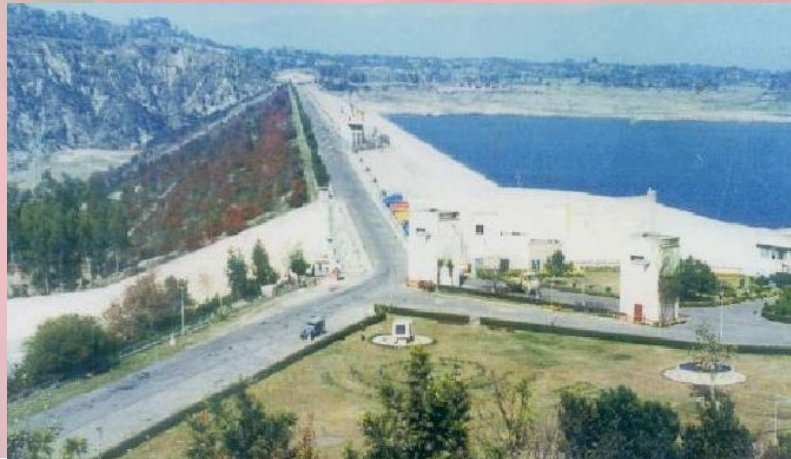
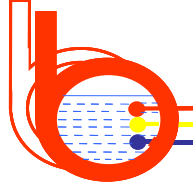




Annual Report 2020-2021



Bhakra Beas Management Board

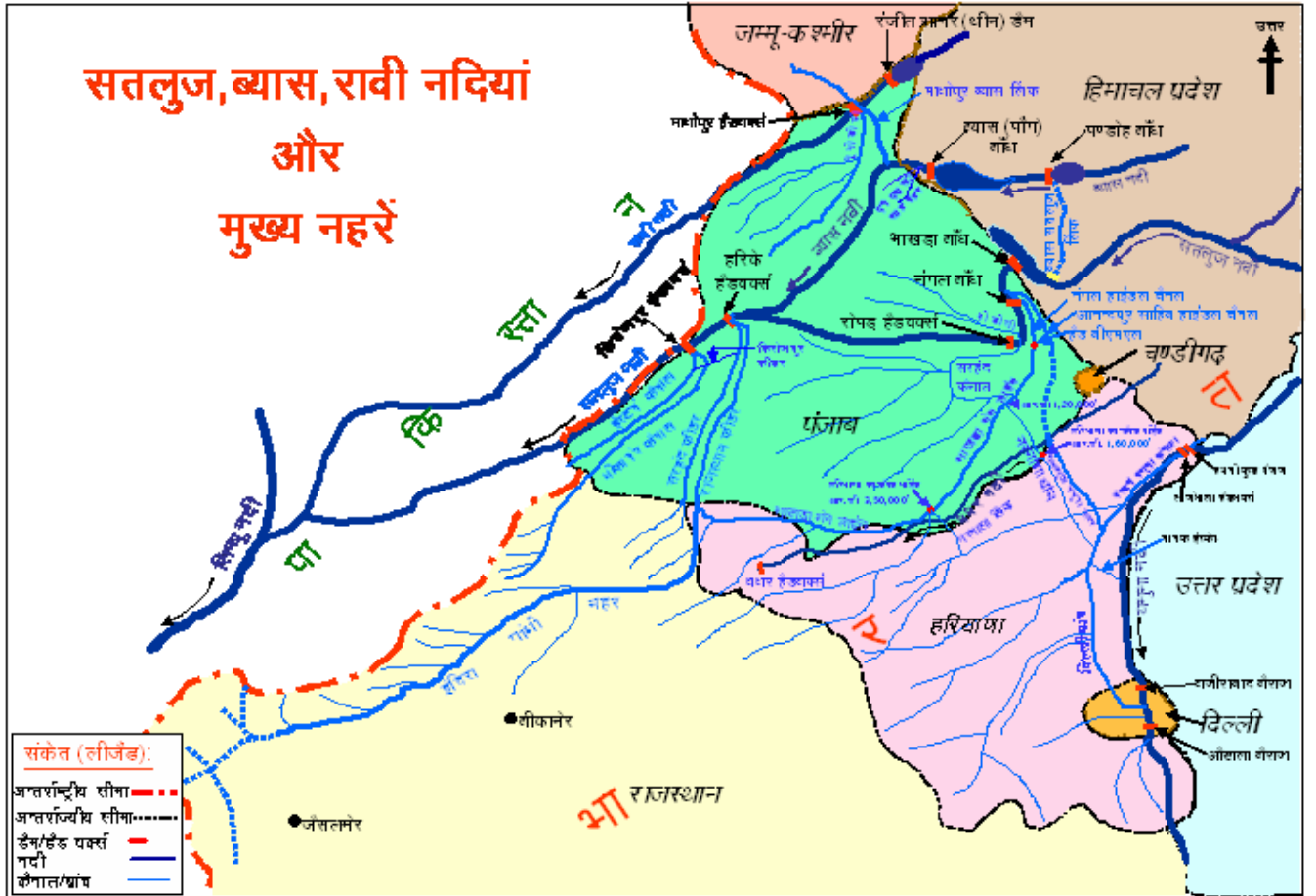


भाखड़ा ब्यास
राष्ट्र गौरव

48वीं वार्षिक रिपोर्ट

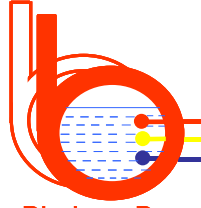
48th Annual Report

2020-2021



भाखड़ा ब्यास प्रबन्ध बोर्ड

Bhakra Beas Management Board



Bhakra Beas
Nation's Pride

VALUES

Discipline-Hardwork-Operational Excellence
and
Professionalism

अनुशासन-कठिन परिश्रम परिचालन श्रेष्ठता
और व्यावसायिकता

MISSION

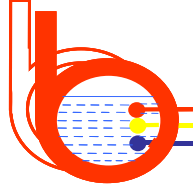
To keep our systems running
efficiently at the minimum cost.

हमारी प्रणालियों को न्यूनतम लागत पर दक्षतापूर्वक
चालू रखना

VISION

To lead and be a trendsetter in Power Sector by establishing high standards in Operation & Maintenance, Renovation & Modernisation of Hydel Projects, Transmission System availability, Canal Systems and by exploiting new Hydro Power Potential with optimal utilization of existing infrastructure and resources.

जल विद्युत परियोजनाओं, पारेषण, नहर प्रणालियों के परिचालन एवं अनुरक्षण तथा नवीनीकरण एवं आधुनिकीकरण में और विद्यमान मूलभूत ढांचे तथा संसाधनों के सर्वोत्तम उपयोग के लिए नई जल विद्युत अंतः शक्ति का लाभ उठाने के लिए उच्च मानको की स्थापना में विद्युत क्षेत्र में अग्रणी रहना और एक ट्रेड सेंटर बनना ।



भाखड़ा ब्यास
राष्ट्र गौरव



भाखड़ा बांध का सामने/नीचे से दृश्य
Bhakra Dam – Downstream View

“भाखड़ा नंगल परियोजना में कुछ आश्चर्यजनक है, कुछ विस्मयकारी है, कुछ ऐसा है जिसे देखकर आपके दिल में हिलोरे उठती हैं। भाखड़ा, पुनरुत्थानशील भारत का नवीन मन्दिर है और यह भारत की प्रगति का प्रतीक है”

Bhakra Nangal Project is something tremendous, something stupendous, something which shakes you up when you see it. Bhakra, the new temple of resurgent India, is the symbol of India's progress.”

Members Of The Board During The Year 2020-2021

<u>Chairman</u>	
Sh. D.K. Sharma	01.04.2020 to 17.07.2020
Sh. Tanmay Kumar	17.07.2020 to 11.11.2020
Sh. Sanjay Srivastava	11.11.2020 to 31.03.2021
Member/Representative	
Government of India	
Sh. Aniruddha Kumar	01.04.2020 to 29.05.2020
Sh. Tanmay Kumar	29.05.2020 to 31.03.2021
Sh. P.K. Saxena	01.04.2020 to 31.03.2021
Partner States	
Punjab	
Sh A. Venu Prasad	01.04.2020 to 08.06.2020
Sh. Sarvjit Singh	08.06.2020 to 31.03.2021
Haryana	
Sh. Devender Singh	01.04.2020 to 27.10.2020
Sh. Anurag Rastogi	27.10.2020 to 29.10.2020
Sh. Devender Singh	30.10.2020 to 31.03.2021
Rajasthan	
Sh. Naveen Mahajan	01.04.2020 to 31.03.2021
Himachal Pradesh	
Sh. Ram Subhag Singh	01.04.2020 to 31.03.2021
Member/ Power	
Sh. Harminder Singh	01.04.2020 to 31.03.2021
Member/Irrigation	
Sh. Gulab Singh Narwal	01.04.2020 to 09.09.2020

बोर्ड के सदस्य (31.3.2021 को)
MEMBERS OF BOARD (AS ON 31.3.2021)



Sh. P.K.Saxena
(Representative, Govt. of India)
Commissioner, Indus,
Ministry of Water Resource,
New Delhi



Sh.Tanmay Kumar, IAS
(Representative, Govt. of India)
Joint Secretary/Hydro,
Ministry of Power ,
New Delhi



Sh.Sarvjit Singh, IAS
(Representative, Govt. of Punjab),
Secretary Irrigation Department,
Govt. of Punjab, Chandigarh.



Sh.Sanjay Srivastava,
Chairman
Bhakra Beas Management Board,
Chandigarh



Sh.Devender Singh, IAS
(Representative, Govt. of Haryana),
ACS, Irrigation & Water
Resources Deptt.,
Govt. of Haryana Chandigarh



Sh. Naveen Mahajan, IAS,
(Representative Govt. of Rajasthan)
Secretary, Water Resources Department,
Govt. of Rajasthan, Jaipur



Sh.Ram Subhag Singh, IAS
(Representative, Govt. of HP),
Addl. Chief Secretary, ,
Forest, MPP & Power, NCES
Department,
Govt. of HP Shimla



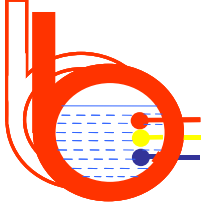
Sh.Harminder Singh,
Member(Power),
(Whole Time Member)
Bhakra Beas Management Board,
Chandigarh



Sh.Sanjay Srivastava,
Chairman
Additional charge of Member Irrigation
Bhakra Beas Management Board,
Chandigarh

विषय सूची
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भाखड़ा ब्यास
राष्ट गौरव

अध्याय-1
Chapter-1

प्रस्तावना
Introduction

1.1 BBMB - ORIGIN

- Bhakra-Nangal Project was taken up immediately after independence of India in the joint collaboration of the erstwhile State of Punjab and the State of Rajasthan.
- After re-organisation of Punjab, **Bhakra Management Board** was constituted on 1st October, 1967 under the Punjab Re-organisation Act, 1966 for administration, operation and maintenance of **Bhakra-Nangal** Project.
- The works of **Beas Projects** were entrusted to **Beas Construction Board** as per the provisions of the Punjab Re-organisation Act, 1966. On completion of Beas Projects, these were transferred to **Bhakra Management Board** on 15th May, 1976 and it was re-named as **Bhakra Beas Management Board** as per the provisions of the Punjab Re-organisation Act.

1.2 FUNCTIONS

- Administration, Operation & Maintenance of Bhakra-Beas Projects.
- Regulation of the supply of water from Bhakra-Beas Projects to the States of Punjab, Haryana and Rajasthan.
- Regulation of the supply of power generated at Bhakra-Beas Projects to the states of Punjab, Haryana, Rajasthan, Himachal Pradesh & U.T. Chandigarh.
- Any other function as the Central Government may assign after consultation with the Governments of States of Haryana, Punjab & Rajasthan.
- The Govt. of India in the year 1999 entrusted additional functions of providing & performing engineering and related technical consultancy services in field of Hydro Electric Projects & Irrigation Projects.
- Ministry Of Power has assigned the work of construction and execution of 2X20 MW Baggi Power House to BBMB vide letter No.5-4/1/2019-BBMB dated 22nd October, 2019.

1.3 Power Wing

General Review

The Power Wing is entrusted with the administration, operation and maintenance of Power Houses, Transmission System and System Load Dispatch Centre (SLDC) of BBMB and Consultancy Services in field of Hydro Electric Projects.

Installed Capacity (As on 31.3.2021)

Power House	No. of machine X Capacity of machine	Installed Capacity (MW)
Bhakra (Right Bank)	5x157	785
Bhakra (Left Bank)	2x108+3x126	594
Ganguwal	1x27.99+2x24.20	76.39
Kotla	1x28.94+2x24.20	77.34
Dehar	6x165	990
Pong	6x66	396
	Total	2918.73

ROOF TOP SOLAR:

Location	Capacity (kWp)
Chandigarh	175
Jamalpur	130
Jalandhar	125
Sangrur	60
Delhi	80
Narela	20
Jagadhari	70
Panipat	36.3
Kurukshetra	19.8
Bhiwani	233.33
Hisar	49.5
Ganguwal	100
Nangal	950
Talwara	300
Total Installed Capacity	2348.93 kWp

Transmission System

(As on 31.3.2021)

BBMB transmission system, spread over the States of Punjab, Haryana, Himachal Pradesh, U.T., Chandigarh and Delhi, operates in integrated manner with Northern Regional Power Grid. The details of BBMB Transmission System is tabulated below:-

Sr. No.	Voltage Level	No. of Sub-Stations	Line Length (Ckt. km)
i)	400kV	03	573.95
ii)	220kV	17	2993.54
iii)	132kV	02	21.72
iv)	66kV	02	115.50
Total:		24	3704.71

System Load Dispatch Center (SLDC)

The System load dispatch Center (SLDC) of Bhakra Beas Management Board is assigned with the responsibility of Round the Clock Monitoring, Operation and Control of BBMB Transmission and Generation Assets.

1.4 Irrigation Wing

General Review

The Irrigation Wing is entrusted with the administration, maintenance and operation of the following Project components:-

I. BHAKRA-NANGAL PROJECT

- (a) Bhakra Dam & Reservoir and Works appurtenant thereto including Nangal Workshop and Nangal Township, Hospital, School, rest house etc
- (b) Nangal Dam and Nangal Hydrel Channel.

II. BEAS PROJECT

a) Unit-I (BSL Project)

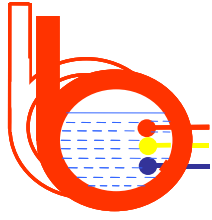
Beas Satluj Link Project comprising Pandoh Dam, Pandoh-Baggi Tunnel, Sundernagar Hydel Channel, Balancing Reservoir, Sundernagar-Satluj Tunnel & connected civil works and townships at Sundernagar, Slapper and Pandoh, Hospital, School, Rest House etc.

b) Unit-II (Beas Dam at Pong)

Beas Dam at Pong including Reservoir, Outlet Works, Spillway & works appurtenant thereto and Talwara Township.

National Hydrology Project (NHP)

Bhakra Beas Management Board (BBMB) has set up Earth Receiving Station (ERS) at Chandigarh for inflow flood forecasting (i.e. short term 3 days and medium term 7 to 10 days) for optimum utilization of Bhakra and Pong Reservoirs and Canal Network.



भाखड़ा न्यास
राष्ट्र गौरव

अध्याय-2 Chapter-2

बोर्ड के निर्णय Decisions Of The Board

2.1 Meetings Of The Board Held During The Year 2020-21

1. 235th meeting of the Board held on 07.07.2020
2. 236th meeting of the Board held on 11.12.2020
3. 237th meeting of the Board held on 19.03.2021

2.2 Important Decisions Taken in the Board Meetings

235th meeting of the Board held on 07.07.2020

Item No. 235.03

Revised A&A of the Renovation Modernization and Upgrading (RM&U) of 5 Hydro Generating Units at Bhakra Left Bank Power House, Bhakra.

Chief Engineer/SO, while explaining the agenda note intimated that the work for RM&U of 5 Generating Units at Bhakra Left Bank Power Houses was allowed in the year 2007 and was proposed to be completed by 2012. However, the work got extended due to various reasons explained in the memorandum, causing increase in the cost of RM&U estimate, which has already been exhausted. He further explained that the original sanctioned estimate for the work was for ₹ 486 crores and the Board in its 197th meeting approved additional/alteration in the contract upto the extent of 5% of the total order value. Thus, the total monetary limit to incur expenditure on the project is ₹ 503.07 crores, against which an expenditure to the tune of ₹ 552 crores has already been incurred upto 31.03.2020 and an expenditure of another ₹ 95.66 crores is expected to be incurred on the pending liabilities of RM&U work. Thus, the total projected cost of the project works out about ₹ 648 crores, which is ₹ 162 crores more than the original sanctioned estimate.

Member/Haryana, requested to provide the details of increase in cost due to variation in scope of work and due to escalation in rates. In this regard, Chief Engineer/System Operation, BBMB, explained that this increase was not due to variation in scope of work and further explained that an increase of about ₹ 80.88 crores is only on account of higher conversion rate of YEN. Further, an increase of ₹ 21.57 crores is on account of cost of RIM and Shaft etc. which has been booked to the RM&U for Unit No. 2. In addition, an increase of ₹ 7.44 crores is attributed to the extra works carried out during RM&U of 3 units which has been already completed.

Member/Punjab requested to intimate the time line for completion of the remaining RM&U work. In this regard, Chief Engineer/System Operation, BBMB, intimated that the RM&U of 3 units has already been completed and 4th Unit is under progress, which was expected to be completed by June, 2020. However, due to restrictions imposed by Govt. of India on entry of all foreign nationals, Curfew and Lockdown in Punjab and Himachal Pradesh, the timeline could not be met. He further intimated that the schedule of completion of RM&U of 5th unit is of 252 days after handing over of the 4th unit.

Member/HP requested to clarify the total capacity addition being achieved through this project. In this regard, Chairman, BBMB clarified that there were 5 units with an installed capacity of 108 MW each at Bhakra Left Bank Power House which are now being uprated to 126 MW each. Out of five units, three units have already been uprated to 126 MW. Thus, the total installed capacity of Bhakra Left Bank Power House will increase from 540 MW to 630 MW after completion of the project, with tantamount to capacity addition of 90 MW.

Member (Gol-MoP), stated that as per the details mentioned in Para No. 3.15 for Item No. 197.01 annexed at Appendix – I of the agenda note, BBMB is to recover the losses incurred by BBMB on account of risk purchase from alternative sources from M/s BHEL as they had failed to comply with the contractual obligations and had failed to take up the work of RM&U of generating units in pursuance to the Letter of Intent issued in favour of M/s BHEL by BBMB on dated 11.8.2004. In this regard, it was informed that the matter will be examined in detail and separate presentation will be made regarding recovery of losses from M/s BHEL.

Member/Irrigation, BBMB stated that the work of RM&U was to be completed upto Nov., 2012, which is yet not completed. He further stated that there was a design defect in the runner due to which the runners were required to be replaced but BBMB has accepted modification of runners by welding additional piece of runner blade which is not acceptable. He further stated that BBMB has refunded penalty amounting to about ₹ 1.5 crores which was deducted on account of delay on the part of vendor, which is illegal.

In this regard, Chairman, BBMB took strong objection of the comments of Member/irrigation and stated that the work is being executed as

per the provision of the Contract Agreement, which are sacrosanct for all the parties including BBMB. As per the provision of the Contract Agreement, the Consortium was to ensure cavitation guarantee of less than 10 kg per 8000 hours of operation. On checking, the actual cavitation was found to be 4.3 kg as against the acceptable limit of 10 kg, which was well within the guaranteed value. However, it was found that the cavitation is concentrated at inlet side on all the runner blades with almost the same area and location due to which the matter was taken up with the vendor to investigate and rectify the cause of cavitation. In this regard, M/s Hitachi conducted model testing and shared its result with the BBMB and also submitted their proposal to modify the existing runner blades by welding additional piece on the runner blade with extended warranty of 2 years. The matter was taken up with CEA, who preferred weld build-up method over solid piece welding. Subsequently, the issue was taken up with Welding Research Institute, Trichi, who denied to comment on the issue as they did not have the product expertise. As the stalemate continued, matter was discussed in a high level meeting held between BBMB and Members of Consortium on dated 13.1.2016 and 2.3.2016 which was attended by the then Chairman, BBMB. During the meeting, it was decided that M/s Hitachi would modify the runner of Unit No. 2 of Bhakra Left Bank House with their best technology and post modification, the unit would be run for a period of 6400 hours including at least 3 months of running at high head range to establish the outcome of modifications made by the vendor. It was further decided that modification of runner blade profile through solid piece welding would be accepted by BBMB through approval of its Board only subject to successful performance of the post modification runner and other parts of the Unit during aforementioned test period. In such case, M/s Hitachi agreed to give ten year extended warranty duly supported by a firm Warranty Deed in respect of the modified portion of the runner blades and any damage or performance impairment caused to the Unit due to the aforementioned modified portion, subject to the condition that after successful performance of Unit No 2 as per performance parameters for modified profile mentioned above, liquidated damages due to runner cavitation issue be waived off after getting approval of the Board.

Chairman, BBMB, further stated that in pursuance to the decision taken in the meeting held on 13.1.2016 and 2.3.2016 which was chaired by the then Chairman, BBMB, M/s Hitachi carried out modification of runner of Unit No. 2 at site by 10th June, 2016. Thereafter, the unit was taken on shutdown on 20.11.2017 for joint inspection of modified runner after the machine had run for more than 9000 hours after modification of runner. As per joint report of BBMB and M/s Hitachi, "No cavitation phenomenon" has been observed on the modified portion at the leading edge of crown side of all the 17 no. blades, as was observed before modification. As per this report, there is no impact of modification of runner blade profile by solid piece welding on any Generator and Turbine component of Unit No. 2. The overall unit performance of Runner and other parts of Turbine and Generator in respect of related output, noise, vibration, is satisfactory, as there is no change in the values of above parameters recorded during original commissioning of the Unit No.2. Thus, as per the report, performance of the unit after runner modification was found to be successful.

Chairman, BBMB, further explained that in view of the successful performance of Unit No. 2, a detailed memorandum regarding acceptance of modified runner of Unit No. 2 after modification of runner blade profile through solid piece welding carried out at site, was placed before the Board in its 228th meeting, whereupon, it was decided by the Board to refer the matter to the Technical Committee of Whole Time Members approved by Board in its 224th meeting, for examination and to put up a detail report on the matter before the Board. Before putting up the case to the Technical Committee, the matter was also examined by the Power Sub Committee of BBMB comprising of the officers of the level of Director of BBMB partner States in its meeting held on 24.5.2018. Thereafter, based on the recommendations of Power Sub Committee and the Technical Committee, the Board in its 230th meeting held on 19.11.2018 approved to accept the modified runner blade profile of Unit No. 2, through solid piece welding with the conditions that the Consortium shall give unconditional extended warranty for a period of 10 years for the modified runners.

Member (Power) stated that modified runners through solid piece welding have been accepted by BBMB after successful test run of the runner

with modified profile at site and due deliberation at all levels followed by the approval of full Board in its 230th meeting.

Member (Power), BBMB further stated that as per the provision of contract in case of delay in implementation of contract, charges/penalty @ 1/2% per week of delay or part thereof of the contract value of such portion of material as has not been delivered or executed within the period of execution of the contract subject to a maximum of 10% of the contract value can be imposed upon the Consortium. Accordingly, a penalty of 10% is being deducted on account of delay in execution of the project, as per the provisions of contract. He further stated that an excess amount of about Rs. 80 lacs on account of part interpretation of penalty clause and facility charges of about Rs.1.47 crore were deducted by the field office of BBMB without approval of competent authority. These facilities were to be provided by BBMB to the vendor free of cost as per Contract Agreement for execution of the work awarded to them.

Member (Power) stated that there is no provision in the Contract Agreement to recover any facility charges from the Consortium. In this regard, Chief Engineer/System Operation had requested to constitute a committee, which included Members from Legal and Finance, which was constituted vide letter dated 23.10.2018. The Committee deliberated the issues in its meeting held on 3.5.2019 and recommended to refund the facility charges already deducted and excess penalty charges by taking the administrative decision for smooth execution of the contract, based on which the facility charges as deducted by BBMB, were refunded to the Consortium after vetting by the Finance Wing of BBMB. Member (Power) further stated that decisions taken in the matter are as per in the Contract Agreement and in the interest of BBMB in order to ensure expeditious completion of RM&U works.

Chairman, BBMB stated that the allegations levelled by Member/Irrigation are absolutely baseless and devoid of facts and therefore vehemently denied.

After detailed deliberation, Members of the Board approved the proposal as contained in the agenda note as under:

1. To accord revised A&A amounting to INR 648 Crores including taxes and duties for Renovation, Modernization and Uprating of 5 Hydro Generating

Units at Bhakra Left Bank Power House, Bhakra on its uprating from 108 MW to 126MW.

2. To authorize the Chairman, BBMB, to approve such additions/ alternation/deletions required (if any) with/without value upto the extent of + 5% (maximum) of the total A&A amount including the taxes and duties at the time of execution of contract for which necessity may arise and which may be deemed to be essential and worthwhile in the interest of work/organization.
3. Regularize the excess expenditure of INR 66.00 Crores including taxes and duties already made over and above the sanctioned amount of technical estimate and permissible limit of 5% excess, already included at Sr. No. 1 above.
4. To make payment for Liabilities of pending work of RM&U amounting to INR 95.66 Crores including taxes and duties for execution of the same expected in coming years, already included at Sr. No. 1 above.

It was further decided that BBMB will make a detailed presentation in the next Board Meeting regarding recovery of losses from M/s BHEL.

Item No. 235.04

Baggi Power House Project - Financial Implications and revision of DoP (Delegation of Power).

Chief Engineer/System Operation, BBMB, while explaining the agenda stated that the agenda has been put up as per directions issued in 234th Board meeting that the proposal regarding revision of DoP and deployment of manpower be discussed in next meeting. He further stated that as per the directions issued in the 234th Board Meeting, a reference was made to the Govt. of Himachal Pradesh to reconsider exemption of '13% free power' and '1.5% LADF' for Baggi Power House, whereupon the Govt. of Himachal Pradesh vide their letter No: MPP-F(2)-1/2019 dated 30.05.2020 has conveyed that 13% Free Power Royalty share and 1.5% pre commissioning LADF cannot be exempted in respect of Baggi HEP. He further stated that as desired by Member/Rajasthan during last meeting, the calculation details of the projected costs in the agenda have been also been provided.

Member/Haryana requested Member/Himachal Pradesh to consider waiver of Free Power and LADF for Baggi Power House. In this regard,

Member/H.P. intimated that the request forwarded by BBMB was considered but not found feasible for acceptance in view of the decision by the State Cabinet. He further stated that these provisions have been incorporated as per the Policy of the Government.

Member/Haryana further requested that BBMB should not put condition regarding providing the experienced manpower in respect of officers/officials below the rank of Executive Engineers as it is difficult for the partner states to provide manpower having experience in construction of Hydro Power Plants. In this regard, Chairman, BBMB stated that the partner states of BBMB have not been able to provide manpower even for the existing projects of BBMB and various posts of SDOs and XENs pertaining to the share quota of partner states are lying vacant at BBMB Project locations in Himachal Pradesh. He requested the partner states to provide people who are willing to work at project locations for a considerable period of their career so that BBMB can train them. In this connection, Member/Haryana intimated that the State of Haryana is considering recruiting the officers specifically for BBMB and will provide requisite manpower to BBMB as per their share quota soon.

Member (Gol-MoP) stated that the proposal to increase Delegation of Power for a specific project is not in order and requested to intimate as to how this proposal is going to speed up the work or going to help in the construction of project, particularly in view of the fact that the project is likely to be constructed through an EPC Contract. In this regard, Chairman, BBMB explained that all other projects of BBMB are in Operation & Maintenance stage whereas Baggi Power House is under construction stage. Therefore, revision of Delegation of Power is being sought for Baggi Power House only. Member/H.P. suggested to make revised Delegation of Power more generalised by including other projects of BBMB in the proposal such as RM&U works.

After detailed deliberations, following was decided:

- i) Board allowed BBMB to proceed with signing of **MoU** with Himachal Pradesh as per the approval accorded in 234th Meeting.
- ii) The proposal for revision of Delegation of Power will be reviewed with respect to other projects of BBMB and a detailed agenda be submitted in the next Board Meeting.

- iii) BBMB will seek officers having experience in construction of Hydro Power Plants only at the level of XENs & SEs, while other officers/officials of the level of SDOs and below to be provided by the partner states can be without such experience.

Item No. 235.05

Clarification to the decision taken during 230th Board Meeting dated 19.11.2018 under Item No. 230.01 (iii).

While explaining the agenda, Chief Engineer/System Operation, BBMB, explained that the matter pertains to the discussions held in the 228th Board Meeting held on 19.01.2018 on the agenda regarding “Acceptance of modified runner after modification of runner blades profile through solid piece welding during R,M&U works of Bhakra Left Bank Power House”, wherein the Members of the Board “were of the opinion that to avoid such delays, the Technical issues may be decided at the WTMs level. However, the decision is being misinterpreted and record pertaining to current as well as previous RM&U works is being sought and various queries pertaining to these cases are being raised.

In this regard, Member (Power), BBMB, explained that decisions in the matter are being taken as per the provisions of Contract Agreement. For operation of the contract, appropriate authority competent to take decisions as per his/her competency, is to take decisions. However, in case, any change in Contract Agreement is required, the matter shall be brought before the Board after due deliberations at WTM level.

Member/Irrigation, BBMB, stated that Chairman, BBMB, has accepted the runners with defective design and also waived off the penalty levied upon the firm without discussing the matter with him, which is against the decision taken by the Board in its 228th Meeting. In this regard, Chairman, BBMB, stated that the matter has already been explained at length under Item No. 235.03, which is reiterated. It is, however, again clarified that the work related to RM&U falls under the preview of Member/Power and Member/Irrigation should rather concentrate on works pertaining to his own sphere rather than interfering in the preview of Member/Power.

After discussions, Board approved the proposal contained in the agenda note. Board asked the Whole Time Members of Board to focus on their respective work areas and to maintain conducive working environment in BBMB.

Item No. 235.06

Regarding amendment in policy of contractual employment in BBMB.

Secretary, BBMB briefly explained the agenda note. He also requested that para no. 3 on page-14 of the agenda note was inadvertently left undeleted and requested the Members not to take cognizance of this para. After discussion, Board approved the proposal to amend Clause No. 5 of the policy for contractual employment in BBMB as under:

“5. Only those persons will be considered for the post of contractual employment who have worked at least for one year on the post of the same rank or higher post in BBMB and who have either retired from BBMB or were working in BBMB six months prior to their retirement and must have worked in BBMB for at-least 2 years in any capacity. However, in case of Hindi Translators, all the employees retiring from BBMB or from the Government Departments/PSUs of the Punjab, Haryana, Rajasthan, Himachal Pradesh, Chandigarh or Central Govt. after attaining the age of superannuation will be considered for contractual employment, provided they have worked at least for one year as Hindi Translator or higher post in their parent department or possess post graduate degree in Hindi”.

Item No. 235.08

Providing new outlet at RD-44100/R on Nangal Hydrel Channel for 85/81 acres of agricultural Land out of existing chak of outlet RD 42000/R of Nangal Hydrel Channel.

Secretary, BBMB informed that this agenda has been placed on the request of the State of Punjab and briefly explained the agenda. Member/Haryana, while initiating the discussion, stated that though the requirement of water is miniscule but puncturing of the main channel is not desirable and suggested that Punjab should make some alternate arrangement to draw the requisite amount of water from the outlet already available at RD

42000/R. Member/Rajasthan concurred the views of Member/Haryana and stated that they are also of the view that outlets on main canals have a direct bearing on safety of the canals and therefore the proposal is not appreciated by them, not only from safety standpoint, but also in view of the fact that such demands may be brought out in future as well by other states.

In this regard, Member/Punjab, intimated that due to site conditions, some of the fields are not getting properly irrigated with the existing outlet and there is no other alternate source of irrigation available in this area. He therefore, requested the Board to approve the proposal.

After deliberations, it was decided to approve the proposal subject to the conditions that in future, such like proposal should be put up with complete technical details and justification and puncturing of main channel should be avoided as far as possible.

Item No. 235.12

Sedimentation of Bhakra and Pong Reservoir.

AND

Item No. 235.14

**Dam Rehabilitation and Improvement Project, Phase - II & III
(DRIP-II & III)**

Taking up the agenda regarding sedimentation of Bhakra & Pong Reservoirs, Secretary, BBMB explained that the issue was earlier discussed in the 233rd meeting wherein the Board had broadly agreed with the concept & desired that BBMB should first explore the possibility of tendering for dredging of reservoir. He further apprised the Board Members, that the opinion of Dam Safety Review Panel (DSRP) of BBMB constituted under DRIP Project does not favour the mechanical dredging of silt in BBMB reservoirs considering the huge area of BBMB reservoirs and high cost of dredging and suggested other long term and short term preventive measures.

Secretary, BBMB further explained that the average annual rate of siltation in Bhakra Reservoir and Pong reservoir is 38.41 MCM & 24.29 MCM against the designed rate of siltation i.e. 33.61 MCM & 25.28 MCM respectively. On account of siltation, annual equivalent water storage capacity loss (replacement cost for creation of storage) works out to over 3000 crores (₹ 2000 crore for Bhakra reservoir and ₹ 1000 crore for Pong reservoir). In view of the

foregoing, DSRP of BBMB has suggested works amounting to ₹ 194/- crores as preventive and curative measures to reduce siltation in BBMB reservoirs.

Initiating the discussion, Member/Haryana stated that this issue has been contested by BBMB in the High Court of HP as well and an SLP filed by BBMB on the issue is still pending in the Hon'ble Supreme Court. The expert committee in its report had suggested that the root cause of silt is illegal mining and deforestation. Had deforestation and illegal mining activity not taken place, inflow of silt would have been substantially lower. Thus, the onus of catchment area treatment lies on the State of Himachal Pradesh and the cost of ₹ 194 Crores should be borne by the State of Himachal Pradesh.

Member/Himachal Pradesh, however, stated that movement of silt with water is a natural phenomenon and every drop of water falling on earth & resulting into runoff carries some silt with it. Sediments are generated due to rainfall in the catchment, intensity of rainfall, soil/rock structure, slopes in the catchment etc. along with many other factors. He further stated that H.P is not permitting mining in the catchment areas of BBMB Reservoirs and felling of green trees has been banned in Himachal Pradesh long ago. Therefore, shifting any liability of CAT plan on the State of H.P. on the pretext of illegal mining and deforestation is not correct and this liability of preventive and curative measures should be shared by all partner states of BBMB.

In this regard, Chairman, BBMB stated that the litigation pending in the Hon'ble Apex Court is with regard to inflow of silt in Balancing Reservoir and its subsequent dredging by BBMB, whereas the proposal submitted by DSRP is for catchment area treatment of Bhakra & Pong Reservoirs. He also stated that sedimentation in Pong Reservoir is even less than design value. Proposed sediment control measures in the catchment would be taken up along rim of the reservoirs, in the vicinity of the reservoirs, tributaries and area directly draining into Bhakra and Pong reservoirs. He further stated that in the previous Board meeting, Secretary, BBMB, was directed to clarify BBMBs stand as to whether the works related to catchment area treatment are to be taken up by BBMB or by State of Himachal Pradesh. Accordingly, Secretary, BBMB, was requested to explain the issue.

Secretary, BBMB explained that the matter has been placed under separate agenda item No. 235.14. Accordingly, the Board decided to discuss both these agenda items simultaneously.

Taking up the agenda item No. 235.14, Secretary, BBMB, explained that during the year 2003, HP State Pollution Control Board initiated criminal prosecution against BBMB under section 24, 25 or 26 of Water Act, 1974, which was challenged by BBMB in the Hon'ble HP High Court, Shimla, by way of filing a Civil Writ Petition No.777/2003. The Civil Writ Petition was converted into PIL by the Hon'ble High Court and Ministry of Environment & Forests (MoEF) as well as Central Pollution Control Board (CPCB) were impleaded as parties. An Expert Committee was constituted by MoEF for suggesting action plan and management of Silt. The Expert Committee had submitted its final report dated 05.05.2005, wherein it was recommended to share the cost of preparation of CAT plan by the concerned stakeholder's viz. BBMB, HPSEB, NHPC etc., as per the catchment area under their project's jurisdictional purview. As per directions of Hon'ble High Court, BBMB engaged the services of HFRI at a cost of ₹15 lac which was further revised to ₹17.03 lac to amend the CAT plan. This report of Expert Committee was filed before the Hon'ble High Court in July, 2008. In compliance to the directions of the Hon'ble High Court an affidavit dated 25.08.2008 was filed by BBMB wherein in para-19 it was stated that :

“It is submitted that the said CAT Plan being a measure for revamping the catchment areas of the state, the management thereof should be left to the Government of Himachal Pradesh. The findings on record establish that environmental damage to the catchment area is being caused because of illegal and indiscriminate mining in these areas and petitioner is not at all responsible for this illegal mining. The CAT Plan being a matter pertaining to the State, it is prayed that the petitioner-Board be kept outside its ambit, scope and purview. Catchment areas fall outside the scope of the authorities vested in petitioner in terms of The Punjab Re-organization Act, 1966.”

However, the Hon'ble H.P. High Court, Shimla in Para-42 & 43 of its judgment dated 31.08.2012 directed as under:

We are aware that a lot of silt is generated due to illegal mining and illicit felling of trees being carried out. The Catchment Area Treatment Plan (CAT) has been prepared and the expert committee has made certain observations about the CAT plan. We are not experts in the field and we, therefore, direct the State of Himachal Pradesh, the Union of India in consultation with the petitioner-BBMB and other authorities to ensure that a properly thought out CAT plan is prepared which ensures that there is minimization of mining and illicit felling of trees and there is afforestation in the area so that there is minimum amount of generation of silt. It is the duty of the State of Himachal Pradesh being the protector of its people to ensure that there is no illegal mining and it shall be open to the petitioner-BBMB to bring to the notice of the authorities incidents of illegal mining and we are sure that if such incidents are brought to the notice of the competent authority then immediate action will be taken.”

“In view of the above discussion, we find no merit in the contention of the petitioner board that it is not Covered by the provisions of the water (prevention and control of pollution) act, 1974 and we are aware of the considered view that it is required to seek consent of the board since the matter has been pending for a long time and with the help of expert committee the pollution has been controlled effectively we while rejecting the contention of the petitioner direct that in case the petition board applies for consent on or before 31st October 2012 no penal action shall be taken against it by the HP State Pollution Control Board. We also direct that the pollution Control Board shall take a holistic approach and dealing with the issues involved will not take a confrontationist approach and shall be guided by the reports of the expert committees which have been accepted by this Court and form part of the record of the case.”

After the decision of Hon'ble High Court, an agenda was placed before the Board in its 211th meeting for information and as per decision of Board, BBMB has challenged the judgment of the Hon'ble HP High Court by filing SLP No. 33418/2012 in the Apex Court. The Hon'ble Supreme Court vide

its order dated 14.12.2012 stayed the operation of impugned order of Hon'ble HP High Court, which is still operative.

