

APL Comments on CERC Approach Paper on Terms & Conditions of Tariff for the period FY 2024-29

Sr. No.	Approach Paper Clause Reference	APL Comments / Suggestions
1.	<p>3.1 – Approach 1: Normative Tariff</p> <p>3.2 – Approach 2: Performance Based Hybrid Approach</p>	<ul style="list-style-type: none"> • Approach 1 as proposed may not result in desired objective as there is not much change from the existing approach. • Approach 2 is preferable as it simplifies existing mechanism and is also tried and tested approach. • Further, it is submitted that the Hon’ble Commission may consider adopting an approach that is either a complete normative one without any true up or it should be based solely on actuals.
2.	<p>4.3 - Capital cost for projects acquired post NCLT proceedings.</p> <p>Comments are sought on following queries:</p> <ol style="list-style-type: none"> 1. Historical Cost or Acquisition Value whichever is lower should be considered for the determination of tariff post approval of Resolution Plan. 2. Tariff provisions to be included to address the issue of the cost of debt servicing, including repayment, that were allowed as a part of the tariff during the CIRP process. 	<ul style="list-style-type: none"> • It is submitted that the Resolution Applicant who acquires the project is assuming the risk and cost to complete and run the project post NCLT proceedings. It is submitted that the same should be allowed as additional capitalization on prudence basis. • Further, considering that the bids for projects under insolvency are based on the prevailing tariff of the project, if the tariff for such project is going to be re-determined post takeover at the Acquisition Cost then the price discovered through bidding process will lose its sanctity and eventually lead to much lower value recovered on resolution. • It is therefore proposed that the successful Resolution Applicant should continue to get the regulated tariff at historical cost and the capex and debt-equity ratio

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		determined under Regulatory process originally shall not change. However, only the change in Rate of Interest of the successful Resolution Applicant shall apply.
3.	<p>4.4 - Computation of Interest During Construction Comments and suggestions are sought from stakeholders on the following options for allowing IDC:</p> <ol style="list-style-type: none"> 1. Existing mechanism wherein the pro-rata deduction (based on delay not condoned) is done on IDC beyond SCOD. 2. Pro-rata IDC may be allowed considering the total implementation period wherein the actual IDC till implementation of the project is pro-rated considering the period upto SCOD and period of delay condoned over total implementation period. 3. IDC approved in the original Investment Approval to be considered while allowing actual IDC in case of delay. 	<ul style="list-style-type: none"> • It is submitted that considering either of the options proposed in the Approach Paper would not lead to recovery of the actual IDC incurred considering the condoned delay. Therefore, the following formula may be considered: Allowable IDC shall be = Original IDC as per Investment Approval + Incremental IDC * delay period condoned/total delay period
4.	<p>4.8 – Controllable and Uncontrollable Factors Comments and suggestions are sought from stakeholders on continued inclusion of delay on account of land acquisition as an uncontrollable factor and on the further inclusion of delay on account of forest clearances as an uncontrollable factor.</p>	<ul style="list-style-type: none"> • Normative period for forest clearance may be prescribed in the Regulations. • Any delay not attributable to the developer shall be allowed as uncontrollable factor to reduce the litigation.
5.	<p>4.10 – Additional Capitalization</p> <ul style="list-style-type: none"> • In order to have an enabling provision under which such additional capitalization can be allowed with 	<ul style="list-style-type: none"> • With reference to Regulation 25.2.c of CERC Tariff Regulations for 2019-24, pertaining to additional capitalization within the original scope of work executed

