

BEFORE THE HON'BLE GUJARAT ELECTRICITY REGULATORY COMMISSION
AT GANDHINAGAR

Petition No. _____ of 2023

IN THE MATTER OF:

Petition under Section 86 of the Electricity Act, 2003 read with GERC's MYT Regulation, 2016 and SLPP Phase-I's PPA with GUVNL to seek the Hon'ble Commission's approval for proposed Renovation, Modernization and Life Extension (R&M and LE) of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of expenditure and recovery by adjustment in tariff and extension of PPA with modified terms by 10 years.

AND

IN THE MATTER OF:

GUJARAT INDUSTRIES POWER COMPANY LIMITED

Through its Authorized Representative : Smt. Kiran R. Mishra,
GM (Commercial, Finance & Legal),
Having its Registered Office at : P.O. Ranoli, Vadodara- 391350, Gujarat
Phone: +91-265-2232768
E-Mail: krmishra@gipcl.com

.... PETITIONER

VERSUS

GUJARAT URJA VIKAS NIGAM LIMITED

Represented by : General Manager (Commerce)
Having its Registered Office at : Sardar Patel Vidyut Bhavan
Race Course, Vadodara 390007, Gujarat
Phone: (0265)2339148
E-Mail: coacom.guvnl@gebmail.com

.... RESPONDENT





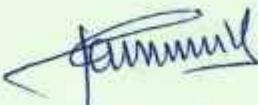
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Place: Vadodara

For Gujarat Industries Power Company Limited

Date: 22.06.2023


 Petitioner






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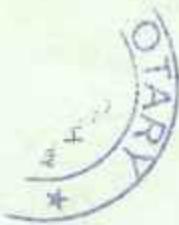
.... RESPONDENT

1. THE PETITIONER MOST RESPECTFULLY SUBMITS AS UNDER:

1.1 The present Petition is being filed by Gujarat Industries Power Company Limited (hereinafter referred to as "GIPCL" or "Petitioner"). Petitioner is a generating company within the meaning of Section 2 (28) of the Electricity Act, 2003. Petitioner established the 250 MW Surat Lignite Power Project Phase-I (SLPP-I) comprising of 125 MW Units 1 & 2 at village Nani Naroli, Taluka-Mangrol of Surat District. This Power Plant falls under the category of State Government controlled IPP and entered into a 30-year PPA with the erstwhile Gujarat Electricity Board (predecessor of GUVNL) in the year 1997. The PPA is based on two-part tariff with pass-through of costs as per normative parameters and therefore falls under Section 62 of the Electricity Act, 2003. SLPP-I commenced Commercial Operation in Feb.2000.







- 1.2 Currently 125 MW Unit-1 has clocked more than 1.63 Lac running hours and Unit-2 more than 1.66 Lac running hours. This Power Plant has completed 23 years of successful operation and is nearing the end of its design / useful life of 25 years. The overall performance of SLPP-I is satisfactory and it is a benchmark for other CFBC based lignite power plants of this size.
- 1.3 Due to ageing and deterioration in fuel (Lignite) quality, currently SLPP-I is facing numerous operational challenges in running the power plant at the normative level. In order to overcome the challenges, improve the availability, reliability, performance and additionally to extend the useful life of the Power Plant by 15 years i.e. up to 40 years. GIPCL proposes to carry out Renovation, Modernization and Life Extension exercise with due approval of beneficiary GUVNL and Hon'ble Commission.
- 1.4 This petition is filed under Section 86 of the Electricity Act, 2003 read with GERC (Multi Year Tariff Regulations), 2016, GERC (Conduct of Business) Regulations, 2004 as well as SLPP-I's Power Purchase Agreement (PPA) dated 15.04.1997 and subsequent amendments executed in the years 2003 & 2005 with the erstwhile Gujarat Electricity Board, the predecessor of Gujarat Urja Vikas Nigam Ltd. (hereinafter referred to as "GUVNL" or "Respondent").
- 1.5 Respondent, GUVNL is the Sole Power Procurer and Beneficiary of Power generated by 250 MW SLPP-I. In response to GIPCL's proposal for Renovation, Modernization and Life Extension of SLPP-I, Respondent GUVNL has given in-principle approval and urged GIPCL to seek the Hon'ble Commission's approval for the proposal, additional capital expenditure and adjustment in tariff for recovery of costs.
- 1.6 The original PPA was executed before the enactment of the Electricity Act, 2003 and establishment of this Hon'ble Commission. Upon formation of the Hon'ble Commission, SLPP-I PPA and amendments were reviewed and approved by the Hon'ble Commission vide an Order dated 22.12.2005 in Petition No. 90/2002.
- 1.7 By way of this Petition, with reference to provision no. 7.1.2 of SLPP-I PPA read with GERC MYT Regulation, 2016, GIPCL seeks the Hon'ble Commission's approval for the proposal to carry out Renovation, Modernization and Life Extension of 125 MW Unit-1 & 2, relaxation in Normative PPA Parameters post R & M exercise and extension of PPA term by 10 years on modified terms beyond the current term of Feb. 2030.
- 1.8 Petitioner humbly requests the Hon'ble Commission to allow modified operational terms, additional capitalization of expenditure incurred on Renovation, Modernization and Life Extension and recovery by suitable adjustment in tariff.

2. PARTIES TO THE PETITION

- 2.1 Petitioner, Gujarat Industries Power Company Ltd. (GIPCL) was incorporated in the year 1985 as a Public Limited Company under the auspices of the Government of Gujarat. The Company is registered with the Registrar of Companies, Gujarat under the Companies Act, 1956 with its Registered and







Corporate Office at P.O. Ranoli, Vadodara- 391 350, Gujarat, India. GIPCL is promoted by leading Gujarat State Enterprises like Gujarat Urja Vikas Nigam Ltd. (GUVNL), Gujarat State Fertilizers and Chemicals Ltd. (GSFC), Gujarat Alkalies and Chemicals Ltd. (GACL) and is a listed entity on NSE and BSE.

GIPCL functions under the umbrella of Energy & Petrochemicals Department, Govt. of Gujarat. The Company is in the business of Electrical Power Generation and the current installed capacity is 1184.4 MW. The Company has a diversified power generation portfolio comprising Thermal (Lignite and Gas) and Renewable (Wind and Solar) Power Plants. The Company also operates Captive Lignite and Limestone Mines in the State of Gujarat.

GIPCL's Thermal portfolio comprises of 310 MW Gas Based Generating Capacity at Vadodara and 500 MW Lignite based Generating Capacity at Mangrol, Surat. GIPCL commissioned the greenfield 250 MW SLPP Phase-I in the year 2000 and expanded the capacity by commissioning 250 MW SLPP Phase-II in the year 2010. GIPCL's Mining portfolio comprises of captive Vastan and Mangrol Valia Lignite & Limestone Mines. Mining activity commenced in the year 1996. GIPCL's Solar Installed Capacity is 262 MW with assets spread across Gujarat State. GIPCL Wind Installed Capacity is 112.4 MW and the Windfarms are spread across various locations in Saurashtra and Kutch, Gujarat. Currently, GIPCL is developing a 2375 MW Solar/Wind/Hybrid Renewable Energy Park at Khavda, Kutch. GIPCL plans to set up around 1200 MW Solar / Hybrid Energy Capacity in the Khavda RE Park.

2.2 **Respondent, Gujarat Urja Vikas Nigam Limited (GUVNL)**, is a Company incorporated under the provisions of the Companies Act, 1956, having its registered office at Sardar Patel Vidyut Bhavan, Race Course, Vadodara 390007, Gujarat, India. The Respondent is engaged in bulk purchase and bulk supply of electricity and is a licensee for the said activities under the provisions of the Electricity Act, 2003. **Respondent, GUVNL is the Sole Beneficiary of power generated by SLPP-I as per PPA executed in the year 1997.**

3. BRIEF BACKGROUND OF 250 MW SURAT LIGNITE POWER PLANT PHASE-I (SLPP-I)

3.1 GIPCL commissioned the 250 MW SLPP-I comprising of 125 MW Unit-1 & 2 as a greenfield project. This Power Plant is located at Nani Naroli Village in Mangrol Taluka of Surat District.

Details of commissioning and Commercial Operation Date (COD) are as under:

Unit No.	Unit Capacity (MW)	Date of Commissioning	Commercial Operation Date (COD)
Unit-1	125	16/01/2000	15/02/2000
Unit-2	125	06/11/1999	15/02/2000
Phase-I	250	---	15/02/2000

3.2 SLPP-I PPA was signed with Gujarat Electricity Board (GEB), the predecessor of GUVNL in the year 1997 and revised in the years 2003 and 2005 on the insistence of GEB/ GUVNL, based on the recommendations of the State Govt. appointed committee for tariff revision of IPPs. Being a Govt. of Gujarat entity,





GIPCL had to accept inferior terms of the modified PPA in the interest of the State's power consumers. The revised PPA was reviewed and approved by this Hon'ble Commission vide an Order dated 22.12.2005 in Petition No.90/2002.

The Original and prevailing Amended PPA terms are listed below.

Parameter	Original	Amended from 01-01-2003/2005
Normative Availability	68.5%	75%
Auxiliary Power Consumption	10%	10%
Return on Equity	16%	13%
Target PLF for Incentive	68.5%	75%
Incentive	0.575% of Equity per % increase in Plant Availability above 68.5% (Rs. 1.06/ kWh)	Flat rate of Rs. 0.25/kWh above 75% PLF

Currently, the Normative PPA parameters for the computation of tariff are as under:

PARTICULARS	PPA parameters
Capacity	2 X 125 MW Unit -1 and 2
COD	15.02.2000
PPA Date	15.04.1997 with amendments in the years 2003 & 2005
PPA Duration	30 years from COD
Main Fuel	Lignite
Aux. Consumption	10%
Normative Annual Plant availability	75%
Station Heat Rate (SHR)	2400 K.Cal/KWh
Project Cost (Power Plant)	Rs. 1210.56 Cr.
Debt: Equity Ratio	75.5 : 24.5
Variable Charges	Lignite@ SHR with Moisture correction limited to max. 10% HFO-3.5 ml/kwh Limestone-0.15 kg/kwh
Fixed Charges	O & M Expenses – 2.5% of the Initial Capital Cost including Insurance and water Charges, presently after 23 years from COD it is 7.938% of the Capital Cost - (Linked to 30%CPI & WPI- 70%) Return on Equity -13% Interest on Working Capital – Lower of GIPCL/GUVNL Rate
Incentive	0.25 Rs. /kwh for Scheduled Generation above 75%

3.3. GIPCL SLPP – I was one of the first power utilities in the country to go for the indigenously manufactured Circulating Fluidized Bed Combustion (CFBC) Boiler of 125 MW Size. The Boiler was manufactured and commissioned by BHEL (OEM-Original Equipment Manufacturer) based on technology sourced







from LLB (Lurgi, Lentjes & Babcock), Germany. Being a new technology for India and BHEL, GIPCL encountered a lot of technical issues and operational challenges post commissioning due to inherent design flaws and poor lignite quality. GIPCL has strived hard to overcome the challenges and successfully operated the plant for more than 23 years. GIPCL's performance is a benchmark for other CFBC based lignite power plants of this size and capacity.

3.4 SLPP-I has consistently performed better than comparable CFBC technology-based lignite power plants at the State and National level. SLPP-I has been a regular winner of Prestigious Awards for Outstanding Performance, Energy Efficiency and Environmental Excellence. SLPP-I supplies power to GUVNL at a low variable cost and ranks high in the "Merit Order of Dispatch".

3.5 **SLPP-I's Year wise performance is highlighted below:**

Financial Year	Commercial Availability	PLF	Aux. Power Cons.	Station Heat Rate
	%	%	%	kCal/kWh
2015-16	83.74	74.83	12.67	2726
2016-17	78.87	69.71	13.16	2743
2017-18	74.83	72.57	13.18	2734
2018-19	76.66	77.94	12.67	2724
2019-20	73.53	73.52	13.07	2782
2020-21	60.98	60.40	13.57	2819
2021-22	62.20	61.31	14.04	2770
2022-23	63.21	62.38	13.80	2852

3.6 **Performance Comparison with other Lignite Power Plants in the State for FY 2021-22**

Power Plant	Availability (%) Actual/ Normative	PLF (%) Actual/ Normative	Heat Rate kCal/kWh Actual/ Normative	APC (%) Actual/ Normative	COD Year
BLTPS	34.84/80	37.82/80	2969/2623	19.04/11	2017
ATPS	23.76 /75	23.57 /75	NA	NA	2006
KLTPS-3	69.7/75	70.02/75	3254/3231	13.53/12	1997
KLTPS-4	6.59/80	7.47/80	3154/3000	39.36/12	2009

Source: GERC Tariff Order / State Energy Account

4. FUEL ARRANGEMENT FOR SLPP-I

GIPCL has obtained mining lease from the Central and State government for lignite and limestone mining in Vastan and Mangrol-Valia belt to meet the Lignite (primary fuel) and Limestone(additive) requirement for SLPP. GIPCL has two Mines namely Vastan Lignite Mine and Mangrol-Valia Lignite Mine.

Vastan Lignite Mine lease area is 1536 Ha. It is divided in two pits namely Vastan North Pit and Vastan South Pit. Vastan North Pit reserve got exhausted in June' 2012 and presently GIPCL is operating the Vastan Lignite Mine-South Pit with annual capacity of approx. 5 Lakhs Tonnes.

Mangrol-Valia Lignite Mine covers a mining lease area of 2059.68 Ha. Till now, GIPCL has acquired 1168.5717 Ha. land, balance 794.86 Ha. is to be acquired. This mine is further divided into two parts:





(a) Mangrol Mine: Mining commenced on 25/12/2009 but had to be abruptly stopped in June, 2014 due to non-availability of land for further advancement.

(b) Valia Mine: Mining commenced on 25/10/2012 and currently it is the major source of lignite for 500 MW SLPP.

The Land to be acquired can be sub-divided into two clusters based on fuel requirement for 500 MW SLPP Power Plant.

(a) Cluster – 1 (Adjacent to Mangrol Mine) – 302.76 Ha land needs to be acquired to commence mining from the year 2027 onwards, to meet fuel requirement for 500 MW SLPP Phase-I & II till the year 2040.

(b) Cluster – 2 (Adjacent to Valia Mine) - 491.903 Ha. land needs to be acquired if PPA term of SLPP-II is extended beyond the year 2040.

4.1 Lignite required for SLPP-I and SLPP-II power generation is met through above captive Lignite Mines operated departmentally by GIPCL.

4.2 The required quantity of Limestone injection to feed in the CFBC Boiler to reduce the Sox emissions, hence to comply with the Environment Norms is also met by the captive mines. GIPCL also needs to acquire land to meet the future limestone requirement.

4.3 GIPCL departmentally manages the Mines through Mine Developer and Operator (MDO) Contract.

4.4 Details of the existing Mines and proposed expansion are as under:

	Lignite Reserve in Million Tons	Annual Contribution in Million Tons Per Annum	Mine Commencement	Expected Mine Closure
Vastan	36	0.5	1996	2026
Mangrol Valia Mine in operation	170	3.2	2012	2040
Mangrol Valia Cluster-I (Proposed)	17	1.2	2026	2040

4.5 The annual lignite requirement of SLPP-I & II combined is around 3.7 Million Tons. Vastan Mine contributes around 0.5 Million Tons and Valia Mine around 3.2 Million Tons annually. Vastan Mine reserve is likely to last only till FY 2026-27.

4.6 The annual lignite requirement of SLPP-I at the Normative Availability Level is approx. 1.7 Million Tons. Approx. 85% of the requirement is met by Valia Mine and balance 15% by Vastan Mine.

4.7 GIPCL proposes to re-start mining in the Mangrol region, which had to be abruptly stopped in 2013 due to non-availability of Land as the replacement for the Vastan Mine and secure lignite supply for future PPA term of SLPP-I & II. Land acquisition in the Mangrol Valia Cluster-I in the lease area has been





initiated with Board approval. GIPCL's Board of Directors approved additional land acquisition for expansion of Mangrol Valia Mine Cluster-I vide Board Resolution No.4451 dated 08.02.2018. The Board Resolution is annexed as **Annexure-A**.

4.8 Recently, Revenue Department, Govt. of Gujarat has given approval under Section 11(1) vide notification dated 13.04.2023 to issue notification for acquisition of certain land parcels. Lignite from this Cluster is expected to be of better quality than Valia Lignite.

4.9 The quality of Lignite from the Valia Mine which is the major source of fuel for SLPP-I is deteriorating. Gross Calorific Value (GCV) is going down, moisture content remains above 50% and additionally contains sulphur and chloride. This results in increased corrosion of Boiler parts and auxiliaries causing frequent Boiler Tube Leakages and pre-mature failure of equipment. Poor Gross Calorific Value in the range of 2450-2500 kcal/kWh with moisture content above 50% results in severe corrosion of Boiler & its auxiliaries and Partial Loading of the Units by 12-15%.

4.10 Mining in the Valia Mine is a challenge due to soft soil strata having low load bearing capacity. This results in frequent land subsidence and adversely impacts lignite production.

4.11 To tide over uncertainty of fuel availability, at times GIPCL has been compelled to procure Imported Coal and blend with lignite @ 8-10%. Imported Coal having GCV 5500 kCal/Kg is blended to the limited extent of 10% and this has the additional benefit of improving the overall fuel quality to a certain extent and reduce the adverse effect on Boiler and associated equipment.

4.12 Imported Coal blending up to 15% has been recommended by OEM (BHEL) to improve the Plant Performance and reduce corrosion in Boiler. A copy of the OEM recommendation is attached as **Annexure-B1**. GIPCL also engaged Central Electro-chemical Research Institute (CECRI), a unit of Council of Scientific and Industrial Research (CSIR), Govt. of India for corrosion assessment and suggest remedial measures. In its report, CECRI has also suggested Fuel Blending/ Switching. Extract of the report is attached as **Annexure-B2**. Imported coal blending is done with GUVNL's prior approval ensuring minimal impact on Variable Tariff.

4.13 Major quantum of Lignite required for SLPP-I for the remainder PPA term till the year 2030 and the proposed extension of 10 years i.e. till the year 2040 can be managed by GIPCL through its Captive Mine. GIPCL is already in the process of acquiring land in Mangrol Cluster-I to re-open Mangrol Mine by FY 2026-27.

4.14 However, GIPCL contemplates 8-10% blending with Imported Coal post Renovation, Modernization and Life Extension to:

- Mitigate the adverse effects of poor lignite quality on the Boiler Performance and improve the overall Plant availability, reliability and performance since the Power Plant is designed for Lignite having GCV of 4240 kCal/kg and moisture content of 24% whereas currently Lignite





GCV is in the range of 2450-2500 kcal/kg and moisture in the range of 50-52%.

b) Take care of lignite shortfall due to variation in lignite reserve vis-a-vis estimate and uncertainty in production due to mine operational constraints.

GIPCL SLPP Phase – I was a pioneer in 125 MW size Lignite plant based on CFBC (Environment Friendly) Technology. To address the design deficiencies mainly with regards to fuel quality, GIPCL proposes to operate SLPP-I post Renovation, Modernization with minimal Imported Coal blending @8-10% with GUVNL's prior approval. Imported Coal Blending shall be done in high demand season with minimal impact on tariff. Blending of reasonably priced 5500 GCV grade Imported Coal with Lignite to a minimal extent improves fuel quality which results into better plant performance, reduced Auxiliary Consumption as well as partial loading and is therefore a win-win proposition for all stakeholders.

5. NEED FOR RENOVATION, MODERNIZATION AND LIFE EXTENSION EXERCISE FOR SLPP-I

5.1 Useful/ Design Life

As per GERC MYT Regulation, 2016 (Chapter-1 Item No.2 (Definitions), Sr.No.62)

"Useful Life" of the thermal generating station is defined as under:

"Useful life" in relation to a unit of a generating station, transmission system and distribution system from the date of commercial operation shall mean the following, namely:

Coal/Lignite based thermal generating: 25 years

5.2 Central Electricity Authority (CEA) has published the **GUIDELINES FOR RENOVATION & MODERNISATION/LIFE EXTENSION WORKS OF COAL/LIGNITE BASED THERMAL POWER STATIONS** in February, 2020.

Item No. 4.2.1 of the CEA R & M Guideline, 2020 states as under:

"The equipment subjected to fatigue stresses and creep due to high temperatures such as turbine rotor and casings, HP piping, boiler headers, Boiler drum, main steam piping and valves, feed discharge lines etc. are designed for a given fatigue life of about 25-30 years of operation. However, many equipment/ components might become prematurely weak metallographically due to various operational stresses like frequent temperature and pressure excursions, full load tripping, frequent start and stops etc. and accordingly, there is a need to check the remaining life of these components after about 20 years of life or 1,60,000 hours of operation lest it may result into serious failures."

5.3 SLPP-I's Unit 1 & 2 have clocked more than 1.63 Lac & 1.66 Lac operating hours respectively and currently numerous operational challenges have emerged due to aging, degradation and obsolescence of equipment, deteriorating fuel quality and frequent load variation on account of increasing renewable penetration.





5.4 BHEL, the Original Equipment Manufacture vide letter SL: SLPP: O & M dtd. 01.07.2022 affirmed that the design and useful life of SLPP-I is 25 years and suggested the following:

- a. *SLPP Phase-I Unit-1 & 2 have completed 22 years of operation and clocked more than 1.5 Lakh operating hours (on the date of communication).*
- b. *The reasonable life of the materials used in the Boilers as per ASTM Standards is around 25 years based on past experience.*
- c. *On inspection, substantial deterioration is noted in the form of erosion, corrosion and accelerated aging is observed due to degraded lignite quality in the form of low GCV, increased moisture, Sulphur, Chloride content.*
- d. *Increased Thermal Fatigue and Creep Effect on the metallurgy of Boiler and associated high pressure piping due to cyclic loading and deviation from design criteria*

In the light of the current condition of Unit-1 & 2 CFBC Boilers, BHEL has suggested timely Renovation, Modernization and Life Extension to extend the operational life of the Units. Copy of the letter is annexed as **Annexure-C**.

5.5 SLPP-I PPA's provision no. 7.1.2 titled "Operation and Maintenance" states as under:

Subject as provided in this Agreement, GIPCL shall operate and, if appropriate, modify and maintain the Generating Station in accordance with:

- (i) ***Good Industry Practice***
- (ii) ***All applicable laws and directives hereunder***
- (iii) ***The manuals, instructions and manufacturer's guidelines supplied by the equipment supplier pursuant to the terms of equipment supply contract***
- (iv) ***The Dynamic Parameters***

Relevant extract of PPA is annexed as **Annexure-D**.

5.6 The average Plant Load Factor of the SLPP Phase-1 for the last 10 years is 70.83% and for the last five years it is 69%. The highest PLF of 85.58% was achieved in the year 2005-06. In view of various detrimental factors, it is becoming very difficult to achieve the normative Availability and PLF of 75%. **GIPCL has infused additional capital to the extent of Rs. 63 Cr. from internal resources to maintain the Plant Availability, Reliability and Performance as per the PPA norms. Year-wise details are as under:**

Sr. No.	Financial Year	Addl. Capitalization in SLPP-I (Rs.in Cr.)
1	2009-10	2.29
2	2010 to 12	0.26
3	2015-16	3.84
4	2016-17	4.24
5	2018-19	4.54
6	2019-20	9.98
7	2020-21	2.11
8	2021-22	9.53
9	2022-23	26.32
	Total	63.11





Item 1.2 of the CEA R & M Guideline, 2020 states as under:

"Renovation and Modernization and Life Extension have been recognized as cost effective options to achieve additional generation from existing units at low cost and in shorter period. "

5.7 GIPCL proposes to tackle the major technical and operational challenges listed below to the best possible extent through the R & M exercise. To derive maximum commercial benefit from the investment in Renovation and Modernization, available lignite resource and other infrastructure like water, effluent disposal, expert and skilled manpower and supporting infrastructure & resources and minimize the impact on tariff, it is proposed to extend the life of the Units up to 40 years and PPA tenure by 10 years. The State's power consumers would be benefitted by increased cheaper power for the remainder PPA term and the benefits would continue over the extended life of the Power Plant.

Technical Challenges for SLPP Phase- 1(2x125 MW Unit):

(i) Address poor Lignite quality issue

- Quality of Lignite fired in SLPP-I has progressively deteriorated from the year 2013-14 onwards, especially after the operationalization of Valia mine. This mine has good lignite reserve but the quality is poor.

GCV & moisture content in fired lignite against the design value is shown below.

Description	Design Value	Current Value	Change (%)
Gross Calorific Value (GCV)	4240 kCal/kg	2450 – 2500 kCal/kg	Reduction by-42%
Moisture Content	24%	50-52 %	Increase by 108-116 %

- Additionally, there is presence of Sulphur and Chloride in lignite.
- The above issues result in restriction of Power Output from the Units, increased corrosion of Boiler Parts & its auxiliaries and causes severe adverse impact on Boilers' Availability, Reliability and overall Performance of the Units.

In this regard, Item 2.2 of the CEA Report,2020 states as under:

Many thermal power stations in the country were designed for a given quality of coal, which has deteriorated over a period of time. The capacity of the raw coal feeding system, pulverizers, primary air fan system, ash handling system etc. for these power stations may have to be augmented to maintain the rated capacity of the boiler with optimum/ improved efficiency, provided the furnace size is adequate to burn the coal of deteriorated quality.





(ii) Address Generic defects & Design deficiencies

- Being an early user of CFBC technology-based Boilers, SLPP-I had to face a number of design and operational issues.

Some of the major issues faced are erosion of combustor water walls, corrosion and fatigue failures of pressure parts, overheating of boiler tubes in Fluidized Bed Heat Exchanger (FBHE-4) and Seal Pots, refractory failures, expansion joints failure, frequent combustor Nozzles damages, back shifting of bed materials, hard deposits in back pass super heater, reheat and economizer coils, chocking of back pass area, failures of Air-preheater tubes, ESP casing & internals, flue gas ducts etc.

- Obsolescence, generic defects, and ageing of plant equipment presents operational challenges

In this regard, Item 2.1 of CEA R & M Guideline, 2020 states as under:

The new installation being capital intensive, it is considered prudent to maximize the generation from the existing power stations to ensure optimal utilization of resources. R & M's main role of replacement of the existing obsolete items of equipment in operation with those with more efficient and of the latest designs incorporating the state-of-the-art technologies and improved metallurgy would however continue.

(iii) Improve flexible operation capability of Units

In view of high renewable penetration in the State, SLPP-I Units are subjected to frequent Backdown for short durations. This is in spite of the low variable tariff and higher rank in the Merit Order of Dispatch. CFBC Boiler in SLPP-I is designed for Base/ Fixed Load Operation and cannot operate withstand frequent load variation due to design limitations and CFBC boilers construction and operational features. GIPCL has already represented to CEA in this regard to exempt SLPP Units from flexible operations (back down) to ensure better availability and reliability of the units.

In view of increased renewable generation in future and grid requirements, GIPCL proposes to address the issue of flexible operation to the best possible extent.

In this regard, Item 2.6 & 2.7 of CEA R&M guideline,2020 states as under:

In view of new operating regimes, it will lead to part load operation of the plants which were earlier operating as base load stations. Hence, R & M intervention may be needed for the refurbishments to improve plant efficiency at part load operation.





The R&M/LE programme may be designed in such a way so as to improve the plant operational performance, availability / reliability, efficiency and emission reduction in the light of the above.

6. ACTION PLAN FOR RENOVATION, MODERNIZATION AND LIFE EXTENSION EXERCISE

6.1 Item 4.1.1 of CEA Report ,2020 states as under:

The main objective of Renovation & Modernisation (R&M) of thermal generating units is to make the operating units well equipped with modified / augmented with latest technology with a view to improve their performance in terms of output, reliability, availability, reduction of outage time, ease of maintenance and minimizing inefficiencies.

6.2 GIPCL has appointed a consultant M/s STEAG Energy Services India to carry out detailed study of design and operating parameters, critical issues, assess residual life of main plant equipment, suggest remedial measures and prepare the Detailed Project Report (DPR) with time schedule and estimated expenditure for this exercise. M/s STEAG Energy Services India is a CEA approved R & M consultant with good reputation, vast consulting as well as O & M experience of Lignite Power Plants across the world and possesses a good track record in this area at the global level.

6.3 GIPCL has mandated the Consultant to focus upon the following key problem areas in the DPR and suggest suitable measure to resolve them with minimal expenditure and outage and ensure a win-win scenario for all the stakeholders.

- Address design issues in Boiler and Turbine areas to the extent possible by utilizing the latest advances in technology and operational experience
- Increase Availability and Reliability of the Units by addressing issues arising due to poor lignite quality and frequent load variation.
- Modification of Boiler Accessories to reduce Partial Loading of Units due to poor lignite quality
- Upgrade and suitably modify on Boiler, Turbine and Balance of Plant equipment to improve Overall Plant Efficiency and main parameters like Station Heat Rate, Auxiliary Power Consumption.
- Explore options for improving flexible operation to the best extent considering the design and operational limitations
- Explore compatibility for Biomass co-firing considering lignite quality issues and operational challenges
- Address obsolescence issue of various equipment like Boiler and Turbine Control System, Electrical Protection System, Switchgear etc. by suitable replacement to ensure operation till 2040
- Ensure Safety of major structure and RCC works in Power Plant for extended life
- Any upgrade/ modification required to extend life of SLPP-I up to 40 years

6.4 GIPCL proposes to adopt the **Rolling Plan** methodology to execute the works so that Unit Outage and generation loss is minimized. The Renovation, Modernization and Life Extension related activities shall be clubbed with the planned overhaul/ outage tentatively from FY 2024-25 onwards with minimal





extended duration. Hence this exercise is likely to be completed in a span of 4-5 years but without any major interruption in power supply to the Grid.

- 6.5 DPR is expected to be ready by Dec. 2023 and shall be shared with GUVNL and the Hon'ble Commission.
- 6.6 Procurement of capital equipment would have a long lead time. Procurement shall be done through transparent competitive bidding, tender process and from OEM / Other reputed manufacturers /suppliers wherever required to meet R&M objectives with the due involvement of Respondent, GUVNL. Invoices and expenditure details shall be duly certified by the company's auditor and shall be submitted to GUVNL and the Hon'ble Commission for review and approval of Expenditure.
- 6.7 The time schedule of completion as per Rolling Plan shall be guided by the DPR. It shall be finalized in consultation with the Respondent GUVNL as well as SLDC and Hon'ble Commission shall be apprised of the same.