In this regard, Member/Haryana suggested that BBMB should file an affidavit in the Hon'ble Supreme Court that the cost of Catchment Area Treatment should be borne by the State of Himachal Pradesh.

Member/Punjab and Member/Rajasthan also concurred the views of Member/Haryana.

Member/Himachal Pradesh, however, strongly objected & resisted the suggestion of Member/Haryana. He stated that the generation of silt is a natural phenomenon and the reservoirs are designed for this. Though, the average annual rate of siltation in Bhakra Reservoir is slightly higher than the designed rate but for Pong reservoir the actual rate of siltation is lower than the designed rate. Thus, it is wrong to say that the State of HP is responsible for siltation of these reservoirs. He suggested that BBMB should be allowed to undertake Rim Protection of its Reservoirs and measures in the tributaries draining into the reservoir to minimise the inflow of silt and the cost of CAT plan should be shared by all the partner states. He requested the Board Members to allow BBMB to use the funds under DRIP for CAT plan of Bhakra and Pong Reservoirs.

Member (Gol–MoWR) supported the views of Member/Himachal Pradesh and stated that generation of silt is a natural phenomenon based on number of factors and it is not correct to hold the State of H.P. responsible for this. Increased sediment load in rivers and reservoirs is a worldwide phenomenon. He also stated that annual sediment load in Pong Reservoir is even less than the design value, which shows that the problem cannot be attributed only to deforestation and mining in the State of HP.

Chairman, BBMB stated that due to climate change, instances of extreme precipitation events resulting into flash floods have increased, which brings in lot of sediments into the reservoir. It is therefore imperative to take necessary measures to reduce sedimentation to the extent possible at an early date so as to elongate life of the BBMB reservoirs.

Member (Gol – MoP) suggested that as per his knowledge, CAT plan is not a part of DRIP Program and BBMB should ascertain this before taking up any such work under DRIP.

Member/Haryana enquired about the time line of DRIP Project. In this regard, Secretary, BBMB clarified that the project is to be implemented over a period of 10 years in two phases of 6 years each with an overlap of two years.

Chairman, BBMB stated that the Ministry of Power has been requested to give guarantee for repayment of loan on behalf of BBMB. In this regard, Member (Gol-MoP) stated that the loan is to be repaid by BBMB Partner States so they should stand guarantee on behalf of BBMB. However, Member (Gol – MoWR) stated that MoJS will not deal with 4 States out of which 2 States are not even participating in DRIP Project. In this regard Member/Haryana, Member/Punjab, Member/Rajasthan, Member/HP principally agreed to allow BBMB to take loan under DRIP and to repay their respective share of loan on behalf of BBMB and requested Member (Gol – MoP) to issue guarantee on behalf of BBMB.

After detailed deliberations, following decisions were taken:

- i) Disbursement of funds from World Bank in terms of loan to BBMB under DRIP Phase-II as already approved by Board in Item No. 234.06, through GOI, Ministry of Power.
- ii) BBMB to take up the matter with the Ministry of Jal Shakti and Ministry of Power regarding issuance of loan guarantee, so that the mechanism for fund flow arrangements to facilitate reimbursement to BBMB can be formulated accordingly.
- iii) BBMB to organize an awareness Workshop on DRIP programme (Phase II & Phase III) in association with CWC/CPMU, with the officers of Water Resources Department, Power Utilities and Finance Departments of participating States (Haryana, Punjab, Rajasthan and Himachal Pradesh) regarding the proposed works to be undertaken in DRIP Programme (including proposed 194 Cr. Under CAT Plan), along with fund flow arrangements for reimbursement to BBMB and consequent sharing of loan by partner States/Power Utilities as per their agreed share, to facilitate the financial concurrence and opening of the respective budget line.

Item No. 235.13

Regarding requirement of panel for induction of senior officers in BBMB from partner states/SEBs.

Secretary, BBMB briefly explained the agenda and informed the Board regarding previous decisions taken by the Board, as detailed in the agenda note.

In this regard, Chairman, BBMB stated that in pursuance to the decisions taken in various Board meetings, partner States of BBMB are being requested to provide a panel of at-least 3 officers against each vacant post of their share so that a good officer with relevant experiences and good service record could be selected for induction in BBMB. However, some of the partner States of BBMB are posting the officers directly in BBMB without providing any panel and without taking the consent of BBMB, even at the level of SE and Chief Engineer, which against the agreed policy.

In this regard, Member/Haryana, intimated that at times, it is not possible for them to send a panel of officers to BBMB due to their own administrative problems.

Member/Punjab, stated that best efforts are being made available by the State of Punjab to provide quality man-power to BBMB keeping in view the importance of BBMB Projects for the State of Punjab. He, however, also stated that sometimes it is not possible to send a panel of officers to BBMB on account of their own administrative problems.

In this regard, Chairman, BBMB, stated that projects of BBMB are aging and well qualified and experience officers are required to operate and maintain these projects. He further stated that recently, officers of the rank of Chief Engineers were posted in BBMB by the States of Haryana and Punjab, without any panel. However, these officers also did not join in BBMB and subsequently their posting orders in BBMB were cancelled by their respective parent department. On account of the above stalemate, 2 out of 3 posts of Chief Engineers in the Irrigation Wing of BBMB remained vacant for over 3 months and one post of Chief Engineer pertaining to the share quota of Haryana Irrigation is still lying vacant since last over 4 months. Chairman, BBMB requested the partner States not to undermine the importance of BBMB Projects as they are lifeline of Northern Indian States and supplying the water and

electricity to the beneficiaries States with utmost reliability and minimal cost. He also mentioned that even Hon'ble Minister of State (I/C), Power, New & Renewable Energy, in a review meeting held on 02.02.2018 at Ministry of Power, New Delhi had stated that, "BBMB to take strict action against less efficient staff and directed that inefficient staff should be repatriated to parent organisation".

Member/Haryana then stated that recently, the Govt. of Haryana has formulated a policy for posting of Chief Engineer in BBMB against their share quota post. He however maintained that in case, any officer of Haryana Irrigation Department is not performing well or not found suitable by BBMB, he may be send back to his parent department.

The matter was discussed in detail and it was decided that BBMB will accept the officer posted by partner states directly in BBMB without the panel with the conditions that BBMB can repatriate any officer/employee with recorded reasons without any prior consent from the partner States and the respective partner state(s) will be obliged to provide a suitable substitute against the officer/employee so repatriated by BBMB expeditiously, to the satisfaction of BBMB.

Item No. 235.16

Draft PPA for 15 MW Floating Solar Power Plant at Nangal Dam Reservoir near village Neilla, District Bilaspur, Himachal Pradesh, BBMB.

Chief Engineer/System Operation, BBMB, while explaining the agenda stated that during 233rd Board meeting, an in-principle approval to PPAs for Ground Mounted Solar Power Plant and Floating SPP was accorded. The draft PPA in respect of Ground Mounted Solar Power Plant as submitted by PEDDA was annexed with the Agenda during last meeting. Draft PPA in respect of Floating SPP has now been received from SECI. SECI had requested to provide the approval of the draft PPA on or before 30/06/2020. He requested the Board, to kindly deliberate and approve the same.

Member/Haryana pointed out that if the injection point is 66kV line of STU, then wheeling charges etc. shall be applicable. Accordingly, he desired to work out the tariff difference if the injection point is taken as nearest ISTS/CTU instead of STU, as proposed. The least cost option be brought out in next Board meeting.

JS/Hydro pointed out while deliberating the slide regarding 'Comparison of PPA of 2 MW Ground Mounted and 15 MW Floating Solar Power Plant' that the PPA needs to define 'force majeure clause' and spell out 'water level' clearly. The same however, are defined at Page 46 - 47 and page 32 respectively of the PPA as enclosed with Agenda.

After deliberations, the action taken to approve the PPA in view of SECI deadline was concurred by the Board. It was also decided that tariff discovered through the competitive bidding shall also be brought in the next Board Meeting for the consideration of members of the Board before award of contract.

Item No. 235.17

Grant of annual incentive to BBMB employees in recognition of their excellent contribution towards efficient maintenance and operation of BBMB Projects.

Chief Engineer/System Operation, BBMB, while explaining the agenda note stated that during the year 2019-20 BBMB has generated 28.57% excess energy than the target fixed by CEA. Plant availability of BBMB during this year has been 98.94% and transmission availability has been 99.82%. Further, BBMB has earned ₹ 25.92 Crore under Deviation Settlement Mechanism (DSM) through optimal operation of its Power Houses and close monitoring of real time generation. He further stated that as per the policy for performance based annual incentive approved by the Board in its 233rd Meeting, the annual incentive for the year 2019-20 works out to 25.3 days salary. He further, stated that in the 233rd Board Meeting, it was decided that 3 days incentive be reduced each time when incentive is granted, to provide financial assistance to the family in case of employees death. Since, the amount so deducted in the previous year is still lying un-utilised, it was proposed to deduct 2 days incentive instead of 3 days incentive for the year 2019-20 for the said purpose.

After deliberations, Board approved the proposal to grant 25 days salary (i.e. Basic Pay + Grade Pay + I.R + D.A) as incentive for the year 2019-20, in recognition of excellent performance of BBMB as per approved Incentive

Policy, out of which two days incentive shall be reduced to provide financial assistance to the family in case of death of an employee.

Item No. 235.18

Contractual appointment of Doctors in BBMB on Part time basis-Regarding

Secretary, BBMB while explaining the agenda note informed the house that the Board in its 222nd and 219th meeting has approved the policy for contractual appointment of Doctors in BBMB wherein there was no age bar for appointment of Doctor in BBMB on part time basis. In this regard, problems are being faced for granting of extension to the existing part-time doctors owing to non-fixation of the age bar. He further explained that due to Corona Pandemic, it has become difficult to appoint new Doctors in place of the existing Doctors. He further stated that at present 15 doctors have been engaged against sanctioned posts of part time Doctors in BBMB out of which 6 part time doctors working in BBMB are above the age of 70 years.

In this regard, Member/Haryana, stated that the possibility to appoint young doctors should be explored in a time bound manner.

After detailed discussion, it was decided to fix the maximum age for appointment of Doctors on part time basis in BBMB as 72 years. However, in view of Corona Pandemic, all Doctors who are already serving in BBMB on part time basis, shall be given extension for another 2 years irrespective of their age and due process for appointment of new Doctors in their place shall be initiated 6 months prior to the expiry of tenure of existing Doctors.

Item No. 235.19

Regarding addition of posts/groups, relaxation and amendment in Schedule-A of BBMB Class I & II Officers (Recruitment & Conditions of Service) Regulations

Secretary, BBMB, while explaining the agenda note mentioned that the agenda is divided in 2 parts. Part – A of the agenda is regarding addition of posts/groups in BBMB Class I & II Cadre, which is submitted for consideration and recommendation of the Board so that the matter regarding addition of new posts/groups over and above the existing cadre strength allowed in BBMB Cadre, can be referred to the Ministry of Power, Govt. of India, for its approval in terms of Clause -4 of the BBMB Class I & II Officers Regulations 2015. Part – B of the agenda is submitted for consideration and approval of the Board for

amendment and relaxation in terms of Clause - 21 of the BBMB Class I & II Officers Regulations' 2015.

Secretary, BBMB further explained that Part-A of the agenda is regarding creation of the cadre of Public Relations and Principals in BBMB Regulations by shifting one post each of the Public Relations Officer and Principal from partner state cadre to BBMB Cadre. In addition, there is requirement to create 1 new post of Dy. Director/Legal under already notified Group – IV (Legal Services) and 1 new post of Director/IT & Computer under Group- X (IT & Communication) in the BBMB Cadre. Creation of these two posts would entail surrendering 3 no. posts of Executive Engineers pertaining to the share quota of BBMB partner states in order to offset the financial implication, as per details brought out in the agenda note.

Further, Part-B of the agenda is in respect of amendment in the condition for grant of ₹ 6850/- Grade pay to the post of SDO/AE as BBMB has not been able to grant the grade pay of ₹ 6850/- as per PSPCL pattern because BBMB does not have any direct recruitment of AEs and also there is no promotional post of AEE in BBMB. Further, at present there are no AEs in BBMB, who have completed the requisite experience of 9 years for promotion to the post of Executive Engineer. Accordingly, it is proposed to relax the condition for promotion to the post of Executive Engineer from 9 years (4 years as AE and 5 years as AEE) to 7 years as AE/AEE, subject to fulfilling of all other requirements for promotion to the post of Executive Engineer as per the BBMB Class-I & II Officers Regulation, 2015 as a "one-time measure".

Member (GoI – MoP) requested to take leave in view of his other engagements with the comments that in case members of the Board deem fit, the matter may be referred to the Ministry as per agenda for further examination.

Member (Rajasthan) stated that he has received this agenda only day before yesterday and in view of insufficient time available for its appraisal, he requested to defer the agenda for next meeting.

Member (Punjab) stated that Punjab does not support the proposal to surrender/abolish any post pertaining to the share quota of the State of Punjab.

Member (Haryana) stated that since there are no further promotional avenues in IT cadre, the present incumbent working as EDP

Manager may be re-designated on as is where is basis without any financial benefits.

After deliberations, the Board decided as under:

- i) To re-designate the EDP Manager on as is where is basis without any financial benefit or perks, as per rules as Director (IT).
- ii) Regarding addition of new posts/groups in BBMB Cadre, matter would be referred to the MoP, Gol for its approval.
- iii) To approve the proposal to amend the condition for grant of ₹ 6850/- Grade pay to the post of SDO/AE/AO as contained in the agenda note.
- iv) To approve to relax the condition for promotion to the post of Executive Engineer from 9 years (4 years as AE and 5 years as AEE) to 7 years as AE/AEE as contained in the agenda note as a one-time measure.

Item No. 235.20

Training policy of BBMB - Guidelines regarding limit on attending In-house/External/Institutional Training Programmes by BBMB employees i.e., officers/officials thereof.

Director/HRD, BBMB, briefly explained the agenda note.

Member (Haryana) stated that BBMB should study the training policy of other organisations. In this regard, Director/HRD, BBMB clarified that the policy has been prepared after studying the training policies of three PSUs i.e, DVC, NHPC & THDC.

After deliberations, Board approved the proposal as contained in the agenda note.

236th meeting of the Board held on 11.12.2020

Item No. 236.02

Installation of 2MW Ground Mounted Solar Power Plant, BBMB at village Neilla Tehsil Naina Devi, Himachal Pradesh.

Special Secretary, BBMB while explaining the agenda note intimated that in pursuance to the decision taken by the Board in its 231st & 233rd meetings, NIT dated 09.07.2020 for execution of 2 MW Ground Mounted Solar Power Plant at village Neilla, Tehsil Naina Devi, Himachal Pradesh was floated by PEDDA and after competitive bidding, the L-1 rate comes out to ₹ 3.36 per unit excluding erection of Transmission Line for evacuation of solar power at 11kV,

which shall be carried out by BBMB. He further explained that SECI, PSPCL & PEDDA were requested to supply copies of MoU/ Purchase Order for 2 MW or similar capacity plants installed on Build Own Operate basis to ascertain the reasonability of rates and the information received from them has been tabulated in the Agenda Note. The levelized tariff of the rates under Pradhan Mantri Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) scheme launched in March, 2019 for setting up of Grid connected Solar Power Plant of individual capacity ranging from 500kW to 2 MW has also been tabulated in the Agenda. In view of the foregoing, he requested the Board to decide upon awarding the work to be L-1 bidder at its quoted rate i.e. ₹ 3.36 per unit on Build Own Operate basis for 25 years and to erect the 11kV transmission line for evacuation of power from Solar Power Plant at an estimated cost of Rs.24 lacs.

Member (Haryana) while initiating the discussion stated that the rates discovered by BBMB through competitive bidding are on the higher side and intimated that the state of Haryana has awarded Solar Projects at rates below ₹3/- per unit. He suggested that BBMB should go for re-tendering the project. He further suggested that BBMB should explore the possibility for collaborating with SECI for its Solar Power Project.

Member (Rajasthan) further suggested that BBMB should float a single tender for its 18MW Ground Based Solar Power Plant so as to invite better competition and get competitive rates. Director (Technical), RVPN suggested that the 11kV Transmission Line proposed to be constructed by BBMB for evacuation of power from Solar Power Plant may also be included in the scope of bidder so as to avoid any dispute in evacuation of power due to non-availability of transmission line on account of any reason. This will also provide an advantage to BBMB as the metering point for power will shift to terminating end of 11kV line and transmission losses will shift to bidder's account. He further requested to clarify as to whether the maintenance of proposed Solar Power Plant is included in the scope of vendor or not. To this, Member (Power) clarified that the project is proposed to be awarded on Build-Own-Operate basis and all maintenance cost for the entire life cycle of project is to be borne by the bidder.

Chairman, BBMB stated that the capacity utilization factor (CUF) for this project was indicated as 17% but looking at various guidelines this could

be revised to 21%, which would increase the quantum of energy generation. He further suggested that in case of re-tendering, BBMB can also stipulate provision for e-reverse bidding, which may provide competitive rates.

After detailed discussions, the Board decided as under:

- i. To re-tender the 2MW Ground Mounted Solar Power Plant at village Neilla Tehsil Naina Devi, Himachal Pradesh with 21% CUF and to include erection of 11kV line in the scope of bidder.
- ii. To float a single NIT for all Ground Mounted Solar Power Plants of BBMB aggregating to 18MW so as to invite better competition and with a provision for e-reverse bidding.
- iii. PPAs already approved by the Board shall be suitably amended to incorporate the decisions taken in Point No. (i) above.

Item No. 236.03

Detailed presentation regarding recovery of losses from M/s BHEL.

Special Secretary, BBMB while explaining the agenda note stated that the Board in its 235th meeting under item No.235.03 had directed to make a detailed presentation regarding recovery of losses from M/s BHEL on account of their failure to execute the contract signed between BBMB and BHEL for RM&U of 5 Hydro Generating Units at Bhakra Left Bank Power House. In this regard, he explained that a global NIT dated 19.09.2002 was floated for RM&U of 5 Hydro Generating Units at Bhakra Left Bank Power House against which 3 bids were received. Based on the evaluation of the NIT and in pursuance to the approval granted by the Board in its 186th meeting held on 10.08.2004, an LOI for the said work was issued in favor of M/s BHEL on 11.08.2004 for Rs.180.15 crores including taxes and duties. After repeated persuasion, the contract for the work was finally signed with M/s BHEL on 18.04.2005. The total liability for carrying out RM&U works including other equipment to be procured by BBMB through separate tendering was Rs.232 crores including taxes and duties. However, even after signing the contract and despite vigorous pursuance and meetings at the highest levels, M/s BHEL did not fulfil the contractual obligations such as furnishing the Bank Guarantee of Rs.3 crores, in the form of security deposit and submission of performance security for 10% of the contract value. M/s BHEL also did not furnish any Bank Guarantee for claiming 10% advance

payment. It is also pertinent to mention that a meeting was held between Chairman, BBMB and CMD, BHEL at New Delhi on 05.08.2005 wherein BHEL committed to furnish the requisite Bank Guarantees before the end of August 2005 but failed to do so.

Compelled by the circumstances, the Board in its 190th meeting held on 21.10.2005 decided to terminate the contract agreement with M/s BHEL and to make a counter offer to L-2 firm i.e. M/s Sumitomo Corporation, to undertake the work on the same terms on which the work had been contracted to M/s BHEL. It was further decided that in case M/s Sumitomo Corporation did not agree for the above proposal, global tenders would be invited. In pursuance to the decision of Board, M/s Sumitomo Corporation were made a counter offer, but the firm conveyed their inability to accept the counter offer made by BBMB. Further, the decision to terminate the contract was conveyed to M/s BHEL on dated 15.11.2005 with a condition that the termination of contract was without prejudice to other remedies available to BBMB to recover the increase in total cost of completing the facilities as per the scope of the contract agreement under risk purchase from alternative sources and/or any other damages recoverable from the contractors by the action of law as per clause 15.5(c) of Supply/Services contract and also as per clause 43.0 "Negligence".

Since M/s Sumitomo Corporation did not accept the counter offer made by BBMB, a global NIT dated 20.01.2006 was floated, which was opened on 29.09.2006. In response to the NIT, both M/s BHEL and M/s Sumitomo Corporation submitted their offers, but the offer of BHEL was not considered by BBMB on account of considered view that considering / accepting the offer of BHEL again shall inevitably dilute the stand and position of BBMB in the matter of its claims and rights against BHEL on account of earlier breach and delay. After evaluating the NIT and ascertaining the reasonability / justification of prices quoted by M/s Sumitomo Corporation, Japan vis-à-vis their earlier offer dated June 2003, a purchase proposal in favour of M/s Sumitomo Corporation was put up for approval of the full Board in its 197th meeting held on 24.10.2007. The overall price liability for carrying out RM&U works through M/s Sumitomo Corporation comes out to Rs.460.20 crores including taxes and duties. Thus, BBMB has been made to bear an additional financial liability of Rs.228.20 crores due to retendering of RM&U works. Further, the total loss incurred by BBMB

due to failure of BHEL to execute the contract awarded to them, amounts to Rs.231.50 crores. The matter has been taken up with M/s BHEL vigorously vide letters dated 26.12.2007, 29.02.2008, 17.03.2008, 28.03.2008 and 11.04.2008 to deposit the security amounting to Rs.30 million, without prejudice to other rights and remedies available to BBMB to recover the increased cost under risk purchase, but M/s BHEL did not respond to BBMB requests. Finally, a self-contained letter for referring the matter to Committee on Disputes was sent to the Under Secretary, Government of India, Ministry of Power vide letter dated 05.05.2010. In this regard, a meeting was held between BBMB and MoP through Video Conferencing on dated 22.10.2020 to discuss the matter.

Initiating the discussions, Member (Haryana) intimated that the work awarded to M/s Sumitomo Corporation was scheduled to be completed by November 2012 but till date, the RM&U of only 3 out of 5 units has been completed. He requested to intimate the dates for completion of RM&U of remaining 2 Units. He further expressed his disappointment that BBMB has not been able to recover the losses since last 13 years and suggested that BBMB may consider to file a Civil Suit against M/s BHEL to recover the amount in case the contract permits us to do so. Member (Punjab) and Member (Rajasthan) also concurred the views of Member (Haryana).

In this regard, Member (Power) intimated that the RM&U of 4th unit (No.3) was scheduled to be completed by April, 2020, which was delayed due to COVID-19 pandemic and is now expected to be completed tentatively by mid of June, 2021. He further intimated that the RM&U of the 5th Unit (No.1) is scheduled to be completed tentatively by March, 2022.

Member (MoP) however intimated the Committee on Disputes constituted to resolve disputes between Ministries/Departments and PSUs of Central Government. The possibility of filing a Civil Suit in parallel while the matter is under consideration before the Committee on Disputes needs to be legally examined. He assured the Board to confirm the position in this regard and intimate the same to BBMB.

After deliberations, it was decided that BBMB will get the provisions of the contract scrutinized thoroughly and consider measures against M/s BHEL to enforce the provisions of contract and recover the losses in parallel with the

proceedings pending before the Committee on Disputes, in case it is legally permitted.

Item No. 236.04

Shortage of Manpower in BBMB.

Taking up the Agenda, Special Secretary, BBMB intimated that BBMB is facing extreme shortage of Manpower and as on 31.10.2020, 5142 out of 11458 sanctioned posts (44.87%) under Group - B, C and D are lying vacant. He further intimated that during the years 2021, 2022 and 2023 another 442, 439 and 409 employees are going to retire respectively. On account of shortage of manpower, BBMB is facing lot of difficulty in maintaining its projects.

In this regard, Member (Haryana) raised queries on status of vacant posts and posts lying vacant since more than 2 years and whether these could be abolished. On this, Member (Power) intimated that various technical posts which are presently lying vacant are essential for smooth operation & maintenance of BBMB Projects, which are quite old and require increased attention and these posts should not be abolished.

Item No. 236.05

Permission to lift 7.00 MLD (2.86 cusec) water from Gobind Sagar (Satluj River) for drinking water facilities under Jal Shakti Division Ghumarwin, District Bilaspur, Himachal Pradesh.

Secretary, BBMB while explaining the agenda note intimated that the Additional Chief Secretary (MPP & Power) to the Govt. of Himachal Pradesh has requested BBMB to issue No Objection Certificate for lifting of 7.0 MLD water from Gobind Sagar reservoir of BBMB to provide drinking water facility in the area of Tehsil Ghumarwin, Distt. Bilaspur, Himachal Pradesh. He further intimated that there is no allocation of water to the State of Himachal Pradesh out of Satluj water and surplus Ravi Beas water as per Bhakra Nangal Agreement, 1959 and Inter-State Agreement dated 31.12.1981 respectively, however, on the request of Himachal Pradesh, BBMB had earlier approved supply of water to HP, twelve times, free of cost and out of common pool, totaling to 293.62 cusec.

After deliberations, the Board agreed to approve the request of Himachal Pradesh to lift 7.0 MLD water from Gobind Sagar reservoir of BBMB for providing drinking water under Jal Jeewan Mission Har-Ghar-Nal-Se-Jal

(Pargana Ajmerpur) under Jal Shakti Division Ghumarwin free of cost, from the common pool.

Item No. 236.06

Regarding Class-I & II posts/cadre in BBMB.

Taking up Part-A of the agenda, Secretary, BBMB explained that BBMB is facing acute shortage of manpower both in Technical & Allied cadres. In case of Technical officers, large no. of vacancies exist in posts of SDO & Xen for both the wings. He further intimated that in allied Non-Technical cadres, BBMB is facing lot of difficulty to maintain the services as more than 50% vacancies exist. He also intimated that only 2-3 posts are sanctioned in these cadres like Hindi Officer, Labour Welfare Officer, Sr. Law Officer, Public Relation officer & Principals and most of the vacancies pertain to the states of Haryana and Punjab.

Initiating the discussions, Chairman, BBMB requested the partner states to post willing officers/officials in BBMB preferably having experience of working in Hydro Power Projects and are willing to work at BBMB Project sites like Bhakra complex, Pong or Dehar power houses.

Member(Haryana) intimated that he has already taken up the matter regarding shortage of doctors with Secretary Health, Haryana who has assured that the doctors willing to serve in BBMB will be posted in BBMB against the share quota of Haryana. He further intimated that the Government of Haryana has framed a policy to post the recently promoted officers/officials to serve in BBMB and the State is also considering a special recruitment drive to recruit the man power as per share specifically for BBMB. He requested BBMB to intimate any specific qualification/requirement to be incorporated in case the State of Haryana carries out special recruitment drive for BBMB. He also requested to supply a consolidated list of the officers of allied cadres required by BBMB so that the requisite number of officers can be provided to BBMB.

Member (Punjab) also assured that the vacancies falling under the share quota of Punjab shall be filled up soon and requested to supply a consolidated list of vacancies of all cadres so that the requisite number of officers can be posted in BBMB.

Taking up Part-B of the agenda, Secretary, BBMB explained that as per BBMB Class I & Class II Regulations, 2015, 3 No. BBMB cadre posts of

Executive Engineers each in Irrigation Wing & Power Wing were allocated. Board in its 230th meeting approved that 75% of above posts are to be filled up by way of promotion from Degree Category (i.e. 02 posts) and 25% are to be filled up from AEs from Diploma category (i.e. 01 post). Further, the agenda for relaxation in time gap for promotion from AE to the post of Executive Engineer from 09 years to 07 years as a one-time measure has been approved by the Board in its 235th meeting.

The 2 no. posts of Executive Engineer in degree category are lying vacant at present as no degree category AE in BBMB Irrigation Wing fulfils the minimum experience of 7 years, whereas there are candidates (AEs) in diploma category who are fulfilling this minimum experience, but cannot be considered for promotion against the 2 no. posts of Executive Engineer (degree category) and these posts will remain vacant. He further informed that such candidate(s) from diploma category would otherwise retire much before the candidates from degree category becoming eligible for promotion as Executive Engineer and as such, will not infringe the rights of degree category AEs for promotion against their own category 2 no. posts of Executive Engineers in I.W.

In view of the foregoing, he requested Board for allowing relaxation in continuation to the one-time relaxation of time gap for promotion to the post of Executive Engineer, approved in 235th meeting of the Board, to fill the sanctioned posts of Executive Engineers of BBMB in Irrigation Wing by way of promotion from eligible Diploma category AEs as a one-time measure under provisions of clause 21 "Power to Relax" of BBMB Class-I & II Officers Regulations.

After deliberations, the Board approved the aforesaid relaxation as a one-time measure.

Explaining part C of the agenda, Secretary BBMB stated that there are 3 hospitals in BBMB located at Nangal, Sundernagar and Talwara and each hospital has one sanctioned post of PMO. The post of PMO is not a cadre post and only the charge of this post is assigned to the senior most doctor working in that particular Hospital without any extra remuneration in his own pay scale to look after the administrative duties and to be in charge of the hospital as per the instructions issued vide letter dated 13.02.2009. As doctors from various participating states are working in BBMB hospitals, lot of difficulty is being faced

in determining the inter-se seniority of doctors to assign the charge of the post of PMO and doctors belonging to different states are claiming the charge of the post of PMO based on various grounds. He further intimated that recently, BBMB has been dragged into a litigation on the matter. Accordingly, the matter has been examined in detail and the opinion of legal cell and standing counsel of BBMB has also been obtained as elaborated in the agenda note. Based on the legal opinion, the criteria for assigning the charge of the post of PMO at BBMB hospitals has been framed as per the details brought out in the agenda note and the same is submitted for consideration and approval of the Board.

After deliberations, the Board approved the criteria for assigning the charge of the post of PMO at BBMB hospitals as under, subject to the condition that no disciplinary proceedings/chargesheet is pending against the officer:

- 1) The charge of the post of PMO in a particular BBMB Hospital would be considered to be given to the doctor of highest rank and maximum length of service in that rank, from amongst the doctors not below the rank of Deputy Director/Civil Surgeon or equivalent/above of Punjab & Himachal Pradesh, Civil Surgeon or equivalent/above of Haryana, Sr. Specialist/Dy. Director/Chief Medical & Health Officer or equivalent/above from Rajasthan, working in that particular hospital.
- 2) In case of non-availability of doctor of the rank defined at Sr. No. 1 above working in that Hospital, then SMO & equivalent rank doctor having more length of service as SMO & equivalent, working in that hospital, would be considered for giving the charge of the post of PMO in that Hospital.
- 3) Further, in case, no SMO & equivalent rank doctor is available in that hospital, then MO & equivalent rank doctor having maximum length of service working in that hospital, would be considered for giving the charge of the post of PMO in that Hospital.
- 4) This charge would be assigned in own pay scale of the doctor, without any extra remuneration.
- 5) The case regarding assigning of the charge of the post of PMO would be forwarded with complete details by the concerned Chief Engineer, duly recommended, to the o/o Secretary, BBMB Chandigarh who would process the case and issue orders in this regard as per the approval of Chairman BBMB.

- 6) Notwithstanding anything contained in Sr. No. 1, 2, 3 above, Chairman, BBMB shall have the right to entrust the charge of PMO of any Hospital in BBMB on account of retirement/transfer/repatriation etc., to the PMO of any other project hospital till further arrangements are made.
- 7) In case of any dispute, decision of Chairman BBMB would be final and no legal claim in this regard would be entertained.

Item No. 236.09 A)

Position of water supplies to the partner States of Punjab, Haryana, Rajasthan and Delhi Jal Board.

Members of the Board noted the position.

Item No. 236.09 B)

Utilization of available water optimally and judiciously by the Partner States – Regarding.

Secretary, BBMB while explaining the agenda intimated that Secretary, Ministry of Jal Shakti, Department of Water Resources, RD&GR, New Delhi vide D.O. letter dated 28th September, 2020 has stressed for a prudent planning by the partner States to utilize the available water optimally and judiciously so as to avoid any scarcity in later stage and requested the partner states to come together and chalk out an approach for optimal utilization of available water.

In this context he further intimated that the Pre-Monsoon IMD forecast was 107% of normal monsoon in the North West region as available in the first week of April, whereas as per IMD, this year 26% deficient monsoon has been observed in Himachal and 75% deficient monsoon has been observed in Lahaul Spiti catchments. In spite of low monsoon, both the reservoirs were managed well and filled up to 85% of live storage capacity. He further stated that the capacity of both the reservoirs met only 1/3rd demand of partner states and 2/3rd of demands are met with monsoon, snow melt and winter rains.

Due to COVID-19, this year the sowing of crops had been delayed and also there was deficient monsoon in downstream command areas of Punjab, Haryana and Rajasthan. Because of this, the demand of Partner States in the month of September and October-2020 was more as compared to previous years. BBMB provided water as per the requirement of partner states resulting in bumper production of Kharif crop.

Member (Haryana) stated that BBMB needs to adopt latest technologies to refine the projected inflows. Efforts should be made to monitor the latest dynamic position of water in BBMB catchments and the partner States should also be kept apprised of the emerging scenario.

Secretary, BBMB intimated that the planning for the distribution of water by the Partner States for the depletion period 2020-21 has already been done according to the availability of water. BBMB is regularly monitoring the winter rains and snow accumulation in catchment areas and till date average 30-40 mm of snow has been received in catchment areas. The revised position of both the reservoirs along with forecast available with BBMB (NHP) is apprised and circulated in every Technical Committee Meeting.

Member (MoP) intimated that BBMB already has an inflow forecasting system in place and suggested that a detailed presentation on the existing system and possible improvements in the system should be made in the next Board meeting.

After deliberations, the Board concurred the views of Member (MoP) and it was decided that a detailed presentation on the matter will be made in the next Board meeting.

[237th meeting of the Board held on 19.03.2021](#)

Item No. 237.02

Budget Estimates for the year 2021-22 and Revised Budget Estimates for the year 2020-21.

FA&CAO, BBMB, while explaining the agenda note, stated that as per Sub-Clause-5, Section 79 of the Punjab Re-organization Act, the partner States/State Power Utilities have to provide funds to BBMB to meet the expenses incurred in the discharge of its functions. Further as per Rule 11 (1) and (2) of BBMB Rules, 1974, BBMB is to prepare Budget Estimate for the next financial year, which is to be approved by the Board. He further informed that the original budget grant for the year 2020-21 was ₹1474.26 Cr., which has been revised to ₹1316.03 Cr. in the Revised Budget Estimate for the year 2020-21. The Budget Estimate for the year 2021-22 is ₹1495.31 Cr., which is a marginal increase of 1.4% from the original budget estimate of last year. He further stated that the Budget Sub Committee in its meeting held on 05.01.2021 has considered the budget and recommended the same for approval by the Full Board.

Initiating the discussions, Member (Haryana) enquired about the actual revenue expenditure incurred during the year 2020-21 whereupon FA&CAO BBMB intimated that the total establishment expenditure during the year 2019-20 was ₹985 cr. and as per the revised budget estimate for the year 2020-21 the establishment expenditure is expected to be about ₹1100.81 Cr. He further intimated that as per the budget estimate for the year 2021-22 the establishment expenditure is expected to be ₹1165.67 cr.

In this regard, Member (Rajasthan) pointed out that the deployment of staff in BBMB is reducing over the years, but the revenue expenditure on account of salaries and other establishment cost is increasing, which needs to be looked into. Member (Haryana) also supported the views of Member (Rajasthan) and stated that the revenue expenditure projections seem to be overestimated and needs a relook. In this regard, FA&CAO explained that the establishment expenditure has increased due to large number of retirements during last year and payment of DA Instalments etc. Further, the increase is to the tune of 5-10%, which is nominal. FA &CAO further intimated that in terms of percentage of total budget, the establishment expenditure is going down whereas the works expenditure is going up, which is a positive sign.

Member (Rajasthan) further desired to know that whether the budget estimates are prepared based on the sanction posts or as per the actual employees in position, whereupon FA&CAO intimated that the budget estimates are prepared based on the actual number of employees in position and a variance of $\pm 5\%$ is kept to cater to any inductions, repatriation and retirement etc.

Member (Rajasthan) further suggested that the ratio of establishment expenditure in the total budget is much higher than the other hydro power utilities whereas expenditure on works is much lower. He suggested that BBMB should adopt latest technological advances in its operations so as to reduce its manpower requirements. In this regard, Chairman BBMB explained that BBMB is primarily an O&M organization and there is no project under construction due to which ratio of works expenditure in BBMB is less than the other Hydro Power Utilities. He further explained that BBMB has to maintain 4 dams and a very large water conductor system comprising of canals and tunnels. Besides this, there are 6 Hydro Electric Power Houses for which the operation and maintenance staff is required to be deployed. He further intimated that BBMB is in the process of installing latest state of the art SCADA System at its Sub-stations and Power Houses, which will bring down the manpower requirements over the next few years.

Member (Rajasthan) further intimated that during the year 2018-19, an advance payment amounting to ₹70 crores was paid by Rajasthan. However, as per AG Rajasthan, the actual expenditure is ₹15 crores more than the advance but the reasons for the same are not recorded. He requested to look into the matter and intimate the reasons for excess expenditure. Chairman BBMB assured Member (Rajasthan) to look into the matter and provide necessary inputs.

After detailed deliberations, the Board passed the proposed Revised Budget Estimates for the year 2020-21 (Rs. 1316.03 Crore) and Budget Estimates for the year 2021-22 (Rs. 1495.31 Crore). Further, it is advised that in Budget Estimates for the year 2021-22, the establishment expenditure should be reworked in view of reduction in actual Manpower and increased retirements.

Item No. 237.03

RENOVATION, MODERNIZATION, UPRATING (RMU) AND LIFE EXTENSION (LE) of 6 No. Hydro Generating Units each of capacity of 66MW to 75MW in respect of Pong Power House, Talwara.

Special Secretary BBMB while explaining the Agenda Note intimated that all six generating Units of Pong Power House were commissioned by M/s BHEL during the year 1978 to 1983 one by one. The original installed capacity of these generating units was 60 MW each (Total capacity 360 MW). Subsequently, these units were uprated to 66 MW each (Total capacity 396 MW) during the years 1998 to 2004 using inherent design margins of the equipment. Now these Generators have out lived their useful life of about 40 years and are prone to repeated faults resulting in outage of units. Keeping in view the deteriorating condition of Stators of Unit no. 1, 4, 5 & 6, these Units are being operated at 60 MW against their uprated capacity of 66 MW each. In view of the foregoing, it is proposed to carry out renovation, modernization, uprating and life extension of all the 6 Hydro Generating Units of Pong Power House, for which a self-contained proposal to accord administrative approval amounting to ₹402 crores is submitted before the Board for kind consideration and approval.

Initiating the discussions, Member (Haryana) pointed out that the projected cost of ₹402 crores for capacity addition of 54 MW works out to about ₹7-8 crores per MW, whereas the cost of setting up any new Hydro Power Plant is to the tune of ₹8-10 crores per MW. Since Pong Power House is an existing installation and no major civil works are involved in RM&U, the projected cost seems to be on the higher side and needs to be relooked. He further inquired about any benchmark price for RM&U of existing Power Plants. In this regard,

Special Secretary BBMB explained that the Generating Units of the Pong Power House have out lived their useful life and their life extension alone will cost about ₹370 crores. Thus, the uprating part of the project is costing only about 32 crores through which the partner states of BBMB will be benefited in terms of peak power production to the tune of 54 MW. He further explained that with improvement in efficiency of Generating Units, an additional power to the tune of 80 MU will be generated every year, the cost of which comes out to about 30 crores at APPC rates. Chairman BBMB further intimated that as per his experience in other Hydro Power Projects, the projected cost for RMU&LE is reasonable, further the Project will be awarded through open domestic competitive bidding with a provision for e-reverse auction and the final prices are expected to be very competitive. Chairman also mentioned that the RMU&LE work of Pong Power Plant is already late and since it is a running project, we have to take renovation work of units one by one and complete work may take another 5 to 6 years

Member (Gol-MoP) stated that while framing the technical specifications for the project, provision with regard to “Make in India” guidelines issued by the Government of India should be incorporated. He further suggested that requisite provisions with regard to Cyber Security of the SCADA System proposed to be installed at Pong Power House should also be incorporated. Further, stringent provisions regarding experience of the contractor in executing similar works should be kept in the NIT so as to ensure timely completion of the project.

After detailed deliberations, the Board approved the proposal as under

1. To accord administrative approval amounting to Rs 402 Crores for RMU & LE of all six hydro generating units of Pong Power House from existing 66 MW to 75 MW capacity of each unit which includes the following:-
 - a) Replacement of Turbine, Complete Generator, Excitation System, 11 KV Bus Duct, Oil Pressure System, Control & Monitoring System and providing SCADA System, cabling etc
 - b) Overhauling of existing Pressure Relief Valves (PRVs) by replacing its seals & fasteners with new one.
 - c) Procurement of 02 Nos. new 84 MVA considering 0.9 pf, 11/220 KV Generator Transformers.
2. To do need based replacement of balance of plant, switchyard elements after carrying out load flow studies and fault level analysis
3. To engage a consultancy firm for detailed work of RMU&LE

4. Mode of bidding shall be local competitive bidding (LCB) with a provision of e-reverse auction
5. While framing the bidding documents the following shall also be specified:
 - a) Provisions with regard to "Make in India" guidelines issued by the Government of India from time to time
 - b) Compliance to Govt. of India guidelines on Cyber Security for the SCADA System
 - c) Stringent pre-qualification provisions with regard to experience of the contractor in executing similar works so as to ensure timely completion of the project

Item No. 237.04

Transfer of approx. 22 Hectare of BBMB land to Northern Railway for construction of Nangal Dam – Talwara- Mukerian New Broad Gauge Rail Line.

AND

Item No. 237.05

Realization of interest amounting to ₹ 7,72,56,351/- from Railways on account of delayed payment of ₹ 2,13,60,782/- and to settle the audit para thereof.

Taking up the agenda, Secretary, BBMB intimated that the Northern Railway vide their office letter dated 22.06.2019 has intimated that they are constructing a new rail line from Nangal Dam to Mukerian via Talwara. This will be an alternative route to Jammu and will act as a critical link for armed forces in case of emergency. This project has a Strategic National importance and its progress is being monitored by the PMO through PRAGATI Portal. Northern Railways has intimated that the alignment of this track passes through the land which falls under the ownership of BBMB. Accordingly, Railways has requested BBMB to transfer the land required for laying the Railway Track, Platform etc. Secretary, BBMB further informed that as per the joint survey carried out by a team comprising of officials from Railways, Revenue Authority & BBMB, the minimum land required by Railways from BBMB for this project works out to about 19.458 hectares. However, local Revenue Authority has yet to authenticate and ascertain the actual measurements of land and it is likely that some variations may occur. As such, in-principal approval for the transfer of 22 hectares land on sale deed basis at the prevailing DC rates to Northern Railways is submitted before the Board for kind consideration and approval please.

Initiating the discussions, Member (Haryana), suggested that the matter regarding realization of interest amounting to ₹7.72 crores from Railways, which has been placed before the Board under item No. 237.05 should also be

linked with this proposal and the transfer of land should be made contingent upon payment of due interest by the Railways. Replying to the query, Chairman, BBMB intimated that there are some differences in the calculation of interest due from the Railways which can only be resolved if they come for discussions on the issue. Presently Railways is contending that they are not liable to pay interest as it is a Govt. to Govt. transactions, because of which this amount could not be realized till date. In this regard, Member (Haryana) stated that the contention of Railways is not acceptable and there is a gross negligence on the part of Railways due to which the amount payable to BBMB was delayed by about 40 years.

After detailed deliberation, the Board granted an in-principal approval for transfer of land and realization of interest due from the Railways as under:

1. In-principal approval for transfer of 22 hectares BBMB land on sale deed basis to Northern Railways for construction of new rail line from Nangal Dam to Mukerian via Talwara on applicable DC Rates at the time of transfer. The Board also authorized Chairman, BBMB to allow upward revision in the requirement of land by Northern Railways to the extent of 10%.
2. To authorize Chairman, BBMB to send the case to the Ministry of Power for the proposed transfer of land from BBMB to Railways under the prevailing instructions of Govt. of India. Subsequent to the approval of Govt. of India, the land shall be transferred to Northern Railways subject to the terms and conditions mentioned in the Appendix D-5 of the Agenda Note.
3. To authorize Chairman, BBMB to take up the matter with Ministry of Power to recover an amount of ₹7,72,56,351/- from Ministry of Railways on account of interest component on delayed payment of principal amount along with the payment of land to be remitted by Railways against transfer of land by BBMB for construction of new Nangal Dam-Talwara-Mukerian Rail Line.

Item No. 237.06

Issue of NOC for construction of High Level Steel Bridge Single span 76.88 Mtr. c/c of bearing over Nangal Hydrel Channel at RD 102072 ft. including approaches from Bus Stand Sri Kiratpur Sahib to Gurudwara Charn Kanwal Sahib main market Kiratpur Sahib in District Rupnagar.

Secretary, BBMB while explaining the agenda note intimated that the Govt. of Punjab vide their UO No. 2205 dated 02.03.2021 has requested BBMB to issue an NOC for construction of subject cited bridge so as to facilitate

movement of local resident's of Kiratpur Sahib. He further intimated that no transfer of land is involved in the ibid case except for a small portion of land measuring about 73.96 sq.mt. required for driving pile foundations for which royalty shall be payable by Punjab PWD (B&R) to BBMB. Further, the approach road will be used by BBMB as well as by the local population and only NOC has to be granted to Punjab PWD (B&R) to use BBMB land for construction of approach road to the said over-bridge over the Nangal Hydel Channel.

In this regard, Member (Rajasthan) suggested that in view of the meager requirement of land, the Board may consider to allow Punjab to use the requisite land without any royalty as a goodwill gesture. All member of the Board unanimously agreed to this suggestion.

Chairman, BBMB further requested that in order to ensure safety of Nangal Hydel Channel, the design of said over-bridge may be shared by Punjab with BBMB. Member (Punjab) assured that the design will be got vetted from BBMB before its approval.

After discussions, the Board approved to grant NOC to Punjab Public Works Department for construction of 2 Lane high Level Steel Bridge Span 76.88 Mtr. c/c of bearing over Nangal Hydel Channel at RD 102072 ft. including approaches from Bus Stand Sri Kiratpur Sahib to Gurudwara Charn Kanwal Sahib main market Kiratpur Sahib in District Rupnagar on the terms and conditions contained in Appendix-F of the agenda note. The Board also approved to allow Punjab PWD (B&R) to use BBMB land measuring about 73.96 sq. mtr. for driving pile foundations of the bridge without any royalty as a goodwill gesture.

Item No. 237.07

Deployment of Central Industrial Security Force (CISF) at all the three Hydro Power Projects of BBMB.

Director (Security) BBMB, while explaining the agenda intimated that the Ministry of Power, Government of India, vide their letter dated 05.01.2018 has forwarded a list of the critical installations of concerned State Governments / Organizations, which are presently not under CISF Security cover. It has been further intimated that the Central Security Agencies have advised to bring these installations under the security cover of CISF. He further stated that the Ministry of Home Affairs, Government of India vide their letter dated 07.11.2019 has forwarded a revised list of vital/critical projects of BBMB as prepared by MHA in consultation with IB. As per this list, the Bhakra Dam Project falls in Category-A whereas Beas Dam Project and Beas Sutlej Link Project falls in Category - B. He further intimated that a joint survey of all the three projects of BBMB was carried out with CISF in the Year 2018 and as per

Survey Reports, the total CISF security personnel required for all the three projects works out to about 923. The total annual financial implications (recurring) for deployment of these personnel are about ₹96.7 crores.

Initiating the discussions, Members agreed that CISF is a professionally trained force to provide high level security to important installations in the country. Chairman, BBMB pointed out that almost all of our installations are very sensitive from security point of view while serving the interest of partner states and also the installations are near to our western borders.

However, Member (Haryana) stated that in view substantial increase in financial liability, CISF may be deployed only at Bhakra and Pong Dams. In this regard, Member (Gol-MoP) and Member (Himachal Pradesh) stated that there may be coordination problems in case different security agencies are deployed at different installations. Further, Chairman BBMB intimated that the increase in cost is due to the fact that the State Police Personnel presently deployed in BBMB are drawing salary as per 5th Pay Commission of State Government of Punjab whereas CISF personnel are drawing salary as per 7th Central Pay Commission. Further, for CISF personnel, BBMB will have to bear other components of their salary such as Leave Salary Contribution @11%, Pension Contribution @12%, S/Charges (which are their Supervision Charges) @11.88% and GST @18%, which are not payable in case of State Police. Chairman BBMB further stated that efforts shall be made to negotiate these components, particularly Supervision Charges with CISF.

Member (Rajasthan) requested that BBMB should provide State wise financial implications of the proposal so that necessary concurrence from the State Finance Departments could be taken. He further suggested that BBMB should work out project wise financial implications for deployment of CISF so as to enable the Board to take an informed decision on the issue. On this Chairman, BBMB informed that project wise as well as state wise financial implications have already been worked out and the same are already a part of agenda. The breakup was apprised in the meeting.

After detailed deliberations, the Board decided to accord an in-principle approval to work out further with CISF on its deployment at all dams & Hydro power stations by authorizing BBMB to hold discussions/negotiations

with CISF so that the earlier conducted surveys be got revisited by CISF and assessment of the strength be got optimized from CISF and formalize the project wise proposal. The State wise tentative share of financial implications shall be communicated to all the partner states. Thereafter, the proposal shall again be put up in the next Board Meeting for final decision on CISF deployment at all the three Hydro Power Projects of BBMB.

Item No. 237.09

To consider the matter of waiving off the late charges of ₹62.43 lacs on reimbursement of RM&U expenditure of Five Hydro Generating units of Bhakra Left Bank Power Houses of BBMB.

FA&CAO while explaining the agenda intimated that the agenda has been submitted on the request of Rajasthan. They have requested for waiver of late charges amounting to ₹63.46 lacs imposed by BBMB on account of delay in reimbursement of RM&U expenditure by RVPN. Further, RVPN has requested to enhance the time period for payment of RM&U expenses to 15 days from the date of receipt of claims in hard copy along with the relevant enclosures.

He further informed that an agenda regarding time period for payment of O&M and RM&U charges was placed before the Board in its 205th meeting wherein it was decided that Member (Punjab) shall study and decide the matter. Accordingly, a meeting was held in the chamber of Principal Secretary to Govt. of Punjab on 13.10.2010 wherein it was decided that provisional payment of one month on account on account of O&M expenditure on revolving basis will be raised with the partner Power Utilities every month by Dy. CAO, BBMB, Nangal and same will be considered for incentive and delayed payment charges, as per the Board's decision taken in its 178th meeting. It was also decided that demand on account of RM&U expenditure will be raised by Dy. CAO, BBMB, Nangal immediately whereupon payment will be released by partner Power Utilities within 7 days of the issue of demand without any incentive. However, in case of delayed payment, penalty @ 0.25% per week shall be levied.

Initiating the discussions, Member (Haryana) requested to clarify that whether the late payment penalty is specific to Rajasthan or it is applicable to other states as well and in how many cases such penalty have been levied in the past. In this regard, it was intimated by FA&CAO that the penalty clause is applicable on all the partner states equally and there are no previous instances

when penalty has been levied as the partner states are making the payments regularly without any delay. Member (Haryana) and Member (Punjab) opined that the late payment charges should not be waived

Member (GoI-MoP) further suggested that the partner states should not insist on hard copy of the demands and all payments should be made electronically. FA&CAO clarified that BBMB has already started accepting the payments electronically and partner states can benefit from this facility.

Representative from RVPN intimated that the claim documents were received from BBMB late due to which they could not make payment in time and requested to grant waiver. He further stated that RVPN had been making all payments to BBMB on time except for this one instance. In this regard, FA&CAO intimated that the late payment charges are levied only after receipt of demand by the partner states and all other states have released the payment timely. Thus, there is no delay on the part of BBMB.

After detailed deliberations, it was decided that RVPN shall approach BBMB with facts & figures on the issue and based on discussions between them the matter shall again be put up in the next Board Meeting.

Item No. 237.10

A) Position of water supplies to the partner States of Punjab, Haryana, Rajasthan and Delhi Jal Board.

Members of the Board noted the position.

B) Position of BBMB Reservoirs.

Secretary, BBMB, made a presentation on the issue and intimated that this year the region is facing scarcity of water. The scarcity position has arisen mainly due to deficient monsoon during the year 2020, due to which BBMB could not achieve FRL in Bhakra & Pong Reservoirs. As per India Meteorological Department during the year 2020, 26% deficient monsoon has been observed in Himachal Pradesh and 75% deficient monsoon has been observed in Lahaul Spiti catchments, which contribute to BBMB reservoirs. Still, in spite of deficient monsoon, BBMB was able to manage both the reservoirs well and these were filled up to 85% of their live storage capacity. Even the availability of Ravi water had been less due to low level of Ranjit Sagar Dam. In view of less rainfall in plains the demand of partner states for irrigation during the months of September & October 2020 were historically high. The inflows in Satluj & Beas Rivers during the depletion period are also below average.

It was intimated that the water level at Bhakra and Pong Dams is about 55 feet and 56 feet lower than last year on the same date i.e on 19.3.2021. As per the demands received from partner states, the cumulative demand of all

the partner States for the period from 19th March to 20th May, 2021 is about 14 lac cusec days whereas total water storage available in Bhakra & Pong Reservoirs is only about 3.24 lac cusec days. Further, as per dry year pattern, inflows to the tune of 0.68 lac cusec days are expected in Pong and about 5.92 lac cusec days are expected in Bhakra. Thus, total water availability in BBMB Reservoirs upto 20th May works out to only about 11.36 lac cusec days (by including RSD water). As such BBMB is not in a position to meet the demands projected by partner states and in case the demands projected by all partner States are to be met, both Bhakra and Pong Dam reservoirs will touch their MDDL much before the onset of monsoon.

Secretary, BBMB further intimated that the depletion period of Pong Dam is upto 20th June and sometimes due to change in climatic conditions, it extends upto 1st week of July. To cater to the bare minimum drinking water requirements on account of lower/delayed monsoons, as per practice the level of Pong reservoir is not allowed to fall below EL 1301 feet as on 20th May, so as to maintain storage of 0.95 BCM for drinking water supply after 20th May. Similarly, a cushion of 0.52 BCM is kept in Bhakra Dam for drinking water by maintaining the reservoir level at 1506 feet as on 20th May. He also informed that this year the projected position of snow cover is about 1/3rd of last year, so we don't expect any substantial improvement in inflows before the onset of monsoon.

Secretary, BBMB, further intimated that the balance share of Haryana, Punjab and Rajasthan is 16%, 27% and 3%, respectively upto the end of depletion period i.e. 20th May, 2021. In view of the emerging position, he requested the Board Members that judicious approach is required for the utilization of water for the remaining depletion period.

Secretary, BBMB, further stated that the partner States were regularly apprised about the availability of water in BBMB Reservoirs and advance planning schedules for the depletion period were taken from all partner States. The issue was also flagged in every Technical Committee Meeting (TCM) with a request to rationalization the demands. The matter was also taken up by Chairman, BBMB personally with the respective Board Members of partner states through DO letters in December 2020 and again in the month of March 2021 with a request to reduce their demands so as to avoid any distress during the summer months i.e. from April to June, 2021.

Chairman, BBMB requested all the Board Members to take a collective call to manage this scarcity situation. He requested the members from Punjab & Haryana to restrict their irrigation demands so as to comfortably meet the drinking water requirements of all partner States during the ensuing summer season.

Member (Rajasthan) mentioned that Rajasthan has made detailed analysis which depicts that this year is analogous to the year 2018 in terms of water availability. The Chief Secretary, Govt. of Rajasthan, has also sent a DO letter to review the forecasted water levels and to assure the minimum desired drinking water supplies to Rajasthan. He further pointed out that the projections made by BBMB are on pessimistic side and Pong Dam level is unlikely to fall below 1280 levels. He further intimated that Pong dam level has gone below 1301 level more than 50% times in the past 20 years and requested the Board to allow it to deplete below 1301 levels this year to supply additional water to the tune of about 40,000 cusec days to Rajasthan to cater to the drinking water requirements of the state.

At this, Member (Punjab) intimated that a committee of Chief Engineers constituted by BBMB in the last TCM meeting has held its meeting today and a possible solution can be that Rajasthan may be allowed to draw some additional water this year, which can be adjusted in next year.

Keeping in view the precarious position of BBMB reservoirs and suggestion of Member (Punjab), the Board decided to authorize Chairman, BBMB to fulfil additional water requirement of Rajasthan for drinking purpose for the rest of depletion period with the condition that this over-drawl shall be adjusted in the next water year.

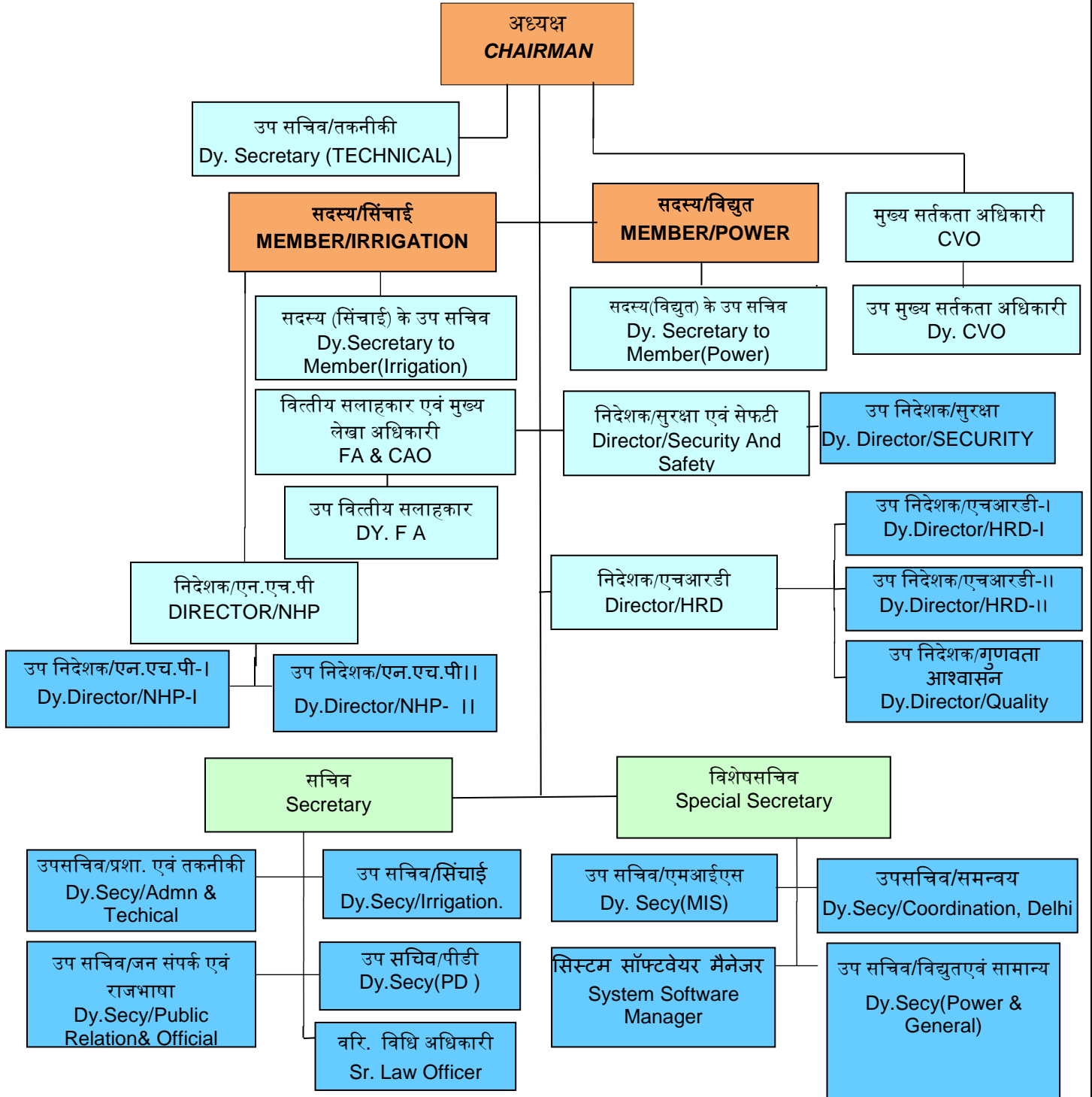
Further, Members from Punjab, Haryana & Rajasthan agreed to take appropriate measures to rationalize the irrigation demands to avoid any distress during the summer months.



अध्याय-3
Chapter-3

संगठनात्मक व्यवस्था
Organisational
Set-Up

बीबीएमबीसचिवालयकीसंगठनात्मकव्यवस्था
Organisational Set-Up Of BBMB Secretariat

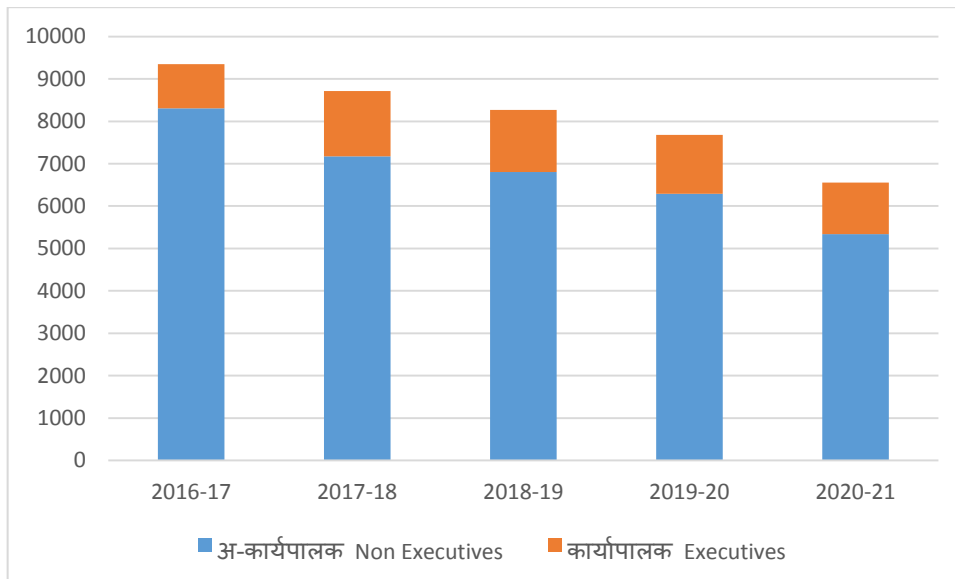


3.1 BBMB Manpower

Total sanctioned and in-position strength for entire BBMB as on 31.03.2021 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group A and B	2125	1220
Group C	4761	2497
Group D	5185	2838
Total	12071	6555

बीबीएमबी की जनशक्ति (कार्यपालक एवं अ-कार्यपालक) BBMB's Manpower (Executives and Non-Executives)



3.2 BBMB Secretariat

The Chairman, Bhakra Beas Management Board is the Chief Executive of the Board and is assisted by two Whole Time Members viz. Member (Irrigation) and Member (Power).

A. Strength of Staff

The sanctioned and in-position strength of Corporate Office including BBMB Secretariat, Chandigarh and Dy.Secretary/Co-ordination office, New Delhi, as on 31.3.2021 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group-A	72	56
Group-B	83	62
Group-C	141	94
Group-D	141	54
Total	437	266

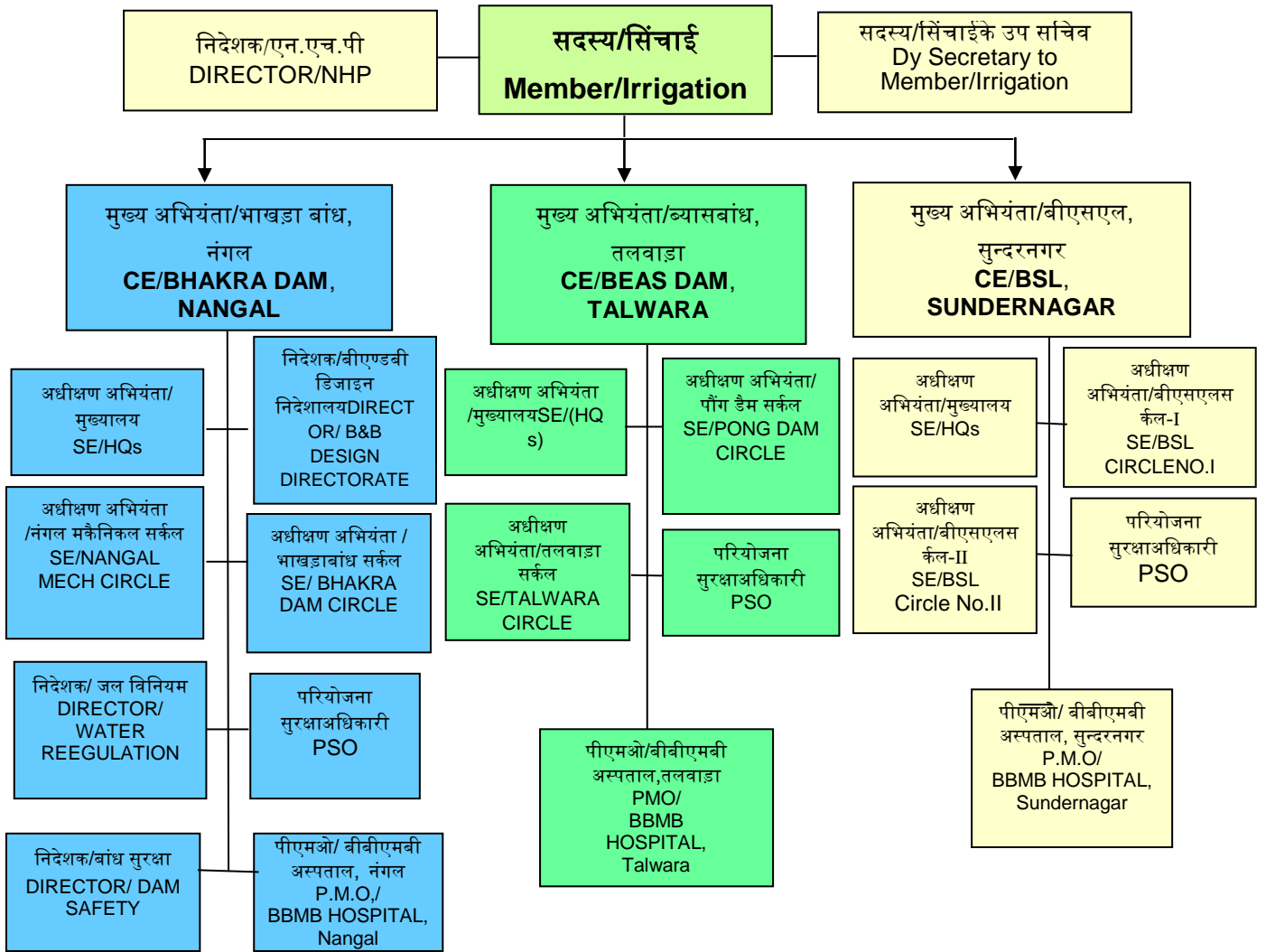
B. Allocation of Officers/Officials (in-position as on 31.3.2021 to various Sections of BBMB Sectt.):-

Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har.Power	Raj.Power Utilities	HPSEBL	BBMB				Total
										Regular	Contract basis	Adhoc	Other	
Officers (All Group)	6	16	3	0	1	15	7	0	4	8	NA			60
Officials (All Group)	32	25	7	0	0	21	8	1	6	106	NA			206
Total	38	41	10	0	1	36	15	1	10	114	0			266

3.3 Irrigation Wing

Chief Engineer/Bhakra Dam, Nangal, Chief Engineer/Beas Satluj Link, Sundernagar and Chief Engineer/Beas Dam, Talwara are heading the three project sites under Irrigation Wing. Director/Water Regulation, Nangal is responsible for water regulation matters.

बीबीएमबी (सिंचाई खण्ड) की संगठनात्मक व्यवस्था Organisational Set-Up Of BBMB (Irrigation Wing)



A. Strength of Staff

The sanctioned and in-position strength of regular establishment as on 31.3.2021 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group-A	210	115
Group-B	646	308
Group-C	2614	1499
Group-D	3387	2057
Total	6857	3979

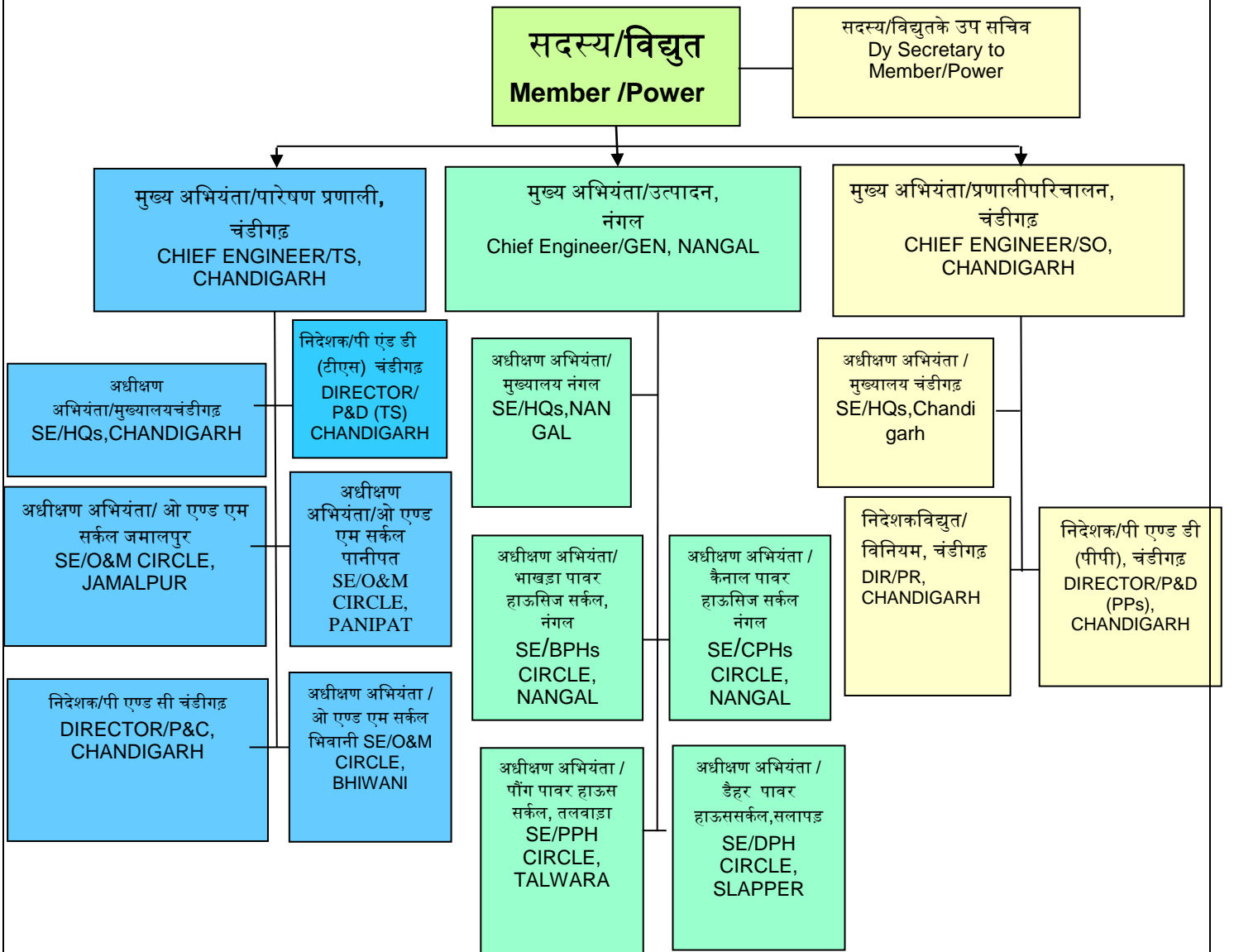
B. Allocation of Officers/Officials (in-position as on 31.3.2021 to various organisations):-

Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har.Power Utilities	Raj.Power Utilities	HPSEBL	BBMB				Grand Total
										Regular	Contract basis	Adhoc	Other	
Officers (All Group)	40	36	15	10	0	2	0	1	19	15	NA			138
Officials (All Group)	1338	103	11	17	1	20	8	3	44	2294	NA			3839
Total	1378	139	26	27	1	22	8	4	63	2309	0			3977

3.4 Power Wing

Three Chief Engineers i.e. Chief Engineer/Transmission System, Chandigarh, Chief Engineer/Generation, Nangal and Chief Engineer/System Operation, Chandigarh head the Transmission, Generation and System Operation organization respectively under Power wing of BBMB.

बीबीएमबी विद्युत खण्ड की संगठनात्मक व्यवस्था Organisational set up of BBMB(Power Wing)



A. Strength of staff

The sanctioned and in-position strength of regular establishment as on 31.3.2021 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group-A	296	223
Group-B	641	335
Group-C	1838	826
Group-D	1564	676
Total	4339	2060

B. Allocation of officers/officials (in-position as on 31.3.2021 to various organisations):-

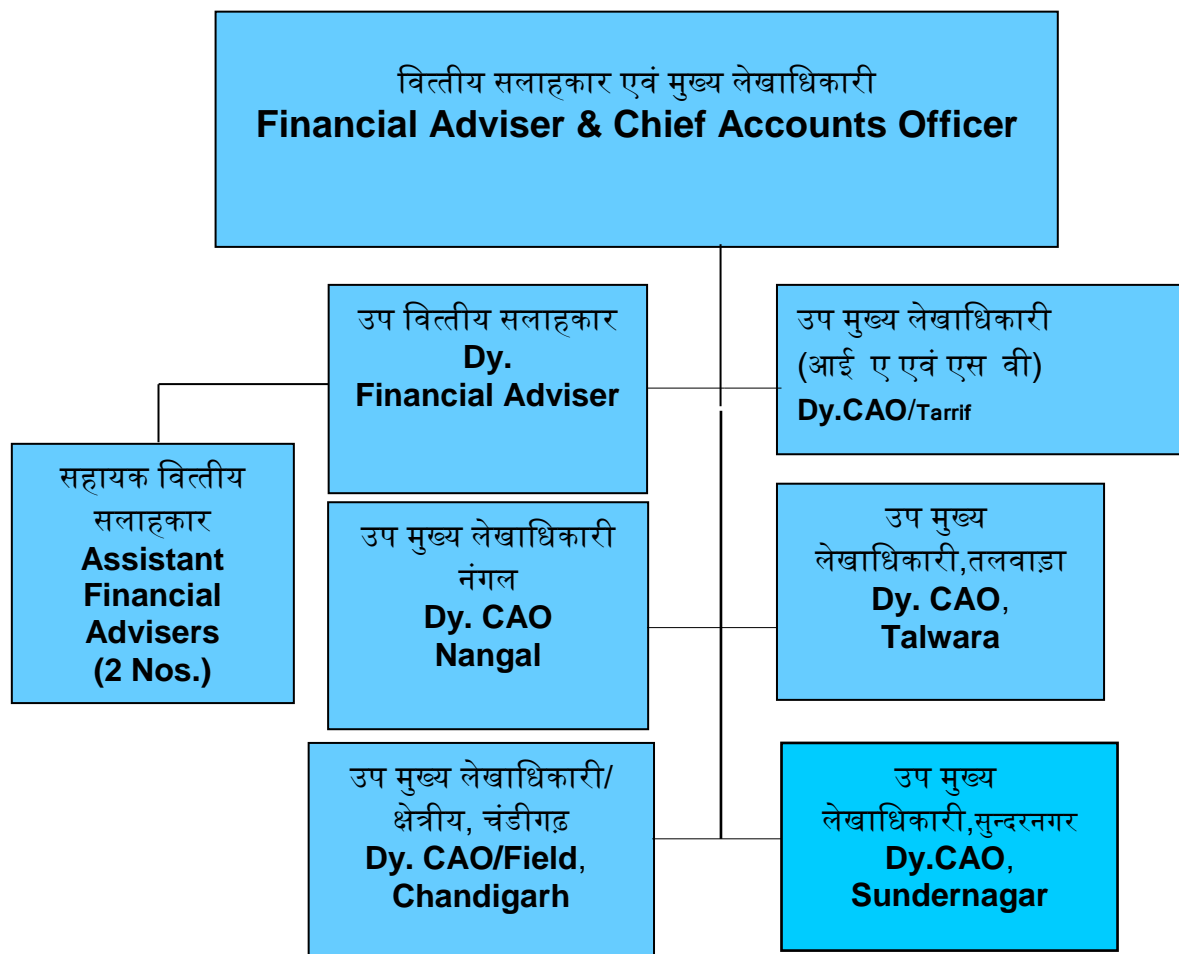
Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har. Power Utilities	Raj. Power Utilities	HPSEBL	BBMB				Grand Total
										Regular	Contract basis	Adhoc	Others	
Officers (All Group)	0	4	1	1	0	82	73	33	21	48	NA	0	263	
Officials (All Group)	125	34	1	1	0	156	107	73	9	1291	NA	0	1797	
Total	125	38	2	2	0	238	180	106	30	1339			2060	

3.5 Finance, Accounts And Audit

The Financial Adviser & Chief Accounts Officer is the Principal Officer to operate the 'Personal Ledger Account (PLA) of the Board and to issue necessary accounts instructions. The functions of the Financial Adviser & Chief Accounts Officer are three-fold viz:

- the Financial Adviser to the Board on all financial matters.
- the Chief Accounts officer for compiling the income and expenditure accounts of the Board and
- the Chief Internal Auditor for doing the Internal Audit and Scrutiny of the financial transactions of the Board.