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	<p>prior approval, a provision may be introduced to existing Regulation 26 to allow such expenses (pertaining to Railway Infrastructure and its augmentation for transportation of coal up to the receiving end of the generating station) if they are found to be beneficial/essential for continued operations.</p> <ul style="list-style-type: none"> • Comments and suggestions are sought from stakeholders on the above suggested approaches and other alternatives, if any. 	<p>after the cut-off date, for replacement on account of obsolescence of technology following is submitted:</p> <ul style="list-style-type: none"> ○ Plant control systems like DCS & PLCs have HMI/Engineering/Historians based on Microsoft operating system. ○ Due to end-of-life support by OEM & pertinent cybersecurity concerns, periodic upgradation of these systems creates operational bottleneck. ○ Hence, such upgradation requires additional capitalization and accordingly it is requested that the same may be allowed as part of Additional Capitalization. <ul style="list-style-type: none"> • Further, any additional capitalization necessitated on account of any environment related compliances should be allowed separately under the head of additional capitalization along with associated operational expenses.
6.	<p>4.10.1 – Normative Add-Cap: Generating Station</p> <ul style="list-style-type: none"> • Based on the past trend of 15-20 years of add cap a special compensation in the form of yearly allowance may be allowed based on unit sizes and vintage, not subject to true up and not required to be capitalized. • Further, any item that costs below Rs. 20 lakhs that is in the nature of minor assets, including Capital Spares below Rs 20 lakh, can be allowed only as part of O&M expenses and may not be considered as part 	<ul style="list-style-type: none"> • Separate norm of Special Compensation for coastal plants considering corrosion factor and sea water utilization to be provided based on their historical add cap details. • Generators should be allowed to approach the Commission for approval of new expenses not covered under add cap or special compensation on case to case basis.

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	<p>of additional capitalization in case of both thermal and hydro generating stations. Further, any major capital spares costing above Rs. 20 lakh may form part of the special compensation.</p> <ul style="list-style-type: none"> The cut-off date proposed to be extended from the current 3 years to 5 years, which shall allow time to close contracts and discharge liabilities and eliminate the need to allow additional capitalization post cut-off date unless in the case of Change in Law and Force Majeure. 	
7.	<p>4.12 - O&M Expenses</p> <ul style="list-style-type: none"> O&M norms may be specified under the following two categories: <ol style="list-style-type: none"> Employee Expenses Other O&M Expenses comprising Repair and Maintenance and Administrative and General Expenses. To give effect to the impact of pay/wage revision, 50% of the actual wage revision can be allowed on a normative basis. There is a need to simplify O&M expenses for HVDC schemes therefore one norm for all HVDC schemes in terms of per MW considering the actual expenses incurred in the past may be specified. Whether to include any provisions with regard to allowing impact of a change in law on O&M expenses. 	<ul style="list-style-type: none"> O&M expenses on account of change in law shall be allowed on case-to-case basis.

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8.	<p>4.13 – Depreciation</p> <ul style="list-style-type: none"> • A depreciation rate may be specified considering a loan tenure of 15 years instead of the current practice of 12 years. • Further, additional provisions may also be specified that allow lower rate of depreciation to be charged by the generator in the initial years if mutually agreed upon with the beneficiary(ies). 	<p>Existing 12-year period should be continued and if the tenure of 15 years is to be considered it should be applied only to new projects otherwise it will impair the debt service of existing loans whose tenure is 12 years.</p>
9.	<p>4.14 – Interest on loans</p> <ul style="list-style-type: none"> • To simplify the approval of interest on loans, the weighted average actual rate of interest of the generating company or transmission licensee may be considered instead of project specific interest on loans. • Further, the cost of hedging related to foreign loans be allowed on an actual basis, without allowing any actual FERV. 	<ul style="list-style-type: none"> • To continue existing approach of project specific interest on loan as loans are availed specific to a project and not doing so may lead to under-recovery of tariff. • Considering rate of interest at company level, may sometimes prove to be detrimental to consumers' interest.
10.	<p>4.16 – Rate of Return on Equity</p> <ul style="list-style-type: none"> • Review of Rate of RoE to be allowed, including that to be allowed on additional capitalization that is carried out on account of Change in Law and Force Majeure. • Whether the revised rate of RoE to be made applicable to only new projects or to both existing and new projects? • Whether timely completion of hydro generating stations can be incentivized to attract investments? 	<ul style="list-style-type: none"> • FoR's recommendation of lower RoE for transmission business is not acceptable because any project is conceived considering the prevailing regulatory regime which should not be modified to the detriment of the developer during the project life. It shall affect investor's sentiment and reduce the much-needed investment in transmission segment. • Rate of RoE should be retained at existing level of 15.5% to boost the confidence of investors considering the

