammonium Sulphate is easily saleable, handling of Ammonia, which is volatile is a matter of concern. Also, availability of ammonia is a matter 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 covered in the instant eleven petitions are not located near the coast and, hence, this technology was not considered.

(d) DSI/Dry type FGD technologies based on DSI is preferable for unit size of 60 MW-250 MW since the reagent cost in this technology is relatively higher than WFGD and Ammonia based FGD. It is more suitable for units running on low PLF and units with balance operating life of 7-9 years.

81. The reasons given by the Petitioner for selecting the DSI based FGD technology in TTPS and NCTPS-DS-I are as follows.

(a) The DSI based FGD is being installed to bring down the SO_2 below 600 mg/Nm^3. For meeting the SO_2 emissions norms below 600 mg/Nm^3, the units do not require high SO_2 removal efficiency. SO_2 removal efficiency of about 50-60% would be adequate. Further, the DSI based FGD are suitable units which lack sufficient space for installation of FGD.

(b) It requires lower capital expenditure, less space, optimum water and shorter installation time.

(c) DSI based FGD technology uses Sodium Bicarbonate ($NaHCO_3$) as the reagent and the reagent consumption is directly linked with the loading of the unit (PLF).

82. We have considered the contentions of the Respondents and the clarifications given by the Petitioner. The Respondents have submitted that the Petitioner has not submitted whether the factors recommended by CEA were considered while selecting the De-SO_2 technology, the life cycle cost benefit analysis of the technology adopted, comparative study of the various technologies and whether the technology adopted would meet the norms fixed by MoEFCC.

83. As regards the Respondents contention that the Petitioner has not submitted whether the technology adopted is in conformity with the CEA recommendations, the Petitioner has submitted that the technology selection is generating station/ unit specific. Therefore, the Petitioner has considered the unit size, geographical location, age of units, availability of space, coal quality, sulphur content in coal, balance plant life, availability of reagent and space requirement and, accordingly, selected the WFGD technology which is in conformity with CEA recommendations dated 21.2.2019 and Advisory dated 7.2.2020.

84. The Respondents have contended that the Petitioner has not submitted the life cycle cost benefit analysis and generating station/ unit specific comparative study of the various technologies. It is observed that the Petitioner in its Written Submissions has submitted that comparative study of the various ECS technologies like DSIFGD, WFGD, AFGD and SWFGD for reduction of SO_2 emission levels was conducted for each generating station/ unit considering the parameters like capital cost, debt equity ratio, specific reagent consumption (gm/kWh), additional APC, estimated cost of reagent, rate of interest and balance useful life. The Petitioner has

submitted that as per the analysis, WFGD system (and DSIFGD system for TTPS and NCTPS-DS-I) is the most cost-effective technology for SO_2 removal and it is in line with the CEA recommendations and has submitted the following details in support of its contention:

Petition No. 501/MP/2019-RSTPSS-II

(₹ in crore)

Particulars	**DSIFGD**	**WFGD**	**AFGD**
Annual Supplementary Capacity Charges (A)	24.18	81.46	74.79
Annual Supplementary Energy Charges (B)	204.02	23.29	99.00
Annual Supplementary Charges (C=A+B)	228.20	104.75	173.79

Petition No. 502/MP/2019-TTPS

(₹ in crore)

Particulars	**DSIFGD**	**WFGD**	**AFGD**
Annual Supplementary Capacity Charges (A)	12.10	65.17	59.64
Annual Supplementary Energy Charges (B)	56.37	8.67	30.47
Annual Supplementary Charges (C=A+B)	68.48	73.84	90.11

Petition No. 66/MP/2020-RSTPSS-III

(₹ in crore)

Particulars	**DSIFGD**	**WFGD**	**AFGD**
Annual Supplementary Capacity Charges (A)	23.95	80.51	73.93
Annual Supplementary Energy Charges (B)	233.72	26.68	113.42
Annual Supplementary Charges (C=A+B)	257.68	107.19	187.35

Petition No. 267/MP/2020-FGUTPSS-I

(₹ in crore)

Particulars	**DSIFGD**	**WFGD**	**AFGD**
Annual Supplementary Capacity Charges (A)	12.68	76.72	70.02
Annual Supplementary Energy Charges (B)	80.75	12.30	41.46
Annual Supplementary Charges (C=A+B)	93.43	89.02	111.48

Petition No. 414/MP/2020-NCTPS-DS-I

(₹ in crore)

Particulars	**DSIFGD**	**WFGD**	**AFGD**
Annual Supplementary Capacity Charges (A)	20.20	98.57	89.83
Annual Supplementary Energy Charges (B)	74.71	15.26	39.78
Annual Supplementary Charges (C=A+B)	94.91	113.82	129.61