7. ENVIRONMENTAL COMPLIANCE

- 7.1 Since SLPP-I is equipped with CFBC Boilers, SOx and NOx emissions is within the limits mandated by Revised Environment Protection (Amendment) Rules, 2015. Flue Gas De-sulphurization (FGD) is not required to meet SOx emission limit.
- 7.2 Only SPM emission compliance needs to be addressed and ESP Retrofitting/refurbishment and Upgrade is the major activity
- 7.3 ESP Retrofitting/refurbishment Upgradation of SLPP-I Units is currently underway in order to bring down the Suspended Particulate Matter (SPM) emission level to the revised limits. SLPP-I Units-1 & 2 already comply with the new limits most of the time and this has been achieved much before the current deadline of Dec. 2024.
- 7.4 GIPCL SLPP Phase- 1 has incurred around Rs. 13.3 Cr. till Dec. 2022 and the estimated expenditure is of Rs.38 Cr.
- 7.5 GIPCL has filed Petition No. 2175/2022 before this Hon'ble Commission to seek approval for the additional expenditure required for this exercise under the "Change in Law" provision of the PPA.

8. PRELIMINARY COST ESTIMATE AND IMPACT ON TARIFF

- 8.1 The Project Cost of SLPP Phase-I was Rs. 1210.57 Crores at the time of commissioning in the year 2000.
- 8.2 GIPCL has obtained a preliminary estimate for Renovation, Modernization and Life Extension of SLPP Phase-I from market sources in order to kickstart the exercise. Based on market survey carried out in 2019-20, the estimated expenditure was Rs. 400 Cr.
- 8.3 Due to the supply chain disruption post COVID-19, spike in fuel price and global tension due Ukraine- Russia war, the price and delivery period of critical





equipment has gone up significantly. Therefore, the earlier estimate may get revised upwards and a firm estimate would be known once the Detailed Project Report (DPR) is finalized.

CEA has also highlighted the unexpected and unprecedented rise in commodity prices, import challenges and supply disruption in their July-Sept.,2022 quarterly report on R & M in Thermal Power Stations.

8.4 The current Fixed and Variable Tariff of SLPP-I is as under: (F.Y. 2023-24)

Sr. No.	Tariff Component	Rs. /kWh	Remarks
1	Fixed Tariff	0.98	At 75% Normative Availability
2	Variable Tariff on Lignite Fuel	2.10	Vastan+ Valia Lignite
3	Variable Tariff with Imported Coal Blending @8-10%	3.00	Imported Coal @ Rs. 11,815 / MT with GCV 5500 Kcal/Kg

8.5 Going by the preliminary estimate, additional capitalization of Rs.400 Cr. for Renovation, Modernization and Life Extension will impact the fixed tariff by approx. 40-50 p/kWh. The final impact on fixed tariff would however depend on the actual expenditure incurred on the exercise with the approval of GUVNL and the Hon'ble Commission.

8.6 The Variable Tariff would be depending on the Mangrol Mine Lignite cost, which would be known post Mangrol Cluster-I land acquisition and award of MDO Contract. However, lignite cost is expected to be competitive considering the alternate sources. Variable Tariff would also depend on the prevailing Imported Coal price if blending is permitted by GUVNL and the Hon'ble Commission considering the current fuel quality vis-a -vis the design parameters of the Plant.

8.8 GIPCL shall submit a firm estimate of Renovation, Modernization and Life Extension exercise once the DPR is finalized.

As per Item 50.4 of GERC's MYT Regulation 2016,

Any expenditure incurred or projected to be incurred and admitted by the Commission after prudence check based on the estimates of renovation and modernization expenditure and life extension, and after deducting the accumulated depreciation already recovered from the original project cost, shall form the basis for determination of tariff.

9.0 APPROVALS OBTAINED FOR THE RENOVATION, MODERNIZATION AND LIFE EXTENSION PROPOSAL:

9.1 Approval by GIPCL Board of Directors:

GIPCL's Board of Directors approved the proposal for Renovation, Modernization & Life Extension for 2 x 125 MW SLPP Phase-I (Units1&2) in the Board meeting held on 07.02.2022 and further directed the management





to seek GUVNL's in-principle approval as well as take all required steps to take forward the proposal. Copy of Board Resolution No.4854 dated 07.02.2022 is annexed as **Annexure-E**.

9.2 Deliberation and Consideration in the high-level meeting chaired by Hon'ble Minister of Energy, Govt. of Gujarat on 23.03.2022

The proposal for Renovation, Modernization and Life Extension of SLPP-I was deliberated in the high-level meeting chaired by Hon'ble Minister of Energy, Govt. of Gujarat on 23.03.2022. In view of the numerous merits, Hon'ble Minister instructed MD GIPCL to immediately forward the proposal to GUVNL, the sole beneficiary of power from SLPP-I. Copy of Record Notes of this meeting is annexed as **Annexure-F**.

9.3 GUVNL in-principle approval for Renovation, Modernization and Life Extension.

In response to GIPCL's proposal submitted on 25.03.2022 and further details of tariff impact on 05.07.2022, GUVNL conveyed in-principle approval vide letter No. GUVNL-COM-GM(IPP)-852 dated 05.08.2022 and directed GIPCL to seek the Hon'ble Commission's approval for the additional capital expenditure and adjustment in tariff. GUVNL approval is annexed as **Annexure-G**. GIPCL's submission to GUVNL is attached as **Annexure-H**.

9.4 Board Approval for additional Mining Land Acquisition in Mangrol Cluster-I

GIPCL's Board of Directors vide Resolution No. 4451 dtd. 08.02.2018 approved mining land acquisition to the extent of 302.7 Ha. in Cluster-I of Mangrol Valia Mine to secure adequate fuel for SLPP-I and II.

9.5 GoG approval for Mining Land Acquisition

Subsequently, GIPCL has sought Revenue Department, GoG approval to acquire lease land for re-opening of Mangrol Mine. GoG has given preliminary approval to issue land acquisition notification for certain land parcels.

9.6 GUVNL approval for Variable Cost

Ensuring adequate fuel for optimum availability of SLPP Stations is GIPCL's responsibility as per the PPA. Expenditure towards Mine expansion and Mining is recoverable as per the terms of Fuel Price Mechanism finalized between GIPCL and GUVNL. The expenditure shall be loaded on the Lignite Cost of supply to the Power Plant.

GIPCL has already provided preliminary estimate of land acquisition cost and lignite price from Mangrol Cluster-I. Once final land price is notified, GUVNL shall be intimated and approval shall be obtained for the expected lignite price.

10. RELAXATION SOUGHT IN PPA PARAMETERS POST RENOVATION, MODERNIZATION AND LIFE EXTENSION EXERCISE

10.1 SLPP-I PPA was executed in the year 1997; in the pre-regulatory era. SLPP-I was the pioneer in selecting CFBC technology Boiler for its lignite power plant.





Since prescribed norms for this category of lignite thermal power plant was non-existent at that point of time, the prevalent norms for Pulverized coal/lignite-based power plant was considered.

- 10.2 Parameters specific to CFBC technology-based Lignite Power Plants were formulated much later after the establishment of Regulatory Commissions. SLPP-I is therefore has been saddled with inferior normative parameters of Station Heat Rate, Aux. Power Consumption and Annual O & M Charges since inception.
- 10.3 In the years 2003 and 2005, Govt. of Gujarat appointed a committee to review and recommend revision of PPAs to bring down the tariff of IPPs in the State. Being a GoG controlled entity, GIPCL accepted the PPA amendment twice in order to give leverage to GoG to negotiate with other IPPs, but it squeezed the returns from SLPP-I.
- 10.4 GIPCL has been incurring huge loss on account of Heat Rate, Aux. Consumption and lower recovery of annual O & M Charge. Annual O & M Charge is specified as a percentage of Capital Cost. The normative PPA parameters are poorer than the design as well as current regulatory norms. Additionally, the provision for working capital is lower and there is no PPA provision for Lignite transit and handling losses as well as pass through of actual water charges.
- 10.5 The normative PPA parameters for CFBC Lignite Power Plants has been notified after establishment of SLPP-I and are far better.
- 10.6 GIPCL had to infuse additional capital totaling approx. **Rs.63.11 Crs.** in past few years in order to maintain plant availability and performance close to the normative level. This amount has not been recovered from the beneficiary, GUVNL.
- 10.7 Other Power Plants in the State which fall under Annual Revenue Recovery (ARR) mechanism and were commissioned after SLPP-I have been allowed additional capital infusion and recovery by way of adjustment in tariff as per the MYT Regulation, 2016.

ATPS, a similar category IPP in the State has also been allowed additional capitalization, relaxation in PPA parameters and revision in tariff to improve the performance.

- 10.8 GIPCL has already infused Rs.63.11 Cr. in SLPP-I but it cannot infuse further due to the following reasons:
 - a. The financial returns from SLPP-I is meagre and on the other hand due to ageing and poor fuel quality, failure rate of equipment has increased.
 - b. GIPCL's overall revenue and profitability has declined after the stoppage of its 310 MW Gas Based Station in Baroda from the year 2021 onwards due to spike in Natural Gas Price.
 - c. Currently, GIPCL is executing a number of RE projects simultaneously to aid the Central and State Govt.'s ambitious target of Renewable Capacity addition by the year 2030. GIPCL is developing a 2375 MW RE Park at





Khavda, Kutch and a 600 MW Solar Project at Khavda. Substantial equity contribution to the extent of Rs. 2000 Cr. is required for financing these Projects.

d. GIPCL is a listed entity and is therefore duty bound to protect its investors interests. GIPCL cannot continue to infuse own funds to sustain SLPP-I operations.

10.9 No compensation is available to SLPP-I for the deterioration in Station Heat Rate and Aux Power Consumption on account of frequent load variation and technical minimum operation to accommodate renewable generation. This compensation is available to Thermal Power Plants in the Central Sector for part load operation as per provision 6.3 B of IEGC Amendment of 06.04.2016. SLDC, in its Annual Report 2021-22 has also acknowledged this issue and stated as under:

The thermal generating stations shall be suitably compensated for generation below the normative level. The compensation for the station heat rate and auxiliary energy consumption shall be worked out in terms of energy charges.

10.10 In the light of above facts, GIPCL requests the Hon'ble commission to grant relief in PPA Parameters of SLPP-I to bring it at par with the current regulatory norms specified by the Hon'ble Commission as per MYT Regulation, 2016. With the support of revised norms as per MYT 2016, this Power Plant can continue to perform optimally, meet its operation expenses for the remainder PPA term and extended PPA duration till 2040.

10.11 GIPCL's request for relaxation in the normative PPA parameters like SHR, APC etc. is only to the extent mandated by design and prudent operating norms, factoring the deterioration in fuel quality and age of the Power Plant.

10.12 As per PPA, SLPP-I's Annual O & M Charge is fixed at 2.5 % of the Project Cost and escalated based on CPI-WPI index. For the financial year 22-23, the Annual O & M Charge was Rs. 38.44 Lacs/MW. This amount is grossly insufficient considering the vintage (Increased O&M requirement and expenses incurred for 23 years since commissioning) of this Power Plant.

As per the norms specified by the Hon'ble Commission, the later commissioned PPA / non-PPA based Power Plants are allowed a higher charge. As an example, the normative Annual O & M Charge in FY 22-23 for 250 MW SLPP-II, commissioned in the year 2010 was Rs.39.89 Lacs / MW.

GIPCL requests the Hon'ble Commission to reset the O & M Charge and bring it on par with other Power Plants with due consideration of its age.

10.13 Water charge is not reimbursed at actuals under separate head for SLPP-I as is the case for other PPA / non-PPA based Thermal Power Plants in the State as per MYT Regulation, 2016. GIPCL requests the Hon'ble Commission to kindly consider this aspect.

10.14 SLPP-I PPA doesn't have the provision of transit loss for lignite transportation from the captive mine even though major quantum of lignite is transported around 15 km from the Valia Mine to Power Plant.





10.15 The current PPA parameters and relaxation sought post Renovation, Modernization exercise is tabulated below.

Sr. No.	Parameter	PPA	Relaxation sought post Renovation, Modernization and Life Extension from FY 2025-26 onwards
1	Addl. Capitalization	Rs. 400 Cr. (preliminary estimate, DPR estimate and actual is expected to be higher)	Actual as per DPR with GUVNL and Hon'ble Commission approval
2	Debt: Equity Ratio	74.5:24.5	74.5:24.5
3	Return on Equity	13%	14%
4	Station Heat Rate kCal/kWh	2400	2461
5	Auxiliary Power Consumption (%)	10	11.5
6	Annual O&M Expenses	2.5% of Capital Cost and escalation as per WPI-CPI.	To be aligned as per GERC MYT Regulation, 2016 and at par with similar Power Plants with due consideration to the age of SLPP-I.
7	Transit Loss	Nil	Actuals, limited to 0.8%
8	Water Charges	Nil. Considered as part of O&M Charge	At Actuals

10.16 Post Renovation and Modernization exercise there would be improvement in efficiency parameters like Station Heat Rate and Auxiliary Power Consumption but would still be poorer than the revised level sought by GIPCL.

10.17 Looking to the age and frequent load variation SLPP-I is subjected to, GIPCL requests the Hon'ble Commission to favourably review and grant relaxation in PPA Parameters to bring it at par with other CFBC Lignite Power Plants in the State in order to ensure that this Power Plant remains viable and performs optimally.

11. BASIS OF THE PETITION BEFORE THE HON'BLE COMMISSION AND PPA APPROVAL

11.1 Hon'ble Commission's approval of SLPP-I PPA and amendments by GEB (predecessor of GUVNL)

Petitioner would like to assert that this Hon'ble Commission has dealt with SLPP-I PPA and the amendments executed with erstwhile Gujarat Electricity Board vide **Petition No.90 of 2002**. Relevant extract of the order on this Petition is reproduced hereunder:





Item no. 17 of the Hon'ble Commission's Order dated 22.12.2005 on Petition No.90/2002

*In view of submissions and affidavits filed by the petitioner on 22.1.2004 and 13.8.2004, we are of the opinion that the purpose for which the petition was filed has already been met. At present the PPAs have been renegotiated and modified. The directions given in the tariff order dt.10.10.2000 in case No.19/1999 are substantially complied. Further in its order dated 10.10.2000 the Commission had also observed in para 6.3.5 as under: "6.3.5. **The Power Purchase Agreement (PPA) already approved by GEB and the Government of Gujarat prior to the date of issue of this order may not be reopened by the Commission. Similarly, the PPA's for private power projects finalized through competitive bidding route, including the expansion of these projects also may not be reopened". Hence, no specific order is required in this matter.***

11.2 Review of SLPP-I PPA terms and regulation of tariff

Regulation 26.1 of GERC MYT Regulations, 2016 deals with Determination of Generation Tariff for Existing Generating Station. This Hon'ble Commission is thus empowered to admit additional capitalization, review of PPA parameters and adjustment in tariff of SLPP-I.

26.1 Existing generating station:

26.1.1 *Where the Commission has, at any time prior to the date of effectiveness of these Regulations, approved a power purchase agreement or arrangement between a Generating Company and a Distribution Licensee or has adopted the tariff contained therein for supply of electricity from an existing generating Unit/Station, the tariff for supply of electricity by the Generating Company to the Distribution Licensee shall be in accordance with tariff mentioned in such power purchase agreement or arrangement for such period as may be so approved or adopted by the Commission.*

SLPP-I PPA has been approved by this Hon'ble Commission vide order No. 90/2002 and hence the Hon'ble Commission can deal with the tariff / amendment to PPA as per provision no. 26.1 of MYT Regulation, 2016.

11.3 Approval for SLPP-I Renovation, Modernization and Life Extension Proposal

Item No.50 of Chapter-4 of GERC MYT Regulation, 2016 deals with Renovation, Modernization and Life Extension of Power Plant. The relevant clauses are reproduced here:

50.1 *The Generating Company, for meeting the expenditure on Renovation and Modernization for the purpose of extension of life **beyond the useful life** of the generating station or a unit thereof, shall file an application before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost-benefit analysis,*





estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost, record of consultation with beneficiaries and any other information considered to be relevant by the Generating Company.

50.2 Where the Generating Company files an application for approval of its proposal for Renovation and Modernization, the approval shall be granted after due consideration of reasonableness of the cost estimates, schedule of completion, use of efficient technology, cost-benefit analysis, and such other factors as may be considered relevant by the Commission.

11.4 **Beneficiary GUVNL's Approval for Renovation, Modernization and Life Extension Proposal**

Respondent, GUVNL is the sole beneficiary of power from SLPP-I and in keeping with the requirement as per GERC MYT Regulation, 2016, GIPCL has obtained Beneficiary GUVNL's in-principle approval for the proposal vide letter dated 05.08.2022.

12. **TECHNO-COMMERCIAL BENEFITS**

12.1 No major thermal capacity addition is planned in Gujarat in the near future. Adequate Thermal Capacity for Base Load Generation to the extent of at least 50% of total generation is essential in order to balance the variable Renewable Generation in the State. SLDC Annual Report 2021-22 states as under:

"The must run mandate for the renewables will require extensive support from conventional generators for balancing and managing variation of renewables. The responsibility of maximum flexible generation certainly remains on the thermal sector.

It is anticipated that more than 3000 MW generation variation in renewable and 5000 MW demand variation in a day would be quite common. It is utmost necessary that the conventional generators having more flexibility should be on bar."

12.2 In view of the unexpected surge in power demand across the country and CEA's projection on expected demand and available capacity, Ministry of Power, Govt. of India has instructed the Power Generation Utilities in January, 2023 not to retire any Thermal Power Plant till the year 2030 and advised to carry out Renovation and Modernization to extend life of the Power Plant. It is expected that Ministry of Power may extend this to cover power plants retiring in 2030 and beyond.

12.3 In view of the anticipated surge in power demand in the State, the matter was deliberated in a high-level meeting chaired by Hon. Energy Minister, GoG on 23.03.2022. MD GIPCL was directed to immediately forward the proposal for Renovation, Modernization and Life Extension of 250 MW SLPP-I to GUVNL so that the State's increased Power Demand in future can be successfully met with a reasonable tariff.





12.4 SLPP-I is a consistently better performing Lignite Power Plant in the State and Lignite Rate is insulated from major shocks on account of global factors and supply-chain disruption. Hence the tariff shall remain almost steady and predictable for the beneficiary, GUVNL.

12.5 SLPP-I is already environment compliant and future ready with regard to stringent emission limits. FGD installation, which is a costly and time-consuming affair is not required in case of SLPP-I. This is a major advantage for the State's Power Consumers and therefore Renovation, Modernization and Life Extension exercise is an economically viable option in case of SLPP-I.

12.6 As per CEA's Report on Optimal Generation Capacity Mix for 2029-30 Version 2.0 published in April, 2023, the capex for new coal-based power plant has been considered as Rs. 8.34 Cr./MW against the earlier estimate of Rs. 7.85 Cr./MW. The investment required for Renovation, Modernization and Life Extension of SLPP-I is expected to be modest in comparison and payback period short.

12.7 The tariff of this Station post Renovation, Modernization and Life Extension would be quite competitive for the beneficiary, GUVNL. GUVNL would be insulated from procuring power at higher rates from the Energy Exchanges, which currently goes up to capped rate of Rs. 10 / kWh during the peak period.

12.8 SLPP-I Power Plant, Mines and associated infrastructure provide direct livelihood to a workforce of around 400-500 and indirectly to a large population residing in surrounding villages. GIPCL is actively involved in CSR activities in the surrounding areas through the DEEP Trust. Life extension of SLPP-I by 10 years will ensure continued livelihood for the employed manpower and socio-economic benefits for the local population.

12.9 The co-located 250 MW SLPP Phase-II's PPA tenure is till the year 2040. Hence common infrastructure of SLPP can be optimally utilized if SLPP-I PPA tenure is also extended till the year 2040.

12.10 GIPCL is a Govt. of Gujarat controlled entity as well as a publicly listed company and is subject to strict government supervision. It is headed by senior government officers and its operation is guided towards overall benefit for all the Stake Holders and principally the State. The State's power consumers would be immensely benefitted from the Renovation and Modernization exercise by way of increased cheaper power availability. Extended Life of this Power Plant would ensure that the benefits are continued for a further duration of 10 years.

13. PRAYER

GIPCL requests before Hon'ble Commission for the following:

13.1 In-Principle approval to proceed with Renovation, Modernization and Life Extension Exercise

a. SLPP-I has completed 23 years of operation and 125 MW Unit -I has clocked more than 1.63 Lac running hours while 125 MW Unit-2 has clocked more than 1.65 Lac running hours. As per GERC's MYT





Regulation, 2016 and BHEL recommendation, the "Useful/ Design Life" of SLPP-I is 25 years. Renovation and Modernization is due upon completion of the design life of 25 years so that the Power Plant can continue to perform as per PPA terms. Approval is sought as per Article 7.1.2 of SLPP-I PPA and clause 6.3.5, 26 and 50 of GERC MYT Regulation, 2016.

- b. Since the Renovation, Modernization and Life Extension exercise is time consuming and requires considerable upfront investment by GIPCL, in-principle approval of the Hon'ble Commission is requested to initiate timely action.

13.2 Extension of PPA term by 10 years till the year 2040

SLPP-I PPA term is till the year 2030, which post Renovation, Modernization and Life Extension exercise is proposed to be extended till the year 2040 with the relaxed PPA parameters and revision in tariff, post Renovation and Modernization exercise. Considering the numerous merits of the proposal as well as estimated rise in Fixed cost of around 40-50 paise/kWh, in-principle approval from the Hon'ble Commission is requested for 10 years Life extension.

13.3 Submission of Detailed Project Report, Final Cost Estimate and Addl. Capitalization Amount, Time Schedule for Completion

- a. Allow GIPCL to submit the Detailed Project Report, final estimate of expenditure, time schedule and impact on tariff at a later stage once DPR is finalized. DPR is currently under preparation. Actual expenditure details shall be furnished upon completion of the Renovation, Modernization and Life Extension exercise.
- b. Approval to implement the Renovation & Modernization as per the **Rolling Plan** by availing extended shutdown along with planned overhauls. The extended duration of shutdown required for the purpose of Renovation, Modernization and Life Extension may be considered as "Deemed Availability" for the recovery of Capacity Charges.
- c. Allow additional capitalization of expenditure along with carrying cost due to Rolling Plan which would take approximate 4-5 years and suitable adjustment in fixed tariff

13.4 Relaxation in PPA Parameters

Review and grant relaxation in PPA parameters in view of technical and commercial aspects enumerated in the Petition for the continued optimal performance and commercial viability of SLPP-I post renovation exercise till the extended term of PPA. Relaxation is requested in order to align the efficiency parameters in line with the MYT Regulation, 2016 and allowed for similar CFBC based Lignite Power Plants in the State.

- 13.5 Grant liberty to the Petitioner, GIPCL to alter/ modify or make additions to this Petition at a later stage based on the emerging facts and circumstances, final DPR recommendation and mutual understanding with Respondent, GUVNL.





13.6 Pass such other orders as deemed fit and necessary in the light of the facts and circumstances of the present case.

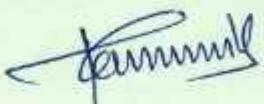
DECLARATION

The subject matter of the petition has not been raised by the Petitioner before any other competent forum, and that no other competent forum is currently seized of the matter or has passed any orders in relation thereto.

Place: Vadodara

For Gujarat Industries Power Company Ltd.,

Date: 22.06.2023


Petitioner





**BEFORE THE HON'BLE GUJARAT ELECTRICITY REGULATORY
COMMISSION, GANDHINAGAR**

PETITION NO. _____ OF 2023

IN THE MATTER OF:

Petition under Section 86 of the Electricity Act, 2003 read with GERC's MYT Regulation, 2016 and SLPP Phase-I's PPA with GUVNL to seek the Hon'ble Commission's approval for proposed Renovation, Modernization and Life Extension (R&M and LE) of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of expenditure and recovery by adjustment in tariff and extension of PPA with modified terms by 10 years.

AND

IN THE MATTER OF:

Gujarat Industries Power Company Ltd.

...Petitioner

Versus

Gujarat Urja Vikas Nigam Ltd.

...Respondent





AFFIDAVIT

I, Kiran R. Mishra, W/o. Shri Rajesh Mishra, aged about 52 years resident of Vadodara, do solemnly affirm and say as follows:

1. I am the General Manager (Commerce, Finance & Legal) of Gujarat Industries Power Company Ltd., and authorized signatory of the Petitioner Company herein and I have read the petition pertaining to the above case and I am competent and duly authorized by the Petitioner Company to file this Affidavit.
2. I have gone through the contents of the accompanying Petition and I say that the facts stated therein are based on the records of the Petitioner Company maintained in the normal course of business and believed by the deponent to be true.
3. The Annexure to the petition are true copies of their original.



DEPONENT

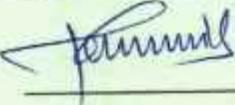
VERIFICATION:



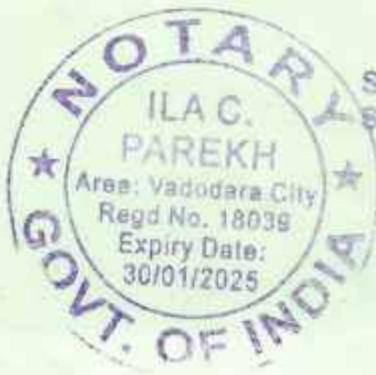
I, the Deponent above named do hereby verify that the contents of my above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed there from.

Reg. No. 3850
Date: 22/06/23

Verified at Vadodara on this 22nd day of June, 2023.



DEPONENT



Solemnly Affirmed/Declared
Sworn Before me by K.R. Mishra

IL A C. PAREKH
NOTARY

22/06/23







GUJARAT INDUSTRIES POWER COMPANY LIMITED

Regd. Office: P.O.: RANOLI – 391 350, DISTRICT: VADODARA

Tel. No. 0265 – 2232768 Fax No. 0265 2230029.

Email: cs@gipcl.com website: www.gipcl.com

CIN – L99999GJ1985PLC007868.

EXTRACT OF 288th MEETING OF THE BOARD OF DIRECTORS OF THE COMPANY HELD ON THURSDAY, THE 8TH FEBRUARY, 2018.

4451. Approval for Land Acquisition for the remaining land within the Mining Lease Area of B-Block of Mangrol – Valia Mine, Diversion of State Highway (No.166 Kosamba – Mosali), Diversion of village road from Harsani to Nani Pardi, construction of the Shah Village diverted road, dedicated Lignite Transportation Road, few blocks of Surali and Tadkeshwar village in Vastan ML Area and blocks in Patna Village for the construction of Intake Well and allied infrastructure for Power Plant.

"RESOLVED THAT pursuant to 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013' (the LAQ Act) consent of the Board of Directors, be and is hereby accorded to acquire 168 land Blocks admeasuring 302.69.92 Ha.Ra.Sq.Mtrs. as per Cluster - 1 list in Charetha, Mosali, Amandera, Mangrol, Surali, Tadkeshwar, Shah, Vasaravi and Patna Villages of Dist: Surat, covering Private, Government and Govt. Gaucher lands consisting of land Blocks situated to the south side of Kosamba-Zankhvav Railway Line, land Blocks for diversion route of Kosamba - Mosali State Highway No. 166, compensatory land as substitute against the acquisition of Govt., Govt. Gaucher / Padtar lands on north side of Kosamba-Zankhvav Railway Line within the Mining Lease (ML) area of Block - B, for the purpose of Lignite and Limestone mining, at an estimated cost of about Rs. 761.48 crores, with the option to explore the possibility of taking the lands on long term lease in consultation with the Revenue Department of Govt. of Gujarat and willingness of the land owners for long term lease."

"FURTHER RESOLVED THAT for acquisition of Cluster-2 lands:

- a. the feasibility of expansion project at SLPP under Section 62 of the Electricity Act, 2003 along with New Tariff Policy, 2016 be carried out in consultation with EPD, GoG and Gujarat Urja Vikas Nigam Limited (GUVNL) considering the per unit variable cost of Lignite;
- b. the lignite price be worked out considering the land cost at prevailing land price; and
- c. the project feasibility study, levellised tariff on variable cost as well as Fixed Cost for 25 years life of the Power Plant, under Cost Plus Model be worked to prior to making applications for acquisition of Lands of 488.00.22 Ha.Ra.Sq.Mtrs."



21.

"FURTHER RESOLVED THAT Managing Director be and is hereby authorized to do all the things and deeds required to give effect to this resolution including but not limited to discuss, negotiate, decide, finalize, sign / execute Agreements, Deeds, Documents, writings, Applications, etc., to furnishing undertaking regarding providing of substitute land against the Govt. Gaucher/ Padtar land in Mosali, Mangrol, Charetha, Amandera, Nani Pardi and Harsani Villages, whether under the Common Seal of the Company in terms of the provisions contained in the Articles of Association of the Company, wherever required, or otherwise, to appoint/nominate Sr. Officials of the Company from time to time, to do and perform all the things and deeds that the Managing Director is hereby authorized to do and perform."

CERTIFIED TRUE COPY
FOR GUJARAT INDUSTRIES POWER COMPANY LIMITED

Date: 03/06/2023.
Place: Vadodara.


CS Shalin Patel
Company Secretary & Compliance Officer



M.Lakshminarasimhan
Senior Deputy General Manager
(Marketing)

Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)
High Pressure Boiler Plant
Tiruchirappalli – 620 014,
Tamil Nadu, India

Phone: +91- 431 -2574180; e-mail: mlsimhan@bhel.in; www.bhel.com

SL: SLPP-O&M
3rd June 2022

Mr. N. K. Singh
General Manager (SLPP)
Surat Lignite Power Plant (SLPP)
Gujarat Industries Power Company Limited (GIPCL)

Dear Sir,

Ref: GIPCL-SLPP email dated. 26 May 2022

Sub: Blending of imported coal with Lignite in 4 X 125 MW CFBC Boilers installed at GIPCL-SLPP –reg

In line with your e-mail on the subject matter and subsequent discussions had with our Technical Team in this regard, please find our observations as under on the requirement of blending of imported coal with Lignite in 4 X 125 MW CFBC Boilers installed at GIPCL-SLPP.

SLPP Phase-I(2x125 MW- Unit 1&2) Boilers were originally designed for firing the Lignite GCV of 4240 kCal/kg and moisture content of 24 % % and SLPP Phase-II (2x125 MW(Unit 3& 4) were designed for firing the Lignite GCV of 2900 kCal/kg and moisture content of 43 %. BHEL had already recommended in the year -2015 for blending of imported coal up to 10-15% with Lignite for firing in CFBC Boilers. Blending up to 10-15% imported coal with 85-90% Lignite on weight basis had been done at SLPP in the past and results/data submitted to BHEL shows in overall improvement Performance without any major deviations in operating parameters.

