

CHHATTISGARH STATE POWER GENERATION COMPANY LIMITED
(A Govt. of C.G. Undertaking)

NO. 03-09/134

Raipur. Dtd 28/02/2026

To,

**The Secretary,
Chhattisgarh State Electricity Regulatory Commission
New Shanti Nagar, Raipur.**

Sub: Additional submission in respect of Petition no. 02 of 2026.

Ref: CSERC's letter no. P No. 02 of 2026/377 dtd 17.02.2026.

Sir,

The desired additional information in respect of Petition no. 02 of 2026, vide captioned letter, is submitted herewith for kind consideration of the Hon'ble Commission please.

Encl: As above.

**CHIEF ENGINEER (C&RA)
CSPGCL, Raipur**

SUBMISSION OF ADDITIONAL INFORMATION

(W.r.t. letter no. P. No 02 of 2026/377, Raipur, Date: 17/02/2026)

INDEX to ANNEXURES

S. no	Contents	Description	Page no
1	Additional Submission	Data Gap Submission	1-2
2	Annexure- 1	Budgetary offer	3-4
3	Annexure- 2	Technical offer	5-13
4	Annexure- 3	SADC offer	14-21
5	Annexure- 4	Copy of LOI	22

Data Gaps in respect of Petition No. 02 of 2026

1. CSPGCL should provide further details and justification in respect of capital expenditure of INR 21 Crore per unit for the ABVTPS plant pertaining to flexible operation.

CSPGCL SUBMISSION:

CSPGCL very humbly submits that the prayer for this scheme in the instant petition is under "In-principle" approval and the cost mentioned in the write-up portion i.e. 21 Cr/unit is as per the budgetary offer received from the OEM M/s BHEL.

It is further submitted that, as already submitted in the petition (Para no. 89, Page no. 36) that this cost does not involve the additional changes which will have to be incorporated on and the consequential effect on capex due to thermal stresses. Therefore, at this stage, looking to the national scenario and industry trend, neither the complete details are available nor the time frame can be confirmed because all major suppliers capacities are already tied up for new projects. Hence, though principally work is to be done but it is not possible to predict the cost or time at this stage.

In the above context, The copy of budgetary offer and technical offer received from M/s BHEL is submitted as **Annexure-I** and **Annexure- II** respectively.

It is further submitted that, as per the technical offer submitted by M/s BHEL the following works as detailed below are not included within the scope of M/s BHEL:-

- Interfacing of APC (Advance Process Control) with the existing DCS and existing control loop modification and Necessary provisions for signal exchange between existing DCS and APC to be taken care by CSPGCL under guidance of BHEL.
- Associated cabling for APC.
- Laying of network interlinking cable supplied by BHEL.
- Procurement and Erection & Commissioning of certain pressure and DP transmitters and RTD as may be specified by BHEL.
- Procurement and Erection & Commissioning of Thermocouple along with associated cables and accessories.
- **Replacement of BFP recirculation valve would be required.** These are to be procured, erected and commissioned by CSPGCL along with requisite materials.



- Similarly, supply of other accessories like cable, JB's etc, are also not in the scope of M/s BHEL.
- For implementing Switching logic for APC, BHEL will provide modification scheme to accept remote command from APC and the same has to be implemented by CSPGCL in existing DCS.

All these costs will be in addition to the offered cost of Rs 21 Cr / unit.

Additionally, **it is submitted that, the installation of remote mounted smart positioner for SADC damper in Boiler area is also required to achieve minimum stable load and recommended ramp rate for flexible operation. The estimated cost for Supply and installation of SADC remote mounted smart positioner is Rs. 2.25 Cr/unit** as per the budgetary offer submitted by Cyrus automation India limited (Authorised channel partner of OEM ABB India Ltd). Copy submitted as **Annexure III**. Hence, the above mentioned work is not within the scope of M/s BHEL. Therefore, the expenditure towards the work will also be part of the cost of "Flexible Operation".

As the costs of the above mentioned works are yet to be finalized, CSPGCL is presently not in position to ascertain and submit the firm cost of the complete scheme. From the information available upto this point, it appears that the final cost may be more than Rs 30 Cr per unit, excluding the opportunity cost.

Meanwhile it may be appreciated that the expenditure towards the Techno-feasibility and Economic study is being borne separately by the CSPGCL and does not form part of the cost estimated for the said scheme. The LoI for the study has already been awarded to M/s Steag Energy Services which is costing about Rs. 87.32 Lakhs. Copy is submitted as **Annexure – IV**.