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	<ul style="list-style-type: none"> • Merit behind approving different Rate of RoE to thermal, hydro generation and transmission projects with further incentives for dam/reservoir based projects including PSP. • Merit in allowing RoE by linking the rate of return with market interest rates such as G-SEC rates/MCLR/RBI Base Rate. 	<p>multiple problems faced by the Transmission Licensees including Insolvency. Further, any variation in the rate of RoE should only to made applicable to new projects and the RoE rate of the existing projects should remain unchanged.</p> <ul style="list-style-type: none"> • In case of generating stations also, the risk perception has increased due to domestic coal shortage as also the non-payment of power purchase cost by procurers. Accordingly, RoE of at least 15.5% should be retained and not linked with any other rate such as G-SEC rates/MCLR/RBI Base Rate, even for change in law since risk perception has increased with many projects going under insolvency. • Further, a rate of RoE fixed for the term of the agreement / concession period translates into regulatory certainty and provides comfort to the lenders too and keeps the borrowing cost within acceptable limits. • Further, additional RoE needs to be allowed for incentivizing investments in the sector considering the capacity additions required to meet the increase in demand forecasted by CEA.
11.	<p>4.17 – Tax Rate</p> <ul style="list-style-type: none"> • The maximum tax amount that shall be payable is limited by the tax rates notified for the relevant 	<ul style="list-style-type: none"> • Tax liability on account of regulatory receivables for past period should be allowed at actuals. • Further, for amalgamated entities / zero tax companies the RoE should be allowed to be grossed up with at least

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	<p>category. Therefore, Base Rate of RoE may be grossed up as follows:</p> <ol style="list-style-type: none"> 1. At MAT rate (If not opted for Section 115 BAA) 2. At effective tax rate (if not opted for Section 115BAA) subject to ceiling of Corporate Tax Rate; or 3. At reduced tax rate under Section 115BAA of the Income Tax Act or any other relevant categories notified from time to time subject to ceiling of rate specified in the relevant Finance Act. <ul style="list-style-type: none"> • Further, tax shall be allowed only in cases where the company has actually paid taxes as under no circumstances tax can be allowed to be recovered if the company has not paid any tax for the year under consideration. 	<p>MAT rate despite there being no actual tax liability for company as a whole if the project on standalone basis is profitable.</p> <ul style="list-style-type: none"> • Furthermore, the option of moving towards a normative tax regime where a normative tax on normative RoE is allowed without any true-up needs to be explored.
12.	<p>4.19 – Life of Generating Stations and Transmission System</p> <p>The useful life of coal based thermal generating stations and Transmission Sub-stations may be increased to 35 years from the current specified useful life of 25 years.</p>	<ul style="list-style-type: none"> • Necessary to clarify the tariff applicable in the extended period of useful life of the asset. • Further, any R&M required for extending the useful life of the generation station from 25 to 35 years should be allowed to be recovered as part of tariff during the extended useful life of the asset for which the PPA term should also be aligned with the extended useful life.
13.	<p>4.21 – Sharing of Gains</p> <p>Comments and suggestions are sought from the stakeholders on the following:</p> <ul style="list-style-type: none"> • Ways to increase non-core revenues through optimal utilization of available resources. 	<p>Sharing of Gains</p> <ul style="list-style-type: none"> • It is submitted that there should be no sharing of gains on operational parameters. • If sharing is still proposed to be continued then it should be done in the ratio of 2/3 to be retained by generator

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	<ul style="list-style-type: none"> Any modification in the sharing mechanism that may be required. 	<p>and 1/3 to be passed on to the consumer instead of the existing 50-50 sharing between generator and consumers.</p> <ul style="list-style-type: none"> Along with sharing of gains sharing of losses should also be done in the same manner as proposed above. <p>Revenue from non-core business</p> <ul style="list-style-type: none"> Further, any revenue generated by the generating company or the transmission licensee from non-core business activity should be shared such that 80% is retained by the generator / licensee and 20% is passed on to the consumers.
14.	<p>4.23 - Treatment of interest on differential tariff after truing up</p> <ul style="list-style-type: none"> In order to streamline the rate of interest on the differential amount, the current practice of allowing a simple interest rate as per Regulation 10(7) in the 2024-29 tariff block may be continued. Further, interest may be allowed to be charged on the differential amount by the utility only until the issuance of the order, and no interest may be allowed during the recovery in six equal monthly instalments. 	<ul style="list-style-type: none"> Carrying Cost should be allowed on the basis of compound interest as settled by Hon'ble Supreme Court in its Uttar Haryana Judgment in Civil Appeal 7129 of 2021 dated 24.08.2022. Interest during the recovery period of six months should be allowed for both over or under recovery of tariff on the principle of time value of money.
15.	<p>5.2 - Peak and Off-Peak Tariff</p> <ul style="list-style-type: none"> Whether it would be advisable to limit the recovery based on daily peak and off-peak periods. Suggestions on National versus Regional Peak as a reference point for recovery of fixed charges. 	<p>It is suggested scheduled overhauling should be allowed as per mutually agreed plan in advance.</p>