Further Based on the request of GIPCL- SLPP, BHEL-Trichy analysed the implications of firing Imported as per the Proximate Analysis given below-

Proximate Analysis (As received basis)		
Description	Imported Coal 1	Imported Coal 2
Total Moisture (% by Wt) ADB	18	25
Ash (% by Wt) ADB	8	15
Volatile Matter (% by Wt)	25-45	25-45
HHV (kcal/kg) (As Received Basis)	5500	5000

The Boilers Performance has been evaluated on major operational parameters for firing by blending of 10% imported coal of GCV 5500 kCal/kg coal and 5000 kCal/kg. The observations are tabulated below:

Description	90% Lignite + 10% 5500 kCal/kg Imported Coal Blend	90% Lignite + 10% 5000 kCal/kg Imported Coal Blend
Efficiency	Base	-0.5%
Aux Power	Base	+0.5%
Limestone Consumption	Base	+5%
Fuel Consumption	Base	+2%
Ash Generated	Base	+6%
Flue Gas Quantity	Base	+0.5%

From the above table, it is inferred firing by blending 10% imported coal-1 (GCV 5500 kCal/kg) considering current boiler configuration and past experience, performance improvement would be more beneficial in comparison with Imported coal-2 (GCV 5000 kcal/kg). There would be overall performance improvement in boilers. However, with changed heat duty conditions Plant operational parameters need to be monitored and to be set/ fine-tuned based on actual firing during operation. Further with the increase in Ash Generation and lime stone consumption with firing of imported coal-2 (GCV-5000 kCal/kg), there would be limitation of Ash Handling System capacity.

Considering the above aspects and overall better Plant Performance, blending of 10-15%Higher GCV of imported coal-1 (5500 kCal/kg) with Lignite is recommended for CFBC Boilers at SLPP.

We trust our clarifications are in order and you may feel free to contact us in case of further queries.

Thanking You,

Yours sincerely



M.Lakshminarasimhan

Corrosion Assessment of Equipment and Structures at Surat Lignite Power Plant (SLPP) and Recommendations of Mitigation Measures

FINAL REPORT

Submitted to



GUJARAT INDUSTRIES POWER COMPANY LTD.

(Surat Lignite Power Plant)

P.O. Nani Naroli – 394 110, Mangrol Taluk, Surat
GUJARAT

Submitted by



सी.एस.आर.आर. इंसिट्यूट
CSIR - CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद,

(Council of Scientific & Industrial Research, Govt. of India)

காரைகுடி KARAIKUDI 630 003, தமிழ்நாடு TAMIL NADU



12.6 Conclusions

- ◆ The newly procured air preheater tube showed no visible corrosion deposit on its surface. However, the x-ray diffraction analysis showed the presence of silica and hematite on the surface (refer Figure 12.8). The presence of silica is due to the prolonged fly ash deposition on its surface. Silica is one of the major phases observed in almost all the corrosion by-product samples collected from SLPP. It should be noted that the fly ashes collected from various locations of the SLPP showed high level of chloride and sulphate in it. There is a great chance that this corrosion accelerating species could have caused corrosion on the surfaces of the newly procured air preheater tubes. It is evident from the hematite phase, which is one of the main corrosion by-products for the steel.
- ◆ The inner surface of the air preheater tube showed a patchy intermittent deposit on it. The collected corrosion by-product had $50\text{-}80\mu\text{m}$ size particulates. Severe sulfidation can occur on the air preheater tube surfaces when they are deposited with FeS-rich fly ash. Subsequent exposure of this FeS with oxidizing flue gas can result in elemental sulphur in the deposit along with H_2S , COS and CH_3SH . The formation of the elemental sulphur next to the metal surface can lead to severe corrosion attack than the corrosion attack by H_2S gas on the metal. The prediction of the main sulphide phase, bornite in XRD analysis had confirmed this.
- ◆ The scanning electron micrograph of the corrosion scale collected from the outer surface of the air preheater tube showed a colony of irregular shaped particulates with varying particle size. The XRD analysis of the corrosion by-product confirmed the presence of the major corrosion by-product, hematite in it.
- ◆ The presence of chloride in the fly ash which is in direct contact with the corrosion scale can alter the growth mechanism of FeS deposited on the tubes. This further leads to rapid outward diffusion of iron through this scale. It may also form iron chloride at metal/corrosion scale interface which can lead to severe metal loss. The condensation of moisture occurs during boiler downtime when the ambient temperature falls below the dew point. This condensed water dissolves chloride in the ash and then enters the corrosion scale via its pores and cracks. Thus, the downtime corrosion attack occurs on the preheater tubes.

12.7 Recommendations of the Remedial Measures

- ◆ To reduce the amount of impurities introduced to the air preheater via fly ash and flue gas, fuel switching or blending to lower the overall sulphur and alkali contents is recommended.
- ◆ By lignite washing process, a significant amount of sulphur and alkali metals can be removed from it. During the washing process, it is important to use water with less chlorine level in order to reduce the aggravated chlorine problem in lignite.
- ◆ Additives can be introduced in TAPH system, or better in the combustor system, in order to reduce the chloride and sulphur content in the flue gas.
- ◆ The sulfidation resistance increases with increase in chromium content in the material. Tube alloys with 9-12% Chromium exhibit satisfactory resistance to low- NO_x



WORK SUMMARY AND CONCLUSIONS

- Hematite (Fe_2O_3) had been uniformly observed in all the corrosion by-products collected from the structures. The presence of calcite ($CaCO_3$) and silica (SiO_2) was also common along with chromia (Cr_2O_3). The deposition of the fly ash over the structural items shall be the main reason for the presence of calcite and silica in these corrosion by-products. The deposition might have created isolated anodic region on the surfaces which might have led to the corrosion of the surface. The presence of high level of chloride in the fly ash deposition might have further accelerated the corrosion degradation.
- Bornite (Cu_5FeS_4) had been identified in few of the corrosion by-products. The sulphur present in the lignite shall be removed in the form of $CaSO_4$ by the reaction of limestone with lignite. At high temperature, $CaSO_4$ reacts with Fe and Cu present in the structural surfaces which results in bornite. The presence of hematite and bornite confirms the gradual degradation of the structural items.
- The presence of corrosion causing species such as chloride and sulphate had been confirmed in the analyses of the concrete samples collected from the cooling tower and fly ash silo.
- The microbial characterization of the flue gas condensate collected from the induced draft (ID) fan structure had confirmed the presence of the iron and heterotrophic bacteria in it. Appropriate biocide had been recommended to mitigate the corrosion issue due to the presence of these microbes in the flue gas condensate.

The remedial measures recommended in this work for each structure shall have the great potential to extend the service life of that particular structure. Generally, the corrosion mitigation measure for each structure involves one or the combinations of the following,

- Fuel switching or blending of the existing fuel with other low sulphate and chloride containing fuels.
- Fuel washing to remove the excess amount of sulphate from the lignite. The water used for this purpose should have very low level of chlorine content.
- Usage of additives to reduce the effect of high level of chloride and sulphates in combustion gas.
- **Corrosion Preventive Paint / Coating Systems:** The paint and coating systems recommended in this work for the structures shall provide very good corrosion prevention. It is recommended to follow the outlined procedures strictly for surface preparation, surface cleaning and paint or coating application procedure in order to exploit the full potential of the system.
- **Selection of Materials and Design:** Galvanic corrosion and uniform corrosion are the two other major forms of corrosion observed on the SLPP structures other than the most prevalent hot corrosion attacks.
 - General recommendation for the galvanic corrosion mitigation is to avoid the formation of galvanic coupling by using materials with similar chemical composition. It is further recommended to use polymer based sleeves in areas wherever there is dissimilar metallic junctions.



M.Lakshminarasimhan

Senior Deputy General Manager
(Marketing)

Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)

High Pressure Boiler Plant

Tiruchirappalli – 620 014,

Tamil Nadu, India

Phone: +91- 431-2574180; e-mail: mlakshminarasimhan@bhel.com; www.bhel.com

SL: SLPP:O&M

1st July 2022

Mr. N. K. Singh

General Manager

Surat Lignite Power Plant (SLPP)

Gujarat Industries Power Company Limited (GIPCL)

Dear Sir,

Ref: GIPCL-SLPP email dated 27 June'2022

Sub: SLPP- I (2X 125 MW- Unit 1&2) Design and Useful Life of the Units

This is in response to your e-mail 27.06.2022 on the subject matter and subsequent discussions with our Technical Team in this regard.

We would like to state that the design life of GIPCL's SLPP-1 Lignite CFBC based Units ((2 X 125 MW- Units 1&2) is 25 years as per the standard CEA/CERC norm. Our observations regarding Useful Life of the CFBC based Lignite Units of GIPCL SLPP-I are as follows:-

- SLPP Phase-I (2x125 MW- Unit 1&2) plant and equipment were supplied between the year 1996 and 2000 and units are in Commercial operation since Feb-2000. It may be noted that the units are in operation for more than 22 years and completed running hours of more than 1,50,000 Hrs.
- The Boiler Material Selection were based on ASTM material Standards which typically provide reasonable useful life around 25 years based on our past experience. The conditions of operation (load cycles), erosion & corrosion conditions often dictate the variations noticed at different site over the operating lifetime of boiler components. However, cyclic loading effects can contribute to reduction of life and, for tubing in particular, the effect of both internal and external oxidation/scaling/corrosion can be an overriding factor.
- Substantial degradation in the Lignite quality also results in increased erosion and corrosion on the Plant and Equipment, thermal fatigue and creep effect, thus causing accelerated aging of the Units.
- Further, these Boilers were originally designed for firing Lignite with GCV of 4240 kcal/kg and moisture content of 24% whereas, Lignite being fired in the Boilers is having GCV 2450 kcal/kg-2500 kcal/kg and moisture in the range of 50-52%. Moreover, presence of Sulphur and Chloride in lignite has resulted in severe corrosion on pressure and non-pressure parts.

Useful Life in relation to SLPP Phase-I (2x125 MW -Units 1& 2) can be considered as 25 Years based on current information of the actual operational parameters, O&M practices and Conditions of these Units provided by your team. We recommend timely R & M activities to continue safe efficient operation of these Units and for extending the operational life of these units.

We trust our clarifications are in order and you may feel free to contact us in case of further queries.

Thanking You,

Yours sincerely

M. Lakshminarasimhan

M.Lakshminarasimhan

ARTICLE 7
PLANT OPERATION, MAINTENANCE AND FUEL MANAGEMENT

7.1 GIPCL'S DUTY TO OPERATE AND MAINTAIN

7.1.1 Operating Procedures

GIPCL shall develop operating procedures in writing for the Generating Station not later than 180 (one hundred and eighty) days prior to the Synchronization. Such operating procedures shall be consistent with:

- i. the terms and conditions of this Agreement
- ii. the design and technical specification of the Generating Station,
- iii. the Prudent Utility Practices,
- iv. the Despatch Procedures; and
- v. the laws of India;

Provided, however, the standing provisions of the operating procedures and instructions, if any, issued by the Regional Load Despatch Center will be binding on GIPCL and the Board, GIPCL will however not be required to develop operating procedures for individual plant equipments with the Board.

7.1.2 Operation and Maintenance

Subject as provided in this Agreement, GIPCL shall operate, and, if appropriate, modify and maintain the Generating Station in accordance with:

- (i) Good Industry Practice
- (ii) all applicable Laws and directives thereunder
- (iii) the manuals, instructions and manufacturers' guidelines supplied by the equipment supplier pursuant to the terms of the equipment supply contract
- (iv) the Dynamic Parameters

7.2 MAINTENANCE PROGRAM

7.2.1 Scheduled Outage

- (a) Not later than 60 days before the beginning of each Year, GIPCL shall submit to the Board its proposed Maintenance Program for the Generating Station in order to enable the Board to co-ordinate the scheduled outages with its own power station as well as the generating station of other independent power producers in the State.

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GUJARAT INDUSTRIES POWER COMPANY LTD.

Regd. Office: P.O. Ranoli – 391 350, Dist. Vadodara, Gujarat – INDIA
CIN: L99999GJ1985PLC007868

**CERTIFIED TRUE COPY OF RESOLUTION PASSED BY THE BOARD OF DIRECTORS AT ITS
311TH MEETING HELD ON MONDAY, THE 07TH FEBRUARY, 2022.**

**4854. SLPP PHASE – I (2x125 MW): RENOVATION AND MODERNIZATION (R&M) OF
UNITS.**

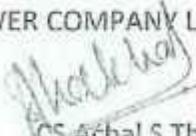
"RESOLVED THAT consent of the Board of Directors be and is hereby accorded for seeking 'in-principle' approval of Gujarat Urja Vikas Nigam Limited (GUVNL) for the proposed Renovation and Modernization (R&M) of 2 x 125 MW Phase – 1 (Units 1 and 2) of Surat Lignite Power Plant (SLPP) of the Company situated at Village Nani Naroli, Taluka Mangrol, District Surat at a tentative cost of Rs. 312.50 Crores."

"FURTHER RESOLVED THAT subject to the approval of Gujarat Urja Vikas Nigam Limited (GUVNL), consent of the Board be and is hereby accorded for making application to Gujarat Electricity Regulatory Commission (GERC) seeking approval for reimbursement of the proposed R & M expenditure as permissible under applicable Act/Regulations/ Rules."

"FURTHER RESOLVED THAT Managing Director be and is hereby authorized to do all the things and deeds required for Renovation & Modernization (R&M) of SLPP Phase-I (Unit- 1 & 2) and to implement this resolution including but not limited to discussing / negotiating with, making applications to, submitting deeds / documents / writings, etc. to GUVNL, GERC or any other authority, to incur necessary preliminary expenses including but not limited to appointment of Consultant(s) for preparing the Detailed Project Report (DPR) of the proposed R & M of SLPP Phase I Units as and when need arises, to nominate and / or authorize Senior Executives of the Company, from time to time, to do and perform all or any of the acts, things and deeds that the Managing Director is hereby authorized to do and perform."

CERTIFIED TRUE COPY
FOR GUJARAT INDUSTRIES POWER COMPANY LIMITED

Date: 21/02/2022
Place: Vadodara


CS Achal S Thakkar
Company Secretary



Dipesh Raj
Under Secretary (Power)

No.GIP-14-2022-1257-K
Government of Gujarat,
Energy & Petrochemicals Department,
Block No.5, 5th Floor, Sachivalaya,
Gandhinagar - 382 010.
Ph.No. 079-23250779
Fax No. 079-23250797

Dated 05.05.2022

To,

- (1) The Managing Director, GUVNL, Vadodara.
- (2) The Managing Director, GIPCL, Vadodara.
- (3) The Managing Director, GSECL, Vadodara.

Sub : Reg. Minutes of Meeting held under the Chairmanship of Hon. Minister (EP&F) for the issues related to GIPCL.

Sir/Madam,

I am directed to refer to the aforesaid subject and to state that a meeting was held under the Chairmanship of Hon. Minister (EP&F) with a view to discuss the issues related to GIPCL.

2. In this regard, a draft of the minutes of meeting submitted by GUVNL was submitted to State Government for kind perusal and approval. State Government has approved the said minutes of meeting. Minutes of the said meeting is enclosed for ready reference.

3. I am, therefore, to request you to take further appropriate action accordingly.

With regard,

Yours faithfully, ,

(Dipesh Raj)

Under Secretary to Government
PEnergy & Petrochemicals Department

Encl : As above

Copy to :-

- ✓ Under Secretary (RE), EPD, Sachivalaya, Gandhinagar.....for kind information and necessary action.

41 35
24 March 2022

Draft Minutes of Meeting of the Energy and Petrochemicals Department on 23.3.2022 at Swarnim Sankul – 1, 1st Floor, Sachivalaya, Gandhinagar.

A meeting of senior officials of the Energy and Petrochemicals Department, chaired by Hon'ble Minister, Shri Kanubhai M Desai was held on 23.3.2022 at 6.00 p.m.

The following had attended the meeting:

- 1) Shri Mukeshbhai Z Patel
Hon'ble Minister for Energy (State)
- 2) Smt. Vatsala Vasudeva, IAS
MD, GIPCL
- 3) Smt. Mamta Verma, IAS
PS (EPD)
- 4) Shri Jai Prakash Shrivahare, IAS
MD, GUVNL

Shri SN Purohit, CGM (RE&BO), Shri NK Singh, GM (SLPP), Shri KR Ghataliya, Sr. Manager (RE Projects) from GIPCL and Smt. Sailaja Vachhrajani, GM (RE & IPP), GUVNL were also present.

Discussion and deliberation was held on several issues pertaining to GIPCL and GUVNL.

1. **GIPCL's settlement with the MDO of Vastan South Mines and Approval by GUVNL.**
 - a) MD, GIPCL represented regarding GIPCL's settlement with the South Vastan MDO (Mine Developer and Operator), which was duly approved by the Board of Directors, chaired by Shri Pankaj Joshi, IAS, the then MD, GUVNL and PS (EPD) on 26.6.2019, and GUVNL's refusal to approve the same. Giving the background and facts & circumstances leading to the settlement, MD, GIPCL explained that the tender awarded to the MDO contractor, M/s HD Enterprises in 2011 for 12 years was based on Stripping Ratio of 1:11.61. However, the contractor encountered geological surprise in the form

b) The intent of the Government to reserve land specifically for PSUs was presumably to promote and enhance their RE generation capacity and not to have them merely as RE Park developers. Implementing this scheme would fulfil this objective.

c) GUVNL submitted that under the CPSU scheme there is a requirement that the Discoms will have to mention a specific disclosure in the bills raised to Government consumers which may not be feasible for GUVNL in view of the regulatory framework. The Hon'ble Minister asked MD, GUVNL to look into the same. MD, GUVNL appreciated the suggestions and asked GIPCL to immediately submit a proposal for the CPSU Scheme so that GUVNL can examine the same.

2. Thermal Expansion Project / R&M of SLPP Phase I and II

a) GM (SLPP), GIPCL did a presentation regarding Thermal Expansion Project at SLPP. It was stated that timeline would be minimum 5 years looking to the land acquisition process. The power cost projection was Rs. 9.08 at levelized tariff for a period of 25 years. However, it was decided that since both cost and time line was on the higher side, GIPCL was requested to rework out the costs.

b) MD, GIPCL stated that GIPCL had also prepared a proposal for Renovation & Modernization (R & M) for the existing Stations of SLPP Phase -1 and Phase – 2, whereby they could continue to supply power to GUVNL for an additional 10 years beyond the existing PPA of 30 years each by investing in their R & M. The incremental cost of power would be about 40 paise/kWh on fixed cost. The Hon'ble Minister directed MD, GIPCL to immediately send the proposal to MD, GUVNL.

The discussion of GIPCL's issues being over, the MD and other GIPCL officials thanked the Hon'ble Minister and took leave of the dignitaries present.

GUJARAT URJA VIKAS NIGAM LIMITED

CIN U40109GJ2004SGC045195

ISO 9001-2008 Certified Company

Sardar Patel Vidyut Bhavan, Race Course, Vadodara (Gujarat) Pin-390007

Phone : Direct (0265) 2340289 PBX-(0265)2310582/83/84/85 86 Fax : (0265)-2344543

E.mail : gmipp.guvnl@gebmail.com

Ref. No. GUVNL-COM-GM(IPP)- 682

Date : 05-08-2022

To,
GM (Comm., Fin. & Legal),
Gujarat Industries Power Company Ltd,
P.O. Petrochemical,
Vadodara - 391 346

Fax No: 0265 2230029

Sub. : GIPCL's proposal for Renovation and Modernization and Life Extension of 250 MW SLPP
Phase - I

Ref. : 1. Your letter no MD / GIPCL / 2022 / dated 25-03-2022
2. Our letter no GUVNL / COM / GM(IPP) /681 dated 22-06-2022
3. Your letter no GIPCL:COM / GUVNL/ SLPP/ 2022-23 / 647 dated 5-7-2022

Dear Madam,

This has reference to GIPCL's letter dated 25-03-2022 wherein a proposal for Renovation and Modernization and Life Extension of 250 MW SLPP Phase - I was submitted to GUVNL for it's in-principle approval.

In this context, this is to convey GUVNL's in-principle approval for the following:

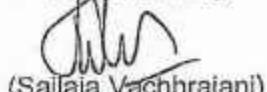
- (i) to carry out proposed Renovation and Modernization and Life Extension (R&M and LE) activities of SLPP Phase - I at estimated cost of Rs. 400 Crores and
- (ii) the extension of term of existing PPA of SLPP Phase - I by 10 years beyond 15-2-2030 (i.e. the date of termination of existing PPA).

It may be further noted that GIPCL shall have to take approval of GERC for the proposed R&M and LE activities of SLPP Phase - I including extension of PPA as this proposal involves increase in Project Cost and resultant increase in cost of power to end consumer. The detailed modalities of tariff for the period beyond 15-02-2030 may be decided separately at the relevant point of time.

Further, GIPCL shall have to submit the Detailed Project Report (DPR) and the required details of estimated cost of lignite and limestone including the cost of land acquisition for the same and the total implication of the same on the cost of power generation and seek GUVNL's approval before awarding contract with regard to the R&M and LE proposal.

Thanking You,

Yours faithfully,



(Salaja Vachhrajani)

General Manager (RE & IPP)

GUJARAT URJA VIKAS NIGAM LIMITED

CIN U40109GJ2004SGCO45195

ISO 9001-2008 Certified Company

Sardar Patel Vidyut Bhavan, Race Course, Vadodara (Gujarat) Pin-390007

Phone : Direct (0265) 2340289 PBX-(0265)2310582/83/84/85 86 Fax : (0265)-2344543

E.mail : cfmipp.guvnl@gebmail.com

Ref. No. GUVNL-COM-GM(IPP)- 68.1

Date : 22/06/2022

To,
GM (Comm., Fin. & Legal),
Gujarat Industries Power Company Ltd.
P.O. Petrochemical,
Vadodara – 391 346

Fax No: 0265 2230029

Sub. : GIPCL's proposal for Renovation and Modernization and Life Extension of 250 MW
SLPP Phase - I

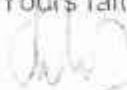
Dear Madam,

This has reference to GIPCL's letter dated 25-03-2022 wherein a proposal for Renovation and Modernization and Life Extension of 250 MW SLPP Phase -I was submitted to GUVNL for it's in-principle approval.

In this context, as requested earlier vide our email dated 17-06-2022, you are requested to provide the estimated cost of lignite during each year from each of the captive mines during the proposed extension of 10 years beyond the term of the PPA.

Thanking You,

Yours faithfully,



(Sailaja Vachhrajani)

General Manager (RE & IPP)

Copy fwcs to :

Managing Director,
Gujarat Industries Power Company Ltd.
P.O. Petrochemical,
Vadodara – 391 346



GUJARAT INDUSTRIES POWER COMPANY LTD.

Post Office Ranoli, Dist. – Vadodara 391 350 Gujarat - INDIA

46
Dtd. 23.01.2023.

The General Manager (IPP & RE),
Gujarat Urja Vikas Nigam Ltd.,
Sardar Patel Vidyut Bhavan,
Race Course Circle,
Vadodara- 390007.

Kind Attn.: Smt. Sailaja Vachhrajani

Sub: In Principle approval for proposed Mining Land (Cluster-I) acquisition and Fuel Mix for SLPP

Ref.:1. Meeting at GUVNL on 31.12.2022
 2. Letter GUVNL-COM-GM(IPP)-852 dtd. 05.08.2022
 3. Letter GUVNL-COM-GM(IPP)-681 dtd. 22.06.2022
 4. GIPCL Letters dtd. 25.03.2022 & 05.07.2022

Dear Madam,

At the outset, I wish to thank you for sparing your valuable time to sit for GIPCL's detailed Presentation on Technical and Commercial aspects of Renovation, Modernization and Life Extension of SLPP-I as well as proposed Land Acquisition in Cluster-1 of Mangrol-Valia Mine to meet the Lignite requirement of 500 MW SLPP. It assumes added significance due to the increased lignite requirement for SLPP on account of SLPP Phase-I life extension by 10 years. Subsequent to our meeting, we have shared the soft copy of our Presentation and the calculations with your officials.

While granting in-principle consent for Renovation, Modernization and Life Extension of SLPP-I vide letter dtd. 05.08.2022, GUVNL had asked GIPCL to submit estimated cost of lignite including cost of land acquisition and its implication on tariff. GIPCL has chalked out a detailed proposal to meet the increased fuel requirement by way of mine expansion and through additional means (Imported Coal) for the period 2025-40 i.e. post Renovation, Modernization and Life Extension of SLPP-1. GIPCL has worked out an optimal fuel mix considering operational and commercial aspect.

GIPCL wishes to share brief details of the proposal, which is primarily a summary of the discussion on 31.12.2022.

Fuel Requirement of SLPP Stations for the PPA duration

Sr. No.	Station	Annual Lignite Req. (Lakh Tons)	PPA Validity	Total Lignite Req. for balance PPA duration (Lakh Tons)
1	SLPP-1	17.41	Feb., 2030	137.38
2	SLPP-2	19.10	April, 2040	343.74
	Total (A)	36.51		481.58

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19 Current Lignite Availability from Captive Mines with Acquired Land

Mine	Annual Prod. (Lakh Tons)	Available Reserves as on 31.03.22 (Lakh Tons)
Vastan	5	21.30
Valia	31.51	410.50
Total (B)	36.51	431.80

Hence there is a lignite deficit of about 50 Lakh Tons((A)-(B)) for the PPA duration of SLPP Phase-I & II. Therefore, it is essential for GIPCL to acquire Cluster-1 land in the Mangrol-Valia Mine, for which mining lease is available, to start mining in this section by the year 2026. GIPCL had briefly opened this section in the year 2009 but could not progress due to non-availability of land.

GIPCL's Board has approved Land Acquisition in the Cluster-1 Mining Lease Area vide Board Resolution 4451 dtd. 08.02.2018.

Sr. No.	Cluster-1 of Mangrol Valia Mine	Qty.
1	Land to be Acquired (Ha.)	232.42
2	Lignite Reserve (Lakh Tons)	168
3	Projected Stripping Ratio	1: 9.10
4	Annual Production Capacity (Lakh Tons)	12

GIPCL shall be conducting a detailed Bore Hole Study to confirm the Stripping Ratio and Mineable Reserve before going ahead with the acquisition.

Importance and Benefits of Cluster-1 Land Acquisition

GIPCL proposes to go ahead with Mangrol Valia Mine Cluster-1 Land Acquisition for the following reasons:

1. The Vastan Mine would supply lignite till the year 2026.
2. GIPCL is aware of the Mangrol-Valia mine geology to some extent and is therefore confident about the Stripping Ratio and lignite quality of this Cluster.
3. The Lignite quality of this mine would be better than Valia Mine.
4. This Mine is closer to the Power Plant and hence transportation would be smooth and cheaper.
5. This Mine would reduce SLPP's current over-dependence on the Valia Mine. Due to over-production and space constraint, Valia Mine has been encountering several challenges since March, '22. There is constraint in enhancing production and transportation from Valia Mine to meet any increased requirement of Power Plant.
6. GIPCL is deploying its in-house team to liaise with the Revenue Department and Collector Office, Surat for smooth land acquisition. In view of past experience and goodwill in the area, GIPCL is confident of concluding the land acquisition process as per plan and best possible rate.

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Imported Coal Blending requirement:

Post Cluster-1 Land Acquisition and opening of Mangrol Section of Mangrol-Valia Mine with Lignite Reserve of 168 Lakh Tons, there would still be a shortfall of 57 Lakh Tons lignite availability for SLPP Phase-I & II operation till 2040.

Further, blending Imported Coal in SLPP Phase-I @ 9% -13% is essential to improve the Plant Performance, reduce Partial Loading of Units and to mitigate the fuel shortage. As submitted earlier, the CFBC Boilers were designed in 1997-98 considering Lignite GCV of 4200 K.cal/Kg while currently, Lignite GCV remains around 2500 Kcal/Kg. Blending with Imported Coal with GCV of 5500 Kcal/Kg will result in near full generation and improve the Station efficiency as well as Stability. This will further help to reduced forced outages, which mainly arises due to the effects of poor fuel quality. Hence, GIPCL proposes to bridge the Lignite shortfall by blending Imported Coal @ 9-13% in SLPP Phase-I. The advantages are listed below.

1. It would help to improve the overall fuel quality for the CFBC technology Boilers and reduce forced outages and therefore improve Plant Availability.
2. Reduce Partial Loading of Units by 8-10% in real time and therefore increased Generation for the Grid.
3. Looking to the current fuel price trends, the proposed tariff with Imported Coal blending @9 -13% in SLPP-1 would not significantly impact variable tariff and it would continue to rank high in the Merit Order of Dispatch.
4. In view of increasing RE penetration in the Grid and projected surge in Grid demand in the coming years, the above fuel mix will result in a win-win situation for GIPCL and the end consumers.

Lignite Reserves and Shortfall Details

Description	In Lakh Te
Lignite Reserve-Vastan	21.30
Lignite Reserve-Valia	410.50
Lignite Reserve-Mangrol-Valia Cluster-I (2026-2040)	168.10
Total Lignite Reserve available as on 31.03.2022	599.90
Total Power Plant requirement till 2040	657.13
Shortfall in Lignite	57.23
Shortfall in Imported Coal term	28.10
Annual Shortfall in Imported Coal term (2026-2040)	2.01

Details of Annual Lignite requirement at Normative PLF in SLPP-I and Proposed Fuel Mix are as under:

Sr. No.	Item	Quantity (in Lakhs Tons)
2	Avg. Annual Lignite Req. of SLPP-1	17.41
3	Projected Annual Lignite Availability for SLPP-1	13.31
4	Lignite Shortfall	4.10
5	Shortfall in Imported Coal terms	2.01
5	Imported Coal Blending Ratio %	13.15

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Projected Land Acquisition Cost and Lignite Rate for Cluster-1 of Mangrol- Valia Mine

Description	Rs. in Crores		
	Option-1 @ Rs. 5.26 Cr/Ha	Option-2 @ Rs. 4.26 Cr/Ha	Option-3 @ Rs. 3.26 Cr/Ha
Cluster 1 Land Area to be Acquired (Ha)	232.42		
Estimated Land Cost/ Ha	5.26	4.26	3.26
Estimated Land Acquisition Cost	1222.51	990.09	757.68
Cost of diversion, Gaucher and drilling cost	10.41	10.41	10.41
Total Estimated Land Cost	1,232.92	1,000.50	768.09
Lignite Price /Ton	3269	3011	2754

Imported Coal Rate Assumption from FY 2026-27 to FY 2039-40 for Tariff working

Imported Coal	Rs./Ton
Basic rate considered for Indonesian Coal GCV 5500 Kcal/Kg GAR	10,000
Annual escalation assumed	2%
Discounting rate assumed	7.50%
Levelised Imported Coal rate for 14 years	11,150

Proposed Fuel mix proposed from FY 26-27 to FY 39-40

Case	Fuel Mix of SLPP-1	Mangrol Lignite	Valia Lignite	Imported Coal
1	At Normative PLF	39.94%	46.91%	13.15%
2	Normative PLF with 2% Backing down	39.55%	51.28%	9.18%
3	Lignite Rate (Max.) /Imported Coal rate Rs./ Ton	3269	1362	11,150

Proposed Variable Tariff with 13.15% Imported Coal Blending

Variable Tariff FY 25-26 to FY 39-40	UoM	Option-1	Option-2	Option-3
Lignite	Rs/kWh	2.37	2.25	2.12
Imported Coal		5.47	5.47	5.47
Lignite + Imported Coal (levelized)	Rs/kWh	3.52	3.42	3.31
HFO		0.20	0.20	0.20
Lime		0.07	0.07	0.07
Total Variable Tariff		3.79	3.69	3.58

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Proposed Variable Tariff with 9.18% Imported Coal Blending considering 2% Backing Down

Variable Tariff FY 25-26 to FY 39-40	UoM	Option-1	Option-2	Option-3
Lignite	Rs/kWh	2.32	2.20	2.08
Imported Coal		5.47	5.47	5.47
Lignite + Imported Coal (levelized)	Rs/kWh	3.14	3.03	2.93
HFO		0.20	0.20	0.20
Lime		0.07	0.07	0.07
Total Variable Tariff		3.41	3.30	3.20

Summary

The expected tariff of SLPP-1 for the period FY 2026-27 to FY 2039-40 with proposed land acquisition and operationalization of Cluster-1 Mine and Imported Coal Blending @9-13% is summarized here.

