Petition before the Hon'ble Uttarakhand Electricity Regulatory Commission

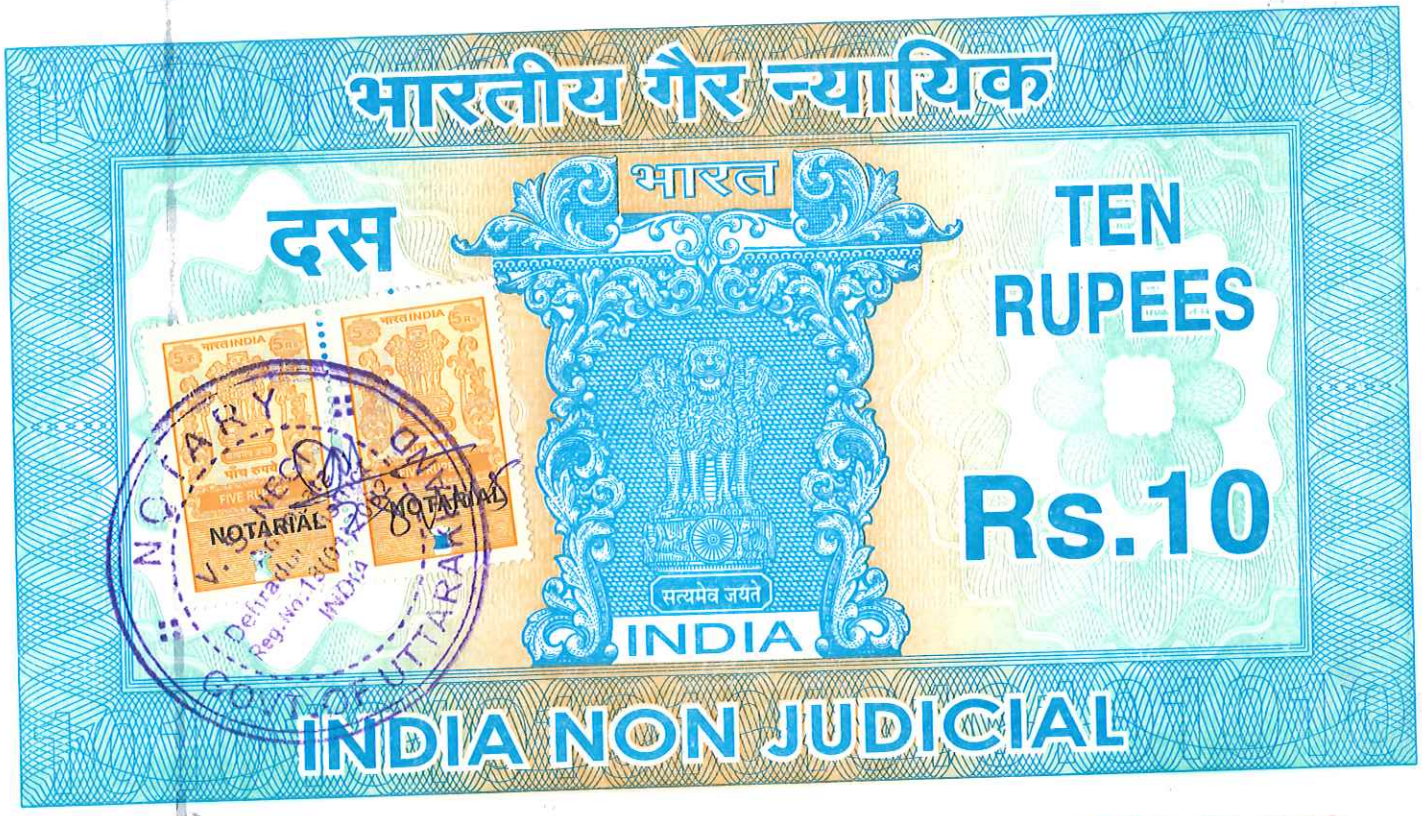
Approval of Business Plan for Second Control Period from FY2016-17 to FY2018-19 for UJVN Ltd

November 2015

By UJVN Limited

Dehradun

UJVN Limited
(A Govt. of Uttarakhand Enterprise)



उत्तराखण्ड UTTARAKHAND 27AA 964172

BEFORE THE HON'BLE UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

FILING NO. _____

CASE NO. _____

In the matter of: Filing of Petition for Approval of Business Plan for Second Control Pertiod from 2016-17 to FY 2018-19 for UJVN Ltd.

AND

In the matter of: UJVN Ltd. is a Company incorporated under the provisions of the Companies Act, 1956 and having its registered office at "UJJWAL", Maharani Bagh, GMS Road, Dehradun.

.....Petitioner.

Affidavit

I, Lalit Mohan Verma S/o Late Sh. S. L. Verma, aged 57 years, working as Director (Finance), UJVN Ltd., residing at Gali No. 2, House No. 3, Vasant Vihar Enclave, Dehradun-248006 the deponent named above, do hereby solemnly affirm and state on oath as under: -

L.M. VERMA
Director (Finance)
Uttaranchal Jal Vidyut Nigam Ltd.
Dehradun (Uttarakhand)

1. That the deponent, the petitioner in the matter, is the Director (Finance) of UJVN Ltd., Maharani Bagh, G.M.S. Road, Dehradun and is acquainted with the facts deposed below.
2. I, the deponent named above do hereby verify that the contents of the Paragraph No. 1 of the affidavit and those of the paragraph No. 1 to 12 of the accompanying petition are true and correct to my personal knowledge and based on the perusal of official records, information received and the legal advice which I believe to be true and verify that no part of this affidavit is false and nothing material has been concealed.

L.M. VERMA
Director (Finance)
Uttaranchal Jal Vidyut Nigam
Dehradun (Uttarakhand)

(Deponent)

I, V.S Chauhan Advocate, DDn, do hereby declare that the person making this affidavit is known to me and I am satisfied that he is the same person alleging to be deponent.

(Advocate)

Solemnly affirmed before me on this 28th day of Nov 2015 at 3-45 a.m./ p.m. by the deponent who has been identified by the aforesaid advocate.

I have satisfied myself by examining the deponent that he understood the contents of the affidavit, which has been read over and explained to him. He has also been explained about Section 193 of Indian Penal Code that whosoever intentionally gives false evidence in any of the proceedings of the Commission or fabricates evidence for purpose of being used in any of the proceedings shall be liable for punishment as per law.

(Notary Public)

This Affidavit is sworn before me by Shri Lalit Mohan Verma
at Delhi
28/11/15

यूजेवीएन लिमिटेड

(उत्तराखण्ड सरकार का उपक्रम)

UJVN Limited

(A Govt. of Uttarakhand Enterprise)

कार्यालय कम्पनी सचिव, "उज्जवल" महारानी बाग, जी0एम0एस0 रोड, देहरादून–248 006 (उत्तराखण्ड) दूरभाषः 0135–2769919, फैक्स 0135–2761549
Office of the Company Secretary, "Ujjwal" Maharani Bagh, G.M.S. Road, Dehradun-248006 Phone 0135-2769919 , Fax 0135-2761549
Email: secujvnl@ujvnl.com Web site: uttarakhandjalvidyut.com Fax 0135-2769919

ISO 9001:2008 Certified

CIN No. U40101UR2001SGC025866

CIRCULAR RESOLUTION DATED 27-11-2015 PASSED BY BOARD OF DIRECTORS OF UJVNL

Approval of Business Plan for UJVN Ltd. for Second Control Period from financial year 2016-17 to 20418-19 for all 10 LHPs.