Petition No. 496/MP/2020-FGUTPSS-II

(₹ in crore)

Particulars	DSIFGD	WFGD	AFGD
Annual Supplementary Capacity Charges (A)	10.60	61.11	55.96
Annual Supplementary Energy Charges (B)	80.34	12.33	41.32
Annual Supplementary Charges (C=A+B)	90.94	73.44	97.28

Petition No. 499/MP/2020-NCTPSS-II

(₹ in crore)

Particulars	DSIFGD	WFGD	AFGD
Annual Supplementary Capacity Charges (A)	21.65	101.83	93.08
Annual Supplementary Energy Charges (B)	212.10	36.42	111.43
Annual Supplementary Charges (C=A+B)	233.75	138.25	204.50

Petition No. 501/MP/2020-FGUTPSS-III

(₹ in crore)

Particulars	DSIFGD	WFGD	AFGD
Annual Supplementary Capacity Charges (A)	5.11	9.00	26.59
Annual Supplementary Energy Charges (B)	37.17	5.63	19.06
Annual Supplementary Charges (C=A+B)	42.28	34.63	45.65

Petition No. 510/MP/2020-SSTPS

(₹ in crore)

Particulars	DSIFGD	WFGD	AFGD
Annual Supplementary Capacity Charges (A)	59.45	281.20	255.90
Annual Supplementary Energy Charges (B)	426.52	55.97	205.35
Annual Supplementary Charges (C=A+B)	485.97	337.16	461.25

Petition No. 545/MP/2020-RSTPSS-I

(₹ in crore)

Particulars	DSIFGD	WFGD	AFGD
Annual Supplementary Capacity Charges (A)	29.59	142.07	129.21
Annual Supplementary Energy Charges (B)	211.26	23.84	95.65
Annual Supplementary Charges (C=A+B)	240.86	165.91	224.86

Petition No. 553/MP/2020-FGUTPSS-IV

(₹ in crore)

Particulars	DSIFGD	WFGD	AFGD
Annual Supplementary Capacity Charges (A)	11.29	59.23	54.04
Annual Supplementary Energy Charges (B)	107.64	17.41	55.69
Annual Supplementary Charges (C=A+B)	118.93	76.65	109.73

85. The Petitioner has proposed installation of WFGD system in nine generating stations/ units and DSIFGD system in two of its generating stations to keep SO_2 emission levels within the norms prescribed in MoEFCC. Taking into consideration

the justification given by the Petitioner, we approve the Petitioner's proposal for implementation of the WFGD system and DSIFGD system for control of SO_2 emissions in the generating stations covered in the instant petitions.

b. Reduction in NO_x emissions

86. The Petitioner had initially considered CM as the primary measure and SNCR/ SCR as the secondary measure to control the NO_x emission. Later, with the revision of emission norms for NO_x for TPPs installed during the period from 1.1.2004 to 31.12.2016 from 300 mg/Nm^3 to 450 mg/Nm^3 by MoEFCC vide Notification G.S.R. 662(E) dated 19.10.2020, the Petitioner has proposed installation of only CM as primary system of De-NO_x to bring the level of NO_x emission below 450 mg/Nm^3 at FGUTPSS-III, FGUTPSS-IV, NCTPSS-II, RSTPSS-II and RSTPSS-III i.e. in five out of the eleven generating stations covered in this order and the secondary De-NO_x system of SNCR proposed initially is not being implemented in any of the generating stations. In case of FGUTPSS-IV, the Petitioner has proposed SCR to meet the revised NO_x emission norm of 100 mg/Nm^3, applicable to generating stations/ units commissioned on or after 1.1.2017. The Petitioner has submitted that the matter seeking relaxation in emission norms for revising NO_x emission norm of 100 mg/Nm^3 applicable to generating stations commissioned on or after 1.1.2017 is sub-judice before the Hon'ble Supreme Court. Therefore, installation of SCR is dependent on the outcome of the Hon'ble Supreme Court judgment. The Petitioner has claimed ₹5.73 crore, ₹10.00 crore, ₹17.08 crore, ₹17.53 crore and ₹17.53 crore towards

installation of CM in FGUTPSS-III, FGUTPSS-IV, NCTPSS-II, RSTPSS-II and RSTPSS-III respectively.