Submitted for kind consideration of the Hon'ble Commission please.

A handwritten signature in black ink, appearing to be 'Yash', with the initials '026' written below it.

M.Gmail

Annexure-D 72

Executive Engineer Cnl <eeied1567@gmail.com>

Fwd: Regarding Budgetary Offer for Implementation (supply, Installation & commissioning) of Flexible Operation load in Unit#2 of 2x500MW, ABVTPS, CSPGCL MarwaSEC&I ABVTPS <secniabvtps@gmail.com>
To: eeied1567@gmail.com

Thu, Feb 27, 2025 at 11:34 AM

Thanks & Regards:**Superintending Engineer (C&I)**

O/o Addl. C.E. (O&M),

2X500 MW, ABVTPS, CSPGCL Marwa.

----- Forwarded message -----

From: Gurpreet Singh Summan <gurpreet@bhel.in>

Date: Wed, Feb 26, 2025 at 5:28 PM

Subject: RE: Regarding Budgetary Offer for Implementation (supply, Installation & commissioning) of Flexible Operation load in Unit#2 of 2x500MW, ABVTPS, CSPGCL Marwa

To: SEC&I ABVTPS <secniabvtps@gmail.com>

Cc: H N Kosaria <chiefengineeramarwa@gmail.com>, aceonm abvtps <aceonm.abvtps@gmail.com>, <pavanim@bhel.in>

Dear Sir,

In reference to the trailing mail our revised budgetary offer including the auto tuning (provided by CSPGCL) for one unit of ABVTPS is as below;

SL	Scope	Description	Price (Ex-works)
1	MANDATORY PART	Adaptive Process Control	INR 14,08,00,000/-
		Low flow operation package for Axial Fans	
		BFP Low Flow operation package. BHEL will furnish the specification for the replacement/Modification of recirculation valve. Supply and installation by CSPGCL.	
		Primary frequency control capability (up to 5% of operating load)	
		En-Rich burners for all 10 elevations. (40 Burners)	
		E&C services	
		Auto tuning of additional loops	
2	OPTIONAL PART	Boiler Stress Monitoring System (BOSMON)	INR 3,95,00,000/-
		Turbine Stress Monitoring System (TSCMON)	

[Quoted text hidden]

As per trailing mail and today's telephonic discussion, a list of control loops which require modification/tuning is attached herewith, please consider a loop which is not covered in flexible operation budgetary offer and provide a revised budgetary offer for flexible operation along

Technical offer

Implementation

of

Flexible Operation Solutions

At

1X 500 MW ABVTPS, Marwa

December 2024

Ref No.: BHEL/PS-SSBG/R&M/FOS/FY24



BHARAT HEAVY ELECTRICALS LIMITED

Spares & Services Business Group (SSBG)

(A single window facility for spares, services, retrofits and R&M/LE)

7th Floor, BHEL New Building, Plot 25, Sector-16A, Noida - 201301 (U.P.)

1.0 Background

The increased share of feed-in grid from fluctuating renewable energies- mainly wind and solar- results in complex challenges for the energy system. In addition to other options such as grid and demand side management, flexible conventional power generation plays a key role for ensuring adequate system stability. Therefore, existing coal-fired power plants need to adapt to a completely new operating scenario.

Flexible power plant operation comprises three aspects: Minimum stable low load, recommended ramp rates and frequent load cycling. Most measures for flexibility enhancement aim at Minimum low load operation and high ramp rates. This is very important for provision of residual load and in times of low demand, it is more economical than shutting down the whole plant. The transformation from base-load to flexible operation is a change process. There is no generic concept or single implementation plan for power plants, as each plant has its own specifics, technology requirements and site conditions.

CEA has mandated all thermal utilities to prepare for this new operating flexi regime to achieve this national objective. CEA has also directed BHEL to assess unit flexibility on sample units from its supply of the existing fleet.

BHEL need to carry out detail study of present operating practices and parameters, analyze it and formulate implementation plan to deliver deliverable as mentioned in this offer. To achieve desirable deliverable, BHEL had to engineer and implement necessary measures by additional hardware, required process and control loop tuning, supervise erection and commissioning of hardware, guide and modify operating procedure and practices to achieve desirable deliverable.