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16.	<p>5.3 – Operational Norms</p> <p>As the generating stations are separately allowed degradation impact due to low load operations, it is felt that the norms may be fixed considering the ideal loading of generating units.</p>	<p>Provision for degradation impact on unit operation & performance to be finalized and introduced in the system as a cost of flexibilization which has also been emphasized in the Clause 45.12 of IEGC Regulation 2023.</p>
17.	<p>5.6 – Emission Control System</p> <ul style="list-style-type: none"> • As only very few of such emission control systems have been commissioned, and in the absence of sufficient data on actual operational performance and its impact on auxiliary consumption, the current tariff norms may be continued for the next control period. However, comments and suggestions are sought from stakeholders on the continuation of the existing norms, or is there a need to modify the same? • Further, as considerable expenses have been incurred to reduce the adverse impact on the environment, suggestions are also sought on ways to incentivizing proper operation of such emission control systems so that the very purpose of incurring such huge expenses can be achieved and accounted for. • Comments and suggestions are sought from stakeholders on whether the current mechanism to exclude these expenses from the merit order may continue until these generating stations equip 	<ul style="list-style-type: none"> • Base O&M expense for FGD should 2.5% of the capital cost in line with Section 63 projects instead of the present dispensation of 2%. • Current practice of excluding expenses towards emission control system while preparing Merit Order Despatch stack should be continued till all plants are equipped with the emission control systems.

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	<p>themselves with emission control systems as per the MoEF&CC notification dated 31.03.2021?</p>	
18.	<p>5.7 – Compensation for Part Load Operations With regard to the compensation norms, an Expert Committee has already been constituted; however, in view of the above discussion, comments and suggestions are sought from stakeholders on the earlier norms and any changes that may be required to compensate the generators to operate the plants in a flexible manner to support the Grid.</p>	<ul style="list-style-type: none"> • To allow 15-minute time block wise compensation for degradation of SHR and Aux. consumption for partial load operations as per CERC Expert Committee report. • To allow additional capex and opex cost under change in law provisions of PPA to the generators. • To direct all States to pay partial load compensation on 15- minute time block wise basis as per CERC Expert Committee report. • As the generating stations are separately allowed degradation impact due to low load operations, the norms may be fixed considering the ideal loading of generating units.
19.	<p>5.9 – Blending of Coal</p> <ul style="list-style-type: none"> • Linking the consent of beneficiaries with the percentage blending of imported coal instead of an increase in ECR may enable a swift response to an increase in demand by the generating company. Procurement of such coal (other than linkage coal) has to be done through a transparent competitive bidding process. • Comments and suggestions are sought from beneficiaries on the above proposal and any other alternative options, if any. 	<ul style="list-style-type: none"> • While the proposal is acceptable, in case of shortfall of domestic coal such consent maybe processed on one-time annual basis. • It is suggested to incentivize higher efficiency plants.

