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Government of India  
विद्युत मंत्रालय  
Ministry of Power  
केंद्रीय विद्युत प्राधिकरण  
Central Electricity Authority  
जल विद्युत अभियांत्रिकी व प्रौद्योगिकी विकास एवं नवीनीकरण व आधुनिकीकरण प्रभाग  
Hydro Engineering & Technology Development and Renovation & Modernization  
Division

## जल विद्युत परियोजनाओं का नवीनीकरण एवं आधुनिकीकरण अवधि 2022-27 व 2027-32 का कार्यक्रम तथा यथास्थिति



### Renovation & Modernisation of Hydro Power Stations

Status/Programme for the Period 2022-27 & 2027-32

### QUARTERLY PROGRESS REPORT

(January-March, 2025)

(4<sup>th</sup> Quarter of 2024-25)

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# Renovation & Modernisation (R&M) Schemes of Hydro Power Stations

## Programme for the period 2022-27 & 2027-32

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**Background  
&  
Plan-wise Summary**

## **RENOVATION, MODERNISATION & UPRATING OF HYDRO ELECTRIC POWER PROJECTS**

### **BACKGROUND**

Renovation & Modernisation (R&M) of the existing old Hydro Electric Projects is considered a cost effective option for retaining the operational capacity at end of its useful life by undertaking requisite R&M works to extend its operational life and also utilizing this opportunity for having uprated capacity, if feasible, by exploring the technological advancement. These type of works are also undertaken during the useful life of plant/ equipment for improvement in operational efficiency, reliability, security and on obsolescence of technology.

Recognizing the benefits of R&M of hydroelectric power projects, Govt. of India set up a National Committee in 1987 and a Standing Committee in 1998 and thereafter had identified the projects/ schemes to be taken up for implementation under R&M. The National Perspective Plan document for R&M of hydroelectric power projects in the country was also prepared in CEA during the year 2000. The status of various projects/ schemes already identified for implementation/ completion till the end of XI Plan, i.e. March, 2012 had been incorporated in the National Perspective Plan.

### **Achievements during VIII, IX, X, XI, XII Plan and Period 2017-22**

The R&M works at 118 (26 in Central and 92 in State Sector) hydro power plants (13 up to the VIII Plan, 20 in the IX Plan, 32 in the X Plan, 18 in the XI Plan, 21 in the XII Plan & 14 during 2017-22) with an aggregate installed capacity of 22634.7 MW had been completed by the end of the year 2017-22 and total a benefit of 4139.56 MW through Life Extension (LE), Uprating (U) and Renovation had been accrued. The State-wise list of Hydro RM&U Schemes completed during VIII, IX, X, XI XII Plans and 2017-22 are given at Annex-I, II, III, IV,V and VI respectively.

### **Programme during the period 2022-27**

The Renovation, Modernization, Uprating and Life Extension works at 49 Hydro Electric Plants (HEPs) with an aggregate installed capacity of 8765.90 MW is programmed for completion during the year 2022-27 with its break-up as 2228.8 MW through R&M at 14 HEPs, 5294.1 MW through Life Extension at 26 HEPs and 1243 MW through Life Extension and Uprating at 09 HEPs. The 09 HEPs where both Life Extension & Uprating are envisaged, the aggregate installed capacity of 1243 MW shall get uprated after completion of R&M works to 1400.5 MW resulting in additional benefit of installed capacity of 157.5 MW. As such, the revised aggregate installed capacity after completion of RMU&LE works of these 49 projects would be 8923.40 MW. The State-wise list of hydro R&M schemes expected for completion during the year 2022-27 is given at Annex-VII.

Out of these 49 Schemes, Eleven (11) Schemes with an aggregate installed capacity of about 2590.8 MW have been completed till March 2025 which has resulted in benefit of 1301 MW through Life Extension and 90 MW through Uprating.

### **Programme during the period 2027-32**

The Renovation, Modernization, Uprating and Life Extension works at 32 Hydro Electric Plants (HEPs) with an aggregate installed capacity of 5161.20 MW is programmed for completion during 2027-32 through Life Extension and Uprating. The State-wise list of hydro R&M schemes expected for completion during 2027-32 is given at Annex-VIII.

## जल विद्युत परियोजनाओं का नवीनीकरण, आधुनिकीकरण और उन्नयन

### पृष्ठभूमि

संसाधनों के इष्टतम उपयोग, कुशल संचालन, बेहतर उपलब्धता सुनिश्चित करने के साथ-साथ देश में क्षमता वृद्धि (उन्नयन) करने के लिए मौजूदा पूर्वस्थापित जल विद्युत परियोजनाओं का नवीनीकरण और आधुनिकीकरण, तथा उन्नयन और जीवन विस्तार (आरएमयू एंड एलई) को एक लागत प्रभावी विकल्प माना जाता है।

जलविद्युत परियोजनाओं के नवीनीकरण और आधुनिकीकरण के लाभों को समझते हुए, भारत सरकार ने 1987 में एक राष्ट्रीय समिति और 1998 में एक स्थायी समिति का गठन किया था। इसके उपरांत आर एंड एम के तहत कार्यान्वयन आरंभ करने के लिए परियोजनाओं/योजनाओं को चिह्नित किया था। वर्ष 2000 के दौरान केंद्रीय विद्युत प्राधिकरण में देश में जलविद्युत परियोजनाओं के नवीनीकरण और आधुनिकीकरण के लिए राष्ट्रीय परिप्रेक्ष्य योजना दस्तावेज भी तैयार किया गया था। ग्यारहवीं योजना के अंत, अर्थात् मार्च, 2012 तक कार्यान्वयन/पूरी करने के लिए पूर्व में चिह्नित विभिन्न परियोजनाओं/योजनाओं की स्थिति को राष्ट्रीय परिप्रेक्ष्य योजना में शामिल किया गया था।

### आठवीं योजना से बारहवीं योजना और 2017-2022 अवधि के दौरान उपलब्धियां

12वीं योजना के अंत तक 118 (26 केंद्रीय और 92 राज्य क्षेत्र में) जल विद्युत संयंत्रों (आठवीं योजना तक 13, नौवीं योजना में 20, दसवीं योजना में 32, ग्यारहवीं योजना में 18, बारहवीं योजना में 21, 2017-2022 के दौरान 14) जिनकी कुल स्थापित क्षमता 22634.7 मेगावाट थी में नवीनीकरण और आधुनिकीकरण का कार्य पूरा किया गया था, जिसके फलस्वरूप जीवन विस्तार, उन्नयन और पुनरुद्धार के माध्यम से 4139.56 मेगावाट का लाभ हुआ था। आठवीं, नौवीं, दसवीं, ग्यारहवीं, बारहवीं योजनाओं और 2017-2022 के दौरान पूरी की गई जल विद्युत आरएमयू एंड यू स्कीमों की राज्यवार सूची क्रमशः अनुलग्नक- I, II, III, IV, V और VI में दी गई है।

### 2022-27 की अवधि के दौरान कार्यक्रम

2022-27 के दौरान 8765.90 मेगावाट की कुल स्थापित क्षमता के साथ 49 जल विद्युत संयंत्रों पर नवीनीकरण, आधुनिकीकरण, उन्नयन और जीवन विस्तार का काम पूरा करने के लिए कार्यक्रम बनाया गया है, जिसमें से 14 जल विद्युत संयंत्रों में 2228.8 मेगावाट की क्षमता नवीनीकरण एवं आधुनिकीकरण के माध्यम से, 26 जल विद्युत संयंत्रों में 5294.1 मेगावाट की क्षमता जीवन विस्तार के माध्यम से और 09 जल विद्युत संयंत्रों में 1243 मेगावाट की क्षमता जीवन विस्तार और उन्नयन के माध्यम से कार्य किया जाएगा। जिन 09 जल विद्युत संयंत्रों में जीवन विस्तार और उन्नयन दोनों की परिकल्पना की गई है, उनमें 1243 मेगावाट की कुल क्षमता में 1400.5 मेगावाट तक वृद्धि होगी, जिसके परिणामस्वरूप 157.5 मेगावाट स्थापित क्षमता का अतिरिक्त लाभ होगा। अतः, इन 49 परियोजनाओं की कुल क्षमता नवीनीकरण, आधुनिकीकरण, उन्नयन और जीवन विस्तार (आरएमयू एंड एलई) के समापन के बाद 8923.40 मेगावाट हो जाएगी। 2022-27 के दौरान पूरी की जाने वाली जल विद्युत आर एंड एम स्कीमों की राज्यवार सूची अनुलग्नक-VII में दी गई है।

इन 49 योजनाओं में से, ग्यारह (11) स्कीमों की कुल स्थापित क्षमता 2590.8 मेगावाट की है, जो मार्च 2025 तक पूरी हो चुकी है, जिसके परिणामस्वरूप जीवन विस्तार के माध्यम से 1301 मेगावाट और उन्नयन के माध्यम से 90 मेगावाट का लाभ हुआ है।

### 2027-32 की अवधि के दौरान कार्यक्रम

5161.20 मेगावाट की कुल स्थापित क्षमता वाले 32 जल विद्युत संयंत्रों में नवीनीकरण, आधुनिकीकरण, उन्नयन और जीवन विस्तार कार्य की योजना 2027-32 के लिए बनाई गई है। 2027-32 के दौरान पूरा होने वाली इन संभावित जलविद्युत आर एंड एम योजनाओं की राज्य-वार सूची अनुलग्नक -VIII में दी गई है।

## Summary of R&M of Hydro Electric Projects

(As on 31.03.2025)

### I Hydro R&M schemes completed up to 2017-22

Sl. No.	Plan Period	No. of Projects			Installed Capacity (MW)	Actual Expenditure (Rs. in Crs)	Benefit (MW)
		Central Sector	State Sector	Total			
1.	Upto VIII Plan Schemes	2	11	13	1282.00	127.37	429.00 [39.00(U) + 54.00(LE) + 336.00(Res.)]
2.	IX Plan Schemes	8	12	20	4892.10	570.16	1093.03 [339.00(U)+ 423.00(LE) + 331.03(Res.)]
3.	X Plan Schemes	5	27	32	4446.60	1029.24	827.73 [122.05(U) + 701.25 (LE) + 4.43(Res.)]
4.	XI Plan Schemes	4	14	18	5841.20	294.84	735 [12 (U) +708 (LE) + 15 (Res.)]
5.	XII Plan Schemes	2	19	21	4149.60	1146.02	549.40 [58 (U)+ 476.40 (LE)+15(Res.)]
6.	2017-2022	5	9	14	2023.2	848.68	505.4 [479.2(LE) + 26.2(U)]
	Total	26	92	118	22634.7	4016.31	4139.56 [596.25 (U)+ 2841.85 (LE)+ 701.46 (Res.)]

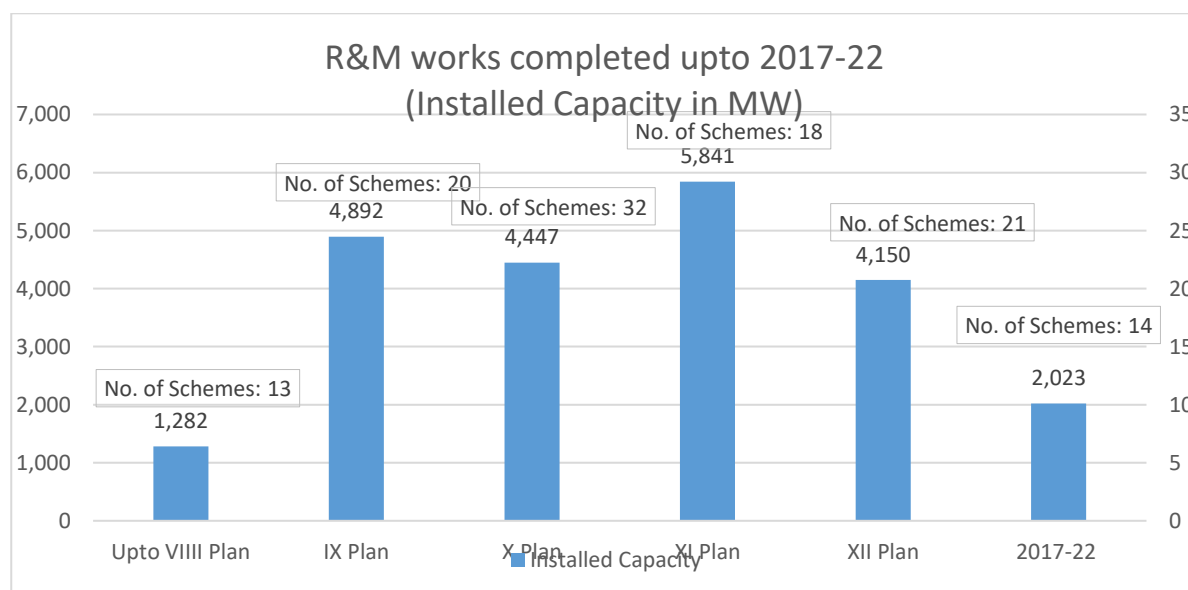
#### Abbreviations:

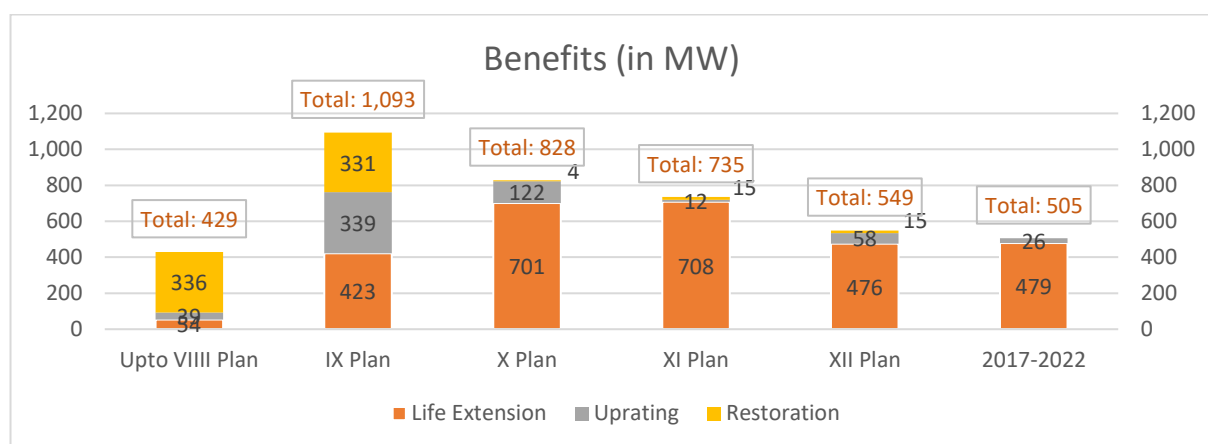
MW – Mega Watt;

Res. – Restoration;

U – Uprating;

LE – Life Extension;





## II Programme of R&M works during 2022-27

Sl. No.	Category	No. of Projects			Capacity covered under RMU&LE (MW)	Benefit (MW)
		Central Sector	State Sector	Total		
1.	Programmed	6	43	49	8765.90	6694.6 [6537.10(LE)+ 157.5(U)]
2.	Completed	2	9	11	2500.8	1391 [1301 (LE)+ 90(U)]
3.	Under Implementation	3	17	20	3140.75	2477.25 [2441.75(LE)+ 35.5(U)]
4.	Under Tendering	1	2	3	312	218 [212(LE)+06(U)]
5.	Under DPR Preparation/ Finalisation/ Approval	0	4	4	955	961 [955(LE)+ 6(U)]
6.	Under RLA Studies	0	11	11	1857.35	1647.35 [1627.35(LE)+ 20(U)]

## III Programme of R&M works during 2027-32

Sl. No.	Category	No. of Projects			Capacity covered under RMU&LE (MW)	Benefit (MW)
		Central Sector	State Sector	Total		
1.	Programmed	5	27	32	5161.2	5267.03 [5161.20(LE)+ 105.83(U)]
2.	Under Implementation	0	1	1	144	156 [144(LE) + 12(U)]
3.	Under Tendering	1	2	3	751	835.83 [751(LE)+ 84.83(U)]
4.	Under DPR Preparation/Finalisation/ Approval	0	6	6	1058	1067 [1058(LE)+ 9(U)]
5.	Under RLA Studies	4	18	22	3208.20	3208.20 [3208.2(LE)+0(U)]

**Abbreviations:** MW – Mega Watt; Res. – Restoration; Assessment

U – Uprating; LE – Life Extension; RLA- Residual Life

**Year-wise & State-wise Summary of  
Original Completion Schedule of  
R&M Schemes at Hydro Power  
Stations  
(During 2022-27)**

**Year-wise & State-wise Summary of Original & Anticipated Completion Schedule of R&M Schemes at Hydro Power Stations During 2022-27**

<u><b>Year 2022-23</b></u>	<u><b>Year 2023-24</b></u>	<u><b>Year 2024-25</b></u>	<u><b>Year 2025-26</b></u>	<u><b>Year 2026-27</b></u>
<u><b>Himachal Pradesh:</b></u> Bhabha Power House, HPSEB, (3x40) =120 MW <b>(Completed in 2022-23)</b>  <u><b>Uttarakhand:</b></u> Tiloth, UJVNL (3x30) =90 MW <b>(Completed in 2022-23)</b>  <u><b>Uttar Pradesh:</b></u> Rihand, UPJVNL (6x50) =300 MW <b>(Completed in 2022-23)</b>  <u><b>Karnataka:</b></u> i) Munirabad Dam Power House, KPCL, (2x9 + 1x10) =28 MW, <b>(Completed in 2022-23)</b>  ii) Linganamakki Dam Power House, KPCL (2x27.5) =55 MW <b>(Completed in 2022-23)</b>  <u><b>Telangana:</b></u> i) Nagarjuna Sagar Ph-II,	<u><b>Himachal Pradesh:</b></u> Bhakra LB, BBMB, (5x108) =540 MW <b>(Completed in 2023-24)</b>  <u><b>Uttarakhand:</b></u> Dhalipur, UJVNL (3x17) =51 MW <b>(Completed in 2023-24)</b>  <u><b>Karnataka:</b></u> Gerusoppa Dam Power House, KPCL (4x60) =240 MW <b>(Completed in 2023-24)</b>	<u><b>Assam:</b></u> Kopili Power Station, NEEPCO (4x50)=200 MW <b>(Completed in 2024-25)</b> (Original 2023-24)	<u><b>Uttar Pradesh:</b></u> Obra, UPJVNL (3x33) =99 MW <b>(Original 2024-25)</b>  <u><b>Andhra Pradesh:</b></u> Nagarjunasagar Right Canal Power House, APGENCO (3x30)=90 MW  <u><b>Tamil Nadu:</b></u> (i)Kodayar PH-I, TNPGL (1x60) =60 MW <b>(Original 2024-25)</b>  (ii)Moyar PH, TNPGL (3x12) =36 MW <b>(Original 2024-25)</b>  <u><b>Karnataka:</b></u> i) Nagjhari U-1 to U-3, KPCL, (3x150) =450 MW,  ii) Sharavathy Generating Station, KPCL (10x103.5) =1035 MW  iii) Shivasamudram, KPCL, (6x3+4x6)	<u><b>Himachal Pradesh:</b></u> Giri, HPSEB, (2x30) =60 MW <b>(Original 2024-25)</b>  <u><b>Punjab:</b></u> i) Anandpur Sahib, PSPCL, (4x33.5) =134 MW (2026-27)  ii) Mukerian St.I, St.II, St.III & St.IV, PSPCL, (3x15, 3x15, 3x19.5 & 3x19.5) =207 MW (2026-27)  iii) Shanan, PSPCL, (1x50+4x15) =110 MW (2026-27)  iv) UBDC St.I & St.II, PSPCL, (3x15+3x15.45) =91.35 MW (2026-27)  <u><b>Uttarakhand:</b></u> i)Dhakrani, UJVNL, (3x11.25) =33.75 MW, (2026-27) <b>(Original 2020-21, then 2025-26)</b>  <u><b>Rajasthan:</b></u> Rana Pratap Sagar, RRVUNL, (4x43)=172, (2026-27)  <u><b>Madhya Pradesh:</b></u>

<u>Year 2022-23</u>	<u>Year 2023-24</u>	<u>Year 2024-25</u>	<u>Year 2025-26</u>	<u>Year 2026-27</u>
<p>TSGENCO, (1x110+7x100.8) =815.6 MW (2022-23) <b>(Completed in 2022-23)</b></p> <p>ii) Nagarjuna Sagar Left Canal Power House, TSGENCO (2x30.6)=61.2 MW (2024-25) <b>(Completed in 2022-23)</b></p>			<p>=42 MW, <b>(Original 2024-25)</b></p> <p>iv) Kadra Dam Power House, KPCL (3x50) =150 MW <b>(Original 2024-25)</b></p> <p>v) Kodalalli Dam Power House, KPCL (3x40) =120 MW <b>(Original 2024-25)</b></p> <p>vi) Supa Dam Power House, KPCL (2x50) =100 MW <b>(Original 2024-25)</b></p> <p><b><u>Assam:</u></b> Khandong Power Station, NEEPCO (2x23)=46 MW <b>(Original 2024-25)</b></p> <p><b><u>Manipur:</u></b> Loktak, NHPC, (3x35) =105 MW</p> <p><b><u>Kerala:</u></b> i) Kuttiyadi, KSEB, (3x25) =75 MW</p> <p><b><u>West Bengal:</u></b> Maithon (U 1 &amp; 3), DVC, (2x20) =40 MW</p>	<p>i) Bansagar Ton-I, MPPGCL, (3x105)=315 MW (2026-27)</p> <p><b><u>Maharashtra:</u></b> i) Vaitarna, MSPGCL (1x60)=60 MW</p> <p>ii) Koyna Dam foot (Right Bank), MSPGCL (2x20)=40 MW</p> <p>iii) Koyna St-3, MSPGCL (4x80)=320 MW</p> <p><b><u>Andhra Pradesh:</u></b> i) Upper Sileru Power House, APGENCO (4x60)=240 MW</p> <p>ii) Tungabhadra Dam, APGENCO, (4x9) =36 MW <b>(Original 2025-26)</b></p> <p>iii) Hampi Canal PH, APGENCO, (4x9) =36 MW <b>(Original 2025-26)</b></p> <p><b><u>Karnataka</u></b> Varahi Underground Power House, KPCL (115MWx 2) =230MW</p> <p><b><u>Kerala:</u></b> i) Idukki 1<sup>st</sup> stage &amp; 2<sup>nd</sup> stage, KSEB, (6 x130) =780 MW</p>



<u>Year 2022-23</u>	<u>Year 2023-24</u>	<u>Year 2024-25</u>	<u>Year 2025-26</u>	<u>Year 2026-27</u>
			<p>(Original 2024-25)</p> <p><b><u>Jharkhand:</u></b> Panchet U-1, DVC, (1x40) =40 MW (Original 2023-24)</p>	<p>ii) Sabarigiri, KSEB (Unit-1,2, 3 &amp; 5) (4x55)=220 MW</p> <p>iii) Idamalayar, KSEB (2x37.5)=75 MW</p> <p><b><u>Telangana:</u></b> Pochampad HPS Stage -1, TSGENCO, (3x9) =27 MW</p> <p><b><u>Tamil Nadu:</u></b> Kodayar PH-II, TNPGL (1x40) =40 MW</p> <p><b><u>Jharkhand:</u></b> Subernrekha, JUUNL, (2x65) =130 MW</p> <p><b><u>Odisha:</u></b> Balimela, OHPC, (6x60) =360 MW (Original 2024-25)</p> <p><b><u>Meghalaya:</u></b> Umiam St.III (Kyrdekulai), MePGCL (2x30)=60 MW</p>
<b>1469.8 MW (7 Schemes)</b>	<b>831 MW (3 Schemes)</b>	<b>200 MW (1 Schemes)</b>	<b>2488 MW (15 Schemes)</b>	<b>3777.1 MW (23 Schemes)</b>

**State-wise Status of R&M Schemes  
(During 2022-27)**

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**NORTHERN REGION**

**HIMACHAL PRADESH**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme / Category/ Completion Target</b>	<b>Expected Benefit (MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES COMPLETED</b>				
<b>1.</b>	<b>Bhabha Power House, 3x40 MW HPSEBL 1989 T&amp;G - BHEL  RM&amp;LE 2022-23</b>	<b>120 (LE)</b>  90.14  43.01	<ul style="list-style-type: none"> <li>Rehabilitation of Generator of Unit-1.</li> <li>Replacement of Electro-Hydraulic Transducer (EHT) with handle, Main Distribution Valve (MDV) spool &amp; sleeve assy., Pilot needle &amp; sleeve assy., Duplex filter element only (inner &amp; outer sleeve), Solenoid valve (Size 10) of MIV Hydro Control Panel (HCP), Pilot operating main distributing valve type for MIV HCP, NRV of PP Set, Nozzle Servomotors &amp; Drain Pipe Lines Route of Decompression Valve &amp; Seal Valve of MIV.</li> <li>Replacement of three (3) nos. Digital governors &amp; Static Excitation and Digital AVR systems complete with accessories. Replacement of Unit Control Boards and providing control &amp; monitoring system (DCS based SCADA).</li> <li>Supply of 2 nos. Forged Fabricated Pelton Runners (Spares Without coating) having 21 buckets suitable for single runner turbine with two jets developing 41240 KW (55282 HP) at a rated net head of 887.20 mtr and design discharge of 5.67 cumecs per unit.</li> </ul>	<ul style="list-style-type: none"> <li>Rehabilitation works completed by BHEL and Unit commissioned on 09.03.2018.</li> <li>Works completed.</li> <li>Works awarded to M/s. GE Power India Ltd. on 19.07.2018 and has been completed.</li> <li>The tender has been awarded to M/s.Voith Hydro Pvt. Ltd. on 04.07.2019. One runner installed during March, 2021 and second runner kept as spare.</li> </ul>

2.	<b>Bhakra LB,</b> 5x108 MW BBMB 1985 5x90 MW (Original) 1960-61  <b>RMU&amp;LE</b>  <b>2023-24</b>	<b>540(LE)+ 90(U)</b>  489.77  583.86	<b>Turbine</b> Replacement of runners, guide vanes, guide vane operating mechanism, GV pads, turbine shaft sleeve and coupling cover, head cover, shaft sealing box. Governor oil pr. Motor pump, aeration pipe, instrument panel etc.  <b>Generator</b> Replacement of stator winding, stator core and frame assembly, rotor pole assembly, thrust collar, air coolers, thrust bearing pads, upper and lower guide bearings, upper and lower bracket, braking system, generator temp. monitoring panel, excitation system, slip ring, NGT etc.  <b>Auxiliaries</b> Control & Protection panels, Generator Transformers, Bus Bars with CTs, PTs etc. LAVT cubicle, switchyard equipments, control cables etc.	<ul style="list-style-type: none"> <li>- Works awarded to consortium led by M/s Sumitomo Corporation, Japan (with other members i.e. M/s Hitachi Ltd. Japan and VA Tech Hydro, GmbH, Austria) on 27.10.2007.</li> <li>- Contract agreements were signed on 02.11.2007 at a total cost of Rs. 489.77 Crores (including Rs. 29.57 Crores towards replacement of turbine &amp; generator shafts).</li> </ul> <b>Unit 2</b> <ul style="list-style-type: none"> <li>- The unit was synchronized on 23.06.2013.</li> <li>- BBMB issued TOC to consortium on 29.11.2018.</li> </ul> <b>Unit 5</b>  The Unit was commissioned after modification of runner profile on 16.5.2022. TOC issued by BBMB on 27.06.2022  <b>Unit 4</b> Unit is running with output of 126 MW. BBMB issued TOC to the consortium on 23.07.2019.  <b>Unit 3</b> Unit is running with output of 126 MW. The TOC was issued by BBMB on 16.03.2022.  <b>Unit 1</b> On successful completion of trial run operation at rated full load (126 MW), unit commissioned w.e.f. 27.09.2023.
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**B - SCHEMES ONGOING – Under DPR Preparation/Finalisation/Approval**

3.	<b>Giri,</b> 2x30 MW HPSEBL 1978 T&G - BHEL  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>60 (LE)</b>  440.12  Nil	Brief description of work proposed to be undertaken are as given below: - <b>1. Civil works:</b> Repair of power house building & Control Room area and Tail Race Channel. Restoration of Flexible apron, protection works on left bank of upstream side of barrage. Replacement of Spherical roller bearing of spillway gates. Improvement of trash rake, stop logs. Centralized Control of operation of barrage gates from Barrage control room. Strengthening of civil works at 132 kV Switchyard. <b>2. Mechanical works:</b>	Revised scheme amounting to Rs.139.80 crore has been framed on the basis of negotiated rates offered by M/s BHEL (OEM) for EM equipment's & balance plant items. Revised administrative approval for Rs. 139.80 Cr. accorded on 30.12.2015. HPERC has accorded 'in principle' approval on 23.05.2017.  PFC has funded the scheme on dated 18.05.2020.  Revised scheme has been prepared to cover the scope of additional
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			<p>Replacement of Guide vanes with stainless steel guide vanes of Unit - 1, Overhauling of MIV, Add. Penstock gate in Surge Shaft, Replacement of Governors with modern digital governors, Revamping of Cooling water system, Provision of online discharge measurement and head measurement for both machines, replacement of penstock drainage valves and pipes, 3 Nos. new Francis runner (2+1 spare) with high efficiency ranging from (18 to 33) MW capacity.</p> <p><b>3. Electrical works:</b> Replacement of 11 KV PILC cable with bus duct, Overhauling of 2x40 MVA, 11/132kV Generator Transformers and Unit Auxiliary Transformers, Replacement of Control and Protection panels, Replacement of rotor field windings with class "F" insulation and complete Overhauling of Generators, Replacement of semi-static exciter system by static excitation system. Replacement of ABCBs with SF6 breakers, Replacement of 33 kV MOCB with SF6 breaker, Replacement of Batteries and battery charging system, Aug. of 16/20 MVA, 132/33 kV Transformer into 25/31.5 MVA etc.</p>	<p>items which were not covered in earlier schemes.</p> <p>Administrative approval amounting to Rs. 440.123 Cr is accorded by HPSEBL on 12.08.2022</p> <p>Funds are being tied up from PFC for revised scheme.</p> <p>Revised scheme was submitted for approval of Hon'ble HPERC on 02.12.2022. Hon'ble HPERC on 22.06.2023 has disposed off the petition as withdrawn with liberty to file a fresh petition. Fresh DPR under Preparation.</p>
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**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**NORTHERN REGION**

**PUNJAB**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW) / Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING – Under RLA Studies</b>				
<b>4.</b>	<b>Anandpur Sahib Hydel Project – I&amp;II,</b> 4x33.5 MW (2x33.5 MW PH-I, 2x33.5 MW PH-II ) PSPCL 1985-86 T&G – BHEL  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>134 (LE)</b>  -  -	Studies for Renovation, Modernization & Uprating (RMU) & Life Extension (LE) work of 4x33.5 MW Hydro Generating Machines of Anandpur Sahib Hydel Project -Preparation of DPR including measurement of input energy parameters (head, discharge etc), Scope of work, Technical Specifications & Tender Document.	T.E No. 286/ASHP/ DPR dt. 30.05.2022 was dropped as per decision of competent authority due to lack of eligible firms on dated 09.02.2023.  Part-I and II of Fresh TE no. 301 dt. 17.05.2023 opened on 14.09.2023. Techno-commercial evaluation of following 3 no. bids is under process: i) M/s Sharp Hydro Engineering Pvt. Ltd., Faridabad ii) M/s WAPCOS Ltd., New Delhi iii)M/s MECON Limited, Ranchi  Price bids have been opened on 09.01.2024.  PO/WO no. 118 dt. 07.06.2024 amounting to Rs. 49.05 lacs has been placed on M/s Sharp Hydro Engineering Pvt. Ltd., Faridabad. Various tests carried out by the firm at site. The reports will be submitted by firm shortly.
<b>5.</b>	<b>Mukerian HEP,</b> 3x15 MW (St.-I), 3x15 MW (St.-II), 3x19.5 MW (St.-III) & 3x19.5 MW (St.-IV) PSPCL 1983 (St.-I), 1988-89 (St.-II), 1989 (St.-III) & (St.-IV) T&G - BHEL  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>207 (LE)</b>  -  -	Preparation of feasibility studies for uprating, study of available input energy, head & discharge, preparation of DPR as per latest CEA guidelines, preparation of complete Scope of Work & Technical Specification, Bid/Tender stage Document	Administrative approval to carry out RLA & RMU study has been accorded by WTDs. Following 3 no. tenders were received and opened on 06.12.2022 against TE no. 296 dated 28.10.2022:  i) M/s Tata Consulting Engineers Limited., Mumbai ii) M/s Mecon Ltd. Ranchi. iii) M/s WAPCOS Ltd., New Delhi.  Work order no. 121 dt. 26.05.2023 amounting to Rs. 2.124 Cr. has been placed on M/s WAPCOS Ltd., New Delhi. Various tests are being carried out by the firm at site.
<b>6.</b>	<b>Shanan HEP,</b> 4x15 MW+1x50 MW	<b>110 (LE)</b>  -	To conduct RLA studies, detailed feasibilities studies and preparation of Detailed Project	Administrative approval to carry out RLA & RMU study has been accorded by WTDs. Two number

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW) / Estimated Cost/ Expenditure	Scope of work	Present Status
	PSPCL 1932(U1 to U4) T - GanzMavag, Hungary G – BTH, UK 1982 (U5-extn) T&G - BHEL  <b>RM&amp;LE</b>  <b>2026-27</b>	-	Report along with specifications for :- a) up-rating of 4x15 MW & 1x50 MW machines, b) rehabilitation & uprating of House Generator Set of 648 KVA , c) Setting up a mini/ small hydel power plant at existing head works at Barot, PSPCL, Joginder Nagar (H.P.).	of tenders were received and opened on 09.11.2022 against TE no. 287 dated 30.05.2022: i. M/s Sharp Hydro Engineering Pvt. Ltd. ii. M/s WAPCOS Ltd., New Delhi.  TE no. 287 dt. 30.05.2022 dropped due to unsuitability of bids. Part-I and II of Fresh TE no. 305 dt. 04.08.2023 opened on 23.02.2024. Techno-commercial evaluation of following 2 no. bids is completed: i) M/s WAPCOS Ltd., New Delhi ii) M/s MECON Limited, Ranchi  WO no.129 dt. 30.10.2024 amounting to Rs. 4.65 Cr. has been placed on M/s MECON Limited, Ranchi. Various tests are being carried out by the firm at site.
7.	<b>UBDC St.I &amp; St II,</b> 3x15 MW (St.-I) & 3x15.45 MW (St.-II) PSPCL 1971-73 (St.-I) & 1989-92 (St.-II) St. I T&G-AEI, UK St.-II T&G-BHEL  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>91.35 (LE)</b>  - -	RLA and RMU Study of UBDC Stage-I Power Houses and preparation of DPR, Technical Specs and commercial Specs.	Administrative approval to carry out RLA & RMU study has been accorded by WTDs.  2 no. tenders having TE 288 dt. 30.06.2022 and TE 297 dt. 1.12.2022 dropped on due to high prices offered by the L-1 firm.  Price Bids of 3 no. bids against Fresh TE no. 300 dt. 16.05.2023 opened on 03.10.2023 and Reverse Auction conducted on same day. M/s Sharp Hydro Engineering Pvt. Ltd., Faridabad is L-1. Work order no. 124 dt. 6.11.2023 amounting to Rs. 52.24 Lac. has been placed on M/s Sharp Hydro Engineering Pvt. Ltd., Faridabad. Various tests are being carried out by the firm at site. Firm has submitted draft DPR. On this draft certain observations have been raised to which reply is awaited.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**NORTHERN REGION**

**UTTARAKHAND**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit (MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES COMPLETED</b>				
<b>8.</b>	<b>Tiloth (Maneri Bhali-I),</b> 3x30 MW UJVNL 1984 T&G – BHEL  <b>RM&amp;LE</b>  <b>2022-23</b>	<b>90(LE)</b>  384.66  206.17	-Refurbishment of turbine, three nos. new runners& one spare runner, new sets of guide vanes. Repairing of various gates and gantry cranes. -Refurbishment of generators with new class F insulated stator & rotor winding. New SEE, Replacement of ABCBs by SF6 breakers, 11 kV Switchgear. Installation of numerical type protection system.  -Civil works of barrage, power channel, power station & Tail race channel.	Agreement for Rs.139.9 Cr. signed with M/s. Andritz Hydro Pvt. Ltd. (AHPL) on 14.12.2016.  <b>Works Completed</b>  <b>Unit 1</b> • Commissioning date : 17.04.2020  <b>Unit 3</b> • Machine no. 3(RMU 2 <sup>nd</sup> Unit) taken over by UJVNL Ltd. for commercial operation on 06.07.2021. Machine is capable of running continuously at 34.1 MW.  <b>Unit 2</b> • Machine no. 2 taken over by UJVNL Ltd. for commercial operation on 08.09.2022.
<b>9.</b>	<b>Dhalipur,</b> 3x17 MW UJVNL 1965-70 T - Litostroj, Yugo. G - Rade Konkar, Yugo  <b>RM&amp;LE</b>  <b>2023-24</b>	<b>51 (LE)</b>  152.65  123.03	-Replacement of turbine, new governors, new sets of guide vanes. Repairing of various gates and gantry cranes. -Refurbishment of generators with new stator core and new class F insulated stator & rotor winding. New SEE, Replacement of 11 kV Switchgear. Installation of numerical type protection system. -Civil works of barrage, power channel, power station & Tail race channel.	Order placed on M/s. Gogoal Energo Pvt. Limited (GEPL), New Delhi for Rs. 78.25 Crs. on 28.12.2016.  • After RMU Unit-A commissioned on 26.10.2022. • After RMU Unit-B commissioned on 07.06.2021. • After RMU Unit-C commissioned on 07.10.2023.



## B - SCHEMES ONGOING - Under Implementation

10.	<b>Dhakrani,</b> 3x11.25MW UJVNL 1965-70 T - Litostroj, Yugoslavia. G - Rade Konkar, Yugoslavia  <b>RM&amp;LE</b>  <b>2026-27</b>	33.75 (LE)  137.31  70.26	-Replacement of turbine, new governors, new sets of guide vanes. Repairing of various gates and gantry cranes. -Refurbishment of generators with new class F insulated stator & rotor windings. New SEE, 11 kV Switchgear. Installation of numerical type protection system. -Civil works of barrage, power channel, power station & Tail race channel	<ul style="list-style-type: none"> <li>Decision was taken to cancel KfW loan. Approval accorded for inviting fresh bids on National Competitive Bidding (NCB) route through domestic funding.</li> <li>DPR was revised based on present price level and Specifications were reframed. Revised DPR was approved by Board on 30.09.2015.</li> <li>UERC accorded approval on 27.06.2017.</li> <li>Financial approval accorded by CPC on 16.11.2017. BoD directed to put up the proposal again with modifications. Revised e-tender uploaded on e-portal on 16.09.2019.</li> <li>LOI has been issued to M/s Flovel on 25.06.2021 and Agreement inked on 05.07.2021.</li> <li>Unit#A handed over to M/s Flovel for reverse engineering on 02.02.2022.</li> <li>LOI for additional works for restoration work of Unit A was placed to M/s Flovel on 19.04.2022. Restoration works of Unit A has been completed on 09.08.2022</li> <li>Model Test is completed.</li> <li>Unit-A RMU started on 16.02.2024.</li> <li>RMU works of Unit-A is completed on 01.03.2025 and CoD completed on 07.03.2025.</li> <li>Supplies of Unit B &amp; C are under progress.</li> <li>Unit B handed over on 16.03.2025 for RMU works &amp; dismantling works under progress.</li> <li>RMU of unit-B is expected to be completed by 15.10.2025</li> <li>Physical Progress-60%</li> </ul>
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**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**NORTHERN REGION**

**UTTAR PRADESH**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES COMPLETED</b>				
<b>11.</b>	<b>Rihand, 6x50 MW UPJVNL 1962 (U-1to5) 1966 (U-6) T&amp;G - EE, UK</b>  <b>RM&amp;LE</b>  <b>2022-23</b>	<b>300 (LE)</b>  132.20 (Revised)  129.67	<ul style="list-style-type: none"> <li>- Replacement of Stator Core, and Coils insulation with Class F.</li> <li>- Replacement of insulation of field coils with Class F</li> <li>- Replacement of Governors</li> <li>- Replacement of Excitation Equipment, 60 MVA generator transformers by 67.5 MVA Transformers, switchyard equipments, Bus bars and under water parts</li> <li>- New Air Cooler and Ventilation system.</li> </ul>	<p>Works of all six units completed by BHEL (Units Commissioned on: U-1: 16.09.2016, U-2: 14.02.2018, U-3: 15.06.2015, U-4: 04.08.2014, U-5: 23.04.2011 and U-6: 31.05.2017).</p> <p>All works completed except some overhauling works of intake gates along with alignment of T-Guide and their hoisting for Unit#1, Unit#5 &amp; Unit#6 and SCADA under common works.</p> <p>Scheme is declared completed in 2022-23.</p>
<b>B - SCHEMES ONGOING - Under Implementation</b>				
<b>12.</b>	<b>Obra, 3x33 MW UPJVNL 1970 (U-1&amp;2), 1971 (U-3) T&amp;G - BHEL</b>  <b>RM&amp;LE</b>  <b>2025-26</b>	<b>99 (LE)</b>  58.80  48.25	<ul style="list-style-type: none"> <li>- Replacement of Stator coil, core &amp; rotor pole etc. (Unit#1, 2&amp; 3).</li> <li>- Replacement of rotor spider arm (Unit# 1&amp;3).</li> <li>- Replacement of digital governor (Unit#1, 2&amp; 3).</li> <li>- Supply of Gov. oil pump (Unit#1, 2&amp; 3).</li> <li>- Supply &amp; installation of Static Excitation System (Unit#1, 2&amp; 3).</li> <li>- Supply of Gen. Air coolers (Unit#1).</li> <li>- Rehabilitation of Intake gate of Units</li> <li>- Rehabilitation of stop logs, draft tube gates.</li> <li>- Refurbishment of draft tube gate crane.</li> <li>- New earthing of Switchyard</li> <li>- Station battery.</li> <li>- Replacement of 132KV Breakers.</li> <li>- Overhauling of 132KV Isolator (32 Set).</li> <li>- Supply of replacement of 132KV CT&amp;PT.</li> <li>- Replacement of numeric relay panels of Units &amp; Feeders.</li> <li>- Replacement of station battery</li> <li>- Installation of Radio Remote Control of both EOI cranes.</li> </ul>	<p><b><u>UNIT No. 1</u></b> <b>All work Completed. Unit Commissioned on 28.08.2024.</b></p> <p><b><u>UNIT No. 2</u></b> <b>All work executed except the following:</b> Capital overhauling along with replacement of vapour seal, spring mattress support of thrust bearing, brake-jack system, carbon segment gland; inception of HS lube oil system, backwash type cooling water strainer, centralized self-lubricating system, refurbishment of runner, runner chamber, GV &amp; Stay vanes, liner of pivot ring etc. The completion of R&amp;M work and commissioning of machine is scheduled by end of June 2025.</p> <p><b><u>UNIT No. 3</u></b>  All works completed. Unit commissioned on 29.09.2022.</p> <p><b>COMMON WORKS:</b> 1. Provision of station supply from Obra HEP 132 KV Bus- Under Progress</p>

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
			<ul style="list-style-type: none"> <li>- Smoke Fire detection system.</li> <li>- Supply of dewatering pumps, air compressor.</li> <li>- Supply &amp; replacement of Elevator (1 No.).</li> <li>- Supply of 1 No. Electrostatic Liquid Cleaner (ELC) &amp; 1 No. Low Vacuum Dehydration (LVDH) Machine.</li> <li>- SCADA</li> <li>- Other works covered in various packages approved by ETF.</li> </ul>	2. SCADA Procurement of remaining items is in progress.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**NORTHERN REGION**

**RAJASTHAN**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under Tendering</b>				
<b>13.</b>	<b>Rana Pratap Sagar,</b> 4x43 MW RRVUNL 1970 T- Johnson & Co. G- General Electric, Canada  <b>RMU&amp;LE</b>  <b>2026-27</b>	<b>172 (LE)</b> + <b>6 (U)</b>  573.76  -	RLA study of Unit No. 1, 2, 3& 4. Scope of works under finalization.	<ol style="list-style-type: none"> <li>1. Detailed Project Report of RMU Work for Generators of RPSPS has submitted by M/s SHEPL-BHEC (Joint Venture), Faridabad.</li> <li>2. Final Detailed Project Report for RLA study of Turbine and associated equipment &amp; complete Civil Structure of RPSPS has been submitted by M/s MECON Ltd., Ranchi and the same has been submitted to MPPGCL for approval.</li> <li>3. Final DPR of RMU has been approved. Final Tender Documents also submitted by M/s Mecon Ltd. Ranchi.</li> <li>4. Unit #2 of RPS has been uprated to 44.5 MW with new generator and its auxiliaries, new digital governor and SCADA system.</li> </ol>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**WESTERN REGION**

**MADHYA PRADESH**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under RLA Studies</b>				
<b>14.</b>	<b>Bansagar Tons-I, 3x105 MW MPPGCL 1991-92 T&amp;G – BHEL  RM&amp;LE  2026-27</b>	<b>315 (LE)</b>  -  -	RLA study of Unit No. 2	<ul style="list-style-type: none"> <li>• After COH, Unit #3 was synchronized on 13.07.2022. The unit tripped on 07.08.2022. Restoration work of generator was completed by BHEL in Dec' 23, however due to high vibration, machine isn't being run continuously. Unit handed over to BHEL for attending the problem in first week of Jan'25.</li> <li>• COH of Unit #1 completed in 31.07.2023.</li> <li>• Tender for RLA study of Unit 2 is under finalization.</li> </ul>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**WESTERN REGION**

**MAHARASHTRA**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW )/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under RLA Studies</b>				
<b>15.</b>	<b>Vaitarna, (1x60) MSPGCL, 1976  RM&amp;LE  2026-27</b>	<b>60 (LE)</b>  -  -	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	WRD, Maharashtra has issued a GR on 21.08.2024 for Renovation, Modernization, Uprating & Life Extension (RMU&LE) of old hydro-electric plants. MSPGCL will undertake RMU&LE works for Hydropower Projects after 35 years of normative life, with prior WRD consent. Unlike routine maintenance, RMU&LE involves major CAPEX activities such as RLA studies, life extension, and capacity enhancement. The policy framework for these major works is being developed by Mahagenco. Once finalized, the Renovation and Modernization (R&M) activities for hydro-electric projects will be started.
<b>16.</b>	<b>Koyna Dam foot (Right Bank), (2x20) MSPGCL, 1980-81  RM&amp;LE  2026-27</b>	<b>40 (LE)</b>  -  -	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	
<b>17.</b>	<b>Koyna St-3, (4x80) MSPGCL, 1975-78  RM&amp;LE  2026-27</b>	<b>320 (LE)</b>  -  -	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**SOUTHERN REGION**

**ANDHRA PRADESH**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW )/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING - Under Implementation</b>				
<b>18.</b>	<b>Upper Sileru Power House,</b> 4x60 MW APGENCO 1967-1968 (St.-I) & 1994-1995 (St.-II) St.-I: T- Excherwyss, Charmilies Switzerland G - Oerlikon, Switzerland St.-II: T - BHEL G – BHEL  <b>R&amp;M 2026-27</b>	<b>- 10.53  5.35</b>	a) Supply, Erection, Testing & Commissioning of Micro Processor based Dual Channel Static Excitation System (Digital AVR's).  Supply, Erection, Testing & Commissioning of SCADA system including field instruments for Unit No. 1 to 4, common auxiliary equipment and switchyard .	Purchase order was placed on M/s. Andritz Hydro Pvt. Ltd. and work completed in 2022. Old Governors were replaced with the New Microprocessor based RGMO Governor during the year 2018, 2019, 2021 & 2020 respectively. (Expenditure: 228.25 Lakhs excl. taxes) Old AVR excitation system is replaced with new DVR for 4 Units during the year 2022 with project cost Rs. 325 Lakh & Expenditure of 225.599 Lakh.  Tender for SCADA floated and cancelled due to poor response. Re tendering is to be carried out with estimated cost of Rs. 5 crore.
<b>19.</b>	<b>Nagarjuna Sagar Right Canal Power House,</b> 3x30 MW APGENCO 1983 (Unit – 1 & 2) 1990 (Unit – 3) T- M/s. BOVING, U.K G-M/s. GEC Large Machines Ltd., U.K  <b>R&amp;M 2025-26</b>	<b>- 10.1  4.54</b>	a) DVR: Replacement AVR's with Modern Digital Voltage Regulator based Static Excitation System.  b) SCADA: Replacement of relay logic based automatic system with SCADA system along with GPS for all the 3 units and Power House.  c) Penstock Intake Gate: Overhauling of Penstock intake gates.  d) Replacement of Governors for two units.	Purchase order was placed on M/s. ABB India Ltd. and work completed in 2022 with total cost of 2 Crore.  Tender for SCADA floated with estimated cost of Rs. 1.05 crores and cancelled as the rates quoted are exorbitantly high Retendering is to be carried out with fresh estimates.  Replacement of Penstock Intake gate of Unit No. 2 and Unit No. 1 is completed. Tender for Penstock Intake gate of Unit No. 3 is in progress. Total estimate cost for all three units is 4.70 Crores.  Tenders will be floated for the new Governors after the completion of SCADA works with an estimated cost of 2.4 crores for two units.
<b>20.</b>	<b>Tungabhadra Dam,</b>	<b>36 (LE)</b>	Partial renovation works involves Capital Overhaul works	The investment for RMU works out to be 330 Cr. excluding IDC (as per

	(4x9 MW) APGENCO 1957-64 Unit-1&2 T-Escherways, Zurich G- Browin Bovert, Switzerland Unit-3&4 T- Hitachi, Japan G- Toshiba,Japan  <b>R&amp;M</b>  <b>2026-27</b>	6.6525  2.517	on all units for replacement of equipment/components worn out over a period of 60 years along with replacement of equipment like governors & Excitation systems, which are affecting the station performance.	budgetary offer of M/s Andritz Hydro) which doesn't yield required benefit economically. In view of above limitations, Tungabhadra board has given consent to carry out partial renovation works only. The proposed R&M works are contemplated to carry out with O&M budget of Rs. 4-5 Crores per year in a phased manner.  At present capital overhauling works on Unit # 3 and #4 at Tungabhadra HEP is completed and Order for capital overhauling works of unit 1 is awarded to M/s Hi-Power Associates and work is under progress. Unit-2 capital overhaul works will be taken up after completion of the works on Unit-1. The replacement of Governor, Excitation equipment for Stage-1 (Unit 1&2) of Dam PH with latest art of new technology, is programmed during FY 2025-26 and tenders are to be floated.
21.	<b>Hampi Canal PH,</b> (4x9 MW) APGENCO 1958-64 Unit-1&2 T-Charmilles, Switzerland G- Browin Bovert,Switzrla nd Unit-3&4 T- Hitachi, Japan G- Toshiba,Japan  <b>R&amp;M</b>  <b>2026-27</b>	<b>36 (LE)</b>  -  -	Partial renovation works involves Capital Overhaul works on all units for replacement of equipment/components worn out over a period of 60 years along with replacement of equipment like governors & Excitation systems, which are affecting the station performance.	After completion of partial renovation works on the units of TB Dam Power House, necessary renovation works will be taken up on the units/ MIVs of Hampi Power House based on the need basis in a phased manner.



**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2022-27**

**SOUTHERN REGION**

**TELANGANA**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit (MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A – SCHEMES COMPLETED</b>				
<b>22.</b>	<b>Nagarjuna Sagar Phase II works,</b> 1x110 + 7x100.8 MW, TSGENCO 1978-85 <u>Unit-1:</u> T&G - BHEL <u>Units 2 to 8:</u> PT - Hitachi, Japan MG - MELCO, Japan  <b>R&amp;M</b>  <b>2022-23</b>	-  21.67  14.34	1. Replacing existing AVR's with latest DVRs along with thyristor modules for 7 units at NSPH.  2. Replacement of all L.T. Breakers of all units and SABs of NSPH.  3. Retrofitting of Numerical Relays of Generator Protection Schemes of Units 2 to 8.  4. Overhauling of EOT Cranes and Gantry cranes at NSPH.  5. Procurement of control cables of different sizes for units 1 to 8, common auxiliaries, Switchyard equipments and switchyard marshalling boxes and laying of Power Cables and Control Cables for Penstock Inlet Gates from main control room for NSPH.  6. Servicing and reconditioning/ procurement of new Isolators required for motoring mode operation for 89G, 89M, 189S1 and 189S2 for units-1 to 8.  7. Procurement of 245 KV SF6 Circuit Breakers.  8. Overhaul of stop log gates, penstock gates and seals replacement for draft tube gates for all units of NSPH including trash rack at tail race.  9. Replacement of switchyard equipment that have completed 25 years of service of 220 KV CVTs (10 Nos.), 132 KV CVTs (17 Nos.), 220	Scheme is declared completed in 2022-23

			<p>KV PTs (5 Nos.), 132 KV PTs (8 Nos.), 220 KV LAs (13 Nos.) and 132 KV LAS (13 Nos.) for NSHES.</p> <p>10. Procurement of 220 KV CTs (18 Nos.) for units (silicon rubber composite type).</p>	
23.	<p><b>Nagarjuna Sagar Left Canal Power House (NSLCPH),</b> 2x30.6 MW TSGENCO 1992 T-Boving, UK G-General Electric, UK</p> <p><b>R&amp;M</b></p> <p><b>2022-23</b></p>	<p>-</p> <p>30.99</p> <p>1.5</p>	<ol style="list-style-type: none"> <li>1. Replacing existing AVR with latest DVRs along with thyristor modules for 2 units.</li> <li>2. Capital overhauls on generator and turbine and its auxiliaries including spares and consumables for all 2 units.</li> <li>3. Modification in design of runner for both units for operating at lower heads.</li> <li>4. Overhauling of EOT Cranes and gantry cranes.</li> <li>5. Procurement of 132KV SF6 Circuit Breakers for both units and its feeders.</li> <li>6. Implementation of SCADA.</li> <li>7. Providing of latest version of EHG System for 1 Unit.</li> <li>8. Cooling water line erections.</li> </ol>	<p><b>Scheme is declared completed in 2022-23</b></p> <ol style="list-style-type: none"> <li>1. It is proposed to postpone the work of replacing existing AVR with latest DVRs along with thyristor modules for Unit-2 in to the R&amp;M works.</li> <li>2. Unit-1 overhauling completed. Unit found normal and taken into service on 20.11.17. The capital overhauling works of Unit-2 has been deferred as the unit running hours are less and there is no major problem in Turbine &amp; Generator.</li> <li>3. Not feasible, hence the proposal has been dropped.</li> <li>4. Completed.</li> <li>5. Completed (Siemens)</li> <li>6. Completed (ABB)</li> <li>7. Completed (BHEL)</li> <li>8. Completed.</li> </ol>
<b>B- SCHEMES ONGOING - Under Implementation</b>				
24.	<p><b>Pochampad HPS Stage -1,</b> 3x9 MW TSGENCO 1987-88 T- BHEL G-BHEL</p> <p><b>R&amp;M</b></p> <p><b>2026-27</b></p>	<p>-</p> <p>17.09</p> <p>-</p>	<ol style="list-style-type: none"> <li>1. Supply, erection, testing and commissioning of 3 sets of Digital Automatic Voltage Regulator (DAVR) based Static excitation equipment (SEE) for Generating Units # 1, 2 &amp; 3 and Dismantling of Existing AVR of HPS.</li> <li>2. Supply, erection, testing and commissioning of New Microprocessor based Digital Governor Controller (EHGC) and dismantling of existing old EHGC panels</li> <li>3. Supply, erection, testing and commissioning of advanced numerical protection relay</li> </ol>	<ul style="list-style-type: none"> <li>• Wrt (1): Preparation of Tender specifications is in progress at HQ.</li> <li>• Wrt (2): Tender invited &amp; technical bid is under evaluation</li> <li>• Wrt (3): PO Placed to M/s. Scope T&amp;M Pvt. Ltd., Mumbai. Erection, testing and commissioning of protection panels for</li> </ul>

			<p>panels with Time synchronizing feature along with DR Evaluation Unit with required hardware and software along with recommended spares for protection of generator, generator transformer and UAT/Excitation transformer for Units # 1,2 and 3</p> <p>4. Procurement of Latest auto Sequencer System for unit 1, 2 and 3</p> <p>5. Procurement of Field Instrument for Unit-1,2 &amp;3</p>	<p>Unit-I, II &amp; III completed on 05.02.2024.</p> <p>• Wrt (4) : Procurement is in process Tenders called for on e-procurement platform. PQB opened on 31.12.2024. Technical evaluation of bids is under process.</p> <p>• Wrt (5) : Purchase order placed has been placed and Material not yet received .</p>
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**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**SOUTHERN REGION**

**TAMILNADU**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category Completion Target</b>	<b>Expected Benefit (MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under Implementation</b>				
<b>25.</b>	<b>Moyar,</b> 3x12 MW TNPGL 1952-53 T – Boving,UK G -Metropolitan Vickers Electric Co. limited,UK  <b>RMU&amp;LE</b>  <b>2025-26</b>	<b>36 (LE)+</b> <b>6 (U)</b>  <b>121.127</b>  79.49	Planning, design, model testing, engineering, manufacture, procurement/ supply of new components and spares at site, painting including penstock (internal and external), insurance, dismantling, capital repairs, erection, testing and commissioning of 3 nos. hydro generating units including P.G. Test in any one of the units. Associated technological, civil, mechanical, electrical works as required with new TG set from 3x12MW to 3x14 MW and Plant, Equipment & facilities.	<p>The work for conducting RLA study and uprating study on Turbine, Generator and other auxiliaries for Rs. 82.8 lakhs was awarded to M/s MECON, Ranchi on 17.06.2013. MECON submitted final DPR for works on 07.02.15. Administrative approval accorded on 04.06.2016.</p> <p>Techno-commercial Bid opened on 15.02.2019. TNPGL Board in its 91<sup>st</sup> Meeting held on 22.11.2019 for Placing Orders on L1 tenderer M/s. Andritz Hydro Private Limited, New Delhi and Letter of Intent (LOI) has been issued on 28.11.2019. Contract agreement has been executed on 14.01.2020. Unit-2 handed over to M/s. AHPL for Reverse Engineering works on 27.01.2020 &amp; completed on 02.12.2020.</p> <p>Drawings submitted by M/s AHPL and approved by TNPGL. Dispatch clearance issued for items inspected and test certificates approved. All materials for Unit-1 &amp; common items have been supplied by M/s AHPL. Unit-1 has been handed over for RMU works on 28.03.2022 and the work is completed on 11.12.2024 and uprated from 12MW to 14MW. Unit-2 and Unit-3 handed over for RMU works on 12.12.2024.</p> <p>Completion Schedule:  Unit #2 – 11.09.2025  Unit-3 – 11.02.2026</p>

S. No.	Scheme/ Category Completion Target	Expected Benefit (MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
26.	<b>Kodayar PH-I,</b> 1x60 MW TNPGL 1970 T-Vevey Engg. works, Switzerland G-Alstom, France  <b>RMU&amp;LE</b>  <b>2025-26</b>	<b>60 (E)+</b> <b>10 (U)</b>  80.96  24.93	Planning, design, CFD/model testing, engineering with RE, manufacture, procurement/ supply of new components and spares at site, painting-penstock, insurance dismantling, capital repairs, erection, testing and commissioning of P.G. Test. Associated technological, civil, mechanical, electrical works as required with new TG set from 1x60MW to 1x70MW and Plant, Equipment & facilities.	Contract was awarded to M/s MECON Ltd., Ranchi for Rs. 91 lakhs on 22.09.2014 for conducting RLA study and uprating study on Turbine, Generator and other auxiliaries. They have completed the study and furnished the final DPR. Administrative approval accorded on 03.02.2017. Techno-commercial Price-Bid opened on 05.09.2019. The BLTC in its 314 <sup>th</sup> Meeting held on 18.11.2019 approved and recommended the proposal for placing works contract order on the L1 tenderer i.e. BHEL, New Delhi to TNPGL Board. Letter of Intent issued to M/s BHEL on 09.03.2020. Reverse Engineering Works completed on 10.08.2021. Drawings being submitted by BHEL and approved by TNPGL. Materials are being dispatched by BHEL at site. EOT crane refurbishment work completed. Unit handed over to BHEL for RMU work on 07.08.2024. EOT crane load test completed on 29.08.2024. Dismantling works and Civil works under progress.

**B - SCHEMES ONGOING – Under DPR Preparation/ Finalisation/ Approval**

27.	<b>Kodayar PH-II,</b> 1x40 MW TNPGL 1971 T-Yugoslavia G- Yugoslavia.  <b>RMU&amp;LE</b>  <b>2026-27</b>	<b>40 (LE)+</b> <b>6 (U)</b>  -  Nil	Replacement of stator core & winding, rotor winding, poles, Excitation system, Governing system, Runner, guide vanes, Cooling water & De-watering systems, Generator Transformers, Generator protection, LT switch gear, lubrication system, 11 KV LAVT, Neutral Grounding Transformer, Annunciation system, power and control cable, UAT, fire-fighting system for generator, yard, cable gallery yard, Refurbishment of turbine inlet valves and Butterfly valves, Air admission system, brake & jack and bearings.	M/s MECON submitted RLA study report in 2006 and proposed to uprate from 40 to 46 MW. TNPGL decided to take up RMU works of Kodayar PH-II on completion of RMU works of Kodayar PH-I as the water of PH-I is used for PH-II.
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**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**SOUTHERN REGION**

**KARNATAKA**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES COMPLETED</b>				
<b>28.</b>	<b>Munirabad Dam Power House,</b> 2x9 MW (U-1&2), 10 MW ,(U-3), KPCL 1962(U-1&2) 1965 (U-3) T-Hitachi Ltd, Japan G- U-1&2: Hitachi U-3: Voest Alpine, Austria <b>R&amp;M</b> <b>2022-23</b>	<b>28 (LE)</b>  4.60  2.20	Generator protection and DCS based SCADA system for Unit 1, 2&3.    2 nos. 11kV Tee-off cubical of Units 1&2 and 11kV Gescom UAT switchgear cubicle.	PO placed on M/s ABB India Ltd., on 26.03.2018 for Rs. 4.87 crore. Contract agreement was signed on 04.05.2018. Work completed.  Supply, erection and commissioning of panel completed by M/s Amar Raja power systems Ltd., Tirupati at a total cost of Rs. 71,19,395.00.
<b>29.</b>	<b>Linganamakki Dam Power House (LDPH),</b> (2x27.5MW) KPCL 1979-1980 T – Electrosilla, USSR G - Electrosilla, Energomach-USSR  <b>R&amp;M</b> <b>2022-23</b>	- 1.34  1.34	Relay and control panels & DCS based SCADA system.	PO placed on M/s. ABB for modification of released panels of SGS to suit LPH at a total cost of Rs. 29.02 Lakhs. Commissioning of panels completed for U#2 for both lines. LOA is issued to M/s ABB limited at the cost of Rs. 2,45,97,408/- on 23.11.2017. Erection, Testing & commissioning of panels for 1 no. Bus coupler, lines (4 no.) and U# 1&2 is completed.
<b>30.</b>	<b>Gerusoppa Dam Power House (Sharavathy Tail Race),</b> (4x60MW) KPCL 2001-2002 T&G - BHEL  <b>R&amp;M</b> <b>2023-24</b>	- 59.66  2.026	Midlife replacement of switchyard equipment's planned    R&M works of Turbine and generator	Ordered issued to M/s APPSIL on 21.05.2021. 4 sets 245 kV CB's & 23 nos. of 245 kV CTs received at site. Erection of switchyard equipment completed.  Based on AOH reports and in house studies and the condition of the equipments, R&M works of turbine and Generator will be taken up at later stage.

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>B - SCHEMES ONGOING - Under Implementation</b>				
31.	<b>Nagjhari, U-1 to 3,</b> 3x150 MW (uprated from 135 MW) KPCL 1979 (U-1), 1980 (U-2), 1981 (U-3) T&G - BHEL  <b>RM&amp;LE</b>  <b>2025-26</b>	450 (LE)  266  80.5	<p>R&amp;M of Turbine of Unit-1, 2 &amp; 3. Supply of major components, spares of turbine like Top cover, Pivot ring, labyrinth, MIV seals, guide vanes, aeration valves, runner, guide apparatus, GV servomotor regulating ring, rotary valve, shaft coupling bolt, spare guide vanes, runner &amp; shaft etc.</p> <p>Replacement of Generator gauge panel, Brake &amp; Jack assembly, oil coolers, Thrust collar, unit auxiliary panels, Generator coupling bolts, HS lubrication system, LEB ring.</p> <p>Replacement of 6 nos. of Unit Auxiliary Panels (UAPs) and retrofitting of 4 nos. breakers, replacement of electro-mechanical relays by numerical relays in 5 incomers, bus coupler &amp; 4 nos. outgoing feeders in common auxiliary panel.</p> <p>SCADA System which includes erection &amp; commissioning of Auto sequencer, installation of Dynamic disturbance recorder, online vibration monitoring system planned in phased manner, fire protection system, Commissioning of Thermo signaling devices in addition to RTD's, replacement of hydraulically operated valves by electrically operated Solenoids.</p>	<p>Order placed on M/s BHEL on 24.02.2018 for Rs. 99.25 Crores (Excluding taxes, freight and insurance) for Turbine, MIV, Governor &amp; its accessories for Units 1, 2&amp;3. Revised DPR with additional scope, submitted by KERC for approval.</p> <p>Additional order dated 14.12.2022 for implementation of split shaft design Generator rotor placed with BHEL. Contract agreement executed on 29.12.2022.</p> <p>Design and approval of drawing of major components completed.</p> <p>Supply of items is in progress. Ordered materials are being received at site. Unit#2 handed over for R&amp;M works from 15.06.2024 and work are under progress. Expected date of completion of Unit-2 is July 2025</p> <p>Order placed on M/s. Balaji Electro Controls Pvt. Ltd. on 19.05.2018 at a total cost of Rs.3,32,14,777.00/-.</p> <p>Erection and commissioning works of UAPs for all Units completed.</p> <p>e-NIT published on GoK e-portal on 05.09.2024.</p> <p>Tender was opened on 16.01.2025, no bids received &amp; the proposal is under review.</p>
32.	<b>Shivasamudram Hydro Power Station,</b> 6x3 MW 4x6 MW KPCL 1920-38 T - Boving, UK (U1 to U6) Escher Wyess,	42 (LE)  169.18  3.27	<p>Model test, design engineering, manufacturing, supply of Turbine &amp; its auxiliaries, Excitation system, Governing system, and dismantling, erection, testing &amp; commissioning, improvements in water conducting system.</p>	<p>LOA dated 29.11.2018 issued to M/s Andritz Hydro for Model test, design engineering, manufacturing supply of Turbine &amp; its auxiliaries, Excitation system, Governing system, SCADA system, Controls &amp; protection System and</p>

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
	Switzerland (U7 to U10) G - GEC, USA  <b>RM&amp;LE</b>  <b>2025-26</b>			dismantling, erection testing & commissioning. Model test procedure for 6 MW turbine and CFD analysis procedure for 3 MW unit are approved. Final approval to model test and CFD reports issued on 19.01.2023. Drawings/ Documents submitted by the firm approved. Material transport winch trolley handed over to M/s AHPL on 05.10.2024 and U-7 & 9 handed over for erection and commissioning on 05.10.2024. Unit-7 spiral case alignment work is in progress and second stage concreting is planned. Unit-9 Non driving end bearing re-babbiting work is under progress.
33.	<b>Kadra Dam Power House,</b> (3x50MW) KPCL 1997-1999 T&G - BHEL  <b>R&amp;M</b>  <b>2025-26</b>	-  44.47  2.627	<ul style="list-style-type: none"> <li>• 220 kV Switchyard - Replacement of breakers, protective painting of switch yard structures.</li> <li>• Relays and control panels - replacement of numerical relays of control panels, GT panel, auto synchronous panel.</li> <li>• SCADA - New SCADA System is to be implemented.</li> </ul>	Order issued to M/s. APPSIL on 21.05.2021 and entered into agreement on 17.06.2021. Erection of switchyard equipment completed.  e-NIT published on GoK e-portal on 05.09.2024 Tender opened on 16.01.2025, no bids received & proposal is under review.
34.	<b>Kodasalli Dam Power House,</b> (3x40MW) KPCL 1998-1999 T&G - BHEL  <b>R&amp;M</b>  <b>2025-26</b>	-  50.60  2.654	<ul style="list-style-type: none"> <li>• Replacement of UAP, ACDB and CAP.</li> <li>• 220kV Switchyard - Replacement of breakers, protective painting of switch yard structures.</li> <li>• Relays and control panels - replacement of numerical relays of control panels, GT panel, auto synchronous panel.</li> <li>• SCADA - New SCADA System is to be implemented.</li> </ul>	LTAC Panels: UAP, ACDB and CAP: Work order dated 21.12.2020 was placed on M/s Lotus power gear. Erection & commissioning of 5 ACDBs, 3 UAPs & CAP completed. PLC programming and communication work completed. Order issued to M/s APPSIL on 21.05.2021. Erection of switchyard equipment completed.  e-NIT published on GoK e-portal on 05.09.2024. Tender opened on 16.01.2025, no bids received & proposal is under review.



S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
35.	<b>Sharavathy Generating Station,</b> (10x103.5MW) KPCL 1964-77 T- U:1-8 - Neyrpic, France, U:9-10- BHEL, G- U:1&2-Hitachi, Japan, U:3to8 –GE Co, USA, U:9&10- BHEL,  <b>R&amp;M &amp;LE</b>  <b>2025-26</b>	1035 (LE)  196.56  -	<b>Hydro-mechanical Works:</b> Overhauling of tunnel Stop log gates, Gates and gantry crane of surge shaft, R&M of BF valves, Civil structure (rails) for movement of gantry crane, cleaning and painting of internal and exterior surfaces of all penstocks, etc.  R&M and Automation of BF & By-pass valves at valve house and incorporation of remote operation by extending the SCADA/ DCS System from SGS  <b>Generator and associated components.</b> R&M of Static Excitation System (SEE).	Overhauling of U#1 to 3 & 5 BF Valves completed. Renovation of 20T capacity gantry and stop log gates completed. The work of replacement of rubber seals for gates was taken up.Painting work for penstocks completed  Job order placed on M/s Voith Hydro Power Ltd., Noida at cost of Rs. 9,99,70,000 on dtd. 15.03.2024. Review and approval of drawing is in progress.  e-NIT floated on 03.07.2023 replacement of all 10 Units SEE. Tender recalled on 09.11.2023 with modified PQR and Techno-commercial conditions, at an estimated cost of Rs. 13.21 Cr. Work order placed on M/s Andritz Hydro at a cost of 8.93 Cr. on 05.08.2024. Drawings approved. Manufacturing is in progress.

#### C - SCHEMES ONGOING - Under Tendering

36.	<b>Supa Dam Power House,</b> (2x50MW) KPCL 1985 T&G - BHEL  <b>R&amp;M</b>  <b>2025-26</b>	-  47.91  -	<ul style="list-style-type: none"> <li>• Replacement of UAP &amp;CAP</li> <li>• <b>SCADA</b> -All instrumentation and field devices of E&amp;M equipment, new annunciation system for units, auto &amp; manual synchronizer and temperature recorder at machine hall, etc.</li> </ul>	Order placed on M/s. Balaji Electro Controls Pvt. Ltd. on 19.05.2018 at a total cost of Rs. 15529505.00. Erection & commissioning of all UAP's and CAP's completed.  e-NIT published on GoK e-portal on 05.09.2024 Tender opened on 16.01.2025, no bids received & proposal is under review.
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S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>D - SCHEMES ONGOING - Under RLA Studies</b>				
37.	<b>Varahi Underground Power House</b> (4x 115MW) KPCL Unit 1&2: 1989-90 Unit 3&4: 2009 T&G Unit 1&2: BHEL Unit 3&4: Andritz Hydro 2026-27	230 (LE) (U 1&2)  -	RLA Studies of Generators Unit1&2.	Job order placed on M/s Diagnostic technologies (I) Pvt .Ltd. ,Mumbai at a total cost of Rs 9,67,600/- incl. of taxes & duties, on 05.03.2024.  <b>RLA studies of unit-2 is in progress.</b>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**SOUTHERN REGION**

**KERALA**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING - Under Implementation</b>				
<b>38.</b>	<b>Kuttiyadi</b> 3x25 MW KSEB 1972 T&G-Fuji, Japan  <b>RMU&amp;LE</b>  <b>2025-26</b>	<b>75 (LE)+ 7.5 (U)</b>  377.41  58.26	Each unit is proposed to be uprated from 25 MW to 27.5 MW. Inspection and rectification of Trash rack. Butterfly valve operation to be made electrically and mechanically with remote. New penstock, MIV replacement with PLC controls. PMG replacement with SSG. Pelton turbine runner's replacement. Replacing Generators, Static excitation with AVR. Replacing Cooling water system. Replacement of DG set. Integrated SCADA, New fire protection system, Store and AC system modification of switchyard. New 11 kV switch gear	<ul style="list-style-type: none"> <li>• Proposal for new penstock is kept in abeyance.</li> <li>• Work order for new Electro-Mechanical work is awarded to BHEL.</li> <li>• Model Test of Turbine completed and payment issued.</li> <li>• Work order issued for constructing new 11 kV control room building from CMSD/ Kakkayam</li> <li>• Dismantling work of <b>Unit#3</b> for RMU completed.</li> <li>• Erection work of Stator &amp; Rotor (Unit #3) is completed.</li> <li>• Turbine Shaft &amp; Nozzle Erection and Alignment completed.</li> <li>• Distributor pressure test at design pressure completed.</li> <li>• Arrangement of panels for Unit 3 such as PP Set MIV and Gov, UCB, HMC, Gauge panel, Temperature panel, Excitation panel, EHG panel, ET cubicle, UAT completed.</li> <li>• HS Oil Pump commissioned.</li> <li>• MIV erected, inlet piping work in progress (Total shutdown allowed from 29.09.2024 onwards).</li> <li>• Fixing of Runner pit Central Frame with rail work completed.</li> <li>• Deflector Servo: Cam &amp; shaft erection completed.</li> <li>• Erection of LT AC panels (UAB &amp; SSB), DC panels completed. Busduct, LAVT, NG Cubicle works are underway.</li> <li>• Cooling Water Pipeline (Main Header) replaced.</li> <li>• Trial run of unit 3 done on 21.02.2025 and at 253 RPM Rotor V-block failed.</li> </ul>

				<ul style="list-style-type: none"> <li>Rectification work done and spun up to 405 RPM on 04.03.2025, but tripped due to UGB vibration.</li> <li>Synchronization is expected in the second week of April 2025</li> <li><b>Other Works:</b></li> <li>Replaced all four feeder PTs (Other RMU works)</li> <li>Replaced all three old 28 MVA GTs with new 35 MVA GTs of TELK make.</li> <li>Construction of new 11 kV control room is in progress.</li> </ul>
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#### **B - SCHEMES ONGOING - Under DPR Preparation/ Finalisation/Approval**

<b>39.</b>	<b>Idukki 1<sup>st</sup> stage and 2<sup>nd</sup> Stage,</b> 6x130 MW KSEB  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>780 (LE)</b>  <b>3.887 (RLA study)</b> - <b>3.498</b>	RLA of Stage I and II machines incl. up rating studies of Stage II machines and preparation of DPR for the RMU of II stage units of Idukki under ground power station at Moolamattom.	Work order for RLA study including uprating study and preparation of DPR for RMU issued to M/s. MECON Limited, Ranchi on 01.09.2022.  RLA study started from 03.12.2022 and completed on 12.10.2023 for all units. RLA study report and Draft DPR submitted. Finalization of DPR under progress.
<b>40.</b>	<b>Idamalayar,</b> 2x37.5 MW KSEB 1987  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>75 (LE)</b>  0.88 (for RLA study)  0.75	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Work awarded to M/s. MECON Ltd., Ranchi on 03/04/2023.  M/s. MECON has started work of Unit#2 on 26.06.2023.  RLA study of both units carried out along with its annual maintenance and completed the study in November 2023. DPR based on RLA study report submitted by M/s MECON on 10.06.2024. Budgetary offer called for replacement of major components from M/s BHEL.

#### **C - SCHEMES ONGOING - Under RLA Studies**

<b>41.</b>	<b>Sabarigiri, (U1,2,3, 5 &amp; 6)</b> 4x55 + 1x 60 MW KSEB 1966  <b>RMU&amp;LE</b>  <b>2026-27</b>	<b>220 (LE) + 20(U)</b>  - -	Unit 1,2,3 & 5 is proposed to be uprated from 55 MW to 60 MW. Detailed scope of work will be arrived after finalization of specification based on RLA study report.  Replacement of Generator and Turbine Shaft of U#2.	Scope of RLA study finalized as per the technical audit conducted by CBIP, New Delhi. Detailed RLA to be conducted for deciding the RMU works. Offers requested from various firms, but not yet finalized.  Due to deteriorated condition of winding, rewinding work is to be taken up before RLA study to avoid outage. Tender for
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				<p>replacement of stator winding and stator core revarnishing &amp; restacking was floated. Due to single Bid, the decision was with the board for finalization. Board sanction obtained for the revival of stator and core and replacement of turbine generator shaft and rewinding of unit 2 and retender the work. Both the shaft replacement and rewinding work are planner together to reduce the outage duration.</p>
			<p>Refurbishment of Stator core of Unit#6.</p>	<p>Work order for Refurbishment of Stator core of U#6 issued to M/s Coral Rewinding India Pvt. Ltd, Erode, Tamil Nadu. Work completed and unit commissioned on 11.02.2023.</p>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**EASTERN REGION**

**ODISHA**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING –Under Implementation</b>				
42.	<b>Balimela,</b> 6x60 MW OHPCL 1973-77 T-LMZ, USSR G- Electrosila, USSR  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>360(LE)</b>  <b>382.91</b>  201.63	<b>Replacement of</b> i) The Turbine & Generator with new ones except the water conductor system. ii) The auxiliaries of the Units including the common auxiliaries. iii) Existing Governors with micro-processor based Digital Governor. iv) Exciter and AVR with Static Excitation System. v) New Thrust bearing pads self-lubricated PTFE Type. vi) C&I system. vii) Protection system by state of the art Numerical Relays. viii) Replacement, 11/220 kV Generator Transformer, Bus Duct system. ix) New Station Auxiliary Transformer. x) Control Power cable with FRLS type cable. xi) Architectural works including interior decoration of Power House. xii) Extension of 1No. 220kV bay in Switchyard.  Refurbishment of Intake gates, Draft Tube gates and civil works.	Contract Agreement signed with BHEL on 21.09.2016. BHEL took over the units on 18.12.2017. OHPC engaged WAPCOS Ltd. as consultant.  <b>Works Completed:</b> <b>Unit 1 &amp;2</b> - 220 kV Switchyard bay extension work completed on 15.06.22. Loading of Station Transformer completed on 15.06.2022. - Commercial operation of Unit 2 started from 29.12.2021. - Commercial operation of Unit 1 started from 15.04.2022. - Final Takeover of Unit 1& 2 completed on 12.09.2023  <b>Unit 3 &amp;4</b> - Handed over to BHEL for R&M work on 16.08.2022 & 10.08.2022 respectively. - Trial Mechanical Spinning of Unit 4 completed. - SCC test of Unit 4 completed. - Commercial operation of Unit-4 started from 06.02.2024. - For Unit-3, Test synchronization was done on 29.03.2024 and load off test was done on 30.03.2024. - Commercial operation of Unit-3 started from 10.04.2024.  <b>Unit 5&amp;6</b> - Unit 5 is scheduled to be synchronized by 31.07.2026. - Unit 6 is scheduled to be synchronized by 31.07.2026. - Supply of Major items of Generator, turbine and control system has started. - Unit No. 5&6 were handed over to BHEL on 22.01.2025 for taking up the R&M Works.