After consideration, the Audit Committee passed the following resolution:-

RESOLVED THAT the MYT Business Plan for UJVN Ltd for the Control period from FY 2016-17 to FY 2018-19 presented to the Board be and are hereby approved.

RESOLVED FURTHER THAT Shri S.N. Verma, Managing Director and/or Shri B.C.K. Mishra, Director (Operations) and/or Shri Sandeep Singhal, Director (Projects) and/or Shri L.M. Verma, Director (Finance) be and is/are hereby authorized to execute and file Business Plan Petition/applications, Written Statement, Rejoinders, Affidavit and make corrections/additions, modifications/ alternations in the documents filed and authenticate under his/their signature(s) and also to do all such legal acts, deeds or things as may be considered necessary in the interest of the Nigam.

RESOLVED FURTHER THAT the said Business Plan be got approved from the Board of Directors by circular resolution in order to complete the dead line of filing the documents before UERC on or before 30-11-2015.

RESOLVED FURTHER THAT the Audit Committee recommends to the Board of Directors to accept the aforesaid resolution.

After consideration, the Board of Directors accepted the recommendations of Audit Committee.

28/11/2015

(Arun Sabharwal)
Company Secretary
UJVN Limited
(A Govt. of Uttarakhand Undertaking)
"Ujjwal" Maharani Bagh
G.M.S. Road, Dehradun

DIRECTOR (FINANCE)
UJVN LIMITED

FILING NO. _____

CASE NO. _____

BEFORE THE HON'BLE UTTARAKHAND ELECTRICITY REGULATORY COMMISSION DEHRADUN, UTTARAKHAND.

In the matter of: Filing of Petition for Approval of Business Plan for Second Control Period from FY2016-17 to FY2018-19 for UJVN Ltd

AND

In the matter of: UJVN Ltd. a Company incorporated under the provisions of the Companies Act, 1956 and having its registered office at UJJWAL, Maharani Bagh, GMS Road, Dehradun.

..... Petitioner

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DIRECTOR (FINANCE)
UJVN LIMITED

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AND

In the matter of: **UJVN Ltd. a Company incorporated under the provisions of the Companies Act, 1956 and having its registered office at UJJWAL, Maharani Bagh, GMS Road, Dehradun.**

.....Petitioner

1. Specific Legal Provisions under which the Petition is being filed

1.1. Regulation 8 of UERC (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2015 (hereinafter referred to as the "Tariff Regulations 2015") specifies as below:

" 8. Business Plan

(1) An Applicant shall submit, under affidavit and as per the UERC (Conduct of Business) Regulations, 2014, a Business Plan by November 30th, 2015, for the Control Period of three (3) financial years from April 1, 2016 to March 31, 2019,

a) The Business Plan for the Generating Company shall be for the entire control period and shall, interalia, contain-

(i) Capital investment plan, which shall include details of the investments planned by the Generating Company for existing stations, yearly phasing of capital expenditure alongwith the source of funding, financing plan and corresponding capitalisation schedule. This plan shall be commensurate with R&M schemes and proposed efficiency improvements for various plants of the company;

(ii) The capital investment plan shall show separately, on-going projects that will spill over into the years under review, and new projects (along with justification) that will commence in the years under review but may be completed within or beyond the tariff period;

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(iii) The Generating Company shall submit plant-wise details of the capital structure and cost of financing (interest on debt and return on equity), after considering the existing market conditions, terms of the existing loan agreements, risks associated in generation business and creditworthiness;

(iv) Details related to major shut down of machines, if any;

(v) Trajectory of performance parameters;

1.2. The present petition is being filed under the above provision of UERC (Terms and Conditions for Determination of Multi Year Tariff), 2015 for approval of Business Plan of UJVN Ltd for Second Control Period.

2. Limitation

Since an application for approval of Business Plan for second control Period by any generating company has to be filed before the Hon'ble Commission before 30th November, 2015 therefore, the present petition is not barred by limitation of Uttarakhand Electricity Regulatory Commission Conduct of Business Regulation 2014.

3. Facts of the case

The facts of the case are as follows:-

1) The Petitioner, UJVN Ltd. is a company incorporated under the provisions of the Companies Act, 1956, having its registered office at UJJWAL, Maharani Bagh, GMS Road, Dehradun.
2) It is submitted that Government of Uttaranchal (GoU) vide order dated November 5, 2001 transferred all hydropower assets of Uttar Pradesh Jal Vidyut Nigam Limited (UPJVNL) located in the State of Uttarakhand to UJVNL with effect from November 09, 2001. In compliance to the said order, administrative and financial control of all hydro power plants of UPJVNL in operation or under construction was taken over by UJVNL with effect from November 09, 2001. GOU order also defines the basis of division of assets and liabilities between UPJVNL and UJVNL and is self-explanatory.
3) Though, administrative and financial control was transferred to UJVNL on November 09, 2001, UJVNL initiated discussions with UPJVNL for formulation of transfer scheme as per the said GOU order on mutually agreed terms.
4) Government of Uttarakhand (GoU) has notified the provisional transfer scheme vide its notification no. 70/AS (E)/I/2008-04 (3)/22/08 dated 07/03/08.

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5) The Hon'ble Uttarakhand Electricity Regulatory Commission issued the following tariff regulations for hydro generating stations in the State of Uttarakhand, applicable for plants of capacity more than 25 MW.

   a. Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2004 (hereinafter referred to as the "Tariff Regulations 2004") issued on 14th May 2004. In accordance to the notification dated December 19, 2011, the Tariff Regulations 2004 were valid up to the date March 31, 2013.

   b. Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2011 (hereinafter referred to as the "Tariff Regulations 2011") issued on 19th December 2011. The Tariff Regulations 2011 were applicable from April 1, 2013 to March 31, 2016.

   c. Uttarakhand Electricity Regulatory Commission (Terms and Conditions for Determination of Multi Year Tariff) Regulations, 2015 issued on September 10, 2015. These regulations are applicable from April 1, 2016 onwards.

6) Under Multi Year Framework for generating company the petition for approval of Business plan for control period from financial year 2016-17 to 2018-19 is required to be filed before the Hon'ble UERC on or before 30.11.2015 for determination of Multiyear Tariff for Second Control Period.

7) In compliance to the regulation 8 of Tariff Regulations 2015 the petitioner has prepared Business Plan for second control period from FY 2016-17 to FY 2018-19. The business plan is enclosed with this petition at **Annexure-I.**

3.1. In view of above, the Hon'ble Commission is humbly requested to kindly approve the Business Plan of UJVN Ltd for Second Control Period from FY2016-17 to FY2018-19.

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4. Cause of Action

The cause of action for the present petition arises on the basis of compliance of the UERC(Terms and Conditions for Determination of Tariff) Regulations 2011 and UERC (Terms and Conditions for Determination of Tariff) Regulations 2015

5. **Ground of Relief**

Not applicable

6. **Detail of Remedies Exhausted**

Not applicable.

7. **Matter Not Previously Filed or Pending With any Court**

The Petitioner further declares that he has not previously filed any petition or writ petition or suit regarding the matter in respect of which this petition has been made, before the Hon'ble Commission, or any other court or any other authority, nor any such writ petition or suit is pending before any of them.

8. **Relief Sought**

8.1. The Hon'ble Commission may kindly approve the Business Plan of UJVN Ltd for Second Control Period from FY2016-17 to FY2018-19.

8.2. The Hon'ble Commission is requested to allow the petitioner to make revision to the current petition and submit additional & relevant information that may emerge or become available subsequent to this filing.

8.3. Grant suitable opportunity to the "Petitioner" within a reasonable time frame to file additional material information that may be subsequently available.

8.4. Condone any inadvertent omissions/ errors/ shortcomings and permit the "Petitioner" to add/ change/ modify/ alter this filing and make further submissions as may be required at a future date.

8.5. Consider and approve the "Petitioner's" application including all requested regulatory treatments in the filing.

8.6. Consider the submissions of "Petitioner" that could be at variance with the orders and regulations of the Hon'ble Commission, but are nevertheless fully justified from a practical viewpoint.

8.7. Pass such orders as the Hon'ble Commission may deem fit and proper keeping in mind the facts and circumstances of the case.

9. **Interim Order, in any, prayed for**

Not applicable.

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11. Particulars of Fee Remitted

Enclosed Demand Draft of Rs. 50,000.00 (Rs. Fifty Thousand only) bearing number 872495 from PNB Yamuna Colony, dated 26.11.2015.

12. List of Enclosures

Supporting documents and Annexure mentioned in the petition:

Annexure-I : **Business Plan for Second Control Period From FY 2016-17 to FY 2018-19** for UJVN Ltd.

(Signature of Petitioner)

DIRECTOR (FINANCE)
UJVN LIMITED

Verification

I, Lalit Mohan Verma S/o Sh. S. L. Verma, aged 57 years, working as Director (Finance), UJVN Ltd., resident of Gali No. 2, House No. 3, Vasant Vihar Enclave, Dehradun-248006 do hereby verify that the contents of the Paragraph No. 1 to 12 are true and correct to my personal knowledge and based on the perusal of official records, information received and the legal advice which I believe to be true and I have not suppressed any material fact.

(Signature of Petitioner)

DIRECTOR (FINANCE)
UJVN LIMITED

Annexure -I

Business Plan for second control period April 1, 2016 to 31 March 2019

BEFORE THE

HON'BLE UTTARAKHAND ELECTRICITY REGULATORY COMMISSION
DEHRADUN, UTTARAKHAND

DIRECTOR (FINANCE)
UJVN LIMITED

UJVNL

UJVN Limited
(A Govt. of Uttarakhand Enterprise)

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1. INTRODUCTION

Brief History

The history of UJVNL can be traced back to erstwhile U.P. State Electricity Board (UPSEB). The erstwhile U.P. State Electricity Board was trifurcated pursuant to enactment of U.P. Electricity Reforms Act, 1999. U.P. State Electricity Reforms Transfer Scheme, 2000 was promulgated for execution of the trifurcation of erstwhile UPSEB into U.P. Power Corporation Ltd. (UPPCL), U.P. Jal Vidyut Nigam Ltd. (UPJVNL) and U.P. Rajya Vidyut Utpadan Nigam Ltd. UPJVNL was erstwhile known and setup as UP Alparthak Evam Laghu Jal Vidyut Nigam Limited, a government company which was incorporated in 1985 to own, establish and operate small, mini and micro hydel projects. Later on the name of the company was changed to UP Laghu Jal Vidyut Nigam Limited and ultimately to UP Jal Vidyut Nigam Limited in 1996. By operation of the aforesaid Transfer Scheme all the Hydro Electric Projects earlier owned and operated by UPSEB were transferred to UPJVNL (a Govt. company existing prior to the said trifurcation) in addition to other projects owned and operated by the UPJVNL previously.

The State of U.P. was bifurcated by enforcement of U.P. Reorganization Act, 2000 (the Reorganization Act) as a result thereof the state of Uttarakhand came into existence. The Govt. of India issued an order dated 05-11-01 u/s 63(4)(a) of the Reorganization Act whereby assets and liabilities between UPJVNL and UJVNL were divided. By operation of this order all the Hydro Power Assets of UPJVNL located in the State of Uttarakhand were transferred to UJVNL. Since then UJVNL is operating all these hydro power plants.

Milestone	Date
UPSEB Unbundled under UPSEB Transfer Scheme	14-01-2000
Uttarakhand State Created under UP Reorganization Act	09-11-2000
UJVNL formed under Companies Act, 1956	12-02-2001
UJVNL Commenced Operations	09-11-2001
UJVNL Took Possession of Assets	09-11-2001

Vision, mission & values

Vision

The vision of UJVNL is to be a significant player in the National Power Sector and best corporate in Uttarakhand. It aims to be an excellent & efficient organization on the strength of its human resources and induce adjacent infrastructure business that provides opportunities for growth.

Mission

The mission of UJVNL is "Contribution towards improvement in the quality of life in Uttarakhand".

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Values

- Creation of value for all stakeholder
- Result oriented with professional work culture
- Earn trust through fair business practices with all
- Growth balanced with environmental protection & enrichment
- Law abiding

Key objectives of the company

UJVNL is a wholly owned Corporation of the Government of Uttarakhand. The main objects to be pursued by the company are as under:

1.1.1.1. To establish takeover, operate and maintain power generating stations harnessing the conventional, non-conventional, nuclear and other sources of energy by what so ever name called that include sub-stations, transmission lines, other ancillaries and activities that are essential for generation, transmission, distribution and trading of power.

1.1.1.2. To carry on its activities within the State of Uttarakhand or elsewhere as may be found feasible.

1.1.1.3. To make arrangements with any Company, Authority, Government or other persons or institutions for the operation and maintenance of any generating station owned by it (including transmission lines and other works connected therewith) on such terms and conditions as may be agreed upon between it and the Company.

1.1.1.4. To take such measures as in the opinion of the Company, are calculated to advance the development of water power in the State of Uttarakhand and may carry out power and Hydro –metric survey work and cause to be made such maps, plans, sections and estimate as are necessary for any of the said purpose.

1.1.1.5. To carry out investigation and to prepare one or more schemes relating to the establishment or acquisition of generating stations, tie-lines, sub-stations and transmission lines for promoting the use of electricity within the State of Uttarakhand.

1.1.1.6. To operate and maintain in the most efficient and economical manner the generating stations, tie-lines, sub-stations and main transmission lines, owned by the Company.

1.1.1.7. To enter into agreement with any licensee licensed under the Indian Electricity Act, 1910 or any other Act, Law of Regulation in force for the time being, or as modified from time to time or with any person for use of any transmission line, distribution line or main transmission line of that licensee or person for such time and upon such terms as may be agreed.

1.1.1.8. To enter into arrangement on such terms as may be agreed upon, for the sale of electricity generated by it to the State Electricity Company constituted for Uttarakhand or for the sale of electricity generated by it to any other state, body, person by itself with the consent of such person or persons duly authorized or licensed under prevalent Laws and Regulations or on its own account.

1.1.1.9. To avail such rights, exercise such powers and functions and to perform such duties as are conferred upon or expected of the company under the provisions of such Laws, legislation and regulations as are in force from time to time.

1.1.1.10. To do such other acts and things as are authorized to be done under the Electricity (Supply) Act, 1948, or any other Act, Laws or regulations in force or amended from time to time.

1.1.1.11. To do such other acts and things as are authorized to be done under Indian Electricity Act, 1910, as amended from time to time.

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1.1.1.12. Presently, UJVN Limited operates Hydro Power Stations ranging in capacity from 0.2 MW to 304 MW, totaling around 1284.85 MW. Though the State was more or less sufficient in energy generation to meet its own requirements at the time of its formation, it is falling short of power at present. As such efficient operation of exiting hydro power projects for economic well-being and growth of the State and its people has become relevant and essential.

Existing Installed Capacity

Currently, UJVN Limited has an installed capacity of 1284.85 MW with installed capacity of Power Stations ranging from 3 MW to 304 MW. The salient features of these existing Power Stations are summarized in Table 2.

Table 1: Salient Features of the Existing Power Stations

S.N	Power Station	Installed Capacity (MW)	Year of Commissioning	Type of Scheme	River	Design Head (m)	Design Discharge (m3/s)
1	MB-II	304.00	2008	ROR	Bhagirathi	247.60	142.00
2	Khodri	120.00	1984	ROR	Tons	57.90	200.00
3	Tiloth	90.00	1984	ROR	Bhagirathi	147.50	71.40
4	Chilla	144.00	1980	ROR	Ganga	32.50	565.00
5	Chibro	240.00	1975	ROR	Tons	110	200.00
6	Kulhal	30.00	1975	ROR	Yamuna	18.00	198.00
7	Ramganga	198.00	1975	Reservoir	Ramganga	84.40	235.60
8	Dhakrani	33.75	1965	ROR	Yamuna	19.80	199.20
9	Dhalipur	51.00	1965	ROR	Yamuna	30.48	199.20
10	Khatima	41.40	1956	ROR	Sharda	17.98	269.00
11	Pathri	20.40	1955	ROR	Ganga	9.75	253.00
12	M. Pur	9.30	1952	ROR	Ganga	5.70	255.00
13	Galogi	3.00	1907	ROR	Bhatta	285.00	1.36
	Total	**1284.85**					

Most of the Power Stations were commissioned by the early 1980's and the oldest Galogi Power Station was commissioned way back in 1907. Thus, it can be said that about more than 3 quarters of the capacity has been in operation for nearly 30 to 60 years and is, almost at the end of the life.

All the UJVN Limited Power Stations except Ramganga are run of the river stations and thus are highly dependent on water availability and monsoon for electricity generation. Table 2 summarizes generation of hydro projects in the last 5 years.

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Table 2: Generation of Hydro Projects in UJVN Limited for last 5 years

S. No	Power Station	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
1	Chibro	795.69	848.97	872.33	949.79	871.44	896.66
2	Khodri	361.77	382.87	397.84	435.79	406.87	411.79
3	Dhakrani	143.02	152.76	148.70	170.64	149.51	147.92
4	Dhalipur	210.84	229.58	230.81	255.17	231.22	219.06
5	Kulhal	142.53	157.83	158.15	178.52	156.11	152.63
6	Tiloth	504.41	516.11	454.96	382.18	380.55	478.81
7	Dharasu	1335.96	1351.15	1153.65	833.09	888.10	1217.98
8	Chilla	775.15	910.09	858.97	784.61	800.29	748.63
9	Ramganga	325.62	416.42	246.58	233.50	265.67	311.54
10	Khatima	155.94	164.00	155.61	114.77	45.17	104.47
Sub Total		**4750.92**	**5129.79**	**4677.62**	**4338.04**	**4194.93**	**4689.49**
11	Pathri	87.21	74.25	56.28	25.11	96.85	106.69
12	Mohd.Pur	29.94	24.10	31.86	41.87	51.82	48.89
13	Other SHPs	38.19	33.68	46.35	6.81	5.34	5.35
14	Total SHPs	155.34	132.03	134.49	73.78	154.02	160.93
Grand Total		**4906.26**	**5261.82**	**4812.11**	**4411.83**	**4348.95**	**4850.42**

Three Power Stations, namely MB-II, Chilla and Chibro account for nearly 60% of the total generation. However, since both Chilla & Chibro are more than 30 years old.

The generation in FY 15 has dipped down by 4.42% as compared to the FY 11 because of the fact that there has been a transfer of SHPs to UREDA by UJVN.

Upcoming Generation Capacity:

UJVN Limited plans to expand its current capacity base and has about 2034 MW of Generating Plants in different stages of planning and implementation. The details of the projects planned and currently being implemented by UJVN Limited in the coming years are presented in the Table 3 below.

DIRECTOR (FINANCE)
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Table 3: Planned Capacity Addition by UJVN Limited

S.No.	Name of Project	Estimated Potential (MW)	District	River/ Tributary	Expected COD
1	Vyasi	120	Dehradun	Yamuna	June, 2018
2	Lakhwar	300	Dehradun	Yamuna	Mar 2021
3	Bowla Nandprayag	300	Chamoli	Alaknanda	Sep 2021
4	Tamak lata	250	Chamoli	Dhauliganga	Mar 2027
5	Nand Pyayag Langasu	100	Chamoli	Alaknanda	Sep 2023
6	Sirkari Bhyol Rupsiabagar	210	Pithoragarh	Goriganga	Sep 2021
7	Kishau	660	Dehradun	Tons	March, 2027
8	Asiganga-I	4.5	Uttarkashi	Bhagirathi	FY 2017-18
9	Asiganga-II	4.5	Uttarkashi	Bhagirathi	Fy 2018-19
10	Bhilangana II A	24	Tehri	Bhagirathi	
12	Dunao	1.5	Pauri-Garhwal	Alakhnanda	FY 2016-17
14	Kaldigad	9	Uttarkashi	Bhagirathi	--
15	Kaliganga-I	4	Rudraprayag	Alakhnanda	FY 2018-19
16	Kaliganga-II	4.5	Rudraprayag	Alakhnanda	FY 2018-19
17	Madhmaheshwar	15	Rudraprayag	Alakhnanda	FY 2018-19
18	Pilangad	4.5	Uttarkashi	Bhagirathi	--
19	Sonegad	7	Uttarkashi	Bhagirathi	--
20	Suwarigad	2	Uttarkashi	Bhagirathi	FY 2017-18
21	Urgam-I	10	Chamoli	Alakhnanda	
22	Limchagad	3.5	Uttarkashi	Bhagirathi	FY 2018-19

Effort towards Diversification of Generation Base

Electricity demand in the state has grown exponentially due to rapid industrialization as a result of industry friendly policies and special package granted to the State by the Union Government. The demand for electricity has been growing at the rate of about 14% per annum during the last 8 years and the demand-supply gap is increasing.

At present power generation in the state is wholly dependent on Hydro projects and allocation of power from central pool is not sufficient to meet the requirement of the State. The power deficit becomes acute during winter season as freezing temperatures causes low river discharges leading to lower generation whereas demand goes up significantly.