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20.	<p>6.3 - Decommissioning of Generating Stations and Transmission Assets</p> <p>Comments and suggestions are sought from stakeholders on the possible approaches to recover or refund the impact of decommissioning costs in case the generating stations/transmission systems are decommissioned before the completion of their useful lives, if such decommissioning is done in compliance of a statutory order or due to technological obsolescence duly approved by RPC.</p>	<p>The Approach Paper only provides for unrecovered depreciation to be allowed however, there is no treatment proposed for the unrecovered RoE of the decapitalized asset. The same may suitably be considered in the Regulations.</p>
21.	<p>6.6 Up-gradation of Asset/Replacement</p> <p>In view of the above, comments and suggestions are invited from stakeholders regarding the treatment of unrecovered depreciation.</p>	<ul style="list-style-type: none"> • Similar treatment may be considered for unrecovered depreciation in case of up-gradation of Asset / Replacement also as suggested in the approach paper for Decommissioning of Generating Stations and Transmission Assets. • The net profit/loss post upgradation / replacement of assets may be adjusted in one go from the beneficiaries, duly factoring in the un-recovered depreciation admissible under the Tariff Regulations

APL comments on Addendum to the Approach Paper regarding compensation methodology for operating a Thermal (Coal) Generating unit below 55% Minimum Power Level

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1.	2. Measures required for achieving lower Minimum Power Load	<p>2.1 Technical Minimum Load operation of Supercritical units may encounter the following issues:</p> <ul style="list-style-type: none"> • In Supercritical boiler, Benson load is upto 47%. Running supercritical units below 50% will lead to phase change (dry to wet mode). This type of frequent phase change can lead to abnormal change in metal temperatures, water in separator, and severe hammering (separator drain lines). Continuous operation in this range leads to fluctuation in MS/HRH temperature, pressure and metal temperature even with slight change in coal quality and feed water flow. • Any mill tripping at load 50% would affect flame stability which increased probability of unsafe operation along with unit tripping. • The present alloys of SA213T91 and SA213TP347H are more susceptible for exfoliation / oxide formation at low load and frequent load fluctuations to maintain rated parameter. • This will require immediate replacement by higher grade austenitic like S30432 (Super 304H) and SA213TP310HCbN (HR3C) which will drastically increase the CAPEX. • Unit operation at low load operation will result in increase in forced outage and premature equipment

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		<p>failure. Considering this supercritical unit minimum load operation may be restricted to 50%.</p> <p>2.2 In order to achieve technical minimum load and desired ramp rate, approximately INR 50 Crores per unit may be considered in view of the indicative element-wise cost required to be incurred as follows:</p> <ul style="list-style-type: none"> a) Advance Process Controller (6 Crores per unit) b) LP turbine last stage blade vibration monitoring measurement system (6 Crores per unit) c) Realtime RLA monitoring instruments for monitoring health of components of BTG (6 Crores per unit) d) Auto Mill Scheduler (2.5 Crores per unit) e) Laser/Acoustics temperature profile and auto SADC control (3 Crores per unit) f) Individual coal flow adjustment with dynamic orifice for better combustion control (5 Crores per units) g) VFD for auxiliary equipment like condensate extraction pumps (5 Crores per unit) h) Boiler fan upgrade to axial type from existing radial configuration (10 Crores per unit) i) BFP recirculation valve modification (1.5 Crores per unit) j) Generator online health monitoring i.e PD monitoring and overhang portion monitoring. (5 Crores per unit) k) Equipment upgrade and metallurgy upgrade on case to case basis depending upon configuration of unit.

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		<p>l) Back up for cost referred to CEA – A roadmap for achieving 40% technical minimum Annexure 1 attached.</p> <p>2.3 For older units the capital investment required is to be based on RLA (Residual Life Assessment) study, in-place of INR 30 Crores.</p>
2.	<p>3 A (a) Capital Expenditure</p> <p>i. In case of old Units (commissioned before 01.01.2004) which have not upgraded...</p> <p>ii. It is estimated that measures essential, to operate at 40% load may require....</p> <p>ii. Unit will be eligible for increased fixed tariff irrespective of actual operation once measures are implemented and exhibits desired low load operation...</p> <p>iv. iv. As per the Regulation 8 (11) of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) notified...</p> <p>v. Power plant may be penalised proportionally (Fixed Cost) for not exhibiting low load operation at least 85% of time when asked for.</p>	<p>i. A (a) Capital Expenditure</p> <p>i. Refer our comment no. 2.3</p> <p>ii. Refer our comment no. 2.2</p> <p>iii. Table to be updated as per our point 2.2 & 2.3.</p> <p>iv. Subcritical Unit: These units are designed to operate at 40% load without oil support in steady state, however for flexible operation (frequent ramp up and ramp down) additional measures are required as mentioned in comment (2.2) and cost for the same to be considered as fixed cost.</p> <p>Supercritical Unit: Refer comment (2.1) supercritical unit can run at 50% load without oil support in steady state, however for flexible operation (frequent ramp up and ramp down) additional measures are required as mentioned in comment (2.2) and cost for the same to be considered as fixed cost.</p> <p>Table II may be revised considering above comments.</p>