Sr. No.	Tariff for the period FY 2026-27 to FY 2039-40	With Captive Lignite from Mangrol Cluster-1 and Valia Mines (Rs./Kwh)	With Imported Coal Blending@9.18%-13%
1	Fixed Cost (with proposed additional capitalization of Rs. 400 Cr.)	1.35	1.35
2	Variable	2.59 to 2.64	3.41 - 3.79

The current tariff estimates are broadly in line with our earlier projection, based on which GUVNL gave in-principle approval vide letter dtd. 05.08.2022.

In view of above facts, GIPCL requests GUVNL's in-principle consent for the following:

1. Land Acquisition of approx. 232.5 Ha. in the Mangrol-Valia Mine Cluster -1 Lease Area at the tentative rate of Rs. 5.26 Cr. /Ha in March,2024. Since the Land acquisition process is conducted through Collector Surat, GIPCL shall strive to acquire land at reasonable rate and shall keep GUVNL posted about the quantum of acquisition and cost incurred.
2. Imported Coal Blending in the range of 9%-13% in SLPP Phase-I in order to improve performance of the Station and to bridge the shortfall in lignite availability.

GIPCL has already floated a tender to appoint the consultant to prepare the Detailed Project Report (DPR) for Renovation, Modernization and Life Extension of SLPP-I and is expected to be finalized shortly. Upon GUVNL's confirmation, GIPCL can go ahead with DPR considering the above parameters. GIPCL also intends to file a petition in GERC shortly, based on this consensus.

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Looking to the numerous merits of GIPCL's proposal, the time-consuming land acquisition process and necessity to open the Cluster-1 Mine by FY 2026-27, a quick consent from GUVNL would be highly appreciated.

With kind regards,

Yours faithfully,



(Kiran R Mishra)
General Manager (Comm., Fin. & Legal)

Encl.

1. GUVNL Letters dtd. 05.08.2022 and 22.06.2022
2. GIPCL Letters dtd. 25.03.2022 and 05.07.2022

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Vatsala Vasudeva, IAS
Managing Director
No. MD/GIPCL/2022/

25 March 2022

Dear *Jai Prakash*,

As discussed in the meeting chaired by the Hon'ble Minister on 23.3.2022, please find enclosed herewith GIPCL's proposal for R & M for SLPP Phase - I.

SLPP Phase - I Station is in the 22nd year of its operations and due for Renovation, Modernization and Life Extension activities as per the regulation/guideline. GIPCL has prepared a proposal for this activity, which is enclosed for your kind perusal. GIPCL's Board of Directors have approved this proposal and also directed to approach GUVNL for in-principle approval.

This would result in extension of SLPP's plant life by 10 years. GUVNL can continue to procure power with an incremental cost of just 40 paise/kWh (Fixed Cost) for the additional period of 10 years. This would be achieved by investing in R & M of the plants and would result in continued availability of cheaper power to the consumer of the State.

This activity is a long-drawn process and after in-principle approval from GUVNL, a number of activities like preparation of detailed project report, approval of cost by GUVNL and GERC, procurement of equipment from various OEMs, acquisition of additional mining land etc. have to be completed within a span of 2-3 years.

In view of the merits of this proposal for the continued availability of cheap power to the State's consumers, I request GUVNL's expeditious in-principle approval to the same.

With regards,

Yours sincerely,
Vasudeva

(Vatsala Vasudeva)

Encl: As above

Shri Jai Prakash Shrivahare, IAS
Managing Director
Gujarat Urja Vikas Nigam Ltd.
Sardar Patel Vidyut Bhavan
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GIPCL's PROPOSAL FOR RENOVATION AND MODERNIZATION AND LIFE EXTENSION (R&M & LE) OF 250 MW SLPP PHASE- I

Way back in 1997, GIPCL had inked a cost plus PPA with GUVNL for the pit head 2 x 125 MW greenfield Lignite Power Project with captive mining. This was among the first IPPs set up in our State on a cost-plus mode much before the advent of regulatory era in power sector.

This project has a number of unique aspects viz.

1. This Power Plant Boiler is based on environment friendly Circulating Fluidized Bed (CFBC) technology and a pioneer of this size in our country.
2. Due to environment friendly technology adopted, this Station doesn't require any costly upgrade to meet the revised environmental norms notified by MoEF in the year 2017.
3. It ranks among the best performing lignite-based power plants in our country and has won a number of National Awards.
4. GIPCL is carrying out in-house mining of lignite and limestone required for this power plant which secures the fuel availability at a very competitive rate.
5. This plant has consistently maintained high availability, plant load factor and ranks high in the merit order of dispatch with a low Variable Charge

A. Brief details of Power Plant and PPA

Plant Configuration	: 2 x 125 MW
Make	: BHEL
Boiler	: CFBC based on LLB, Germany design
Project Cost	: Rs. 1210 Crores
PPA execution	: 15.04.1997
COD	: 15.02.2000
PPA Duration	: 30 years from COD
PPA Re-negotiation	: In the year 2003 and 2005
Fuel	: Lignite and Limestone from Captive Vastan and Valia Mines
Operating hours	: >1.52 Lakh hours (22 years)
Design Lignite Quality	: 4240 Kcal/Kg with moisture content of 24%

B. Need for R&M & LE

In view of this Power Plant being a pioneer in opting for an indigenous (BHEL) unit with environment friendly CFBC technology, a number of design and operational issues were encountered since commissioning. GIPCL has acquired sufficient in-house expertise and in collaboration with BHEL resolved a number of issues. Some of the issues are:

1. With the progression of mining, GIPCL is encountering lignite with poorer calorific value, higher moisture content resulting in partial loading of 10-15%. Currently GCV of lignite remains in the range 2500-2750 Kcal/kg against design value of 4240 Kcal/Kg and moisture content 50-52% against design value of 24%.
2. The high Sulphur and chloride content in lignite is resulting in heavy corrosion/erosion of combustor water walls, corrosion and fatigue failure of pressure parts
3. Overheating of boiler tubes in Fluidized Bed Heat Exchanger and Seal Pots, Refractory failure, expansion joint and combustor nozzle damages, back shifting of bed materials etc. are encountered.
4. Intermittent ramping up/down due to high renewable penetration causing increased stress on boiler parts and equipment. R & M can take care of this aspect to an extent.
5. The normative life of a Thermal Power Plant as per CERC and GERC Regulation is 25 years.

6. SLPP Phase-I PPA was executed in the year 1997 in the pre-regulatory era for a duration of 30 years, exceeding the thermal plant design life of 25 years as per the regulatory norms. CEA recommends R & M and life extension activity after completion of 20-year operating life.
7. CERC/GERC regulation stipulates reimbursement of R & M & LE expenditure after completion of 25 years.

C. Key Benefits for GUVNL after R&M & LE

1. Improved Plant Availability and Plant Load factor and therefore increased availability of reliable and cheaper power to the extent of 10-15% for remainder PPA duration and further extended period of 10 years.
2. Due to captive fuel sourcing and in-house mining, the Variable Charge would remain almost steady with minimal Imported coal blending.
3. Improved response to ramping requirement dictated by increased renewable penetration.
4. Since environmental friendly CFBC technology has been adapted, this plant doesn't require any costly upgrade. We have already carried out major upgrades on ESP required to meet the PM emission norms and this cost shall be claimed separately under "Change in Law" provision of the PPA.

D. GIPCL's R&M Proposal

1. GIPCL proposes R & M and life extension of 10 years for the 250 MW SLPP Phase-I.
2. The current PPA duration of 30 years shall be extended by another 10 years. There would be an effective increase of plant life by 15 years over the design life.
3. GIPCL has carried out a detailed in-house analysis of the R&M activities and prepared the cost estimates.
4. The estimated R & M & LE cost is Rs. 400 Cr. which is approx. 30 % of the Project Cost.
5. GIPCL needs to acquire additional mine lease land to cater to the increased lignite and limestone requirement for extended life of 10 years beyond the current PPA duration. Imported Coal blending to a limited extent would also be required to improve the generation level of this Station.
6. GIPCL is planning to carry out the activity under the rolling plan i.e. the activity would be clubbed with the annual shutdown/ major overhaul to avoid additional generation loss.
7. GIPCL would be commissioning a Detailed Project Report for R&M and life extension of 10 years after GUVNL's in-principle approval.
8. GIPCL would prefer reimbursement of expenditure through either option as specified in the extant GERC/CERC regulation.

Option A -Additional capitalization of R&M and LE cost and reimbursement through increased fixed cost.

Option B – Special allowance as provided in the extant GERC /CERC regulation and allow pass through in fixed cost.

9. As per our estimate, there would be modest loading of 40 p/Kwh on the current fixed cost of 96 p/Kwh.

Detailed working of estimated cost and loading on tariff shall be submitted after finalization of DPR.

We would like to highlight that CERC/GERC norms for lignite power plants with CFBC technology were non-existent at the time of this PPA execution. The extant norms for coal-based plants were considered for the PPA and therefore the norms for Aux. Consumption, Station Heat Rate, O & M Charge, Water Charges and return on equity etc. are much inferior to the current regulatory norms.

Due to adoption of the new environment friendly CFBC technology, a number of technical issues have cropped up in our boilers. GIPCL has successfully resolved them by deploying in-house expertise and enlisting the support of OEM(BHEL) along with infusion of considerable financial capital.

GIPCL has diluted various favourable PPA terms of this Station in the year 2003 and 2005 which has adversely impacted the return from this Station.

In the absence of regulatory norms at that point of time, SLPP Phase-1 PPA doesn't specify about R & M activity. However, subsequent SLPP-II PPA, CEA guidelines, CERC/GERC regulations and approval accorded by GERC to GSECL thermal power Stations can be the basis for approval of this proposal. The approval for R & M as well as LE by 15 years beyond design life would result in increased availability of cheaper power for an extended duration to the state consumers and also allow full utilization of the massive investment on plant, mining and other infrastructure setup at SLPP. This measure will also immensely benefit the local population in and around SLPP plant who depend directly/ indirectly on this plant for their livelihood. GIPCL is actively involved in various CSR activities in this area through DEEP Trust since the inception of this plant.

The financial impact for GUVNL would be quite marginal since increase in fixed cost would be offset to a great extent by the increased generation after R & M & LE.



GUJARAT INDUSTRIES POWER COMPANY LTD.

P.O. Ranoli - 391 350, Dist. Vadodara, Gujarat - INDIA

Ref: GIPCL:Com/GUVNL/SLPP/2022-23/ 647

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05.07.2022

Courier

The General Manager (IPP & RE),
Gujarat Urja Vikas Nigam Ltd.,
Sardar Patel Vidyut Bhavan,
Race Course,
Vadodara - 390007.

Kind Attn.: Smt. Sailaja Vachhrajani

**Sub: SLPP-1 Renovation & Modernization (R&M) & Life Extension (LE) – Impact on
Tariff from FY 2025-26 to FY 2039-40**

Ref: Your letter GUVNL-COM-GM(IPP)-681 dtd. 22.06.2022

Dear Madam,

With regard to your query regarding anticipated impact on Variable Charge of SLPP-1 post R & M and LE activity, our submission is as under:

1. Our OEM, M/s BHEL vide their letter dtd. 01.07.2022(annexed), confirmed the design and useful life of SLPP-1 Units as 25 years in line with the standard CEA /CERC norms and also recommended timely R&M of SLPP Phase-I, 2 x 125 MW Units -1 & 2 considering their current condition due to accelerated aging and poor fuel quality encountered.
2. Lignite quantum required for the PPA duration of SLPP Phase-1 & 2 is 491 Lakh MT whereas the lignite reserves currently available with the acquired mining land is 431 Lakh MT. Hence there is Lignite shortfall of 60 Lakhs MT for the PPA Term of SLPP Stations and we need to go for acquisition of land.
3. Factoring life extension of SLPP-1 by 10 years beyond its PPA duration, the total lignite requirement for SLPP Stations works out 672 Lakh MT.
4. Currently, lignite requirement of SLPP Stations is met by Vastan and Valia Mines. Supply from the Vastan Mine may get exhausted by FY 2025-26. As per our PPA, ensuring fuel availability is the generator's responsibility. Hence, we need to acquire allotted land in the Mangrol mine lease area and start production from FY 2026-27 to meet the fuel requirement for the remainder PPA term as well as life extension period of SLPP-1.
5. Even for the PPA term, there is lignite shortfall of about 60 Lakh MT. We intend to acquire 303 Ha Cluster-1 land in Mangrol Mine lease area, which is expected to yield 178 Lakh MT of lignite. Cluster – I land acquisition in Mangrol lease area is expected to cost Rs.1515 Cr. @ Rs. 5 Cr./Ha. With the expected Stripping Ratio of 1:8.91, the levelized lignite rate for 14 years from this mine is expected to be Rs. 2816/MT.

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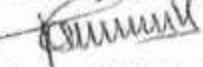
6. It can be noted from above figures that total lignite requirement would be 672 Lakh MT for the 500 MW SLPP considering 10-year Life Extension of SLPP-1 till 2040. However, the total Lignite availability even after land acquisition and operationalization of Mangrol Mine + existing Valia Mine would be 610 Lakh MT only. Hence there would be a lignite shortfall of 62 Lakh MT till 2040.
7. We propose blending of Imported Coal in SLPP Phase-I @ 12.5% -15% during R&M & LE period i.e. from FY 2025-26 till the extended PPA duration of 2040 to mitigate fuel shortage and improve the Plant performance. As submitted earlier, our boiler was designed considering Lignite GCV of 4200 K.cal/ Kg while currently, Lignite GCV remains around 2500 Kcal/Kg. Blending with Imported Coal having GCV of 5500 Kcal/Kg will result in near to full Load generation and improve the Station efficiency as well as stability. We have therefore considered imported coal of 31 Lakh MT (5500 GCV) equivalent to lignite quantity shortfall of 62 Lakh MT. Imported Coal rate is assumed as Rs. 10,000 / MT in FY 2025-26 with 2% annual escalation thereafter for calculation of the levelized Variable Charge.
8. The Variable Charge (Lignite+ Imported Coal) of SLPP-1 post R&M & LE activity from FY 2025-26 till 2040 is expected to be in the range of 3.29 - 3.43 Rs. /Kwh considering above assumptions. Additionally, the Fuel Charge for supplementary fuel (limestone + fuel oil) is currently 0.28 Rs. / Kwh and not expected to vary significantly.
9. As communicated earlier, we have also computed the impact of R&M activity on fixed charge of SLPP Phase-I as per the two options available in the Tariff Regulation.
 - a) With the additional capitalization option, the fixed charge would increase by 0.39 Rs. /Kwh.
 - b) If we opt for Special Allowance Option @ Rs. 7.5 Lakhs/MW/Year in the year 2016-17 escalated annually @ 5.72% thereafter, the increase in fixed charge would be around 0.29 Rs. /Kwh.

We are confident that our SLPP-1 Variable Charge of approx. 3.57- 3.71 Rs. / Kwh in FY 2025-26 will be quite competitive and our Stations would continue to feature in the top of the Merit Order of Dispatch.

We request your kind review and a quick in-principle approval to go ahead with R&M & Life Extension activity for SLPP-1 to extend its useful life for another 15 years beyond the design life of 25 years till 2025.

Thanking you,

Yours faithfully,
For Gujarat Industries Power Co. Ltd.,


(Kiran R Mishra)
General Manager (Commerce, Finance & Legal)



M. Lakshminarasimhan

Senior Deputy General Manager
(Marketing)

Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)

High Pressure Boiler Plant

Tiruchirappalli – 620 014,
Tamil Nadu, India

Phone: +91- 431 -2574180; e-mail: misimhan@bhel.in; www.bhel.com

SL: SLPP:O&M
1st July 2022

Mr. N. K. Singh

General Manager

Surat Lignite Power Plant (SLPP)

Gujarat Industries Power Company Limited (GIPCL)

Dear Sir,

Ref: GIPCL-SLPP email dated 27 June'2022

Sub: SLPP- I (2X 125 MW- Unit 1&2) Design and Useful Life of the Units

This is in response to your e-mail 27.06.2022 on the subject matter and subsequent discussions with our Technical Team in this regard.

We would like to state that the design life of GIPCL's SLPP-1 Lignite CFBC based Units ((2 X 125 MW- Units 1&2) is 25 years as per the standard CEA/CERC norm. Our observations regarding Useful Life of the CFBC based Lignite Units of GIPCL SLPP-I are as follows:-

- SLPP Phase-I (2x125 MW- Unit 1&2) plant and equipment were supplied between the year 1996 and 2000 and units are in Commercial operation since Feb-2000. It may be noted that the units are in operation for more than 22 years and completed running hours of more than 1,50,000 Hrs.
- The Boiler Material Selection were based on ASTM material Standards which typically provide reasonable useful life around 25 years based on our past experience. The conditions of operation (load cycles), erosion & corrosion conditions often dictate the variations noticed at different site over the operating lifetime of boiler components. However, cyclic loading effects can contribute to reduction of life and, for tubing in particular, the effect of both internal and external oxidation/scaling/corrosion can be an overriding factor.
- Substantial degradation in the Lignite quality also results in increased erosion and corrosion on the Plant and Equipment, thermal fatigue and creep effect, thus causing accelerated aging of the Units.
- Further, these Boilers were originally designed for firing Lignite with GCV of 4240 kcal/kg and moisture content of 24% whereas, Lignite being fired in the Boilers is having GCV 2450 kcal/kg-2500 kcal/kg and moisture in the range of 50-52%. Moreover, presence of Sulphur and Chloride in lignite has resulted in severe corrosion on pressure and non-pressure parts.

Useful Life in relation to SLPP Phase-I (2x125 MW -Units 1 & 2) can be considered as 25 Years based on current information of the actual operational parameters, O&M practices and Conditions of these Units provided by your team. We recommend timely R & M activities to continue safe efficient operation of these Units and for extending the operational life of these units.

We trust our clarifications are in order and you may feel free to contact us in case of further queries.

Thanking You,

Yours sincerely

M. Lakshminarasimhan



GUJARAT INDUSTRIES POWER COMPANY LTD.

Post : Ranoli, Dist. - Vadodara 391 350 Gujarat - INDIA

GIPCL/ Comm/ GERC/SLPP-I R & M/ 2023 / 893

Dtd. 29th July, 2023.

The Secretary,
Gujarat Electricity Regulatory Commission,
6th Floor, GIFT One, Road 5-C,
Zone-5, GIFT CITY,
Gandhinagar- 382 355.

Sub: Petition No. 2228/2023
Ref: Letter GERC/Legal/2023/1407 dtd. 14.07.2023

For Icind sumit H
Hon'ble chairman
- " Member
- " Member
- Secretary
J.W.
3/8/23

Respected Sir,

GIPCL acknowledges receipt of the referred letter on 19.07.2023. As directed by the Hon'ble Commission, GIPCL has hand delivered a copy of the subject Petition along with Annexures to the Respondent, GUVNL on 20.07.2023. Soft copy of the Petition and Annexures has also been provided to Respondent, GUVNL.

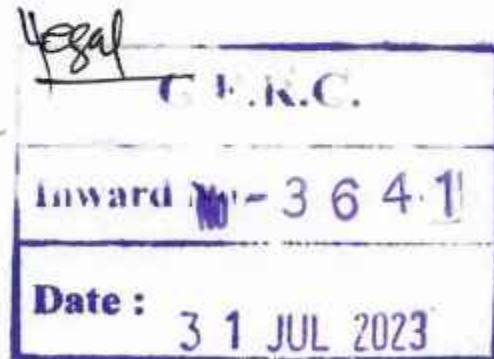
With kind regards,

Yours faithfully,
For Gujarat Industries Power Company Ltd.

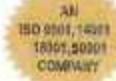

(Kiran R Mishra)
General Manager (Comm., Fin. & Legal)

cc.

The General Manager(Commerce),
Gujarat Urja Vikas Nigam Ltd.,
Sardar Patel Vidyut Bhavan,
Race Course Circle,
Vadodara -390007.



Regd. Office & Vadodara Plant :
Post Ranoli, Dist. - Vadodara 391 350 Gujarat - INDIA
Phone : EPABX (0265) 2232768 / 2213 / 0159, (D) 2234223 Fax : 2236029
Email : krmishra@gipcl.com



Website : www.gipcl.com

Surat Lignite Power Plant :
Village : Nani Naroli, Tal. Mangrol, Dist. Surat 394 110, Gujarat -
Phone : EPABX (02629) 261063 to 261072 Fax : 261080
Email : gensipp@gipcl.com

1. <i>First Name</i>
2. <i>Last Name</i>
3. <i>Date:</i>

ole
TAT
23/4/24

BEFORE THE GUJARAT ELECTRICITY REGULATORY COMMISSION
AT GANDHINAGAR
PETITION NO. 2228 OF 2023

IN THE MATTER OF:

Gujarat Industries Power Company Limited

..Petitioner

Versus

Gujarat Urja Vikas Nigam Limited

..Respondent

REPLY ON BEHALF OF THE RESPONDENT TO THE PETITION

MOST RESPECTFULLY SHOWETH:

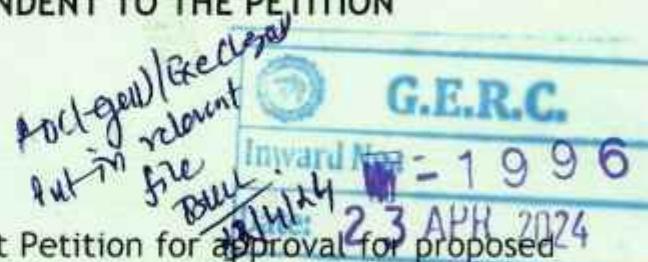
Preliminary Submissions:

1. That the Petitioner has filed the instant Petition for approval for proposed Renovation, Modernization and Life Extension of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of incurred expenditure and recovery by adjustment in tariff and extension of PPA with modified terms by 10 years.

2. It is submitted that in regard to the above Units, the Petitioner has entered into a PPA with the GUVNL dated 15.04.1997 (as amended in 2003 and 2005). The PPA would expire on 15-02-2030.

3. It is submitted that any claim for additional expenditure and incorporation in tariff has to be considered and approved by the Hon'ble Commission. The Petitioner is required to demonstrate the prudence and necessity of such expenditure, other relevant factors namely, following transparent procurement process and efforts taken by the petitioner to minimize such expenditures. The claims for capital expenditure by the Petitioner is to be examined and considered after prudence check as per the objectives and provisions of the Electricity Act, 2003, applicable Regulations, terms of the PPA and the interest of consumers. For such consideration, it is essential for the Petitioner to submit various details, break of up of costs and justification of each cost, cost benefit analysis, documentary proof, audited accounts etc.

4. Any tendering/procurement process should be aimed at ensuring economical cost and it is necessary to award the same through competitive bidding. The Petitioner is required to ensure that cost incurred is minimal





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and reasonable. Further the Petitioner has not provided any technical reports or Detailed Project Report (DPR) along with cost and justification for each of the expenses.

5. Regulation 50 of the MYT Regulations 2016 has been relied on by the Petitioner. The same reads as under:

50.1 *The Generating Company, for meeting the expenditure on Renovation and Modernization for the purpose of extension of life beyond the useful life of the generating station or a unit thereof, shall file an application before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost, record of consultation with beneficiaries and any other information considered to be relevant by the Generating Company.*

50.2 *Where the Generating Company files an application for approval of its proposal for Renovation and Modernization, the approval shall be granted after due consideration of reasonableness of the cost estimates, schedule of completion, use of efficient technology, cost-benefit analysis, and such other factors as may be considered relevant by the Commission.*

6. However the Petitioner has not provided a Detailed Project Report with the details as envisaged under Regulation 50.1 nor provided the details necessary for the consideration of various aspects for approval under Regulation 50.2. It is upto the Petitioner to justify its contentions and claims in terms of the applicable Regulations.

It is submitted that SLPP Phase I is consistently performing well and better than other lignite power plants in the state. The power from the Petitioner's power project is economical power.

8. The Hon'ble Commission may consider all such aspects and take a view in public and consumer interest.
9. In light of the above preliminary submissions, the para wise reply to the petition are as under:

Para 1: With regard to Para 1, it is submitted that to the extent that the contents are matter of record, they need no reply. The Preliminary Submissions are reiterated. The generating station which is the subject matter of this Petition is the Surat Lignite Power Project (SLPP) Phase I Unit 1 and 2. The Petitioner and Gujarat Electricity Board (succeeded by GUVNL) had entered into PPA and further

mutually agreed to the amendments and the PPA have been considered by the Hon'ble Commission. The PPA expires on 15-02-2030. It is submitted that the approval of the Hon'ble Commission is necessary for consideration of any additional capital expenditure or adjustment in tariff and for that prudence check is required. The Preliminary Submissions are reiterated.

Para 2: The contents of Para 2 deal with description of parties and is a matter of record. GUVNL procures power from GIPCL on behalf of the state distribution licensees.

Para 3: The contents of Para 3 deal with the background and performance of the SLPP Phase I and is a matter of record. However it is submitted that there cannot be any issue raised on the amendments agreed to by GIPCL at this stage. Further it is submitted that the renegotiation of PPA with GIPCL was a result of directive of this Hon'ble Commission in its first tariff order dated 10.10.2000 and therefore the allegation that it was on insistence of GEB / GUVNL is not correct. The State Government appointed committee for tariff revision of IPPs was formed in order to implement directive of the Hon'ble Commission to reduce power purchase cost. Further in regard to the technology etc, it is submitted that the Generator is free to choose suitable technology and configuration of the plant to supply power as per PPA.

It is however admitted that the SLPP - I power is economical power and it has consistently performing well and better than other lignite based power plants. In regard to Para 3.5, it is submitted that for the purpose of processing of invoices as per the PPA, the normative auxiliary consumption and SHR data is considered whereas the Para 3.5 appears to be the actual parameters claimed by the Petitioner. In regard to the data at Para 3.6, there appears to be a typographical error wherein availability is lower than PLF for some generating stations. Usually, the PLF is less than or equal to availability. GIPCL may verify the data and confirm the same.



Para 4: The contents of Para 4 deal with the fuel arrangement for SLPP I and is a matter of record. The fuel arrangements are the responsibility of the Generating Station.

It is clarified that at this stage, there is no consideration to extend the PPA of SLPP-II beyond the year 2040. (Reference to Para 4 (b) Cluster -2).

It is submitted that the Petitioner has stated that it would need to acquire land for the mines to cater to increased lignite requirement and land for limestone requirement. This would have a direct impact on costs but the Petitioner has not provided any details of the land to be acquired or even an estimate of the costs. GIPCL is required to submit details of availability and price of lignite from GIPCL's captive mines for its present and future requirement, requirement of additional mine lease land of lignite and limestone and requirement of imported coal / alternate source of lignite during the proposed period of extension.

The Petitioner has stated in Para 4.2 that the required quantity of limestone injection is also met by captive mines and then said that it needs to acquire land to meet future limestone requirement. Earlier, GIPCL has stated that it has to acquire land for the mines. It needs to be clarified by GIPCL whether the land to be acquired for limestone would be the same land as to be acquired for lignite mines or separate land is required for limestone. If GIPCL requires separate land, then details of land such as its area, price etc is required to be furnished. Further GIPCL has intimated that there may be 8-10% blending of imported coal and in this regard, it may be necessary to provide the financial implication - with landed cost of imported coal and escalation in imported coal price etc. Further for any such blending, the need for such blending to be kept minimal, the procedure followed earlier and the prior approval of GUVNL as well as efforts by GIPCL itself to ensure that the costs are kept at minimum are required to be followed. There cannot be any blanket approval for blending of imported coal.



Para 5-6: The contents of Para 5 and 6 deal with the contentions on the need for renovation, modernization and life extension exercise for SLPP - I and the action plan for the same.

It is submitted that the PPA was entered into for 30 years (prior to 2003). Any costs require prudence check by this Hon'ble Commission including the need for such renovation while considering the period of the PPA is sought to be extended by 10 years. The Petitioner has not attached any technical report specific to the SLPP I but has referred to the CEA R&M Guidelines.

Only reasonable and prudent expenditure can be considered - not merely audited expenditure but in addition prudence check is required. The Petitioner has stated that it would follow the procurement through transparent competitive bidding, tender process and from OEM/Other reputed manufacturers.

The Hon'ble Commission may consider the submissions of the Petitioner in this light.

Para 7: The contents of Para 7 deal with the environment compliance in relation to Environment (Protection) Amendment Rules which is a subject matter of Petition No. 2175 of 2022 and GUVNL has already filed its reply to the same.

Para 8: With regard to Para 8, it is reiterated that only reasonable and prudent expenditure can be claimed and the same is to be verified and approved by the Hon'ble Commission. Further it is submitted that there has to be a transparent competitive bidding and efforts to mitigate the cost. It is submitted that the Petitioner has submitted that the earlier estimate is prior to COVID 19 and the same is liable to be increased due to alleged supply chain disruption post COVID 19. There is no estimate available for the current scenario and the Petitioner has submitted that the earlier estimate may be revised and a firm estimate would be known once the DPR is finalized. It is submitted that as per the MYT Regulations, estimates is to be provided. GIPCL has claimed approx. 40 -50paise per kWh in Para 8.5 but has not provided any calculation or details. The Petitioner has also claimed the estimated expenditure of Rs. 400 crores (based on FY 2019-20) but has not provided any basis or supporting documentation for the same, let alone for the revised estimate. There has to be some basis for the estimate for consideration of



prudence check by the Hon'ble Commission. GIPCL needs to submit exact cost details in this regards so as to access financial liability. If the Petitioner is awaiting the DPR for the final estimates, then when the DPR is finalized, the actual cost details needs to be submitted to Hon'ble Commission for approval. It is submitted that any submissions of the GIPCL has to be considered in light of the MYT Regulations and the requirements and procedures therein. The Preliminary Submissions are reiterated.

Para 9: The contents of Para 9 deal with the approvals and are a matter of record. It is submitted that GUVNL's in principal approval was clear that the Hon'ble Commission's approval for additional capital expenditure and adjustment in tariff is necessary.

Para 10: With regard to Para 10, the Preliminary Submissions and submissions made hereinabove are reiterated. The contentions in relation to parameters is to be subject to prudence check and justification to be provided by GIPCL. It is submitted that in regard to the claim in Para 10.4, the same needs to be considered as per the Regulations - the Petitioner has not provided any specific comparison.

In addition, GUVNL submits as under:

(a) In para 10.6, GIPCL has claimed that it has infused additional capex of about Rs.63.11 Crores to achieve normative availability and that the same is not recovered from GUVNL. In this regard, it is submitted that there cannot be any recovery from GUVNL for this amount in any case, it is the obligation of the Generator to carry out necessary O&M expenses regularly so as to make available their plant as per normative availability and for the same, the generator gets Fixed Cost corresponding to actual availability vs normative availability.

(b) In para 10.9, it submitted that there is no provision for any compensation for deterioration in Station Heat Rate and Auxiliary Consumption due to frequent load variation under the prevailing GERC Regulations. The Petitioner has also referred to only Central Sector - not to any State Regulations. This Petition cannot be considered for any such additional reliefs not otherwise provided



in the GERC Regulations. However in Para 10.15, the Petitioner has sought increase in SHR and Auxiliary Power Consumption without providing any specific basis for the same. The only explanation in Para 10 is the compensation for deterioration in fuel quality and age of power plant but the revised parameter sought is simplicitor SHR and Auxiliary Consumption. GIPCL is required to be provide the justification for the revision sought.

(c) In para 10.12, GIPCL has sought for revision of the O&M Charges but has not specified any revised O&M charges. As already submitted, GIPCL is required to provide for a specific claim with justification. Merely stating that the O&M charge is insufficient due to vintage is not sufficient. GIPCL should provide details. In absence of such details, the financial burden on GUVNL and therefore consumers in the State of Gujarat cannot be known.

a. In terms of the MYT Regulations 2016, the O&M expenses is to be based on average of actual Operation and Maintenance expenses (Regulation 54); however GIPCL has not provided any details let alone any evidence. Mere reference to SLPP II cannot be sufficient. The Regulations also provide for the norms for new generating stations.

(d) In para 10.13, GIPCL is claiming water charges but has not provided any details of the Regulation under which it is seeking to claim or the actual charges it is claiming. GIPCL is required to provide the normative value / methodology for working out water charges with evidence/supporting document and the same is subject to prudence check. In case, water charges is separately allowed by GERC, same may be excluded from O&M charges as per existing GERC MYT Regulation 2016.

(e) In para 10.14, GIPCL has referred to transit loss. Their plant is just 15 KM away from mines, so it is similar to a pithead plant. The Petitioner is claiming actuals limited to 0.8% (in Para 10.15) however that ceiling is for non pit head. Even if there is to be any consideration, it can be only as per transit loss for pit head plant as per GERC regulation.



(f) With regard to Para 10.15, the submissions made hereinabove are reiterated. GIPCL has not provided a separate column with justification for the revision.

(g) In para 10.16, GIPCL has made a claim but has not provided any details or supporting documentation in regard to SHR and Auxiliary Consumption. There cannot be any revision merely on a statement that the actual is worse than what has been sought.

In any case, the norms claimed by the Petitioner should not be more than norms prescribed in prevailing GERC MYT Regulation.

Para 11: With regard to Para 11, while there is no dispute on the jurisdiction of the Hon'ble Commission, the Petitioner has to justify the basis for seeking additional capitalization for renovation and modernization. In terms of Regulation 50, the same is provision for renovation and modernization for purpose of extension of life beyond useful life and further the Generating Company is to file application before the Hon'ble Commission for approval of the proposal with a detailed project report giving various details but this has not been done in the present case. It is reiterated that the necessary approval of claim and expenditure is to be given by the Hon'ble Commission. The Letter dated 05.08.2022 by GUVNL also makes this clear.

Para 12: With regard to Para 12, while GUVNL is in principle agreeable to extend the term of the PPA in view of the economical power, it is necessary for GIPCL to provide details so that it can be ensured by the Hon'ble Commission that the power from GIPCL's power plant would remain economical and an informed decision can be taken by the Hon'ble Commission.

Para 13: With regard to Para 13, it is submitted that Hon'ble Commission may consider the Petition in light of the above submissions and the applicable Regulations.

GIPCL has sought in principle approval for R&M but is required to demonstrate the fulfilment of conditions under MYT Regulations for the same. GIPCL has sought for permission to submit the Detailed



Project Report at a later stage. However in absence of the Detailed Project Report, there cannot be any approval.

In regard to Para 13.2, the Petitioner has referred to the estimated rise of 40-50 paise per kWh. As already submitted hereinabove, there is no basis or calculation or details for the above and further the above is likely based on the estimated expenditure prior to COVID 19 which the Petitioner itself claims is liable to be revised. The Petitioner may clarify on this aspect.

Further in regard to consideration of deemed availability under Para 13.3, the claim to "implement the Renovation & Modernization as per the **Rolling Plan**" and for extended duration of shutdown to be considered as "Deemed Availability" cannot be accepted. There is no such provision for Deemed Availability in the MYT Regulations. The Petitioner has not provided any reference or basis or justification for the same. In fact there is no pleading in this regard. The Petitioner cannot claim full fixed cost for such period. Reference may be made to Regulation 58 of MYT Regulations.

In regard to Para 13.3(c) for allowing carrying cost, the same has to be considered in light of the provisions of the GERC MYT Regulations. The Petitioner has not provided any justification or basis in the Regulations. There is no such specific provision for carrying cost.

The Hon'ble Commission may examine and consider all aspects and take an appropriate view.



PLACE: Vadodara
DATE: 22/04/2024

RESPONDENT
GUJARAT URJA VIKAS NIGAM LIMITED

Deputy Engineer (IPP)
Gujarat Urja Vikas Nigam Limited
Vadodara

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BEFORE THE GUJARAT ELECTRICITY REGULATORY COMMISSION
AT GANDHINAGAR
PETITION NO. 2228 OF 2022

IN THE MATTER OF:

Gujarat Industries Power Company Limited ..Petitioner

Versus

Gujarat Urja Vikas Nigam Limited ..Respondent

AFFIDAVIT

SR. No. 6888
Date : 22/04/2024

I, Hitesh Patel son of Prabhudas Patel, aged about 49 years, residing at Vadodara, do solemnly affirm and state as under:

1. I am the Deputy Engineer of the Respondent in the above matter and am duly authorized by the Respondent to make this affidavit.
2. I say that the contents of the accompanying Reply are based on information maintained in the records of the Respondent Company and are believed by me to be true and based on legal advice received and believed by me to be true.



DEPONENT

Deputy Engineer (IPP)
Gujarat Urja Vikas Nigam Limited
Vadodara

VERIFICATION

I, the deponent above named, solemnly affirm and verify that the contents of the above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed therefrom.

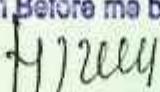
Verified at Vadodara on this 22nd day of April, 2024.

MY Commission Expires
On 04/07/2028



Deputy Engineer (IPP)
Gujarat Urja **DEPONENT** Limited
Vadodara



Solemly Affirmed/Declarer
Sworn Before me by H. J. ZALA

H. J. ZALA
NOTARY (Govt. of India)



GUJARAT INDUSTRIES POWER COMPANY LTD.

P.O. Ranoli - 391 350, Dist. Vadodara, Gujarat - INDIA

70

GIPCL/ Comm/ GERC/SLPP-I R & M/ 2024 /

01.08.2024.

The Secretary,
Gujarat Electricity Regulatory Commission,
6th Floor, GIFT One, Road 5-C,
Zone-5, GIFT CITY,
Gandhinagar- 382 355.

Sub: Petition No. 2228/2023 (GIPCL vs GUVNL)

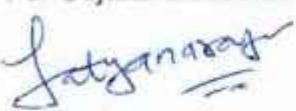
Ref: GUVNL reply dtd. 22.04.2024

Respected Sir,

GIPCL has filed the subject Petition to seek regulatory approval for carrying out Renovation, Modernization and Life Extension exercise of GIPCL's 2 x 125 MW Surat Lignite Power Plant Phase-I. This Power Plant was commissioned in 2000 and shall be completing the design life of 25 years in 2025. It is proposed to extend the operating life of this Power Plant till 2040 by timely intervention. GIPCL filed the subject Petition post GUVNL's in-principle approval and instruction to obtain regulatory approval. Detailed Project Report (DPR) for this activity was under preparation and therefore the Petition was based on internal technical and cost assessment. Post DPR, the technical scope has changed to some extent and the estimated cost has also increased due to various reasons. GIPCL has discussed the DPR findings with Respondent, GUVNL. GUVNL has indicated that it would once again seek its Board approval for GIPCL's revised proposal based on Detailed Project Report. GIPCL's submission in this regard is attached.

With kind regards,

Yours faithfully,
For Gujarat Industries Power Company Ltd.


(S. Mani)

Addl. General Manager (Commercial & Legal)

Cc to :

The General Manager (Commerce),
Gujarat Urja Vikas Nigam Ltd.,
Sardar Patel Vidyut Bhavan,
Race Course Circle,
Vadodara -390007.



Regd. Office & Vadodara Plant :

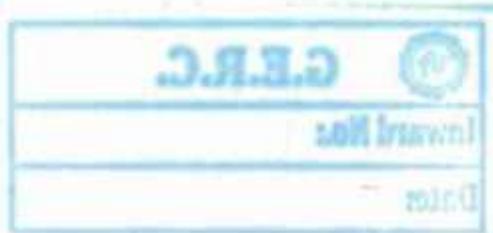
P.O. Ranoli - 391 350, Dist. Vadodara Gujarat - INDIA
Phone : EPABX (0265) 2232766 / 0182 / 0028, (D) 2234223 Fax : 2230029
Email : kmishra@gipcl.com



Surat Lignite Power Plant :

Village : Nani Nari, Tal. Mangrol, Dist. Surat 394 110, Gujarat - INDIA
Phone : EPABX (02829) 261063 to 261072 Fax : 261080
Email : genslipp@gipcl.com

Website : www.gipcl.com
CIN-L99999GJ1985PLC007868



BEFORE THE HON'BLE GUJARAT ELECTRICITY REGULATORY
COMMISSION, GANDHINAGAR
PETITION NO. 2228 OF 2023

IN THE MATTER OF:

Petition under Section 86 of the Electricity Act, 2003 read with GERC's MYT Regulation, 2016 and SLPP Phase-I's PPA with GUVNL to seek the Hon'ble Commission's approval for proposed Renovation, Modernization and Life Extension (R&M and LE) of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of expenditure and recovery by adjustment in tariff and extension of PPA duration with modified terms by 10 years.

AND

IN THE MATTER OF:

GUJARAT INDUSTRIES POWER COMPANY LIMITED

Through its Authorized Representative: S.Mani,

Having its Registered Office at

Addl. General Manager (Commercial & Legal),
P.O. Ranoli, Vadodara- 391350, Gujarat
Phone: +91-265-2232768
E-Mail: svmani@gipcl.com

.... PETITIONER

VERSUS

GUJARAT URJA VIKAS NIGAM LIMITED

Represented by : General Manager (Commerce)

Having its Registered Office at : Sardar Patel Vidyut Bhavan

Race Course, Vadodara 390007, Gujarat

Phone: (0265)2339148

E-Mail: smathur.guvnl@gebmail.com

.... RESPONDENT

1. PARTIES TO THE PETITION

- 1.1 The Petitioner, Gujarat Industries Power Company Limited (GIPCL) is a Company incorporated under the provisions of Companies Act, 1956, involved in Electrical Power Generation with a present installed generation capacity of 1184.4 MW, having its registered office at P.O. Ranoli, Vadodara- 391350, Gujarat, India. GIPCL functions under the umbrella of Energy and Petrochemicals Deptt., Govt. of Gujarat.
- 1.2 Respondent, Gujarat Urja Vikas Nigam Limited (GUVNL), is a Company incorporated under the provisions of Companies Act, 1956, having its registered office at Sardar Patel Vidyut Bhavan, Race Course, Vadodara 390007, Gujarat, India. The Respondent is engaged in bulk purchase and bulk supply of electricity and is a licensee for the said activities under the provisions of Electricity Act, 2003. Respondent is the procurer of the entire capacity under the referred PPA.



Yashwant

2. MOST RESPECTFULL SHOWETH:

- 2.1 This Petition has been filed under Section 86 of the Electricity Act, 2003 read with GERC (Multi Year Tariff Regulations),2016, GERC (Conduct of Business) Regulations, 2004 as well as SLPP-I's Power Purchase Agreement (PPA) dated 15.04.1997 and subsequent amendments executed in the years 2003 & 2005 with the erstwhile Gujarat Electricity Board, the predecessor of Gujarat Urja Vikas Nigam Ltd. (hereinafter referred to as "GUVNL" or "Respondent").
- 2.2 Respondent, GUVNL is the Sole Power Procurer and Beneficiary of Power generated by 250 MW SLPP-I. In response to GIPCL's proposal for Renovation, Modernization and Life Extension of SLPP-I, Respondent GUVNL has given in-principle approval and urged GIPCL to seek the Hon'ble Commission's approval for the proposal, additional capital expenditure and adjustment in tariff for recovery of costs.
- 2.3 By way of this Petition, with reference to provision no. 7.1.2 of SLPP-I PPA read with GERC MYT Regulation, 2016, GIPCL has sought Hon'ble Commission's approval for the proposal to carry out Renovation, Modernization and Life Extension of 125 MW Unit-1 & 2, relaxation in Normative PPA Parameters post R & M exercise and extension of PPA term by 10 years on modified terms beyond 2030.
- 2.4 Petitioner GIPCL has also requested Hon'ble Commission to allow modified operational terms, additional capitalization of expenditure incurred on Renovation, Modernization and Life Extension and recovery by suitable adjustment in tariff.
- 2.5 Hon'ble Commission heard the Petition on 09.11.2023 and vide Daily Order dated 05.12.2023. Respondent, GUVNL was asked to file its reply. GUVNL filed its reply on 22.04.2024.
- 2.6 In the meantime, the Detailed Project Report for Renovation, Modernization and Life Extension of SLPP-I which was under preparation was finalized by consultant STEAG and GIPCL submitted the Detailed Project Report to GUVNL on 12.02.2024 for review and comments. This was indicated in Para 6.2 & 6.5 of the Petition.
- 2.7 Detailed Project Report recommends increased technical intervention in the Power Plant so that it can operate safely and efficiently for extended life of 15 years beyond the design life of 25 years. The current PPA duration of 30 years ends in 2030 and it is proposed to extend it by another 10 years till 2040.
- 2.8 The original cost estimate as per GIPCL's internal techno-commercial assessment was Rs. 400 Cr. based on market data of 2019-20. This was indicated in Para 8.2 of the Petition. Due to unexpected spurt in commodity price and cost of services post COVID-19 and the DPR has estimated the expenditure for the best case as Rs. 690 Cr. GIPCL had highlighted this possibility in Para 8.3 of the Petition.
- 2.9 GIPCL had submitted the proposal seeking approval for Renovation, Modernization & Life Extension of SLPP-I to GUVNL on 25.03.2022. GUVNL gave in-principle approval vide letter No. GUVNL-COM-GM(IPP)-852 dated 05.08.2022 and directed GIPCL to seek the Hon'ble Commission's approval for



the additional capital expenditure and adjustment in tariff. The same is stated in Para 9.3 of the Petition.

- 2.10 Recently, GIPCL had discussion with GUVNL with regard to the DPR findings, revised cost estimate for this activity and way forward for approval.
- 2.11 While GUVNL is still in-principle agreement for Renovation, Modernization and Life Extension of SLPP-I in view of numerous merits, it has indicated that the DPR and revised cost estimate have to be put up for management approval and would therefore take some time. GIPCL has been asked to submit a revised techno-commercial proposal based on the DPR.
- 2.12 GIPCL seeks to modify the Petition in line with the DPR findings and revised cost- estimate and put up to the Hon'ble Commission for approval.
- 2.13 GIPCL has already sought Hon'ble Commission's permission in this regard in Para 13.3 of the Petition which is reproduced below:

Submission of Detailed Project Report, Final Cost Estimate and Addl. Capitalization Amount, Time Schedule for Completion

- a. *Allow GIPCL to submit the Detailed Project Report, final estimate of expenditure, time schedule and impact on tariff at a later stage once DPR is finalized. DPR is currently under preparation. Actual expenditure details shall be furnished upon completion of the Renovation, Modernization and Life Extension exercise.*
- 2.14 Since contents of the Petition would be updated, GIPCL is not filing rejoinder to GUVNL reply dtd. 22.04.2024.

3. PRAYER

1. Petitioner, GIPCL requests Hon'ble Commission to allow it to modify the Petition with the findings of the Detailed Project Report and GUVNL's in-principle approval for the revised cost estimate.
2. GIPCL undertakes to file the revised Petition post GUVNL's in-principle approval at an early date.



J. D. Parekh



BEFORE THE HON'BLE GUJARAT ELECTRICITY REGULATORY
COMMISSION, GANDHINAGAR
PETITION NO. 2228 OF 2023

IN THE MATTER OF:

Petition under Section 86 of the Electricity Act, 2003 read with GERC's MYT Regulation, 2016 and SLPP Phase-I's PPA with GUVNL to seek the Hon'ble Commission's approval for proposed Renovation, Modernization and Life Extension (R&M and LE) of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of expenditure and recovery by adjustment in tariff and extension of PPA duration with modified terms by 10 years.

AND

Reg. No. 4937
Date: 02/08/24

IN THE MATTER OF:

Gujarat Industries Power Company Ltd.

Versus

Gujarat Urja Vikas Nigam Ltd.

...Petitioner

...Respondent

AFFIDAVIT

I, Satyanarayan Mani, S/o. Shri Balasubramani Iyer, aged about 55 years resident of Vadodara hereby solemnly affirm and state as under:

1. I am Addl. General Manager (Commercial & Legal) of the Petitioner and I am fully conversant with the facts of the case and competent to depose to the present Affidavit.
2. I have gone through the contents of the accompanying Rejoinder and I say that the facts stated therein are based on the records of the Petitioner Company and believed by the deponent to be true.

The annexures to the rejoinder are true copies of their originals.

Solemnly Affirmed/Declared
Sworn Before me by: Satyanarayan Mani

ILA C. PAREKH
NOTARY 02/08/24

Satyanarayan Mani

DEPONENT



VERIFICATION:

I, the Deponent, above named do hereby verify that the contents of my above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed there from.

Verified at Vadodara on this 2nd day of August 2024

Satyanarayan Mani
DEPONENT



ole.
Ranoli
25/6/25



GUJARAT INDUSTRIES POWER COMPANY LTD.

P.O. Ranoli - 391 350, Dist. Vadodara, Gujarat - INDIA

GIPCL/ Comm/ GERC/SLPP-I R & M/ 2025 /

Dtd. 25.06.2025.

The Secretary,
Gujarat Electricity Regulatory Commission,
6th Floor, GIFT One, Road 5-C, Zone-5, GIFT CITY,
Gandhinagar- 382 355.

Sub: Petition No. 2228/2023 (GIPCL vs GUVNL)

Respected Sir,

Petitioner, GIPCL wishes to update and revise the contents of the subject Petition as per the DPR prepared by STEAG India and approved by GUVNL for the Renovation, Modernization and Life Extension of 2 x 125 MW SLPP-I Units. It is requested to kindly admit the current submission and quickly grant an in-principle approval to facilitate the timely completion of the long and complex exercise to the benefit of the State's power consumers.

With kind regards,

Yours faithfully,
For Gujarat Industries Power Company Ltd.

S. Mani

(S. Mani)
Addl. General Manager (Commercial & Legal)

Encl.: Petitioner submission dated 25.06.2025

cc.

The General Manager (Commerce),
Gujarat Urja Vikas Nigam Ltd.,
Sardar Patel Vidyut Bhavan,
Race Course Circle,
Vadodara -390007.



Regd. Office & Vadodara Plant :
P.O. Ranoli - 391 350, Dist. Vadodara, Gujarat - INDIA
INDIA
Phone : EPABX (0265) 2232768 / 0182 / 0026, (D) 2234223 Fax : 2230029
Email : svmani@gipcl.com



Surat Lignite Power Plant :
Village : Nani Nandi, Tal. Mangrol, Dist. Surat 394 110, Gujarat -
Phone : EPABX (02629) 261083 to 261072 Fax : 261080
Email : gensipp@gipcl.com
Website : www.gipcl.com
CIN-L99999GJ1985PLC007868



BEFORE THE HON'BLE GUJARAT ELECTRICITY REGULATORY COMMISSION,
GANDHINAGAR

PETITION NO. 2228 OF 2023

IN THE MATTER OF:

Petition under Section 86 of the Electricity Act, 2003 read with GERC's MYT Regulation, 2016 & 2024 and SLPP Phase-I's PPA with GUVNL to seek the Hon'ble Commission's approval for proposed Renovation, Modernization and Life Extension (R&M and LE) of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of expenditure and recovery by adjustment in tariff and extension of PPA duration with modified terms by 10 years.

AND

IN THE MATTER OF:

GUJARAT INDUSTRIES POWER COMPANY LIMITED

Through its Authorized Representative: Addl. General Manager (Commercial & Legal),
Having its Registered Office at : P.O. Ranoli, Vadodara- 391350, Gujarat
Phone: +91-265-2232768
E-Mail: svmani@gipcl.com

.... PETITIONER
VERSUS

GUJARAT URJA VIKAS NIGAM LIMITED

Represented by : General Manager (Commerce)
Having its Registered Office at : Sardar Patel Vidyut Bhavan
Race Course, Vadodara 390007, Gujarat
Phone: (0265)2339148
E-Mail: smathur.guvnl@gebmail.com

.... RESPONDENT

1. PARTIES TO THE PETITION

1.1 The Petitioner, Gujarat Industries Power Company Limited (GIPCL) is a Company incorporated under the provisions of Companies Act, 1956, involved in Electrical Power Generation with a present installed generation capacity of 1184.4 MW, having its registered office at P.O. Ranoli, Vadodara- 391350, Gujarat, India. GIPCL functions under the umbrella of Energy and Petrochemicals Deptt. Govt. of Gujarat.



1.2 Respondent, Gujarat Urja Vikas Nigam Limited (GUVNL), is a Company incorporated under the provisions of Companies Act, 1956, having its registered office at Sardar Patel Vidyut Bhavan, Race Course, Vadodara 390007, Gujarat, India. The Respondent is engaged in bulk purchase and bulk supply of electricity and is a licensee for the said activities under the provisions of Electricity Act, 2003. Respondent is the procurer of the entire capacity under the referred PPA.

2. **MOST RESPECTFULL SHOWETH:**

2.1 This Petition has been filed under Section 86 of the Electricity Act, 2003 read with GERC (Multi Year Tariff Regulations), 2016 & 2024, GERC (Conduct of Business) Regulations, 2004 as well as SLPP-I's Power Purchase Agreement (PPA) dated 15.04.1997 and subsequent amendments executed in the years 2003 & 2005 with the erstwhile Gujarat Electricity Board, the predecessor of Gujarat Urja Vikas Nigam Ltd. (hereinafter referred to as "GUVNL" or "Respondent").

2.2 Respondent, GUVNL is the Sole Power Procurer and Beneficiary of Power generated by 250 MW SLPP-I comprising 125 MW Units-1 and 2.

2.3 Since the SLPP-I 125 MW Units-1 and 2 were on the verge of completing their design life of 25 years and the CFBC Boilers were facing operational issues due to deteriorating lignite quality and aging, GIPCL initiated the proposal to carry out Renovation, Modernization and Life Extension of PPA duration of 30 years by 10 years till 2040.

2.4 SLPP-I Units entered into Commercial Operation in February, 2000. A 30-year PPA was signed with Gujarat Electricity Board (GEB), the predecessor of GUVNL in the year 1997, before the advent of regulatory era and enactment of the Electricity Act, 2003. The two-part tariff envisages pass-through of fuel cost as per the normative parameters and therefore it is covered by Section 62 of the Electricity Act, 2003.

2.5 The proposal for Renovation, Modernization and Life Extension of SLPP-I Units was deliberated in the high-level meeting chaired by Hon'ble Minister of Energy, Govt. of Gujarat on 23.03.2022. In view of the numerous merits of the proposal, Hon'ble Minister instructed MD GIPCL to immediately forward the proposal to GUVNL.

2.6 GIPCL submitted its R & M & LE proposal to GUVNL on 25.03.2022 and in-principle approval was accorded by GUVNL vide letter dated 05.08.2022. GIPCL was asked to seek GERC approval for the proposal since the additional capitalization would result in tariff revision. GIPCL filed this Petition before the Hon'ble Commission in June, 2023.





2.7 GIPCL appointed M/s STEAG India, a reputed CEA approved R & M Consultant to prepare the DPR in 2023. The DPR was finalized in February, 2024 after extensive study and discussions and the same was submitted to GUVNL for review in February, 2024.

2.8 The DPR has exhaustively dealt with the design issues, fuel quality aspect, operational and commercial issues of SLPP-I Units and recommended measures to improve performance, safety, availability, reliability of Units- 1 & 2 and enhance the life of Units by 15 years after the completion of design life of 25 years in 2025.

2.9 Detailed Project Report recommends increased technical intervention in the Power Plant so that it can operate safely and efficiently for extended life of 15 years beyond the design life of 25 years. The current PPA duration of 30 years ends in 2030 and it is proposed to extend it by another 10 years till 2040.

2.10 The original cost estimate as per GIPCL's internal techno-commercial assessment in the year 2021-22 was Rs. 400 Cr. and it was based on market data of 2019-20. Due to unexpected spurt in commodity price and cost of services post COVID-19 as well as increased scope of intervention, the estimated expenditure as per DPR for the best case is Rs. 690.7 Cr.

2.11 GIPCL has also sought revision in some of the PPA Normative Parameters from FY 2025-26 onwards upon completion of the design life (25 years) of the Units and align with the prevailing regulatory norm for CFBC Lignite Units of this category. The proposal has been accepted by GUVNL. This will allow better O & M and thereby improved availability and reliability of the Units.

2.12 GIPCL has apprised GUVNL in detail about the proposal and submitted the requisite supporting documents for approval. The final techno-commercial proposal with tariff impact due to additional capital expenditure and revision in normative parameters etc. along with pay back to GUVNL, worked out as per latest MYT Regulation, 2024 was submitted to GUVNL on 18.11.2024. Copy of GIPCL proposal is attached as **Annexure-1 (Page No. 83)**

2.13 GUVNL has given its approval for the DPR findings and GIPCL proposal vide letter dated 29.05.2025. Copy of the letter is annexed as **Annexure-2 (Page No. 105)** GUVNL has approved the estimated capital cost of Rs. 690.7 Cr. and revision in selected normative PPA parameters. The said GUVNL approval is subject to GERC's approval for adjustment in tariff for recovery of costs.



Subanary

2.14 The Petition was heard by the Hon'ble Commission on 09.11.2023 and vide Daily Order dated 05.12.2023 Respondent, GUVNL was asked to file its reply. GUVNL filed its reply on 22.04.2024 and since contents of the Petition were to be updated, GIPCL didn't file rejoinder immediately and vide submission dated 03.8.2024 sought Hon'ble Commission's permission to revise the contents of the Petition as per GUVNL's approval for the DPR, revised cost estimate and revision in PPA parameters after expiry of design life and as per prevailing regulatory norm for similar Lignite Power Plants. Extract of the submission on 03.8.2024 is presented below:

Para 2.13 on Page No. 73 is reproduced below:

"Submission of Detailed Project Report, Final Cost Estimate and Addl. Capitalization Amount, Time Schedule for Completion

a. *Allow GIPCL to submit the Detailed Project Report, final estimate of expenditure, time schedule and impact on tariff at a later stage once DPR is finalized. DPR is currently under preparation. Actual expenditure details shall be furnished upon completion of the Renovation, Modernization and Life Extension exercise."*

2.15 GUVNL, the PPA beneficiary and Respondent after due review of GIPCL proposal given approval for the DPR findings, estimated expenditure of Rs. 690.7 Cr. and the techno-commercial proposal for the Renovation, Modernization and Life Extension Exercise, extension in PPA duration by 10 years and allowed revision in PPA Normative Parameters from FY 2025-26.

2.16 Now, GIPCL seeks to apprise the Hon'ble Commission about the DPR findings and seeks regulatory approval to proceed with the exercise so that it can be completed as per plan by 2028. DPR executive summary is attached as **Annexure-3 (Page No. 107)**

2.17 The Renovation and Modernization exercise is a very complex and time-consuming exercise. Major equipment has to be sourced from Original Equipment Manufacturer like BHEL and they have a long lead time. GIPCL is therefore proceeding with detailed engineering and placement of order from major equipment and services. As per the DPR schedule, GIPCL proposes to take up the activity Unit wise clubbed with Major Shutdown so that there is minimal impact on the Availability for the Grid. Minor activities shall be taken up as and when opportunity is available while major activities shall be taken up in 2027 and 2028. Petitioner requests the Hon'ble Commission to consider the specific duration for the major activity for "Deemed Availability" as per Item No. 10 of the CEA guidelines of February, 2020 for the Renovation and Modernization and Life Extension of Coal/ Lignite Thermal Power. Extract is presented below:



Jayaram

"The thermal units under outage on account of the approved programme of renovation/upgradation should be considered deemed to be available for the period approved in advance by the concerned authorities."

3. PRAYER

Petitioner, GIPCL requests the Hon'ble Commission to approve the following:

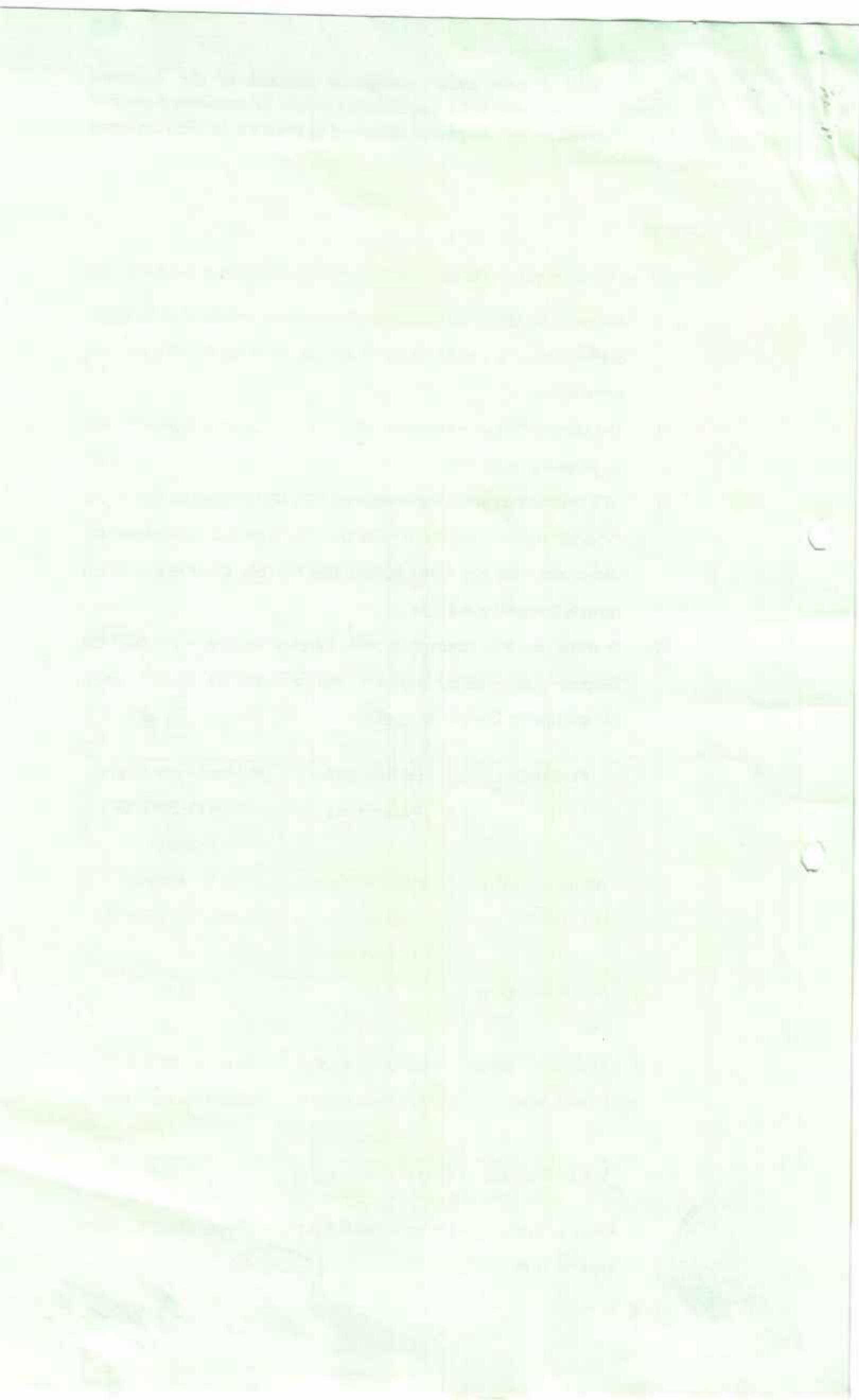
- I. Renovation, Modernization and Life Extension proposal of GIPCL for SLPP-I Units-1 & 2 as per the DPR and approved by GUVNL, the PPA beneficiary.
- II. The current PPA duration is till 2030 and the same shall be extended by 10 years i.e. till 2040.
- III. DPR estimated capital expenditure of Rs. 690.7 Crore or the actual expenditure incurred on the exercise following due procedure and which shall be put forth before the Hon'ble Commission upon completion of the exercise.
- IV. Revision in the Normative PPA Parameters from FY 2025-26 proposed as regulatory norm and allowed by GUVNL upon completion of 25-year design life.

Parameters	Existing PPA Parameters	Revised Parameters from FY 2025-26 onwards
Station Heat Rate kCal. /kWh	2400 (Without Moisture Correction)	2461 (Without Moisture Correction)
Aux. Power Cons. (%)	10	11.5
Annual O&M Expenditure	Escalation as per WPI-CPI on Project Cost	As per GERC's MYT Regulation from time to time
Water Charges	Part of O&M Charge	At Actuals

- V. Allow suitable adjustment in tariff for the recovery of such capital expenditure;



J. D. Narayana



- VI. Approve the specific period during which major activity for Renovation, Modernization and Life Extension of Unit is undertaken for Deemed Availability as per the CEA Guideline of February,2020.
- VII. Pass such other order(s) as deemed fit and proper in the facts and circumstances of the case.
- VIII. In-principle approval to proceed with the exercise as per the submission.

Date- 25/06/2025
 Place- Vadodara

J. Patel



J. Patel



BEFORE THE HON'BLE GUJARAT ELECTRICITY REGULATORY COMMISSION,
GANDHINAGAR

PETITION NO. 2228 OF 2023

IN THE MATTER OF:

Petition under Section 86 of the Electricity Act, 2003 read with GERC's MYT Regulation, 2016 & 2024 and SLPP Phase-I's PPA with GUVNL to seek the Hon'ble Commission's approval for proposed Renovation, Modernization and Life Extension (R&M and LE) of SLPP Phase-I's 2x125 MW Unit 1 & 2, additional capitalization of expenditure and recovery by adjustment in tariff and extension of PPA duration with modified terms by 10 years.

AND

IN THE MATTER OF:

Gujarat Industries Power Company Ltd.

Versus

Gujarat Urja Vikas Nigam Ltd.



Petitioner

...Respondent

Reg. No. 4344

Date: 25/06/25

AFFIDAVIT

I, Satyanarayan Mani, S/o. Shri Balasubramani Iyer, aged about 56 years resident of Vadodara hereby solemnly affirm and state as under:

1. I am Addl. General Manager (Commercial & Legal) of the Petitioner and I am fully conversant with the facts of the case and competent to depose to the present Affidavit.
2. I have gone through the contents of the accompanying Rejoinder and I say that the facts stated therein are based on the records of the Petitioner Company and believed by the deponent to be true.
3. The annexures to the rejoinder are true copies of their originals.



VERIFICATION:



Satyanarayan

DEPONENT

I, the Deponent, above named do hereby verify that the contents of my above affidavit are true to my knowledge, no part of it is false and nothing material has been concealed there from.

Verified at Vadodara on this 25th day of June 2025



Satyanarayan
SOLEMNLY AFFIRMED/DECLARED
SWORN BEFORE ME BY.....
DEPONENT
S. Channan Mani

ILA C. PAREKH
NOTARY
25/06/25



GUJARAT INDUSTRIES POWER CO. LTD.,
BARODA

18th November, 2024.

Sub: Revised Proposal for Renovation, Modernization and Life Extension of 2 x 125 MW SLPP-I Units as per the Detailed Project Report

This proposal is based on the comprehensive Detailed Project Report(DPR) for the Renovation, Modernization and Life Extension of 2 x 125 MW SLPP-I prepared by the consultant M/s STEAG India. GIPCL had submitted a techno-commercial proposal based on the DPR on 07.10.2024. The earlier proposal has been slightly modified since MYT Regulation, 2024 becomes applicable for the capitalization of Renovation & Modernization & Life Extension(R & M & LE) expenditure post 01.04.2025 and the return on this expenditure is now computed as per the RoCE methodology.

A. Background

- GIPCL commissioned the 250 MW Surat Lignite Power Project Phase-I (SLPP-I) comprising 125 MW Units 1 & 2 at village Nani Naroli, Taluka- Mangrol of Surat District in February, 2000.
- PPA with Gujarat Electricity Board (GEB), the predecessor of GUVNL was signed in the year 1997 before the dawn of regulatory era and enactment of the Electricity Act, 2003.
- The two-part tariff envisages pass-through of fuel cost as per the normative parameters and therefore comes under Section 62 of the Electricity Act, 2003.
- SLPP-I was the pioneer among IPPs in the country in adoption of the novel Circulating Fluidized Bed Combustion (CFBC) technology for its Boilers. This is an environment friendly way to burn the low-grade lignite and it has ensured that the Units are able to meet the stringent revised emission norms without major intervention and expenditure.
- The operating parameters of CFBC power plant were not available at the time of SLPP-I PPA formulation. Therefore, SLPP-I PPA normative parameters are aligned as per then prevalent norms for conventional thermal power plants. SLPP-I has been put to a huge disadvantage in respect of critical parameters like Auxiliary Power Consumption, Annual O & M Charge etc. and this has adversely impacted the recovery of justified costs for GIPCL.
- Further, SLPP-I PPA underwent revision in the years 2003 and 2005 based on the recommendations of the State Govt. appointed committee to review and revise the tariff of IPPs in the State. GIPCL had to accept unfavourable terms and downward revision in tariff in the interest of the State's power consumers.

- Key Amendments of the PPA in 2003/2005 are as under:

Sr. No.	PPA Parameter	As per original PPA	As per Amended PPA from 01-01-2003/2005
1	Normative Availability	68.5%	75%
2	Return on Equity	16%	13%
3	Target PLF for Incentive	68.5%	75%
		0.575% of Equity for Plant Availability for every % above 68.5%	Flat rate of Rs. 0.25/kWh above 75% PLF

- Normative Parameters of SLPP-I PPA as on date

PARTICULARS	PPA parameters
Capacity	2 X 125 MW Unit -1 and 2
COD	15.02.2000
PPA Date	15.04.1997 with amendments in the years 2003 & 2005
PPA Duration	30 years from COD i.e. till Feb. 2030
Main Fuel	Lignite
Normative Auxiliary Power Consumption	10%
Normative Annual Availability	75%
Normative Station Heat Rate (SHR)	2400 K.Cal/KWh
Project Cost (Power Plant)	Rs. 1210.57 Cr.
Debt: Equity Ratio	75.5 : 24.5 %
Variable Charges	Lignite, as per SHR with moisture correction factor limited to max. 10% HFO-3.5 ml/kwh Limestone-0.15 kg/kwh
Fixed Charges	O & M Expenses inclusive of insurance and water charge @2.5% of the Initial Capital Cost linked to CPI (30%) & WPI (70%)) Return on Equity -13% Interest on Working Capital – Lower of GIPCL/GUVNL Bank Interest Rate
Incentive	0.25 Rs. /kwh for Scheduled Generation above 75%

- **SLPP-I Performance and GIPCL's Efforts**

Financial Year (COD : 15.02.2000)	Commercial Availability (Normative: 75%)	PLF	Aux. Power Cons. (Normative: 10%)	Station Heat Rate (Normative: 2400 kCal/kWh with moisture correction limited to 10%)
	%	%	%	kCal/kWh
2015-16	83.74	74.83	12.67	2726
2016-17	78.87	69.71	13.16	2743
2017-18	74.83	72.57	13.18	2734
2018-19	76.66	77.94	12.67	2724
2019-20	73.53	73.52	13.07	2782
2020-21	60.98	60.40	13.57	2819
2021-22	62.20	61.31	14.04	2770
2022-23	63.21	62.38	13.80	2852
2023-24*	67.41	66.86	13.09	2822

*Performance up to 2022-23 considered in DPR

It can be observed that:

- The average Plant Load Factor of the SLPP Phase-1 for the last few years is 68.84% and for the last five years it is 64.89%. Highest PLF of 85.58% was achieved in the year 2005-06.
- The 125 MW Units- 1 & 2 have clocked around 1.7 lac operating hours. SLPP's Performance is satisfactory considering its age. Its performance is considered a benchmark for other CFBC based lignite Units in its category in the State and country. This Power Plant has consistently received accolades at the National Level.
- Plant Performance has deteriorated from FY 2020-21 onwards due to following reasons:
 - Deterioration in fuel quality has resulted in partial loading of units and frequent Boiler Tube Leakages
 - Premature failure of structural members in the Boiler occurred on account of excessive stress due to deviation from design parameters which is primarily due to poor fuel quality and frequent load excursion on account of increased RE penetration.
 - GIPCL has infused capital of approx. Rs. 63 Cr. over and above the Annual O & M expenditure to sustain safe and efficient operation of SLPP-I Units. This amount has not been claimed from GUVNL.

Year wise capital infusion is listed below:

Sr. No.	Financial Year	Addl. Capitalization in SLPP-I (Rs.in Cr.)
1	2009-10	2.29
2	2010 -12	0.26
3	2015-16	3.84
4	2016-17	4.24
5	2018-19	4.54
6	2019-20	9.98
7	2020-21	2.11
8	2021-22	9.53
9	2022-23	26.32
	Total	63.11

- The Auxiliary Power Consumption and Station Heat Rate of SLPP-I are inferior to the Normative level prescribed in the PPA and therefore GIPCL is incurring significant loss on this account since the beginning.

B. Proposal for Renovation, Modernization and Life Extension by 10 years

- A comprehensive Renovation, Modernization and Life Extension exercise has been conceptualized to coincide with the end of the 25-year design life of the Units in the year 2025.
- This exercise is necessary in the light of deteriorating performance, Boiler Tube leakages causing increased forced outages. OEM BHEL has recommended Renovation, Modernization of the Units after completion of design life. CEA guidelines for Thermal Power Plants stipulate timely action by the Power Stations and beneficiaries.
- This exercise is expected to address the currently encountered problems to a great extent and improve safety, availability and performance of the Units. Additionally, it would extend the useful life of Units by 15 years beyond their design life till the year 2040.
- In view of the huge surge in power demand expected in the coming years and considering CEA's projection on expected demand and available capacity, Ministry of Power, Govt. of India has instructed the Power Generation Utilities not to retire any Thermal Power Plant till the year 2030 and advised to carry out Renovation and Modernization to extend life of the Power Plant.
- SLPP-I Units based on the environment friendly CFBC technology have the added advantage of being among the few thermal utilities in the country which comply with the stringent emission norms as per the Revised Emission Norms of 2015.
- Adequate lignite and limestone reserves required for the 10-year life extension of SLPP-I Units is available in the area and the mining activities are taken care by in-

house by GIPCL's Mining department. The lignite and limestone cost are therefore quite competitive and fuel availability is secured for the life of Power Plant.

- GIPCL initiated action in the year 2021-22 itself and submitted preliminary estimate of activities involved and cost to GUVNL in March, 2022 and GUVNL's in-principle approval was received in August, 2022.
- GIPCL's Board of Directors approved the proposal for Renovation, Modernization & Life Extension for 2 x 125 MW SLPP Phase-I (Units 1&2) in the Board meeting held on 07.02.2022 Board Resolution No.4854 dated 07.02.2022. GIPCL management was directed to seek GUVNL's in-principle approval and take required steps in this regard, is a.
- The proposal for Renovation, Modernization and Life Extension of SLPP-I Units was deliberated in the high-level meeting chaired by Hon'ble Minister of Energy, Govt. of Gujarat on 23.03.2022. In view of the numerous merits of the proposal, Hon'ble Minister instructed MD GIPCL to immediately forward the proposal to GUVNL.
- GIPCL submitted its R & M & LE proposal to GUVNL on 25.03.2022 for which in-principle approval was accorded by GUVNL vide letter No. GUVNL-COM-GM(IPP)-852 dated 05.08.2022. GIPCL was asked to seek GERC approval for the proposal since it would involve revision in tariff due to additional capitalization. GIPCL has filed Petition No. 2228/2023 before GERC in June, 2023.

C. Detailed Project Report for Renovation, Modernization and Life Extension of SLPP-I Unit-1 & 2

- GIPCL appointed M/s STEAG India, a reputed CEA approved R & M Consultant to prepare the DPR in 2023. The DPR was finalized after extensive study and discussions in February, 2024. A copy of the DPR has been submitted to GUVNL for review and comments.
- The DPR has exhaustively dealt with the design issues, fuel quality aspect, operational and commercial issues of SLPP-I Units and recommended measures to improve performance, safety, availability, reliability of Units- 1 & 2 and enhance the life of Units by 15 years till the year 2040 and 10 years beyond the current PPA tenure of 2030.
- As per GERC's MYT Regulation-2016, beneficiary's approval is imperative for the DPR of Renovation, Modernization and Life Extension and the revised tariff proposal and thereafter regulatory approval is to be sought.

(i) Key Findings of the DPR

- **Quality of lignite has got deteriorated with time in terms of lower GCV values, higher moisture content with sulphur and chlorides including deviation on fines against the recommended value.**
- **Due to poor fuel quality, furnace and entire flue gas path are subjected to overloading which in turn resulting higher partial loading, higher degree of erosion of tubes at various locations due to higher velocities and especially at bottom part of water walls.**

- Also due to higher fuel loading and higher percentage of fines, unburnt carbon losses are higher. **High moisture with sulphur and chloride in fuel has led to severe cold end corrosion of Air Preheater tubes, ESP internals & casing and flue gas duct from APH outlet to Chimney.**
- **Frequent BTL (Boiler Tube leakage) is causing forced outage.** BTL in each Unit occurred mainly in the combustor water walls / FBHE-4 Evaporator/ FBHEs water wall / Sealpot WW / SH1B / Backpass Hanger tubes/ Back pass SCW & its roof & Economizer, mainly due to erosion by ash laden flue gas, overheating, Thermal Fatigue, Corrosion Fatigue, Caustic Gouging, Fire side corrosion-erosion, acid dew point corrosion and High metal temperature excursion during ramping due to backing down instruction.
- The Blockage of flue gas path in back pass section is also affecting ID fan loading resulting partial loading and overall performance of Units.
- **The present Turbine cycle heat rate has deteriorated significantly due to ageing compared to the design heat rate.** Unit1&2 Turbine are not operating at the rated Load of 125 MW due to boiler limitations and its lower steam generation capacity.
- Auxiliary Power Consumption of SLPP-I is higher due to CFBC Boiler Technology with FBHE. There is need to revisit the PPA norm as per current regulatory norm for CFBC Technology Power Plant.
- **SO₂, NO_x and specific water consumption are well within limit as per Latest Emission Norms as notified on 7th December' 2015,** However, Suspended Particulate Matter (SPM) is on higher side due to stringent revised norms vs design. Further ESP performance deteriorated due to severe cold end corrosion. ESP field/ structure/ casing repair/ replacement is required based on rate of corrosion. Both Units ESP refurbishment is considered under separate Environment Management Plan to ensure meeting statutory requirement and adhere timeline as specified by MOEF&CC.
- Lignite and Limestone handling system are maintained and working fine, however major challenge noted as reliability and availability of obsolete technology equipment / spares, refurbishment of machines, revamping of existing conveyor system, Steel & Civil Structures and JNT's, lignite storage shed requirement.
- SLPP has two mines, namely Vastan which is approx. 3.5 km away from the plant and other is Mangrol-Valia which is approximately 23 KM away from the plant. The conveying system in Phase-I from Vastan mines designed with 2 nos. conveyors (1W+1S) system. However, only one conveying system and Lignite storage at both mine end and inside plant erected. **Therefore, upgradation and revamping of conveyor with stone removal/picking facility and SCR is required.**
- Pneumatic conveying system along with PLC for transportation of bed ash from bed ash silo to bed material bunker shall be provided to avoid manual intervention and proper bed material management.
- Balance of Plant system i.e. Plant Water system, River Water System, Raw Water System, Pre-treatment system, DM Water system, Cooling Water System, Fire Water System, Ventilation and Air Conditioning System, Compressed Air System, Crane and Hoist, Effluent Treatment System are maintained and working fine, however due to ageing factor as plant is operating for 23 years, condition-based refurbishment of these system equipment and piping system are required.
- The presence of corrosion causing species such as chloride and sulphate were reported in the analysis of the concrete samples collected from the cooling tower and fly ash silos. Severe corrosion on structures were witnessed especially in Boilers and Lignite Handling

System area during walk down survey of the units. The structural items prone to corrosion degradation require individual attention for the selection of appropriate corrosion mitigation measures.

(ii) Area wise Recommendations

a. Boiler & Auxiliaries

1. Replacement of existing eroded water wall tubes of combustor and Pressure Parts Modification works.
2. Redesign and modification of inlet header of FBHE-4 Evaporator Coils for uniform flow distribution.
3. Modification and Replacement of FBHE-4 Evaporator Coils/Risers
4. Modification and Replacement of all FBHEs and Seal Pot water wall tubes
5. Modification / upgradation to improve water circulation for Seal Pot Horizontal / inclined tubes
6. The Modification and replacement of Super heater-1B to avoid blockage of flue gas path in back pass section.
7. Modification and Replacement of Back pass Hanger tubes and Steam Cooled Wall (SCW) tubes
8. Replacement of complete Economizer coils
9. Replacement / retrofitting of valves, safety valves,
10. Replacement / retrofitting of drains and vents, valves and lines along with supports
11. The modification in PA wind box and SA nozzles design/orientation.
12. The modification of combustor fluidizing nozzles along with grate and refractory
13. Complete replacement of existing cyclones and COD Shells along with refractory and modified cyclone vortex finder.
14. Combustor, FBHEs and Seal Pot refractory.
15. Installation of additional Soot Blower system in back pass section after consultation with OEM and retrofitting of existing Soot Blower System to have more efficient system.
16. Modification of draft system with addition of one ID fan with identical capacity and head of existing two ID fans.
17. Replacement of damaged/corroded internals casing, dampers of ESP
18. Replacement of APH tubes
19. The modification for current flue gas flow and replacement of corroded Flue Gas Duct/ Air Duct / structures and supports.
20. Anticorrosive coating on structures and inside flue gas ducts before and after ESP
21. Replacement of complete insulation.
22. Refurbishment of Hangers and Supports.
23. Complete refurbishment / Replacement of lignite conveyors casing with basalt liner, Rotary Air lock feeders with motors and associated lignite feeding system equipment's and Modification to arrest back flow of Flue Gas from Lignite Rotary Air Lock Feeders (LRALFs).
24. Replacement of PA & SA Fans IGV and Silencer.
25. Replacement of all FBHEs bundle & empty chamber blowers and sealpot blowers with modified design to be incorporated for better performance.

b. Steam Turbine & Auxiliaries

1. To optimize the R&M and LE cost, refurbishment of existing HP-IP and LP Turbine rotor & blade are considered for life extension, however Performance improvement shall be marginal.
2. Although Replacement of HP-IP & LP Steam Turbine Internals with improved design of Inner casings and Blades (HP/IP/LP outer casing shall be retained) to improve Specific Steam Consumption and Turbine Heat rate, will support to achieve commercial availability in case of Boiler Capacity degradation due to poor fuel quality limitation.

3. Refurbishment of Turbine Stop and Control valves and Replacement of EHTC Actuators. However, for performance & availability guarantee, steam cycle exposed components are to be checked through RLA, and Bidder shall ensure all component's healthiness.
4. Replacement of Boiler feed pump impeller to reduce auxiliary power consumption and to meet expected life.
5. Replacement of Critical piping insulation to improve turbine heat rate.
6. Replacement of SWAS instrument for better water chemistry control to improve reliability and availability of boiler and turbine.

c. Balance of Plant

1. Installation of interconnection conveyor and feeding system to connect to Phase-I at JT-13 with expectation of significant benefit in increasing of the boiler efficiency by improvising the fluidization and combustion process, reduction of auxiliary power consumption, reduction in existing high O&M cost as optimized length as compared to present path of BCN-M1A, and New slow speed conveyor feeding system with higher belt width will improve stones removal rate, and in-turn improve system reliability and availability.
2. Replacement of Secondary crushers (Hammer Mills) for the plant life extension
3. Refurbishment of the machines(stackers).
4. Refurbishment of the structures
5. Replacement of Instrument Air and Service Air compressors
6. Replacement of underground piping from raw water pump header to the stilling chamber.
7. LP piping system refurbishment based on condition assessment
8. Replacement of mechanical parts and scrapper mechanism of clarifier
9. DM generation plant is in a depleted state and its replacement with new RO-DM plant is considered.
10. Corrocoat coating on CW pump to improve efficiency, reduce APC and increase life of pumps.
11. Complete refurbishment of cooling tower
12. Fire system renovation
13. Chlorination system replacement
14. Replacement of Air Washer Units, damaged AC ducting and insulation, air conditioners
15. Any short comings in BOP areas are to be upgraded / replaced.

d. ELECTRICAL SYSTEM

1. Retrofitting of obsolete analogue Generator AVR of U#1 & 2 with DAVR.
2. Unit#1 brushless excitation system required to be replaced with new modified design.
3. Replace GT-1 with new Generator Transformer as tan delta values are in increasing trend.
4. One new 2 MVA service transformer shall be procured for LLHS area against failed transformer.
5. Retrofitting of obsolete HA2 type 6.6KB ABB SF6 breaker with New VCB in 6.6KV Unit and Station Board of Unit#1.
6. Retrofitting of obsolete Siemens/GEC 415 V LT Breakers with New ACBs.
7. ID Fan motor of higher rating with F/H class insulation shall be procured for both units (existing ID Fan motor-725KW)
8. 1 No. 1250 KW SA Fan motor shall be procured as repaired motors are in operation
9. 1 No. 1125 KW PA Fan motor shall be procured as repaired motors are in operation
10. Procurement of 1 no conveyor 6A/6B motor (300KW) as repaired motors are in operation
11. Retrofitting of AMF Panels required for existing 2 nos. 750KVA DG set

(iii) Estimated Expenditure as per DPR

- As per DPR estimate (FY 2023-24), expenditure shall be Rs. 690.7 Cr. considering IDC, Contingency Expenditure etc.
- This estimate is prepared based on the visual inspection of the plant, condition of equipment and requirement of replacement/refurbishment/revival assessed based on walk down survey, discussion with O&M team of SLPP, O&M records, outage history, fuel as received, latest regulations requirements, Energy Audit report, RLA report, corrosion study report, various other pre-implementation studies as specified in various section of this report. However, a more realistic cost for R&M and LE can be estimated, after OEM's / R&M Bidder's site visit during bidding stage of the project.
- Funding of R & M & LE expenditure is proposed in the Debt: Equity Ratio of 70:30 as per MYT 2024.

Estimated R & M & Life Extension Cost in Cr.	Equity (%)	Amount of Equity Rs. In Cr.	Amount of Loan Rs. In Cr.
690.7	30	207.21	483.49

(iv) Expenditure Break-up as per DPR

Section	Description	Rs. In Cr.
A	R&M and LE Cost/New Equipment Cost	
	BOILER & AUXILIARIES	196.8
	TURBINE & AUXILIARIES	72.3
	C&I	43.20
	ELECTRICAL	37.40
	LIGNITE STORAGE AND HANDLING SYSTEM	47.00
	LIME STORAGE AND HANDLING SYSTEM	15.80
	ASH HANDLING SYSTEM	10.80
	COMPRESSED AIR SYSTEM	4.80
	HVAC	4.00
	FIRE SAFETY SYSTEM	4.50
	PLANT WATER SYSTEM, DMP, CW SYSTEM, IDCT, ETP	16.9
	CONVEYOR FROM MINE TO POWER PLANT	23.00
	CIVIL	24.60
	CONTINGENCIES	25.06
	Total [A] Plant & Equipment	526.16
B	Break-up of [A] with GST	
	GST @ 18.0%	94.71
	Total [B] Plant & Equipment with GST	620.87
C	Financing Charges and IDC	
	Financing and other charges	5.21
	Project Cost Without IDC	626.08
	IDC	64.61
	Total Project Cost with IDC	690.69

As per Para 32.4 of GERC MYT Regulation, 2024 "Any expenditure incurred or projected to be incurred on or after April 01,2025, as may be admitted by the Commission as additional capital expenditure for determination of Tariff, and renovation and modernisation expenditure for life extension, shall be serviced in the manner specified in this Regulation.

(v) Variation in Cost Estimate: DPR versus Preliminary Estimate

The estimated expenditure for Renovation, Modernization and Life Extension exercise as per the DPR (FY 2023-24) is Rs. 690.7 Cr. while GIPCL's preliminary estimate in early 2022 was Rs. 400 Cr. However, actual expenditure shall be known upon completion of the ordering process and completion of the exercise.

The increase in estimated expenditure seen in the DPR vis-à-vis the preliminary estimate is explained hereunder:

1. Consultant has carried out exhaustive assessment of SLPP-I Units for preparing the DPR. Based on the vast expertise in this domain, consultant has determined the residual life of various equipment, control systems and structures in the light of heightened corrosion on account of poor fuel quality. DPR has recommended additional essential measures to ensure safe and sustained operation of the Units for the extended life till the year 2040.
2. DPR cost estimate is an indicative number which is calculated in accordance with indicative offers from OEM and database of other projects. Implementation of the project is in line with the Government's R&M guideline and policy for increased generation and improved performance from existing stations with environmental protection.
3. DPR has recommended following additional measures for life extension and these were not envisaged in the preliminary in-house assessment done in 2021-22.
 - (i) Refurbishment of HP/IP Turbine rotor along with EHTC Actuators and Turbine Valves in view of operational stresses due to working in high temperature and pressure, full load tripping, more start – stops and 1.72 lac running hours at the **estimated cost of Rs. 39Cr.**
 - (ii) On the Boiler side, replacement of additional pressure parts and structural components with **estimated expenditure of Rs. 7 Cr.**
 - (iii) After analysis of Generator Transformer of 125 MW Unit – I Test Reports, replacement is necessary to ensure trouble free operation for the extended life. It is also required to replace obsolete AVR, Circuit Breakers etc. with **estimated expenditure of Rs.15 Cr.**
 - (iv) It is necessary to reduce Lignite conveyor speed along with higher belt width to improve the stone removal rate from lignite. This will help to improve system reliability, availability and Plant Performance. **The estimated expenditure is Rs. 43 Cr.**
 - (v) Refurbishment of Lime stone conveying system, compressors and Ash handling system considering Ageing and Deterioration of System/Equipment to improve system reliability, availability and Plant Performance. **Estimated expenditure is Rs. 10 Cr.**

(vi) Upgradation of critical electronic modules which have become obsolete as well as transmitters/ analysers and field instruments involving **estimated expenditure of Rs. 4.3 Cr.**

The estimated total expenditure due to increased scope is Rs. 119 Cr.

(vii) IDC was not considered in the preliminary estimate of 2022 since the execution timeline and detailed plan was not known. DPR has specified the detailed timeline for the activity along with phasing of expenditure. **Estimated IDC is Rs. 70 Cr.**

(viii) **Contingency of Rs.30 Cr.** is considered in the DPR to take care of unforeseen expenditure that may be required during the execution of R & M & LE activity. This is based on the Consultant's extensive experience of R & M & LE activity in various Thermal Power Plants.

(ix) The cost estimate of Rs. 400 Cr. in 2022 was based on in-house technical and cost assessment considering condition of the Units at that point of time. The cost estimate was arrived by considering the price of equipment and services prevailing in FY 2019-22.

(x) The price of major inputs has steeply risen in the interim period. Eg. MS Steel price has gone up by about 18%, Boiler Tube/ Coil by 40-50%, Boiler Refractory material by 40-80%, Electronic Cards for Turbine Control System by 40-300% and Screw Compressors by around 80%. **Hence, around Rs. 70 Cr. increase in expenditure can be attributed to price inflation in the interim period.**

Detailed Table showing area wise variation between DPR and preliminary estimate with justification is attached as Annexure- A.