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
				- Dismantling of TG Set and associated auxiliaries of Unit 5&6 are under progress.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**EASTERN REGION**

**WEST BENGAL**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit (MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES Ongoing - Under Tendering</b>				
<b>43.</b>	<b>Maithon U-1&amp;3, 2x20 MW + 1x23.2 MW DVC 1957-58 T - Neyrpic, France G - Siemens, W.Germany</b>  <b>RM&amp;LE</b>  <b>2025-26</b>	<b>40 (LE)</b>  109.29  7.76	<ul style="list-style-type: none"> <li>• Replacement of Turbine &amp; Accessories, Generator &amp; Associated equipment, Protection &amp; Control System, Generator Transformer, Circuit Breaker, Isolator, CTs, PTs, Surge protection equipment, HT bus duct, Unit Auxiliary Board, DC distribution Board etc..</li> <li>• Implementation of balance Control, Monitoring &amp; Protection system of Power Plant in Existing DCS (ABB Supplied).</li> <li>• Refurbishment of Water conductor system consisting of Penstock, spiral casing, stay vanes, Draft tube etc.</li> <li>• Repair, refurbishment and strengthening etc. of Unit-1 &amp; 3 foundations, Power House Building civil /structural component.</li> </ul>	<ul style="list-style-type: none"> <li>• Work order for RLA study, uprating study, preparation of DPR, specification etc. placed on M/s MECON on 11.04.2019. RLA study of Unit-1 completed in October'19 and of Unit-3 on 06.01.2020.</li> <li>• DPR was submitted for techno-economic clearance. Civil &amp; Electromechanical BOQ and estimated cost has been approved by CEA on 13.09.2022.</li> <li>• NIT Document prepared.</li> <li>• Revisiting of NIT Doc. in respect of recent directives of MoP, dated 16 March 2023 for incorporation of the recommendation made in the committee report for Hydro Power Project completed.</li> <li>• NIT floated on 20.10.2023. Tender opened on 15.03.2024. Price Bid opened on 09.08.2024. Price negotiation meeting held on 06.09.2024. Negotiated price is 32.5% higher than updated DE.</li> <li>• Tender cancelled on 09-12-24.</li> <li>• Specification &amp; estimate preparation for two Packages a) Electro-mechanical &amp; b) Civil with Hydro-mechanical)</li> <li>• Retendering is under process.</li> </ul>



**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**EASTERN REGION**

**JHARKHAND**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING - Under Implementation</b>				
<b>44.</b>	<b>Panchet U-1,</b> 2x40 MW DVC 1959 T - NOHAB, Sweden G - AEG, West Germany  <b>RMU&amp;LE</b>  <b>2025-26</b>	<b>40 (LE)</b> <b>+6(U)</b>  121.85  2.19	<ul style="list-style-type: none"> <li>Replacement of main Electro-Mechanical Equipment (Design, CFD, Model testing, supply Erection, Testing, commissioning and PG Test) consisting of Vertical Full Kaplan Turbine, Generator, Excitation System &amp; AVR etc. and associated auxiliaries other plant Equipment/ system essential for life extension of the unit as well as station.</li> <li>Implementation of Control, Monitoring &amp; Protection system of Power Plant such as DCS, Electronic Governors, Static Excitation System, numerical relays, SCADA etc.</li> <li>Refurbishment of water conducting system consisting of Penstock, spiral casing, stay vanes, Draft tube etc.</li> </ul>	<ul style="list-style-type: none"> <li>LOA placed on BHEL for RMU work of Unit#1 on 17.01.2022. Completion period is 24 (twenty-four) month from LOA date.</li> <li>Kick-off meeting held with BHEL on 07.02.2022.</li> <li>Manufacturing of model completed. Turbine model testing commenced from 30.11.2022 and completed on 09.12.2022.</li> <li>Basic engineering completed in Jan 2023.</li> <li>98% detail engineering completed.</li> <li>Generator shaft reached at Panchet.</li> <li>Turbine Runner and Blade assembly completed at Erection Bay.</li> <li>Servomotor pocket cutting for fixation of wall mounted Servomotor completed.</li> <li>Stator Assembly at erection bay is in final stage.</li> </ul>
<b>B - SCHEMES ONGOING - Under RLA Studies</b>				
<b>45.</b>	<b>Subernrekha,</b> 2x65 MW JUUNL 1977-80  <b>RM&amp;LE</b>  <b>2026-27</b>	<b>130(LE)</b> - -	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	RLA studies is proposed. Board of Director of JUUNL approved the agenda to appoint consultant for RLA study for RMU& LE of both units on 19.02.2025. further action in this regard is under progress.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**NORTH EASTERN REGION**

**MANIPUR**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit (MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING – Under Implementation</b>				
<b>46.</b>	<b>Loktak,</b> 3x35 MW NHPC USSR 1983 LMZ T-LMZ G-Leningrade, (U-1) T&G – BHEL(U-2&3)  <b>RM&amp;LE</b>  <b>2025-26</b>	105 (LE)  273.59  107.44	i) Activities covering main equipment i.e. turbine, generator, generator transformers, other plant equipment essential for life extension of the units as well as station. ii) Activities required for ensuring efficient and sustained performance of unit as well as station. iii) Implementation of Control, Monitoring & Protection system of Power Plant such as Electronic Governors, Static Excitation System, numerical relays, SCADA. iv) Refurbishment of water conductor system and associated Civil/HM works including infrastructure works.	<ul style="list-style-type: none"> <li>CEA approved post R&amp;M revised Design Energy of 562.73 MU in place of existing 448 MU.</li> <li>CERC approved R&amp;M proposal on 24.07.2019 at FI of Rs. 236.07 Cr and IDC &amp; FC of Rs. 37.52 Cr i.e. Total Rs. 273.59 Cr.</li> </ul> <p>a) E&amp;M: Three out of four E&amp;M Packages i.e. EM-2 (Bus Duct), EM-3 (EOT Crane) &amp; EM-4 (DG Set) are awarded. EM-1 (Main) package further subdivided into 13 Nos. out of which LOA for 10 Nos. sub-packages placed i.e.</p> <ul style="list-style-type: none"> <li>EM-1(i)(Main Package-Turbine &amp; Generator).</li> <li>EM-1(ii)(GSU Transformer &amp; Auxiliary Transformer).</li> <li>EM-1(iii)(Outdoor Switchyard System).</li> <li>EM-1(iv) (MV &amp; LV Switchgear).</li> <li>EM-1(v) (DC system).</li> <li>EM-1(vi) (Illumination system).</li> <li>EM-1(vii) (HVAC System).</li> <li>EM-1 (viii) (Firefighting system)</li> <li>EM-1(xii) (Oil handling system)</li> <li>EM-1(xiii)(Mechanical workshop)</li> </ul> <p>The remaining 03 nos. subpackages for ancillary works i.e. EM-1(ix) (PLCC System), EM-1(x)(Communication System), EM-1(xi)(Electrical Workshop) are under pre-tendering stage. The works under package EM-3 (EOT Crane) and EM-1(xii)-(Oil Handling System) has been completed &amp; work of EM-4 (DG Set) is in progress. Supply under packages EM-1 (iii) (Switchyard) &amp; EM-1 (viii)(Fire Fighting) in under progress.</p> <p>b) Civil: Three out of five Civil packages i.e. “Restoration of Drainage system &amp; Slope Protection at By-Pass Tunnel Area &amp; Penstock area (C1)”, “Construction of vertical bored cast-in-situ pile work at bye pass tunnel area (C2)” and “Civil works of Ithai barrage and power channel (C4)” are awarded. The work under package C1 and C2 has been completed and work under package C4 is in progress. Tendering of remaining two civil packages i.e. “Civil works of power house complex including valve house, surge shaft and tail pool (C3)” and “Under water</p>

				<p>concrete repair and restoration at barrage, intake structures, emergency gate (C5)” is under process.</p> <p>c) HM: HM Package has been awarded and work is in progress.</p> <p>Misc. &amp; Infrastructure works: Dredging of Khordak Channel has been completed by Loktak Development Authority (LDA). As intimated by LDA, dredging of certain stretches could not be carried out due to prohibition by the Forest Department. LOA for hiring of consultancy services for construction of residential and non-residential building has been awarded and is in progress.</p> <p>Drawing with cost estimate has been submitted by the consultant. However, as desired by Competent Authority, tentative estimates in details for all components is under process.</p> <p>MoEF&amp;CC, GoI directed to obtain prior Environmental Clearance for RM&amp;LE. Accordingly, NHPC is taking needful action. Due to disturbed law and order situation in Manipur w.e.f. 03.05.2023, progress of works is seriously hampered. Complete shutdown of Plant could not be taken as per plan (i.e November-2024). Further, this year the inflow is on higher side and all the units are running continuously. In view of above, it has been planned to undertake complete shutdown during next less inflow period i.e November-2025 for undertaking Renovation and Modernization work. However, detailed schedule shall be shared after receipt of final schedule from M/s BHEL.</p>
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**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**NORTH EASTERN REGION**

**ASSAM**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit (MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES COMPLETED</b>				
47.	<b>Kopili Power Station,</b> 4x50MW NEEPCO T&G- BHEL 1988  <b>RM&amp;LE</b>  <b>2024-25</b>	<b>200 (LE)</b>  <b>1075.19</b>  <b>1201.65</b>	i) Activities covering repair/rectification of tunnel, PPV, replacement of both the penstocks along with related civil works, stability study of civil structures, refurbishment of intake gate, dam etc.  ii) Activities covering main equipment i.e. Turbine, generator, GTs, other plant equipment for efficient and sustained performance of the units as well as the station.  iii) Activities for integration of Control, monitoring and protection system of power plant such as Electronic/digital Governors, SCADA, SAS etc.  iv) Renovation of SY equipment along with replacement of instrument transformers of higher accuracy class, PI, LA SST & SAT etc.  v) Activities having direct impact on improvement generator/turbine efficiency, machine availability etc.  vi) Implementation of AGC in all the units.	i) CEA/CWC has cleared Cost Estimate of renovation and Modernisation for Rs 824.12 Crs at Jan 2021 PL and Rs. 53.97 Cr (IDC).  ii) Financial aspects and levelized tariff finalized as follows: 1st year = Rs 2.78/KWH Levelized tariff: - Rs 2.83/KWH  iii) Commercial operation of Unit 4 started w.e.f. 20.08.2023  iv) Commercial operation of Unit 3 started w.e.f. 03.09.2023  v) Commercial operation of Unit 2 started w.e.f. 12.11.2023  vi) Commercial operation of Unit 1 started w.e.f. 03.06.2024.
<b>B - SCHEMES ONGOING – Under Implementation</b>				
48.	<b>Khandong Power Station,</b> 2x23 MW NEEPCO T&G- BHEL 1984-85  <b>RM&amp;LE</b>  <b>2025-26</b>	<b>46 (LE)</b>  277.74  235.74	i) Activities covering main equipment i.e. Turbine, Generator, GTs and other plant equipment for efficient and sustained performance of the units as well as station.  ii) Activities for integration of control, monitoring and protection system of power plant such as Electronic/ Digital Governors, SCADA SAS etc.  iii) Renovation of Switchyard with capacity enhancement along with replacement of instrument transformers of higher accuracy class, PI, LA, SST etc.	<ul style="list-style-type: none"> <li>• DPR from CPRI, Bangalore received in the month of June'2018. Financial aspects and levelized tariff finalized and submitted to Management for approval.</li> <li>• Some BoP items like DG set, Firefighting system, Penstock Protection BFV, etc. procured and installed under R&amp;M budget.</li> <li>• Appraisal to constituents was done.</li> <li>• Petition for R&amp;M proposal has been filed before CERC.</li> <li>• Machine resize and design energy review has been approved by CEA.</li> </ul>

			<p>iv) Activities having direct impact on improvement of generator/turbine efficiency, machine availability etc.</p> <p>v) Restoration of components damaged by inundation</p>	<ul style="list-style-type: none"> <li>• CEA has approved Rs. 123.19 Crs. for EM Cost on 05.08.2021 &amp; Rs. 66.62 Crs. for Civil &amp; HM Costs on 02.10.2021 for Renovation and Modernisation.</li> <li>• The plant was inundated in flush flood on 26.03.2022.</li> <li>• A revised estimate for EM package of Rs. 188.42 Crores have been approved by CEA on 18.11.2022.</li> <li>• Revised cost estimate for Civil and HM works amounting to Rs. 90.21 Crores has been approved by the BoD, NEEPCO.</li> <li>• Work for R&amp;M of Khandong E/M Package has been awarded to M/s Voith Hydro Pvt. Ltd. Refurbishment works in U#1 &amp; 2 completed, Erection works under progress. Unit#1 boxing up started. Unit#2 Turbine erection and stator/rotor build up is under progress.</li> <li>• Civil package has been awarded to M/s Vijetha Engineers &amp; Infrastructures Pvt. Ltd. About 80 % work of the package completed. Remaining works are in progress.</li> <li>• Work for R&amp;M of 132 and 33 KV Switchyard has been awarded to M/s Mega Electricals on 31.08.2023. Erection work under progress.</li> <li>• HM Package has been awarded to M/s Abir Infrastructure Pvt. Ltd. on 13.10.2023. Almost 80% works of the HM package have been completed. Residual works are in progress.</li> <li>• Order for Fire Detection and Prevention System (FDAPS) has been placed to M/s Technico, Kolkata. 90% of Erection and commissioning work of Khandong PS completed.</li> <li>• Order for EOT Crane for Valve House has placed to M/s R.N. Suresh Tools Corporation, Mumbai. Crane erection, testing and commissioning completed.</li> </ul>
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				<ul style="list-style-type: none"> <li>• Construction of KIOSK Building in Switchyard is awarded to M/s Pulakesh Kakati, Guwahati. Work is in progress</li> <li>• Renovation &amp; Modernization of HM Equipment has awarded to M/s Techno Trade. Works pertaining to Intake Gate, Surge Shaft Gate (one) and two nos. of Draft Tube Gates have been completed. Others are in progress.</li> </ul>
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**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2022-27**

**NORTH EASTERN REGION**

**MEGHALAYA**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING – Under Implementation</b>				
<b>49.</b>	<b>Umiam Stage-III, (Kyredemku lai) 2x30 MW MePGCL 1979 T&amp;G - BHEL</b>  <b>RMU&amp;LE</b>  <b>2026-27</b>	<b>60(LE) +6(U)</b>  408  81.41	<b>Mech. Equipment's (Turbine &amp; its auxiliaries):</b> <ul style="list-style-type: none"> <li>- Replacement of Runners, head cover &amp; bottom ring, facing &amp; wearing rings. Guide vanes, guide vane servomotor &amp; gate operating mechanism. Guide bearings, coolers &amp; bearing housing, turbine shaft, shaft seal &amp; sealing box. Upper draft tube &amp; draft tube liner. Inlet valve along with its servomotor &amp; by-pass valve. Governor and turbine control system, oil pressure supply system, compressed air supply system, cooling water supply, drainage &amp; dewatering system, auxiliary machine control etc.</li> <li>- Refurbishment of spiral case and stay ring, penstock &amp; by-pass valve etc.</li> </ul> <b>Elec. Equipments (Generator &amp; its auxiliaries):</b> <ul style="list-style-type: none"> <li>- Replacement of stator cores, stator windings &amp; neutral leads. Rotor spoke &amp; rim, rotor winding &amp; excitation leads &amp; rotor pole, Shaft, thrust &amp; guide collars, thrust runner, coupling bolts &amp; coupling cover. Thrust bearing pads. Segment type upper &amp; lower guide bearings and oil coolers. Brake ring &amp; brake/jack system, air cooler, current transformers, fire protection system, instruments &amp; relays, terminal boxes on control cubicle, all cables, AC excitation system, digital AVR &amp; excitation cubicle, excitation transformer etc.</li> </ul>	<p>The feasibility study was conducted and completed by JV of TEPSCO &amp; TEPCO, Japan under JETRO grant and IIT Roorkee submitted head measurement studies.</p> <p>An updated DPR as per CEA's recommendation was prepared by MePGCL and posed the scheme for JICA funding through MoP.</p> <p>The Department of Economic Affairs vide letter dated 20.10.2016 requested to confirm the 20 percent Counterpart Funding of the state and also provide the debt sustainability confirmation/ self-certification in respect of the 10 percent loan component of the external assistance of 80 percent of the project cost.</p> <p>After completion of the preparatory study, Minutes of Discussion signed among MePGCL, MoP and JICA.</p> <p>Bid document for E&amp;M package prepared. Concurrence on the Bidding Document for E&amp;M package received from JICA on 22.12.2021.</p> <p>The tender for E&amp;M package was floated on 03.01.2022.</p> <p>Concurrence from JICA received on 23.12.2022 for issue of LOA and signing of Contract Agreement with M/s. Andritz Hydro Pvt. Ltd. (AHPL), the single bidder.</p> <p><b>Electro &amp; Mechanical Equipments (Package-1)</b></p> <p>LOA was issued on 12<sup>th</sup> January 2023 to M/s. AHPL and the Contract Agreement was signed between MePGCL and M/s. AHPL on 1<sup>st</sup> March 2023.</p>

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
			<ul style="list-style-type: none"> <li>- Refurbishment of upper &amp; lower bearing brackets, top cover, hood and air housing</li> <li>- Replacement of 11 KV metal enclosed cubicles &amp; unit auxiliary transformers, station battery bank &amp; charger etc.</li> <li>- Replacement of generator transformer &amp; instruments, station service transformers, control and protection boards etc.</li> <li>- Replacement of motorized disconnecting switches, CTs, PTs, conductors &amp; accessories for 132 KV switchyard.</li> <li>- Replacement of 12 KV power cables, 600 V power cables, control cables, paint etc.</li> <li>- Civil &amp; Hydro Mechanical Work</li> <li>- Site Installation</li> <li>- Low Pressure Grouting and lining</li> <li>- Repair of Pressure Tunnel</li> <li>- Steel liner Installation</li> <li>- Recoating of penstock</li> <li>- Repair of trash rack and link tunnel</li> <li>- Repair of intake gate</li> <li>- Repair of trash rack</li> <li>- Repair of radial gate</li> <li>- Investigation and Rehabilitation of Dykes and other related item.</li> <li><b>Additional works</b></li> <li>- Repairing of spillway</li> <li>- Dismantling and reconstruction of Penstock Valve House</li> <li>- Repairing of Penstock Drains</li> <li>- Land Reclamation</li> </ul>	<p>Reverse engineering of Unit-1 completed.</p> <p>At present the work in Design for E&amp;M is completed and 60% of manufacturing of E&amp;M equipment has been completed.</p> <p><b>Hydro Mechanical &amp; Civil facility (Package-2)</b></p> <p>The tender was floated on 20<sup>th</sup> September 2022 with the initial date of opening on the 21<sup>st</sup> November 2022 and extension was given 4 times due to non-participation of Bidders. The Bidder has not extended the bid validity citing increase in price. Approval being sought from JICA for concurrence against change in scope of works and the same is awaited. Tender floated on 08.06.2024 and pre bid meeting held on 24.06.2024. Technical Evaluation completed LOA issued on 2<sup>nd</sup> January, 2025 and Signing of Contract was made on 27<sup>th</sup> January 2025.</p>