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		<p>PG test are not carried out for 40% unit load.</p> <p>v. Units are not designed for flexible operation; after implementation of various measures as mentioned in (2.2) two years trial and stabilization period may be considered and proposed clause may be reviewed.</p>											
3.	<p>3.B(a) It has been observed that the extent of deterioration in Net Heat Rate depends on the percentage unit loading. Units running minimum power load below 55% shall be additionally compensated in Electricity Charge Rate (ECR) to the extent of Net Heat Rate (NHR)...</p>	<p>3 B (a)</p> <ul style="list-style-type: none"> CEA in its report published in Mar'23 stipulated in Net Heat rate which included adjustment for increased aux power consumption. Accordingly, Net Heat Rate increase (%) needs to be worked out for various load band of various capacities units, however, the impact worked out in the approach Paper seems to be on lower side. We propose that, such degradation in parameters shall be based on design heat rate degradation curve (provided by OEM) after applying the normative margin and the increased Aux Power consumption. <p>OEM reference table is as under:</p> <table border="1" data-bbox="1136 1013 1892 1398"> <thead> <tr> <th data-bbox="1136 1013 1339 1317">Capacity (MW)</th> <th data-bbox="1339 1013 1541 1317">Loading (%)</th> <th data-bbox="1541 1013 1745 1317">Proposed Net Heat Rate increase (%)</th> <th data-bbox="1745 1013 1892 1317">Typical Net Heat Rate increase based on OEM HBD (%)</th> </tr> </thead> <tbody> <tr> <td data-bbox="1136 1317 1339 1398" rowspan="2">660 MW</td> <td data-bbox="1339 1317 1541 1357"><55-50%</td> <td data-bbox="1541 1317 1745 1357">8.70</td> <td data-bbox="1745 1317 1892 1357">10.94</td> </tr> <tr> <td data-bbox="1339 1357 1541 1398"><50-45%</td> <td data-bbox="1541 1357 1745 1398">11.90</td> <td data-bbox="1745 1357 1892 1398">13.90</td> </tr> </tbody> </table>	Capacity (MW)	Loading (%)	Proposed Net Heat Rate increase (%)	Typical Net Heat Rate increase based on OEM HBD (%)	660 MW	<55-50%	8.70	10.94	<50-45%	11.90	13.90
Capacity (MW)	Loading (%)	Proposed Net Heat Rate increase (%)	Typical Net Heat Rate increase based on OEM HBD (%)										
660 MW	<55-50%	8.70	10.94										
	<50-45%	11.90	13.90										

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			<45-40%	14.60	18.00
4.	<p>4 Likely increase in paisa/ kWh on account of proposed compensation</p> <p>i. ii. iii.</p> <p>*No additional capital investment is required in the unit size of 660 MW and 800 MW units for operating them at 40% load.</p>	<ul style="list-style-type: none"> The compensation to be calculated block wise since the loss incurred in a block cannot be recovered. Domestic coal price considered is on lower side and GCV considered is on higher side. Imported coal price is not considered. Compensation for impact of high moisture of imported coal in heat rate may be considered. <ul style="list-style-type: none"> Our comment may be considered for additional CAPEX and heat rate, compensation table may be revised. It is submitted that 660 MW & 800 MW units are not designed for flexible operation (for proposed ramp rate). For meeting flexible operation, additional capital investment may be considered as per comment (2.2). 			
5.	<p>Assumptions</p> <p>1.ix. Price of oil: Rs.35/lt</p>	Price of oil may be considered as per prevailing market rates.			
6.	<p>Assumptions: WACC for annuity payment has been considered @ 10%</p>	<p>While, the assumption sheet mentions that RoE for such investment shall be considered at 15.5%, a contrary assumption of considering WACC @10% may not be appropriate.</p> <p>It may be clarified that the RoE component for equity contribution towards such additional capex shall be computed @ 15.5% and shall also be grossed up with</p>			