Proposed Time-schedule for R & M & LE as per DPR

Useful life of Existing Plant (years)	25
Last year of useful life of Existing Plant	2024-25
Start Date of R&M and LE Project Activity	01-Apr-2025
Construction period (Quarters)	11
Proposed Commissioning Dates post-R&M and LE	
- First Unit	01-Oct-26
- Second Unit	01-Oct-27
Useful Life post-R&M and LE (years)	12
Last year of useful life post-R&M and LE	2039-40

Sr. No.	Activity	Time Schedule for each Unit R&M and LE Work
1	Date of issuance of LOI	Zero date/ Effective date
2	Engineering, Manufacturing and supply of equipment at site for both unit.	Within 18 Months from the zero date/effective date. <i>(tentatively supply may start after 12 months)</i>
3	Total shut down period for E&C work including continuous 72 hours trial run on full load	3 months for each unit separately. <i>(*shutdown period may be further optimized after package planning during ordering phase)</i>
4	Performance Evaluation	Within 08 (Eight) weeks from the date of completion of continuous 72 hours trial run on full load for each unit separately.
5	Warranty/Defect liability period	24 (Twenty Four) months from the date of operational acceptance after successful completion of PG tests for each unit
6	Extended defect liability period for critical components.	18 (Eighteen) months after completion of warranty /defect liability period for each unit separately

(vi) PHASING OF EXPENDITURE AS PER DPR

Phasing of the expenditure is the basis for determining the Interest During Construction (IDC). The IDC figure of Rs 64.61 crore is based on the quarterly phasing as per the DPR.

Description (R&M & LE of First Unit)	Period	Month of Expenditure	Quarterly Expenditure (First Unit)	Description (R&M & LE of Second Unit)	Quarterly Expenditure (Second Unit)	R&M Year (Proposed)	Period	Total Quarter Share
Advance & Engineering 60% Completion	Q1	3	12%			2025	Q1	6%
Engineering 100% Completion	Q2	6	3%			2025	Q2	2%
Material receipt	Q2	6	2%			2025	Q2	1%
Material receipt	Q3	9	5%			2025	Q3	3%
Material receipt	Q4	12	23%			2026	Q4	12%
Material receipt	Q5	15	35%	Advance & Engineering 60% Completion	12%	2026	Q5	24%
Erection & Commissioning Completion	Q6	18	10%	Engineering 100% Completion	3%	2026	Q6	7%
PG Test and Acceptance	Q7	19	10%	Material receipt	2%	2026	Q7	6%
	Q7	21		Material receipt	5%	2026	Q7	3%
	Q8	24		Material receipt	23%	2027	Q8	12%

	Q9	27	Material receipt	35%	2027	Q9	18%
	Q10	28	Erection & Commissioning Completion	10%	2027	Q1 0	5%
	Q11	29	PG Test and Acceptance	10%	2027	Q1 1	5%

(vii) Comparison of Plant Parameters (Pre & Post R & M & LE)

Parameters	Scenario without R & M & LE (Avg of 3 years, Apr2020 - Mar2023)	Scenario post R&M and LE
Plant Load	Current generation level 232 MW	250 MW (Rated Level)
Partial Loading	12.86%	Close to Nil
Annual PLF	61.36%	~75%
SLPP-I Station Heat Rate	2814 Kcal/Kwh	~2749Kcal/Kwh operation at Rated Load and better fuel
Auxiliary Power Consumption	13.8%	~13%
Commercial Availability	62.13% (expected)	75%
Reliability	Frequent Boiler Tube Leakage (BTL) (about twice in every quarter)	BTL issues would be addressed to a great extent & forced outages would reduce.
Plant Life Extension	Through capital overhaul till the year 2030	40 Years till the year 2040
Environment	ESP refurbishment/upgradation work is in progress under Environment management plan to meet new stringent environment norms. SOx, NOx, water consumption are within the revised emission limit.	Considering the advantage of environment friendly CFBC technology and Environment Management Plan, SLPP Units are meeting the New Environmental norms. Further, Both Units ESP refurbishment based on increased rate of corrosion needs to be taken care.
Flexibility with prevalent grid norms	Plant Operation following SLDC demand for backing down / loading.	Flexing Lignite-fired SLPP-I is not recommended considering Technological as well as operational challenges and Limitations of CFBC boilers firing low grade lignite. Matter is under discussion with M/s BHEL(OEM) and CEA.
Biomass pellets co-firing	Not envisaged due adverse impact of operational deviations	Not envisaged due adverse impact of operational deviations

Unit parameters expected post R & M & LE exercise

Sl. Nr.	Parameter	Unit	Value
1	Rated Generation	MW	125.0
2	Lignite GCV	kcal/kg	2454
3	Unit heat rate	kcal/kWh	2,749.0
4	Moisture in Fuel	%	50.50
5	Limestone Consumption	kg/kWh	0.15
6	Commercial Availability	%	75.0
7	Auxiliary Power Consumption	%	13.0

(viii) Relaxed Normative PPA Parameters sought post completion of Design Life i.e. FY 2025-26 onwards

- a. The R & M & LE exercise shall result in improved Station Heat Rate and decrease in Auxiliary Power Consumption. However, the improved parameters would inferior to the normative parameters for CFBC lignite power plants. Station Heat Rate is expected to improve from the current 2814 kCal/kWh to 2749 kCal/kWh while the allowed as per relaxed normative norm would be approx. 2700 kCal/kWh (max. with 10% moisture correction). The Auxiliary Power Consumption is currently around 13.8% which is expected to come down to 13% while the allowed as per the relaxed normative norm would be 11.5%.
- b. SLPP-I PPA was formulated in the pre-regulatory era and hence the PPA parameters are not relevant or practically achievable for CFBC Lignite Power Plant. Revision of normative parameters in the years 2003 and 2005 has been to the detriment to GIPCL and has adversely impacted the financial viability of this Power Plant.
- c. With advancing age of the Units and deterioration in fuel quality, increased O & M intervention and major expenditure is essential to keep the plant up and running in a safe and optimal manner for the balance PPA duration and extended life. GIPCL has already infused additional capital of Rs. 63 Cr. in the past few years, over and above the annual O & M expenditure. This capital infusion has not been claimed by GIPCL by way of tariff adjustment.
- d. GIPCL's 2 x 125 MW SLPP-II Power Plant commissioned in the year 2010 is equipped with similar Units. The normative PPA parameters for this Power Plant are based on the regulatory norms and are more appropriately aligned to the CFBC Lignite Power Plant with Fluidized Bed Heat Exchanger(FBHE). It is also in tune with the normative parameters for CFBC Lignite Power Plants as per GERC's MYT Regulation, 2016/2024.

A similar State Govt. controlled IPP in the State saddled with similar inappropriate normative parameters based PPA has been allowed relaxed parameters identical to SLPP-II by GUVNL and the regulatory commission.

- e. Currently, major quantum of around 80-85% lignite supply to SLPP-I is from the captive Valia Lignite Mine. This mine is roughly 15-20 km from the Power Plant and lignite is transported through dumpers and re-handled multiple times near the Power Plant to remove stones and reduce moisture content. There is significant loss in quantity and quality of lignite and this is currently not taken care in the PPA. SLPP-I is incurring substantial loss on this front and hence it is requested to allow Lignite handling loss of

0.2% which is also allowed by GERC MYT Regulation, 2016 and 2024 for thermal power plants with captive mines.

- f. The normative O & M Charge is currently linked to WPI & CPI Index and it is insufficient for proper upkeep of CFBC Lignite Power Plant which is about to complete its design life of 25 years. It is therefore proposed to be aligned as per the normative O & M charge allowed for SLPP-II and also allowed for similar technology based IPP in the State. This will help in carrying out proper O & M of the Plant for the remaining life and extended life.
- g. Water Charges is a substantial amount and therefore may be considered for reimbursement at actuals as in the case of SLPP-II. Currently, Water Charge is considered part of O & M Charge in case of SLPP-I. GIPCL is requesting for reimbursement of Water Charges at actuals as permitted by the Regulation.
- h. GIPCL is seeking relaxation in Normative Parameters for SLPP-1 from FY 2025-26 onwards, post completion of design life of 25 years by the 125 MW Units-1 & 2. This will allow GIPCL to improve the availability and reliability of the Units even before the completion of R & M & LE activity.
- i. The Commercial Availability shall be as per the current PPA methodology for the remainder term and extended term of the PPA.
- j. The fixed tariff shall increase by about 21 p/kWh and Variable Charge by 9 p/kWh in the first year i.e. FY 2025-26 due to the Relaxed Normative Parameters.

Mine	Lignite Reserve in Million Tons	Annual Contribution in Million Tons Per Annum	Mine Commencement (Year)	Expected Mine Closure (Year)
Vastan	36	0.5	1996	2026
Mangrol Valia Mine in operation	170	3.2	2012	2040
Mangrol Valia Cluster-I (Land acquisition under process)	17	1.2	2026	2040

Sr. No.	Parameter	Current Normative as per PPA	Relaxed Normative desired from FY 2025-26 as per MYT-2024
1	Return on Equity	13%	13% (Base Rate as per MYT-2024)
2	Interest on Term Loan and Working Capital		As allowed by MYT -2024 for the loan and working capital
2	Station Heat Rate	2400 kCal/kWh (without moisture correction)	2461 kCal/kWh (without moisture correction)
3	Auxiliary Power Consumption	10%	11.50%
4	Lignite Transit Loss	Nil	0.20%
5	Annual O & M Charge	Linked to WPI and CPI	On the lines of SLPP-2
6	Annual Water Charge	Nil	Actuals as per SLPP-2 and permitted by the Regulation

(ix) Fuel Scenario at SLPP

- a. GIPCL has sufficient Mine lease area with adequate lignite and limestone reserves to take care of the fuel requirement of SLPP-I & II for their PPA term i.e. 2030 and 2040 respectively and also for 10 years extended life till 2040 and 2050 respectively.
- b. Limestone addition is required in the CFBC Boiler to control SOx emission and GIPCL has adequate lease land with limestone reserve.
- c. The annual lignite requirement of SLPP-I considering the Normative Availability Level is approx. 1.7 Million Tons. About 80- 85% of the requirement is met by Valia Mine and balance 15-20% by the Vastan Mine.

- **Details of Captive Lignite Mines**

- d. The Vastan Lignite Mine currently contributes around 0.5 million tons annually and is expected to last till the year 2026. GIPCL has therefore initiated the lengthy and time-consuming process to acquire around 230 Ha. private land (Cluster-I) in the Mangrol leasehold area open the Mangrol Mine coinciding with the closure of Vastan Mine.
- e. For balance life of the 500 MW Power Plant (SLPP-I with R&M & LE + SLPP-II) up to year 2040 about 65.52 Million Tons lignite will be required while the reserve available in the currently acquired land is about 40.13 Million Tons. **Therefore, there is a shortfall of 25.39 Million Tons.**
- f. Lignite Reserves available in the GIPCL's Land Lease area is 89.52 Million Tons and is therefore sufficient to meet the requirement of 500 MW Power Plant with SLPP-I with R&M & LE up to the year 2040 & SLPP-II with R&M & LE up to the year 2050.
- g. Lignite shortfall is foreseen considering normative operating level of SLPP Units even for the current PPA tenure of SLPP-I & II considering the currently operational Mines. Therefore, acquisition process of Cluster-I leasehold land has commenced for Mangrol Pit having lignite reserve of 16.8 Million Tons and anticipated Annual Production of 1.2 Million Tons.
- h. The additional lignite requirement of SLPP-I due to the 10-year life extension of Units shall be as under:

Power Plant	Annual Requirement per year of extended life (Million Tons)	Lignite Req. for 10-year Life Extension of SLPP-I (Million Tons)
SLPP-I	1.741	17.41

- i. Vastan Limestone Mine is also being expanded to meet the limestone requirement of SLPP-I & II for the PPA tenure. GIPCL has initiated land acquisition of around 80 Ha.
- j. GIPCL has already submitted a detailed proposal to GUVNL on 23.01.2023 regarding lignite availability and sought approval for expansion of captive lignite and limestone mines to meet the future fuel requirement of SLPP Units.

GIPCL's Board of Directors vide Resolution No. 4451 dtd. 08.02.2018 approved mine land acquisition to the extent of 302.7 Ha. in Cluster-I of Mangrol Valia Mine to secure adequate fuel for SLPP-I and II.

GoG has given preliminary approval to issue land acquisition notification for certain land parcels.

k. Lignite and Limestone Pricing

- The price of Mangrol- Valia Mine lignite would be known only upon completion of land acquisition and award of the Mine Developer and Operator (MDO) contract which is expected sometime in FY 2026-27.
- The lignite quality of Mangrol Pit is expected to be similar to Vastan Lignite and hence it can be taken as reference.
- The major quantum of lignite for SLPP-I (around 80%) shall continue to come from the existing Valia Mine and hence there would not be major impact in overall lignite price in future due to lignite from Mangrol Mine. Lignite and Limestone price are governed by the Fuel Price Mechanism of the PPA.
- The future tariff in DPR has been computed by escalating the current price of primary fuel, secondary fuel and additive i.e. lignite, limestone and HFO @ 2% every year.
- GIPCL has to acquire available lease land and expand the existing Lignite and Limestone Mines and this requirement is independent of the proposed life extension of SLPP-I Units by 10 years. Hence, there shall be no impact in lignite and limestone rate exclusively on account of the proposed life extension of SLPP-I Units till 2040.
- GIPCL is operating the Mines departmentally and therefore lignite and limestone price remains quite competitive and the operating efficiency and safety parameters are quite impressive. Lignite availability for the Power Plant is fairly consistent and is expected to remain as such in future too.

I. Imported Coal Blending to mitigate Lignite Shortfall and Improve Plant Performance

- The quality of Valia Lignite is poor and further geological issues like bench collapse occurs frequently and this disrupts or slows down production. Extended monsoon due to climate change also creates insufficient lignite stock post monsoon. Imported Coal blending to the limited extent of 10-15% becomes necessary in these circumstances and is therefore recommended in the DPR.
- Imported Coal blending is also beneficial to improve plant performance since it improves the overall fuel quality and is therefore recommended in the DPR.
- Imported Coal blending is being done in the last few years with good results. In future this practice is proposed to be continued with GUVNL approval.

D. Capitalization of Expenditure on Renovation, Modernization and Life Extension as per GERC's MYT Regulation,2024

Chapter-50 of GERC MYT Regulation,2024 deals with Renovation, Modernization and Life Extension of Thermal Power Plants. GIPCL is seeking regulatory approval as per the guidelines of this Chapter.

Para 50.1 states as under:

Generating Company, for meeting the expenditure on renovation and modernization for the purpose of extension of life beyond the useful life of the generating station or a unit thereof, shall file an application before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost, record of consultation with beneficiaries, consent received from the beneficiaries and any other information considered to be relevant by Generating Company.

Para 50.5 leaves it to the discretion of the Generating Company whether it wishes to opt for Special Allowance or revision in Capital Cost. Further applicable operational norms cannot be relaxed in case Special Allowance is availed. GIPCL is opting for Additional Capitalization option.

The relevant para is reproduced below:

In case of coal-based/lignite fired thermal generating stations, the Generating Company, instead of availing renovation and modernization may opt to avail a 'special allowance' in accordance with the norms specified in this Regulation, as compensation for meeting the requirement of expenses including renovation and modernisation beyond the useful life of the generating station or a unit thereof and in such an event, upward revision of the capital cost shall not be allowed and the applicable operational norms shall not be relaxed but the Special Allowance shall be included in the annual fixed cost:

Provided that such option shall not be available for a generating station or unit thereof for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these Regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational and performance norms.

GIPCL seeks to adhere to the R & M guidelines of the MYT Regulation, 2016/ 2024 and CEA guidelines.

- i. GIPCL is seeking relaxation of Normative PPA Parameters after completion of design life to align with SLPP-II and allowed for similar technology IPP in the State. Relaxed parameters are sought from FY 2025-26 onwards. The tariff computation is done with Revised Normative Parameters post FY 2025-26.
- ii. DPR has proposed Zero date for R & M & LE as 01.04.2025 and it is proposed to complete the exercise by FY 2027-28. Procurement of items and minor activities shall be initiated from FY 2025-26 onwards utilizing the available opportunity and it is planned to complete by 2028 . However major activity shall be taken up Unit wise in FY 2026-27 and FY 2027-28. Actual Expenditure and IDC shall be capitalized FY 2028-29 onwards and tariff is computed accordingly.
- iii. SLPP-I Initial Project Cost is Rs. 1210.57 Cr. and the residual value of the asset at the end of PPA duration in 2030 is considered as Rs. 121 Cr. which is 10% of the original asset value.

iv. RoE is computed as per the PPA on the original Project Capital of Rs.1210.57 Cr. while the return on the R & M & LE estimated expenditure of Rs. 690.7 Cr. (it shall be substituted by the Actual Expenditure post completion of R & M & LE activity) is computed as per the RoCE methodology specified in MYT -2024. This is for the PPA remaining period FY 2028-29 to FY 2029-30.

v. Renovation, Modernization and Life Extension Exercise estimated expenditure is Rs. 690.7 Cr. Residual Capital value of the current asset shall be Rs. 121 Cr. after completion of PPA term. The return on the Residual Equity Capital is computed as per the PPA Norm while R & M & LE expenditure incurred post 01.04.2025 shall be capitalized along with IDC from FY 2028-29 onwards(or actual completion) and return calculated as per the RoCE method of MYT Regulation, 2024.

vi. MYT Regulation, 2024 has proposed the RoCE methodology for capitalization post 01.04.2025. The Base Rate of RoE as per MYT 2024 is 13% and Additional RoE of 2.5 % is allowed upon achievement of higher performance targets. SLPP-I Units have completed their useful life and therefore they cannot take advantage of the additional RoE , even after elaborate R & M. Hence, the Base Rate of RoE is considered for tariff computation. GIPCL requests GUVNL and Hon'ble Commission to allow RoE of 14% in line with SLPP-II and other Lignite based IPPs in the State.

vii. As per the RoCE methodology of MYT-2024, the return on the R & M & LE investment of Rs. 690.7 Cr. would be meagre for GIPCL. It is therefore necessary to adopt a lenient approach in allowing the pass through of actual costs. The benefit of cheaper power to the Grid would far outweigh the economic benefit to GIPCL by the renovation, modernization and life extension of SLPP-I.

viii. **Period-wise tariff details are tabulated hereunder.**

Sr. No.	Period	Capital Cost	Revised First Year Tariff (before Discounting)	Existing Tariff (before Discounting)	Remarks
1.	FY 2025-26 to FY 2027-28	As per PPA	Fixed – Rs. 1.30/kWh Variable- 2.20/kWh	Fixed – Rs. 1.12/kWh Variable- 2.11/kWh	Variation due to Revised Normative Parameters
2.	FY 2028-29 to FY 2029-30	As per PPA + R & M & LE expenditure capitalized (1210.57 +690.7) = Rs. 1901.27.7 Cr.	Fixed – Rs. 2.43/kWh Variable- 2.34/kWh	Fixed – Rs. 1.22/kWh Variable- 2.24/kWh	RoE on Project Capital Cost as per PPA Norm + RoCE on R&M & LE expenditure capitalized as per MYT,2024
3.	FY 2030-31 to FY 2039-40	Residual Asset Value (10% of Project Cost Rs. 121 Cr.) + Capitalization of R & M & LE Expenditure (Estimated Rs. 690.7 Cr.)	Fixed – Rs. 2.25/kWh Variable- 2.43/kWh	NA	RoE on Residual Project Capital as per PPA Norm + RoCE on R & M & LE capital expenditure as per MYT,2024

Note:

- *Relaxed Normative Parameters considered from FY 2025-26 onwards after completion of useful life of Plant.*
- *Actual expenditure on R & M & LE allowed by the Hon'ble Commission shall replace the estimated R & M & LE expenditure of Rs. 690.7 Cr. at the time of tariff determination*

ix. DPR has proposed R & M & LE activity in conjunction with the Planned Annual Overhaul of the Units in FY 2026-28 period to reduce the overall downtime of Units. Minor activities shall be taken up as and when opportunity arises after the zero date of 01.04.2025 and completed by FY 2027-28.

x. The shutdown period of Units availed exclusively for R & M & LE activity in FY 2026-28 shall be considered for **deemed availability** as per the GERC's MYT Regulation, 2016 /2024 for the purpose of Annual O & M Charge receivable as per the PPA. DPR has estimated shutdown exclusively for R & M & LE as 3-4 months for each Unit.

xi. Actual expenditure including all the associated costs related to the R & M & LE activity like DPR preparation cost, Project Management Consultancy Charges, regulatory fees and charges as well as other applicable charges, taxes and duties along with IDC. Procurement and Expenditure details shall be submitted to GUVNL upon completion of the exercise.

xii. GUVNL shall be kept in the loop while awarding the major contracts for this exercise. Procurement of equipment and services shall be done through transparent tendering process as per the contract procedure of GIPCL.

E. Tariff Computation

PARTICULARS	UNITS	SLPP-I R&M (with relaxed PPA norms at par with SLPP- II)
PROJECT DETAILS (GENERAL)		
GROSS INSTALLED CAPACITY	MW	250.0
TOTAL NO OF UNITS		2
CONSTRUCTION R&M/LE PERIOD	Quarters	11
R&M AND LE CAPITAL STRUCTURE		
DEBT: EQUITY RATIO		70:30
TECHNICAL OPERATING PARAMETERS		
AUX. CONSUMPTION	%	11.5
RESIDUAL PLANT LIFE POST-R&M AND LE	Years	12
PLANT NORMATIVE COMMERCIAL AVAILABILITY	%	75
GROSS HEAT RATE	kcal/kWh	2461.0
GROSS CALORIFIC VALUE OF START-UP FUEL	kcal/kg	9642.0
GCV OF LIGNITE - VASTAN	kcal/kg	2454.0
GCV OF LIGNITE - VALIA	kcal/kg	2454.0
SPECIFIC CONSUMPTION OF SECONDARY FUEL OIL	ml/kWh	3.5
SPECIFIC CONSUMPTION OF LIMESTONE	kg/kWh	0.15
FINANCIAL PARAMETERS		
RATE OF INTEREST	%	9.50

REPAYMENT PERIOD	Years	12
COST OF LIGNITE – VASTAN (Provisional Rate of FY 24-25)	Rs/tonne	2589
COST OF LIGNITE – VALIA (Provisional Rate of FY 24-25)	Rs/tonne	1231
FUEL OIL COST	Rs/kl	58000
LIMESTONE COST (Provisional Rate of FY 24-25)	Rs/tonne	442
O & M EXPENSES (PROJECTED FOR 2025-26)	Rs crore	117.82
WATER CHARGES (PROJECTED FOR 2025-26)	Rs crore	13.72
ANNUAL ESCALATION IN WATER CHARGES	%	3
ESCALATION RATE CONSIDERED		
(i) LIGNITE	%	2.0
(ii) FUEL OIL	%	2.0
(iii) LIMESTONE	%	2.0
(iv) O & M EXPENSES	%	5.72
WORKING CAPITAL REQUIREMENT AS PER PPA		
(i) LIGNITE STOCK	MONTHS	0.5
(ii) LIMESTONE STOCK	MONTHS	0.5
(iii) FUEL OIL STOCK	MONTHS	2.0
(iv) O & M EXPENSES	MONTHS	1.0
(v) RECEIVABLES	MONTHS	2.0
(vi) MAINTENANCE SPARES (ON HISTORICAL COST)	%	1.0
(vii) RATE OF INTEREST FOR WORKING CAPITAL	%	9.50
RETURN ON EQUITY (Base Rate as per MYT-2024)	%	13
FINANCING & BANKING CHARGES	%	1
DISCOUNT RATE FOR LEVELIZED TARIFF (For MAT Period)	%	9.39
DISCOUNT RATE FOR LEVELIZED TARIFF (Post MAT Period)	%	8.23
GOODS & SERVICES TAX (GST)	%	18

Tariff Working is attached as Annexure-B.

F. Cost Benefit Analysis

The gains from R&M and LE to the power consumers served by GUVNL are discussed below.

The economic benefit to the consumer and society at-large, can be seen from the following discussion.

(a) If R & M & LE exercise is not undertaken, the annual availability of SLPP-I can be expected around 62% for the balance duration of PPA term, as observed in the last few years. Post R & M & LE, the availability is expected to reach the normative level of 75% and there shall be availability of 13% additional energy i.e. 252 MUs to the Grid. This shall eliminate power shortfall that is sought to be met by short-term and spot purchase by GUVNL during the pendency of the current PPA up to 2029-30. The short-term RTC price bids invited by GUVNL for the latter half of 2023-24 (GERC order on petition no. 2250 of 2023).

During the pendency of the current PPA of SLPP-I for FY 2028-29 and FY 2029-30, the shortfall of power supply to GUVNL on account of low availability (62 % vis-à-vis 75%) is valued at the current short-term RTC power price of Rs 5.87 per kWh. On the other hand, if R&M and LE is implemented, the renovated plant is expected to start supply to GUVNL in FY 2028-29 with tariff of **Rs.4.76**. (**Fixed tariff: Rs. 2.43 and Variable tariff: Rs. 2.34 per kWh**). Gain to the State Discoms has been computed on this opportunity cost.

(b) The current PPA tenure of SLPP-I is till FY 2029-30. The opportunity cost of power from a new lignite-fired plant that would replace the SLPP-I from FY 2030-31 is considered for computing cost-benefit. The estimated tariff of power from a new lignite-fired CFBC

plant of similar configuration is Rs 7.3 per kWh. For the extended life of operation from FY 2030-31 to 2039-40, payback shall ensue from 5th year after R & M & LE even considering opportunity cost as low as Rs. 5.45 per kWh.

(c) The estimated cost of a new CFBC lignite-fired Power Plant of similar configuration is Rs. 10.5 crore per MW or above whereas the estimated cost of R & M & LE is about Rs. 2.76 crore per MW. **The cost of R & M & LE is about 26% of the new project cost.**

As per Final Report of the committee constituted by CEA (July 2023) "The cost of R&M/LE works shall not exceed 50% of the EPC cost of a new generating unit of indigenous origin (BHEL) and this criterion is being met in the case of SLPP-I.

(d) Further, the gestation period of new project would be 48 to 60 months whereas for R&M and LE the plant shutdown requirement would be 3 to 4 months.

(e) Based on the above considerations, the economic payback for the estimated capital expenditure of Rs 690.7 crore is achieved in the 5th year after R & M & LE exercise, which is much better than the guideline of 7 to 8 years recommended as per the CEA Report of 2023.

Detailed Cost -Benefit working for GUVNL & Discoms is attached as Annexure-C.

G. DPR Recommendation

- The R&M and LE activity will be able to supply additional power at a competitive rate to the State Grid, which will benefit the state's consumers at large.
- The cost benefit analysis strongly supports the proposed investment in R&M and LE based on the improved techno-economic performance that is expected from the implementation of the project.
- The minimum overall downtime of the unit would be around 13 to 15 weeks to full fill the objective of R&M & LE. The proposal for R & M & LE as per DPR is complying with the technical, financial and commercial parameters of the CEA Report on R & M & LE of 2923.
- This Report justifies R&M and LE Project against the capital cost based on cost benefit analysis, project timeline and operating cost of Greenfield plant of similar configuration and equivalent capacity while also satisfying different constraints / challenges in the system such as technical operational constraint, Technologies/Fuel options available, environmental & statutory compliances, standard / innovative bidding process, financial constraint and viable business model.

H. Action Taken by GIPCL

- GIPCL has formed internal team to oversee the R & M & LE activity.
- GIPCL is in touch with BHEL and other OEMs for their inputs to resolve the design issues/ limitations in the Boiler and allied areas looking to the deteriorating fuel quality.
- GIPCL has also initiated action to float tender and appoint Project Management Consultant for the R & M & LE activity.
- GIPCL has filed Petition No. 2228/2023 in GERC seeking regulatory approval for R & M & LE, relaxation in normative parameters and tariff revision. GIPCL shall update the Commission upon receipt of GUVNL approval for the DPR and revised proposal.

 GUVNL	Gujarat Urja Vikas Nigam Limited	
	Sardar Patel Vidyut Bhavan, Race Course, Vadodara: 390 007	
	CIN U40109GJ2004GCO45195	<i>An ISO 9001:2015 Certified Company</i> <i>Phone: 0265-2311797, Fax No. 0265-2327483</i>
No : GUVNL/Comm/IPP/2025-26/GIPCL/ 809		Date : 29/05/2025



To,

The Addl. General Manager (Comm& Legal),
Gujarat Industries Power Company Ltd.,
PO: Ranoli
Dist; Vadodara-391350.

Sub: Approval of DPR and Techno-Commercial Proposal for Renovation, Modernization and Life Extension of 2 x 125 MW SLPP-I Units.

Ref: 1. GIPCL Letter No GIPCL/SLPP-I R & M & LE/ GUVNL/24-25/1297 dated 07.10.2024.
2. GIPCL proposal dated 18.11.2024.
3. GIPCL Letter No GIPCL/MD/2025/2474 dated 29.03.2025

Sir,

This has reference to GIPCL's letter dated 07.10.2024 and subsequent correspondence regarding approval for DPR and revised Techno-Commercial Proposal for the Renovation, Modernization and Life Extension of 2 x 125 MW SLPP-I at estimated cost of Rs 690 Crores.

In this context, this is to convey GUVNL's approval for the following:

1. To carry out Renovation & Modernization and Life Extension (R&M and LE) activities for SLPP Phase -I at revised estimated cost of Rs. 690 Crores as per recommendations in DPR prepared by the consultant of GIPCL.
2. The following parameters are approved in-principle for revision effective from FY 2025-26:

Sr. No.	Parameter	Existing PPA Parameters	Revised Parameters from FY 2025-26 onwards
1	Station Heat Rate kCal/kWh	2400 (Without moisture correction)	2461 (Without moisture correction)
2	Auxiliary Power Consumption (%)	10	11.5
3	Annual O&M Expenses	Escalation as per WPI-CPI on project cost.	As per GERC's MYT Regulations from time to time
4	Water Charges	Part of O&M Charge	At Actuals

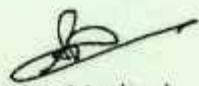
All other parameters shall remain unchanged.

It is clarified that GIPCL shall be required to obtain the necessary approval from the Hon'ble GERC for the proposed increase in R&M and LE cost from Rs. 400 Crores to Rs. 690 Crores, as well as relaxation in PPA parameters as stated above.

Further, regarding the request for consideration of deemed availability during the R&M period, it is respectfully submitted that the GERC's MYT Regulation 2024 do not provide for any specific provisions allowing deemed availability for Generating Stations undergoing R&M activities. Accordingly, the request to treat the extended shutdown period under the Rolling Plan as "Deemed Availability" shall not be considered.