**State-wise Status of R&M Schemes  
(During 2027-32)**

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**NORTHERN REGION**

**JAMMU & KASHMIR**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under RLA Studies</b>				
<b>1.</b>	<b>Salal Stage-I</b> (Unit 1, 2 & 3) 3x115 MW NHPC Nov 1987 T&G – BHEL  <b>RM&amp;LE</b>  <b>2027-32</b>	345 (LE) - -	Detailed scope of work will be arrived after finalization of R&M proposal.	As per the regulations, RMLE of stage-I is to be carried out by 2027 and that of stage-II by 2035. As on date all the generating units are running smoothly. Many of the systems are already renovated/ replaced from time to time resulting into smooth operation of the Power Station. RLA studies of the generating transformers of the Stage-I are also recently been carried out through M/s CPRI, Bangalore, where in there are no major issues in these GTs.
<b>2.</b>	<b>Salal Stage-II</b> , (Unit 4, 5 & 6) 3x115 MW NHPC Apr-1995  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>345 (LE)</b> - -	Detailed scope of works will be arrived after finalization of R&M proposal.	It has been proposed to postpone the RM&LE of Stage-I as of now and RM&LE of the complete Power Station (690 MW, Stage-I&II) in one go is planned w.e.f 2028-29. This way, the uniformity in the make, model rating etc. of the associated equipment and systems can be maintained and requirement of complete shutdown of the Power Station repeatedly, can be avoided.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**NORTHERN REGION**

**HIMACHAL PRADESH**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under Tendering</b>				
<b>3.</b>	<b>Pong Power House, 6x66 MW BBMB 1977-83 T&amp;G-BHEL RMU&amp;LE 2028-29</b>	396 (LE) + 54 (U) 402 1.15	Hiring the consultant for preparation of DPR, Tender Specification and to finalize EPC contractor for carrying out RM&U along with Life Extension of 6 Units.	<p>NIT No. 492/PHD/Pong- 359 dated 23.02.2022 has been floated on e-proc.punjab.gov.in and Part-I of the Tender has been opened on 23.06.2022.</p> <p>Contract Agreement No. 765/PHD/Pong-359 dated 23.08.2023 signed with WAPCOS Ltd. Kick of meeting conducted on 23.08.2023.</p> <p>DPR for RM&amp;U of Pong HEP from 396MW to 450 MW has been examined by CEA and found to be generally in order.</p> <p>Draft GCC Vol.I &amp; IV was submitted by the Consultant on 18.12.2024. The scrutiny of the above submitted documents of EPC Tender is under Progress.</p> <p>Technical and commercial specification received from M/s WAPCOS on 17.03.2025 which are under the scrutiny.</p> <p>Flow analysis, Transient analysis study, Insulation coordination studies and fault Level analysis is pending from M/s WAPCOS.</p>
<b>B - SCHEMES ONGOING - Under RLA Studies</b>				
<b>4.</b>	<b>Chamera-I, 3x180 MW NHPC May-1994 RM&amp;LE 2027-32</b>	<b>540 (LE)</b> - -	Detailed scope of works will be arrived after finalization of specifications based on RLA study report.	The RLA Studies shall be taken up during 2028-29.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**NORTHERN REGION**

**UTTARAKHAND**

**(Amount in Rs. Crores)**

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>A - SCHEMES ONGOING - Under Implementation</b>				
<b>5.</b>	<b>Chilla (Ph-B),</b> 4x36 MW UJVNL 1980(U-1 to 3) 1981(U-4) T&G – BHEL  <b>RMU&amp;LE</b>  <b>2027-28</b>	144 (LE) + 12 (U)  490.56  32.24	-Replacement of existing Kaplan turbine and their complete auxiliaries, refurbishment of existing generators. Complete replacement of switchyard equipment along with Power Transformer, Replacement of 11 kV system, New Excitation system, New Electronic Governors, new control metering & protection system & SCADA, HM Works and Civil Works. Uprating from 4x36 MW i.e. 144 MW to 4x39 i.e. 156 MW.	<ul style="list-style-type: none"> <li>• Capital Investment approval accorded by UERC on 29.01.2016.</li> <li>• Tender document has been uploaded vide Tender No. 01/DGM/M&amp;U- GV/2018-19 on 09.01.2019.</li> <li>• LOI issued to L-1 bidder M/s BHEL on 30.10.2019 &amp; UJVN Ltd., received acceptance letter from M/s BHEL on 07.11.2019.</li> <li>• Agreement between M/s BHEL and UJVN Ltd signed on 22.01.2020.</li> <li>• Turbine model testing has been completed in April, 2023. Load Test on 50/10 T EOT crane performed successfully on 06.11.2023. Load Test on 200/30 T EOT crane performed successfully on 17.02.2024</li> <li>• Design &amp; Engineering work is completed.</li> <li>• Manufacturing &amp; Procurement works of E&amp;M and Hydro Mechanical components are in progress.</li> <li>• Two set of DT cone, one No Runner chamber, isolators, Rotor Rim punching for two Unit , PLCC items, FDPS items, cable termination kit , Stator segment, Power Cables, LP CAS, Turbine Shaft, Top cover, Regulating ring, Pivot ring, 132 kV Control panels and Generators relay panels has been received at Chilla site.</li> <li>• Shutdown of Unit -I (M/c No -4) taken by M/s BHEL for RMU works on 07.11.2024.</li> <li>• Dismantling of machine &amp; Runner chamber cutting work has been completed and cutting of lower &amp; upper DT cone and stator winding is under progress.</li> </ul>

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
				<ul style="list-style-type: none"> <li>Tentative schedule for completion of R&amp;M works is follow as  Unit#1- 07.11.2024 to 31.12.2025  Unit#2- 01.01.2026 to 31.10.2026  Unit#3- 01.11.2026 to 31.08.2027  Unit#4- 01.01.2027 to 31.10.2027</li> <li>Physical progress: 31.00%</li> </ul>

#### B- SCHEMES ONGOING - Under DPR Preparation/Finalisation/Approval

6.	<b>Ramganga,</b> 3x66 MW UJVNL 1976 T&G-BHEL  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>198 (LE)</b>  455.20  NIL	-Replacement of runner, rehabilitation of generators, installation of intake hoisting arrangement, installation of DT gantry crane, 11 kV Circuit Breakers, control protection and replacement of Switchyard equipment, instrumentation, governors, pumps and life extension of units based on RLA studies.	<ul style="list-style-type: none"> <li>DPR was prepared in-house and was reviewed by AHEC, IIT Roorkee. Specifications were vetted by AHEC. Tender on turnkey basis floated on e-portal.</li> <li>Tender has been scrapped as UERC declined Investment approval on 12.02.2016.</li> <li>Appeal has been filed in Hon'ble Appellate Tribunal, New Delhi on 23.03.2016.</li> <li>Appeal has been disposed of by the Appellate Tribunal, New Delhi vide order dated 04.09.2024 with the direction to move petition, afresh, based on fresh DPR prepared on the basis of current requirements of R&amp;M.</li> <li>DPR revision is being initiated.</li> </ul>
7.	<b>Kulhal,</b> 3x10 MW UJVNL LTD. 1975 T&G - BHEL  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>30(LE)</b>  118.24  NIL	-Replacement of turbine, new governors, new sets of guide vanes. Repairing of various gates and gantry cranes. -Refurbishment of generators with new stator core and new class F insulated stator & rotor windings. New SEE, Replacement of 11 kV Switchgear. Installation of numerical type protection system. -Civil works of barrage, power channel, power station & Tail race channel	<ul style="list-style-type: none"> <li>LoI issued to M/s Gogoal-Emeco (Consortium) on 04.03.2014. UERC declined approval vide order dtd. 13.03.2015 with the advice that on account of obsolescence of protection equipment, suitable proposal be mooted. UJVNL approached commission with suitable modifications. However, UERC declined Investment approval vide order dated 11.02.2016 due to better availability of the machines.</li> <li>Appeal has been filed in the Appellant Tribunal New Delhi on 23.03.2016.</li> </ul>

S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
				<ul style="list-style-type: none"> <li>Bank Guarantee has been extended by the firm up to 31.10.2024.</li> <li>Appeal has been disposed of by the Appellate Tribunal, New Delhi vide order dated 04.09.2024 with the direction to move petition, afresh, based on fresh DPR prepared on the basis of current requirements of R&amp;M.</li> <li>New DPR of Rs.120.82 Cr. was approved in 123<sup>rd</sup> BOD.</li> <li>DPR has been submitted in UERC for approval.</li> </ul>
<b>C - SCHEMES ONGOING - Under RLA Studies</b>				
<b>8.</b>	<b>Tanakpur,</b> 3x31.4 MW NHPC Apr-1993  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>94.2 (LE)</b> - -	Detailed scope of works will be arrived after finalization of specifications based on RLA study report.	The RLA Studies shall be taken up during 2028-29.
<b>9.</b>	<b>Chibro,</b> 4x60 MW UJVNL 1975 (Unit 1 to 3) 1976 (Unit 4) T&G-BHEL  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>240 (LE)</b>  184.88  NIL	Detailed scope of works will be arrived after finalization of specifications based on RLA study report.	Proposed to be taken up after RMU works of Dhalipur & Dhakrani HEP.
<b>10</b> .	<b>Khodri,</b> 4x30 MW UJVNL 1984 T&G-BHEL  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>120 (LE)</b>  169.63  NIL	Detailed scope of works will be arrived after finalization of specifications based on RLA study report.	Proposed to be taken up after RMU works of Dhalipur & Dhakrani HEP.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**NORTHERN REGION**

**RAJASTHAN**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under RLA Studies</b>				
<b>11..</b>	<b>Jawahar Sagar Power Station</b> (3x33 MW) <b>RRVUNL</b> 1972-73 T- Canadian Alis Chalmers, Canada G- General Electric, Canada  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>99 (LE)</b>  -  -	RLA Studies and DPR Preparation	Tender for hiring of consultancy services for one Unit (1x33MW) of JSHPS, which include RLA studies including complete civil structure of JSHPS, DPR preparation with RMU recommendation of all three units, preparation of Tender Documents and assistance in tender evaluation (3x33MW) is under process.

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**WESTERN REGION**

**MADHYA PRADESH**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under Tendering</b>				
<b>12..</b>	<b>Gandhi Sagar,</b> 5x23 MW MPPGCL 1960-66 <u>Units 1,2&amp;3</u> T – JM Voith G – Siemens, WG, <u>Units 4&amp;5</u> T&G – Hitachi, Japan  <b>RMU&amp;LE</b>  <b>2029-30</b>	<b>115 (LE)</b> + <b>10.83 (U)</b>  433.68  4.17	Replacement of Generator and Turbine along with switchyard equipment & refurbishment of embedded parts.	<p>All the units with associated auxiliary systems submerged on 14.09.2019 due to over flooding of dam in its catchment area.</p> <p>Gandhi Sagar HPS was commissioned between 1960 &amp; 1966. All the units with associated auxiliaries system submerged on 14.09.2019 due to over flooding of Dam The RLA studies had been carried out by WAPCOS. Also three units out of five (i.e. unit 1, 4&amp;5) have been revived with the help of WAPCOS. Revival of Unit#2 is under progress. As units have already served their useful life, hence it is decided to go for comprehensive R&amp;M of the units. Services of WAPCOS have been availed as consultant.</p> <p>RLA Study has been completed.</p> <p>DPR of R&amp;M was approved by Board of MPPGCL. However after discussion held with CEA on 07.09.2022 scope of work has been revised.</p> <p>Revised DPR for R&amp;M and Uprating with estimated cost of Rs. 433.68 has been approved.</p> <p>Consent from Rajasthan regarding equally sharing the expenditure to be incurred during R&amp;M is awaited. Tender for comprehensive R&amp;M of Gandhi Sagar HPS has been opened on 31<sup>st</sup> July 2024. Only Single firm i.e. M/s flovel energy Pvt. Ltd. has submitted the bid. LOA will be issued shortly.</p>



S. No.	Scheme/ Category/ Completion Target	Expected Benefit(MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
<b>B - SCHEMES ONGOING - Under DPR Preparation/ Finalisation/Approval</b>				
<b>13.</b>	<b>Pench</b> 2x80 MW MPPGCL 1986-87 T&G – BHEL  <b>RM&amp;LE</b>  <b>2027-28</b>	<b>160 (LE)</b>  -  -	Comprehensive R&M of Pench HPS	<p>1. RLA study has been completed by WAPCOS Ltd.</p> <p>2. Order for hiring consultant for preparation of DPR &amp; tender document and providing Project Monitoring Consultancy is issued to M/s WAPCOS on 10 August' 2023.</p> <p>3. The DPR for R&amp;M of pench is approved from BoD of MPPGCL. The same has been forwarded to MPPMCL and Maharashtra for approval.</p>
<b>14.</b>	<b>Bargi,</b> 2x45 MW MPPGCL 1988 T&G – BHEL  <b>RM&amp;LE</b>  <b>2027-28</b>	<b>90 (LE)</b>  -  -	RLA Study of Unit-1 & Unit-2	<p>RLA study has been completed by MECON Ltd., Ranchi.</p> <p>Revised draft DPR for R&amp;M works has been submitted in October 2024. Same is under approval from BoD.</p>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations  
during 2027-32**

**WESTERN REGION**

**GUJARAT**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit (MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under Tendering</b>				
<b>15</b>	<b>Kadana PSS, 4x60 MW GSECL Units 1&amp;2 1989-90 T&amp;G-Skoda Units 3&amp;4 1998-99 T&amp;G-BHEL RMU&amp;LE 2027-32</b>	<b>240 (LE) +20 (U)</b>  <b>84.95</b>  <b>3.15</b>	<p>Plant Design, Engineering, Manufacture, Shop testing, Supply, Transportation, Storage, Erection, Testing, Commissioning and PG Test for Renovation, Modernization &amp; Uprating of 4x60 MW</p> <p>i) Upgradation of existing governing system with new digital governing system for unit 3 &amp; 4.</p> <p>ii) RLA of Civil super Structure of Power House above ground of all units.</p> <p>iii) R&amp;M of Kadana unit to run in pumping mode.</p>	<p>GSECL had published tender GSECL/ PP/PMI/Kadana/PSP/ on 18.10.2022 for EPC basis for complete R&amp;M work of 4x60MW KHEP Units. The tender did not achieve the expected outcome. Hence, the tender under reference stands cancelled with effect from 03.06.2023.</p> <p>Work under progress. Microprocessor panels' inspection/ FAT done at Bangalore. MDCC for Microprocessor panel given BBU for supply approved Valve Table assembly FAT done at Bhopal Orthography. All supply received in Jan' 2024 Work will be carry out in shut down of plant.</p> <p>Work Completed.</p> <p>A new tender for Appointment of Project Management Consultancy (PMC) service provider for Preparation of R&amp;M Feasibility Study &amp; Detailed Project Report, EPC tender preparation, tender evaluation, finalization of EPC, Design, Engineering, E&amp;C Supervision till completion of project with uprating of 4x60 MW of Pumped Storage Hydro Power (PSP) Station of GSECL at Kadana, Gujarat was published on 12.06.2023 by GSECL. Pre-bid meeting is completed on 27.06.2023. Technical Bid opened on 17.08.2023. Technical Scrutiny completed and approved. Price bid opened on 17.11.2023. <b>Present Status:</b> A high level meeting held between OEM (BHEL) and GSECL MD &amp; ED for operationalization of Kadana HEP in pump mode. It was decided to carry out work through BHEL.</p> <p>Visit of BHEL engineers at KHEP and GSECL corporate office. Report</p>

S. No.	Scheme/ Category/ Completion Target	Expected Benefit (MW)/ Estimated Cost/ Expenditure	Scope of work	Present Status
				<p>submitted on 22.05.2024. GSECL has confirmed scope of work on 01.06.2024. BHEL has submitted budgetary offer on 17.08.2024 and revised budgetary offer on 30.09.2024. For clarification in the offer, BHEL engineers visited GSECL Corporate office on 14.11.2024 and subsequent meeting through VC on 25.11.2024.</p> <p>After the due correspondences between GSECL and BHEL the offer for “Revival of pumped mode operation for one unit including replacement of DCS and installation of SFC for all four Units of Kadana Hydro Electric plant”. submitted by M/s BHEL on 04.01.2025</p> <p>Based on the offer, LOA issued on 13.02.2025.</p> <p>Further, A severe flood on 17th September 2023 damaged the TRC and completely destroyed the 4x3 MW mini power house downstream, owned by M/s Ajanta Energy Pvt. Ltd., Parallely, at dam foothills, dam work under DRIP-II is going on. Pondage in the lower reservoir and pump mode operation of the hydroelectric project (HEP) will only be permitted after DRIP-II activity in 2027. Meanwhile, the renovation and modernization (R&amp;M) of the KHEP units will be carried out alongside the DRIP-II activities.</p>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**SOUTHERN REGION**

**ANDHRA PRADESH**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit (MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under DPR Preparation/ Finalisation/Approval</b>				
<b>16</b>	<b>Lower Sileru, (4x115 MW) APGENCO  RM&amp;LE  2029-30</b>	<b>460 (LE)</b>  698.94  1.8 (for RLA studies)	Residual Life Assessment (RLA)/ Life Extension Studies and Preparation of Detailed Project Report along with technical specifications for R, M & U of Lower Sileru Hydro Electric Project.	<p>The 175th board meeting of APGENCO approved to conduct the RLA/ LE studies and Preparation of DPR for R, M &amp; U of all four units (4x115 MW) of LSHEP.</p> <p>Work has been awarded to M/s MECON for Rs 1.8 Crore to carry out RLA. RLA studies of all four units completed. DPR has been furnished in March 2023 by M/s MECON.</p> <p>R&amp;M works of the existing four units will be taken up by the time of completion of new units 5 &amp; 6 due to space &amp; EOT constraints.</p> <p>APGENCO has placed an order for Erection, Testing &amp; commissioning of 2 Nos., of 115 MW additional units in the existing power house and scheduled to be commissioned by December 2025.</p> <p>Proposed time required for R&amp;M works: 48 Months.</p>
<b>17</b>	<b>Machkund, 3x17 MW (St.-I) &amp; 3x23 MW (St.-II) APGENCO 1955-56 (St.-I) &amp; 1959 (St.-II) St.-I: T - M.Smith, USA G - W.House,USA St.-II: T - J.M.Voith,</b>	<b>120 (LE)+ 9 (St.-I) (U)</b>  1.98 Crs./Nil (RLA studies)  Cost of R&M – not yet finalised	Residual Life Assessment studies (RLA) on Civil structures, penstocks, Hydro Mechanical and all Electrical & Mechanical equipment of all six units.  <b>Note:</b> Three units of Stage-I each rated at 17 MW are proposed to be uprated to 20 MW.	<p>The Govt. of AP (APGENCO) &amp; Govt. of Odisha (OHPC) mutually agreed for carrying out RM&amp;U by sharing the costs &amp; benefits in the ratio of 50:50. Modified agreement was entered on 23.10.2020 by both APGENCO and OHPC officials.</p> <p>In Machkund HEP, Stage-I Units were running at derated capacity of 16 MW and Stage –II Units were running at derated capacity of 21 MW against their original capacity of 17 MW and 23 MW respectively.</p> <p>Work awarded to M/s Tata Consulting Engineers (TCE), Bangalore for carrying out RLA Study on 11.11.2021.</p>

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit (MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
	W. Germany G - Westing House, USA  <b>RMU&amp;LE</b>  <b>2027-32</b>			<p>PAC comprising of members from both the Govts. of AP &amp; Odisha was constituted in new agreement for taking decisions on all administrative and technical issues.</p> <p>RLA studies on all units are completed.</p> <p>Draft DPR submitted on February 2025.</p> <p>The time schedule for implementation and other modalities will be discussed with OHPC in the ensuring Project administration committee (PAC). After finalization of issues in PAC meeting, the actual schedule of R&amp;M works will be communicated.</p>