Bottlenecks in development of Hydro projects

The state could not harness the full potential of Hydro power due to various reasons, notably among them are the inordinate delay in various clearances for the up-coming hydro projects, suspension / closure of 480 MW Pala Maneri & 381 MW Bhairoghati projects of State PSU (UJVN Limited), 600 MW Lohari Nag Pala project of NTPC Ltd. by Govt. of India and cancellation of already issued environment clearance to some Hydroelectric projects. Because of these factors the development of hydro power projects in the state is not taking place at desired pace. It is pertinent to mention that due to various environmental, social and religious issues, the development of hydro power in Uttarakhand state has been greatly hampered. Several religious agitations against developments of hydro power projects have resulted in the closure of three aforesaid hydro projects in the state and there is a strong demand for closure of other up-coming projects.

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Alternate Resources: Development of Gas based thermal power plant

For the reasons listed in the previous section, the State Government is exploring alternatives to hydro power. In this regard Gas Based Power Projects have been initiated by the State Government (UJVN Ltd, A Govt. Uttarakhand Undertaking) in joint venture with GAIL (India) Ltd. at Haridwar & Kashipur in Uttarakhand, but Government of India has informed that they do not have adequate Gas supply and have expressed its inability to allocate gas to the state for generation in near future.

Alternate Resources: Development of Solar Power Plants

- For the fulfilment of The Renewable purchase obligation (RPO for solar) for Uttarakhand as stated in Uttarakhand Electricity Regulatory Commission (Renewable Purchase Obligation, its compliance & implementation of REC framework), Regulations 2010, UJVN limited has taken several initiatives. UJVNL is currently exploring the feasibility of setting up solar PV based power plants in Uttarakhand. The following initiatives are being undertaken by UJVNL towards developing solar power in the state:
    - 100 kWp pilot project is being developed at the Headquarters
    - 500 kWp Roof top Solar PV Plant at Central Store, Pathri Power Station has been approved by Board in its 71st meeting held on 30-06-2014. Bids are being invited by UREDA.
    - Future projects under planning stage:

Implementation Phase	Type	Power station involved	Ownership	Capacity	Estimated investment (Rs Cr)
Commissioned on 24-12-2012.	Roof Top Solar PV Plant	Main Head Office "UJJwal"GMS Road Maharani Bagh, Dehradun	UJVN Ltd.	100 kW	2.73
Commissioned on 31-03-2015.	Roof Top Solar PV Plant	Pathri Power HEP, Bahadarabad, Haridwar	UJVN Ltd.	500 kW	3.51
To be implemented on BOO Basis up to 31-03-2016.	Grid Connected	Solar PV Project at Dhakrani HEP	UJVN Ltd.	1.466 MW	12.00
To be implemented on BOO Basis up to 31-03-2016	Grid Connected	Solar PV Project at Khodri HEP	UJVN Ltd.	4.398 MW	37.00
NIT for 7.00 MW Canal Bank Grid Connected Solar PV Plant on Bank of Yamuna Power Channel near Kulhal on BOOT basis. To be implemented upto 31/03/2017	Grid Connected	Kulhal HEP	UJVN Ltd.	7.00 MW	44.408
NIT for 7.00 MW Canal Bank Grid Connected Solar PV Plant on Bank of Yamuna Power Channel near Dhalipur on BOOT Basis. To be implemented upto 31/03/2017.	Grid Connected	Dhalipur HEP	UJVN Ltd.	7.50 MW	47.580

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Implementation Phase	Type	Power station involved	Ownership	Capacity	Estimated investment (Rs Cr)
NIT for 7.00 MW Canal Bank Grid Connected Solar PV Plant on Bank of Yamuna Power Channel near Dhakrani and Dakpathar Barrage on BOOT basis. To be implemented upto 31/03/2017.	Grid Connected	Dhakrani HEP and Dakpathar Barrage	UJVN Ltd.	4.50 MW	28.548

UJVN Ltd. as indicated in the above sections is looking at various sources of generation to augment its existing generation. In the above sections the endeavor of UJVN Ltd. has been to apprise the Commission the status of its initiatives in this regard. UJVN Ltd. shall file before the Commission the initiatives planned by it as soon as they take some concrete shape. At that stage UJVNL shall file before the Commission technical, financial and commercial details of the project for its approval.

Note on Manpower Planning of UJVN Ltd. during the Control Period is enclosed as Annexure-1.

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2. CAPITAL EXPENDITURE PLAN – UPCOMING PROJECTS

Vyasi Hydroelectric Project (120 MW)

Background

Vyasi HE Project is a run of the river scheme on river Yamuna, powerhouse of which is located near Hathiari village in the district of Dehradun in Uttarakhand. The scheme envisages construction of concrete dam of 86m height known as Vyasi dam located near Judo village (5 Km d/s of Lakhwar dam), 7m dia and 2.7 Km long Head Race Tunnel (HRT), 18m dia 63.5m high Surge Shaft, 2 nos. 4m dia. 209m long each Pressure Shafts and a Surface Power House to install two units of 60MW each. Water from Vyasi reservoir will be diverted by construction of Vyasi dam through a HRT and this water will be further carried through 2 nos. Pressure Shafts to Surface Power house at Hathiari to generate 120 MW from 2 units of 60 MW each.

The initial work on the project was started in 1979 and main civil works of the project were started in July, 1987 through 2 nos. of contracts for civil works viz. one for Vyasi dam and upstream half portion of HRT and another for Hathiari Power house, Surge shaft, Penstocks and downstream half portion of HRT. Work on this project has been in progress from the year 1987 to 1992 by Irrigation Dept. of erstwhile Uttar Pradesh state.Work on this project was stopped in 1992, and the whole project was handed over to UJVN Ltd. in 2008.

The construction power for the project has been planned from 33.75 MW (3x11.25 MW) Dhakrani power station. For this, three number of 33 KV single circuit transmission line of 25 Km length each from Dhakrani Power station to Lakhwar site was constructed earlier with 2 no.s Of arrangements out of above 3 nos. 33 KV lines for power supply to Hathiari substation.

Forest Clearance and Environmental Clearance were also earlier accorded in name of State Irrigation Department which have been transferred presently in favour of UJVNL. The EIA/ EMP studies has already been completed by G.B Pant Institute of Himalayan Environment and Development, Uttarakhand in Dec. 2006. As work on almost all structures was already in progress, land for restarting the work is readily available.

Since Vyasi HE project is the run of the river scheme on river Yamuna located downstream of Lakhwar dam and no storage is involved as such, there is no inter-state issue in case of Vyasi HE Project alone being, a run of the river scheme.

At present civil construction work of the project work is going on all the fronts of the project.

Capital Expenditure

The estimated cost of the project at February 2010 price level is Rs. 936.23 Crores including IDC of 72.51 Crores and Rs. 6.55 Crores of Financing Charges. The project is estimated to get completed by June, 2018. Capital expenditure of Rs. 662.95 Crores is projected to be incurred during the control period. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 4: Capital Expenditure during Control Period – Vyasi Project

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Particulars	Expenditure by I.D. till zero date	Up to Previous Year (n-1) by UJVN Ltd.	FY 2014-15	FY 2015-16			FY 2016-17	FY 2017-18	FY 2018-19
			Actual / Audited	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April - March)	Projected	Projected	Projected
a) Preliminary		21.07	21.07		2	2	4	1.29	0
b) Land	2.45	10.93	13.38		15	15	4.14	0	0
c) Works	8.76	4.19	12.95	4.52	30	34.52	130	100.32	40
j) Power Plant Civil works	26.1	7.57	33.67	4.2	20	24.2	60	40	14.7
k) Buildings	9	0.05	9.05	-0.03	1	0.97	3	3	3.64
m) Plantation			0			0	0.3	0.4	0.3
o) Miscellaneous	3.69	6.28	9.97	1.07	1	2.07	2	2	0.57
p) Maintenance During Construction		2.28	2.28	0.12	0.12	0.24	1	1	0.92
q) Special Tools and Plants		0.14	0.14			0	0.5	0.5	0.13
r) communication	10	11.49	21.49	0.08	0.2	0.28	4.5	4.5	3.29
x) Environment and Ecology		18.97	18.97		0.62	0.62	1.5	1.5	0.75
y) Losses on Stock			0			0	0	0	1.36
II - Establishment		13.34	13.34	2.26	2.26	4.52	10	11.86	10
III - Tools and Plants (limited to 1-2 crores)		0.94	0.94	0.03	0	0.03	0.03	0	0
IV - Suspense									
V - Receipt & Recoveries (-)		-2.87	-2.87	-1.95	0	-1.95	0	0	0
2- INDIRECT CHARGES									
i) Capitalised Value of abatement of Land Revenue					0	0	0	0	0.36
ii) Audit & Accounts Charges					0.27	0.27	1	1	1
A 2 - ELECTRICAL WORKS				0.2	20	20.2	70	40	19.59
INTEREST DURING CONSTRUCTION (At Debt :		1.08	1.08	1.34	9.09	10.43	30	22	9

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Particulars	Expenditure by I.D. till zero date	Up to Previous Year (n-1) by UJVN Ltd.	FY 2014-15	FY 2015-16			FY 2016-17	FY 2017-18	FY 2018-19
			Actual / Audited	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April - March)	Projected	Projected	Projected
Equity = 70:30)									
FINANCING CHARGES		0	0		0.55	0.55	3	2	1
Total	60	95.46	155.46	11.84	102.11	113.95	324.97	231.37	106.61

Details of the project cost

Table 5: Capital Cost – Vyasi Project

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VYASI H. E. PROJECT (120 MW), UTTARAKHAND
ABSTRACT OF COST (February 2010)

S. No	Description	Amount (Rs. in Crores)
A	**CIVIL WORKS**	
1	**DIRECT CHARGES**	
	I - Works	
	A - Preliminary	28.36
	B - Land	32.52
	C - Works	317.79
	J - Power Plant Civil Works	172.57
	K - Buildings	19.66
	M - Plantation	1.00
	O - Miscellaneous	16.61
	P - Maintenance During Construction	5.44
	Q - Special Tools and Plants	1.27
	R - Communication	34.06
	X - Environment and Ecology	23.34
	Y - Losses on Stock	1.36
	TOTAL OF I - WORKS	**653.97**
	II - Establishment	**49.72**
	III - Tools and Plants	**1.00**
	IV - Suspense	-
	V- Receipt & Recoveries	-0.94
	TOTAL DIRECT CHARGES	**703.74**
2	**INDIRECT CHARGES**	
	I - Capitalised Value of Abatement of Land Revenue	0.36
	II - Audit & Accounts Charges	3.27
	TOTAL INDIRECT CHARGES	**3.63**
	TOTAL CIVIL WORKS	**707.38**
B	**ELECTRICAL WORKS**	**149.79**
	TOTAL COST (CIVIL + ELECTRICAL)	**857.17**
	INTEREST DURING CONSTRUCTION	72.51
	FINANCING CHARGES	6.55
	TOTAL COST INCLUDING IDC & FINANCING CHARGES	**936.23**
	Total	**936.23**

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Status Update of Capital Expenditure

1. Vyasi Hydroelectric project (2X60 MW) is run-of-river scheme on river Yamuna in Dehradun district. GoU has directed to take up work on Vyasi HEP in the first stage. 30% works in Vyasi project already stands completed by UP Irrigation Department from 1987-1992.
2. Total power generation envisaged from project is 375.24 MU with Vyasi Stand alone operation and 439.80 MU with integrated operation of Vyasi & Lakhwar Projects.
3. Approved Cost of Vyasi project is 936.23 crore (including IDC &FC) and levelized tariff is Rs 4.19.
4. TEC of Vyasi Project has been received from CEA vide office memorandum No. 2/UTR/20/CEA/10-PAC/7508-38 dated 25.10.2011.
5. Environment clearance of Vyasi HEP has been transferred in favor of UJVNL by MOEF on 22.04.2010 after NHPC conveyed its NOC for the same.
6. R&R policy for Hydro Power Projects in Uttarakhand was finalized based upon references from NRRP 2007, THDC, Himachal Pradesh & Punjab and has been approved by GoU.
7. Formal final stage forest clearance has been received from MoEF in Oct-2013 and GO has been issued on 19.11.2013 for granting the lease of 99.93 ha forest land out of 868.08 ha diverted forest land for construction of Vyasi HEP to UJVN Limited for 30 years.
8. The supplementary agreement was formally executed between UJVN Limited and M/s NPCC Limited in Mar, 2012 for Power House and related civil works. Work for Consultancy services for Design Engineering of Vyasi Project has been awarded in July 2012.
9. LoI for construction of balance civil works of Dam and associated structures was awarded to M/s Gammon India Limited on 10.12.2013.
10. LoI for E&M works of Vyasi Project have been issued to M/s BHEL Limited on 26th Mar, 2014 and agreement for the same has been signed on 10.06.2014.
11. NIT for Hydro Mechanical works have been published.
12. Till March 2015, UJVN has spent an amount of Rs. 95.46 Crores on the project whereas the Irrigation department has spent Rs. 60 crores on the project.

Financing of Capital Expenditure

The project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 662.95 Crores planned for the control period, debt component will be Rs. 464.065 Crores and equity contribution will be Rs. 198.995 Crores. Equity will be provided by GoU from budgetary support envisaged for UJVN Limited while debt is yet to be tied-up with financial institutions through a tender has been floated for debt tie-up. The financing charges for the control period will be Rs. 6 crores and Interest during the construction in the control period will be Rs. 61 crores. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 6: Funding Pattern during the Control Period – Vyasi Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Capital Expenditure	113.95	324.97	231.37	106.61
Debt (70%)	79.77	227.48	161.96	74.63
Equity (30%)	34.19	97.49	69.41	31.98

The details of the capital expenditure of the Vyasi HEP have been attached in the **Annexure -2**

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Capitalization Schedule

As per the Commissioning schedule, Vyasi project will get commissioned in June, 2018. The entire capital expenditure of Rs. 932.36 Crores will get capitalized in FY 2018-19. Year-wise capitalization during the control period is provided in the table below:

Table 7: Capitalization during the Control Period – Vyasi Project

Capitalisation	932.36

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Lakhwar Multipurpose Project (300 MW)

Background

Lakhwar Project is a part of multipurpose scheme primarily a peaking power station on river Yamuna in the district of Dehradun in Uttarakhand. The scheme envisages construction of 204m high concrete dam on river Yamuna near Lohari village. The Multipurpose scheme also envisages construction of Vyasi HEP (Hathiari power station) downstream of Lakhwar HEP. The scheme also includes construction of a barrage at Katapathar about 3 Km downstream of Hathiari powerhouse station (Vyasi HEP) on river Yamuna. The inflow and stored water in Lakhwar and Vyasi reservoir after generation of power at Lakhwar underground power house and Hathiari power house will be balanced at Katapathar barrage for downstream use. As a result of regulated flow from the Katapathar barrage, it is also assessed that about 75 MU of additional energy would be generated from the existing downstream projects of Uttarakhand state such as Dhakrani, Dhalipur, Kulhal and Khara. The live storage of Lakhwar reservoir is estimated to be 330.66 MCum.

The project was originally approved by planning commission with estimated cost of Rs. 140.97 crores in Jan, 1976 as multipurpose scheme. Environmental clearance was accorded to the project by MOE&F in Feb, 1987.

The initial work of Lakhwar Vyasi Project was started in 1979 and three major contracts for construction of main civil works of the project were signed in July, 1987. Some construction works such as abutment stripping for Lakhwar dam, construction of 2 nos. diversion tunnels, part excavation of underground powerhouse, part excavation of tail race tunnel etc at Lakhwar site and abutment stripping for Vyasi dam, excavation of head race tunnel, diversion channel, part excavation of surge shaft, pressure shaft, surface powerhouse, etc at Vyasi/ Hathiari site have been completed. However, the progress on construction of project works suffered and since the end of 1992 almost all the construction works are stopped. A revised Detailed Project Report (DPR) was also prepared by State Government revising the project cost to Rs 1446 cr. based on 1996 price level and the same was submitted to CEA/ CWC.

Capital Expenditure

2.1.1.1. Since the end of 1992 works at project sites of Lakhwar and Vyasi were stopped by the then State Govt. After formation of Uttarakhand these projects were handed over to NHPC for its speedy execution through an MOU signed on 1st Nov. 2003.

2.1.1.2. NHPC after taking over the sites reviwed design, quantities, hydrology, geology etc. and prepared a new DPR for Lakhwar Vyasi combined schemes. During the process of preparation of DPR, additional investigation works relating to construction material survey, drifts (2 nos.) and drill holes (3 nos.) at Lakhwar dam site and river bed on Lakhwar dam axis (1 no.) had been done for further geological investigations.

2.1.1.3. The project sites are easily accessible by road and approach road to all work sites. Most of residential and non-residential buildings required for the construction of the project have been constructed at various sites. These residential quarters being very old and most of them lying unused, major repair work is required to maintain these buildings. Land required for starting the work is available.

2.1.1.4. Forest clearance & environment clearance of this project was accorded in 1986 & 1987 respectively in favour of Irrigation Department. MoEF vide letter F.No. 8-172/1986-FC (pt-1) dated 31.01.2014 accorded the approval of the Central Government for transfer of the lease in favour of UJVN Ltd in respect of 768.1552 hectares of forest land already diverted during 1986 in favour of Irrigation Department, GoU for construction of Lakhwar Project. MOEF has conveyed continuity of Environmental Clearance of Lakhwar Project vide letter no. J-12011/32/2010-IA.I dated 10.01.2011.

Status of the project

2.1.1.5. Lakhwar Multi Purpose project is a storage scheme (204 m high dam) on river Yamuna in Dehradun district, which in addition to providing Irrigation and drinking water benefits will also generate 300 (3X100) MW power. The Project has been declared as National Project wherein 90% of the cost of

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water component shall be provided as grant assistance by GoI. 30% of the Project construction stands completed by UPID from 1987-92.

2.1.1.6. Total power generation envisaged from project is 612.93 MU (at 23.3% P.L.F.) along with 139.56 MU enhancements in existing downstream projects i.e. Vyasi, Dhakrani, Dhalipur, Kulhal etc.

2.1.1.7. CWC has finalised Project Cost as Rs. 3966.51 Crores, cost of Irrigation component as Rs. 2578.23 Crores and cost of Power Component as Rs. 1388.28 Crores. Benefit Cost Ratio for Water Component has been finalized as 1.59:1.

2.1.1.8. Lakhwar Project has been cleared by the Technical Advisory Committee (TAC) of CWC in its meeting held on 14.12.2012 as conveyed vide MOM through letter no. 16/27/2012-PA(N)/8-32 dated 03.01.2013.

2.1.1.9. The forest and environmental clearance was granted by Deptt. of Env. Forest and Wild Life, GoI in Oct, 1986 and Feb, 1987 respectively. MOEF has conveyed continuation of earlier Environmental Clearance of Lakhwar Project in Jan-2011 and additional conditions shall be specified by the EAC, if any, based upon replies to the observations raised during presentation. Replies to observations of EAC were submitted to MoEF on 16.02.2013.

2.1.1.10. Proposal for change of user agency of 786.1552 ha out of 868 ha forest land already transferred in 1986 in favour of Irrigation Department to UJVN Ltd for balance construction of the Project was submitted to MOEF in Aug.2013 and First stage Forest Clearance was granted by FAC MoEF in Sept.2013 & Stage –II Forest clearance by MoEF was granted on 31.01.2014. GO for same has been issued on 01-03-2014.

2.1.1.11. Irrigation Department vide their letter no 4870/Lakhwar-1/C-10/JP dated 21.11.2013 closed the Agreement no 02/SE/LVCC-01/87-88 between ID and M/s J.P. Associates for the work of 204 meter high concrete gravity Lakhwar Dam, Intake, 300 MW Underground Power House and appurtenant works on river Yamuna in Dehradun District.

2.1.1.12. MoU for Design and Engineering of civil & HM works for the Project has been signed with Central Water Commission in Sep-2013.

2.1.1.13. MoU for Design consultancy services of Electro-mechanical works of the Project was signed with Central Electricity Authority in Aug-2014.

2.1.1.14. Bids for Pre Qualification of capable contractors for the construction of project have been opened in Aug, 2014 and evaluation of the same is in progress.

2.1.1.15. Meeting with Cabinet Secretary, GoI on 01.05.2014 – It was view of all present i.e. Secretary MoWR, Secretary MoP, Secretary MoEF, Chief Secretary GoU, Addl. Chief Secretary (Energy) GoU, representative of Planning Commission etc. that "there appears to be no legal hurdle in implementation of the Project.

2.1.1.16. Clarifications sought by Planning Commission from MoEF have been submitted on 05.09.2014.

2.1.1.17. Planning Commission has recommended the Project for sanction of Investment Clearance on 10.12.2014. Sanction is awaited from ministry of water resources.

2.1.1.18. Chief Secretary, Govt. of Uttarakhand has requested Secretary, Ministry of Water Resources, GoI vide letter no.234/Secy/Power/2015 dated: 16.03.15 for early Investment clearance of this vital National Project.

Power Generation

2.1.1.19. Lakhwar Hydro project is a peaking power station with a proposed installed capacity of 3x100 MW. It shall utilize inflow of Yamuna River for power generation. This project will meet peaking demand of

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state of Uttarakhand which is facing acute power shortage due to thrust on industrialization of state after its separation from Uttar Pradesh.

