BEFORE THE HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION SHIMLA

Petition No: 113 of 2023
Instituted on: 09.11.2023
Heard on: 29.12.2023
Decided on: **14.03.2024**

IN THE MATTER OF:

The Himachal Pradesh State Electricity Board Limited
…… Applicant/ Petitioner

CORAM

DEVENDRA KUMAR SHARMA
CHAIRMAN

YASHWANT SINGH CHOGAL
MEMBER (Law)

SHASHI KANT JOSHI
MEMBER

Approval and Inclusion of Capital Expenditure Schemes for Restoration of 3x42 MW Larji Power House in the CAPEX Plan of Generation Business of HPSEBL for 4th MYT Control Period (FY20 to FY24).

Present:

Sh. Dhanajay Sharma, Ld.Counsel for the Petitioner along with
Sh. Anup Ram , Chief Engineer (Commercial).

ORDER

The Himachal Pradesh State Electricity Board Limited (hereinafter called the 'HPSEBL' or 'Petitioner') has filed a Petition with the Himachal Pradesh Electricity Regulatory Commission (hereinafter referred to as 'the Commission' or 'HPERC') for Approval and Inclusion of Capital Expenditure Scheme for Restoration of 3x42 MW Larji Power House in the

CAPEX Plan of Generation Business of HPSEBL for 4th MYT Control Period (FY20 to FY24).

2. Larji HEP with an installed capacity of 126 MW (3 Units each of 42 MW), is a run of-river project on river Beas with pondage, with underground power station and static excitation, situated in District Kullu. The First Unit (Unit-III) of Larji HEP was commissioned in September, 2006, Second Unit (Unit-II) was commissioned in October, 2006 and Third Unit (Unit-I) was commissioned in February, 2007. The total Capital Cost of the Larji HEP approved by the Commission was Rs.1098.70 crore. At total installed capacity of 126 MW, the per MW Capital Cost of the Larji HEP at the above mentioned Capital Cost works out to Rs. 8.72 crore.

3. The Petitioner has informed that on 9th July, 2023, the Larji Hydro Electric Project faced an unparalleled natural disaster when the River Beas witnessed an unprecedented flood event with a discharge of 5600 cumecs. This flood far exceeded the historical highest flood recorded on 3rd August, 1953, which had a discharge of 3838.37 cumecs. The project site was inundated as the flood waters caused the water level to rise more than 5 meters above the Highest Flood level (EL 909 m) at the powerhouse location on 9th and 10th July, 2023.The floodwaters entered the Powerhouse cavity from the Main Access Tunnel (MAT) and Emergency Exit Tunnel (EET for short), both of which open at the National

highway at EL 910 m. This led to the submersion of critical Electro-mechanical Components, AID System, Electric Supply System, Water supply System of the Project and Civil protection works at Dam site and Residential complex. The situation worsened with unprecedented rainfall in August 2023. This rainfall destabilized the hill slopes in the vicinity of the Main Access Tunnel/Emergency Exit Tunnel and Surge shaft. Falling stones and boulders from the destabilized slopes inflicted substantial damage to the Penstock Hoisting gate structures. Moreover, some of these stones and boulders entered the surge shaft, exacerbating the damage.

4. The scheme for restoration of 3 x 42 MW Larji Power House prepared and submitted by HPSEBL aims at restoring Unit- I of Larji HEP by December, 2023 in manual mode to supply winter peaking power and restoration of Units- II & III by the end of May, 2024 to utilize monsoon flows. The other objectives of the proposal are slope stabilization and protection measures to safeguard the Civil structures, Hydro-mechanical and Electro-mechanical equipment against damage from such events.

5. The critical Electro-mechanical components of the Larji HEP were designed, manufactured, supplied, erected, tested and commissioned by M/s Bharat Heavy Electricals Limited (“BHEL” for short). The critical Electro-mechanical components include the Generator, Turbine, Main Inlet

Valve (MIV), Excitation System, Governor, Control & Protection systems, and SCADA.

6. The Larji Powerhouse had been running efficiently and achieving its generation targets until July 9, 2023, when it was submerged. The project was designed for production of 587 million units (MUs) (Design Energy). Larji HEP has generated 1,04,306 MUs up to 09.07.2023 before its submergence. As per the data, the year wise generation of the powerhouse, on an average, is more than the target assigned. The year wise plant load factor varies from 53% to 61% since the commissioning of the Project.