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		appropriate tax rate to derive the post tax RoE as per the prevalent regulatory framework to compute RoE in line with the prevailing Tariff Regulations.
7.	Payback Period of 5 years vs Depreciation rate of 5.28%	<ul style="list-style-type: none"> • The proposed compensation methodology in the Approach Paper on the one hand stipulates recovery of such additional capex within 5 years, whereas on other hand, assumes a depreciation rate of 5.28% which would lead to under recovery. • Clarity is sought to confirm that the generators shall fully recover their investment made towards capex for reduced technical minimum operation. • It is further submitted that the tariff should be worked out considering appropriate depreciation rates as well as other tariff components such that the entire capex is fully recovered over the remaining term of the PPA.
8.	Treatment of downtime for installation of additional equipment and testing	<ul style="list-style-type: none"> • It is expected to experience instances, whereby units/projects might need to undergo planned maintenance for installing additional equipment or sensors. • Apart from such planned outages, there could also be instances of forced outages which might occur during testing of such installations. • The Approach paper does not provide for any compensation for such downtime, and it is crucial to consider necessary compensation to protect developers

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		<p>from such downtime as this downtime is beyond the control of the developers.</p> <ul style="list-style-type: none"> • Accordingly, such downtime/outage period shall be excluded from the calculation of the plant availability or the unit/plant shall be considered as deemed available for the duration of such downtime/outage period.
9.	Phased targets of implementation of schemes shall put the plants under early years of phasing at disadvantage in MOD	<ul style="list-style-type: none"> • It is evident that units/projects implementing changes to comply with lower technical minimum load operation and higher ramp rates are likely to have deteriorated performance parameters resulting in higher variable costs. • Accordingly, such plants would be at a disadvantage in the MOD stack as compared to those units / plants which have not undertaken such measures. Therefore, suitable changes may be made in operating procedures such that effect of increase in variable costs on account of compliance with such low load operation and ramping requirements shall not be considered for working out MOD stack during the transition period till such time as all plants are compliant with this requirement.



It is important to understand the cost difference between the actual costs required to guarantee flexible operation (one-time Capex) and the provision of Capex to be able to repair the damages that occur due to flexible operation and reclaim back the machine to normal. The damages get accumulated till the breakdown of components, which may need replacement to be able to run again.

7.3.1.2 Siemens Study Based on Siemens proposal for the implementation of flexibilization measures at Dadri and Simhadri NTPC stations, approximately Rs.20 to Rs.50 crores is estimated considering the measures required in the units. The proposal consisted of implementations of the following:

- Temperature Optimizer
- Fatigue Monitoring System
- EOH Counter
- Optimization of Control Loops
- BFP Recirculation Valve
- Auto ON/OFF of Fans and Pumps
- Mill Scheduler

7.3.1.3 GE Study. Based on the proposal for the implementation of flexibilization measures at Talcher NTPC station, approximately Rs.20 to Rs.50 crores is estimated based on the measures required in the units.

7.3.1.4 Engie Study. As per the study done for Dadri and Farakka NTPC stations the cost of capital expenditure is estimated:

- Between Rs.3.2 crore and 5.6 crore for extended load following with P_{min} 40%.
- Between Rs.4.1 crore and 8.0 crore for frequent warm starts.

7.3.1.5 Capex at Dadri

The order for retrofit work for flexible measures at Dadri 500MW unit to reduce the minimum load operation to 40% was placed by NTPC in 2019. The retrofit work included the implementation of following measures-

- a) Predictive MS Temperature Control
- b) RH Temperature control
- c) Installation of Modulating Recirculation Valves in BFPs
- d) Automation in Milling System
- e) Flue Gas Temperature Control
- f) Single Drive Operation- Automated Start/Stop of ID/FD/PA Fans.
- g) Condition Monitoring System- Boiler Fatigue Monitoring System and Equivalent Operating Hours.

Total capex implication of the above retrofits for Dadri unit is around rupees five and half crore. The results of the retrofit works undertaken are awaited.

7.3.2 Operational Expenditure (OPEX)

The increase in OPEX is clubbed in the following three broad categories: