
NTPC R&R Colony, Darlipali

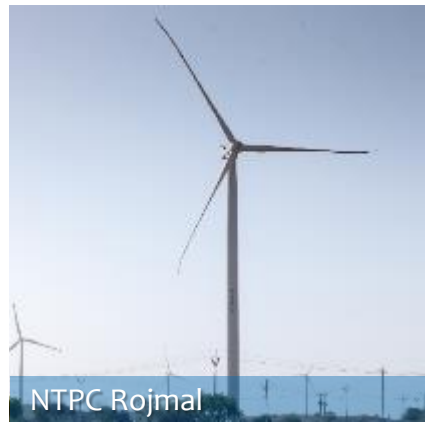

NTPC Bhadla


NTPC Kudgi

Submissions before Hon'ble CERC - 1st Amendment Tariff Regulations


NTPC Koldam


NTPC Kayamkulam


NTPC Rojmal

Outline

- Return on Equity
- Supplementary Tariff on projected Basis
- Other AFC Components
- Operating Norms for ECS
- Norms for Reagent Consumption

Return on Equity on ECS and Change in Law

Draft Amendment proposes that the RoE on add-cap expd. towards ECS and Change-in-Law schemes to be allowed @ weighted average rate of interest of loan portfolio of the station/ company

- **100% Debt Financing**
  - Huge Capex requirement: NTPC (Incl JVs) need to invest Rs. 31,000 crs on FGD alone
  - Lenders are already reducing exposure to power sector – Raising debt without matching equity would not be possible
  - Worsening ratios
    - Rating impact
    - Increased rate of Interest for all loans- existing and future
    - Increase in tariff

Return on Equity on ECS and Change in Law

- **Investment on ECS is not without Risks**
  - There would under recovery of Fixed cost whenever station is not able to achieve normative Target Availability
  - In fact with addition of more complex equipment like FGD, the risk increases
  - This investment carries risk but no risk premium
  - Returns have to commensurate with the Risks
- **No Incentive to raise cheaper debt**
  - The higher the Interest rate negotiated, the higher is ROE
- **Different rates of Return for different Companies:**
  - Generating companies having higher financial efficiency like NTPC would earn lower returns while companies get loans at higher rate and increase cost of power to Discoms would earn higher returns, which would be against the intent of Regulations

Return on Equity on ECS and Change in Law : Cont.

- **Disparity in returns:** where ECS is part of original investment approval (like Vindhyachal-V and Bongaigaon) vs ECS at stations under MoEF notification
- **Already Settled Issue :** Draft Tariff Regulations 2019 proposed RoE on add-cap and ECS @ weighted average rate of loan portfolio of the station/ company
  - After considering stake holders comments Hon'ble Commission allowed RoE @ 15.5% on the said schemes including change-in-law schemes.
  - Large investments have been committed based on the Regulations notified recently and the same may not be changed as the same would add uncertainty

- **The provision in not in the interest of the beneficiaries**
- **Return on Equity on ECS and Change-in Law Schemes may be allowed at the normative rate of 15.5%**

Supplementary Tariff Determination for ECS after Completion

Petition for determination of Supplementary Tariff for the ECS installed in the coal or lignite based thermal generating station in accordance with these regulations not later than 60 days from the date of operation of such emission control

- ECS installation in multiple units would take 1-2 years and final determination of would take further time
- Cash Flow problem to the generators
- Interest liability on the beneficiaries

Supplementary Tariff may be determined based on projected basis for capex towards ECS as in case of generating units subject to true up

Other AFC Components : Depreciation and IWC

- **Depreciation:**

  The depreciation of the emission control system shall be computed from its date of operation for the balance useful life or extended life of the generating station, as the case may be.