7. The Petitioner, HPSEBL, has submitted the restoration plan of the Larji HEP as under:

"(1) ***Restoration of the LT Supply system of Larji Powerhouse-*** *For the restoration of the powerhouse, it is of upmost importance to restore the LT Supply of Powerhouse. LT supply of the powerhouse was restored by providing one 630 kVA, 11/.4 kV DTR at Pot Head Yard and 400 kVA , 11/.4 kV DTR at the portal of MAT.*

(2) ***Dewatering and removal of the Silt from Powerhouse-*** *About 50,000 kL flood water ingressed into the Powerhouse cavity, which has been dewatered and silt is being removed by different mitigation measures.*

(3) ***Restoration of Electro-Mechanical Components-*** *In the current situation where several critical components of the Larji Powerhouse are outdated and no Original Equipment Manufacturer (OEM) support for spare parts is available, a*

strategic plan has been laid out as follows:

a) Immediate Restoration of Unit No-1 (by December 2023) in manual Mode:

Given the urgency to maintain generation and support the 132 kV Network during the winter of 2023, it has been decided to restore Unit No-1 with its existing system. This will be achieved by utilizing existing spare parts available with HPSEBL, incorporating healthy components from Unit No-2 and 3, and repairing the damaged parts of Unit No-1 and machine shall be put on bar in manual mode.

b) Restoration of Unit No-2 and 3 (by May 2024)

The Damaged and out-dated components, including the AVR and Excitation Panels, Electronic/Digital Governor System, and Automation and SCADA System, will be replaced or upgraded to meet the latest technology standards and statutory compliance. These units will be brought back into operation by April 2024.

c) Winter 2024 Restoration of Unit No-1 in Auto Mode

Auto Mode of Unit No-1 will take place during the winter of 2024. This will ensure that it is also brought up to date with the latest technology and aligned with the guidelines of statutory bodies.

This phased approach allows for the immediate restoration of one unit to maintain generation capacity while providing adequate time for the necessary upgrades and maintenance of the remaining units. It is essential to ensure the reliability, efficiency, and compliance of the Larji Powerhouse with the latest technology and statutory requirements."

8. The abstract of the cost of the scheme submitted by the Petitioner is as under:

ABSTRACT OF COST OF THE SCHEME

Sr. No.	Description	Quantity	Unit	Amount (in Rs.)
1	Cost of Electro-Mechanical Equipments works	1	Job	1,15,94,43,535
2	Cost of Civil & Hydro-mechanical Works	1	Job	69,92,37,650
	Total			**1,85,86,81,185**

9. The detail of the Electro-mechanical equipment works submitted by the Petitioner is as under:

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
1.	GOVERNORS	Complete replacement of existing 3Nos. BHEL make EHG-40 Governor with latest available Digital Governor compatible with SCADA System.	3 Nos.	1,897.50	Price as per Budgetary offer from M/s ABB India Limited dated 16.12.2022 is Rs.165,000,000. Accordingly, escalation for one year has been added.
2.	EXCITATION SYSTEM	Replacement of existing AVR static excitation system with latest available excitation system.	3 Nos.		
3	SCADA SYSTEM AND CONTROL PANEL	Provision of New SCADA System in line with latest AVR and Governor Panel having control & monitoring of GIS, DC/AC supply, DG set, MIV components etc. Complete replacement of existing unit control panels.	1 Job		

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
4	PROTECTION PANEL	Replacement of all the protection panels with Numerical Relays based protection panels of Generator, generator transformer & station transformer, bus bar, 4 Nos. 132kV line and bus coupler, synchronizing trolley etc.	1 Job		
5.	MIV, RUNNER/ TURBINE & GENERATOR	Cost of equipment/ component/ material for overhauling of MIV and turbine e.g. components such as hydraulic Valve, Air Release Valve and replacing seals and other wearable parts, hydraulic pipes, sensors and transmitted for bearings, replacement of compressors.	3 Nos	358.86	Price as per PO of Uhl Stage-III Power house dated 24.02.2023 for 3 units is Rs.3,12,05,070. Accordingly, escalation for one year has been added. Only the material cost has been included here. The erection/ service cost has been included in Annexure-10 (Capital maintenance)

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
		Procurement of spare runner along with template.	1 No.	641.51	As per NOA to M/s BHEL of Larji power house dated 15.02.2001, the price for Spare runner is 680,000 CIF USD = Rs. 3,20,75,600, at that time as per NOA 1 U.S. Doller was Rs. 47.17, accordingly, double price for procurement of spare runner alongwith template has been considered i.e. Rs.6,41,51,200.
		Cost of equipment/ component/ material for overhauling of HP & LP compressed air system (sensors, transmitters, seals, valves, guages etc.)	1 Job	41.39	As per BHEL Offer for Uhl Stage-III Power house for supply part dated 25.07.2023 for Rs.41,38,850.
		Cost of equipment/ component/ material for overhauling of Governor & MIV OPU	3 Nos	61.73	As per M/s BHEL Offer for Uhl Stage-III Power house 24.05.2023 the price for overhauling of Governor & MIV was Rs.41,64,795. Also, some items were not quoted by BHEL, and the price for those items has been incorporated as per M/s Yuken India Limited Quotation Letter

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					dated 10.07.2023 for amounting to Rs. 20,08,412. Therefore, total price of M/s BHEL & M/s Yuken i.e. Rs. 61,73,207 has been taken. Only the material cost has been included here. The erection/ service cost has been included in Annexure-10 (Capital maintenance).
		Cost of equipment/component/material for overhauling of Generator	3 Nos/ 1 job	23.12	The price for supply/ material part has been taken as per PO of Uhl Stage-III Power house dated 23.11.2022 of Rs.20,10,107., Accordingly, escalation for one year has been added. Only the material cost has been included here. The erection/ service cost has been included in Annexure-10 (Capital maintenance).
		Cost of equipment/component/material for overhauling Servomotor of MIV	1 Job	43.97	Price as per M/s BHEL Budgetary offer for Uhl Stage-III Power house dated 04.03.2023 is Rs.38,23,554. Accordingly,

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					escalation for one year has been added. Only the material cost has been included here. The erection/ service cost has been included in Annexure-10 (Capital maintenance)
		Turbine instruments like limit switch, DTT for TGB pad & TGB oil, pressure transmitters, level indicators, speed sensors, moisture detector for TGB, gauges, float switch, flow meters, thermostat. Cost of equipment/compone nt/material for overhauling Servomotor of MIV	1 Job	45.22	The price for service part of major overhauling of one unit has been taken in (Annexure 10) and the charges of material part of turbine instruments has been incorporated as per BHEL Offer for Uhl Stage-III Power house dated 23.05.2023.Only the material cost has been included here. The erection/ service cost has been included in Annexure-10 (Capital maintenance).
		Cost of equipment/compone nt/material for rebabbiting of bearing pads. Turbine instruments like limit switch, DTT for TGB pad & TGB oil, pressure	Job	423.58	The price has been taken as per BHEL Offer for Uhl Stage-III Power house dated 14.12.2022, price in the offer is Rs. 119.20 Lac for one unit,

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
		transmitters, level indicators, speed sensors, moisture detector for TGB, gauges, float switch, flow meters, thermostat.			accordingly, same has been calculated for 3 No. units after including escalation for one year and with 3% freight& transit insurance charges .Only the material cost has been included here. The erection/ service cost has been included in Annexure-10(Capital maintenance).
		Cost of equipment/component/material for brake & jack control panel Cost of equipment/component/material for rebabbiting of bearing pads.	Job	22.94	As per BHEL Offer for Uhl Stage-III Power house dated 14.06.2023 Only the material cost has been included here. The erection/ service cost has been included in Annexure-10 (Capital maintenance).

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
		Cost of capital maintenance of machines incorporating the service charges to carry out overhauling of turbine, generator and its auxilliaries and erection cost of the equipments as considered in annexures 2 to 9. Cost of repairing and changing runner is also included Cost of equipment/component/material for brake & jack control panel	3 Nos	1,274.55	As per M/s BHEL Budgetary offer dated 27.08.2020 for major overhauling of one unit during capital maintenance works, for Rs. 293,00,000, therefore, after 15 % hike per annum per financial year as specified in their budgetary offer the price for 3 units has been calculated.
6	TRANSFORMERS	i) Overhauling of 3 No. 52 MVA, 11/132kV generation transformer & one no. 6.3MVA, 132/11kV station transformer.	4 No.	59.76	Overhauling of Generation Transformer & Station transformer has been taken as per BHEL Offer for Uhl Stage-III Power house dated 26.05.2023, total price in the offer is Rs.44,81,882 for three no. quantities, accordingly, same has been calculated for 4 No. by multiplying 4/3.
		ii) OLTC for 3 No. 52 MVA, 11/132kV generation transformer & one no. 6.3MVA, 132/11kV station transformer.	4 No.	22.66	OLTC overhauling price has been taken as per BHEL Offer for Uhl Stage-III Power house dated 20.06.2023, total price in the

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					offer is Rs.11,33,000 for two no. quantities, accordingly, same has been calculated for 4 No. quantities by multiplying 2.
		iii) Complete replacement of 3 No. 500 kVA, Unit Auxiliary Transformers.	3 No.	45.90	As per AMES IMPEX Electricals Pvt. Ltd. Offer dated 08.08.2023
		iv) Complete replacement of 2 No. 1MVA, 11/.415 kV Station transformers. iii) Complete replacement of 3 No. 500 kVA, Unit Auxiliary Transformers.	2No.	46.80	As per AMES IMPEX Electricals Pvt. Ltd. Offer dated 08.08.2023.
		v) HVWS cum firefighting system for transformer and water mist type fire fighting system for generator.	1 Job	29.41	Price as per M/s BHEL for HVWS cum firefighting system for transformer & M/s Newage Fire Protection Engineers Private Limited Offer for fire fighting system of generator for Uhl Stage-III Power house dated 26.06.2023 & 29.07.2023 of Rs.2,755,402 & Rs.185,236 (total Rs.2,940,638).

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
7	DEWATERING & DRAINAGE SYSTEM	Renovation of Dewatering & drainage system alongwith 02 No. VVFD for dewatering pumps.	1 Job	184.45	Total price as per M/s BCTPL budgetary offer dated 04.09.2023 is Rs. 1,72,40,000, however, pumps of 90m3 were already replaced with submersible type pumps, therefore, not included in the offer. Also, price for 3 Nos. pumps & starters for 750m3@50m has been considered as per unit price given in this offer. Accordingly, total price including erection and commissioning i.e. Rs. 1,84,45,000 has been considered.
8	GIS	Complete overhauling of GIS System is required. Renovation of Dewatering & drainage system alongwith 02 No. VVFD for dewatering pumps.	1 Job	447.26	Price as per Budgetary offer from M/s GE T&D India Limited dated 20.07.2020 for spares and supervision services for 145 kV GIS Maintenance at HPSEB Larji for amounting to Rs 94,73,750 for spares and Rs. 213,71,590 for services i.e total Rs. 308,45,340. Accordingly escalation has

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					been added for 3 years.
9	TURBINE LUBRICATING OIL FILTRATION PLANT, TRANSFORMER OIL DEHYDRATION PLANT SYSTEM AND AIR COMPRESSOR	Replacement of turbine lubricating oil filtration plant Complete overhauling of GIS System is required.	3	83.24	As per NOA for Bhaba HEP dated 17/03/2021, the price for one quantity was Rs. 21,34,364, accordingly escalation for 2 years has been added.
		Replacement of transformer oil dehydration plant.	1	17.91	As per NOA of 4500LPH Dehydration plant for Bassi Power House dated 17.05.2022 the price for one quantity was Rs.15,57,078 (after discount), accordingly escalation for one year has been added.
10	DC SYSTEM(BATTERIES AND CHARGER)	i) 1 No. 220V, 1070 Ah Battery Bank & 2 Nos. 200A Battery Charger for both the battery bank of power house and DCDB.	1 Job	139.85	Price for battery bank has been taken as per the budgetary offer from M/s Exsol Energy System Pvt. Ltd. Of Rs. 96,30,114 Dated 31.07.2023 (excluding buyback price) & price of battery charger as per Maha Mai Engineers for amounting to Rs. 43,55,000 dated 08.08.2023.

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
		ii) 30 Volt Batteries and charger for dam site.i) 1 No. 220V, 1070 Ah Battery Bank & 2 Nos. 200A Battery Charger for both the battery bank of power house and DCDB.	1 Job	5.47	Price of battery bank as per the EHV cost data 2023-24 is Rs.82,000 & price of battery charger as per the budgetary offer from Maha Mai Engineers dated 09.08.2023 is Rs. 4,65,000. Accordingly, total becomes Rs.5,47,000.
		iii) 2 Nos. 24 volt, Battery Charger for 725 Ah batteries and DCDB.	1 Job	17.95	Price for battery bank has been taken as per the budgetary offer from Maha Mai Engineers dated 09.08.2023.
		iv) 2 Nos. 48 Volt, battery charger for Ah batteries and DCDB.	1 Job	7.45	Price for battery bank has been taken as per the budgetary offer from Maha Mai Engineers dated 09.08.2023.
11	VENTILATION & AIR CONDITIONING SYSTEM	Replacement of Ventilation & Air Conditioning system for power house	1 Job	345.00	As per budgetary offer from M/s Doctor & Company Pvt. Ltd. Dated 04.08.2023.
12	CONDITION MONITORING AND DISCHARGE MEASUREMENT SYSTEM	Installation of condition monitoring system having water discharge monitoring for generator efficiency, air gap monitoring, vibration monitoring.	3 Nos. each	274.57	Price as per Budgetary offer from M/s TPES for Baner Power House dated 30.01.2023 for 1 No. condition monitoring system is Rs. 7,958,667, accordingly, calculated for

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					3Nos. and escalation for one year has been added. As the size of the machine does not have direct bearing on the condition monitoring system, therefore for tentative costing, offer for Baner HEP is considered.
13	HT, COMMUNICATION AND UNIT & STATION AUXILIARY STARTER PANEL	i) Replacement of HT panel for power house i.e. 5 Nos.	5 Nos.	87.65	As per Budgetary offer from M/s ABB India Limited dated 01.06.2023 the cost for 5 No. VCB panel was Rs.87,65,000.
		ii) Replacement of HT panel for dam site i.e. 4 Nos.	4 Nos.	16.17	As per Purchase Order issued by SE (Designs), ES, HPSEBL, Hamirpur dated 28.04.2023, the price for 1 No. feeder is Rs. 404,317 (after 0.5% discount), therefore, the same has been calculated for 4 Nos.
		iii) Replacement of communication Panel	1 Job	98.33	Cost as provided by PLCC Division, HPSEBL, Sundernagar was Rs.100,51,970 with GST, accordingly, GST has been excluded from this.

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
		iv) Replacement of unit and station auxiliary starter panels l	1 Job	172.92	Price as per M/s BHEL Offer for Uhl Stage-III Power house dated 20.02.2023 is Rs. 1,50,36,840, accordingly, escalation for one year has been added.
14	ELEVATOR	Replacement of elevator	1 Job	43.87	As per Omega Elevators Company offer dated 29.07.2023.
15	DIESEL GENERATOR	Procurement of 500 kVA Diesel Generator	1 no.	51.03	As per Budgetary offer from M/s Spain Electronics dated 09.09.2023. As the offer was for CPCB-II for amounting to Rs. 39,25,000, accordingly 30% hike as per CPCB-IV has been added.
16	CABLE	Replacement of power & control Cables excluding 132kV cable.	1 Job	123.97	As per NOA dated 12.01.2005 for Cable works of Larji Power house the price in NOA for supply & erection of FRLS type XLPE/ PVC insulated, Copperu/ Aluminium Conductor, HT, LT power and control cables along with cable hangers, trays was Rs. 218,81,333 & 31,35,879,

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					accordingly price escalation/ hike has been given as per Economic Advisor of India site, which turned out to be Rs. 61,984,749 as per , attached accordingly supporting documents are attached. 20 % of this amount has been considered for the replacement/ overhauling of the entire cabling system.
17	AID (ALERT INFORM & DIRECT) SYSTEM ON RELEASE OF WATER FROM DAM	Restoration / Rerouting of AID network from dam to power house	1 Job	41.77	As per NOA for revamping of AID for Larji Power House dated 30.04.2022, the price for revamping of AID system along with OFC was Rs.36,32,310 (excluding GST) (after discount 1%), accordingly escalation for one year has been incorporated.
		Relocation of AID station from Dam to Power House	1 Job	91.60	As per estimate provided by AE, Larji.
18	LIGHTENING ARRESTOR, CVT, WAVE TRAP	i) 8 Nos., 132 kV Lightening Arrestor	8 Nos.	4.48	As per EHV Cost data for FY 2023-24 of HPSEBL, the cost of 120 kV has been considered.

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
		ii) 2 nos. 132 kV CVT	2 Nos.	3.80	As per EHV Cost data for FY 2023-24 of HPSEBL.
		iii) 2 Nos. 132 kV Wave trap	2 No.	5.50	As per EHV Cost data for FY 2023-24 of HPSEBL.
19	ILLUMINATION SYSTEM	Supply and installation of Luminaries and other accessories required for Illumination System of Power house	1 Job	132.62	Price as per NOA dated 18.10.2004 for Supply and installation of Luminaries and other accessories required for Illumination System of larji Larji Power house was Rs. 5,904,834 for supply and Rs. 863,665 for installation, (total Rs. 6,768,499), accordingly price hike has been given as per Economic Advisor of India site. Accordingly, price for June, 2023 is Rs. 1,32,61,674 as per the attached supporting documents are attached.

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
20	BUS DUCT	Overhauling of Bus duct alongwith LAVT & NGT cubicles	1 Job	160.91	Price as per NOA to M/s BHEL for Bus duct of Larji power house dated 15.02.2001, for amounting to Rs. 189,15,000. After price hike as per Economic Advisor of India site, price for June, 2023 is Rs.80,453,033, as per the attached accordingly, supporting documents are attached. Accordingly, 20 % of this amount has been considered for the replacement/ overhauling/ replacement of the defective part.
21	EOT	Overhauling of EOT	1 Job	74.60	Price as per NOA to M/s BHEL for Bus duct of Larji power house dated 21.09.2001, for amounting to Rs. 81,94,600. After price hike as per Economic Advisor of India site, price for June, 2023 is Rs. 37,301,923 (supporting documents are attached), accordingly, supporting documents are attached.

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
					Accordingly, 20 % of this amount has been considered for the replacement/ overhauling/ replacement of the defective part.
22	WORK OF EMERGENT NATURE EXECUTED BY RE LARJI FOR RESTORATION OF POWER HOUSE	i) Emergent nature works carried out by RE Larji for the restoration of power house	1 Job	206.94	As per estimate submitted by RE Larji amount for Emergent nature works is Rs. 2,52,36,900 (including GST). Therefore, amount excluding 18% GST has been considered i.e. Rs.2,06,94,258.
		ii) Providing of office furniture	1 Job	11.92	As per estimate submitted by RE Larji.
		iii) Providing various types of electrical testing equipments to be used during restoration activities of Larji HEP	1 Job	64.32	As per estimate submitted by RE Larji.
23	RESTORATION OF UNIT-I	Restoration of Unit-I by utilizing the spare parts available with HPSEBL and by dismantling the healthy parts from unit II & III	1 Job	563.07	Price as per offer submitted by OEM i.e. M/s BHEL of amounting to Rs. 6.26 Cr., after negotiation Rs. 5.63 Cr. and same was awarded to M/s BHEL on dated 04.09.2023.
	Total			**8,517.50**	

Sr. No	Description	Works to be Carried out	Qty	Total Amount (in lacs)	Remarks
	Contingency @3% on material cost			255.53	
	Subtotal			**8,773.03**	
	GST @18%			1,579.15	
	Sub total			**10,352.17**	
	Labour cess @1%			103.52	
	DC @11 %			1,138.74	
	Grand Total			**11,594.44**	

10. The Cost of Civil and Hydro-mechanical Components as per the Scheme submitted by the Petitioner is as under:

Sr. No.	Detail of Works to be Carried out	Quantity	Total Price(INR)
1	Concept for raising MAT Portal Invert & alternate MAT location for Larji HEP.	1complete Job	34,03,21,175
2	Works to be performed at Dam Site & CT Gate Gallery	1complete Job	15,49,42,202
3	Works to be performed at HPSEBL Colony Thalout.	1complete Job	3,16,82,140
4	Works to be performed at Surge Shaft	1complete Job	12,52,10,463
5	Works to be performed at Power House Complex	1complete Job	3,28,56,124
6	Other Miscellaneous Civil Works as Required during restoration of Larji Power House.	1 complete Job	20,00,000
7	Mitigation measures i.e. removal of silt, slush etc. from the Power House cavern.	1 complete Job	1,22,25,546
	Total		**69,92,37,650**

11. The Petitioner has submitted the following justification for the costing of the Scheme:

"The cost estimation of restoration of Larji HEP has been done by referring to various sources. The OEM, M/s BHEL, expressed its inability to submit the offer without checking the damage to individual component by opening and testing them. Based upon the past experience, it is submitted that the other EPC contractors would take months before submitting their price offer for restoration. Therefore, following references and assumptions were made for tentative approximate costing of the restoration Scheme:-

i) The offer for capital maintenance of one machine was already taken from M/s BHEL before submergence. This offer included mainly cost of expert services provided by M/s BHEL for dismantling the machine carrying out maintenance of generator, turbine and their associated equipment including repair of runner as well. However, this offer excluded supply of major material. Additionally, since, this offer was submitted before the submergence of power house, it excludes additional work which would be needed to mitigate damage due water and silt ingress.

ii) The 3x33.33 MW Uhl-III also suffered water damage in the past due to bursting of penstock. M/s BHEL is the OEM for 3x33.33 MW Uhl stage-III HEP. The restoration activities of Uhl stage-III HEP are still going on. Therefore, the price offer and work awarded to BHEL has been taken as reference for calculating the restoration cost of various components of Larji HEP.

iii) The Uhl-III HEP got water ingress for limited period of time whereas Larji HEP was submerged for days. Therefore, it is clear that the damage

sustained by Larji HEP will be much more than that occurred in Uhl-III HEP. Additionally, Larji HEP has bigger machines owning to higher capacity and slower speed.

iv) The validity of the offer submitted as by M/s BHEL for Capital maintenance mentioned in Sr. No. 1) was valid upto March, 2021and thereafter price hike of 15% per annum was quoted by M/s BHEL. Accordingly price hike of 15% per annum was taken on every price reference of previous years of M/s BHEL or of other companies.

v) Certain component/ equipment for which recent Cost references/ budgetary offers were not available, costing for the same has been taken out from the initial award for the Larji project. Since the prices were quite old, therefore, the price hike as per Wholesale price indices released by economic advisor India on the nearest Commodity was taken to account for the price escalation.

vi) The costing of services for the restoration of MIV, turbine, generator and auxiliaries was taken as quoted by M/S BHEL for capital maintenance which includes runner repair also. The costing of material which are expected to be damaged due to water & silt for the same components has been taken from the BHEL offers for Uhl stage-III HEP. In the said offer of BHEL for Uhl stage - III HEP only the material prices were quoted and prices for erection/ services were quoted separately for the complete project.

vii) Costing for the Governor, excitation system, control of monitoring system (SCADA) and protection panels was taken from M/s ABB's offer.

viii) Prices for ventilation and air conditioning system, HT panels of power house elevator, dewatering and drainage system, overhauling of GLS, DC system

(battery and chargers), Unit and station auxiliary transformers, DG set etc. were taken from the budgetary offers submitted by the manufacturing firms.

ix) The costing for replacement of LT distribution panels and providing condition monitoring system has been taken from P.O. and price offer for Bhaba and Baner HEP, respectively considering the similar type of equipment would be needed for Larji HEP.

x) Costing for station & auxiliary Starter panels, Overhauling of turbine, generator, servomotors, station and generator transformers, firefighting system, air compressor and HP&LP compressed air system, brake and jack panels, has been taken from the price offers for Uhl stage-III HEP.

xi) The costing for repair / overhauling of cables, bus duct, and illumination system, EOT Crane is taken from the original awarded cost for Larji HEP and further accounting price hike considering as per WPI indices, then further considering certain %age of overall cost as overhauling expenditure.

xii) The costing for communication panels and AID system was taken as per the estimate provided by PLCC office and field offices respectively.

xiii) Costing of CVT, wave trap and LA has been taken as per EHV cost data for FY 2023-24

xiv) Costing for turbine oil filtration, transformer oil dehydration plant & HT panel for dam site has been taken as per previous awarded works.

xv) The cost of restoration of unit-I was taken as per award of work to the OEM i.e. M/s BHEL after negotiation."

12. The Petitioner has submitted the cost benefit analysis for the scheme as under:

"The cost benefit analysis is an approach to evaluate business or policy decisions to

estimate or evaluate the value against the cost of a decision, project, or policy. In short it is a method for the management to help in deciding whether a particular action to be taken or not. The works proposed in this scheme are compulsory works for the making the project functional. Since, it is a mandatory work there is no doubt about implementing this scheme; as such there is no need for the cost benefit analysis. However, to understand the reason for attributing compulsory nature to the works proposed for restoration, the following facts are presented:

i) The Larji power house has three machines of 42MW having total capacity of 126MW.

ii) During peak season the project runs at 110% of the rated capacity i.e. at 138.6 MW.

iii) During peak season the project generates 33.264 lakh units in a single day.

iv) The tariff of the Larji Project is Rs.1.27/ unit as per the approved ARR for the 4th control period (2020-24) by HPERC.

v) Therefore, during peak season HPSEBL is losing Rs.42.24 Lakh everyday as a generation loss.

vi) The design energy of the Larji Project is 586.82 MU.

vii) If the complete power house remains non-operational for the complete year, the total generation loss will be Rs.74.526 crores considering design energy.

viii) The proposed cost of the project is Rs. 185.86 crores. Since, Power House can't be bring into working condition without carrying out renovation activities proposed in the scheme, therefore, with the current

tariff the project will recover the total investment in 2.49 years (=185.86/74.526) or in approximately 30 months.

ix) *The HPERC approved average/ overall power purchase cost from all the sources for FY 2023-24 for HPSEBL as mentioned in annual performance review is Rs. 2.70/ Unit. This means that even though the generation loss due to non-operation of Larji HEP is Rs. 1.27/Unit, as additional loss of Rs. 1.43/ Unit need to be borne by HPSEBL as the HPSEBL won't be able to utilize cheaper power of Rs. 1.27/ Unit.*

x) *In line with above, additional loss of Rs.47.57 Lakh for each day during peak season or Rs. 83.915 Cr for one year (considering design energy) shall have to be borne by HPSEBL. This additional loss will further be transferred to consumers of HPSEBL during truing up of APR for the current control period. However, the same shall only be allowed if the restoration work is completed without causing any undue delay. Therefore, it is imperative that to avoid undue delay for restoration work the sanctioning of expenditure for the concerned scheme is expedited. Just as matter of thought, from the above calculation it can be infer that if Larji project is to be operated by a generation Licensee other than HPSEBL which is free to choose sale of power through open access then an addition burden of Rs. 83.915 Cr per annum has to be borne by electricity consumers of Himachal Pradesh.*

xi) *As per the detail submitted by Power Controller, simple average of per unit prices of the energy at the Indian Energy Exchange for the month of August, 2023 is Rs.6.89/ unit. This is the rate at which HPSEBL has to procure power in case of unavailability of power from the identified*

sources. The importance of Larji HEP is can be understood clearly by comparing the average rate of Rs.6.89 / unit to the rate of Rs.1.27 / unit energy generated by Larji HEP."

13. The case was listed for hearing in the Court on 17.11.2023 and the Commission, in exrcise of the powers vested under Regulation 15 of Himachal Pradesh Electricity Regulatory Commission (Power System Development Fund) Regulation 2020, as an interim measure, sanctioned Rs. 35 Cr. (Thirty Five Crore Only) from the PSDF especially for payments to be released to M/s BHEL for restoration and rehabilitation works of Larji Power House so that execution of restoration work is not delayed due to delay in funding. This interim amount of Rs. 35 Cr. was to be inclusive in the CAPEX Scheme submitted for approval. The Petitioner was directed to supply the detailed Engineering of Civil and Electrical Works proposed alongwith bar charts and completion schedule duly authenticated by the Director (Civil) and the Director (Technical) of the HPSEBL.

14. The case was listed again for hearing in the Court on 29.11.2023 where the HPSEBL sought two week time extension to submit the requisite details in the matter. The Commission agreed in principle for the release of remaining payment to be made to the BHEL for the restoration and rehabilitation works of the Larji Power House so that execution of the restoration works is not delayed due to delay in funding and such CAPEX

shall be allowed in due course. The requisite details were furnished by the HPSEBL on 29.12.2023.

15. The Commission having heard the applicant and stakeholders and having had formal interactions with the officers of the HPSEBL and having considered the documents available on record, considers the submissions of the Petitioner. In our view, the unfortunate incident of submergence of the Larji HEP on 9th July, 2023 is covered under the Force Majeure. Accordingly, the Commission not only has already sanctioned Rs. 35.00 Crore from the State Power Sector Development Fund (PSDF) for the payments to be released to M/s BHEL for restoration and rehabilitation works of Larji Power House but has also agreed in principle for the release of remaining payment to be made to M/s BHEL for the restoration and rehabilitation works of the Larji Power House so that execution of the restoration works is not delayed due to delay in funding and such CAPEX shall, however, be allowed in due course. The Commission has noted down the reports of Civil and Electro mechanical works submitted by the Petitioner.

16. The Commission is of the opinion that Larji HEP should go for the R&M activities to ensure improved reliability and availability. The non allowance of the for the Larji HEP shall not be in the interest of the stakeholders involved. In the instant case, the HPSEBL shall be availing

the benefit of reliable power with peaking capability for many years to come at a tariff which is much less than the tariff of new hydro generating stations commissioned during recent times. However, the Commission is of the view that the cost of the scheme proposed by the Petitioner can not be approved as such at this stage as estimation by the Petitioner is based on various assumptions. The detailed scrutiny shall be carried out at the time of filing the detailed tariff Petition for approving the capital cost incurred. The Commission hereby directs the Petitioner to award various works under the proposed scheme on competitive bidding basis except for those works which can be undertaken by the Government owned Original Equipment Manufacturers (OEM) only. Further, the works valuing more than Rupees One Crore should compulsorily be executed through E-reverse bidding only.

17. Amount of Civil works mentioned is Rs.69,92,37,650/-. In view of high cost of Civil works, these works be undertaken only after detailed investigations, surveys, engineering designs, approved construction drawings and Bill of Quantities (BOQ) are ready.

18. The Commission further directs the Petitioner to finalise tender documents including Bill of Quantities (BOQ) and specifications of items in tenders only after detailed engineering designs and approved construction drawings mentioned in Para-17 above are ready.

19. The Petitioner, during the period of unit shut down/station shut down for the purpose of carrying out R&M activities, shall keep the following two separate records and shall submit the same to the Commission along with the tariff Petition for approval of capital cost after R&M of the generating station:

(i) Incidental Expenditure during Construction (IEDC) including man power cost, construction power cost etc. booked to R&M activities; and

(ii) Normal O&M expenses of the generating station (not booked to R&M expenditure) which are not avoidable even when the units/station is under shut down.

The Petition is accordingly disposed off. The file after needful be consigned to records.

Announced:
14.03.2024

-Sd-	-Sd-	-Sd-
(Shashi Kant Joshi)	(Yashwant Singh Chogal)	(Devendra Kumar Sharma)
Member	**Member(Law)**	**Chairman**