**State-wise Programme/ Status of Renovation and Modernisation Schemes of Hydro Power Stations for completion during 2027-32**

**SOUTHERN REGION**

**Tamil Nadu**

**(Amount in Rs. Crores)**

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>A - SCHEMES ONGOING - Under RLA Studies</b>				
<b>18.</b>	<b>Kundah-I,</b> 3x20 MW TNPGL 1960-64  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>60 (LE)</b>  - Nil	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>19.</b>	<b>Kundah-II,</b> 5x35 MW TNPGL 1960-65  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>175 (LE)</b>  - Nil	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>20.</b>	<b>Kundah-III,</b> 3x60 MW TNPGL 1965-78  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>180 (LE)</b>  - Nil	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>21.</b>	<b>Kundah-IV,</b> 2x50 MW TNPGL 1966-78  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>100 (LE)</b>  - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>22.</b>	<b>Kundah-V,</b> 2x20 MW TNPGL 1964-88  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>40 (LE)</b>  - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>23.</b>	<b>Mettur Tunnel,</b> 4x50 MW TNPGL 1965-66  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>200 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>24.</b>	<b>Sarkarpathy,</b> 1x30 MW TNPGL 1966  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>30 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>25.</b>	<b>Sholayar-II,</b> 1x25 MW TNPGL 1971  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>25 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>26.</b>	<b>Suruliyar,</b> 1x35 MW TNPGL 1978  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>35 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>27.</b>	<b>Kadamparai PH,</b> 4x100 MW TNPGL 1987-89  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>400 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>28.</b>	<b>Aliyar</b> 1x60 MW TNPGL 1970  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>60 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32

<b>S. No.</b>	<b>Scheme/ Category/ Completion Target</b>	<b>Expected Benefit(MW)/ Estimated Cost/ Expenditure</b>	<b>Scope of work</b>	<b>Present Status</b>
<b>29.</b>	<b>Lower Mettur-I</b> 2x15 MW TNPGL 1988  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>30 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>30.</b>	<b>Lower Mettur-II</b> 2x15 MW TNPGL 1988  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>30 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>31.</b>	<b>Lower Mettur-III</b> 2x15 MW TNPGL 1988  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>30 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32
<b>32.</b>	<b>Lower Mettur-IV</b> 2x15 MW TNPGL 1988-89  <b>RM&amp;LE</b>  <b>2027-32</b>	<b>30 (LE)</b> - NIL	Detailed scope of work will be arrived after finalization of specification based on RLA study report.	Due to stringent financial status of TENGEDCO, RLA/ RMU work will be taken later in a phased manner during 2027-32



# **ANNEXURES**

## State-wise List of Hydro RMU&amp;LE schemes completed upto the VIII Plan

Sl. No.	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Himachal Pradesh								
1	Bairasiul, NHPC	CS	3x60	25.98	25.98	18 (U)	RM&U	1991-92
2	Giri, HPSEB	SS	2x30	9.85	7.90	6 (U)	RM&U	1995-96
Punjab								
3	UBDC-I, PSPCL	SS	3x15	11.00	8.00	11 (Res)	R&M+Res.	1991-92
Uttar Pradesh								
4	Rihand, UPJVNL	SS	6x50	1.43	1.43	100(Res.)	R&M+Res.	1995-96
Karnataka								
5	Nagjhari, U-2, KPCL	SS	1x135	11.97	11.32	15 (U)	RM&U	1995-96
6	Shivasamudram, VVNL	SS	6x3 + 4x6	8.00	8.00	18 (LE)	RM&LE	N.A.
Kerala								
7	Sholayar, KSEB	SS	3x18	7.58	7.58	-	R&M	1996-97
Tamil Nadu								
8	Kadamparai (Units 3&4), TANGEDCO	SS	2x100	23.17	33.69	200(Res.)	R&M+Res.	1993-95
9	Kundah III (Units 1&2), TANGEDCO	SS	2x60	5.45	3.20	-	R&M	1991-92
10	Moyar, TANGEDCO	SS	3x12	1.62	1.30	36.00 (LE)	RM&LE	1990-91
11	Sholayar-I, TANGEDCO	SS	2x35	1.40	0.85	-	R&M	1994-95
Assam								
12	Khandong, U-1, NEEPCO	CS	1x25	0.62	0.62	25 (Res)	R&M+Res.	1991-92
Tripura								
13	Gumti, TPGL	SS	3x5	17.50	17.50	-	R&M	1994-95
Total			1282	125.57	127.37	429 [39 (U) + 54(LE) + 336(Res)]		

Abbreviations: R&M – Renovation & Modernisation; U – Up-rating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

**State-wise List of Hydro RMU&LE schemes completed in the IX Plan**

Sl. No.	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Himachal Pradesh								
1	Bhakra RB BBMB	CS	5x132	88.45	90.68	125.00 (U)	RM&U	2000-01
2	Dehar U-2 BBMB	CS	1x165	10.74	10.74	25.00 (Res.)	R&M+Res.	1998-99
3	Bairasiul, NHPC	CS	3x66	18.45	18.45	-	R&M	2000-01
4	Bassi, HPSEB	SS	4x15	5.35	4.34	-	R&M	2000-01
Jammu & Kashmir								
5	Salal St.I, NHPC	CS	3x115	51.50	51.50	-	R&M	2000-01
6	Chenani, J&KSPDC	SS	5x4.66	11.00	11.00	0.93 (Res)	R&M+Res.	2000-01
Punjab								
7	Ganguwal, U-2 BBMB	CS	1x24.2	18.90	15.00	22.00 (LE)+ 2.20 (Res)	RM&LE+Res	1997-98
8	Kotla, U-3, BBMB	CS	1x24.2	18.90	16.90	22.00 (LE)+ 2.20 (Res)	RM&LE+Res	1998-99
9	Ganguwal U-3, BBMB	CS	1x24.2	25.00	43.40	22.00 (LE)+ 2.20 (Res)	RM&LE+Res	2000-01
10	Kotla U-2, BBMB	CS	1x24.2	25.00		22.00 (LE)+ 2.20 (Res)	RM&LE+Res	2001-02
Uttarakhand								
11	Chilla U-1, 3& 4, UJVNL	SS	3x36	4.25	4.11	-	R&M	1998-99
12	Tiloth, UJVNL	SS	3x30	8.02	5.51	6.00 (U)	RM&U	1998-99
Andhra Pradesh								
13	Lower Sileru, APGENCO	SS	4x115	13.35	9.30	24.00 (Res)	R&M+Res.	2001-02
14	Srisaillam RB, APGENCO	SS	7x110	16.32	11.40	-	R&M	2001-02
Karnataka								
15	Sharavathy, U-1 to 8, KPCL	SS	8x89.1	65.00	63.49	115.20 (U) +178.20 (Res)	RM&U+Res	1997-98
16	Sharavathy, U-9&10, KPCL	SS	2x89.1	17.96	14.68	28.80(U) +19.10 (Res)	RM&U+Res	1997-98

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Orissa								
17	Hirakud-I, U1&2, OHPC	SS	2x37.5	95.10	95.10	24.00(U) +75.00(LE)	RMU&LE	1997-98
Gujarat								
18	Ukai,U-1&3, GSECL	SS	2x75	24.99	24.99	75.00 (Res.)	R&M+Res.	1997-98
Maharashtra								
19	Koyna I&II, MSPGCL	SS	4x65+ 4x75	74.91	74.91	40.00(U) + 260.00(LE)	RM&U of St-I & II & LE of St-I	1999-2000
20	Koyna III, U-10, 11 &12, MSPGCL	SS	3x80	4.65	4.65	-	R&M	1997-98
Total			4892.10	597.84	570.16	1093.03 [339.0(U) + 423.0(LE) + 331.03(Res.)]		

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension;  
Res – Restoration; MW – Mega Watt; CS-Central Sector: SS- State Sector

**State-wise List of Hydro RMU&LE schemes completed in the X Plan**

Sl. No.	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Himachal Pradesh								
1	Pong, BBMB	CS	6x60	17.70	17.79	36.00(U)	RM&U	2003-04
Punjab								
2	Ganguwal,U-1, BBMB	CS	1x29.25	51.28	81.99	25.89 (LE) +2.10	RM&LE+Res.	2006-07
2	Kotla, U-1, BBMB	CS	1x29.25	51.28		2.33 (Res.)	RM&LE+Res.	2006-07
4	Shanan Ph.A, PSPCL	SS	4x15+ 1x50	11.35	10.93	-	R&M	2003-04
5	Shanan, Ph.B, PSPCL	SS	4x15+ 1x50 \$	35.95	13.34	60.00(LE)	RM&LE(LE for 15 MW units+R&M for 50 MW unit	2006-07
6	Anandpur Sahib, PSPCL	SS	4x33.5	3.68	1.04	-	R&M	2006-07
7	UBDC I&II, PSPCL	SS	3x15+ 3x15.45	7.89	2.44	45.00 (LE)	RM&LE(LE for 3x15MW&R &M for 3x15.45 MW	2006-07
8	Mukerian St.I, PSPCL	SS	3x15	6.04	4.38	-	R&M	2006-07
Uttarakhand								
9	Chibro, UJVNL	SS	4x60	10.45	10.52	-	R&M	2006-07
Karnataka								
10	Nagjhari, U-1&3,KPCL	SS	2x135	26.12	21.62	30 (U)	RM&U	2002-03
11	Supa PH, KPCL	SS	2x50	2.64	2.47	-	R&M	2002-03
12	Mahatma Gandhi, VVNL	SS	4x12+ 4x18	44.66	43.13	19.20 (U) +120.00 (LE)	RMU&LE	2002-03
13	Munirabad, VVNL	SS	2x9+ 1x10.3	3.64	3.53	28.30 (LE)	RM&LE	2002-03

**Annex- III**  
**(Sheet 2/3)**

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
14	Mani Dam, KPCL	SS	2x4.5	1.00	1.00	-	R&M	2002-03
15	Shivasamudram , VVNL	SS	6x3+ 4x6	68.38	73.17	42.00 (LE)	RM&LE	2004-05
16	Bhadra, Ph.II, KPCL	SS	1x2	3.30	2.51	2.00 (LE)	RM&LE	2005-06
17	Varahi, KPCL	SS	2x115	2.57	2.66	-	R&M	2006-07
18	Sharavathy, Ph.A, KPCL	SS	10x103.5	5.22	3.52	-	R&M	2006-07
Kerala								
19	Neriamangalam KSEB	SS	3x15	58.00	53.05	7.65 (U) +45.00(LE)	RMU&LE	2006-07
20	Pallivasal, KSEB	SS	3x5+ 3x7.5	94.00	371.71	37.50 (LE)	RM&LE	2002-03
21	Sengulam, KSEB	SS	4x12	114.00		48.00 (LE)	RM&LE	2002-03
22	Panniar, KSEB	SS	2x15	62.00		30.00 (LE)	RM&LE	2002-03
Tamilnadu								
23	Pykara, TANGEDCO	SS	3x6.65+ 1x11+2x	26.06	20.147	58.95(LE)	RM&LE	2004-05
24	Papanasam, TANGEDCO	SS	4x7	27.05	22.61	4.00 (U) + 28.00 (LE)	RMU&LE	2005-06
Orissa								
25	Hirakud-I (Sw.yard), OHPC	SS		9.85	15.88	-	R&M	2006-07
26	Hirakud-I,U-3&4, OHPC	SS	2x24	126.14	108.86	16.00(U)+ 48.00(LE)	RMU&LE	2005-06
West Bengal								
27	Maithon, U-2, DVC	CS	1x20	42.08	36.94	3.20(U)+ 20.00(LE)	RMU&LE	2004-05
Maharastra								
28	Bhira Tail Race, MSPGCL	SS	2x40	1.60	0.70	-	R&M	2003-04
29	Tillari, MSPGCL	SS	1x60	4.50	4.24	6.0 (U)	RM&U	2004-05

**Annex- III**  
**(Sheet 3/3)**

Sheet 5/5

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
30	Koyna Gen. Complex, MSPGCL	SS	4x70+4x80+4x80	12.00	11.50	-	R&M	2004-05
Meghalaya								
31	Umium St.I, MePGCL	SS	4x9	81.88	84.21	36(LE)	RM&LE	2002-03
Assam								
32	Khandong, NEEPCO	CS	2x25	4.00	3.35	-	R&M	2003-04
Total			4446.60	1016.31	1029.24	827.73 [122.05(U) +701.25(LE) + 4.43(Res.)]		

\$ - Installed Capacity of Shanan, Ph.B, at Sl. No. 5 not included in the total, as the same has been accounted for at Sl. No. 4.

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension;  
Res – Restoration; MW – Mega Watt; CS-Central Sector: SS- State Sector

**State-wise List of Hydro RMU&LE schemes completed in the XI Plan**

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp	Benefits (MW)	Category	Year of Completion
				(Rs . in crs)				
Himachal Pradesh								
1	Dehar Ph. A BBMB	CS	6x165	11.00	6.94	-	R&M	2010-11
2	Dehar Ph. B BBMB	CS	6x165	49.00	24.45	330(LE)	RM&LE	2009-10
Uttarakhand								
3	Tanakpur, NHPC	CS	3x31.4	10.77	11.95	-	R&M	2007-08
4	Khodri Ph.A, UJVNL	SS	4x30	5.25	6.39	-	R&M	2008-09
5	Chilla Ph.A, UJVNL	SS	4x36	23.55	21.24	-	R&M	2008-09
Andhra Pradesh								
6	Upper Sileru, APGENCO	SS	4x60	4.20	3.34	-	R&M	2009-10
Karnataka								
7	Nagjhari, U1 to 6, KPCL	SS	5x150 + 1x135	14.75	15.31	-	R&M	2009-10
8	Sharavathy Ph.B, KPCL	SS	10x103.5	20.50	11.14	-	R&M	2009-10
9	Supa, KPCL	SS	2x50	3.45	4.90	-	R&M	2009-10
10	Bhadra, KPCL	SS	2x12	1.44	0.85	-	R&M	2009-10
11	Lingnamakki, KPCL	SS	2x27.5	3.81	2.62	-	R&M	2010-11
Tamil Nadu								
12	Mettur Dam, TANGEDCO	SS	4x10	30.17	24.16	10 (U) + 40 (LE)	RMU&LE	2007-08
Maharashtra								
13	Koyna St.I&II, MSPGCL	SS	4x70 + 4x80	87.50	81.82	-	R&M	2008-09



**Annex- IV**  
**(Sheets 2 of 2)**

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp	Benefits (MW)	Category	Year of Completion
				(Rs . in crs)				
14	Vaitarna, MSPGCL	SS	1x60	16.00	0.14	-	R&M	2009-10
15	Koyna Dam PH, MSPGCL	SS	2x18	5.78	0.25	-	R&M	2009-10
16	Koyna St.III, MSPGCL	SS	4x80	16.65	5.79	320 (LE)	RM&LE	2011-12
Manipur								
17	Loktak, NHPC	CS	3x30 derated	18.55	17.88	15.00 (Res.)	R&M + Res.	2011-12
Meghalaya								
18	Umium St.II, MePGCL	SS	2x9	90.46	55.67	2(U)+18.00(LE)	RMU&LE	2011-12
Total			5841.2	412.83	294.84	735 [12.00(U) +708.00 (LE)+15.00 (Res)]		

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension;  
Res – Restoration; MW – Mega Watt; CS-Central Sector: SS- State Sector

**State-wise list of Hydro RMU&LE schemes completed in the XII Plan**

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (No.x.MW )	Est. Cost	Actual Exp	Benefits (MW)	Capacity after RMU&LE (MW)	Category	Year of Completion
				(Rs . in Crs)					
Himachal Pradesh									
1	Bassi, HPSEB	SS	4x15	124.25	158.26	6.0(U)+60(LE)	66	RMU&LE	2013-14
Jammu & Kashmir									
2	Lower Jhelum, J&KSPDC	SS	3x35	101.3	96.10	15.00(Res)	105	R&M+ Res.	2014-15
3	Sumbal Sindh, J&KSPDC	SS	2x11.3	25.00	24.59	-	22.6	R&M	2016-17
Uttarakhand									
4	Pathri, UJVNL	SS	3x6.8	113.25	108.3	20.40(LE)	20.4	RM&LE	2014-15
5	Khatima, UJVNL	SS	3x13.8	256.77	148.88	41.40 (LE)	41.4	RM&LE	2016-17
Uttar Pradesh									
6	Matatila, UPJVNL	SS	3x10.2	10.29	7.21	30.6 (LE)	30.6	RM&LE	2015-16
Andhra Pradesh									
7	Lower Sileru, APGENCO	SS	4x115	8.75	6.77	-	460	R&M	2013-14
8	Srisaillam RB, APGENCO	SS	7x110	16.70	17.60	-	770	R&M	2015-16
Telangana									
9	Nagarjuna Sagar Ph-I works, TSGENCO	SS	1x110+7x100.8	33.35	13.90	-	815.6	R&M	2012-13
Karnataka									
10	Supa, KPCL	SS	2x50	3.45	3.88	-	100	R&M	2014-15
11	Nagjhari,U-1 to 6, KPCL	SS	1x135 (U-6)	69.21	64.49	15 (U)	150	RM&U	2015-16
12	Sharavathy Genarating Station (Ph B), KPCL	SS	10x103.5	20.00	29.27	-	1035	R&M	2016-17
Kerala									
13	Idamalayar, KSEB	SS	2x37.5	14.50	13.22	-	75	R&M	2012-13

Sheet 2 of 2

Sl. No	Project, Agency	CS/ SS	Inst. Cap. (No.x.MW )	Est. Cost	Actual Exp	Benefits (MW)	Capacity after RMU&LE	Category	Year of Completion
				(Rs . in Crs)					
14	Sabarigiri, U-4 KSEB	SS	1x55	52.20	50.41	5(U)	60	RM&U	2014-15
15	Poringalkuthu, KSEB	SS	4x8	88.63	51.90	4 (U)+ 32.00 (LE)	36	RMU&LE	2015-16
Tamil Nadu									
16	Periyar, TANGEDCO	SS	4x35	161.18	133.68	28.00(U)+ 140(LE)	168	RMU&LE	2015-16
Odisha									
17	Rengali Unit-1 OHPC	SS	1x50	47.50	36.76	50(LE)	50	RM&LE	2012-13
18	Rengali Unit-2 OHPC	SS	1x50	25.20	20.73	50(LE)	50	RM&LE	2013-14
West Bengal									
19	Jaldhaka St.I, WBSEDCL	SS	3x9	88.62	79.97	27 (LE)	27	RM&LE	2016-17
Assam									
20	Khandong, NEEPCO	CS	1x25	25.05	29.18	25(LE)	25	RM&LE	2014-15
21	Kopili, NEEPCO	CS	2x50	50.22	50.92	-	100	R&M	2014-15
Total			4149.60	1335.42	1146.02	549.40 [58(U)+ 476.40 (LE) + 15 (Res)]	4207.6		

**State-wise list of Hydro RMU&LE schemes completed during 2017-22**

Sl. No	Name of Project, Agency, Inst. Cap. (No. x MW)	CS/ SS	Capacity Covered Under RMU&LE (No.x MW)	Est. Cost	Actual Exp.	Benefits (MW)	Capacity after RMU&LE (MW)	Category	Year of Completion
				(Rs. in Crs.)					
A. COMPLETED SCHEMES IN 2017-22									
Jammu & Kashmir (UT)									
1	Salal, NHPC (6x115)	CS	5x115	58.01	51.08	-	575	R&M	Completed in 2019-20
2	Chenani, J&KSPDC (5x4.66)	SS	5x4.66	34.28	21.84	23.30 (LE)	23.3	RM&LE	Completed in 2021-22
3	Ganderbal, (Unit-3) J&KSPDC (2x3+2x4.5)	SS	1x4.5	18.00	3.26	4.5 (LE)	4.5	RM&LE	Completed in 2021-22
Punjab									
4	Ganguwal, BBMB (1x29.25+2x24.2) & Kotla, BBMB (1x29.25+2x24.2)	CS	1x24.2 (U-2) 1x24.2 (U-3)	14.19	9.58	48.4 (LE)	48.4	RM&LE	Completed in 2017-18
Himachal Pradesh									
5	Dehar Power House (Unit-6), BBMB (6x165)	CS	1x165	19.87	16.00	-	165	R&M	Completed in 2017-18
6	Dehar Power House (Unit-3), BBMB (6x165)	CS	1x165	23.00	18.67	-	165	R&M	Completed in 2021-22
7	Baira Siul, NHPC (3x60)	CS	3x60	341.41	330	180 (LE)	180	RM&LE	Completed in 2021-22
Gujarat									
8	Ukai, GSECL (4x75)	SS	3x75 (U-1,2,&4)	7.30	7.30	-	225	R&M	Completed in 2021-22
Karnataka									
9	Bhadra River Bed units, KPCL (2x12)	SS	2x12	23.55	20.12	-	24	R&M	Completed in 2019-20
Tamil Nadu									
10	Sholayar-I, TANGEDCO (2x35)	SS	2x35	90.44	66.94	70 (LE) + 14(U)	84	RMU&LE	Completed in 2019-20
Kerala									
11	Sholayar, KSEB (3x18)	SS	3x18	199.55	84.26	54 (LE)	54	RM&LE	Completed in 2020-21
12	Idukki 1 <sup>st</sup> stage, KSEB (3x130)	SS	3x130	89.90	65.76	-	390	R&M	Completed in 2020-21
Odisha									
13	Hirakud-I OHPCL (2x37.5)	SS	2x37.5 (U5&6)	158.77	101.83	75.00 (LE) + 12.2 (U)	87.2	RMU&LE	Completed in 2021-22
14	Hirakud-II (Chiplima), OHPCL (3x24)	SS	1x24 (U-3)	65.67	52.04	24.00 (LE)	24	RM&LE	Completed in 2019-20
Sub Total (A)			2023.20	1143.94	848.68	505.4 [479.2(LE) + 26.2(U)]	2049.40		

@ This cost includes Scheme I only i.e. Rehabilitation of damaged/burnt equipments.