  – For stations/ units where useful life/ extended life is over depreciation may be allowed to be recovered in **05 years to avoid tariff shock**

  – **Depreciation may be spread over minimum of 05 years to avoid tariff shock**

- **Interest on Working Capital:**

  – Expenditure would be incurred on account of consumption of reagents/ lime corresponding to one month's generation

  – The same would be recoverable only after bills are raised at the end of the month

  – **Cost of Lime/ Reagents corresponding to one months generation may be allowed may be allowed in working capital**

Other AFC Components : O&M Expenses

- **O&M Norms (Proposed @ 2% of capital cost of ECS) :**
  - In Tariff Regulations 2019, the norms of O&M Expenses have generally been based on past actuals
  - In case of new Hydro stations they based on Capital cost and have specified as 3.5% of capital cost
  - Considering the benchmark cost of Rs. 6.5 cr/MW for thermal stations, the O&M Exp norms for thermal station work out to about 3.5 - 4.0% of capital cost (varies with Unit size)
  - Operation of ECS involves use and handling of chemicals : corrosive in nature
  - Availability of specialized vendors other than OEM would take some time

O&M may be allowed @ 4% of capital cost for first three years

Other AFC Components : O&M Expenses

- **Sale of Gypsum**
- Draft amendment provides that revenue generated from sale of gypsum and other by-products would be utilized to set-off O&M expenditure
  - No inducement for generator to sell at optimum/ market price
- With increased production of gypsum, there may be enough takers of gypsum
- In pit head stations there may be requirement by generating station to transport gypsum at nearby town so that it can be utilised. In such as case the expenses on transport may be allowed as pass through
- It is suggested that proceeds from sale of gypsum may be kept in a separate fund to be used for gypsum utilization/disposal

Sale proceeds may be kept in separate fund to be used for gypsum utilization/disposal

Operating Norms: APC

- **Auxiliary Energy Consumption:**
  - Additional APC of 1% for FGD not adequate due to following:
    - » Worked out considering full load, whereas actual loading would be much lower (for some station PLF would be in the range of 50%)
    - » Power consumption in FGD does not vary significantly with unit loading
    - » For Unit size of 500 MW & above, APC of 1.5% may be considered
    - » For smaller size units, APC of 2.5% may be allowed.
  - Additional APC of about 500 KW may be allowed for DSI Systems (Proposed 'Nil")
  - Additional APC of 0.2% may be allowed for SNCR; based on the pilot test at NTPC Stations (Proposed 'Nil")

- **Normative APC of 1.5% for Unit size 500 MW & above and 2.5% for small size units**
- **Norms for APC DSI (for Sox control) and SNCR (for Nox control) may also be considered**

Operating Norms: Station Heat Rate

- **Station Heat Rate:**
  - Unit heat Rate would deteriorate on account of increase in unburnt in case of installation of Low Nox burners
  - Also due to formation water/ moisture during Nox reduction in case of SCR/ SNCR, wet flue gas loss increases in boiler

Station Heat Rate Relaxation may be allowed based on Nox reduction technology

Heat Loss of 0.8% for Low Nox Burners; about 0.6% for SNCR and 0.1% for SCR may be allowed

Norms for Reagent

- **Lime Stone Consumption:**
  - Proposed formula needs limestone purity and SO2 removal efficiency, which may require detailed procedure & add costs
  - Proposed Formula with a margin of 10% may be considered for excess Limestone required w.r.t stoichiometric ratio SLC=1.1x K x SHR x S]/[CVPF] g/KWH
  - Alternative Normative limestone consumption may be allowed based on Sulphur content in coal

% Sulphur	0.4	0.5	0.6	0.7	0.8	0.9
Lime stone Consumption with 10% Margin for 100/200 mg/NM3 (gm/KWH)	12	15	18	21	24	27
Lime stone Consumption with 10% Margin for 100.200 mg/NM3 (gm/KWH)	10	12	14	17	19	21

- **Sodium Bi-carbonate for DSI Systems:**
  - May be allowed based on unit size

    a) for Unit Size ≥ 200 MW --12 g/KWh.

    b) for Unit Size ≥ 100 MW and <200 MW–14 g/KWh.

    c) for Unit Size <100 MW—15 g/KWh.
  - 10% margin may be kept in above value as DSI implementation is being done for the first time for Indian coal

Effect of ECS implementation on Merit order rating

- The stations that undertake compliance of new emission norms will be adversely impacted in their merit order ranking
  - Increase due to lime stone consumption
  - Increase in APC
- To offset this
  - Option-I : First Run principle – Such stations should be scheduled ahead of stations which are non compliant
  - Option-II: It may be mandatory for the Discoms to procure a certain percent of power from such environment compliant stations

Thank You