87. Accordingly, we approve installation of CM system in FGUTPSS-III, FGUTPSS-IV, NCTPSS-II, RSTPSS-II and RSTPSS-III. However, the Petitioner has not submitted whether the capital cost claimed towards De-NO_x is just the hard cost of the CM system or it includes other costs too. Moreover, the Petitioner has not submitted the present emission levels of NO_x in FGUTPSS-III, FGUTPSS-IV, NCTPSS-II, RSTPSS-II and RSTPSS-III. Therefore, we are not inclined to approve the capital cost of the CM system claimed by the Petitioner at this stage. However, the Petitioner may install the CM system for control of NO_x in the said five generating stations and claim the same after the installation in the petition to be filed under Regulation 29(4) of the 2019 Tariff Regulations.

c. *Capital cost of identified ECS*

88. The details of the capital cost of ECS proposed by the Petitioner for the reduction in SO_2 and NO_x emissions are given in the table below:

Petition No.	Generating station/unit Capacity (MW)	COD	CEA indicative cost of FGD per MW (₹ in lakh)	Hard cost of WFGD/ DSIFGD per MW (₹ in lakh)	Total capital cost of CM System/ ESP (₹ in crore)
501/MP/2019	RSTPSS-II (2x500)	1.4.2006	40.50 (500 MW)	38.33	17.53
502/MP/2019	TTPS (4x110)	20.2.1998	45.00 (110 MW)	10.46*	-
66/MP/2020	RSTPSS-III (2x500)	27.3.2014	40.50 (500 MW)	38.33	17.53
267/MP/2020	FGUTPSS-I (2X210)	22.3.1989	45.00 (210 MW)	65.71	-
414/MP/2020	NCTPSS-I (4x210)	1.12.1995	45.00 (840 MW)	08.15*	-

496/MP/2020	FGUTPSS-II (2X210)	1.1.2001	45.00 (210 MW)	65.71	55.66**
499/MP/2020	NCTPSS-II (2x490)	31.7.2010	40.50 (500 MW)	49.40	17.08
501/MP/2020	FGUTPSS-III (1X210)	1.1.2007	45.00 (210 MW)	65.71	05.73
510/MP/2020	SSTPS (5x200+2X500)	1.5.1988	45.00 (200 MW) 40.50 (500 MW)	49.90	-
545/MP/2020	RSTPSS-I (2x500)	1.1.1991	40.50 (500 MW)	51.60	-
553/MP/2020	FGUTPSS-IV (1X500)	30.9.2017	40.50 (500 MW)	59.00	10.00 (approx.)

* Per MW hard cost of DSIFGD **Modification of existing ESP

89. As stated above, the Petitioner has proposed WFGD and DIS based FGD technology for control of SO_2 emission, CM system for control of NO_x emission and ESP for control of particulate matter emissions. The Respondents have contended that the hard cost of WFGD and the DSI based FGD systems claimed by the Petitioner are more than the CEA indicative hard cost and it should be restricted to the CEA indicative hard cost. The Petitioner has contended that the hard cost claimed by the Petitioner has been discovered through a transparent competitive bidding process and, hence, the same may be approved. The consolidated concerns raised by the Respondents on the aspect of higher hard cost and the clarifications given by the Petitioner are dealt in the following paragraphs.

90. The submissions of the Respondents on the aspect of capital cost are as follows:

(a) The submissions made by UPPCL are as follows.

i) The Petitioner has not provided the basis on which the cost has been ascertained. CEA is in the process of reviewing the cost so the cost of

FGD system may be approved provisionally at CEA recommended cost subject to adjustment after CEA conveys the revised cost estimates. The huge delay caused by the Petitioner in invitation of tenders, which led to escalation in prices, may also be considered.

ii) The Petitioner has put up investment proposal approval without any proof that the cost ascertained by it is optimum in nature and arrived at through widely recognized for determination of such cost. As such the proposal of the Petitioner for WFGD system is not according to the provisions of Section 61 of the 2003 Act.

iii) Section 61 of the 2003 Act provides that investment and expenditure made by the generating company should be optimum and arise from good performance, economical use of resources and the tariff determined based on optimum investment/ expenditure. Such optimum investment/ expenditure should reflect cost of supply of electricity and ensure safeguarding of the interest of the consumers.

iv) As per Section 61 of the 2003 Act generation and supply of electricity are conducted on commercial principles and recover of the cost of the electricity in a reasonable manner.

v) The Petitioner has computed Supplementary Annual Fixed Charges and Supplementary Variable Charges for TTPS for the first year. However, from the computation provided by the Petitioner, it is unable to assess whether capital cost of ₹56.89 crore considered is for 2 units of 110 MW each i.e. 220 MW or for 4x110 MW i.e. 440 MW.

vi) Comparison of the supplementary variable charges shows that either variable charges considered in TTPS are under-stated or variable charges considered in FGUTPPS-I are over-stated. The only variation is the APC

in TTPS (11.50%) and FGUTPSS-I (9%). Other factors like cost of reagent and estimated consumption are same in TTPS and FGUTPSS-I.