वित्तीय सलाहकार एवं मुख्य लेखा अधिकारी बीबीएमबी की संगठनात्मक व्यवस्था Organizational Set-Up Of FA & CAO, BBMB



A. Strength of Staff

The sanctioned and in-position strength of regular establishment as on 31.3.2021 is given in the table below:

Class of Establishment	Sanctioned Strength	In-position
Group-A	35	30
Group-B	142	91
Group-C	168	78
Group-D	93	51
Total	438	250

B. Allocation of Officers/Officials (in-position as on 31.3.2021 to various organisations):-

Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har. Power Utilities	Raj. Power Utilities	HPSEBL	BBMB				Grand Total
										Regular	Contract basis	Adhoc	Other	
Officers (All Group)	2	10	0	4	2	7	4	0	0	1	NA			30
Officials (All Group)	57	26	1	3	3	30	10	1	2	87	NA			220
Total	59	36	1	7	5	37	14	1	2	88				250



अध्याय-4
Chapter-4

वित्तीय कार्य-निष्पादन
Financial Performance

FINANCIAL REVIEW OF BBMB

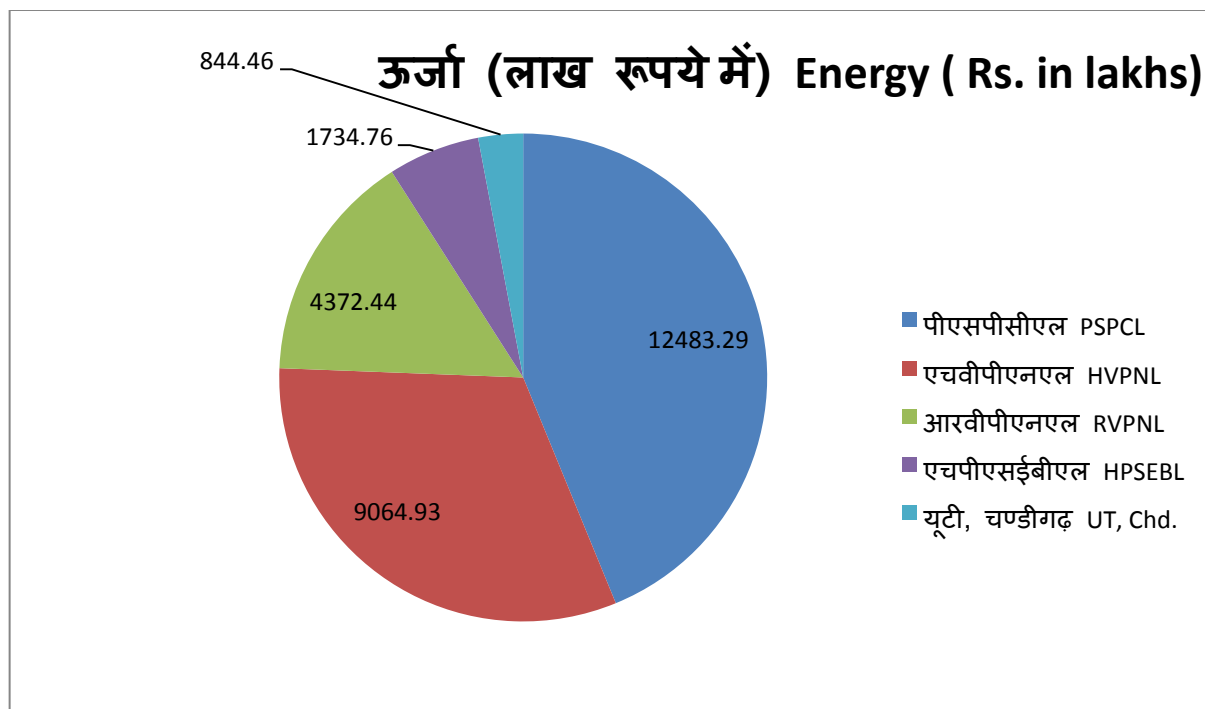
- The Bhakra Beas Management Board has been constituted under Section 79(1) of the Punjab Re-organization Act, 1966, for administration, operation and maintenance of works mentioned in Section 79 of the Act. According to Sub-Section 5 of Section 79 of the Act, the Governments of the successor States of the erstwhile Punjab and the State of Rajasthan are required at all times to provide necessary funds to BBMB to meet all expenses required for discharge of its functions. The Board, in consultation with the FA&CAO, prepares the revised Budget Estimates for the current year as well as Budget Estimates for the next financial year as provided under Rule 11 of BBMB Rules.
- The revenue expenditure debitable to Irrigation Wing is financed by the Partner State Governments of Punjab, Haryana and Rajasthan from their own resources in the agreed ratios. Similarly, for the Power Wing, revenue expenditure is partly met out of the receipts realised from Common Pool Consumers and partly by the partner State Power Utilities from their own resources, in the agreed ratios.
- Ministry of Power, Govt. of India, New Delhi on the direction of Hon'ble Supreme Court of India vide its notification No. 02/13/96-BBMB (Vol. VI) dated 31.10.2011 has revised the sharing of allocation of energy in Power Wing from Bhakra-Nangal and Beas Projects w.e.f. 01.11.2011.
- The obligations of the Partner State Governments/State Power Utilities based upon the budget for the year 2020-21, after deducting the share of Revenue Receipts of Power Wing, are determined as under:-

(Rs. in Lakhs)

Punjab	15718.76	PSPCL	25683.32
Haryana	10237.82	HVPNL	21429.44
Rajasthan	12696.07	RRVNL	14356.04
		HPSEB Ltd.	3792.86
		UT, Chandigarh	1846.32

- The amount of advances made by the participating State Governments and State Power Utilities are credited to the Personal Ledger Account of the FA&CAO opened in the Public Account of the Government of India. As and when the expenditure is incurred, the proportionate share of the State Governments/State Power Utilities is passed on to the concerned Accountant General/State Power Utilities for exhibition in the State/State Power Utilities' accounts.

- The PLA of BBMB, which remained positive throughout the year under review, closed with a credit balance of Rs. 19617.64 Lakhs on 31st March, 2021.
- 2. The PWD System of accounting is being followed and there has been no change in Accounting Policy during the year.
- 3. i) Notional Operating Expenditure (Chargeable to Power Wing) Rs. 80048.14 Lakhs.
- ii) Units generated (ex-Bus) 11338.67 MU
- 4. Notional Operating Expenditure per unit of energy (Generation & Transmission) 70.59 paise
- 5. **Energy Sales Revenue: Rs. 28499.88 Lakhs**
 - i) PSPCL = Rs. 12483.29 Lakhs
 - ii) HVPNL = Rs. 9064.93 Lakhs
 - iii) RRVPNL = Rs. 4372.44 Lakhs
 - iv) HPSEB Ltd. = Rs. 1734.76 Lakhs
 - v) UT, Chandigarh = Rs. 844.46 Lakhs

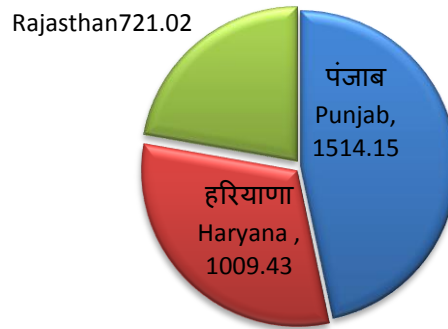


6. Water Sales Revenue & Other Misc. Receipts: Rs. 3244.60 Lakhs

- (i) Punjab State = Rs. 1514.15 Lakhs
- (ii) Haryana State = Rs. 1009.43 Lakhs
- (iii) Rajasthan State = Rs. 721.02 Lakhs

**भागीदार राज्यों को जल तथा अन्य विविध प्राप्तियों
का वितरण (लाख रुपये में)**

**Distribution of Water & Other Misc. Receipts to
Partner States (Rs. in Lakhs)**

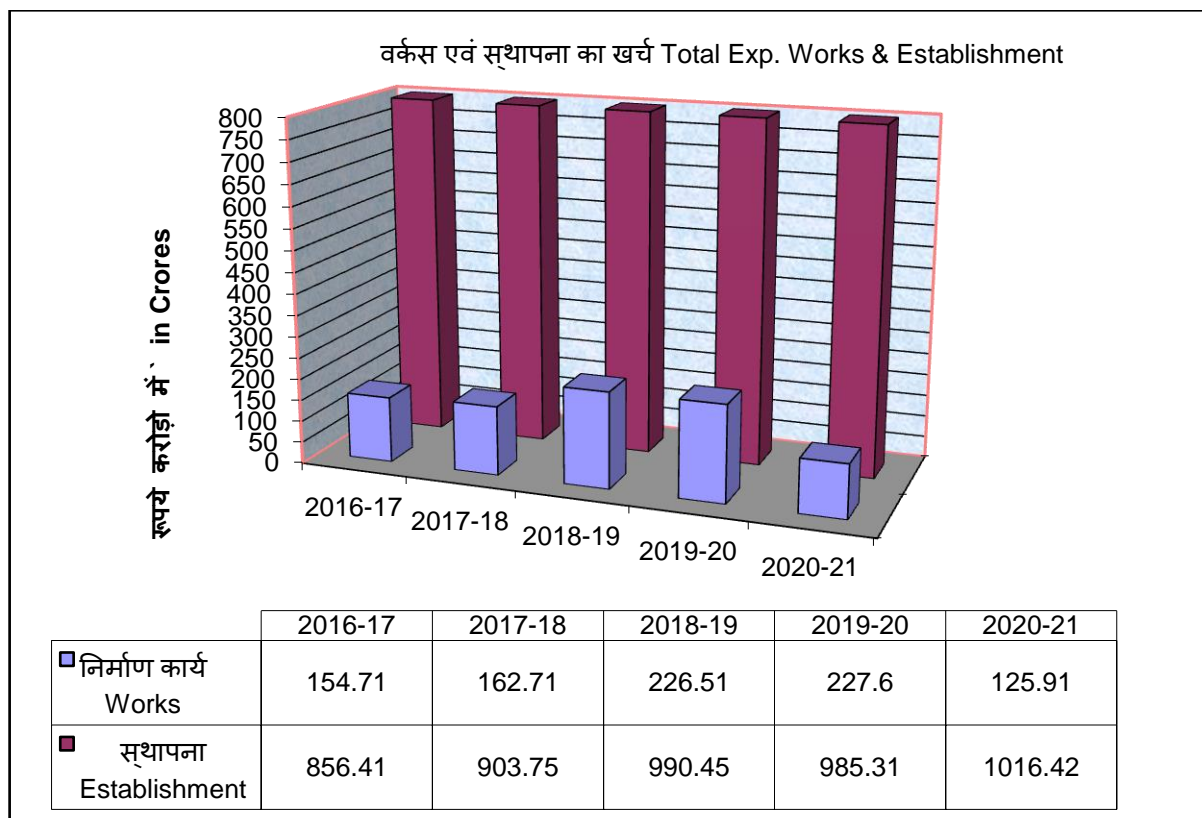


7. Capital Expenditure

(Rs. in Lakhs)

	Punjab Govt.	Haryana Govt.	Rajasthan Govt.	Total
Bhakra	-22.81	-15.21	-6.83	-44.85
Beas (Residual Works)	0.34	0.38	0.87	1.59

8. Total Expenditure of BBMB (Works & Establishment).



4.1 POWER WING

4.1.1 Beneficiaries

The following beneficiaries are drawing electric energy from the BBMB Projects as decided by Ministry of Power, Govt. of India, New Delhi on the direction of Hon'ble Supreme Court of India vide its notification No. 02/13/96-BBMB (Vol. VI) dated 31.10.2011 w.e.f. 01.11.2011:-

- Punjab
- Haryana
- Rajasthan
- Himachal Pradesh
- Chandigarh U.T

COMMON POOL CONSUMERS

A	National Fertilizer Ltd., Naya Nangal	1.02 LU/day
B.	Old Himachal Pradesh	1.2 LU/day
C.	Supply of power for Fertilizer factory in Rajasthan	5 LU/day
D.	U.T. Chandigarh	1 LU/day plus Special Assistance of 10 LU/day
E.	Project supplies to Irrigation Wing at Nangal, Talwara & BSL Complex	

4.1.2 Revenue Receipts and Expenditure

The revenue expenditure of Power Wing is primarily met out of Revenue Receipts realized from Common Pool Consumers. In the contingency of Revenue Expenditure exceeding Revenue Receipts derived from Common Pool Consumers, the excess expenditure is required to be met by the Partner State Electricity Boards/Power Utilities as per provisions under the Punjab Re-organization Act 1966. The position of revenue receipts, advances realized and expenditure incurred and balance available is given below:

A.	Revenue Receipts	(Rs. in Lakhs)
1	Bhakra	28824.35
2	Beas Transmission Lines	83.73
3	Dehar Power Plant, S .Nagar(Other Receipt)	120.08
4	Dehar Power Plant (Sale of Power)	14.60
5	Pong Power Plant,. Talwara (Other Receipt)	6.08
6	Pong Power Plant (Sale of Power)	14.93
7	Add from Bhakra I.B.	-630.53
8	Add from Unit No.1 BSL Sundernagar	22.99
9	Add from Unit No.2 Pong Dam Talwara	43.65
	Total:-	28499.88

B. Revenue Expenditure

Following are the figures of Revenue Expenditure during the year 2020-21:-

(Rs. in Lakhs)

Sr. No.	Particulars	Works	Estt.	Total
OPERATION & MAINTENANCE				
1.	Bhakra Left Power Plant/Generation	-252.81	5720.53	5467.72
2.	Bhakra Left Power Plant /Transmission	551.31	3671.20	4222.51
3.	Bhakra Right Power Plant /Generation	168.46	3596.86	3765.32
4.	Bhakra Right Power Plant/Transmission	641.85	10179.96	10821.81
5.	Beas Transmission lines	1172.75	7224.55	8397.30
6.	Dehar Power Plant	3868.50	4194.86	8063.36
7.	Pong Power Plant	106.22	638.71	744.93
8.	Add from Bhakra Irrigation Branch	1472.09	16477.27	17949.36
9.	Add from Unit No. I of Beas Project (Beas Sulej Link, Sundernagar)	891.92	16296.60	17188.52
10.	Add from Unit No.2 of Beas Project (Pong Dam, Talwara)	189.77	3237.54	3427.31
	TOTAL	8810.06	71238.08	80048.14
RENOVATION, MODERNISATION & UPRATING (RM&U)				
11.	RM&U of Bhakra Left Power House	704.44	--	704.44
	TOTAL RM&U	704.44	--	704.44
TOTAL EXPENDITURE (POWER WING) (O&M + R,M&U)		9514.50	71238.08	80752.58

Capital Expenditure

No Capital Expenditure has been booked to Capital Head of Account. However, expenditure relating to Renovation, Modernization and uprating scheme for the year is given on prepage.

4.1.3 Sharing of Revenue Receipts & Expenditure

Revenue receipts and expenditure of Power Wing is apportioned amongst the partner State Power Utilities as under:-

A. Bhakra Complex

Revenue receipts and expenditure, including RM&U expenditure, is apportioned amongst Partner State Power Utilities in the following ratios:-

R.R.V.P.N.L.	15.22%
P.S.P.C.L.	51.80%
	(after deducting RRVPNL Share)
H.V.P.N.L.	37.51%
	(after deducting RRVPNL Share)
H.P.S.E.B. L.	7.19%
	(after deducting RRVPNL Share)
Electricity Department, UT, Chandigarh.	3.5%
	(after deducting RRVPNL Share)

B. (i) Beas Project Unit-I (Dehar Power Plant)

Gross revenue receipts/expenditure on Dehar Power Plant is apportioned between Power and Irrigation in the ratio of 94:6. The net revenue receipts/expenditure on Power side is apportioned amongst partner State Power Utilities in the following ratios:-

R.R.V.P.N.L.	20%
P.S.P.C.L.	51.80%
	(after deducting RRVPNL Share)
H.V.P.N.L.	37.51%
	(after deducting RRVPNL Share)
H.P.S.E.B.L.	7.19%
	(after deducting RRVPNL Share)
Electricity Deptt., UT, Chandigarh.	3.5%
	(after deducting RRVPNL Share)

(ii) Beas Project Unit No. II (Pong Dam)

Gross revenue receipts/expenditure on Pong Power Plant is apportioned between Irrigation and Power in the ratio of 76.5 and 23.5. The net revenue receipts/expenditure on the power side is apportioned amongst partner State Power Utilities in the following ratios:-

R.R.V.P.N.L.	58.5%
P.S.P.C.L.	51.80% (after deducting RRVPNL Share)
H.V.P.N.L.	37.51% (after deducting RRVPNL Share)
H.P.S.E.B.L.	7.19% (after deducting RRVPNL Share)
Electricity Deptt., UT, Chandigarh.	3.5% (after deducting RRVPNL Share)

iii) Beas Transmission Lines

With effect from 01.11.2011 the reallocation of share between partner Power Utilities is as under:-

R.R.V.P.N.L.	23.80%
P.S.P.C.L.	28.72% (after deducting RRVPNL Share)
H.V.P.N.L.	60.59% (after deducting RRVPNL share)
H.P.S.E.B.L.	7.19% (after deducting RRVPNL Share)
Electricity Deptt., UT, Chandigarh.	3.5% (after deducting RRVPNL Share)

4.1.4 Outstanding O&M Charges against Partner State Power Utilities:

The position of amount recoverable from partner State Power Utilities against their share in revenue expenditure as on 31st March, 2021 is as under:-

(-)Advance

(+) Recoverable

(Rs. in Lakhs)

Particulars	PSPCL	HVPNL	RRVNL	HPSEBL	UT, Chd.	Total
Outstanding as on 01.04.2020	8071.45	-1638.01	-808.86	-305.88	56.08	5374.78
Revenue	12483.29	9064.93	4372.44	1734.76	844.46	28499.88
Receipts realized during the year.						
Advances released by partner States Power Utilities during the year.	18819.63	16029.58	11270.15	2805.58	1857.93	50782.87
Total amount available	23231.47	26732.52	16451.45	4846.22	2646.31	73907.97
Expenditure incurred during the year.	31742.99	25532.88	15916.61	4611.06	2244.60	80048.14
Outstanding/ Balance available as on 31.03.2021	8511.52	-1199.64	-534.84	-235.16	-401.71	6140.17

4.1.5 SUMMARY OF OUTSTANDINGS AS ON 31.03.2021

(-)Advance

(+) Recoverable

	Total O&M charges	Total RM&U Charges	(Rs. in Lakhs) Total outstanding amount
PSPCL	8511.52	30.12	8541.64
HVPNL	-1199.64	21.85	-1177.79
RRVNL	-534.84	10.50	-524.34
HPSEBL	-235.16	11.24	-223.92
UT, Chd.	-401.71	2.06	-399.65
Total	6140.17	75.77	6215.94

4.1.6 Dues from Common Pool Consumers on account of Sale of Power

During the year, the common pool consumers were M/S National Fertilizer Limited, Naya Nangal, old Himachal Pradesh, Union Territory of Chandigarh, Rajasthan Fertilizer Factory and Irrigation Wing of BBMB. The following amounts were outstanding on 31.03.2021 against the various common pool consumers and others.

(-)Advance

(+) Recoverable

Sr. No.	Sale of Power to	Rs. in Lakhs
1.	M/S National Fertilizer Limited., Naya Nangal - Energy - Sale of Water	6.33
2.	Rajasthan Fertilizer Factory through Rajasthan Vidyut Prasaran Nigam Ltd.	2892.98
3.	Jammu and Kashmir	22.65
4.	Irrigation Wing Nangal	0.59
5.	Beas Sutlej Link Project	15.60
6.	Beas Project, Talwara	2.56
7.	Union Territory Chandigarh (3.5% Schedule allocation)	7433.62
8.	Union Territory Chandigarh (Special Assistant)10 Lakhs/day	0.00
9.	Union Territory Chandigarh (1 Lakhs/day))	0.00
10	Himachal Pradesh State Electricity Board (old Supply)	58.21
	TOTAL	10432.54

4.1.7 Other Outstanding Dues

A) Pooled Transmission Losses

Sr. No.	Particulars	Rs. in Lakhs
1	P.S.P.C.L.	-2.89
2.	HVPNL	0.01
3.	Uttar Pradesh Power Corporation Limited	0.01
4.	Union Territory, Chandigarh	0.01
	TOTAL	-2.86

B) Wheeling Charges (Samyapur)

Sr. No.	Particulars	Rs. in Lakhs
1.	Uttar Pradesh Power Corporation Limited	-2.72
2.	Delhi Transco Ltd. (DESU)	8.04
3.	Jammu & Kashmir.	373.23
	TOTAL.	378.55

C) Wheeling Charges (Bairasiul)

Sr. No.	Particulars	Rs. in Lakhs
1.	Delhi Transco Ltd. (DESU)	62.47
2.	Haryana Vidyut Prasaran Nigam Ltd. (HSEB).	332.64
	TOTAL	395.11

D) CENTRAL ELECTRICITY DUTY

Sr. No.	Particulars	Rs. in Lakhs
1.	Union Territory, Chandigarh	59.33
2.	Beas Sutlej Link Project	3.01
	TOTAL.	62.34

E) MAINTENANCE CHARGES OF CONTROL EQUIPMENT AT 132 KV DEHAR-SHIMLA LINE

Sr. No.	Particulars	Rs. in Lakhs
1.	Himachal Pradesh State Electricity Board Limited.	4.43
	TOTAL	4.43

GRAND TOTAL.**Rs. 11270.11 Lakhs****4.1.8 Energy Allocation/Sale**

Revenue is being collected by selling the power to Common Pool Consumers whereas energy to State Power Utilities is allocated as per their shares in each project. The detail of allocation to State Power Utilities as well as to Common Pool Consumers is as follows:

(Figures in MU)

Project	PSPCL	HVPNL	RRVNL Including RFF	HPSEBL Including Old HP	UT Chd	NFL	Irrigation Wing	Total
Bhakra Complex	2553.96	1920.76	1101.77	412.02	580.7 5	20.94	20.07	6610.27
Dehar Power House	1199.93	868.96	579.11	166.49	81.08	0.00	11.22	2906.79
Pong Power House	367.42	266.09	999.75	50.93	24.78	0.00	10.56	1719.53
Grand Total	4121.31	3055.81	2680.63	629.44	686.6 1	20.94	41.85	11236.59

- Note:**
- i) Figures are based on scheduled energy as mentioned in REAs issued by NRPC.
 - ii) Total energy sent out from BBMB Power Houses is 11338.67 MUs and energy scheduled/booked to the Partner States/Beneficiaries is 11236.59 MUs. The difference in actual energy sent out and energy scheduled to the Partner States/Beneficiaries has been accounted for under Deviation Settlement Mechanism (DSM) since generation stations of BBMB have come under the ambit of ABT w.e.f. June-2016.

4.2 IRRIGATION WING

4.2.1 Revenue Receipts and Expenditure

The compiled monthly accounts in respect of revenue and capital expenditure are sent to the respective Accountant Generals for adjustment in the State Accounts. The copies of monthly receipts/ expenditure are also sent to the Government of India, State Government and Chief Engineer's of Partner States to apprise them of the flow of expenditure and to arrange for finances of the Board. Monthly Classified Accounts of cheques drawn and remittances made are sent to the Controller of Accounts, Government of India, Ministry of Power.

A Revenue Receipts

Revenue receipts realized during the year were Rs. 3244.60 Lakhs. As per prevailing practice, the revenue receipts relating to the Irrigation Wing are paid to the Partner State Governments.

B Revenue Expenditure

The Gross revenue expenditure is apportioned between Irrigation and Power in the manner mentioned in paragraph 4.2.2 below. Partner State-wise position of funds released vis-à-vis expenditure incurred is given below:-

(-)Advance

(+) Recoverable

(Rs. in Lakhs)

Particulars	Punjab Govt.	Haryana Govt.	Rajasthan Govt.	Total
<u>Bhakra Project</u>				
Opening balance as on 01.04.2020	17.35	3658.22	-631.53	3044.04
Amount released during the year	10409.31	5400.00	2919.00	18728.31
Total amount available	10391.96	1741.78	3550.53	15684.27
Expenditure during The year	9439.79	6064.36	2782.37	18286.52
Closing balance as on 31.03.2021	-952.17	4322.58	-768.16	2602.25

Beas Project

Opening balance as on 01.04.2020	-1556.15	-3565.35	-1226.42	-6347.92
Amount released during the year	4429.36	3500.00	9466.24	17395.60
Total amount available	5985.51	7065.35	10692.66	23743.52
Expenditure during the year.	4203.94	2802.63	8187.22	15193.79
Closing balance as on 31.03.2021	-1781.57	-4262.72	-2505.44	-8549.73
Total balance available Bhakra & Beas as on 31.03.2021	-2733.74	59.86	-3273.60	-5947.48

4.2.2 Sharing of Revenue Receipts & Expenditure

A. Bhakra

Gross receipt/expenditure is apportioned between Irrigation and Power in the ratio of 50:50.

The net irrigation receipt/expenditure is further apportioned between the Partner State Governments in the following ratios:

Rajasthan	15.22%	} Unit No. I Unit No.II & III after deducting Rajasthan's share
	19.06%	
Punjab	60%	
Haryana	40%	

B. Beas Project Unit-I (Beas Satluj Link)

Gross Revenue receipt/expenditure on Beas Project Unit-I, Beas Satluj Link Project is apportioned between Irrigation and Power in the ratio of 6:94. The net Irrigation receipt/expenditure is shared between the partner State Governments in the following ratios:-

Rajasthan	15%
Haryana	34%
Punjab	51%

C. Beas Project Unit-II (Pong Dam)

Gross receipt/expenditure on Irrigation side is apportioned between Irrigation and Power in the ratio of 76.5:23.5. Net revenue receipts/expenditure is apportioned between Partner States in the ratios given below:

Rajasthan	58.5%
Punjab	24.9%
Haryana	16.6%

4.2.3 Capital Expenditure of Projects

A. Bhakra Project

The capital expenditure of the Board is met out of the sale proceeds of surplus stores/machinery as no loan is sanctioned by the Partner State Governments/Government of India under Capital Head of Account. Participating state-wise position is given on next page:-

4700 - Capital outlay on Major Irrigation

(-)Advance

(+) Recoverable

(Rs. in Lakhs)

	Punjab	Haryana	Rajasthan	Total
Opening balance as on 01.04.2020	-868.48	-578.99	-259.53	-1707.00
Expenditure during the year	-22.81	-15.21	-6.83	-44.85
Total amount payable by the State Govts. to BBMB	-891.29	-594.20	-266.36	-1751.85

4801 – Power Project- Hydel Generation Left Power Plant

(-)Advance

(+) Recoverable

(Rs. in Lakhs)

	Punjab	Haryana	Rajasthan	Total
Opening balance as on 01.04.2020	- 31.84	- 21.22	- 9.52	- 62.58
Expenditure during the year	--	--	--	--
Total amount payable by the State Govts. to BBMB	- 31.84	- 21.22	- 9.52	- 62.58

4801 – Power Project- Hydel Generation Right Power Plant

(-)Advance

(+) Recoverable	(Rs. in Lakhs)			
Opening balance as on 01.04.2020	66.29	44.24	14.68	125.21
Expenditure during the year.	--	--	--	--
Total amount payable by the State Govts.	66.29	44.24	14.68	125.21
Grand Total (LPP+RPP) payable by the State Govts. to BBMB	34.45	23.02	5.16	62.63

B. Beas Project

The capital expenditure of Beas Project was previously met out of the central assistance given to the participating State Governments by Government of India. The funds for executing the residual liabilities of the project are now to be provided by the Partner State Governments out of their Plan Outlay or their own resources. State-wise position of the balance expenditure is given as under:-

4700 and 4801 – Capital expenditure of Beas Project

(-)Advance

(+) Recoverable

	(Rs. in Lakhs)			
	Punjab	Haryana	Rajasthan	Total
Opening balance as on 01.04.2020	340.36	257.85	441.41	1039.62
Amount received from the State Govts. during the year.	--	--	--	--
Expenditure during the year.	0.34	0.38	0.87	1.59
Total amount payable by the State Govts. to BBMB (Irrigation & Power)	340.70	258.23	442.28	1041.21

**4.3 Position of Outstanding dues from Partner State Governments:
(AS ON 31.03.2021)**

(-)Advance

(+) Recoverable

(Rs. in Lakhs)

Particulars	Punjab Govt.	Haryana Govt.	Rajasthan Govt.	Total
O&M Charges	-2733.74	59.86	-3273.60	-5947.48
BCB (Residual Works)	340.70	258.23	442.28	1041.21
Total	-2393.04	318.09	-2831.32	-4906.27

4.4 CONTRIBUTORY PROVIDENT FUND (AS ON 31.03.2021)

Adhoc/Regular/Work-charged employees of Bhakra Beas Management Board are entitled to subscribe to Board's General Provident Fund/Pension Scheme or Contributory Provident Fund scheme managed by BBMB Contributory and General Provident Fund Trust. Half of the Trustees represent the Management and other half represents Employees. The position of Balances of Bhakra Beas Management Board Employees Contributory and General Provident Fund under different prescribed schemes is given below:-

(Rs. in Lakhs)

Sr. No.	Name of Securities/Instruments	Amount
1	Central Govt. Securities	6271.30
2	Govt.of India Special Deposit Scheme A/c	6678.99
3	Adhar Housing Finance Ltd	450.00
4	Aditya Birla Finance	400.00
5	Andhra Bank Bonds	400.00
6	Andhra Pradesh State Dev. Loan A/c	2079.90
7	Bajaj Finance Ltd. Bonds	300.00

8	Bihar State Development Loan A/c	780.00
9	Capital First Ltd.	700.00
10	Chhattisgarh State Power DC Ltd.	1,000.00
11	Credila Financial Service Pvt Ltd.	100.00
12	Dewan Housing Finance Ltd.	650.00
13	Export Import Bank Bond	140.00
14	Edelweiss finvest Pvt. Ltd.	600.00
15	Food Corporation of India Bonds	1000.00
16	Gujrat State Development Loan A/c	308.00
17	Haryana Vidyut Prasaran Nigam Ltd. Bond	530.00
18	Haryana State development Loan	500.00
19	HP State Electricity Board Bond	450.00
20	IDBI Bank Ltd Bond	300.00
21	India Bulls Financial Services Ltd	310.00
22	Indian Railway Finance Corp Bond	300.00
23	Industrial Development Finance Corp.Bond	200.00
24	IL&FS Financial Service Ltd	700.00
25	IL&FS Transportation network Ltd	1,550.00
26	J&K State Development Loan A/c	1390.20
27	Jaipur Vidyut Vitran Nigam Ltd. (JVVNL)	800.00
28	Krishna Bhagya Nigam Ltd	250.00
29	Karnataka SDL	900.00
30	L&T Infrastructure Finance Co. Ltd Bond	880.00
31	L&T Housing Finance Ltd	200.00
32	Maharashtra State Development Loan A/c	500.00
33	North Eastern Electric power Corporation (NEEPCO Ltd)	200.00
34	Patel KNR Heavy Infra ltd	1,000.00
35	PNB Housing Finance Ltd Bond	530.00
36	PNB Perpetual Bond	350.00
37	Power Finance Corp.Ltd. Bond	2050.00
38	Federal Bank Limited	100.00

39	Punjab State Development Loan A/c	1,800.00
40	HDFC Credila Financial Services Ltd.	300.00
41	Ajmer Vidut Vitran Nigam Ltd	400.00
42	Telangana State Development Account	400.00
43	Assam State Development Loan	495.10
44	Rajasthan Rajya Vidut Prasaran Nigam Ltd.	700.00
45	Rajasthan State Development Loan A/c	1712.28
46	Reliance Capital Ltd. Bond	900.00
47	Rural Electrification Corp. Ltd. Bond	1,378.76
48	Sintex industries ltd	600.00
49	Steel Authority India Ltd	200.00
50	Tamil Nadu Uday Bond	2,240.00
51	Tata Cleantech Capital Limited	400.00
52	Tata Capital Finance Ltd	1200.00
53	Tourism Finance Corporation Ltd.	132.00
54	Tamilnadu State Development Loan	200.00
55	UP State Development Loan A/c	3,608.89
56	U P Power Corporation Ltd	800.00
57	West Bengal State Development Loan A/c	1,716.89
58	Sikkam State Development Loan A/c	451.80
59	Mizoram State Development A/c	72.84
60	Telangnana State Development A/c	186.97
61	ONGC Petro Additions Ltd.	800.00
62	Gujrat State investment Ltd.	800.00
63	JM Financial Product Ltd.	500.00
64	Tamil Nadu Generation & Distribution Co.	500.00
Total		58343.92
Mutual Fund		
1	BHARAT 22 ETF MF	150.00
2	SBI Blue Chip Fund Growth	480.00
3	IL&FS Infrastructure Debt Fund Series-3-A	200.00
4	ICICI Prudentail Value discovery fund Growth	100.00

5	Kotak ETF Fund	50.89
6	Kotak Select Gilt Investment Fund	200.00
7	Axis Blue Chip Fund	484.00
8	Kotak Standard Multicap Fund	150.00
9	HDFC Top-100 Fund	50.00
10	HSBC Mutual Fund	200.00
11	Motilal OsWal Nifty 50 Indix Fund (MF)	20.00
Total Mutual Fund		2,084.89
Total Investment up to 31/3/2021		60428.81

4.5 Audit

The Internal Audit of the various Divisions/Offices of Bhakra Beas Management Board is conducted by the Financial Adviser and Chief Accounts Officer. The statutory audit is conducted by the Accountant General, Audit, Punjab. The Board's accounts have been audited by the Accountant General, Audit, Punjab upto 03/2021.

4.6 Personal Ledger Account (PLA)

Under the provisions of Section 79(5) of the Punjab Reorganization Act, 1966, the Partner State Governments and State Electricity Boards are required to provide necessary funds to BBMB to meet all the expenses required for the discharge of its functions, including operation and maintenance charges for works of Irrigation Wing (dams, canals and other civil structures) and for works of Power Wing (power plants, transmission network, etc.), respectively. Since BBMB does not have any working capital to meet the operation and maintenance charges, it was decided in the meeting held by the Secretary, Irrigation & Power, Government of India, New Delhi on 14.2.1967 to provide these funds to Personal Ledger Account (PLA) to be opened in the books of Government of India to which the participating States would contribute appropriate amounts as per their share after making provision in their respective budgets. As on 31.03.2021 balance in Personal Ledger Account was Rs. 19617.64 Lakhs only.

4.7 O&M Cost of BBMB System

The cost booked to notional generation and notional transmission of BBMB during the year was Rs. 566.06 Crore and Rs. 234.42 Crore respectively. The O&M cost for notional generation works out to 49.92 p/kWh and notional transmission cost to 20.67 p/kWh. After accounting for receipts from common pool consumers, the cost of energy delivered to the partner States (including notional transmission) against their share works out to be 48.88 p/kWh.



अध्याय-5 Chapter-5

परिचालन कार्य-निष्पादन Operational Performance

5.1 Power Wing

The power generation at BBMB power stations and its transmission to various partners/ beneficiaries is under the Power Wing of the BBMB. The integrated operation of the system requires real time monitoring of the power system so as to have effective control of the frequency, voltage and loading on the system and to optimally utilize the generation resources. These functions are performed by the Power Regulation Directorate, Chandigarh through a state of the art Load Dispatch Centre at Chandigarh.

5.1.1 Energy Generation

The total energy generation of BBMB generating stations during 2020-21 was 11482.05 MU (including of 4.28 MU deemed generation at Ganguwal & Kotla Powerhouses) which is 19.60 % more than the Annual Generation Target of 9600 MU fixed by the CEA for the year 2020-21. The annual energy generation at each BBMB Power House for the year 2020-21 is indicated in **Fig.1**. The annual target and actual energy generation during the year 2011-12 to 2020-21 are depicted in **Fig.2**.

5.1.2 Peak Generation

BBMB strives to meet peaking demands of partner states. Typical daily generation curves of BBMB Power Houses for monsoon, winter, mild winter & hot season periods are depicted in **Fig.3**.

5.1.3 Availability of Power Houses

The annual availability factor of Bhakra Left Bank and Bhakra Right Bank powerhouses was 99.38% and 99.83% respectively. At Pong, the availability was 99.11%. The availability at Dehar power house was 92.23%. The availability factors of Ganguwal and Kotla Powerhouses were 99.50% and 99.35% respectively. The plant availability factors of BBMB powerhouses are depicted in **Fig.4**. Overall availability of BBMB Power Houses was 97.04 %.

5.1.4 Energy Transmitted

Energy transmitted from BBMB Powerhouses (to the various partners/beneficiaries) was 11338.667 MUs. and energy booked to the partners/beneficiaries is 11236.59 MUs (these figures does not include deemed generation at Ganguwal & Kotla Power houses) as indicated in **Fig.5**. The difference in actual energy sent out and energy booked to the partner state/ beneficiaries have been accounted for under Deviation Settlement Mechanism (DSM) since generating stations of BBMB have come under the ambit of ABT w.e.f. June 2016 The auxiliary consumption in BBMB Powerhouses has been 27.1504 MU (0.2394%) and transformation losses have been 111.9526 MUs (0.975 %).

5.1.5 Availability of Transmission

The availability of Transmission System of BBMB during 2020-21 was 99.47%.

5.1.6 Diversion of Water from Nangal Hydrel Channel (NHC) to Anandpur Sahib Hydrel Channel (ASHC).

As decided in the 184th meeting of the Board held on 23.12.2003, whenever any machine(s) at Ganguwal and/or Kotla Power House (s) is/are on shutdown, the excess water after meeting the irrigation requirements of Punjab & Haryana through Nangal Hydrel Channel (NHC) shall be diverted to Anandpur Sahib Hydrel Channel (ASHC). Further, the loss of generation at Ganguwal/ Kotla Power houses due to diversion shall be fully compensated by PSPCL (erstwhile PSEB) and the balance increase in generation at Anandpur Sahib Hydrel Project after accounting for the loss of generation shall be equally shared between BBMB & PSPCL (erstwhile PSEB). The total credit of generation at Ganguwal & Kotla Power Houses due to diversion of water shall be treated as deemed generation of Ganguwal/ Kotla Power Houses. Further the adjustment of deemed generation amongst the partner states is done as per the decision taken in 136th Power Sub – Committee meeting of BBMB held on 23.04.2019.

In pursuance of the above, the deemed generation at Ganguwal/Kotla Powerhouse during 2020-21 is as under:-

(All Figs. in MU)

Period	Loss of Generation at Ganguwal & Kotla	Excess Generation at ASHP	Deemed Generation	Gain to BBMB
4/20 to 3/21	0.09	4.7	4.28	4.19

5.1.7 System Load Dispatch Center (SLDC)

The System Load Dispatch Centre (SLDC) of Bhakra Beas Management Board is assigned with the responsibility of Round the Clock Monitoring, Operation and Control of BBMB Transmission and Generation Assets. BBMB SLDC is equipped with State of Art Supervisory Control & Data Acquisition and Energy Management System (SCADA/EMS) and a dedicated Optical Fiber based Communication System which helps the SLDC Engineers in discharging their responsibilities efficiently, by taking informed decisions duly assisted and guided by the latest technologies.

BBMB has also established its backup SLDC by sharing the infrastructure with PSTCL, thereby providing a unique and cost effective solution to ensure continuity of services in case of any disaster. By sharing the backup of SLDC with PSTCL, BBMB saved about Rs. 5 Crores in the project cost for itself as well as for PSTCL. BBMB has also equipped its 10 important Generating Stations and Sub-Stations with the State of Art RTUs.

In addition, all BBMB Power Houses and Sub-stations have been provided with dedicated SCADA remote consoles. These remote consoles are connected to BBMB SLDC through a dedicated communication link. With the help of these remote consoles the Sub-station/Power houses officers/staff can monitor the status of various power system devices installed in their own Sub-station as well as other Sub-stations of BBMB. In addition to this the reports

pertaining to each Power House and Sub-station can be generated by their Control Room Engineers/Staff.

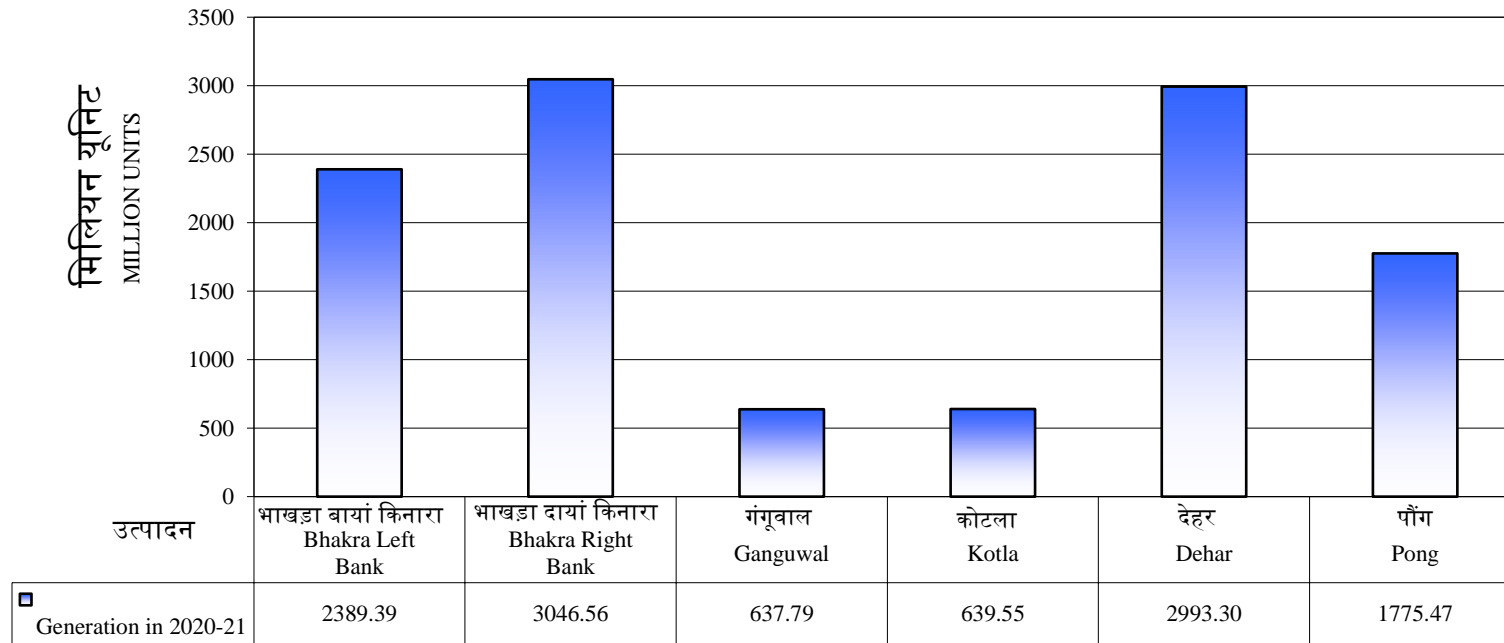
Through their concert efforts, the Engineers at BBMB SLDC have pioneered various innovative techniques in Power System Monitoring, Operation and Control and continue to march forward towards their goal for implementation of Smart Grid in BBMB.

बीबीएमबी के विद्युत-घरों में वार्षिक सकल उर्जा उत्पादन वर्ष 2020-21

चित्र-1
Figure - 1

ANNUAL GROSS ENERGY GENERATION AT BBMB POWER HOUSES
2020-21

योग : 11482.05 मिलियन यूनिट
Total : 11482.05 MU

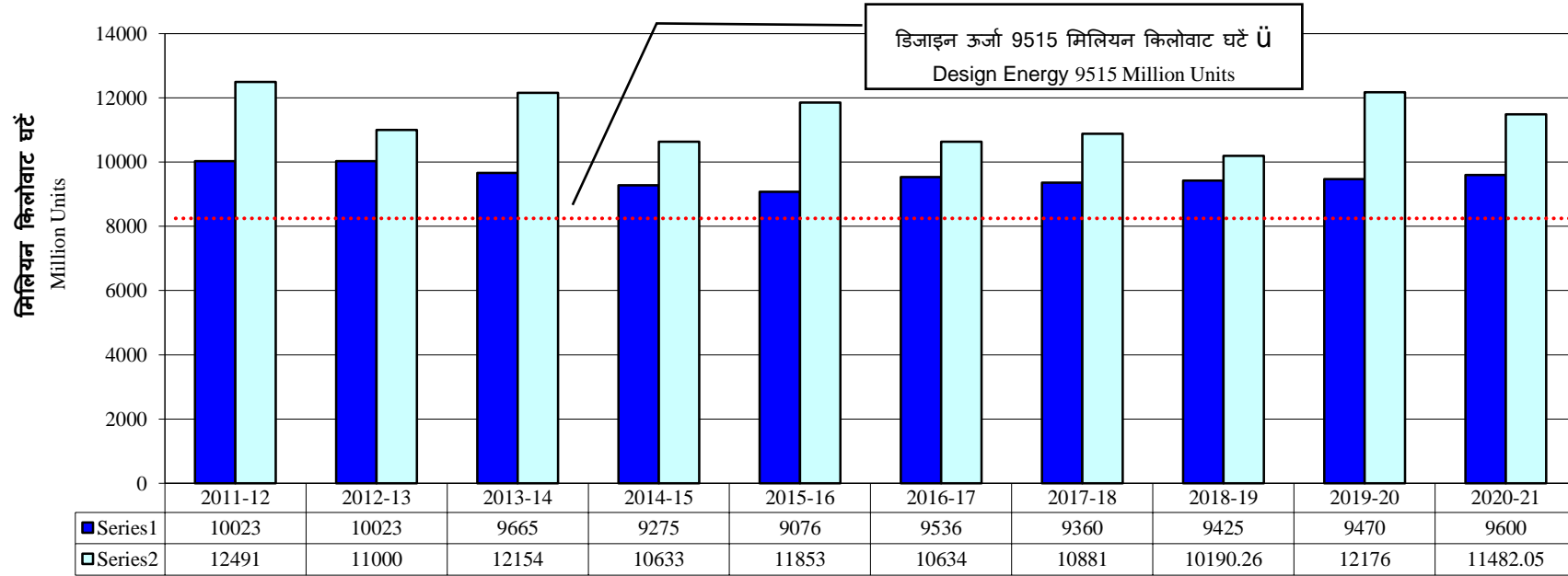


गंगुवाल एवं कोटला विद्युत घरों से कुल उत्पादन में डीमड उत्पादन के रूप में 4.28 मिलियन यूनिट शामिल हैं।
The Total Generation at Ganguwal & Kotla PHs includes 4.28 MUs as Deemed Generation. (Gwl=2.14 MU & Ktl=2.14 MU)

वर्ष 2011-12 से 2020-21 के दौरान वार्षिक ऊर्जा उत्पादन के सम्बन्ध में लक्ष्य/उपलब्धियां

TARGET/ACHIEVEMENTS IN RESPECT OF ANNUAL ENERGY GENERATION DURING THE YEARS 2011-12 TO 2020-21

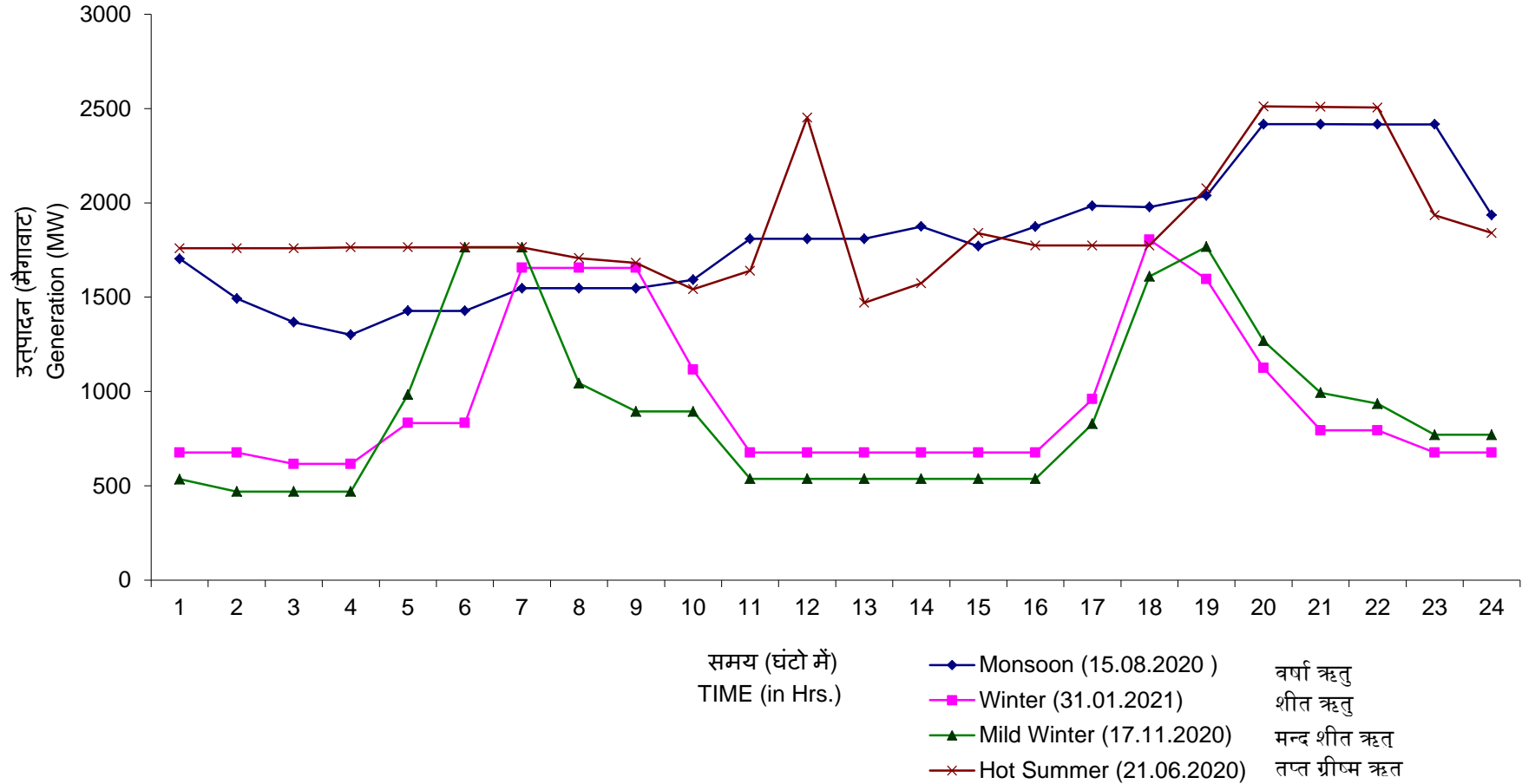
चित्र-2
Figure - 2



वर्ष
Year

वर्ष 2020-21 के दौरान बीबीएमबी के प्रतीकात्मक दैनिक उत्पादन वक्र
 TYPICAL DAILY GENERATION CURVES OF BBMB DURING 2020-21

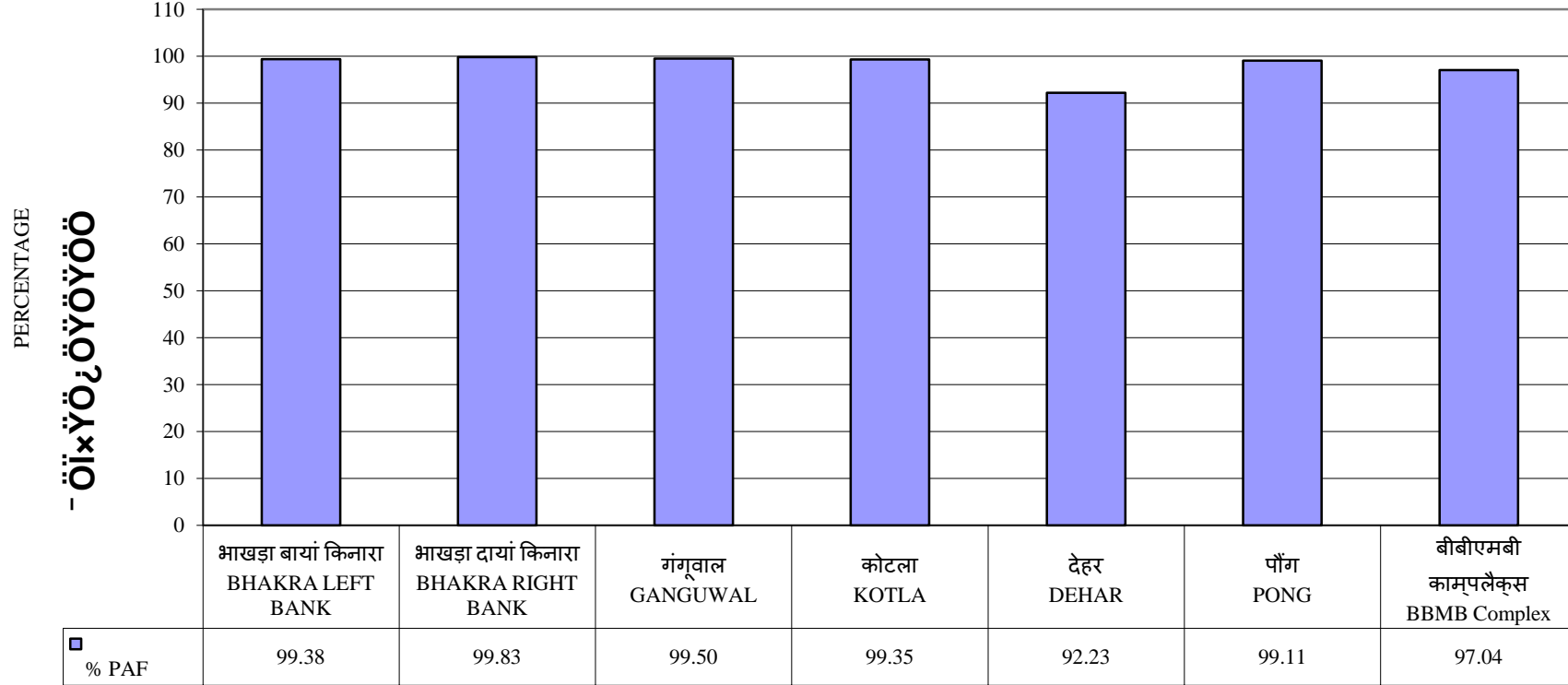
चित्र-3-ए
 Fig. 3-A



वर्ष 2020-21 के दौरान बीबीएमबी के विद्युत-घरों का संयन्त्र उपलब्धता
गुणक (आर,एम एण्ड यू अवधि रहित)

Figure 4

PLANT AVAILABILITY FACTOR OF BBMB POWER HOUSES DURING
THE YEAR 2020-21 (EXCLUDING R,M&U PERIOD)

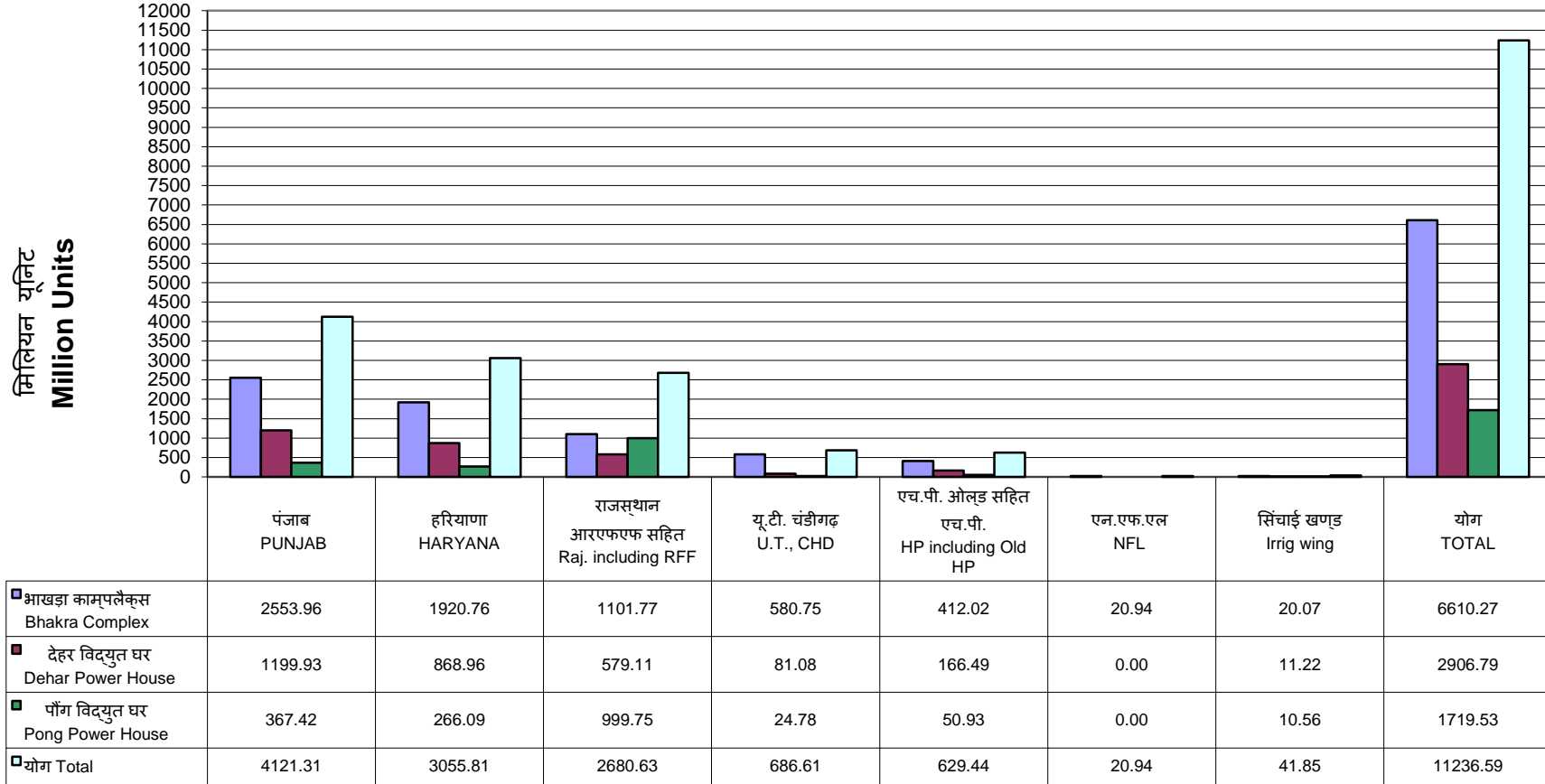


संयन्त्र उपलब्धता गुणक (पी.ए.एफ.) प्रतिशतता = $\frac{\text{वर्ष में कुल घंटे} - (\text{अनिवार्य बंदी के घंटे} + \text{आर,एम एण्ड यू अवधि को छोड़ कर योजित बंदी के घंटे} + \text{आर,एम एण्ड यू अवधि})}{\text{वर्ष में कुल घंटे} - \text{आर,एम एण्ड यू अवधि के घंटे}} \times 100$

Plant Availability Factor (PAF) %age = $\frac{\text{Total hrs in a year} - (\text{Forced outage hrs} + \text{Planned outage hrs excluding R,M\&U period} + \text{R,M\&U period})}{\text{Total hrs in a year} - \text{R,M\&U period in hours}} \times 100$

वर्ष 2020-21 के दौरान बीबीएमबी विद्युत-घरों से भागीदार/लाभानभोगियों को पारेषित ऊर्जा
ENERGY TRANSMITTED TO PARTNERS/BENEFICIARIES FROM BBMB PHs DURING 2020-21

X"O:0-5
Figure - 5



5.2 Irrigation Wing

5.2.1 Position of Reservoirs

Control and Operation of reservoirs and regulation of water to various partner States/beneficiaries is under Irrigation Wing of the BBMB.

Bhakra Reservoir

- a) Filling of Bhakra Reservoir started on 8th June, 2020 when the Reservoir level was El. 1560.82 ft (475.74 m).
- b) Total inflows including diversion through BSL system from 01.04.2020 to 31.03.2021 were 13.568 MAF/16.598 BCM.
- c) Diversion through BSL system from 01.04.2020 to 31.03.2021 was 3.338 MAF/4.084 BCM.
- d) Maximum level El. 1662.75 ft. (506.81 m) was attained on 10th September, 2020.

- **Pong Reservoir**

- a) Filling of Pong reservoir started on 03rd July, 2020 when the reservoir level was El. 1334.49 ft. (406.75 m).
- b) Total inflows from 01.04.2020 to 31.03.2021 were 5.677 MAF/6.945 BCM.
- c) Maximum level El. 1376.59 ft. (419.58 m) was attained on 9th September, 2020.

5.2.2 Regulation of Water Supplies and Water Account

For preparation of water account, the year is divided into two periods i.e. the filling period from 21st May to 20th Sept. and the depletion period from 21st Sept. to 20th May of next year. The water accounts are prepared separately for the filling period and depletion period. The excess/shortages of one period are not carried over to the next period. The distribution/shares and deliveries to the partner States alongwith excess/shortage received by such State out of Satluj as well as Ravi-Beas waters for the period 21.5.2020 to 20.05.2021 and the water releases for Delhi Jal Board have been depicted in the **Fig 6 to 13**. The figures indicated in these charts have been taken from the water accounts circulated to the partner States from time to time.

The releases from Bhakra and Pong reservoirs are decided by the Technical Committee (comprising Whole Time Members of BBMB, Technical Members/Directors of State Electricity Boards/State Transmission Utilities and Chief Engineers of Irrigation Departments of the partner States and Members from CWC under the chairmanship of Chairman, BBMB) in the monthly meetings by taking into account the requirements of Irrigation and Power, reservoir levels and the inflows.

The share distribution for the various partner States and the water required to be delivered at various Inter-State Contact Points both out of Satluj and Ravi-Beas waters out of approved releases from Reservoirs are intimated through Canal Wire/Wireless Messages to the concerned officers of the partner States on 10-daily basis.

The water supplied to the partner States during the filling/depletion period is given in Figures detailed as under:-

1. Water supplied to Punjab out of Satluj and Ravi -Beas waters. - **Fig. 6 & 7**
2. Water supplied to Haryana out of Satluj and Ravi - Beas waters. - **Fig. 8 & 9**
3. Water supplied to Rajasthan out of Satluj and Ravi - Beas waters. - **Fig. 10 to 12**
4. Supply of Water to Delhi Jal Board - **Fig. 13**

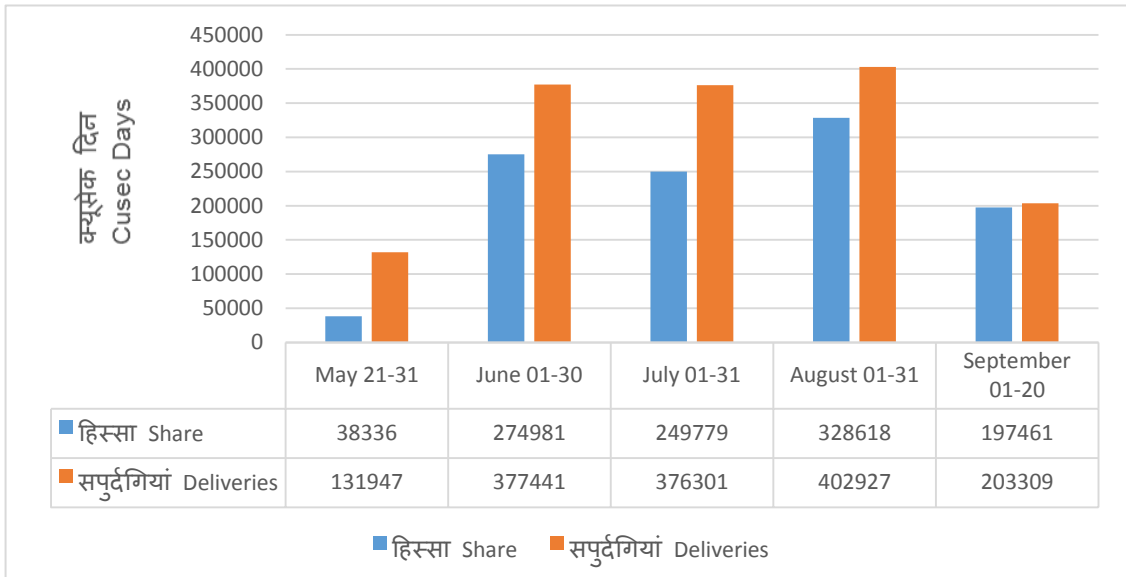
Total water supplied to the States from 21.05.2020 to 20.05.2021 has been as under:-

(All figures in million acre ft)

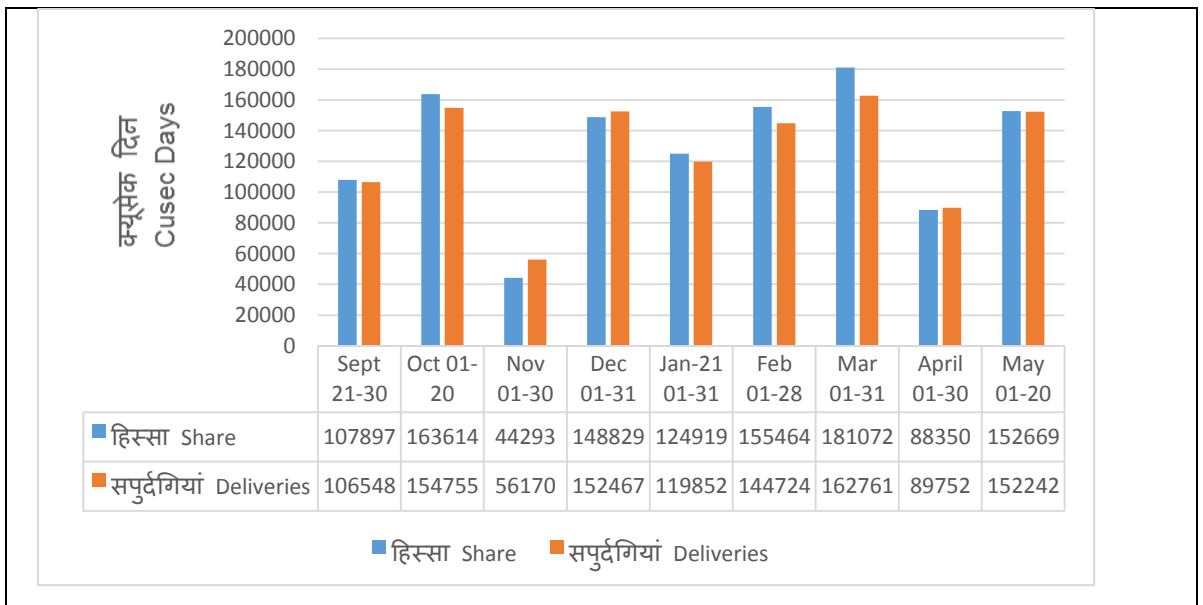
State	Satluj	Ravi-Beas	Total
Punjab	5.256	6.170	11.426
Haryana	3.755	1.787	5.542
Rajasthan	1.101	6.821	7.922
Delhi Jal Board	-	0.294	0.294
Total	10.112	15.072	25.184

दिनांक 21.05.2020 से 20.05.2021 तक की अवधि के लिए सतलुज जल से पंजाब को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरण का Statement showing position of water supplies to Punjab out of Satluj water for the period from 21.05.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



Note (1) All figures are in cusec days.

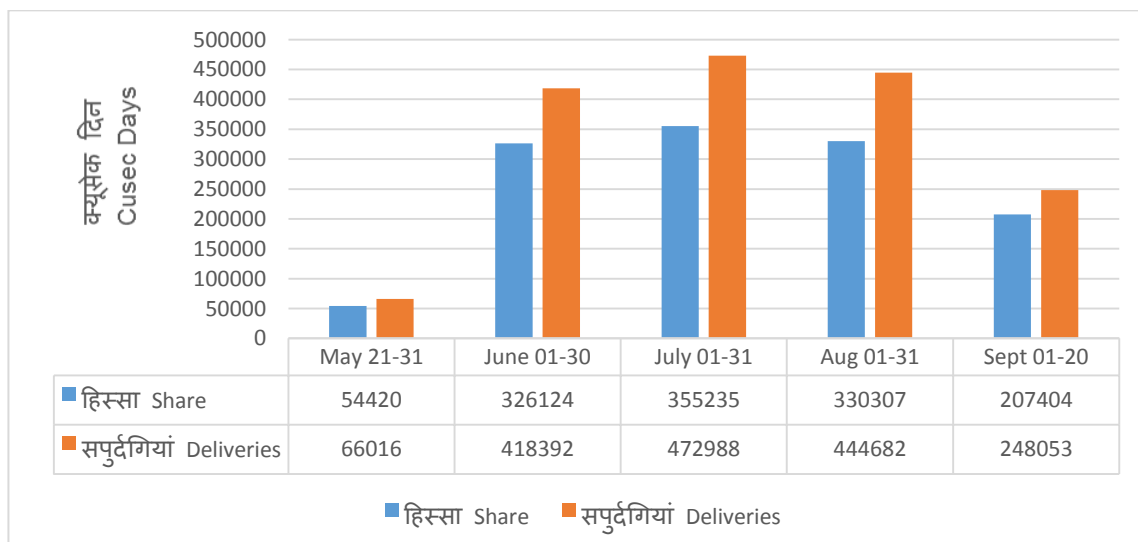
(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

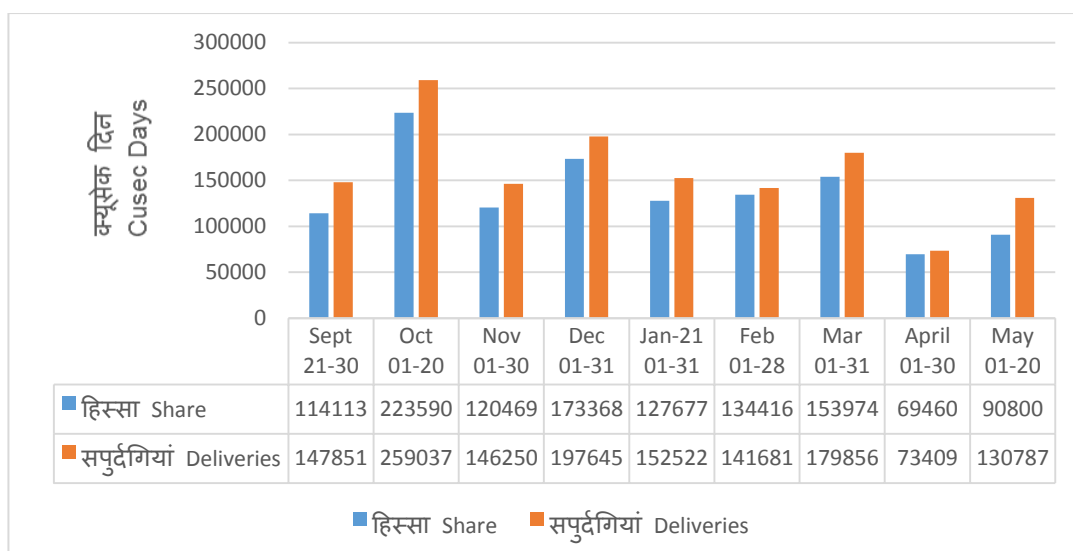
1. सभी आंकड़े क्यूसेक दिनों में।
2. सभी सपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए रावी ब्यास से पंजाब को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका
Statement showing position of water supplies to Punjab out of Ravi-Beas waters for the period from 21.5.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



Note:- (1) All figures are in cusec days.
(2) The deliveries have been made as per requirements decided in Technical Committee Meeting
(3) The deliveries to Punjab also include some supplies made d/s Ropar which have already been booked to Punjab at Ropar.

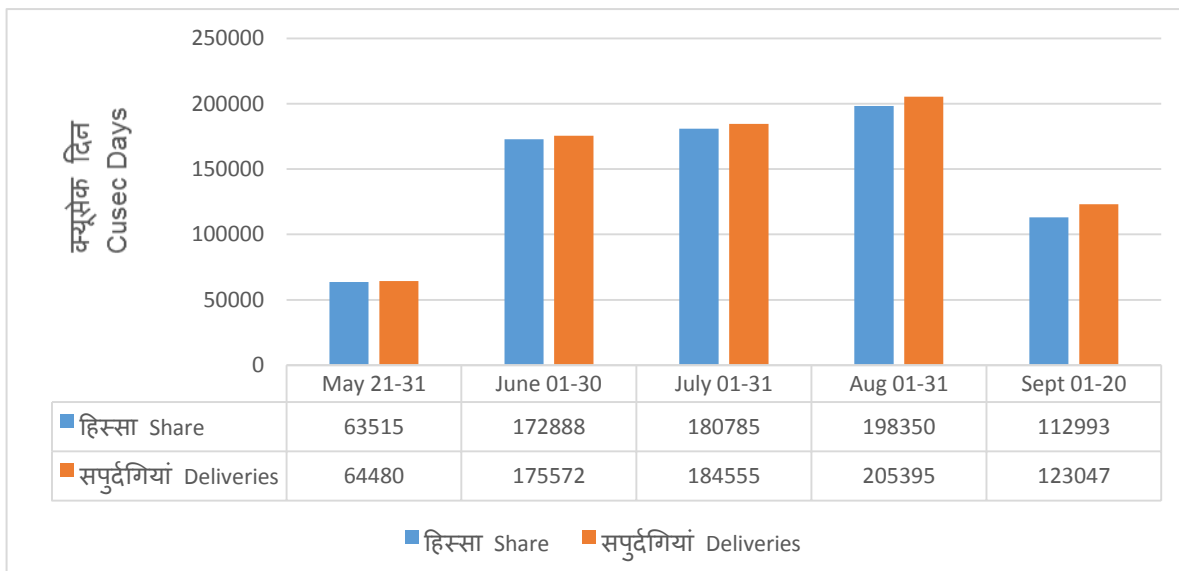
नोट:-

1. सभी आंकड़े क्यूसेक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।
3. पंजाब को की गई सुपुर्दगियां में रोपड़ के डाउनस्ट्रीम की गई कुछ आपूर्तियां भी शामिल हैं जो पंजाब को रोपड़ पर पहले ही बुक की जा चुकी है।

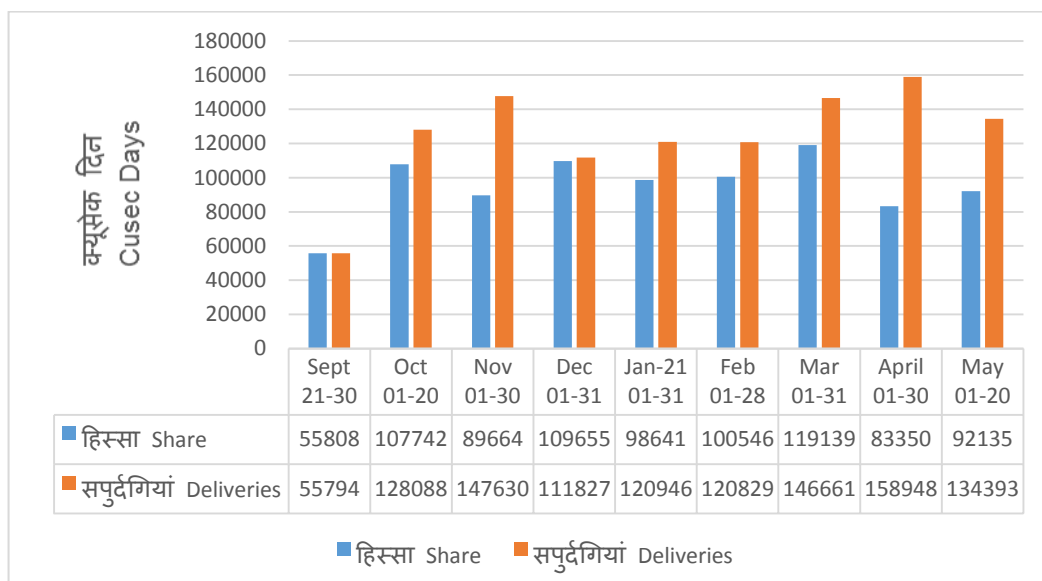
दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए सतलुज जल से हरियाणा को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका

Statement showing position of water supplies to Haryana out of Satluj waters for the period from 21.5.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



Note(1) All figures are in cusec days.