Thanking you,

Yours faithfully,



(Sanjay Mathur)

General Manager (Comm)

Cfwcs to:

- MD, GIPCL, Ranoli, Vadodara.



**DETAILED PROJECT REPORT OF
RENOVATION & MODERNIZATION AND LIFE
EXTENSION OF UNIT-1&2 (2X125 MW)
SURAT LIGNITE POWER PLANT, GIPCL**

steag
energy services

1.0 EXECUTIVE SUMMARY

GIPCL commissioned SLPP Phase-I 2x125MW Surat Lignite Power Plant based on environment friendly CFBC technology Boilers near Surat on 15th Feb 2000. The Plant has been successfully operating as an IPP having a long term PPA with GUVNL for 30 years.

STEAG Energy Services India (SESI) were appointed as consultant to carry out the Renovation & Modernisation and Life Extension (R & M and LE) by 15 years beyond design economical life of 25 years of the Steam Generator (Boiler) & auxiliaries, Steam Turbine & auxiliaries, Electrical System, Instrumentation and Control System, Lignite handling system, Lime handling system, Ash handling system, Plant water system, Civil & Structural Work and Balance of Plant Systems of Surat Lignite Power Plant (SLPP) Unit #1 and Unit#2 of Gujarat Industries Power Company Limited (GIPCL).

Surat Lignite Power Plant is situated in Surat district of the state of Gujarat. The total installed capacity of the lignite fired power plant is 500 MW consisting of Four units which comprises of 4X125MW units, out of which Phase-1 2x125MW Unit#1 and Unit#2 are evaluated for R&M and LE under this Report. The units have been operating for about 23 years and about 1,67,000 operating hours. The Units performance has deteriorated gradually over the years due to ageing, fuel (lignite) quality and various technical & operational challenges of CFBC Boilers and associated system. The implementation of Renovation and Modernization (R&M) measures appears to be technically feasible solution to improve Availability, Reliability, Efficiency and Output of the units. Studies of R&M and LE measures implemented in India indicate that these measures can improve generation, increase efficiency and reduce undesirable environment impact substantially. R&M also enables improvement of performance through retrofitting of equipment to deal with technological obsolescence, design deficiencies, generic defects and increase equipment lifetime by 15 years or more. Up gradation of unit, also, enables compliance with increasingly stringent guidelines and statutory standards regarding environment. This Detailed Project Report attempts to indicate the measures, which could address the plant issues for better performance and sustainable operations of units.

SESI has analysed the equipment / system performance and condition assessment based on performance history, maintenance history, residual life assessment and energy audit study report, operating data and design data received from GIPCL.

Based on the site walkdown survey, analysis of input data / drawings / documents and detailed discussion with stakeholders, SESI has prepared the measures of R&M and LE.

The objectives of R&M and LE work of SLPP-I are as below:

- a) Overall improvement of Plant availability, reliability and performance of SLPP-I.
- b) Improvement of performance and availability by conducting Boiler R&M and LE works which includes boiler pressure parts, non-pressure parts and auxiliaries.
- c) Improvement of performance by conducting R&M and LE works of TG island through improvement of turbine cycle heat rate / reduction in specific steam consumption.
- d) To take appropriate measures with reference to deteriorated quality lignite as compared to design quality lignite
- e) Restoring Boiler steam generation capacity to rated value 390 TPH and Turbine Load 125MW.
- f) Overcome the Boiler Draft system limitation and thereby reducing partial loading.



- g) Extending Unit life for 15 years of reliable operation.
- h) Modernize control system.
- i) Improve commercial availability by reducing forced outages and minimizing partial loading
- j) Operational Flexibility as per Grid code requirement
- k) To optimize the Auxiliary Power Consumption.

Factors Governing Scope

In the present condition, it is not possible to operate these units as per its design parameters at rated capacity without major Renovation and Modernisation Works.

Only proven options for retrofit, which are site-specific to, the requirements of SLPP, are considered.

The optimized scope is governed by the following:

1. Replacement of components, which have exhausted their life.
2. Refurbishment/Retrofitting/Repair of parts, which could be retained service without compromising reliability and safety.
3. Change of components considering design deficiencies and generic issues that are needed to minimize forced outage and reduce partial loading
4. Change of components that are needed to adhere to prescribed environmental standards.
5. Necessary modifications in the system to run the unit at rated capacity with the available low calorific Lignite.
6. Necessary modifications / replacement / refurbishment to resolve load restrictions.
7. Replacement of components for which spare parts will not be available in future.
8. Obsolete technology.
9. Plant and Equipment Safety requirements

The Key Findings are as below:

a) Quality of lignite has got deteriorated with time in terms of lower GCV values, higher moisture content with sulphur and chlorides including deviation on fines recommendation. Due to poor fuel quality, furnace and entire flue gas path are subjected to overloading which in turn resulting higher partial loading, higher degree of erosion of tubes at various locations due to higher velocities and especially at bottom part of water walls i.e. at vicinity of RTZ, FBHEs. Also due to higher fuel loading and higher percentage of fines, unburnt carbon losses are higher. High moisture with sulphur and chloride in fuel has led to severe cold end corrosion of Air Preheater tubes, ESP internals & casing and flue gas duct from APH outlet to Chimney.

Frequent BTL (Boiler Tube leakage) causing forced outage in each Unit occurred mainly in the combustor water walls / FBHE-4 Evaporator/ FBHEs water wall / Sealpot WW / SH1B / Backpass Hanger tubes/ Back pass SCW & its roof & Economizer; mainly due to erosion by ash laden flue gas, overheating, Thermal Fatigue, Corrosion Fatigue, Caustic Gouging, Fire side corrosion-erosion, acid dew point corrosion, High metal temperature excursion during backing down to full load.



The Blockage of flue gas path in backpass section also affecting ID fan loading resulting partial loading and overall performance of units.

Year-wise capital spare cost increasing trend is observed due to aging of the plant and frequent forced outage repair work of various reasons which includes uncertain fuel and load variation / backing down as explained in this report.

b) The present Turbine cycle heat rate deteriorated significantly due to ageing compared to the design heat rate at TMCR condition. Unit1&2 Turbine are not being operating at the rated Load of 125 MW due to boiler limitations and lower steam generation capacity.

c) Auxiliary Power Consumption of SLPP-I is higher due to CFBC Boiler Technology with FBHE. There is need to revisit PPA norm as per current regulatory norm for CFBC Technology Power Plant.

However, SLPP has taken measures through Energy Audit recommendation implementation, some are also considered under R&M activities like equipment performance improvement, arrest leakages, insulation, modification & replacement with efficient pump, etc

d) SO₂, NO_x and specific water consumption are well within limit as per Latest Emission Norms as notified on 7th December' 2015, However, Suspended Particulate Matter (SPM) is on higher side due to stringent revised norms vs design. Further ESP performance deteriorated due to severe cold end corrosion, ESP field/ structure/ casing repair/ replacement is required based on rate of corrosion. Both Units ESP refurbishment is considered under separate Environment Management Plan to ensure meeting statutory requirement and adhere timeline as specified by MOEF&CC.

e) Lignite and Limestone handling system are maintained and working fine, however major challenge noted as reliability and availability of obsolete technology equipment / spares, refurbishment of machines, revamping of existing conveyor system, Steel & Civil Structures and JNT's, lignite storage shed requirement.

SLPP has two mines, namely Vastan which is approx. 3.5 km away from the plant and other is Mangrol-Valia which is approximately 23 KM away from the plant. The conveying system in Phase-I from Vastan mines designed with 2 nos. conveyors (1W+1S) system. However, only one conveying system and Lignite storage at both mine end and inside plant erected. Lignite from Mines end is transported in Dumper and unloading to either of receiving end of Vastan or near the plant end. Stacker cum Reclaimer (SCR) at Vastan mine has stacking capacity 1200 tph (rated) for reclaiming the capacity is 800 tph (rated). During lignite conveying from the stockpile after reclaiming in either of phases is run approximately for 16 hours to meet the plant requirement. Therefore, upgradation and revamping of conveyor with stone removal/picking facility and SCR is required.

Due to lignite fuel quality deterioration and to mitigate shortfall of lignite, the imported coal blending to improve the desired quality to the extent in line with recommendation of OEM as well as regulatory policy guideline, is implemented at SLPP.

f) Pneumatic conveying system along with PLC for transportation of bed ash from bed ash silo to bed material bunker shall be provided to avoid manual intervention and proper bed material management.

g) Balance of Plant system i.e. Plant Water system, River Water System, Raw Water System, Pre-treatment system, DM Water system, Cooling Water System, Fire Water System, Ventilation and Air Conditioning System, Compressed Air System, Crane and Hoist, Effluent Treatment System are maintained and working fine, however Due to ageing factor as plant is operating since 23 years, condition based refurbishment of these system equipment and piping system are required.

h) The presence of corrosion causing species such as chloride and sulphate were reported in the analysis of the concrete samples collected from the cooling tower and fly ash silos. Severe corrosion on structures were



witnessed especially in Boilers and Lignite Handling System area during walk down survey of the units. The structural items prone to corrosion degradation require individual attention for the selection of appropriate corrosion mitigation measures.

Based on the findings from the assessment of data provided by GIPCL, Detailed Project Report including following option has been finalized:

Boiler & Auxiliaries

Major recommendations include:

1. The replacement of existing eroded water wall tubes of combustor and Pressure Parts Modification works.
2. Redesign and modification of inlet header of FBHE-4 Evaporator Coils for uniform flow distribution (as implemented in Phase-II Boilers)
3. Modification and Replacement of FBHE-4 Evaporator Coils/Risers
4. Modification and Replacement of all FBHEs and Seal Pot water wall tubes
5. Modification / upgradation to improve water circulation for Seal Pot Horizontal / inclined tubes
6. The Modification and replacement of Super heater-1B to avoid blockage of flue gas path in backpass section.
7. Modification and Replacement of Backpass Hanger tubes and Steam Cooled Wall (SCW) tubes
8. Replacement of complete Economizer coils
9. Replacement / retrofitting of valves, safety valves,
10. Replacement / retrofitting of drains and vents, valves and lines alongwith supports
11. The modification in PA windbox and SA nozzles design/orientation.
12. The modification of combustor fluidizing nozzles alongwith grate and refractory
13. Complete replacement of existing cyclones and COD Shells alongwith refractory and modified cyclone vortex finder.
14. Combustor, FBHEs and Seal Pot refractory.
15. The Installation of additional Soot Blower system in backpass section after consultation with OEM and retrofitting of existing Soot Blower System to have more efficient system.
16. The modification of draft system with addition of one ID fan with identical capacity and head of existing two ID fans.
17. The replacement of damaged/corroded internals casing, dampers of ESP
18. Replacement of APH tubes
19. The modification for current flue gas flow and replacement of corroded Flue Gas Duct/ Air Duct / structures and supports.
20. Anticorrosive coating on structures and inside flue gas ducts before and after ESP
21. Replacement of complete insulation.
22. Refurbishment of Hangers and Supports.
23. Complete refurbishment / Replacement of lignite conveyors casing with basalt liner, Rotary Air lock feeders with motors and associated lignite feeding system equipments' and Modification to arrest back flow of Flue Gas from Lignite Rotary Air Lock Feeders (LRALFs).
24. Replacement of PA & SA Fans IGV and Silencer.
25. Replacement of all FBHEs bundle & empty chamber blowers and sealpot blowers with modified design to be incorporated for better performance.

Steam Turbine & Auxiliaries

Major recommendations include:

1. To optimize the R&M and LE cost, refurbishment of existing HP-IP and LP Turbine rotor & blade are considered for life extension, however Performance improvement shall be marginal. Although Replacement of HP-IP & LP Steam Turbine Internals with improved design of Inner casings and Blades (HP/IP/LP outer



casing shall be retained) to improve Specific Steam Consumption and Turbine Heat rate, will support to achieve commercial availability in case of Boiler Capacity degradation due to poor fuel quality limitation.

2. Refurbishment of Turbine Stop and Control valves and Replacement of EHTC Actuators. However, for performance & availability guarantee, steam cycle exposed components are to be checked through RLA, and Bidder shall ensure all component's healthiness.
3. Replacement of Boiler feed pump impeller to reduce auxiliary power consumption and to meet expected life.
4. Replacement of Critical piping insulation to improve turbine heat rate.
5. Replacement of SWAS instrument for better water chemistry control to improve reliability and availability of boiler and turbine.

Balance of Plant

Major recommendations include:

1. Installation of interconnection conveyor and feeding system to connect to Phase-I at JT-13 with expectation of significant benefit in increasing of the boiler efficiency by improvising the fluidization and combustion process, reduction of auxiliary power consumption, reduction in existing high O&M cost as optimized length as compared to present path of BCN-M1A, and New slow speed conveyor feeding system with higher belt width will improve stones removal rate, and in-turn improve system reliability and availability.
2. Replacement of Secondary crushers (Hammer Mills) for the plant life extension
3. Refurbishment of the machines(stackers).
4. Refurbishment of the structures
5. Replacement of Instrument Air and Service Air compressors
6. Replacement of underground piping from raw water pump header to the stilling chamber.
7. LP piping system refurbishment based on condition assessment
8. Replacement of mechanical parts and scrapper mechanism of clarifier
9. DM generation plant is in a depleted state and its replacement with new RO-DM plant is considered.
10. Corrocoat coating on CW pump to improve efficiency, reduce APC and increase life of pumps.
11. Complete refurbishment of cooling tower
12. Fire system renovation
13. Chlorination system replacement
14. Replacement of Air Washer Units, damaged AC ducting and insulation, air conditioners
15. Any short comings in BOP areas are to be upgraded / replaced.

ELECTRICAL

Major recommendations include:

1. Retrofitting of obsolete analogue Generator AVR of U#1 & 2 with DAVR.
2. U#1 brushless excitation system required to be replaced with new modified design.
3. Replace GT-1 with new Generator Transformer as tan delta values are in increasing order
4. One new 2 MVA service transformer shall be procured for LLHS area against failed transformer.
5. Retrofitting of obsolete HA2 type 6.6KB ABB SF6 breaker with New VCB in 6.6KV Unit and Station Board of Unit#1.
6. Retrofitting of obsolete Siemens/GEC 415 V LT Breakers with New ACBs.
7. ID Fan motor of higher rating with F/H class insulation shall be procured for both units (existing ID Fan motor-725KW)
8. 1 No. 1250 KW SA Fan motor shall be procured as repaired motors are in operation
9. 1 No. 1125 KW PA Fan motor shall be procured as repaired motors are in operation
10. Procurement of 1 no conveyor 6A/6B motor (300KW) as repaired motors are in operation
11. retrofitting of AMF Panels required for existing 2 nos. 750KVA DG set



12. Obsolete Existing AFCO make Chargers in BTG area and LLHS area shall be replaced with modern Float cum Boost Charger- 11 Nos.
13. Life cycle replacement of Lead Acid Plante YKP-17 Battery set in LLHS area.
14. Upgradation of Siemens make HIPATH 4000V3 model with new EPABX system

CONTROL AND INSTRUMENTATION

Major recommendations include:

1. Up-gradation of Siemens "Teleperm ME" system with new latest DCS software and Hardware for Boiler and BOP operation and control.
2. Up-gradation of BHEL "MAX DNA" HMI software with new latest HMI Software/Hardware workstations for Turbine controls and protection.
3. Upgradation of PLCs as per requirement
4. Replacement / refurbishments of Field Instruments as required
5. Analyzers (SWAS, CEMS etc.) replacement as required

FGD

The Installation of FGD not required as Surat Lignite Power Plant (SLPP) is operating environment friendly CFBC (Circulating Fluidized Bed Combustion) technology based Boilers. SO₂ emission is effectively controlled by addition of Limestone as an additive with Lignite feeding in Boilers. Due to capturing of Sulphur in the combustor during combustion process in CFBC Boilers, SO₂ emission remains well within limit of 600 mg/Nm³. SO₂ emission of SLPP units are in the range of 100-280 mg/NM³ on monthly average basis.

SCR

The Installation of SNCR / SCR is not required as Surat Lignite Power Plant (SLPP) is operating environment friendly CFBC (Circulating Fluidized Bed Combustion) technology based Boilers. Due to low combustion temperature (around 800 - 850 deg. C) and stage combustion in CFBC Boiler, NO_x emission level remains well below prescribed value i.e. 600 mg/NM³. NO_x emission of SLPP units are in the range of 25-75 mg/NM³ on monthly average basis.

ESP

ESPs were designed for 150 mg/NM³ SPM for SLPP-I in-line with earlier norms during project implementation phase whereas latest environment norms prescribed limit is 100 mg/NM³ SPM for SLPP-I. To comply with the latest norms laid down by the MOEF&CC / Pollution Control Board, retrofitting/refurbishment/replacement and upgradation of ESP is being carried out to maintain the SPM below the prescribed limits and also to ensure healthiness of ESP fields.

At SLPP, the ESP internals and casing were badly corroded due to the presence of chlorine and sulfur in the lignite. Heavy air ingress through these casing leakages and subsequent corrosion of the internals (i.e. Collecting Electrodes, Emitting Electrodes, frame etc.) aggravated the deterioration of the ESP fields. Also, air ingresses through corroded casing ultimately resulted in reduction in power generation due to overloading of ID fans. Further, ESP works in hostile atmosphere which is highly corrosive due to presence of Sulphur and chloride in the lignite. The damage mechanism is a continuous process at SLPP and every year it has refurbished six to eight field as per condition assessment, damage projection and convenience. Online monitoring is being carried out by CPCB/GPCB of the emission levels and corrective action also initiated in-line with communication from the Pollution Control authorities and to adhere timeline of MOEF&CC.



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The major ESP fields have been refurbished/upgraded. Further, retrofitting/refurbishment/replacement and upgradation of existing ESPs are scheduled during annual overhaul to fulfill compliance of New Environmental norms with a target to complete by December, 2024.

Flexible Operation

SLPP-I is designed and engineered as base load plant. Considering the design & engineering and technological & operational issues and limitations of CFBC boilers at SLPP and adverse impact of operational deviations observed in the Units due to flexible operation, GIPCL and NLC made detailed presentation on 16.02.2023 to CEA officials highlighting the issues related flexible operation and backing down (low load operation) of lignite fired CFBC Boilers.

GIPCL has submitted requests CEA vide letter no. SLPP/CEA/2023-24/248 Dated 15.05.2023 and SLPP/CEA/2023-24/1797 Dated 17.06.2023 to consider and recommend that "flexible operation of lignite fired CFBC power plant should be avoided as long as possible and in unavoidable situation due to grid requirement they may be allowed to be operated at 80% technical minimum load for safe and smooth operation of CFBC Boilers. This would ensure optimum availability & reliability of lignite fired CFBC Thermal Power Plants and maximize competitive power to the grid from an environment source for the public at large".

The Unit design ramp rate of SLPP units is 1% due to Boiler design limitation for temperature excursion and thermal expansion. Considering Technological & operational challenges and Limitations of CFBC boilers with low grade lignite firing, GIPCL has submitted requests to CEA vide letter no. SLPP/CEA/2023-24/2789 dated 17.10.2023 to consider 80% technical minimum load with ramp rate of 1 MW/Min for safe and smooth operation of CFBC Boilers. GIPCL has again submitted requested to CEA vide letter no. SLPP/CEA/2023-24/3083 dated 05.12.2023 and represented the matter during the meeting held on 11.01.2024 at CEA Delhi. Matter is under discussion with BHEL (OEM) and CEA.

Biomass pellets co-firing capability as per prevailing policy/regulation

Burning biomass-lignite mixtures containing Sulphur & Chloride content might negatively influence the ash deposition behavior, and alleviate slagging, fouling and chlorine corrosion problems which are already persisting in SLPP-I CFBC boiler flue gas path due to firing of poor quality lignite compared to design quality lignite. Further the detrimental effects of alkali (present in the biomass) on the refractory, and the operational risks which include fuel pre-processing / fire explosion risk, excessive bed agglomeration, slagging and back pass chocking, may further increase. Frequency of Soot blowing and additional LRSB already recommended under this R&M. Therefore, in view of above constraints i.e. adverse impact of operational deviations, and SLPP has taken measures in-line with communication from the Pollution Control authorities for air pollution control within statutory limits, this report does not include facilities for biomass co-firing as well as biomass storage and handling with associated safety system under this R&M and LE project.

It is to note that Ministry of Power vide letter no.11/86/2017-Th.II dated 07.04.2022 has clarified that the "Revised policy for Biomass Utilization for power generation through Co-firing in coal based power plant" dated 08.10.2021 is also applicable to Circulating Fluidized Bed Combustion (CFBC) Boilers. The Ministry of Power issued modification on 16.06.2023 to revise the biomass policy dated 08.10.2021 and biomass co-firing in coal fired Thermal Power Plants (TPPs) obligation shall increase to 7% from FY 2025-26. Standard Operating Procedure for Biomass Pellet co-firing in CFBC Boilers dated June2022 shall be followed. Accordingly, co-firing technology of torrefied biomass pellets and Briquetted Biomass as partial substitute of Coal to meet the National Mission on use of Biomass in Coal fired CFBC boiler, shall be consulted with OEM to take up R&D activity in existing boiler design to handle the higher amount of alkalis in the biomass pellets.

Considering the issues and GIPCL may get the consultation of lignite fired CFBC boilers OEM regarding co-firing proportion before the start of the biomass pellets/briquettes co-firing and understand the impact on the combustion based on the ultimate analysis.



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Risk Management

The associated risk evolved in R&M and LE project implementation are minimal in comparison to new project implementation of similar capacity and configuration. However, the key risks faced in implementing the R&M/LE needs to be mapped across different execution stages of the R&M/LE life cycle.

Cost Benefit Analysis

Capital Cost of the Project scope depends on the Plant & Equipment price of Supply and services of Multiple packages through Suppliers/ Contractors, which is market driven. The capital cost of the Project (R&M case without turbine retrofit/replacement with new design blades and internal casing but include turbine refurbishment only) is estimated to be Rs. 690.7 crores including Supply and Services of Plant & Equipment, contingencies, overheads, duties & taxes, IDC and financing fee for implementation of R&M and LE activities for Unit #1, and #2 of SLPP, Surat. Based on debt-equity ratio of 75.5:24.5, and financing of debt at an interest rate of 9.05% per annum for repayment period 14 years, the interest during construction (IDC) is estimated to be Rs. 64.61 crores. The financial parameters for calculating the fixed cost considered by SLPP-I for (a) the existing PPA, and (b) Revised parameter sought in the PPA terms in line with SLPP-II/GERC, refer table 14.4.2. The normative RoE (return on equity) is based on the current rate of return of 13%, as specified in the PPA for Phase I, and 14% in-line with SLPP Phase -II. The Details are given at Chapter-14 of this report.

The performance and viability of the proposed R&M and LE of SLPP-I can be assessed by (i) its impact on the tariff, and (ii) payback to the consumer in terms of the opportunity cost saved by implementing the project. The post-R&M and LE tariff is shown in the table below.

Performance Indicator	unit	Tariff post-R&M and LE in line with SLPP-II
R&M and LE Capital Cost	Rs crore	690.7
Variable Cost	Rs/kWh	2.46
Fixed Cost	Rs/kWh	2.40
Levelised Cost of Generation	Rs/kWh	4.86

The levelised tariff post-R&M and LE shows an increase of Rs 1.42 per kWh in fixed cost over the current fixed cost of Rs 0.98 per kWh (see Table 14.4.1).

The gains from R&M and LE to the power consumers served by GUVNL are discussed below.

Competitiveness of SLPP-I: The estimated tariff for the post-R&M/LE operation of SLPP-I also compares favorably with (a) the spot market price paid by GUVNL in recent purchases (data provided by GIPCL), (b) the short-term RTC price bids invited by GUVNL for the latter half of 2023-24 (GERC order on petition no. 2250 of 2023) and comparison with installation of New similar CFBC Technology based Power Project.

Economic Benefits of R&M and LE of SLPP-I: The economic benefit to the consumer and society at-large, can be seen from (a) the opportunity cost of power shortfall that is sought to be met by short-term and spot purchase during the pendency of the current PPA up to 2029-30, and (b) the opportunity cost of power from a new lignite-fired plant that would replace the SLPP-I that is nearing the end of its useful life of 25 years and could be shut down in case R&M and LE is not taken up.



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The estimated cost of a new lignite-fired Power Plant of similar configuration based on CFBC technology is about Rs. 10.5 crore per MW whereas estimated R&M and LE cost as indicated in DPR is about Rs. 2.76 crore per MW, which is about 26% of the new project cost. Further, the gestation period of new project would be 48 to 60 months whereas for R&M and LE the plant shutdown requirement would be 3 to 4 months. As per Final Report of the committee constituted by CEA (July 2023) "The cost of R&M/LE works shall not exceed 50% of the EPC cost of a new generating unit of indigenous origin (BHEL).

The estimated tariff of power from such a new lignite-fired CFBC plant is Rs 7.30 per kWh. During the pendency of the current PPA of SLPP-I from 2026-27 to 2029-30, the shortfall of power supply to GUVNL on account of low availability is valued at the current short-term RTC power price of Rs 5.87 per kWh (Table 14.6.3). On the other hand, if R&M and LE is implemented, the renovated plant is expected to start supply to GUVNL in 2026-27 with a leveled tariff of Rs 4.86. For the remaining years of operation from 2030-31 to 2039-40, the opportunity cost of power is Rs 7.30 per kWh.

Based on the above considerations, the economic payback period for the estimated capital expenditure of Rs 690.7 crore is 6.3 years.

The available data indicate that the estimated tariff for SLPP-I R&M and LE is more competitive than the rates at which spot purchases are made by GUVNL from India Energy Exchange in calendar year 2023. Furthermore, it is seen that the estimated tariff for post-R&M and LE operation is quite competitive in comparison to the average rate for short-term RTC purchase. The R&M and LE activity will be able to supply additional power at a competitive rate to the State Grid, which will benefit the state and consumers at large.

Conclusion: The benefit-cost analysis strongly supports the proposed investment in R&M and LE based on the improved techno-economic performance that is expected from the implementation of the project.

The capital expenditure on R&M and LE of the Phase I units of SLPP is expected to increase the availability, reliability, and efficiency of the unit and thus reduce the under-recovery of fixed charges and energy charges. The cost-benefit analysis here shows the efficacy of the investment based on the performance indicators.

Parameters	Pre-R&M/LE (Avg of 3 years, Apr2020 - Mar2023)	Post-R&M and LE
Plant Load	Present continuous operating load for SLPP-I 232 MW	250 MW (SLPP-I Rated MW)
Partial Loading	System Partial loading (12.86%)	System Partial Loading Nil. Boiler Capacity Improved to achieve plant rated capacity.
PLF	61.36%	-75%
SLPP-I Station Heat Rate	2814 Kcal/Kwh (The variance of heat rate causing fuel cost under recovery)	-2698 Kcal/Kwh When firing improved quality fuel only and operating at TMCR.
Auxiliary Power Consumption	13.8%	-13%
SLPP-I Plant Availability	SLPP-I : 76.31% (Unit#1 : 80.80%, Unit#2 : 71.83%)	-85% (Indicative only)



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Commercial Availability	62.13%	75% (normative commercial availability)
Reliability	Very High BTL (about twice in every quarter)	BTL issues addressed to reduce forced outage.
Plant Life Extension	Through capital overhaul 30 Years till year 2030	Through R&M and LE activity 40 Years till year 2040
Environment	ESP refurbishment/upgradation work is in progress under Environment management plan to meet new stringent environment norms. SOx, NOx, water consumption are in limit.	Considering the advantage of environment friendly CFBC technology and Environment Management Plan, SLPP Unit are meeting the New Environmental norms. Further, Both Units ESP refurbishment based on rate of corrosion need to be done.
Flexibility with prevalent grid norms	Plant Operation following SLDC demand for backing down / loading.	Flexing Lignite-fired SLPP-I is not recommended considering Technological & operational challenges and Limitations of CFBC boilers with low grade lignite firing. However, matter is under discussion with M/s BHEL(OEM) and CEA.
Biomass pellets co-firing	Not envisaged due adverse impact of operational deviations	Not envisaged due adverse impact of operational deviations

The economic figures in this report are indicative number which is calculated in accordance with indicative offers from OEM and database of other projects. Implementation of the project is in line with the Government's R&M guideline and policy for increased generation and improved performance from existing stations with environmental protection. The minimum overall downtime of the unit would be around 13 to 15 weeks to full fill the objective of R&M.

This Report justifies R&M and LE Project against the capital cost based on cost benefit analysis, project timeline and operating cost of Greenfield plant of similar configuration and equivalent capacity while also satisfying different constraints / challenges in the system such as technical operational constraint, Technologies/Fuel options available, environmental & statutory compliances, standard / innovative bidding process, financial constraint and viable business model.



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BEFORE THE GUJARAT ELECTRICITY REGULATORY COMMISSION AT
GANDHINAGAR
PETITION NO. 2228 OF 2023

IN THE MATTER OF:

Gujarat Industries Power Company Limited (GIPCL)

..Petitioner

Versus

Gujarat Urja Vikas Nigam Ltd. (GUVNL)

..Respondent

AFFIDAVIT OF SERVICE

File No. 6136
Date: 03/09/25

Satyanaaran Mani son of Balasubramani Vaidyanathan Iyer aged about 57 years, resident of Vadodara, do hereby solemnly affirm and state as under:

6. I say that I am the Addl. General Manager(Commercial & Legal) in the Petitioner Company (GIPCL) and I am competent to swear the present affidavit.
7. I say that pursuant to Daily Order 26.08.2025 by this Hon'ble Commission, GIPCL has caused publication of Public notice in two daily Gujarat Newspaper (i.e. Sandesh and Jansatta) and one English Newspaper (i.e. The Times of India) on 3.9.2025. The copies of the relevant extracts of the newspapers with the said notices are attached hereto and marked as Annexure A (Colly).
8. I say that the Petition has been uploaded along with all documents on the website of the Petitioner.
9. I say that the compliance affidavit for relevant details /documents /information /justification as asked in the present matter will be filed separately.
10. I say that the above is in compliance with the directions of the Hon'ble Commission.

SOLEMNLY AFFIRMED/ DECLARED
SWORN BEFORE ME BY..... Mum'

ILA C. PAREKH 03/09/25
NOTARY

VERIFICATION:



		G E R C.
Inward No. 4350		
Date: 6 SEP 2025		
Legal	Tech.	Admin
RA/CA	Acct.	
IT		

Satyanaaran
DEONENT

AC/CL/ADL/BC
RMA
BUL 6/9/25

I, the deponent above named do hereby verify that the contents of my above affidavit are based on the records maintained by the Petitioner in normal course, no part of it is false and nothing material has been concealed therefrom.

Verified at Vadodara on this 3rd day of September 2025.



Satyanaaran
DEONENT