vii) The hard cost claimed by the Petitioner for FGUTPPS-I is ₹65.71 lakh/MW i.e., higher by ₹20.71 lakh/MW than the indicative cost of ₹45.00 lakh/MW suggested by CEA. This is due to delay on the part of the Petitioner in taking decision to implement FGD system and floating tender. The Commission may consider directing CEA to estimate the cost of FGD system as on 1.4.2017, 1.4.2018 and 1.4.2019. The cost discovered by the Petitioner in 2019 through bids be discounted by an appropriate 'price discounting rate' back to 1.4.2017 price level for elimination of the effect of price due to delayed actions by the Petitioner. The discounted cost, so arrived at, may be compared with the revised estimate as on 1.4.2017 computed by CEA. The discounted cost may be allowed if it does not vary by 10% from the CEA revised cost estimate or else regulated by the Commission as it may deem fit. As an interim measure, the Commission may approve the cost of FGD provisionally at existing CEA rate subject to adjustment after CEA conveys the revised estimate for consideration of the Commission. Similar observations were made by UPPCL in case of other generating stations/ units.

viii) It is not clear about the basis for arriving at the capital cost of SNCR and CM system in case of RSPTSS-II.

(b) RUVNL has submitted that the Petitioner has not considered the GST, input tax credit on GST paid on capital goods, IDC and IEDC. The indicative incremental tariff indicated by the Petitioner may be treated as ceiling and no further additional impact may be allowed. RUVNL is obliged to procure power only up to the contracted capacity and up to valid term of agreements. The impact of ACE on installation of FGD system should be calculated considering the useful life of 25 years of FGD system.

(c) PSPCL in its Written Submissions in Petition No. 501/MP/2019, Petition No. 66/MP/2020, Petition No. 267/MP/2020, Petition No. 496/MP/2020, Petition No. 501/MP/2020, Petition No. 510/MP/2020 and Petition No. 545/MP/2020 has submitted that as per the CEA guidelines, the estimated base cost for installation of ECS is likely to be reduced with increasing units and may even come down further due to increased number of vendors/ suppliers. However, the Petitioner has sought approval of capital costs which are exponentially high and the Petitioner is liable to justify the same together with the details regarding vendors/ suppliers and the reasons for deviation from the CEA indicative cost. The Petitioner has only made general and vague statements and has failed to provide any information regarding the "uncontrollable factors" or as to how "efflux of time" has affected the cost of FGD. Though the cost breakup has been provided by the Petitioner, the basis for arriving at the claimed cost and the reasons for deviation has not been provided by the Petitioner in respect of the following stations:

Sl. No.	Generating Station	Petition No.	ACE claimed (₹ in crore)	Capex as per CEA norms (₹ in crore)	Balance useful life (in years)
1.	RSTPSS-I	545/MP/0202	674.07	405.00	Nil
2.	RSTPSS-II	501/MP/2020	562.94	405 .00	9.5
3.	RSTPSS-III	66/MP/2020	561.94	405.00	18.5
4.	SSTPS	510/MP/2020	1327.59	882.50	Nil
5.	FGUTPSS-I	267/MP/2020	189.00	330.84	Nil
6.	FGUTPSS -II	596/MP/2020	189 .00	421.25	4
7.	FGUTPSS -III	501/MP/2019	216.30	94.50	12

(d) TPDDL in its Written Submissions has submitted that hard cost claimed by the Petitioner for its FGUTPSS-I, FGUTPPS-II and FGUTPPS-III is substantially higher than CEA's indicative cost. The Petitioner has not provided any explanation for the cost difference between CEA's indicative hard cost and that of the Petitioner. The Petitioner has failed to share detailed item-wise justifications for the increase in estimated hard cost or explain and substantiate the uncontrollable factors that caused the increase in the cost. The Petitioner's reliance on the Commission's acknowledgement that costs may change is not

sufficient for explaining the substantial difference in costs. The costs towards project management and engineering cost are controllable and as such should be restricted to CEA's recommended indicative cost. The costs other than base cost such as IDC, IEDC, taxes etc. are consequential and verifiable cost based on relevant records and their admissibility may be dealt accordingly at the time of tariff fixation on the basis of actuals allowed after prudence check. ACE, if approved, should not be disbursed as a one-time payment but should be released in tranches, depending upon the progress of the installation and commissioning of the FGD system, as the same would help in avoiding tariff shock for the end consumers. Besides this, TPDDL has made generating station/ unit wise submissions in Petition No. 501/MP/2019, Petition No. 267/MP/2020, Petition No. 414/MP/2020, Petition No. 499/MP/2020, Petition No. 496/MP/2020, Petition No. 501/MP/2020 and Petition No. 545/MP/2020 regarding non-submission of cost break-up, whether the cost claimed is just the base cost or includes other cost as well, etc.