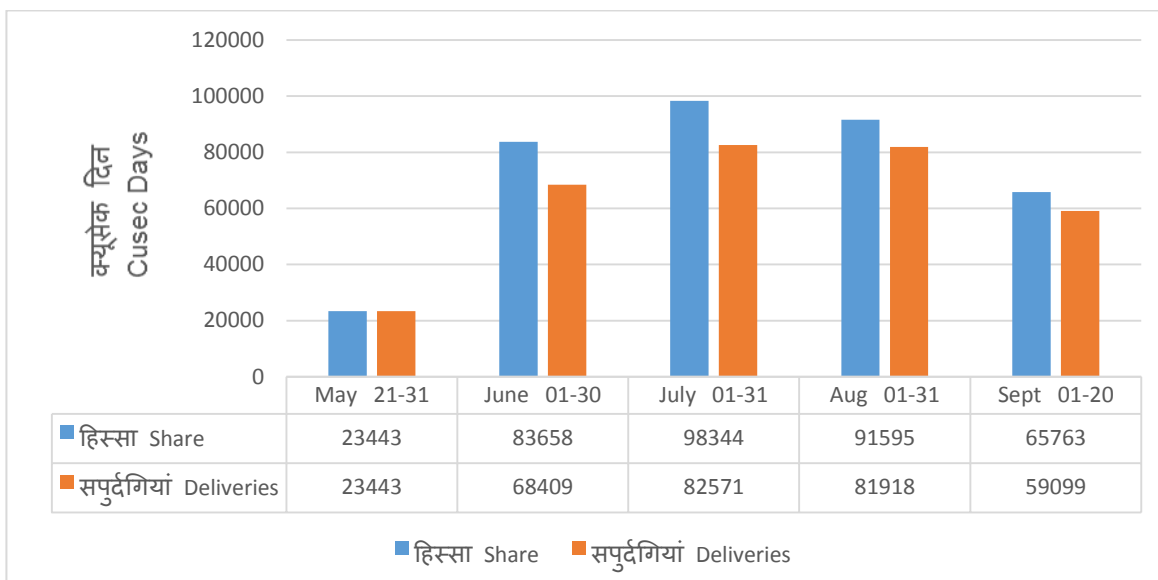
(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

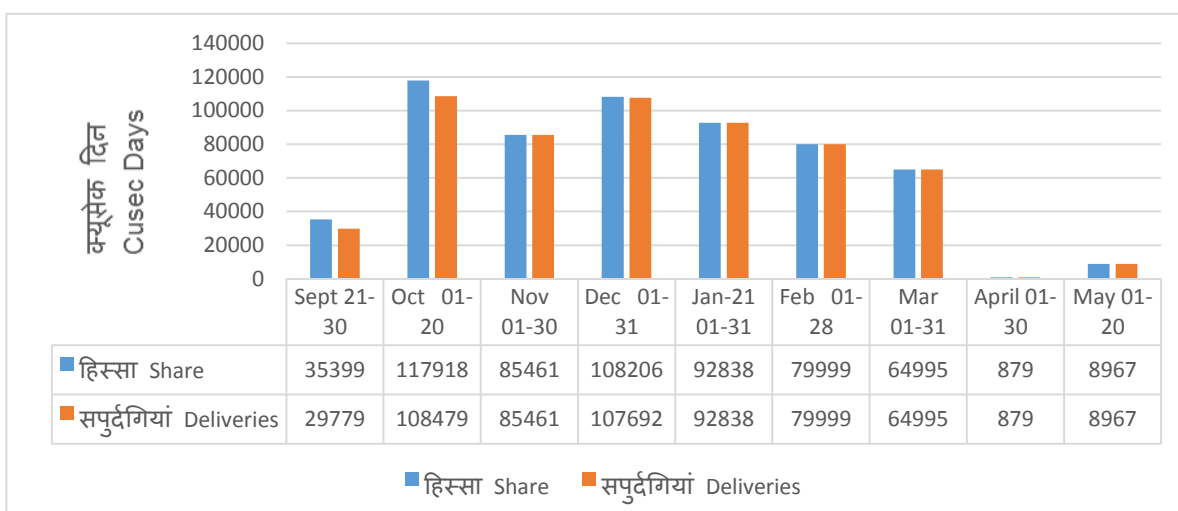
1. सभी आंकड़े क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए रावी-ब्यास जल से हरियाणा को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका
Statement showing position of water supplies to Haryana out of Ravi-Beas water for the period from 21.5.2020 to 20.05.2021.

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

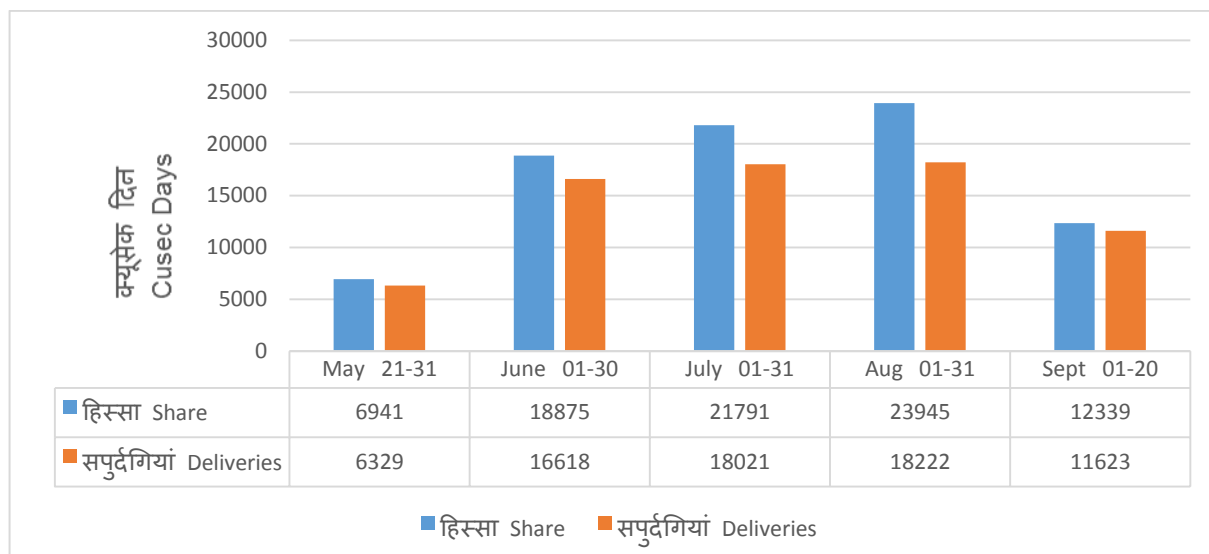
नोट:-

1. सभी आंकड़े क्यूसेक दिनों में।
2. सभी सुपूर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

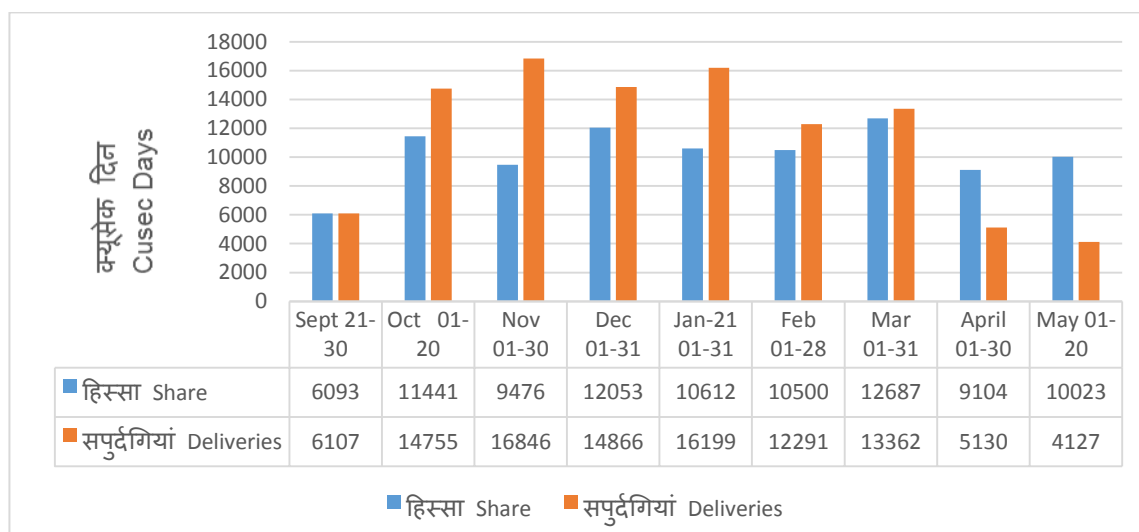
दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए सतलुज जल की हरियाणा के रास्ते राजस्थान को हुई सप्लाई की स्थिति को दर्शाने वाली विवरणिका

Statement showing position of water supplies to Rajasthan via Haryana out of Satluj water for the period from 21.5.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

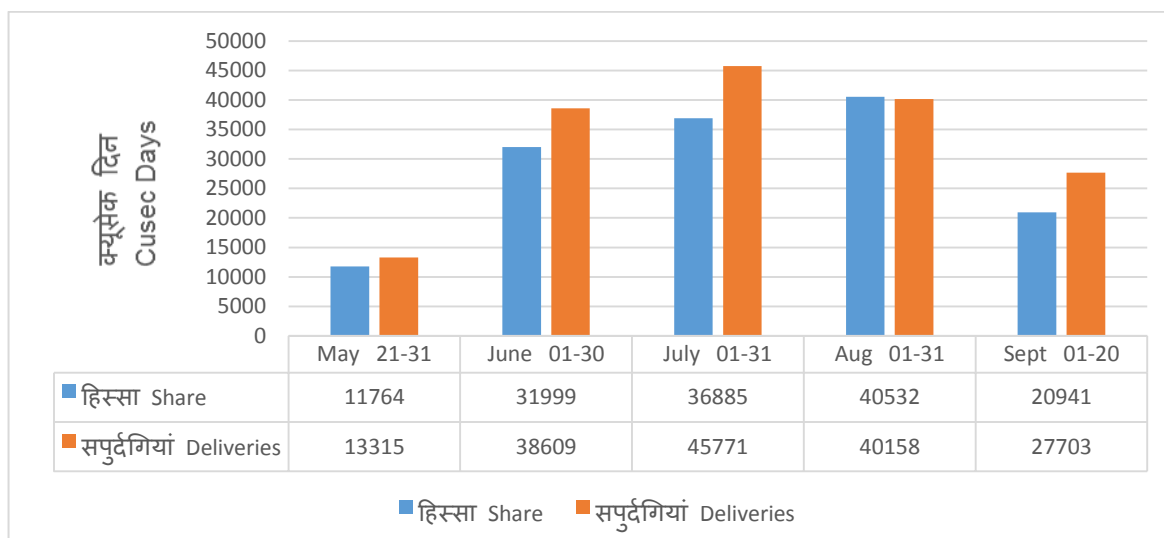
नोट:-

1. सभी आंकड़े क्यूसेक दिनों में।
2. सभी सपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

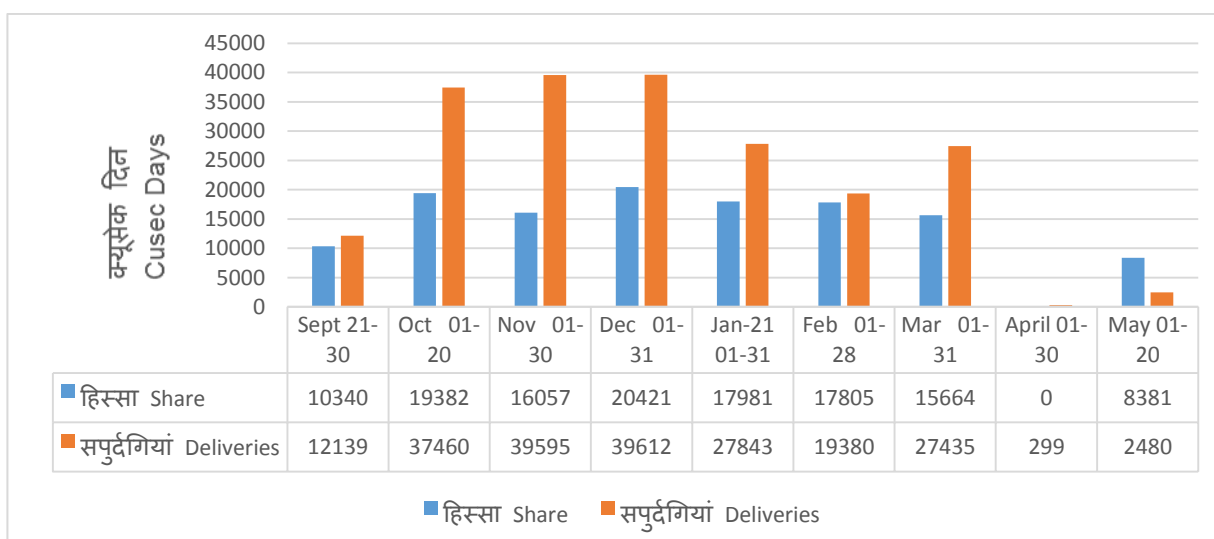
दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए सतलुज जल की पंजाब के रास्ते राजस्थान को हुई सप्लाई की स्थिति को दर्शाने वाली विवरणिका

Statement showing position of water supplies to Rajasthan via Punjab out of Satluj water for the period from 21.5.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

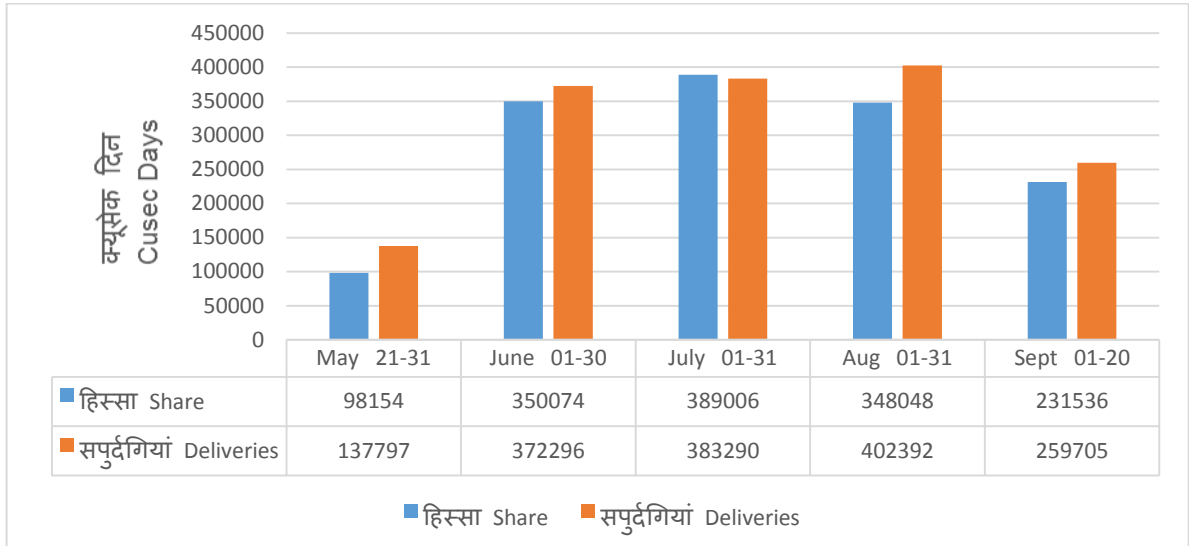
नोट:-

1. सभी आंकड़े क्यूसिक दिनों में।
2. सभी सपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

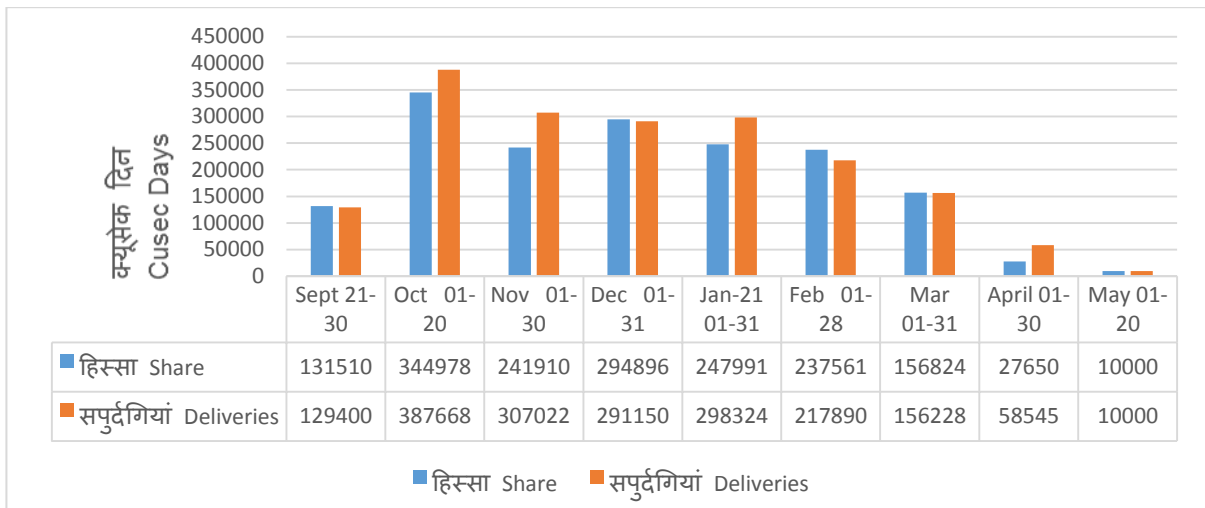
दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए रावी-ब्यास जल से राजस्थान को हुई जल आपूर्ति की स्थिति को दर्शाने वाली विवरणिका

Statement showing position of water supplies to Rajasthan out of Ravi-Beas water for the period from 21.5.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



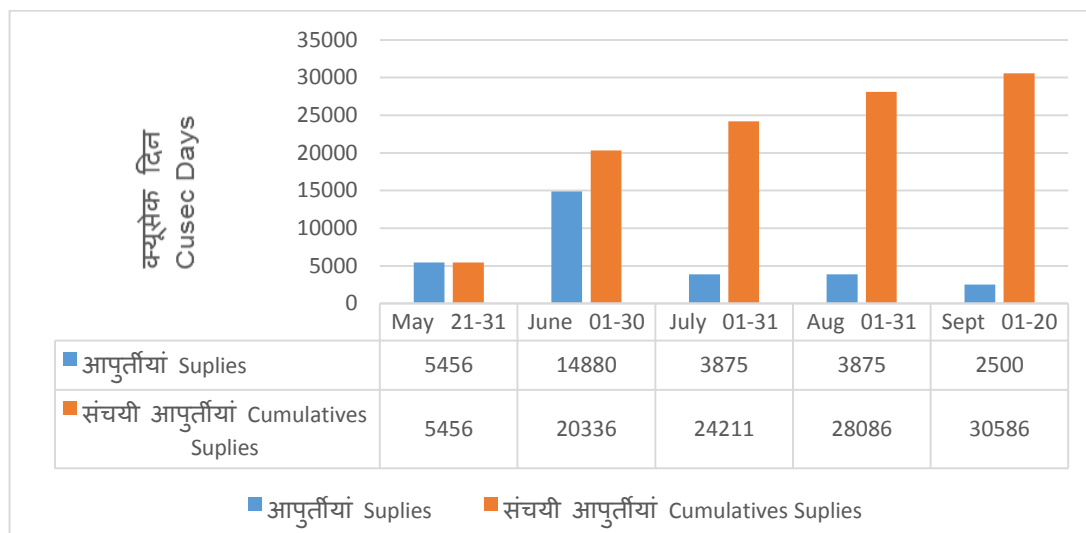
Note: All figures are in cusec days.

नोट: सभी आंकड़े क्यूसेक दिनों में।

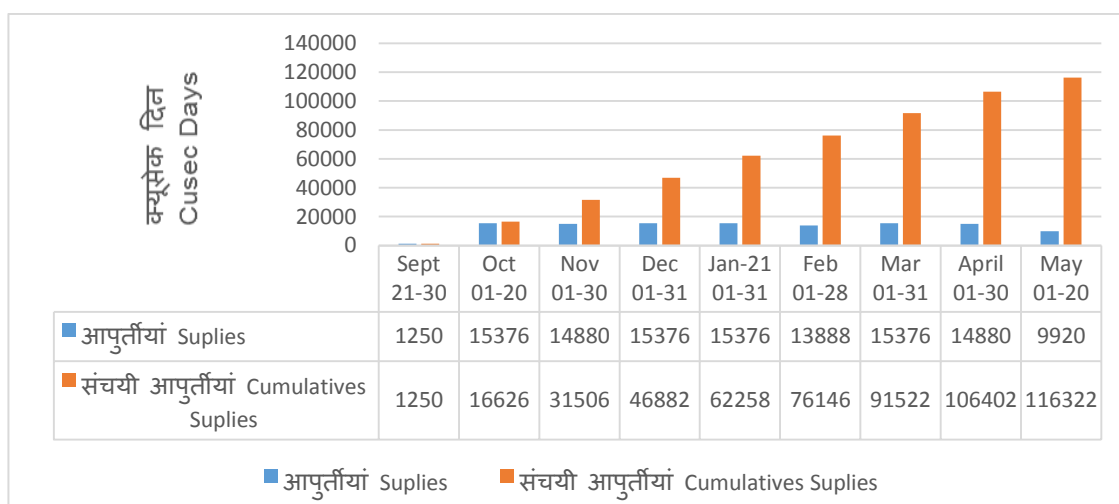
दिनांक 21.5.2020 से 20.05.2021 तक की अवधि के लिए दिल्ली जल बोर्ड को की गई जल आपूर्ति की स्थिति दर्शाने वाली विवरणिका

Statement showing position of water supplies made to Delhi Jal Board for the period from 21.5.2020 to 20.05.2021

भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



रिक्तीकरण अवधि (21.09.2020 से 20.05.2021)
Depletion period (21.09.2020 to 20.05.2021)



नोट(1)

सभी आंकड़े क्यूसेक दिनों में ।

Note(1)

All figures are in cusec days.



अध्याय-6 Chapter-6

परिचालन एवं अनुरक्षण Operation & Maintenance

6.1 Power Wing

In addition to routine maintenance activities, following works of significance were carried out on various Power Houses/Transmission System of BBMB during the year 2020-2021:-

6.1.1 Bhakra Power Houses

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks
	From	To	
1.	15.01.2021	31.03.2021	Annual Maintenance & Modification of Tower of its link line.
2	30.10.2020	24.11.2020	Capital maintenance of Penstock Head gate and its hoist system.
3	01.04.2020	31.03.2021	The RM&U of Unit no.3 from 108 MW to 126 MW is in progress.
4.	28.12.2020	14.01.2021	Annual Maintenance
5.	20.05.2020	31.05.2020	Annual Maintenance
6.	07.12.2020	28.12.2020	Annual Maintenance
7.	05.10.2020	31.03.2021	Capital Maintenance is in progress
8.	07.11.2020	28.11.2020	Annual Maintenance
10.	27.03.2021	17.04.2021	Annual Maintenance

B. Major Works

The work of Renovation, Modernization & Uprating (RM&U) of Bhakra Left bank Power house from 5x108 MW to 5x126 MW is in progress under which after completing the assembly & erection work of Unit no – 2, 4 & 5 with new components (except retained components), has already been completed during the period i.e. in July 2013, August 2015 and October 2013 respectively and all these three units have been successfully commissioned and are handed over to BBMB and running successfully at the rating capacity of 126 MW. Thereafter during the FY 2019-20 the next Unit i.e. Unit No – 3 of Bhakra Left Bank have been taken on RM&U w.e.f. 01.04.2019 for its uprating from existing 108 MW to 126 MW and unit was likely to be commissioned during Dec/2019 but due to the various technical issues at site its commissioning was delayed and unit was likely to be commissioned during June/July-2020 but due to the COVID-19 situation in the country and lockdown imposed in the country w.e.f 23rd March-2020 the said work of RM&U of unit no. 3 was stopped totally at site and later the work could only be started by the Andritz Hydro with limited manpower available due to COVID-19 situation and for M/s Hitachi work of Turbine portion, the availability of Japanese were required at site but Japanese could visit India by the end of March-2021 as the result the pending work of unit

no. 3 of turbine portion again could be restarted during April-2021 and now unit was scheduled to be commissioned during June-July/2021 but due to the 2nd wave of COVID-19 in India again Japanese has decided to leave India by the end of April-2021 as the result commissioning of the unit no.3 is likely to be delayed further till Japanese again reach at site after the COVID-19 situation of 2nd wave becomes normal in India.

1. The following points of RM&U of Unit No –3 got completed during the period of the annual report i.e F/Y 2020-21:-
 - a. The final assembly of DE & NDE fans, rotor poles, brake track, brake jacks etc. completed successfully on the existing retained rotor.
 - b. Final assembly of the rotor and its electrical testing as per the approved quality plan completed successfully at site.
 - c. Lifting of the rotor of the weight of approximately 410 Ton from the Generator floor and then lowering it into the Generator pit of Unit No – 3 is completed successfully by using the rotor lifting beam and both the EOT cranes in tandem operation.
 - d. Lifting of the upper bracket and then placing it on the stator frame of Unit No – 3 completed successfully.
 - e. Final alignment of upper bracket and lower bracket completed successfully.
 - f. Final alignment of Generator alone completed successfully in reference to turbine shaft free parameters.
2. The capital maintenance of unit No. 7 has been started on 05.10.2020 on contract as per terms and conditions of the work order and is under progress.
3. The overhauling of the CGL make unit breaker of the unit bay of Bhakra Left bank power house has been completed successfully by the firm's engineers of CGL
4. The replacement of old electro-mechanical backup over current earth fault relays of 4 No. outgoing BBMB feeders has been completed with the new numerical based relays by the firm's engineers of Siemens.
5. The impeller and shaft of drainage pump No. 2 at Bhakra PP- II has been repaired in the mechanical workshop by the pumping staff of Bhakra Right Bank Power House and then after assembling the impeller and shaft with the pump, the drainage pump No. 2 has been made available for draining the water from the pit. It is a very special kind of work which has been successfully completed by the pumping staff of Bhakra Right Bank Power House.
6. At present the stator build-up work meant for Unit no – 1 is in progress at site and under which the complete core build-up work is successfully completed and further its core induction test is also successfully completed on 04.03.2021 and further winding work of the new stator is in progress.
7. Routine maintenance of all the 04 nos. Hydro generators, turbines, unit transformer with associated allied equipment's including maintenance of various other auxiliary equipment's of the power house such as various auxiliary transformers, 66/220 kV breakers, isolators, CTs, PTs, power house lift, HVAC Plant & EOT & Gantry Cranes, various firefighting equipment's, Ventilation system such as blowers, exhaust fans, air ducts, hydro governing system, cooling water pumps, air compressors, dewatering, drainage, & sump pumps, penstock gate hoist system, all

air & water piping system etc. has been completed successfully.

8. The annual maintenance of unit no. 5 was carried out successfully during this period.
9. The major rotor earth fault of Unit no – 1 was attended successfully by repairing the damaged rotor pole terminal at site in record time.
10. The major fault of water leakage from the draft tube of Unit - 2 was attended successfully during the period of the report.
11. The overhauling work of Cooling water pump no – 5 & treated water pump no – 1 completed successfully during the period of report.
12. Annual Maintenance of Elgi make Air compressor at EL – 1150 completed successfully.
13. The five yearly maintenance of gate hoist along with its control of unit no. - 2 at EL-1700/EL-1433 was carried out successfully.
14. The annual maintenance of unit no. 1 & 4 was carried out successfully during this period.
15. The major crack in the one of the blade of runner of Unit no – 1 was observed and same was attended successfully by repairing the cracked portion through welding and grinding at site departmentally in record time.
16. During the annual maintenance of unit no. – 1, the aeration pipe found broken/damaged during running of machine inside the draft tube chamber and spare aeration pipe reinstalled and commissioned successfully at site departmentally in record time.
17. The major fault of water leakage from the draft tube of Unit - 2 was attended successfully during the period of the report.
18. The major overhauling work of dewatering pump no – 1 completed successfully by manufacturing the various spare parts required in the power house workshop, during the period of report.
19. The Unit no – 3 is on PTW for RM&U work and its draft tube is in empty condition and due to the seal damage of the draft tube gate, a water leakage was observed which could not be attended by taking out the gate as M/s Hitachi did not allow BBMB to fill the water in the draft tube due to their RM&U work as the result there was a excessive running of the dewatering pump but same leakage was got attended successfully by using the divers from the irrigation wing and leaking area of the seal was got blocked to stop the leakage.

CIVIL Maintenance Works:

1. For surveillance of Bhakra Left Bank Power House and Bhakra Right Bank Power House CCTV cameras have been installed.
2. Various Works executed during the financial year.

3. Various Swachhta activities such as cleanliness of wild grass, collection of polythene bags and disposal to dumping site etc. has been carried out in various offices and colony section of BBMB (PW) at Nangal.
4. The day to day maintenance of colonies was carried out as per complaints received in the complaint register.

6.1.2 Ganguwal and Kotla Power Houses

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks
	From	To	
Ganguwal			
1	-	-	-
2	21.05.2020 24.03.2021	23.05.2020 31.03.2021	M/C stopped for Maintenance work. (Less discharge) Annual Maintenance
3	-	-	-
Kotla			
1	27.07.2020	29.07.2020	Quarterly Maintenance
2	21.05.2020 30.07.2020	23.05.2020 01.08.2020	M/C stopped for Maintenance work. (Less discharge) Half Yearly Maintenance
3.	24.03.2021	31.03.2021	M/C stopped for Annual Maintenance

B. Major Works

Ganguwal & Kotla Power Houses

1. Half Yearly maintenance of 132 KV Ganguwal-Kotla Tie Ckt no. 2 was carried out on dated 08/06/2020.
2. Annual maintenance of 132/220KV 90 MVA I/L T/F T-2of Ganguwal Power House was carried out on dated 31/10/2020.
3. Annual maintenance of 132 KV Ganguwal-Kotla Tie Ckt no. 2 & allied equipment's at Ganguwal Power House was carried out on dated 05/11/2020.
4. Annual maintenance of 132 KV Ganguwal-Kotla Tie Ckt no. 1 & allied equipment's at Ganguwal Power House was carried out on dated 06/11/2020.
5. Annual maintenance of 132KV Bus-Coupler & its allied equipment's at Ganguwal Power House was carried out on dated 10/11/2020
6. Annual maintenance of 132 KV /33KV 16 MVA T/F T-3 at Ganguwal Power House was carried out on dated 16/11/2020.
7. Annual maintenance of 132 KV /33KV 16 MVA T/F T-2 at Ganguwal Power House was carried out on dated 19/11/2020
8. Annual maintenance of 132 KV /33KV 12.5 MVA T/F T-1 at Ganguwal Power House was carried out on dated 07/12/2010.

9. Annual maintenance of 132/220KV 90 MVA I/L T/F T-1at Ganguwal Power House was carried out on dated 15/12/2020
10. Annual maintenance of 132 KV Ganguwal-Kotla Tie Ckt no. 1at Kotla Power House was carried out on dated 03/11/2020.
11. Annual maintenance of 132 KV Ganguwal-Kotla Tie Ckt no. 2at Kotla Power House was carried out on dated 04/11/2020
12. Half yearly maintenance of 132 KV Kotla-Ropar Ckt no. 2at Kotla Power House was carried out on dated 26/11/2020
13. Half yearly maintenance of 132 KV Kotla-Ropar Ckt no. 3at Kotla Power House was carried out on dated 10/12/2020
14. Half yearly maintenance of 132 KV Kotla-Ropar Ckt no. 1at Kotla Power House was carried out on dated 25/12/2020.

6.1.3 Pong Power House

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks CP.138
	From	To	
6	01.02.2020	06.04.2020	Annual maintenance of machine along with replacement of of protection panel of machine.
5	07.12.2020	16.01.2021	Annual maintenance of machine along with attending stator earth fault of machine.
4	16.10.2020	19.02.2021	Annual maintenance of machine along with attending stator earth fault of machine.

6.1.4 Dehar Power House

A. Maintenance of Units

Unit No.	Period of Maintenance	Remarks
II	22.06.2020 to 27.10.2021	Capital Maintenance Annual Maintenance
Rotary Valves M/C 3 & 4	10.02.2021 onwards	Capital Maintenance of Rotary Valves machine no.3 & 4 is in progress w.e.f. 10.02.2021.
III	14.02.2020 to 30.03.2021	Capital Maintenance of machine no.3 has been completed on dated 30.03.2021, but the alignment of machine with respect to Rotar still be made.

6.1.5 Renovation, Modernization & Upgrading (R, M & U) of Bhakra Left Bank Power House

Presently, R, M&U of five no. hydro-generating units at Bhakra Left Bank Power House has been taken in hand.

1. In deference to approval of the Board, accorded in its 197th Board meeting held on 24.10.2007 at Chandigarh, Notification of Award for R, M&U works was issued in favour of Consortium led by M/s Sumitomo Corporation, Japan (with other members i.e. M/s Hitachi, Ltd., Japan and M/s VA Tech Hydro GmbH, Austria [now named as M/s Andritz Hydro GmbH, Austria] on 27.10.2007. Subsequently, Agreement for Implementation has been signed on 2.11.2007. In pursuance thereof, following Contracts have been signed:-
 - a. Off Shore Supply Contract Agreement and On Shore Service Contract Agreement for Turbine Portion between BBMB and M/s Sumitomo Corporation, Japan and between BBMB and M/s Hitachi, Ltd., Japan respectively both on 4.11.2007.
 - b. On Shore Supply Contract and On Shore Service Contract Agreements for Generator Portion on 13.11.2007 between BBMB and M/s VA Tech Hydro GmbH, Austria [now named as M/s Andritz Hydro GmbH, Austria]
 - c. Agreement for Assignment in respect of On Shore Supply Contract and On Shore Service Contract Agreements for Generator Portion in favour of M/s VA Tech Hydro India Pvt. Ltd. On 21.11.2007 among BBMB, M/s VA Tech Hydro GmbH, Austria and M/s VA Tech Hydro India Pvt. Ltd. [M/s VA Tech Hydro now named as M/s Andritz Hydro]
2. Effective Date of the Contract Agreements for R, M&U works of 5 no. Hydro Power Generating Units is 2nd January, 2008.

3. First Unit (Unit No. 2):

Scheduled date for commencement of RM&U work on the first Unit (Unit No. 2) was 1st January, 2010. But due to discrepancy in the metallurgy of the Runner Crown and Runner Band during inspection at works of M/s Hitachi in Japan, RM&U work commenced by the Consortium on 26th April, 2010 and taken over for operation run on 18th July, 2013. The Unit is running at uprated output of 126 MW.

Regarding localized cavitation, the modification of runner blade profile through solid piece welding carried out at the site by 10th June, 2016 as per meeting held by the Management with the Consortium on 13th January, 2016 and 02nd March, 2016.

The modified runner was inspected by the joint team of M/s Hitachi and BBMB on dated 21.11.17 and "No cavitation" has been observed on the modified portion. The modification of runner blade profile through solid piece welding has been approved in the 230th meeting of full Board of BBMB on dated 19.11.2018. BBMB issued TOC of the Unit No. 2 to the consortium on dated 29.11.2018.

4. Second Unit (Unit No. 5):

R, M&U works on 2nd Unit (Unit No. 5) commenced by the Consortium on 11th April, 2011 and taken over for operational run on 02.10.2013. The Unit is running with output of 126 MW.

Based on the report of CPRI, Bangalore, spare new Generator Shaft (as earlier ordered on M/s Andritz Hydro) along with the new spider rim and other related parts ordered on dated 14.10.2016 on M/s Andritz Hydro GmbH, Austria have been replaced with existing components of Unit No. 5 of Bhakra Left Bank

Power House.

The work for the replacement of shaft, spider, rim and other related parts along with various activities had been started on 21.10.2016 and put on commercial run on dated 15.06.2018. M/s Hitachi, Japan proposed to modify the runner blade profile of Unit No. 5 through solid piece welding in situ w.e.f 1.3.2020, but could not be done due to pandemic situation in India and non-arrival of Japanese Nationals.

5. **Third Unit (Unit No. 4)**

The Unit was taken on R, M & U works on 22.11.2013 and taken over for operational run on 05.08.2015 and is presently running at uprated output of 126 MW. The Unit has been taken on Shutdown on 4th April, 2019 and handed over to M/s Hitachi, Japan for modification of runner. The work of modification of Runner blades profile is completed on 18th May, 2019. BBMB issued TOC of the Unit No. 4 to the consortium on dated 23.07.2019.

6. **Fourth Unit (Unit No. 3)**

Unit has been taken on shutdown for RM&U works on 1st April, 2019. The rotor decoupled from the turbine shaft on dated 05.04.2019. The rotor has been taken out from the pit on dated 29.04.2019. The NDT of Generator shaft and rotor spider completed on 10.5.19. Work of Stator Assembly of Unit No.3 in the service bay was started on 22nd January, 2019. The High voltage test of complete stator winding carried out on 24.07.2019 successfully. During NDT of shaft and spider, some crack were found on the surface of spider, which needs to be attended. The repair /welding of these cracks has been completed on 28.9.2019. The Turbine runner along with shaft has been taken out from the pit on 17.5.2019. Shaft decoupled from the runner on 29.5.2019. The NDT of Turbine shaft carried out successfully w.e.f 09.06.2019 to 13.06.2019. The final lowering of shaft with new runner into the pit carried out on 06.09.2019. Shaft free activities achieved on 30.09.2019. The lower bracket has been lowered into pit on dated 04.10.2019. The stator has been lowered into the pit on dated 21.10.2019. The alignment and centering of stator has been completed. The work of trial assembly of DE & NDE fan completed on dated 21.02.2020. Due to pandemic situation, the work was halted at site w.e.f. 23.03.2020 and resumed on 4.6.2020 after getting approval of local administration of Himachal Pradesh authorities for the movement of M/s Andritz Hydro employees, with limited staff. The Impedance and HV testing of Rotor Poles has been completed successfully on dated 26.6.2020. The work of upper bracket assembly completed on dated 09.07.2020. After positioning of rotor poles with respect to their magnetic centre and matching of rotor magnetic centre with respect to stator, the work of Rotor lowering completed on dated 29.07.2020. Final assembly of spider cover completed on 17.08.2020. The assembly of rotor inside pit has been completed on dated 14.09.2020. The uncoupled run out checks, radial displacement & coupling gaps and upper bracket alignment of rotor has been successfully completed in the presence of BBMB representative at site on dated 30.09.2020. The work on Unit No 3 got halted due to non- arrival of Japanese Nationals in India. Accordingly, the Japanese Nationals arrived at site on dated 26.3.21 and started working at site in the first week of April, 2021. Final Measurement of Runner Gap, Coupling of Turbine Shaft with Generator Shaft alongwith Shaft locking were completed on 21.4.21. But, due to the rapid increase of COVID-19 cases in India and worsening of situation, the Japanese Nationals have demobilized to Japan on 30.4.21 but have assured that as the situation improves and Govt. guidelines allows them to visit site, they will return to resume the work at site at the earliest. Further, the Japanese nationals are taking up work

at site via VC and commissioning the Turbine part of the unit viz painting of servo motor pipes and draft tube man doors completed on 09.06.2021 and related activities are under process. UGB cooler pressure and leak test with piping completed on 11.06.2021. As such, the commissioning of the Unit has been extended further due to recent COVID-19 situation.

7. **Fifth Unit (Unit No. 1)**

The commencement of RM&U works shall be based on commissioning of fourth unit which has been delayed due to COVID-19. Fifth unit shall be taken for shutdown after the completion of RM&U works of fourth unit. The build-up of stator for 5th unit (PH Unit-1) has been allowed by SE/BPHC Nangal to M/s Andritz Hydro including transfer of material from Neilla Store to site. The work of stator stacking has been completed on 13.3.21 and the work of stator winding has been started on 15.3.21 and is under progress.

8. Keeping in view the current COVID-19 scenario, R, M&U works are expected to be completed in 21-22.

6.1.6 Transmission System

General performance of BBMB sub-stations and transmission lines remained satisfactory. The details of the major works carried out are as under:-

i) Power Transformers

- 1 No. 132/11 kV Transformer T-1 replaced with old & used EMCO make 132/11 kV Transformer (shifted from BBMB, Slapper) in the period of dated 06.03.2021 to 26.03.2021, after testing and charged on dated 26.03.2021 at 400 kV Sub-station, BBMB, Bhiwani.
- Damaged 400/220 kV 450 MVA (3X150 MVA Single phase unit) ICT Bank-II at 400 kV substation, BBMB Panipat has been replaced with 400/220 kV 500MVA Transformer by the PGCIL, commissioned successfully and charged on dated 03.10.2020.

ii) Circuit Breakers

- 1 No. 145 kV Circuit Breaker (Alstom Make) replaced with 1 No. 145 kV (CGL make) Circuit Breaker on 220/132kV,100MVA T/FT-1 for controlling 132 kV side at 400 kV Substation, BBMB, Bhiwani.

iii) Current Transformers (CTs)

- One No. damaged CT replaced with Old & used repaired CT on 400 kV Line Reactor (Blue Phase) at 400 kV Sub Station, BBMB, Bhiwani.
- One No. 33 kV CT replaced on Blue Phase of (33 kV side) 132/33 kV, 16/25 MVA Transformer T-2 at 220 kV Sub Station, BBMB, Hisar.
- 1 No. 245 kV CT (BHEL make) replaced with 1 No. 245 kV CT (Heptacare Power Industries make) on 220 kV Charkhi Dadri-Bhiwani Circuit-3 (Yellow Phase) at 220 kV Sub Station, BBMB, Charkhi Dadri.
- 1 No. 245 kV CT (BHEL make) replaced with 1 No. 245 kV CT (Heptacare Power Industries make) on 220 kV Charkhi Dadri-Bhiwani Circuit-3 (Blue Phase) at 220 kV Sub Station, BBMB, Charkhi Dadri.
- 1 No. 245 kV CT (TELK make) replaced with 1 No. 245 kV CT (Heptacare Power Industries make) on 220 kV Charkhi Dadri-Bhiwani Circuit-4 (Yellow Phase) at 220 kV Sub Station, BBMB, Charkhi Dadri.
- 2Nos. 66 kV CTs replaced on Faridabad ckt- II (Blue & Yellow Phase) at 220 kV

Sub Station, BBMB, Ballabgarh.