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration;

MW – Mega Watt; CS-Central Sector; SS- State Sector

## State-wise List of Hydro RMU&amp;LE schemes programmed for completion during 2022-27

Sl. No	Name of Project, Agency Cap. (No.x MW)	Inst.	CS/ SS	Capacity Covered Under RMU&LE (No.x MW)	Est. Cost	Actual Exp.	Benefits (MW)	Capacity after RMU&LE	Category	Year of Completion
					(Rs. in Crs.)					
A. COMPLETED SCHEMES										
Himachal Pradesh										
1	Bhabha Power House, HPSEB (3x40)		SS	3x40	90.14	43.01	120(LE)	120	RM&LE	Completed in 2022-23
2	Bhakra LB, BBMB (5x108)		CS	5x108	489.77	583.86	540 (LE) + 90 (U)	630	RMU&LE	Completed in 2023-24
Uttarakhand										
3	Tiloth (Maneri Bhali - I), UJVNL (3x30)		SS	3x30	384.66	206.17	90 (LE)	90	RM&LE	Completed in 2022-23
4	Dhalipur, UJVNL (3x17)		SS	3x17	152.65	123.03	51 (LE)	51	RM&LE	Completed in 2023-24
Uttar Pradesh										
5	Rihand, UPJVNL (6x50)		SS	6x50	132.20	129.67	300 (LE)	300	RM&LE	Completed in 2022-23
Telangana										
6	Nagarjuna Sagar Phase-II works, TSGENCO (1x110+7x100.8)		SS	1x110+7x100.8	21.67	14.34	-	815.6	R&M	Completed in 2022-23
7	Nagarjuna Sagar Left Canal Power House, TSGENCO (2x30.6)		SS	2x30.6	30.99	1.50	-	61.2	R&M	Completed in 2022-23
Karnataka										
8	Munirabad Dam Power House, KPCL (2x9 + 1x10)		SS	2x9 + 1x10	4.60	2.20	-	28	R&M	Completed in 2022-23
9	Linganamakki Dam Power House, KPCL (2x27.5)		SS	2x27.5	1.34	1.34	-	55	R&M	Completed in 2022-23
10	Gerusoppa Dam Power House (Sharavathy Tail Race), KPCL (4x60)		SS	4x60	59.66	2.026	-	240	R&M	Completed in 2023-24
Assam										
11	Kopili Power Station, NEEPCO (4x50)		CS	4x50	1075.19	1201.65	200 (LE)	200	RM&LE	Completed in 2024-25
Sub Total(A)				2500.80	2442.87	2308.80	1391 [1301(LE)+ 90(U)]	2590.80		
B. Ongoing Schemes – UNDER IMPLEMENTATION										
Uttarakhand										
12	Dhakrani, UJVNL (3x11.25)		SS	3x11.25	137.31	70.26	33.75 (LE)	33.75	RM&LE	2026-27
Uttar Pradesh										
13	Obra, UPJVNL (3x33)		SS	3x33	58.80	48.25	99 (LE)	99	RM&LE	2025-26
Telangana										
14	Pochampad HPS Stage -I, TSGENCO (3x9)		SS	3x9	17.09	-	-	27	R&M	2026-27
Andhra Pradesh										
15	Upper Sileru Power House, APGENCO (4x60)		SS	4x60	10.53	5.35	-	240	R&M	2026-27
16	Nagarjunasagar Right Canal Power House, APGENCO (3x30)		SS	3x30	10.1	4.54	-	90	R&M	2025-26
17	Tungabhadra Dam, APGENCO (4x9)		SS	4x9	6.65	2.517	-	36	R&M	2026-27
18	Hampi Canal PH, APGENCO (4x9)		SS	4x9	-	-	-	36	R&M	2026-27
Karnataka										
19	Nagghari (Unit-1 to 3) KPCL (6x150)		SS	3x150 (U-1 to 3)	266.00	80.5	450 (LE)	450	RM&LE	2025-26
20	Shivasamudram, KPCL (6x3+4x6)		SS	6x3+4x6	169.18	3.27	42 (LE)	42	RM&LE	2025-26
21	Kadra Dam Power House,		SS	3x50	44.47	2.627	-	150	R&M	2025-26
22	Kodasalli Dam Power House,		SS	3x40	50.60	2.654	-	120	R&M	2025-26
23	Sharavathy Generating Station, KPCL (10x103.5)		SS	10x103.5	196.56	-	1035 (LE)	1035	RM&LE	2025-26

(Sheet 2 of 3)

Sl. No	Name of Project, Agency Cap. (No.x MW)	Inst. CS/ SS	Capacity Covered Under RMU&LE (No.x MW)	Est. Cost	Actual Exp.	Benefits (MW)	Capacity after RMU&LE	Category	Year of Completion
				(Rs. in Crs.)					
Jharkhand									
24	Panchet U-1, DVC (2x40)	CS	1x40 (U-1)	121.85	2.19	40 (LE) + 6 (U)	46	RMU&LE	2025-26
Tamil Nadu									
25	Moyar PH, TNPGL (3x12)	SS	3x12	121.127	79.49	36 (LE) + 6 (U)	42	RMU&LE	2025-26
26	Kodayar PH-I, TNPGL (1x60)	SS	1x60	80.96	24.93	60 (LE) + 10 (U)	70	RMU&LE	2025-26
Kerala									
27	Kuttiyadi, KSEB (3x25)	SS	3x25	377.41	58.26	75 (LE) + 7.5 (U)	82.5	RMU&LE	2025-26
Odisha									
28	Balimela, OHPCL (6x60)	SS	6x60	382.91	201.63	360 (LE)	360	RM&LE	2026-27
Assam									
29	Khandong Power Station, NEEPCO (2x23)	CS	2x23	277.74	235.74	46 (LE)	46	RM&LE	2025-26
Manipur									
30	Loktak, NHPC (3x35)	CS	3x35	273.59	107.44	105 (LE)	105	RM&LE	2025-26
Meghalaya									
31	Umiam St.III, (Kyrdemkulai) MePGCL (2x30)	SS	2x30	408.00	81.41	60 (LE) + 6 (U)	66	RMU&LE	2026-27
Sub Total (B)			3140.75	3010.88	1011.06	2477.25 [2441.75(LE)+ 35.50(U)]	3176.25		
C. Ongoing Schemes – UNDER TENDERING									
Rajasthan									
32	Rana Pratap Sagar RRVUNL (4x43)	SS	4x43	573.76	-	172 (LE) + 6 (U)	178	RMU&LE	2026-27
Karnataka									
33	Supa Dam Power House, KPCL (2x50)	SS	2x50	47.91	1.5	-	100	R&M	2025-26
West Bengal									
34	Maithon, DVC (2x20+1x23.2-U#2)	CS	2x20 (U-1&3)	109.29	7.76	40 (LE)	40	RM&LE	2025-26
Sub Total (C)			312	730.96	9.26	218 [212(LE)+6(U)]	318.00		

Sl. No	Name of Project, Agency Cap. (No.x MW)	Inst. (No.x MW)	CS/ SS	Capacity Covered Under RMU&LE (No.x MW)	Est. Cost	Actual Exn	Benefits (MW)	Capacity after RMU&LE	Category	Year of Completion
					(Rs. in Crs.)					
D. Ongoing Schemes – UNDER DPR PREPARATION/ FINALISATION/ APPROVAL										
Himachal Pradesh										
35	Giri, HPSEBL (2x30)		SS	2x30	440.12	-	60 (LE)	60	RM&LE	2026-27
Tamil Nadu										
36	Kodayar PH-II, TNPGCL (1x40 )		SS	1x40	-	-	40 (LE) + 6 (U)	46	RMU&LE	2026-27
Kerala										
37	Idukki 1 <sup>st</sup> and 2 <sup>nd</sup> stage, KSEB (6x130)		SS	6x130	3.887	3.498	780 (LE)	780	RM&LE	2026-27
38	Idamalayar, KSEB (2x37.5)		SS	2x37.5	0.88	0.75	75 (LE)	75	RM&LE	2026-27
Sub Total (D)				955.00	4.77	4.25	961 955(LE)+ 6(U)]	961.00		
E. Ongoing Schemes – UNDER RLA STUDIES										
Punjab										
39	Anandpur Sahib Hydel Project, PSPCL (4x33.5)		SS	4x33.5	-	-	134 (LE)	134	RM&LE	2026-27
40	Mukerian St.I, St.II, St.III & St.IV, PSPCL (3x15, 3x15, 3x19.5& 3x19.5)		SS	3x15, 3x15, 3x19.5& 3x19.5	-	-	207 (LE)	207	RM&LE	2026-27
41	Shanan HEP, PSPCL (1x50+ 4x15)		SS	1x50+ 4x15	-	-	110 (LE)	110	RM&LE	2026-27
42	UBDC St.I & St.II, PSPCL (3x15+ 3x15.45 )		SS	3x15+ 3x15.45	-	-	91.35 (LE)	91.35	RM&LE	2026-27
Madhya Pradesh										
43	Bansagar Ton-I, MPPGCL (3x105)		SS	3x105	-	-	315 (LE)	315	RM&LE	2026-27
Maharashtra										
44	Vaitarna, MSPGCL (1x60)		SS	1x60	-	-	60 (LE)	60	RM&LE	2026-27
45	Koyna Dam foot (Right Bank), MSPGCL (2x20)		SS	2x20	-	-	40 (LE)	40	RM&LE	2026-27
46	Koyna St-3, MSPGCL (4x80)		SS	4x80	-	-	320 (LE)	320	RM&LE	2026-27
Karnataka										
47	Varahi Underground Power House (4x115)		SS	2x115	-	-	-	230	R&M	2026-27
Kerala										
48	Sabarigiri, (Unit-1,2,3, 5 ) KSEB (4x55)		SS	4x55 (Unit-1,2, ,3, & 5 )	-	-	220 (LE) + 20 (U)	240	RMU&LE	2026-27
Jharkhand										
49	Subernrekha, JUUNL (2x65)		SS	2x65	-	-	130 (LE)	130	RM&LE	2026-27
Sub Total (E)				1857.35	0.00	0.00	1647.35 [1627.35(LE)+ 20(U)]	1877.35		
Total (A+B+C+D+E)				8765.90	6189.48	3333.36	6694.6 [6537.10(LE)+ 157.50(U)]	8923.40		

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

## State-wise List of Hydro RMU&amp;LE schemes programmed for completion during 2027-32

Sl. No	Name of Project, Agency	Inst. Cap.	(No.X MW)	CS/ SS	Capacity Covered Under RMU&LE (No.x MW)	Est. Cost	Actual Exp.	Benefits (MW)	Capacity after RMU&LE	Category	Completion Target
						(Rs. in Crs.)					
A.Ongoing Schemes – UNDER IMPLEMENTATION											
Uttarakhand											
1	Chilla (Ph B), UJVNL	(4x36)		SS	4x36	490.56	32.24	144 (LE) + 12 (U)	156	RMU&LE	2027-28
Sub Total(A)					144	490.56	32.24	156 144 (LE) + 12 (U)	156		
B.Ongoing Schemes – UNDER TENDERING											
Himachal Pradesh											
2	Pong Power House, BBMB (6x66)			CS	6x66	402.00	1.15	396 (LE) + 54 (U)	450	RMU&LE	2028-29
Madhya Pradesh											
3	Gandhi Sagar, MPPGCL	(5x23)		SS	5x23	433.68	4.17	115 (LE) + 10.83 (U)	125.83	RMU&LE	2029-30
Gujrat											
4	Kadana PSS, GSECL (4X60)			SS	4x60	84.95	3.15	240(LE)+20(U)	260	RMU&LE	2027-32
Sub Total(B)					751	920.63	8.47	835.83 751 (LE) + 84.83(U)	835.83		
C. Ongoing Schemes – UNDER DPR PREPARATION/FINALISATION/APPROVAL											
Uttarakhand											
5	Kulhal ,UJVNL (3x10)			SS	3x10	118.24	-	30(LE)	30	RM&LE	2027-32
6	Ramganga,UJVNL (3x66)			SS	3x66	455.2	-	198(LE)	198	RM&LE	2027-32
Madhya Pradesh											
7	Pench, MPPGCL (2x80)			SS	2x80	-	-	160 (LE)	160	RM&LE	2027-28
8	Bargi, MPPGCL (2x45)			SS	2x45	-	-	90 (LE)	90	RM&LE	2027-28
Andhra Pradesh											
9	Lower Sileru, APGENCO (4x115)			SS	4x115	698.94	1.8	460 (LE)	460	RM&LE	2029-30
10	Machkund St.I & St.II, APGENCO (3x17+ 3x23)			SS	3x17+ 3x23	-	-	120(LE)+9(U)	129	RMU&LE	2027-32
Sub Total(C)					1058	1272.38	1.8	1067 1058(LE) + 9(U)	1067		
D. Ongoing Schemes – UNDER RLA STUDIES											
Jammu & Kashmir (UT)											
11	Salal Stage-I, (Unit 1,2 &3)	NHPC (3x115)		CS	3x115	-	-	345 (LE)	345	RM&LE	2027-32
12	Salal Stage-II, (Unit 4,5 &6)	NHPC (6x115)		CS	3x115	-	-	345 (LE)	345	RM&LE	2027-32
Himachal Pradesh											
13	Chamera-I, NHPC (3x180)			CS	3x180	-	-	540 (LE)	540	RM&LE	2027-32
Uttarakhand											
14	Tanakpur, NHPC (3x31.4)			CS	3x31.4	-	-	94.2 (LE)	94.2	RM&LE	2027-32
15	Chibro, UJVNL (4x60)			SS	4x60	184.88	-	240 (LE)	240	RM&LE	2027-32
16	Khodri, UJVNL (4x30)			SS	4x30	169.63	-	120 (LE)	120	RM&LE	2027-32
Rajasthan											
17	Jawahar Sagar Power Station, Jawahar Sagar (3x33)			SS	3x33	-	-	99(LE)	99	RM&LE	2027-32
Tamil Nadu											
18	Kundah-I, TNPGL (3x20)			SS	3x20	-	-	60 (LE)	60	RM&LE	2027-32
19	Kundah-II, TNPGL (5x35)			SS	5x35	-	-	175 (LE)	175	RM&LE	2027-32
20	Kundah-III, TNPGL (3x60)			SS	3x60	-	-	180 (LE)	180	RM&LE	2027-32
21	Kundah-IV, TNPGL (2x50)			SS	2x50	-	-	100 (LE)	100	RM&LE	2027-32
22	Kundah-V, TNPGL (2x20)			SS	2x20	-	-	40 (LE)	40	RM&LE	2027-32
23	Mettur Tunnel, TNPGL (4x50)			SS	4x50	-	-	200 (LE)	200	RM&LE	2027-32
24	Sarkarpathy, TNPGL (1x30)			SS	1x30	-	-	30 (LE)	30	RM&LE	2027-32
25	Sholayar-II, TNPGL (1x25)			SS	1x25	-	-	25 (LE)	25	RM&LE	2027-32
26	Suruliyar, TNPGL (1x35)			SS	1x35	-	-	35 (LE)	35	RM&LE	2027-32
27	Kadamparai PH, TNPGL (4x100)			SS	4x100	-	-	400 (LE)	400	RM&LE	2027-32
28	Aliyar, TNPGL (1x60)			SS	1x60	-	-	60 (LE)	60	RM&LE	2027-32
29	Lower Mettur-I, TNPGL (2x15)			SS	2x15	-	-	30 (LE)	30	RM&LE	2027-32
30	Lower Mettur-II , TNPGL (2x15)			SS	2x15	-	-	30 (LE)	30	RM&LE	2027-32
31	Lower Mettur-III , TNPGL (2x15)			SS	2x15	-	-	30 (LE)	30	RM&LE	2027-32
32	Lower Mettur-IV , TNPGL (2x15)			SS	2x15	-	-	30 (LE)	30	RM&LE	2027-32
Sub Total (D)					3208.20	354.51	0.00	3208.20 [3208.20 (LE)+ 0(U)]	3208.20		
Total (A+B+C+D)					5161.20	3038.08	42.51	5267.03 [5161.20 (LE)+ 105.83(U)]	5267.03		

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration;  
MW – Mega Watt; CS-Central Sector; SS- State Sector



## Abbreviations

1	APGENCO	Andhra Pradesh Generation Corporation Limited
2	BBMB	Bhakra Beas Management Board
3	DVC	Damodar Valley Corporation
4	GSECL	Gujarat State Electricity Corporation Limited
5	HPSEB	Himachal Pradesh State Electricity Board
6	J&KSPDC	Jammu & Kashmir State Power Development Corpn.
7	JSEB	Jharkhand State Electricity Board.
8	KPCL	Karnataka Power Corporation Limited
9	KSEB	Kerala State Electricity Board
10	MSPGCL	Maharashtra State Power Generation Corporation Limited
11	MePGCL	Meghalaya Power Generation Corporation Limited
12	MPPGCL	Madhya Pradesh Power Generation Corporation Limited
13	NEEPCO	North-East Electric Power Corporation Limited
14	OHPC	Odisha Hydro Power Corporation Limited
15	PSPCL	Punjab State Power Corporation Limited
16	RRVUNL	Rajasthan Rajya Vidyut Utpadan Nigam Limited
17	TNPGCL	Tamil Nadu Power Generation Corporation Limited
18	TSGENCO	Telangana State Power Generation Corporation Limited
19	UPJVNL	Uttar Pradesh Jal Vidyut Nigam Limited
20	UJVNL	Uttarakhand Jal Vidyut Nigam Limited
21	VVNL	Vishwesharayya Vidyut Nigam Limited
22	WBSEDCL	West Bengal State Electricity & Distribution Company Limited
23	AVR	Automatic Voltage Regulator
24	BOQ	Bill of Quantity
25	CERC	Central Electricity Regulatory Commission
26	CPRI	Central Power Research Institute
27	DPR	Detailed Project Report
28	DVR	Digital Voltage Regulator
29	JICA	Japan International Co-operation Agency
30	LOA	Letter of Award
31	RLA	Residual Life Assessment