(e) BRPL has made the following submissions:

(i) The Petitioner has failed to provide the reasons for deviation and merely made a general submission and has stated that the CEA recommended cost is only indicative. The Petitioner cannot merely claim that the costs are indicative and claim escalations without any justifications. By placing reliance on the order dated 23.4.2020 in Petition No. 446/MP/2019, BRPL has submitted that the Commission may consider approving the cost of FGD system provisionally at the existing CEA rate subject to adjustment after the revision of the CEA cost estimates.

(ii) The Petitioner has provided the cost break-up. However, the basis for arriving at the same is still not clear.

(iii) In Petition No. 66/MP/2020, BRPL has submitted that when it comes to the technological aspect, the Petitioner claims that it has purportedly 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.

(iv) In Petition No. 267/MP/2020, there is no prudent basis to verify the reasonableness of the cost estimates provided by the Petitioner and as such no approval can be granted for the same in the absence of the details.

(v) In Petition No. 414/MP/2020, the cost claimed by the Petitioner towards the FGD is commercially unviable. Further, ACE sought by the Petitioner may not to be allowed for a plant that has completed its useful life. The Petitioner has not installed WFGD system and instead has installed DSI based FGD system. The Petitioner cannot compare the indicative costs for WFGD system with the cost of DSI based FGD system and claim to have met the CEA standards.

(vi) BRPL in Petition No. 499/MP/2020, in case of NCTPSS-II, has submitted that the Petitioner has incorrectly stated that the cost is comparable to the CEA benchmark rather there is an escalation of ₹8 lakh per MW. No reasons or justification for the same have been forwarded by the Petitioner and it has failed to share the reasons and details which have led to increase in the over-all cost of the FGD system.

(vii) The CEA indicative hard cost in case of SSTPS is ₹45 lakh per MW for 200 MW units and ₹40.50 lakh per MW for 500 MW units. However, the Petitioner has claimed hard cost of ₹49.90 lakh per MW and the increase in cost has been attributed due to efflux of time and other uncontrollable factors. The CEA cost estimates were issued in February 2019 and the NIT was issued by the Petitioner on 19.9.2019, i.e., merely

after six months of the CEA estimates. Accordingly, the Petitioner cannot claim that due to passage of time and on account of inflation the cost has increased.

91. The clarifications given by the Petitioner in response to the concerns raised by the Respondents regarding the capital cost of FGD system are consolidated to avoid duplication and they are as follows.

(a) NIT for implementation of FGD system for RSTPSS-II and RSPTSS-III were clubbed together in one package and bids were invited to get better competitive price. MHPSIL was the successful bidder at an award value of ₹988.82 crore approx. There is provision for escalation in prices in the awarded contract. The Petitioner has provided the break-up of the capital cost claimed towards FGD system implementation. The Commission, in order dated 23.4.2020 in Petition No. 446/MP/2019, has recognized that the CEA recommendations and cost discovered through competitive bidding needs to be taken into account to view the reasonableness of cost.

(b) There is no provision of disbursing the capital cost in tranches linked with the progress of installation of the FGD system.

(c) In case of TTPS, the CEA norms do not indicate any cost for DSI based FGD system. The awarded cost of DSI based FGD system for two units was ₹23 crore (for 220 MW) and it is less than ₹0.45 crore/ MW recommended by CEA for 210/ 250 MW units for FGD system.

(d) In response to the contention of UPPCL in Petition No. 502/MP/2019, the Petitioner has submitted that the indicative supplementary fixed cost for first year considered for TTPS is 7.07 paise/unit based on its useful life upto 13.1.2025. The Commission has specified another 15 years for recovery of ACE towards ECS through depreciation. The supplementary tariff was worked out as per the provisions of the 2019 Tariff Regulations and CEA

recommendations vide letter dated 20.2.2019. The contention of UPPCL regarding non-consideration of GST and IDC is misplaced.

(e) In response to the contention of RUVNL in Petition No. 66/MP/2020 and Petition No. 501/MP/2020, the Petitioner has submitted all the details with respect to impact of taxes, IDC and IEDC on the capital cost of the Project. The issue of cost and time over-run would arise after the FGD system is commissioned and integrated with the instant station.

(f) As regards RUVNL's contention that the Petitioner may proceed for installation of FGD subject to the condition that RUVNL is obliged to procure power only up to the contracted capacity and upto valid term of agreements, the Petitioner has submitted that the RUVNL is being supplied power in terms of the PPA executed between the parties. Therefore, the quantum of power and the terms and conditions of the power supply is to governed in terms of the said PPA. ACE on account of installation of FGD System will be recovered in the form of depreciation in accordance with Regulation 33(10) of the 2019 Tariff Regulations.