- 2Nos. 66 kV CTs replaced on Faridabad-Palla Circuit-I (Red & Yellow Phase) at 220 kV Sub Station, BBMB, Ballabgarh.
- 2Nos. 66 kV CTs replaced on Faridabad-Palla Circuit-II (Blue & Yellow Phase) at 220 kV Sub Station, BBMB, Ballabgarh.
- 3 Nos. 245 kV CTs (TELK make) replaced with 3 Nos. 245 kV CTs (Heptacare Power Industries make) on Bus-1 side of Bus Coupler (Red, Yellow & Blue Phase) at 220 kV Sub Station, BBMB, Charkhi Dadri.
- 3 Nos. 145 kV CTs (BHEL make) replaced with 3 Nos. 145 kV CTs (Heptacare Power Industries make) on 132/11 kV Transformer (Red, Yellow & Blue Phase) at 220 kV Sub Station, BBMB, Charkhi Dadri.
- 3Nos. 66 kV CTs replaced on Faridabad Circuit-I (Red, Blue & Yellow Phase) at 220 kV Sub Station, BBMB, Ballabgarh.
- One No. 132 kV CT (BHEL make) replaced with new CT on 132/11 kV Transformer T-1 (Yellow Phase) at 400 kV Sub Station, BBMB, Bhiwani.
- 2 Nos. 66 kV CTs of Capacitor Bank-II replaced with new CTs (Yellow & Red phase) at 220 kV Sub Station, BBMB, Ballabgarh
- 6 Nos. 132 kV CTs have been replaced with new CTs of various feeders at 220 kV Substation, BBMB, Delhi.
- 10 Nos. 132 kV CTs have been replaced with new CTs of various feeders at 400 kV Substation, BBMB, Panipat.
- 12 Nos. 33 kV CTs have been replaced with new CTs of various feeders at 220 kV Substation, BBMB, Delhi.
- 1 No. 66 kV CT of 66/11 kV, 16/20 MVA Transformer T-6 has been replaced with new CT at 66 kV Substation, BBMB, Chandigarh.

iv) CVT/PTs

- 2 Nos. CVTs replaced with 2 Nos. PTs on 220 kV Hisar-Bhiwani Circuit-2 at 220 kV Sub Station, BBMB, Hisar.
- 3 Nos. CVTs replaced with 3 No. PTs on 220 kV Hisar-Chirawa Single Circuit at 220 kV Sub Station, BBMB, Hisar.
- 220kV Bus-II (RadeKoncar make) (Red Phase) 245 kV CVT replaced with 245 kV PT (Hivoltrans make) at 220 kV Sub-station, BBMB, Charkhi Dadri
- 220kV Bus-II (CGL make) (Yellow Phase) 245 kV CVT replaced with 245 kV PT (Hivoltrans make) at 220 kV Sub-station, BBMB, Charkhi Dadri
- 2 Nos. 245 kV CVTs replaced with 2 Nos. 245 kV PTs + 2 No. Coupling Capacitors on 220 kV Samaypur-Charkhi Dadri Circuit at 220 kV Substation, BBMB, Samaypur.
- 1 No. CVT (RadeKoncar make) of 220KV Dadri-Panipat single circuit (Red Phase) replaced with 245 kV (CGL make) old and healthy CVT at 220 kV Sub-station, BBMB, Charkhi Dadri .
- 1 No. CVT (RadeKoncar make) of 220KV Dadri-Panipat single circuit (Blue Phase) replaced with 245 kV (Hivoltrans make) old and healthy CVT at 220 kV Sub-station, BBMB, Charkhi Dadri.
- 1 No. 245 kV CVT replaced with 1 No. 245 kV PT + 1 No. Coupling Capacitor on 220 kV Ballabgarh-BTPS Circuit-1 at 220 kV Substation, BBMB, Ballabgarh.
- 1 No. 245 kV CVT replaced with 1 No. PT on 220 kV Bus-1 at 220 kV Sub Station, BBMB, Ballabgarh.
- 1 No. 245 kV old CVT (WSI make) (red phase) of 220 kV Dadri-Samaypur single circuit replaced with New 245KV PT (Hivoltrans make) at 220 kV Sub-station, BBMB, Charkhi Dadri.

- 1 No. 145 kV CVT (WSI make) (Yellow phase) replaced with new 1 No. 145 kV (CGL make) CVT of 132/11 kV, 4 MVA Transformer at 220 kV Sub Station, BBMB, Charkhi Dadri.
- 1 No. 245 kV old CVT (RADE KONCAR make) (Yellow Phase) replaced with New (Hivoltrans make) 1 No. 245 kV PT on 220 kV Charkhi Dadri-Khetri Circuit-I at 22 kV Sub Station, BBMB, Charkhi Dadri.
- 3 Nos. 66 kV CVTs replaced with 3 Nos. PTs on Bus-II at 220 kV Sub Station, BBMB, Ballabgarh
- 3 Nos. 66 kV CVTs replaced with 3 Nos. PTs on Bus-I at 220 kV Sub Station, BBMB, Ballabgarh.
- 3 Nos. 33 kV PTs have been replaced with new PTs at 220 kV Substation BBMB Delhi.
- 220 kV CVT of 220 kV Ganguwal – Dhulkote ckt.-1 has been replaced with new PT (CGK make) at 220 kV Sub Station, BBMB, Dhulkote
- 220 kV CVT of 132 kV Bus Coupler has been replaced with new PT at 220 kV Sub Station, BBMB, Jamalpur
- Old 8 No. 145 kV CVTs of various feeders have been replaced with new PTs at 220kV Sub Station, BBMB, Jamalpur.

v) Lightning Arrestors (LAs)

- 1 No. 220 kV LA replaced on Blue Phase of 220/132 kV Transformer T-3 at 220 kV Sub Station, BBMB, Hisar.
- 1 No. of 220 kV LA replaced on Blue Phase of 220 kV side of 400/220 kV ICT with new LA at 400 kV Sub Station, BBMB, Bhiwani.
- 1 No. LA replaced on Yellow Phase of 132 kV Hisar-Sirsa Single Circuit at 220 kV Sub Station, BBMB, Hisar.
- 33 kV LA replaced on Yellow phase of 33 kV Hisar-Rajgarh at 220 kV Sub Station, BBMB, Hisar.
- 220 kV LA replaced on Red phase of 220 kV Hisar-Chirawa Circuit at 220 kV Sub Station, BBMB, Hisar.
- 1 No. 384 kV damaged LA of Yellow phase of 400 kV Panipat- Panchkula line has been replaced with new LA at 400 kV substation BBMB Panipat.
- Damaged 60 kV LA of 66 kV Bus Bar-2 has been replaced with new (Oblum make) LA at 220 kV substation, Jamalpur.
- Damaged 198 kV LA of 220 kV Jamalpur – Dhandari Ckt.-1 has been replaced with new (Electrolites make) LA at 220 kV substation, Jamalpur.
- Damaged 198 kV LA of 220 kV Jamalpur – Ganguwal Ckt.-1 has been replaced with new (Electrolites make) LA at 220 kV substation, Jamalpur.
- Damaged 198 kV LA of 220 kV Sangrur - Jamalpur Ckt.-2 has been replaced with new LA (Electrolites make) at 220 kV substation, Jamalpur.
- Damaged 198 kV LA of 220 kV Barnala - LehraMohabbat S/C has been replaced with new LA (Electrolites make) at 220 kV substation, Barnala.
- Damaged 120 kV LA of 132 kV Jamalpur – Goraya S/C has been replaced with new (CGL make) LA at 220 kV substation, Jamalpur.

vi) Isolators

- One No. 72.5 kV Isolator replaced on Bus Coupler-1 at 220 kV Sub Station, BBMB, Ballabgarh.
- One No. 72.5 kV Isolator replaced on Bus Coupler-2 at 220 kV Sub Station, BBMB, Ballabgarh.
- One No. 72.5 kV Isolator Bus-1 replaced on Fardiabad Circuit 1 at 220 kV Sub

Station, BBMB, Ballabgarh.

- One No. 72.5 kV Isolator Bus-2 replaced on Fardiabad Circuit 1 at 220 kV Sub Station, BBMB, Ballabgarh
- 9 Nos. 145 kV isolator at 400 kV Substation, BBMB, Panipat with new isolators has been replaced.

vii) Protection & Testing

- MICOM P-632 Distance Protection Scheme replaced with New Siemens make 7U T-85 Numerical Differential Protection relay on 400/220 kV ICT at 400 kV Substation, BBMB, Bhiwani.
- 220 kV Numerical low impedance Bus Bar Protection Scheme commissioned on 12.10.2020 at 220 kV Substation, BBMB, Kurukshetra.
- Old Distance Protection Scheme of 220 kV Kurukshetra-Jagadhari line and 2 Nos, DTH-31 relays at 220 kV substation, BBMB, Kurukshetra have been replaced with numerical relays alongwith C&R panels.
- Old 31 Nos. LBB, 4 Nos. Differential and 10 nos. over current relay at 400 kV substation, BBMB, Panipat has been replaced with new numerical relays.
- Existing Static type KBCH differential relay of 220/132 kV, 100 MVA Transformer T-3 has been replaced with new (Siemen make) Numerical relay at 220 kV S/Stn. Jalandhar.
- 2 Nos. Electromagnetic types CDD-21 Back up relay of 220 kV Jalandhar – Dasuya Ckt-4 and 220 kV Jalandhar–ButariCkt. have been replaced with new (Siemen make) Numerical type Backup protection relay at 220 kV S/Stn. Jalandhar.
- Obsolete 4 Nos. 220 kV Duplex type-C & R panels of 220/66 kV, 100 MVA T/F T-1 & T-2, 220 kV Ganguwal–Jagadhri&220 kV Jagadhri–Kurukshetra S/C have been replaced with New (Siemens make) C&R panels at 220 kV S/Stn.Jagadhri.
- New RTU panel (Synergy & Solutions make) model 6049-E-70 HUSKY got commissioned at 220 kV S/Stn.Jagadhri.
- Old 12 Nos. Facia Annunciator of various feeder/Transformer have been replaced with new FaciaAnnunciator at 220 kV S/Stn. Jamalpur.

viii) Overhauling of Beakers

- Overhauling of 3 Nos. 132 kV SF-6breaker has been carried out at 220 kV Substation, BBMB, Kurukshetra.
- Overhauling of 13 Nos. 66 kV SF-6 Breakers (ABB make) have been carried at 220 kV Substation, BBMB,Dhulkote
- Overhauling of 04 Nos. 66 kV SF-6 Breakers (ABB make) have been carried at 66 kV Substation, BBMB, Chandigarh.

ix) Deposit Works

- Height of 2 No. Towers raised on 220 kV Single circuit Panipat –Dadri line. Railway Deposit work due to new Railway track from Rohtak–Meham–Hansi(Work completed).
- Shifting of tower no. 251 of 400kv Dehar-Panchkula transmission line. The said work is a deposit work of Haryana PWD B&R Department due to laying of new bypass road of Pinjore. It required raising the height by shifting of one no. tower. The work has been completed successfully.
- The shifting of Tower No. 8, 9 & 10 of 400KV Dehar-Rajpura line as deposit work of ACC Barmana. The said work is being done in hilly area near Slapper and

more than 80% work completed. The stringing/ sagging are left due to ROW problem & Court Case. It is likely to be completed soon.

x) Civil Works

- The work for major repair of residential buildings at 220 kV Substation, BBMB, Delhi is in progress.
- Renewal and replacement and repair of the existing buildings / boundary wall etc. at various substation under O&M circle, BBMB, Panipat has been carried out.
- Out door GYM has been installed at 220 kV Substation, BBMB, Jamalpur.
- Out door GYM has been installed at 220 kV Substation, BBMB, Jagadhri
- Sewerage treatment plant of 20 KLD Capacity installed at 220 kV Substation, BBMB, Dhulkote.
- Damaged/broken trench covers have been replaced at 66 kV Substation, BBMB, Chandigarh.
- Existing 40 Nos. 400W HPSV flood lights have been replaced with 190 W LED lights at 220 kV Substation, BBMB, Jalandhar.
- Damaged/broken trench covers have been replaced at 220 kV Substation, BBMB, Jalandhar.
- Existing 22 Nos. 400W, HPSV flood lights have been replaced with 190 W & 35 W LED light at 220 kV Substation, BBMB, Sangrur.

xi) Miscellaneous Works

- Fire detection alarm system installed in Control Room at 220 kV Sub Station, BBMB, Hisar.
- 31 Nos. Manual Mechanism of 31 Nos. 132 kV Isolators replaced with Electrical Mechanism at 220 kV Sub Station, BBMB, Hisar.
- 2 Nos. Battery charger replacement at 220 kV Sub Station, BBMB, Samaypur.
- Old battery charger for Source-1 & Source-2 replaced with 2 Nos. Float cum Float Boost 220 V, 450 AH DC Battery charger at 400 kV Sub Station, BBMB, Bhiwani.
- 35 Nos. Manual Mechanism of 35 Nos. Isolators replaced with Electrical Mechanism at 220 kV Sub Station, BBMB, Hisar.
- ACSR conductor replaced on 132 kV Bus-1 & 2 at 220 kV Sub Station, BBMB, Hisar.
- Work for installation of CCTV Cameras at 220 kV Substation, BBMB, Kurukshetra has been carried out.
- Replacement of conventional type lights with new LED at Switchyard and office at 220 kV Substation, BBMB, Delhi have been carried out.
- Hot line washing of 400 kV and 220 kV bays equipments 400 kV Substation, BBMB, Panipat has been carried out.
- Old & damaged battery charger has been replaced with new (redtron make) 220 V, 450 AH, 45-60 A Battery charger at 220 kV S/Stn. Jamalpur.
- Old & damaged battery charger has been replaced with new (redtron make) 220 V, 300 AH, 30-45 A Battery charger at 220 kV S/Stn. Barnala
- 11 Nos. CCTV Camera for security at 66 kV S/Stn. Chandigarh have been provided.
- 08 Nos. CCTV Camera for security at 66 kV S/Stn. Dhulkote have been provided.

xii) Substation Automation System and Remote Operation

- BBMB has already taken a significant step in the field of Automation for Substations in its Transmission System. After successful commissioning of Substation Automation System (SAS) at 220 kV Grid Substation, BBMB, Barnala letter of award has been issued for carrying out Substation Automation System at four no. Substations i.e. 220 kV BBMB Substation at Hisar, Charkhi Dadri, Ballabgarh and Samaypur along with their remote operation from 400 kV Grid Substation, BBMB, Bhiwani and SLDC Chandigarh.

xiii) Roof Top Solar Plant

BBMB, pioneer in Hydroelectric Generation added another feather in its cap by commissioning of 2348.93 kWp Grid Connected Rooftop Solar Power Plants on 56 no. non-residential buildings at its various project sites and substations out of which 638.93kWp has been commissioned during financial year 2020-21. Further, 1091.97 kWp of Grid Connected Rooftop Solar Plants at various project site of BBMB are likely to be Commissioned during FY 2021-22. The proposal for setting up 18MW Ground Mounted Solar Plants at four different locations of Nangal and Talwara and 15 MW Floating Solar Power Plant at Neilla (HP) is at advance stage of finalization.

xiv) Protection/Technical Audit

Work of Protection Audit of all the substations and generating stations of BBMB has been completed as per work order No. 43/P&D(TS)/SS&P-358 Dated: 16.10.2019. Draft report was submitted by CPRI which was circulated to field offices. The observations raised on draft report by field officers have been intimated to CPRI.

6.2 Irrigation Wing

6.2.1 Bhakra Nangal Project

A Bhakra Dam

- Observation of data from various instruments/devices, installed inside & outside of the body of Bhakra Dam and sent to O/o Design Directorate, BBMB, Nangal Township for processing and analyzing the same.
- The geodetic survey work of Bhakra Dam was carried out during the year by taking precise to work observation, traverse observation and allied precise double leveling with on the points fixed on both upstream and downstream side of the dam under settlement observation Sub Division.
- The lawn spreading maintenance of plantation remained in progress both on left sides and right sides abutment Bhakra Dam during the year under horticulture sub division.
- Providing & laying floor tiles in SW & JW quarters at Olinda has been completed.
- Renovation of BBMB Dispensary at Olinda has been completed.
- Providing 1.8m High barbed wire fencing at Neilla ground has been completed.
- Finishing wall with cement based water soluble paint residential & non-residential building at Bhakra Dam has been completed.
- Jungle clearance at various site of Bhakra Dam has been completed.

- Providing 20mm thick premix carpeting on road from Barmala to Discharge Board Olinda at Bhakra Dam has been completed.

B Nangal Dam & Nangal Hydrel Channel (NHC)

Inspection of Nangal Dam, NHC and its allied works were carried out from time to time and following repair and maintenance works are carried out during the period from April 2020 to March 2021 is as under :-

- To assess the condition of U/S and D/S pucca floor of Nangal Dam, sounding in the area has been submitted to Dir. Design BBMB Nangal vide this office letter No.1569-70/NGL/21-W dated 20.05.2019 for observation. However, the result of the previous year shows that the condition of the bed is satisfactory.
- Providing 60mm thick cement concrete interlocking paver block of M-35 in area surrounding Kotla and Ganguwal power house has been completed.
- Restoration of drain (drainage system) in between RD-27000 to RD-32726 right side of NHC has been completed.
- Providing installed up-lift pressure meter (V-wire type) with digital readout unit has been completed.
- Repair and grouting of old stone pitching of Nehru park, Regulation office, Nangal Dam office complex and lying pavement of cement 1:2:4 at head works has been completed.
- Providing cautionary and informatory reflective sign board along N.H.C. at various places such as V.R., A.R. Bridges, cross drainage works and other important places has been completed.
- Construction and Renovation of Bridge upstream Sirsa Aqueduct (Phase 1, Study and Design) has been completed.
- Replacing and fixing 1 No. pump in inspection gallery for pumping out the water into river at Nangal Dam at Nangal has been completed.
- Repair of deteriorated concrete of expansion joints of Sirsa aqueducts over pier No. 3 and 11 downstream face with epoxy-based polymer cement concrete has been completed.
- Providing and fixing chain link fencing of Nangal Hydrel Channel from RD-0 to RD-4000 on left side, RD-1250 to RD-1550 right side and Both Side of VR Bridge at RD-1550 has been completed.
- Providing boundary wall and shed at silt ejector site material storage site at RD-10000 has been completed.
- Filling cement bags with sand has been completed.
- Spraying herbicides by 45 HP Tractor has been completed.
- Supply at site of work well decayed farm yard manure at various sites under Nangal Dam Division is has been completed.
- Painting of distance marks, Sign boards, gauges, re-writing of letters, figures and painting on metallic repair etc. has been completed.
- Jungle clearance of NHC (both side) has been completed.
- The work of restoration of drainage system of right side bank of NHC from RD-150250 to RD-158200 of NHC in Ghanauli Section is has been completed.
- The work of repainting of letters and figures on sign boards right side of NHC and painting of sign boards got completed.
- Replacement of water supply fitting and tiles of bathroom-3 and maintenance of lawns and flowers and beds of Kotla Rest House has been completed.
- Repair/ Maintenance courtyard flooring of 24 Nos. LIG Quarter at Nangal Dam is in progress.
- Plantation of Trees in vacant area in Nangal Township to increase the Green

Cover has been complete.

- Repairing of honey combed concrete lining slabs on side slopes with 12.5 mm thick cement sand plaster 1:3 from RD-168318 to RD-170000 both side and RD-177000 to RD-180000 both side of Nangal Hydrel Channel during partial closure in March-2021". (Ropar Section) has been completed.
- Special repair to tile lining joints on side slope with 1:3 cement sand mortar from RD-181000 to RD-200337 both sides of NHC during partial closure in March-2021". (Ropar section) has been completed.
- Special repair to tile lining joints on side slope with 1:3 cement sand mortar from RD-143000 to RD-155150 right sides of NHC during partial closure in March-2021". (Ghanouli section) has been completed.
- Repair of honey combed concrete lining slabs on side slopes with 12.50 mm thick cement plaster 1:3 from RD-37200 to RD-40600 left side of Nangal Hydrel Channel during partial closure in March-2021 has been completed.
- Repairing of concrete lining slab above water level with 12.5 mm thick Cement plaster 1:3 from RD-21000 to RD-28000 left side of Nangal Hydrel Channel during partial closure in March-2021 has been completed.
- Repairing of honey combed concrete lining slabs on side slopes with 12.50 mm thick cement plaster 1:3 from RD-147000 to RD-150000 (both side) of Nangal Hydrel Channel during partial closure in March-2021". (Ghanouli Section) has been completed.

C. Gates and Gearing

Routine repair & maintenance works i.e. greasing of ropes with servo coat / grease, greasing of winches, greasing of trunion pin at Ganguwal & Kotla spillway and all the maintenance works on Mechanical appliances at Nangal.

- Leakage through RHR gate No.22,22 & 24 has been arrested.
- Modernization of existing lift providing at Nangal Dam has been completed.
- Special Painting of CHR gates (upper &lower) of bay No.2, 3, 4, & 5 at Nangal Dam has been completed.
- Special Painting of RHR gates (upper &lower) of bay No.9,10,11,13 ,14 & 16 at Nangal Dam has been completed.
- Steel wire Ropes of Gate No.4 of Nakkian Escape has been changed.
- Changing/repairing of Hook of lifting beam of RHR Bulk head gate has been completed.
- Leakage through RHR gate No.25,23,20,13,11,12,6,7,8,10,14,16,20,22 & 24 have been arrested and remaining gates has been completed.
- Steel wire Rope of Kotla Spillway gate No.2 (LHS) has been changed.
- Changing of hook of RHR BHG (upper) has been completed.
- Leveling of upper and lower gate leaf of CHR gate No.6 has been completed.

D. RM & SR Division (Inspection/Repair by Pneumatic Caisson method)

- The work of Bhakra Spillway repair has been in progress since 1983 with the help of pneumatic caisson method.
- For passing away controlled release through spillway gates in rainy season as per instruction issued vide Member/Irrigation letter No. 521-26/421/BBMB/Reg dated 22.08.89, both the bays of spillway were clean on 23.05.2020 the work of

maintenance of floating equipment and other allied work have been suffered badly due to the shortage of manpower.

- After monsoon, the assembling of sinking set and caisson units and other floating equipment's in use for Bhakra Spillway repair by Pneumatic was started in Mid oct-2020. The work of assembling could not be started as per schedule due to shortage due to shortage of manpower. Only Pontoons were lowered in spillway and the assembly of pontoons completed on 07.12.2020 further erection work of superstructure suffered/stopped due to shortage of manpower.

- **Spillway:-**

S.No	Description	Status
1.	Underneath of beam and deck	O.K.
2.	Spillway D/S Balcony	O.K.
3.	Spillway bridge piers	O.K.
4.	Spillway training walls above water level	O.K.
5.	Spillway outlet Eye Brow	O.K.

E. Bhakra Mechanical Division, Nangal

Bhakra Mechanical Division, Nangal is mainly responsible for operation, maintenance/repair works of permanent installations including radial gates, river outlet gates, trash racks, spillway radial gates etc., maintenance & overhauling of all the Mechanical equipment including heavy earthmoving machinery, transport vehicles at Bhakra Nangal Project and Railway network which have been provided for carriage of workmen & material from Nangal to Bhakra Dam and other such works.

Besides general capital maintenance & periodical repair and painting of all Mechanical Installation i.e. Penstock High Head Gates, River Outlet Gates, Penstock Steel Liners, Elevators, Dehumidifying plant, Hoist Gantry Crane etc.

The following additional works were carried out during the period 1.4.2020 to 31.3.2021 in Bhakra Mechanical Division, BBMB, Nangal Township:-

- Protection work to hill slope around Bhakra Dam area of 2400 Sqft
- Gunitting has been carried out above tunnel portal.
- Capital Maintenance of River outlet Gate No. 8,16,&13 completed.
- Capital Maintenance of Penstock Gate No. 2 Completed.
- Patch repair painting (U/S) of 4 No. Radial Gate Completed.
- Patch Panting of Radial Gate Railing and Top Cover, Gear Box has been completed during the period under report.
- The dehumidifying plant remained under operation upto 24/10/2020.
- Painting of stairs and pipe line has been completed.
- Pre-Monsoon/Post Monsoon Inspection and Maintenance of all the mechanical Installation has been completed during the period under the report.
- Maintenance & Painting work of emergency Gate completed during the report.

F. Nangal Workshop Division

Nangal Workshop is on unit of many small shop and was primarily set up for structure for the construction of mighty Bhakra Dam is the year 1947 subsequently it contributed a lot for Bhakra Dam and BSL Project and Now its capacity is being utilized for various maintenance activities of all the project of BBMB. However its little capacity is being utilized for under taking the various Structure jobs of different electricity board and Govt. organizations.

Some of the Miscellaneous works executed at Nangal Workshop are as under:-

- Fabrication of light structure Trash Racks for Hydroelectric Projects.
- Fabrication of pipes from M/s Plates up to 1.5 MT.
- Fabrication of Rubber Seals of different types and sized for the Hydro Gates.
- Fabrication of different types of Bushes. Gears shaft etc. for different Machines.
- Casting of Ci Impellers pulleys and other parts and casting of ferrous non-ferrous metal parts and along with pattern making.
- Fabrication of M.S door Chowkhats frames Almirah and other steel items for various metal parts.
- Repair of various parts of machines such as Guide Vanes, Bus housing etc.
- Addl. S.E. B.C. and Township Division, Nangal Fabrication of M.S. Chowkhats. M.S. Gates, Tree Gourds, M.S Angles, Brass spindles, Dust bin etc.
- Addl. S.E. Bhakra Mech. Division, Nangal Township. Fabrication of M.S Flange Sheddens nut, and Bolts M.S Pipes, Railing brake Block, Rubber seals, tree Guard anchoring, anchor plate fish plate, pipe riling shaft sleeves studs, M.s frames, wooden chair etc.
- Addl. S.E. Nangal Dam Division, Nangal Township. Mfg. M.S angle,. Roller Pin Cocking plates, Bolts. Tree Guard wooden chair steel almirah Rubber seal bush. Nut Plumber Block table Brakets etc.
- Addl. S.E. Bhakra Dam Division, Nangal Township. Mfg. fabrication of tree Guard wooden Chair steel Almirah, Barricades, M.S frame etc.
- Addl. S.E. R.M & S.R. Division Nangal Township. Mfg. of steel Almirah Bush Rubber Seal Wooden Chair, Shaft, pin etc.
- Addl. S.E Nangal Electrical Division, Nangal Township. Mfg. M.S. Clamps,. Washer, frame hooks Brass Nut Wooden Chair, steel Almirah.
- Addl. S.E. Hydrology Division Nangal Township. Mfg. Wooden Chair Steel Almirah Tilting Dust Bin.
- Sr. Law Officer Nangal Township Mfg. Steel Almirah incumbency Board.
- Addl. S.E Proc: C/Store Division, Nangal Township. Mfg. wooden Chair Steel Almirah, Weight Bridge.
- Addl. S.E. Water Regulation Division Nangal Township.Mfg. Wooden Chair Steel Almirah Frame.
- Director Design BBMB, Nangal Township. Mfg. Steel Almirah Wooden, Chair.
- Addl. S.E. Dam Safety BBMB Nangal Township Mfg. Wooden Chair, Steel Almirah.
- Dy. Chief Engineer, Bhakra Dam Circle, BBMB, Nangal Township Mfg. Wooden Chair Steel Almirah.
- Chief Engineer, Bhakra Dam, Superintending Engineer/ Head Quarter Nangal Township. Mfg. Wooden Chair, Steel Almirah.
- Addl. S.E. STP & D Division, BBMB Power Wing Nangal. Mfg. Nut, Bolt, Steel Plates, Shaft, Shear Pin, M.S Plates Gunmetal seat M.S. Angle Gland plates Tower, with channel etc.

- Addl. S.E. Civil Mtc. Division, BBMB Power Wing. Mfg. Chowkhats, Wooden Chair Steel Almirah Dust Bin, Garbage Container.
- Resident Engineer, Bhakra Power House BBMB Power Wing, Nangal Township Mfg. Wooden Chair Steel Almirah Dust Bin Chowkhats.
- Add. S.E, Civil Mtc. Division BBMB Power Wing Ganguwal. Mfh. Wooden Chair, Steel Almirah Dust Bin Garbage Container Chowkhats.
- Addl. S.E. O&M Division, BBMB, Power Wing Ganguwal. Mfg/ Trash Rack Rubber seal wooden chair steel almirah Bush shaft shear pin coupling
- Addl. S.E. Mech./Mtc. Division, Dehar Power House slapper repair Guide Vanes Nott Nut Plug Plates etc.
- Resident Engineer Dehar Power House Slapper Mfg. Grease adopten Bronze Bush Brass seal Guide Vanes Bush.
- Addl. S.E. Township Division BBMB Talwara. Mfg. Steel; Chowkhats M.S Grill Coupling Impeller Shaft herbage Container steel Almirah wooden Chair.
- Addl. S.E. Mech. Division, BBMB Talwara. Mfg. Rubber seal steel Almirah G.M Rod. etc.
- Addl. S.E. R.M & S.R. Division BBMB Talwara. Mfg. Signboard.
- Addl. S.E. Elect. & Workshop Division, BBMB Sunder Nagar. Mfg. Pantoon Garbage Container Pulley, Rubber seal Pipe Rubber Pan puller etc..

G. Bhakra Electrical Division

Special works completed during the year 2020-21 are:-

- Providing and laying Telephone Cable from RL-1400 Telephone Exchange to Policce Check Post Kalakund. Olinda to Police Check Post Golethai and Replacement of old Connection overhead G.I. wire System by laying underground Telephone Cable from Olinda to Neilla.
- Providing roof top Solar power plant and Sinchai Sadan filed hoste at Nangal Township.

H. B.C & Township Division

- The work providing facilities for players such as interlocking kabaddi mats. Gym chairs and land scraping of katcha portion in indoor stadium work completed during 3/2021. Providing Gym facility at various locations at Nangal, work completed. Renovation of remaining 100 No. bungalow work completed. Renovation of Doctors bungalows (1 & 2 Model school) and hospital staff quarters, NIT floated. Renovation of Spl. model school NIT floated. Providing footpath with pavers on both sides of WA road from Rly. Crossing near ASHC work completed during 3-2021.
- Water supply & sanitation installation in various residential & non-residential buildings and also the work were carried out during 2020-21. Providing addl. Overhead water tank for kitchen in various W/C & D/S qtrs. at Nangal, work completed during 11/2020.
- The mtc. and repair work of regular/WC. Qtrs. at Nangal. P/F glazed tiles in W/C qtrs. at Nangal (2nd phase) work completed during 10/2020. Regarding of roof tiles in various W/C qtrs. at Nangal, work completed during 3/2020. Regarding of roof tiles in various Regular staff qtrs. at Nangal, (2nd phase), work completed during 12/2020.
- The work i.e . const. of boundary wall around bungalows, work completed during 8/2020. Const. of 8 No. class room along with staircase for smart classes in BBMB DAV Public School at Nangal, work completed.

- Providing and fixing kota stone flooring in backyard of houses in BBMB Colony, Sector 36-A, Chandigarh has been completed.
- Providing and fixing kota stone flooring in backyard of Type-IV & V houses in BBMB Colony, Sector 36-B, Chandigarh has been completed.
- Providing and fixing modular kitchen in VIP Guest house, BBMB Colony, Sector 35-B, Chandigarh has been completed.
- P & F of wall panelling and false ceiling in 6 No. Rooms (3-A to 8-A) in BBMB Rest House, Sector- 35-B, Chandigarh with additional work i.e P & F of wooden flooring, PVC false ceiling and wall panelling in the VIP room No. 1 & 2 of BBMB Rest House, Sector- 35-B, Chandigarh has been completed.
- Providing floor tiles in flooring, white washing and painting in type-I houses in BBMB Colony, Sector 36-A, Chandigarh has been completed.
- Providing floor tiles in flooring, white washing and painting in type-II houses in BBMB Colony, Sector 36-A, Chandigarh has been completed.

6.2.2 Beas Project

6.2.2.1 Beas Project Unit-I (BSL)

A. Monitoring of the behaviour of Pandoh Dam, various components of BSL Project and Dehar Power Plant, with the help of data observed on various instruments /devices was done and it was found that structure behaviour of these works have functioned quite satisfactory during the period under report.

B. Problem of Excessive Sulphate Contents in Seepage Water of galleries / Tunnels of Pandoh Dam

The problem of sulphate contents in seepage water is being monitored regularly. The flow of high sulphate content in the affected seepage hole of D & G Galleries of Pandoh Dam is in stabilized condition. The Ultrasonic Pulse Velocity tests conducted by the CS & MRS, New Delhi during August, 2016 showed that no significant deterioration of concrete quality has taken place with the time over the monitoring period. The overall quality of concrete is good.

C. Siltation of Pandoh Reservoir

Silt survey of Pandoh Dam for sedimentation studies was conducted in the year 2018. The latest silt survey shows that the live storage capacity of Pandoh Reservoir i.e. between normal reservoir level (El.2900 ft.) and maximum reservoir level (El.2941ft.) is 1272Hect.m (10313.39Ac.ft.) which has been reduced by 31.46% of its original live storage capacity.

D. Repair of Pandoh Spillway

After the flood season of 2019 the repairs of Pandoh Spillway were carried out and an area of 473.05 sqm. was repaired as per practice in vogue.

E. Protection Works Downstream of Pandoh Spillway

No damage has occurred to wire crates provided along Samla complex from RD-600 to 4200. All the protection works are in good condition.

F. Emergency Gates of Baggi Control Works

During the annual maintenance of right and left bays of Baggi Control Works stilling basin, the leakage of all the emergency gates was normal. General maintenance of mechanical works, stop logs etc. has been done as per normal

procedure & schedule.

G. Silt ejector of Sunder Nagar Hydel Channel

The silt ejector at RD 1364.59 m (4477 ft.) of Hydel Channel was operated during the monsoon period from July, 2020 to September, 2020 with discharges varying from 7.078 to 14.158 cumecs (250 to 500 cusecs). The total quantity of silt ejected was 1.517Hect.m (12.310 Ac.ft.). Running of silt ejector during rainy season remained satisfactory.

H. Silt observation in the Balancing Reservoir

During the period July, 2020 to September, 2020, the three dredgers have removed 78.37 Hect.m of silt from balancing reservoir. As per silt survey carried out in 2020, the balance silt deposit at the end of period was of the order of 99.16 Hect.m.

I. Penstock Headers & Branches

Routine maintenance regarding Penstock Headers, Branches and dresser couplings has been carried out. Nothing abnormal was noticed.

6.2.2.2 Beas Project Unit-II (Pong Dam)

Monitoring of the behaviour of Pong Dam, various components of Pong Dam & Power Plant, with the help of data observed on various instruments/devices was done and it was found that structural behavior of these works has functioned quite satisfactory.

A. Sedimentation of Pong Reservoir

Sediment survey of Pong reservoir carried out during 2019-2020 has revealed that average annual rate of siltation from year 1974 to 2020 (46 years) works out to 24.22Mm³ (19633Ac.ft) against the design figure of 25.29 Mm³ (20500 Ac.ft.). The average silt yield/annum/ sq. mile of catchment area (1974 to 2020) works out to 4995.59 m³ (4.05Ac.ft). The average trap efficiency during 1975-76 to 2019-20 is about 97.45%. The percentage of total sediment deposited is 26.37% in dead and 73.63% in live storage of the reservoir.

B. Irrigation outlet tunnel

The visual inspection of exposed portion of civil structure and protection work of exit channel of T-1 & T-2 outlet tunnels was carried out. The unwanted jungle & weed growth is being removed regularly.

C. Plantation

The general upkeep and maintenance of various lawns, ornamental plants, shrubs, hedges and flower beds are being done regularly at dam site to enhance the beauty of Dam Area. The JavikKhad has been prepared regularly. Plants have been planted by VIP's in E-Park.

6.2.3 Dam Safety Activities(2020-21)

- The Pre-monsoon and Post-monsoon inspection of various units of Bhakra Beas Complex carried out by field engineers and nothing abnormal reported.
- The recommendations/observations made by Dam Safety Review Panel under DRIP and Dam Safety Committees are being monitored for implementation regularly on quarterly basis by Dam Safety Directorate, BBMB, Nangal and report is being submitted to all concerned.

- The Annual health status of all Dam under BBMB for the year 2020 was satisfactory and the annual health status report is being submitted to all concerned.
- The Annual meeting of National Committee on Dam Safety could not be organized by CWC due to COVID-19 prevailing conditions.

6.2.4 BBMB Hospitals

BBMB hospitals are providing outdoor as well as indoor medical facilities to the employees of BBMB as well as to the general public of the area. Sufficient diagnostic aids like X-Ray, pathological investigations, ECG, physiotherapy, ultrasound and other facilities like blood transfusion are being provided. Revised National T.B. Control Programme (RNTCP), Immunization Programme, etc. are also being run. In Eye Department, I.O.L. operations are being performed. Public health care and family welfare facilities are also being provided in the hospitals.

6.2.4 Visitors

Due to ongoing Corona Pandemic and as per guidelines issued by Govt. of India/Board Office Chandigarh, permits were not issued to general public for visiting Bhakra Dam

6.3 National Hydrology Project

Bhakra Beas Management Board (BBMB) has set up Earth Receiving Station (ERS) at Chandigarh for inflow flood forecasting (i.e. short term 3 days and medium term 7 to 10 days) for optimum utilization of Bhakra and Pong Reservoirs and Canal Network. BBMB has the 'first mover' in the country under the World Bank funded Hydrology Phase-II project.

Under this project, 87 no. Real Time Data Acquisition stations comprising Automatic Rain Gauge Stations, Automatic Full Climate Stations, Snow Water Equivalent, Water Level Recorders etc. and 10 No. Automatic Stage Recorder at Contact Points of Partner states have been installed in the catchment of River Sutlej and Beas by using state of the art technology. In addition to this 6 No. Meteorological stations have also been co-opted with IMD. The schematic arrangement of Real Time Decision Support System involves real time transmission of Hydro meteorological data through INSAT-3D at 1 hour interval to Earth Receiving Station at Chandigarh.