2.0 OBJECTIVE

The main objectives of this Flexibility solutions are as below;

- Optimum ramp rate (Maximum & stable) for the unit in the control load range keeping the deviation limits of operating parameters within allowable range (as per Table-I). The trials will be conducted up to 2-3%/minute ramp up/down rate per minute.
- Optimum ramp rate (Maximum & stable) for the unit beyond control load range keeping the deviation limits of operating parameters within allowable range (as per Table-I). The trials will be conducted up to 1%/minute ramp up/down rate.
- Optimum stable low load level up to 40% TMCR with focused supervision of operator.
- Reduction in throttling losses and further enhancing frequency response by implementation of primary frequency control package.
- Stable operation at full & part loads (100%, 80%, 60%, 50%) for collection of process parameters for heat rate assessment
- Online monitoring of life consumption for Steam generator and Turbine.

3.0 KEY DELIVERABLES

Following are the key deliverables to be demonstrated with in operating range of parameters mentioned below for continuous, sustainable and repeatable operation.

PART A

- Ramp up and down rate at 3% / minute (within 70% to 100% TMCR operating range) with operator intervention for mills cut in/out (Minimum 5 min duration in one ramp).
- Ramp up and down rate at 2% / minute (within 55% to 70% TMCR operating range) with operator intervention for mills cut in/out (Minimum 5 min duration in one ramp).
- Ramp up and down rate at 1% / Minute (with 40% to 55% range) with operator intervention for mills cut in/out (Minimum 5 min duration in one ramp).
- Achieving 40% TMCR on sustainable continuous basis, with Focused Supervision of operator, capability improvement of operator, guide for updating SOP and procedure.
- Primary frequency control capability of up to 5% TMCR in control load range.
- Enabling stable & reliable operation of axial fans during low load (no stalling condition at low load).

Ramps can be demonstrated in a certain minimum load range and not to be measured instantaneous. The actual load ramp rate will be limited to available Turbine stress evaluator margin.

Allowable excursion range of operating parameters in operating control load range will be limited to the values as mentioned in Table-1.

Table - I	
Parameter	Variation Limit (Standard deviation)
Steam Temperature	15°C
Drum Level	50 mm
Furnace Pressure	30 mmWC

The deviation limits are to be measured in standard deviation only and set points are to be considered for respective operating condition. The standard deviation limits are applicable in control load range only.

4.0 BHEL APPROACH / METHODOLOGY

Following approach shall be adopted for the implementation;

1. Assessment Test Trials

- Customer to conduct the unit ramp trials, primary response and technical minimum load trial as per BHEL requirement in full auto mode of operation BHEL will provide SOP and Guideline for testing for conducting above mentioned test. The above trials may be required to be repeated to confirm the performance of machine for given conditions of ramping and low load. Tests like Load Ramp up and ramp down test, Low Load Trial & Primary Frequency response can be conducted for unit assessment.
- Team BHEL will witness the above mentioned tests. Further, the trend and required data will be provided to BHEL by customer for analysis and identifying the constraints.
- While initial trials are being conducted in full auto mode and all the existing limitations will be recorded and indicated to the customer. BHEL will advise corrective and remedial actions for equipment and same shall be taken up/implemented by customer.

INPUTS required from Customer;

- A. Historical Operational Data from the utility for Steam Generator & Steam Turbine
 - a) Number of Cold start, warm start & Hot start till date.
 - b) Total Operating hours of the plant.
 - c) Any replacement/repair/modification of critical components during the operation period.
 - d) Metal Temperature and process parameters for each start-up case
- B. Latest uploaded configuration files from DCS.

2. Shutdown Works

- Customer to implement the corrective actions suggested by BHEL in the unit.
- Installation of APC, thermocouples, MTM and other materials required.
- Conductance for short RLA/Replica test for evaluating the base values for BOSMON.

3. Re assessment test/trials

Tests shall be carried out after completing the above activities as mentioned in point 2 above.

4. Demonstration test

- BHEL will commission solutions to meet the required deliverables as per the above scope and fine tune it.
- For the fine-tuning activity, ramp trials in different load range for different set of conditions as per BHEL requirement to be operated. (BHEL to carry out tests with help of CSPGCL)
- After fine tuning activities, final ramp trials will be conducted as per BHEL requirement in the load range of 100% TMCR and technical minimum load operation at Benson point+5%.
- The start of the final trials shall be considered as the effective date of the contract.
- All operating data comparison will be in deviation format from respective set points (design value/operating value).
- Further, these trials will be conducted with a maximum load change of 3% per minute for 5 minutes in a single ramp test due to manual addition and removal of mills. Sufficient stabilization time will be provided between each ramp trials. No addition and withdrawal of mills should be attempted during ramps.
- Final report submission.