(g) In response to the contention of TPDDL in Petition No. 267/MP/2020, the Petitioner has submitted that it has provided the detail of capital cost segregation, wherein the base cost, IEDC, IDC, taxes etc. have been shown separately. In case of generating stations/ units which have completed their useful life, 2020 amendment Regulations provides for recovery of depreciation over a period of minimum 10 years.

(h) In case of FGUTPSS-I, FGUTPPS-II and FGUTPPS-III, the hard cost claimed by the Petitioner is more than the CEA indicative hard cost. CEA in its guidelines dated 21.2.2019 has mentioned that the cost estimation given is only indicative in nature and is only the base cost and it may vary. Cost for smaller sized units is higher than that the bigger sized units for the reasons that (i) the cost of common systems (i.e. limestone handling system, Milling System

including Limestone Slurry Preparation system, Gypsum Dewatering System, Gypsum Handling System and Makeup Water System etc.) does not vary much with respect to unit size. Accordingly, on account of the contribution of common system component in case of smaller, cost per MW cost increases; (ii) the FGD equipment size largely depends upon the flue gas flow. Flue gas flow per MW is higher for smaller units and subcritical units. Gas flow rate of 2x210 MW units is almost equivalent to a 500 MW unit. The common facilities like limestone milling and handling system, gypsum handling system etc. having same capacity as 500 MW unit may be installed with minor variations. However, connecting the same to two unit requires more ducting, piping, cabling etc. and (iii) the cost of equipment and size of equipment does not have linear relationship.

(i) In response to contention of PSPCL in Petition No. 267/MP/2020 and 496/MP/2020, the Petitioner has submitted that it has carried out tendering process for installation of FGD system for the complete fleet of its stations in Lots based on the vintage of units/ stations, technology, timelines prescribed etc. FGD system for FGUTPSS-I, FGUTPPS-II and FGUTPPS-III was included in Lot-3 for tendering process. However, it could not be awarded under Lot-3 as price quoted by L1 bidder was higher than cost estimate. Therefore, it was retendered under Lot-4 and was awarded to GEPIL at awarded value of ₹690 crore (for 1050 MW).

(j) In response to contentions of UPPCL and TPDDL in Petition No. 414/MP/2020, the Petitioner has submitted that the capital cost claimed in the instant petition is based on the estimated cost prior to award of the contract. However, the contract has been placed to MELCO for the FGD system implementation in the instant station for about ₹86.03 crore.

(k) The total estimated cost for the purpose of tariff of the FGD package for NCTPSS-II is ₹627.57 crore which includes contingency, IEDC, IDC and FC. The breakdown of capital cost of ₹627.57 crore claimed by the Petitioner in

respect of NCTPSS-II has been given in the petition. The costs duly certified by the auditors will be submitted at the time of filing the petition for determination of supplementary tariff in terms of Regulation 9(4) of the 2019 Tariff Regulations.

(l) The reliance on the principles of Section 61 of the 2003 Act support the Petitioner in case of NCTPSS-I and NCTPSS-II since the cost of the technology chosen by the Petitioner is reasonable and balances the interest of the consumers.

(m) This is not the stage to fix the normative cost of various technologies available for emission control. The Commission has already held that the MoEFCC Notification amounts to "*change in law*" and generators are entitled to additional capital cost as well as the O&M cost. The Commission has already approved capital cost so as to enable the funding of the same in case of Sasan Power Limited, Coastal Gujarat Power Limited and Adani Power Limited. There is no reason to fix normative cost of technologies and the better approach would be to approve the capital cost specifically sought in the instant petition subject to prudence check at the time of truing up.

(n) In case the Commission feels that certain costs which have been incurred by the Petitioner are not reasonable, the same may be disallowed after considering the submissions made by the parties. The cost provided by CEA was only indicative in nature and does not represent the actual cost of installation of ECS. The Commission has itself acknowledged that increase in the demand for installation of FGD system may lead to change in prices of FGD system in the international and domestic market. Therefore, the prices discovered are reasonable for the unit size and have been discovered through transparent process of competitive bidding.

(o) The hard cost of WFGD system claimed by the Petitioner in case of SSTPS and RSTPSS-I is higher than the CEA indicative cost because of the

fact that SSTPS is a comparatively older station. The space available between and around the units was scarce. Accordingly, due to layout constraints, FGD system is being installed away from the units which has led to iincrease in the cost marginally due to increase in ducts/ piping length. Also, the present switchgear/ transformers have no spare capacity to accommodate additional electrical supply to equipment such as blowers, gypsum handling system, and especially high rating equipment such booster fan, limestone mills, etc. This has led to installation of additional switchgear electrical works which has led to increase in the over-all cost of the FGD system.