Real Time Data is processed using Rainfall Runoff Model, Hydro Dynamic Model, Flood Model and Water Allocation of MIKE software. The outcome/ scenario generation is further shared on NHP Dashboard.

MOWR, Govt. of India in association with World Bank has initiated, National Hydrology Project (NHP) in India to carry forward the work and objectives of Hydrology Project Phase-II under the NHP. To this effect, BBMB has been allocated Rs. 30.00

Crore for strengthening and expansion of existing Data Acquisition system (DAS), development of alternate models and technology enhancement along with capacity building in the organisation to achieve better results.

Under NHP, Tender for installation of 11 no. new Hydromet stations and upgradation of 10 no. old stations installed under HP-II, has been allotted to prospective bidder.

The Annual Work Plan 2021-22 under NHP have already been approved by MoWR, Govt. of India.

6.4 Information Technology:

Issues handled are as under:-

1. Implementation of e-Office in BBMB.

e-Office, a Mission Mode Project under the National e-Governance Programme (NeGP) of Gol has been implemented at Boards Office & Chief Engineers Offices. Training to all the users was provided along with hands on training on the use of the system. It is now proposed to extend the same to all divisions/Offices of BBMB.

2. MIS for Legal cases

Web based **Software** for managing all the legal cases for Legal cases for all divisions of BBMB (instituted in any court of India) has been developed and implemented. The responsibility of data updation is with the users of respective divisions/offices.

3. BBMB's Website has been awarded STQC Certificate by STQC Directorate, Ministry of Electronics and Information Technology, Gol.

The BBMB website was developed complying to Guidelines for Indian Government Websites (GIGW). These guidelines inter-alia, ensures that, the websites are accessible to citizens/persons with disability. The website of BBMB available at URL <https://bbmb.gov.in> is STQC Certified by STQC Directorate, Ministry of Electronics and Information Technology, Gol.

4. Implemented procurement from GeM

The procurement activities of all divisions has been implemented from GeM. The training sessions for the same were got conducted at four locations in BBMB. Regular training of users on the latest features available on GeM are being conducted.

5. e-Reverse Auction Implemented

e-reverse auction (e-RA) has been implemented for all tenders with threshold value of one crore which has been subsequently reduced to threshold value of Rs. 10 lakhs.

6. e-Tendering / e-procurement extended to all cases above Rs 2 Lakhs

All the tenders by various offices of BBMB above a threshold value of Rs.2.00 Lacs are invited through e-procurement/e-tendering system.



अध्याय-7 Chapter-7

जल-शक्ति अध्ययन Water Power Study

Actual Water Power Data for the operation of Bhakra Reservoir for the period 1.4.2020 to 31.3.2021

Month	Period	Inflows (Cs days)					Gains or Losses between Nangal & Ropar (Cs days)	Delhi Jal Board (Cs days)	W.J.C Contribution (Cs days)	Releases from Bhakra Reservoir (Cs days)	Closing reservoir level (ft)	Av.power from Bhakra Power Houses		Av.power from Gwl. & Kotla Power Houses		Total Power available from Bhakra Complex		Gen. from Dehar Power Plant in LU
		Satluj	Dehar Power Plant	Bye Pass Chute	Total Col. (4+5)	Total Col. (3+6)						MW	LU	MW	LU	MW	LU	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Starting reservoir level on 31.03.2020 = 1599.26 ft																		
April 2020	01-10	6905	3002	-	3002	9907	-300	496	0	14999	1595	463	111	150	36	612	147	60
	11-20	7399	4517	-	4517	11916	-300	496	0	15139	1592	460	110	149	36	609	146	87
	21-30	8478	4573	-	4573	13050	-300	496	0	17343	1589	515	124	141	34	655	157	89
May	01-10	11610	5772	-	5772	17381	-600	496	0	27096	1579	775	186	150	36	925	222	109
	11-20	13544	5889	-	5889	19433	-600	496	0	34369	1564	959	230	149	36	1108	266	111
	21-31	13982	7566	-	7566	21548	-600	496	0	24970	1561	683	164	137	33	821	197	135
June	01-10	13956	7459	-	7459	21415	-600	496	0	21443	1562	596	143	150	36	747	179	135
	11-20	24196	8499	-	8499	32695	-600	496	0	26248	1569	730	175	149	36	879	211	147
	21-30	35507	8511	-	8511	44018	-600	496	0	30326	1583	863	207	148	36	1011	243	146
July	01-10	37025	8456	-	8456	45481	1000	125	0	34366	1593	995	239	150	36	1144	275	144
	11-20	33994	8463	-	8463	42457	1000	125	0	24219	1607	735	177	146	35	882	212	143
	21-31	27348	8459	-	8459	35807	1000	125	0	19842	1620	639	153	138	33	776	186	143
Aug.	01-10	34219	8443	-	8443	42663	1000	125	3548	244725	1632	791	190	145	35	935	225	141
	11-20	41202	8417	-	8417	49619	1000	125	7189	24664	1647	817	196	148	35	965	232	140
	21-31	34232	8427	-	8427	42659	1000	125	8041	24200	1657	821	197	146	35	967	232	138
Sept.	01-10	27257	8424	-	8424	35681	0	125	10417	24148	1663	820	197	148	36	968	232	139
	11-20	18249	7336	-	7336	25584	0	125	822	30874	1660	1047	251	150	36	1197	287	130
	21-30	14103	7156	-	7156	21259	0	125	0	30444	1654	1030	247	148	36	1171	283	125
Oct.	01-10	10380	4497	-	4497	14877	0	496	0	26572	1648	888	213	148	35	1036	249	87
	11-20	8186	3994	-	3994	12180	0	496	0	21895	1643	732	176	136	33	868	208	78
	21-31	5933	2814	-	2814	8747	0	496	0	14412	1639	486	117	144	35	630	151	53
Nov.	01-10	6040	2144	-	2144	8184	0	496	0	12769	1636	413	99	143	34	557	134	41
	11-20	5677	1960	-	1960	7637	0	496	0	13288	1632	425	102	147	35	572	137	38
	21-30	5394	1935	-	1935	7329	0	496	0	13012	1629	415	100	139	33	554	133	38
Dec.	01-10	4804	1804	-	1804	6609	100	496	0	13804	1618	440	106	148	36	588	141	36
	11-20	4815	1677	-	1677	6492	100	496	0	16009	1624	510	122	148	36	658	158	33
	21-31	5191	1479	-	1479	6670	100	496	0	18431	1609	591	142	149	36	740	178	29
Jan. 2021	01-10	4156	1561	-	1561	5717	200	496	0	12513	1604	393	94	138	33	531	127	31
	11-20	4313	1383	-	1383	5696	200	496	0	12824	1599	391	94	142	34	534	128	27
	21-31	5318	1299	-	1299	6617	200	496	0	14464	1591	439	105	151	36	590	142	26
Feb.	01-10	4434	1187	-	1187	5621	400	496	0	13630	1584	402	96	149	36	551	132	24
	11-20	4660	1248	-	1248	5908	400	496	0	14923	1576	433	104	150	36	583	140	25
	21-28	5305	1203	-	1203	6508	400	496	0	15562	1568	446	107	150	36	596	143	24
Mar.	01-10	4397	1320	-	1320	5717	200	496	0	15510	1557	442	106	150	36	592	142	27
	11-20	5717	1408	-	1408	7125	200	496	0	14915	1546	408	98	150	36	558	134	29
	21-31	4926	1707	-	1707	6633	200	496	0	13361	1537	358	86	117	28	475	114	35

Actual the Operation of Pong Reservoir for the period 01.04.2020 to 31.03.2021

Months	Period	Inflows at Pong (cs)	Gains or Losses between Pong & Mandi Plain(cs)	Net diversion Ravi to Beas (cs)	Releases from Pong Reservoir (cs)	Closing Reservoir level (ft)	Generation from Pong	
							MW	LU
1.	2.	3.	4.	5.	6.	7.	8.	9
Starting Reservoir level on 31.03.2020 = 1359.34 ft.								
April 2019	01-10	5602	0	2768	3606	1360	68	16
	11-20	4425	0	3720	4544	1360	89	21
	21-30	4975	0	3525	11128	1357	216	52
May	01-10	5230	-500	4063	14006	1353	267	64
	11-20	4979	-500	4334	15005	1349	283	68
	21-31	4680	-500	1759	15004	1344	278	67
June	01-10	5824	-500	3109	15007	1340	274	66
	11-20	6517	-500	6198	14899	1336	269	64
	21-30	12072	-500	5687	15006	1335	268	64
July	01-10	14476	1125	5659	13805	1335	246	59
	11-20	14114	1125	5912	13108	1336	234	56
	21-31	17631	1125	5570	10372	1340	186	45
Aug.	01-10	21564	1125	5314	11803	1345	216	52
	11-20	42509	1125	4759	8861	1359	167	40
	21-31	40916	1125	2935	5932	1374	119	28
Sept.	01-10	20099	1125	250	10708	1376	220	53
	11-20	9164	1125	536	13927	1375	284	68
	21-30	4036	1125	3198	10306	1372	210	50
Oct.	01-10	3100	750	1897	11246	1369	225	54
	11-20	3280	750	2581	9967	1367	200	48
	21-31	2278	750	2763	10219	1363	203	49
Nov.	01-10	1707	375	3203	8679	1361	171	41
	11-20	1731	375	3204	8505	1358	165	40
	21-30	2026	375	4769	7964	1355	152	36
Dec.	01-10	2100	375	3782	9725	1352	186	45
	11-20	2192	375	3438	11060	1348	208	50
	21-31	2734	375	2464	10522	1344	196	47
Jan. 2020	01-10	3192	375	2733	10837	1341	198	48
	11-20	1881	375	3463	9986	1337	180	43
	21-31	2051	375	1166	10263	1333	183	44
Feb.	01-10	1784	0	461	11338	1328	199	48
	11-20	2280	0	223	12936	1322	223	54
	21-28	1919	0	0	14924	1316	254	61
March	01-10	1571	375	0	13217	1309	223	53
	11-20	1220	375	0	10239	1303	167	40
	21-31	1233	375	0	6167	1299	97	23



अध्याय-8 Chapter-8

पुरस्कार एवं सम्मान Honours and Awards

8. The Awards won by BBMB during the year 2020-21 upto 31.03.2021:

1. Environmental Preservation Awards:

Bhakra Beas Management Board has been conferred with 'Silver Award' in "7th Exceed Environment Award 2020" under "Environmental Preservation" category in Power (inclusive Renewable) Sector. Hon'ble Sh.Parkash Javadekar, Union Minister of Environment, Forest and Climate Change conferred the award to BBMB in a virtual webinar organized by Sustainable Development Foundation (A unit of EK Kaam Desh Ke Naam) a non-governmental Organisation working for social upliftment on dated 20.08.2020 at New Delhi.

2. Professional Awards:

Bhakra Beas Management Board, BBMB (Pong) has been selected as the winner under the "Best Hydro Power Generator" Category and Bhakra (Left Bank Power House) and Right Bank Power House) is Runner up in "Best Hydro Power Generator" category at the IPPAI Power Awards announced by Independent Power Producers Association of India on 25.02.2021.

3. Hindi Awards:

Bhakra Beas Management Board Secretariat has been announced 1st prize for the year 2017-18 by Town Official Language Committee. Besides first and second prizes for the implementation of official language in "B" region during 2020-2021 has been announced for two subordinate offices i.e. Chief Engineer, Transmission System and Director P & D (PP), BBMB, Chandigarh.

4. Sports Awards:

- BBMB Team won Gold Medal in Inter CPSU Badminton Tournament held at Nangal from 18.02.2021 to 20.02.2021 hosted by BBMB.
 - BBMB Team won Bronze Medal in Inter CPSU Table Tennis Tournament held at Delhi from 05.03.2021 to 08.03.2021 hosted by P.F.C.
 - BBMB Team won Gold Medal in Inter CPSU Chess (Men) Tournament held at Shimla from 13.03.2021 to 15.03.2021 hosted by SJVNL.
 - BBMB Team won Silver Medal in Inter CPSU Chess (Women) Tournament held at Shimla from 13.03.2021 to 15.03.2021 hosted by SJVNL.
 - BBMB Team won Gold Medal in Inter CPSU Volleyball Tournament by lifting the trophy 24th time consecutively held at Rishikesh from 17.03.2021 to 19.03.2021 hosted by THDCIL.
 - BBMB Team won Gold Medal in Inter CPSU Cricket Tournament held at Delhi from 23.03.2021 to 27.03.2021 hosted by D.V.C.
- Due to Covid-19 & shortage of time, Kabaddi & Athletic events could not be carried out in which BBMB is champion for the last 22 years in Kabaddi & 7 years in Athletics (Men & Women).



अध्याय-9 Chapter-9

पर्यावरण प्रबन्धन Environment Management

9.1 Environment Management

Environmental Appraisal of river valley projects was initiated in 1979 as an administrative requirement but was subsequently made mandatory by Govt. of India in January 1994 through a notification of Impact Assessment. New river valley projects including hydel power, major irrigation and their combination including flood control are required to obtain environmental clearance as per Gazette Notification No. S.O. 60 (E) dated January 27, 1994 (subsequently amended) covering both preventive and mitigative measures. The present Environmental Impact Assessment (EIA) /Environment Management Plan (EMP) for the river valley projects cover the following action plans:-

- Catchment Area Treatment (CAT) Plan
- Afforestation Plan
- Survey of flora and fauna and action plan for restoration
- Rehabilitation and Resettlement Plan (R and R), if any
- Command Area Development (CAD)Plan.

Regarding Bhakra and Beas Projects, there were provisions for R&R plans but there were no provisions for other plans, like CAT, CAD, Afforestation Plans, etc. as these were constructed prior to 1979. However, BBMB, on its own, has started studying and evaluating the post-construction status of environmental components and their impacts, if any, for short-term and long-term mitigative measures at all project stations.

9.2 Socio-Economic Impacts Of BBMB Projects

The beneficial impacts of Bhakra and Beas Projects have been much more compared to that envisaged at the planning stage. Bhakra and Beas Projects being multi-purpose projects, have two big storage reservoirs namely, 'Gobind-Sagar' and 'Maharana-Partap Sagar', which provide irrigation and drinking water to Punjab, Haryana, Rajasthan, Delhi and Chandigarh. These Reservoirs and their connected canal system have not only brought the '**Green Revolution**' but also the '**White and Industrial Revolutions**' in Northern Region.

BBMB Projects brought socio-economic upliftment of the region by way of enhanced employment opportunities, better energy and irrigation facilities, enhanced industrialization, ecological improvement in the downstream areas of the dams due to prevention of floods, etc.

In addition, these Reservoirs attract not only tourists but also promote fishery.

The Pong Dam Lake (Maharana-Partap Sagar) has been included in the list of 'Wetlands of International Importance' in August, 2002 under the Ramsar Convention on Wetlands of 1971. More than one lac migratory birds of 220 species visit Maharana Partap Sagar every year. Nangal Lake has been

included under National Wetland Conservation Programme in January, 2008 by Ministry of Environment & Forests, Govt. of India.

BBMB organized a National workshop with the help of Central Board of Irrigation and Power, New Delhi in the month of August, 2005 at New Delhi on the subject “**Impact of Bhakra-Nangal Project**”. Through this workshop, BBMB has brought forward the facts regarding positive impact of Bhakra-Nangal Project before the nation.

9.3 Environment Management Plan For BBMB

Following measures were taken regarding implementation of Environment Management Plan for BBMB:-

- A study of EIA for Beas Satluj Link Project of BBMB was got conducted in 1999 from NEERI, Nagpur for proper silt management from Sundernagar balancing reservoir & as per their recommendations, the silt is being removed during Monsoon only to avoid environmental degradation.
- Final report of the Expert Committee has been submitted to Hon'ble Himachal Pradesh High Court, Shimla with the conclusion that dredging will be carried out only during monsoon for management of silt at BSL Project. After the decision of Hon'ble H.P. High Court Shimla, matter was placed before the Board in its 211th meeting and as per approval of the Board, SLP has been filed in the Hon'ble Supreme Court of India. Hon'ble Supreme Court of India vide order dated 14.12.2012 has directed the H.P. Pollution Control Board not to take any coercive steps in terms of judgment of Hon'ble High Court. Thereafter the matter was listed for 21.1.2013. Hon'ble Supreme Court has granted leave in the matter and has also directed interim protection granted vide order dated 14.12.2012 to continue.
- 3 no. dredgers deployed to ensure flexible and reliable dredging capability during the monsoon season for dredging out maximum silt from the Balancing Reservoir.
- Measurement of flow discharge and total suspended solids at various sites in Kansa Khud and river Beas are being observed during monsoon. L-section and Cross-section along Suketi Khud are also being observed for pre-monsoon period and for post monsoon period every year to study the deposit of the silt, if any.
- Catchment Area Treatment (CAT) Plan for BSL project up-stream of Pandoh Dam to Larji Dam for river Beas and its tributaries was got prepared from Himalayan Forest Research Institute, Shimla.
- In Bhakra and Beas catchments a no. of new hydroelectric projects are coming up and CAT plans are to be framed by respective project proponents.

- Other mitigation measures like organized promotion of fish production, one time farm management of silt effected agriculture land, tarring of village roads etc.
- To prepare solid waste management plans for its safe & and scientific disposal around the project areas.
- BBMB is an ISO 14001:2015 certified organization for Environmental Management System for its hydro projects and generation units.
- R&R aspects of Bhakra and Pong dams are being met with.

9.4 Release Of 15% Minimum Flow From Pandoh Dam

HP Govt., vide notifications dated 16.7.2005 and 9.9.2005, had issued the directions regarding release of minimum flow to the extent of 15% immediately downstream of diversion structures of the existing and upcoming hydel projects in Himachal Pradesh. Pandoh Dam of BBMB being a diversion dam comes under the ambit of this notification. BBMB has been releasing 15% of minimum flow at Pandoh Dam since September, 2005. However, BBMB has also taken up the issue of exemption regarding its applicability to BBMB projects being old projects with HP Govt. and the Ministry of Environment and Forests (MoEF) through Ministry of Power.

9.5 Plantation Programme

BBMB has been improving ecological environment by following regular 'Plantation Programme' undertaken every year on its vacant land, maintaining & improving gardens, terraces, fringe areas of the reservoirs, project colonies, offices, etc.

9.6 Rock Garden At Talwara

BBMB has developed a modern Rock Garden, first of its kind under the stewardship of Padam Shri Nek Chand, Founder of 'Chandigarh Rock Garden' on about 20 acres of vacant land at Talwara Township. The Rock Garden at Talwara has been developed from the waste and surplus material collected from Beas Dam Project. It has unique features, like an Engineering Section, Modeling dam Construction, an Environment Section and Children Park. This modern Rock Garden was inaugurated by Chairman, BBMB on 16th August, 2005 in the presence of Padam Shri Nek Chand. New development works including preparation of ground for land scapes, are being taken up every year in this prestigious garden.

9.7 Social Welfare Activities

- BBMB is very much alive to its social responsibilities. At every project station, BBMB is liberally spending towards welfare activities for local people residing in the vicinity of the projects. During the year, BBMB hospitals provided specialized outdoor as well as indoor medical facilities, alongwith ambulance, to the people residing in villages in the vicinity of the projects. Public Health Care and Family Welfare Facilities were also provided. Blood donation camps were organized. Moreover, free medical camps were held to provide ready medical help alongwith medicines, at the doorstep of the villagers. Moreover it is has been decided to make provision @ 2% of the annual Irrigation works budget for carrying out various social welfare activities by BBMB in consultation with respective local authorities/ Deputy Commissioners of the areas for people living in the vicinity of BBMB projects especially in rural areas.
- A Step up towards battle against COVID-19, Bhakra Beas Management Board employees contributed two days salaries amounting to Rs. 2,70,50,000/- to Prime Minister Fund on **07.04.2020**. BBMB employees worked day and night to maintain essential services such as supply of water, electricity generation and transmission of electricity during the period of lockdown. BBMB Doctors, Nurses and para-medical staff remained involved in maintaining medical services. All project heads continued to help daily wage labourers by providing them cooked food and ration items at all its project stations.
- Blood banks in India was facing acute shortage of blood due to nationwide lockdown but blood banks were still to cater critically ill patients, blood disorder, cancer patients, etc. Bhakra Beas Management Board organized Blood Donation Camp in association with the team from Department of Transfusion Medicine, PGI Chandigarh in BBMB Rest House, Chandigarh on 29.05.2020.
- Bhakra Beas Management Board organized a free medical camp in weeklong State Level Nalwari Mela at District Bilaspur of Himachal Pradesh from 17.03.2021 to 23.03.2021. Team of doctors and paramedical staff religiously facilitated the public of Bilaspur and adjoining villages. In the Camp free medicines were distributed to the needy people.



अध्याय-10

Chapter-10

मानव संसाधन विकास

Human Resource Development

10.1 Human Resource Development

10.1.1 Training Policy of BBMB

A BBMB framed its own training policy in the year 2003 in line with the Ministry of Power's "Training Policy for Power Sector-March 2002" and implemented it for imparting extensive and regular training to its personnel from the year 2003-04 onwards. To review the existing policy and prepare biennial perspective training plan, a Standing Core Group headed by FA&CAO was constituted in October, 2007 to guide the entire training functions in BBMB. Working Procedure for nomination of officers/ officials for various Training Courses/ Seminars/Symposia etc. was prepared and the same is applicable w.e.f. 09.06.2015 & is being amended from time to time as per requirement.

B The motto of BBMB Training Policy is to "ensure Training for all once a year for each employee". Based on the policy, the target of minimum 3Mandays of training for officers/ officials has been required to be imparted. In-house training calendar which includes the training module for deputing the officers/ officials for training to other Project Stations is sought from HOD's on Financial Year basis. Approval for the same is conveyed to the respective offices along with the target of Mandays for their offices out of the total Mandays fixed for the whole BBMB. The ibid target includes In-house as well as Institutional Trainings/ Seminars/Conferences/ Workshops. The Institutional as well as In-house Training Calendar depicting different modules such as, Technical Training, Personality Development, IT & Computer skills, Health & Life Style Management, HR & Finance, Fire Safety with First Aid, Workers Training, Misc. Modules, etc. was also prepared for the year 2020-21 as per previous practice.

C After reviewing its prevalent Training Policy, a need of focused and extensive training to all staff is felt as new staff is inducted from partner States to fill the gap made by retirements. Employees being from different States/ Departments and work cultures, it becomes imperative that they must be trained as per the requirements and working culture of BBMB under induction training programme. In addition, due to frequent transfers/repatriation of staff from and to their parent departments, it is essential to conduct training programmes on regular basis so as to keep all the newcomers abreast with BBMB work requirements and culture. Moreover, it is endeavored to include all categories of in-position employees in the training programmes to improve their Technical/ Managerial skills and to equip them with the latest know-how & innovative technologies. Orientation Programmes are also arranged at Project Stations from time to time for newly inducted Engineers of Irrigation Wing & Power Wing.

D Various types of training being imparted by BBMB are as under:-

- i) Institutional Trainings wherein personnel are nominated from BBMB to attend Training Programmes/ Seminars/ Conferences/ Workshops at various Institutes situated at different stations or by organizing

Training Programmes for BBMB personnels through outside experts/ faculties etc.

- ii) In-house Training Programmes through BBMB's own experts/ faculties etc.
- iii) Induction training to personnel joining BBMB either on fresh recruitment or from partner states.
- iv) On-Job Site Training to Engineers from other Organizations, like HCS Probationers from Haryana Irrigation, NPTI, PSTCL etc.
- v) Practical Training/Training visits to the students of Under-Graduate/ Post Graduate Courses of Engineering from different Universities/ Colleges of India.
- vi) The teaching staff of BBMB Schools is nominated for attending Capacity Building Programmes conducted by CBSE to update them with the new Technology in the education system.
- vii) Orientation Programmes for Promotion in Science & Technology and carrier counseling are organized from time to time for the students of BBMB Schools at Project Stations.
- viii) Various onsite Programmes are conducted for the Engineers of both Power & Irrigation Wing to enable them to obtain knowledge of latest techniques relating to their job profiles.

The above training programmes are being conducted for giving training to each category of officers/ staff of BBMB i.e. Engineers, Ministerial staff, like Superintendents/ Assistants, etc. (Non-technical class).

As Institutional Training is not cost effective for Worker class/ Ministerial staff categories of employees, Management decided to have extensive In-house training programmes/ Interactive Workshops/ Seminars, etc. at all the Project Stations/ Work places which are being organized at large scale on diverse topics such as Technical Management, Motivation, Health, Finance etc.

BBMB has created its own infrastructure for imparting training to its employees. A lecture hall at SLDC Complex, Chandigarh to arrange In-house Lectures/ Workshops/ Seminars has been established in the year 2003. A Training Centre named "Bhakra Beas Training Centre" has commenced working at Nangal since March, 2005. This Training Centre has a lecture hall with all the latest learning-aids, two different model-rooms for Irrigation and Power Wings and a discussion room to impart Institutional Training to Power Sector Engineers and Technicians of BBMB & other Power Utilities.

Training programme on "Distribution, Reforms, Upgrades & Management" (DRUM) is being on self-sustaining "No-Profit No-Loss" basis has been conducted in BBMB in which Engineers from the Partner States/Utilities also participated.

10.1.2 Achievements in respect of training during 2020-21

The achievement in respect of 'Training Mandays covered' in BBMB for training BBMB personnel during 2020-21 is as under :-

Training Mandays

		Training Mandays				TOTAL Achievement
		Executives		Non-Executives		
Year	Target of Mandays Fixed	Institutional Training	In-house Training	Institutional Training	In-house Training	
2020-21	16000	3105	2776	216	12473	18570

10.2 Implementation Of Reservation Policy For SC And ST.

BBMB discharge its function as laid down in Section 79(1) of the Punjab Re-organization Act, 1966 for which staff for the operation and maintenance of BBMB works is provided by partner State Governments/SEBs on transfer basis. However, in the event of inability of partner States/SEBs to provide the requisite staff, BBMB resorts to direct recruitment and promotion in respect of Group 'C' and 'D' employees.

Thus the staff in BBMB is drawn from the partner States according to the allocated share of posts. Such employees are governed by the same terms and conditions as are applicable to them in their parent departments. The reservation for the members of SC/ST categories of employees is watched by the parent departments of State Government according to their policy/rules/regulations. BBMB's own recruited employees are governed by BBMB Class III and Class IV Employees (Recruitment and Conditions of Service) Regulations, 1994 and BBMB Class I & II Officers (Recruitment and Conditions of Service) Regulations, 2015. As per the provision of Bhakra Beas Management Board Class-III and Class-IV employees (recruitment and conditions of Service) regulation 1994 and BBMB Class I & II Officers (Recruitment and Conditions of Service) Regulations, 2015, BBMB followed Punjab Government reservation Policy till April, 2017. Now as per Gazette Notification of Govt. of India, BBMB is following Central Government Reservation Policy since May, 2017. The amended clause 11 of ibid regulations specifies that "the members belonging to the Scheduled Castes, the Scheduled Tribes, Backward Classes, Ex-Serviceman, Physically handicapped persons and the dependents of deceased employees in the service, shall have the reservation in the service and all other concessions as prescribed by the Central Government from time to time". Roster Registers are being maintained by various Administrations/HODs of BBMB.

The existing strength/percentage of Schedule Caste employees as on 01.01.2021 is as under:-

Group	Total existing BBMB own recruited employees	Scheduled caste	Percentage
A	72	19	26..38%
B	380	80	21.05%
C	1866	521	27.92%
D	1966	553	28.12%
Total	4284	1173	27.38%

For providing general welfare measures for SC employees, instructions have been issued to all field offices requesting them to provide the following facilities, if so demanded by the members of SC, on the occasion of birthday of Dr. B. R. Ambedkar, Maharishi Balmiki Ji and Sri Guru Ravi Dass Ji:-

- i) Bus facilities for Shobha Yatra at token charges of Re.1/- per km.
- ii) Auditorium for function on above occasions, free of charge.

Instructions have also been issued to all Head of Departments in BBMB that the heads of organization and senior officers should frequently meet their SC/ST officers/staff, particularly on occasions like Dr.B.R.Ambedkar Jayanti, Maharishi Balmiki Ji Jayanti, etc.

In addition to above, BBMB has given representations to the members of the Scheduled Castes by nominating one SC member of the rank of Addl.SE/Senior Executive Engineer in all Selection Committees.

10.3 Management-Employee Relationship

Meetings of the management with the representatives of the Staff/Unions were convened from time to time and the demands raised by the Unions and their grievances were settled amicably.

10.4 Integrity And Honesty: Imprint Of Vigilance Organisation

The Vigilance Administration in Bhakra Beas Management Board comprises of a Chief Vigilance Officer (CVO), NTPC, holding additional charge of CVO, BBMB and Six Vigilance Officers (VOs) viz-a-viz One No. Dy. CVO, OneNo. Dy.Director, Three Nos. ADs, One No. AO who have been posted under CVO to carry out the vigilance work. Any complaint(s) received is got investigated by the VO and based on finding/record appropriate action is recommended with the approval of CVO.

The Vigilance Organisation in BBMB is making earnest efforts to inculcate the following principles among all the employees of BBMB, as a measure of preventive vigilance:-

- (i) To check and control the tendency to delay matters.
- (ii) To record speaking orders in clear terms on the files giving merits of the orders.
- (iii) To avoid decisions being influenced due to vested interest.

- (iv) To be receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- (v) To be firm in conviction that integrity is to be safeguarded at any price.
- (vi) Identification and focus on sensitive spots, regular and surprise checks/inspections of such spots.
- (vii) Identification of officials suspected of corruption, and proper scrutiny of personnel who are posted in sensitive posts which involve public dealing, establishment and purchase related work and ensure their rotation after every 3 years as per CVC guidelines.
- (viii) To keep a watchful eye on all breeding grounds of corruption.
- (ix) To expose without fear those involved in acts of self-gratification
- (x) To take pride in humble living and acts of honesty.
- (xi) To follow the rules, procedures, instruction, manuals, etc meticulously.
- (xii) To avoid drawing illogical and dubious inferences so as to derive undue benefits whenever an ambiguity in rules is encountered.
- (xiii) Agreed list & list of doubtful integrity are prepared and it is ensured that officers /officials of doubtful integrity are not posted on sensitive posts.
- (xiv) Expedite the inquiries, their follow-up action to get decision from parent States/State Electricity Boards.
- (xv) Implementation of disciplinary action without any delay.
- (xvi) Various advisory are issued for system improvement in BBMB.
- (xvii) Circulars for improving awareness as well as system improvement in working of BBMB are also taken up from time to time.

During the year 2020-21 (01/04/2020 to 31/03/2021), 29 complaints were received. 27 Nos. complaints have been disposed off and 02 Nos complaints are under investigation.

Besides above, **Vigilance Awareness Week – 2020** was observed w.e.f. 28.10.2020 to 02.11.2020 in BBMB offices at Chandigarh as well as at Project Stations. Various activities as the part of Vigilance Awareness Week in Comaign mode was also conducted with theme “**Stark Bharat, Samriddh Bharat**” at Chandigarh, Nangal, Talwara and Sundernagar, Panipat and Bhiwani.

10.5 Implementation Of The Official Language Policy Of The Union In BBMB

Officials in the BBMB are normally posted on transfer basis from the partner states i.e. Punjab, Haryana, Rajasthan and Himachal Pradesh. Out of this, 60% staff is from the Punjab state/PSPCL, whose mother tongue is Panjabi and they perform all the official work either in Panjabi or in English only. Under these circumstances, it had been very difficult to implement the official language

policy of the Government of India in the board. There was a time when only 4-5 per cent work was done in the Board, however, Due to commitment of higher officers and under there expert guidance, use of Hindi in the official work of the Board started gradually.

The Department of Official Language issues an Annual Programme every year in order to promote the progressive use of the official language Hindi. All out efforts are made by the Board to achieve the targets fixed in the Annual Programme and the details of the progress achieved by the Board as compared to the targets are given hereunder:

Compliance of Section 3(3) of the Official Language Act, 1963

Details of the documents issued by the Board Secretariat and the Board as a whole, under Section 3(3) of the Official Language Act, 1963 during the year 2020-21 are given below:

	Documents issued under Section 3(3)	Documents issued in English only
Board Secretariat	38	Nil
Board as a whole	2494	Nil

Reply of the letters received in Hindi:

All the letters received in Hindi are invariably replied in Hindi by the Borad secretariate and its sub-ordinate offices. Status of the reply in respect of the letters received in Hindi during the year 2020-21 is given below:

	Total Letters Received in Hindi	Reply in Hindi	Reply in English
Board Secretariat	11553	9222	Nil
Board as a whole	373440	308548	Nil

Note : Remaining letters filed.

Correspondence in Hindi:

Number of letters sent in Hindi by the Board Secretariate and it's subordinate offices since last few years, has registered a manifold increase due to the collective efforts of the staff and the officers of the Board for implementation of the official language, and the targets fixed in the Annual Programme has been achieved. 99.6% letter in the Board Secretariate and 96.8% in the Board as a whole had been sent in Hindi during the year 2020-21. The details are given below:

	Total letters	Sent In Hindi	Sent in English
Board Secretariate	29992	29873	119
Board as a whole	485646	470464	15182

Noting in Hindi:

Almost 93.8% notings are written in Hindi.

Dictation in Hindi:

75% dictation by the officers are given in Hindi.

Recruitment of Hindi Typists/Stenographers:

Cent percent Hindi/Bilingual Typists/Stenographers are recruited in the Board.

Purchase of Hindi books for the Library:

Details of the expenditure incurred on purchase of Hindi books for the Library of the Board Secretariate & subordinate offices during the year 2020-21 is given below:

Total Expenditure on Purchase of Books	Expenditure on Purchase of Hindi Books
Rs. 26007/-	Rs. 21047/- (81%)

Computers:

A total of 540 computers and 16 laptops are available in the Board till date, bilingual (Hindi/English) facility is available on all the computers and laptops.

Website:

Board's website is fully bilingual, and information given in both the languages is regularly updated.

Official Language Implementation Committee:

Official Language Implementation Committees have been constituted in all the offices of the Board and quarterly meetings of these committees are regularly held. Details of the meetings of the Official Language Implementation Committee of the Board Secretariate during the year 2020-21 are as under:

Quarter	Date of the Meeting
April-June	25 June, 2020
July-September	16 October, 2020
October-December	29 December, 2020
January-March	31 March, 2021

Hindi Workshop:

Following Hindi Workshops have been organized in Board Secretariate during the year 2020-21:

Quarter	Date of the Workshop
April-June	26 June, 2020
July-September	18 September, 2020
October-December	31 December, 2020
January-March	31 March, 2021

Hindi Fortnight:

Hindi month/Fortnight is organized in the Board Secretariate and all the subordinate offices during the month of September every year. During the year 2020-21 Hindi Month was celebrated in the Board Secretariate from 01 September, 2020 to 30 September, 2020. Several programmes were organized during the occasion.

Following Hindi Competitions were organized during the Hindi Fortnight:

1. Hindi Shabd-gyan Pratiyogita,
2. Hindi Tankan Pratiyogita on computer,
3. Hindi Nibandh avam Anuvad Pratiyogita,
4. Hindi Noting and Drafting Pratiyogita,
5. Hindi Kavya Path Pratiyogita

Officers and staff have participated in these competitions with great enthusiasm. Officers and staff secured First, Second and Third place were awarded cash prize of Rs. 3,000/-, Rs. 2,500/- and Rs. 2,000/- respectively. Besides, under the Incentive Scheme, 27 employees were also honored with cash award for doing maximum work in Hindi.

At the end of Hindi Month a prize distribution ceremony was held on 23rd October, 2020.

Bilingual/Hindi Publications:

Following materials/books are published by the Board bilingually/in Hindi:

- Annual Administrative Report
- BBMB Samachar (House Journal)
- All the material published in News Papers
- BBMB Janta and Corporate Brochure
- "Jeevan Dhara" Patrika
- DOs and DON'Ts for better Vigilance compliance
- Board's Diary and Calendar
- Telephone Directory

Besides, following books have been published by the Board till date:

- Administrative Glossary
- Rajbhasha Sahayak Pustak
- Technical Glossary
- Bhakra Beas ki kahani
- Beas Satluj Link Project

Do Shabd:

Two English words and their Hindi synonyms are displayed daily on a white board in order to facilitate the employees in day to day official working in Hindi.



अध्याय-11
Chapter-11

परामर्शी सेवाएं
Consultancy Services

11.1 Consultancy Services

The Govt. of India, in the year 1999, has entrusted additional functions of providing & performing engineering and related technical consultancy services in field of Hydro Electric Projects & Irrigation Projects to BBMB.

11.2 Activities of Consultancy Directorate

(i) Implementation of Integrated Management System

For effective implementation of Management System Certifications, BBMB has been divided into 7 centers viz. 6 CE(s) and Board Secretariat. In addition to the earlier acquired QMS:9001 & EMS:14001 with total of 14 Management System Certifications, BBMB in a commitment towards the Safety of its stake holder including its employees, has endeavored to acquire Occupational Health & Safety Management System (OHSMS:18001) for all its 7 Centers & simultaneously implementing Integral Management System (IMS) comprising of EMS, QMS & OHSMS.

For further improvement in the Management System, BBMB is gearing up for latest OHSMS 45001:2018 certifications for all its centres under IMS program.



अध्याय-12
Chapter-12

सूचना का अधिकार
Right to Information

Public Grievances /RTI (Chapter 31 And 32)

Right to Information Act 2005 is in place and fully operational w.e.f. 12th October, 2005. The Act provides for setting out the practical regime of right to information in order to promote openness, transparency and accountability in public offices. BBMB has adopted and implemented the Act in letter and spirit. The necessary infrastructure has been provided for Operationalization of the Act. BBMB designated nine Assistant Public Information Officers (APIOs) and eight Public Information Officers (PIOs) at different locations. In line with requirements of the Act, eight Appellate Authorities have also been designated. The official Website of BBMB (www.bbmb.gov.in) depicts official designations, addresses and phone nos. of these officers. Comprehensive details regarding the procedure in respect of applying for information have been given on the website. The information regarding 17 No. manuals which have been prepared as per provisions of Section 4(2) of the RTI Act, (Pro-Active disclosure) is also available on the website. The information is regularly updated from time to time as per provisions of the RTI Act. The quantum of applications received under the Act appeals made & other related details are given in Annexure-1 .

Annexure-1

Details relevant to RTI Act for the years 2020-2021 (As on 31.03.2021)

Sr.No	No. of requests received	No. of decision	Decision where applications for information rejected													Number of cases where disciplinary action was taken against any officer in respect of Administration of this Act.	Amount of Charges collected (Rs.)	
			No. of times various provisions were invoked															
			Section 8(1)										Other Section					
			a	b	C	D	e	F	g	h	I	j	9	11	24	Other		
1.	398	398	NIL										NIL			NIL	11023/-	

TRANSMISSION NETWORK