(p) The capital cost claimed in case of RSTPSS-I is based on estimates and the package is still under tendering process. Final cost would be identified after award of the package to successful bidder.

(q) The hard cost of WFGD system in case of FGUTPSS-IV is on higher side when compared with CEA indicative cost. Higher cost is on account of the fact that cost of common systems does vary with respect to unit size and number of units but does not have linear relationship. Accordingly, cost per MW will be higher for smaller or single Unit Station.

92. We have considered the submissions made by the Petitioner. In the instant eleven petitions, the Petitioner has sought approval for installation of ECS and the consequent ACE towards installation of ECS to meet the revised ECNs notified by MoEFCC. We are considering the instant eleven petitions for “in-principle approval” under Regulation 11 of the 2019 Tariff Regulations.

93. The Petitioner has proposed WFGD technology for control of SO_2 emissions in case of RSTPSS-II, RSTPSS-III, FGUTPSS-I, FGUTPSS-II, NCTPSS-II, FGUTPSS-III, SSTPS, RSTPSS-I and FGUTPSS-IV and DSIFGD in TTPS and NCTPSS-I for

control of SO_2 emissions. The Petitioner has further proposed CM system for control of NO_x emissions in RSTPSS-II, RSTPSS-III, NCTPSS-II, FGUTPSS-III and FGUTPSS-IV. The Petitioner has also proposed modification of existing ESP for reduction of particulate matter in case of FGUTPSS-II.

94. It is observed that the Petitioner has not completed the bidding process and has not finalized the agency for implementing WFGD system in case of RSTPSS-I and the hard cost of WFGD system claimed is on estimated basis. Therefore, we are not inclined to approve the estimated hard cost of WFGD system in case of RSTPSS-I. We only accord “in-principle” approval for installation of FGD system for RSTPSS-I.

95. Bidding process been completed in case of only two units out of the four units in TTPS (4X110 MW). Accordingly, hard cost of WFGD system in case of only two units of TTPS is approved and that in case of the remaining two units, “in-principle” approval is accorded for installation of FGD system.

96. As regards the capital cost of CM system, though the Petitioner has claimed that the same has been discovered through a competitive bidding process, it is not clear whether the cost claimed is just the hard cost or it includes other associated cost as well. As such, we only accord “in-principle” approval for installation of CM system in the generating stations/ units as proposed by the Petitioner. The Petitioner is directed to the submit the details of the hard cost and other associated cost of the

CM system in the petition that is required to be filed under Regulation 29(4) of the 2019 Tariff Regulations and the same will be considered accordingly.

97. The Petitioner has also claimed an amount of ₹55.66 crore for R&M of the existing ESP in FGUSTPSS-II for control of particulate matter on estimated basis and has sought liberty to approach the Commission for relaxation of the same based on the actuals. It is observed that the Commission, vide order dated 2.9.2021 in Petition No.300/GT/2020 pertaining to the truing up of tariff for the period 2014-19 of FGUSTPSS-II, has observed that P.G test report of the existing ESP indicates that it is already capable of meeting the revised norm of 100 mg/Nm^3. However, the Petitioner was granted liberty to approach CEA with all technical details of the existing ESP for its approval with regard to requirement of R&M of the existing ESP to meet the revised norm of 100 mg/Nm^3. Accordingly, the Petitioner shall approach CEA for its concurrence with regard to i) whether existing ESP is capable of meeting SPM emission level of 100 mg/Nm^3 and ii) whether any upgradation/ R&M of existing ESP is required to meet the revised norm of 100 mg/Nm^3. In case it gets established that the existing ESP is capable of meeting the norm of 100 mg/Nm^3 and current emission level of 130-140 mg/Nm^3 is due to performance deterioration of the existing ESP, then it would be just a case of regular R&M and any expenditure incurred for bringing SPM emission level within 100 mg/Nm^3 would not be treated as expenditure incurred for meeting the revised norms. Accordingly, we are not inclined to grant “in-principle” approval for modification of the existing ESP in FGUTPSS-II at this stage.

98. Taking into consideration that per MW hard cost suggested for FGD system by CEA is indicative in nature; the cost claimed by the Petitioner is discovered through a competitive bidding process; the cost recommended by CEA is more than two-three years old; and the CEA has already recognised the need for revising the cost recommended by it earlier, we approve the following hard cost towards installation of WFGD and DSI based FGD system in the subject generating stations/ units for reduction of SO2 emission levels:

Petition No.	Generating station/unit Capacity (MW)	Hard cost of FGD (₹ in lakh/MW)
501/MP/2019	RSTPSS-II (2x500)	38.33
502/MP/2019	TTPS* (4x110)	10.46
66/MP/2020	RSTPSS-III (2x500)	38.33
267/MP/2020	FGUTPSS-I (2X210)	65.71
414/MP/2020	NCTPSS-I (4x210)	8.15
496/MP/2020	FGUTPSS-II (2X210)	65.71
499/MP/2020	NCTPSS-II (2x490)	49.40
501/MP/2020	FGUTPSS-III (1X210)	65.71
510/MP/2020	SSTPS (5x200+2X500)	49.90
553/MP/2020	FGUTPSS-IV (1X500)	59.00

**For only two units of TTPS*

99. Besides the hard cost towards installation of WFGD, DSI based FGD system and De-NO_x 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 the 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.

Liberty to approach the Commission

100. The Petitioner has submitted that the MoEFCC Notification mandates reduction in water consumption, mercury and particulate matter, besides SO_2 and NO_x. The Petitioner has submitted that as the generating stations of the Petitioner meet the norms in respect of water consumption, mercury and particulate matter prescribed by MoEFCC no claim has been made in respect of them. However, the Petitioner has sought liberty to approach the Commission as and when the work(s) pertaining to the same are undertaken in future.

101. We have considered the Petitioner's prayer. Some of the Respondents have raised their concerns on the Petitioner's prayer for liberty to approach the Commission when the work pertaining to reduction in water consumption and particulate matter and Mercury emissions are taken up in future. Without going into the concerns raised by the Respondents, we would like to state that if any application or petition is filed by the Petitioner in this regard in future, it would be dealt as per the applicable laws and regulations along with the placed facts and circumstances.

102. The Petitioner has further prayed for additional APC, additional water consumption, additional O&M Expenses, cost of reagents, Gross Station Heat Rate (GSHR) and allow deemed availability on account of shutdown for installation of ECS under Regulation 76, i.e. Power to Relax of the 2019 Tariff Regulations. Some of the Respondents have raised their concerns on the said prayers of the Petitioner. The Petitioner in the case of TTPS has also prayed to not consider the supplementary variable charge for Merit Order Dispatch. As the instant petition is for "in-principle"

approval of ACE towards installation of ECS, we do not deem fit to go into these prayers at this stage and we would consider them in petitions to be filed by the Petitioner under Regulation 29(4) of the 2019 Tariff Regulations after installation of ECS. However, we would like to point out that after filing of the instant petitions by the Petitioner and during the present proceedings, the Commission has introduced a separate tariff stream for ECS by amending the 2019 Tariff Regulations vide the 2020 Amendment Regulations. Accordingly, the Petitioner's prayer for additional APC, additional water consumption and additional O&M Expenses will be considered as per Regulation 49(E)(f), Regulation 35(1)(6) and Regulation 35(1)(7) of the amended 2019 Tariff Regulations respectively. The Petitioner's prayer for allowing cost of reagents, GSHR and deemed availability on account of shutdown will be dealt on a case to case basis on a petition under Regulation 29(4) of the 2019 Tariff Regulations.

103. The Respondents have raised the issue of depreciation, useful life and extension of life of the generating stations/ units and the Petitioner has also submitted its clarifications. We are not going into the submissions made by the parties in this order as the instant petitions are for "in-principle" approval of ACE towards installation of ECS. The issues raised by the Respondents will be dealt in the petition to be filed by the Petitioner after installation of ECS under Regulation 29(4) of the 2019 Tariff Regulations for determination of supplementary tariff.

Summary

104. In view of the foregoing discussions, it is observed 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 and DSI based FGD systems for reduction in the SO_2 emissions taking into consideration the effectiveness, availability and cost, size of the plants, operational expenses and availability of the reagents.

(c) The hard cost claimed by the Petitioner towards installation of WFGD and DSI based FGD Systems has been discovered through a competitive bidding process and the hard costs claimed by the Petitioner is higher in some cases than the indicative cost recommended by CEA because of the reasons enumerated above in the order.

(d) The capital cost claimed by the Petitioner towards installation of CM system for reduction of NO_x emission levels in five of the subject generating stations/ units is not approved. However, the installation of CM system in the said stations is approved.

(e) Installation of ESP for reduction of particulate matter in case of FGUTPSS-II is not approved for the reasons enumerated above in the order.

(f) 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.

105. The instant order disposes of Petition No. 501/MP/2019, Petition No. 502/MP/2019, Petition No. 66/MP/2020, Petition No. 267/MP/2020, Petition No. 414/MP/2020, Petition No. 496/MP/2020, Petition No. 499/MP/2020, Petition No. 501/MP/2020, Petition No. 510/MP/2020, Petition No. 545/MP/2020 and Petition No. 553/MP/2020 in terms of above discussions and findings.

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