2.1.1.20. Since Uttarakhand does not have any proven coal reserves and there is no proposal for nuclear installation in the state, it has therefore to rely essentially on its underdeveloped hydro potential for meeting states power requirement.

2.1.1.21. Lakhwar project is geographically very attractive project as it is only 72 km from state capital and most of the infrastructure work is already in place.

2.1.1.22. The unit cost of energy at Bus Bar, considering return of 14% on the Equity invested based on generation in a 90% dependable year with 95% machine availability as approved by CEA are as follows:

Tarrif	As per CERC Norms	As per UERC Norms
First Year	Rs 5.60 per kWh	5.28 per kWh
Levelised	Rs 4.79 per kWh	Rs 4.34 per kWh

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Table 8: Capital Expenditure – Lakhwar Project

Particulars	Up to Previous Year (2014-15)	Current Year (2015-16)			FY 2016-17	FY 2017-18	FY 2018-19	Total Expenditure Approved by Competent Authority	Total Expenditure Actually Incurred (Up to Sep 2015)
	Actual / Audited	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April - March)	Projected	Projected	Projected		
(1)	(2)	(3)	(4)	(5)=(4)+(3)	(6)	(7)	(8)	(9)	(12)=(3)+(4)
A) Expenditure Details	**Year of Commissioning: 2021-22**								
I- works									
a) Preliminary	52.19		3	3	5.19	8.07	3.46	44.28	52.19
b) Land	150.8116145		12	12	12	30	4.1	142.9232	150.8116145
c) Works	0.7618486			0	12.64	150	336	2423.8964	0.7618486
d) Regulatory and measuring devices				0				0	0
e) Falls				0				0	0
f) C.D. Works				0				0	0
g) Bridges				0				0	0
h) Escapes				0				0	0
i) Navigation works				0				0	0
j) Power plant and civil works				0	3.03	50	50	263.0419	0
k) Buildings	0.6521459	0.280711		0.280711	8.13	13	9.1	62.5175	0.9328569
l)Earthworks				0				0	0
m) Plantation				0				0	0
n) Tanks & reservoir				0				0	0

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Particulars	Up to Previous Year (2014-15)	Current Year (2015-16)			FY 2016-17	FY 2017-18	FY 2018-19	Total Expenditure Approved by Competent Authority	Total Expenditure Actually Incurred (Up to Sep 2015)
	Actual / Audited	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April - March)	Projected	Projected	Projected		
(1)	(2)	(3)	(4)	(5)=(4)+(3)	(6)	(7)	(8)	(9)	(12)=(3)+(4)
o) Miscellaneous	0.6386324	0.3048646		0.3048646	4.03	5.64	3.23	73.71	0.943497
p) Maintenance				0	0.33	4.27	7.55	32.858	0
q) Special tools and plants				0	1.53	1.26	0	2.7882	0
r) Communication	0.0009763			0	17.33	5	2	104.3109	0.0009763
s) Power plant and electric system				0				390.962	0
t) Water supply works				0				0	0
u) Distributory and minors				0				0	0
v) Water course				0				0	0
w) Drainage				0				0	0
x) Enviroment and ecology				0	3.58	7.15	7.86	35.7725	0
y) Losses on stock				0	0.08	0.99	1.89	8.2145	0
II - Establishment	0	0.2134271		0.2134271	5.39	12	10	309.8117	0.2134271
III - Tools and Plants	0			0	2.15	6.46	7.53	35.8528	0
IV - Suspense				0				0	0
V - Receipt & Recoveries (-)	0			0	0	0	0	-1.1506	0

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Particulars	Up to Previous Year (2014-15)	Current Year (2015-16)			FY 2016-17	FY 2017-18	FY 2018-19	Total Expenditure Approved by Competent Authority	Total Expenditure Actually Incurred (Up to Sep 2015)
	Actual / Audited	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April - March)	Projected	Projected	Projected		
(1)	(2)	(3)	(4)	(5)=(4)+(3)	(6)	(7)	(8)	(9)	(12)=(3)+(4)
2- INDIRECT CHARGES				0					0
i) Capitalised Value of abatement of Land Revenue	0			0	0.36	0.47	0.03	0.8633	0
ii) Audit & Accounts Charges	0			0	2.15	6.46	7.53	35.8528	0
Total (A)	**205.0552177**	**0.7990027**	**15**	**15.7990027**	**77.92**	**300.77**	**450.28**	**3966.5051**	**205.8542204**

Status Update of Capital Expenditure

1. Revised DPR with revised cost estimate based on price level of February, 2010 was submitted to CWC on 16th July, 2010.
2. A copy of revised DPR has been sent to member States of Upper Yamuna River Board (UYRB) in 2010 and again in 2012 for their views/comments regarding sharing of benefits. Rajasthan & Delhi have submitted their acceptance regarding sharing the benefits as per the MoU of 1994. Chairman, UJVN Limited has requested Principal Secretary, Irrigation Department, Haryana and Chief Secretary, U.P. for expediting their replies regarding sharing of benefits in continuation to earlier requests of UJVN Limited.
3. Replies to the comments of all the Directorates of CWC were submitted and clearances have been received.
4. The Project has been cleared by the Technical Advisory Committee of CWC in its meeting held on 14.12.2012.
5. The forest and environmental clearance was granted by Department of Environment Forest and Wild Life, GoI in October, 1986 and February, 1987 respectively.
6. MOEF has conveyed continuation of earlier Environmental Clearance for Lakhwar project with additional conditions as specified by the EAC of MoEF.
7. Till March, 2015 an amount of Rs. 205.06 crores has been made on the project.

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Financing of Capital Expenditure

2.1.1.23. Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 530 Crores planned during the control period, debt will be Rs. 371 Crores and equity contribution will be Rs. 159 Crores. Equity will be provided by GoU from budgetary support envisaged for UJVN Limited while debt is yet to be tied-up with financial institutions. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 9: Funding Pattern during the Control Period – Lakhwar Project

	Upto FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Capital Expenditure	205.06	15.80	77.92	300.77	450.28
Debt (70%)		11.06	54.54	210.54	315.20
Equity(30%)		4.74	23.38	90.23	135.08

The details of the Capital Expenditure have been attached in the Annexure -3

DIRECTOR (FINANCE)
UJVN LIMITED

Kishau Hydro Electric Project (660 MW)

Background

Kishau Dam Project would utilize the water of river Tons which is a major tributary of river Yamuna and forms boundary between Himachal Pradesh and Uttarakhand in most of its reaches in this region. The water stored in the Kishau reservoir shall be utilized for irrigation, power generation and to augment drinking water supply for National Capital Delhi.

The project with a proposed installation of 660 MW (4 x 165 MW) is envisaged to generate an annual energy of 1379 MU in a 90% dependable year with 95% of Installed Capacity.

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Status Update

2.1.1.24. Kishau project is a storage scheme on river Tons in Dehradun district, which in addition to power generation of 660 MW will provide Irrigation to 97076 ha and drinking/Industrial water benefits of 617 MCM also. As the project has been declared as National Project, financial assistance would be provided to the extent of 90% of the cost of water component as grant assistance by GoI. Sharing of water and Irrigation benefits among Yamuna Basin States presently is as per MoU of 1994 which is to be finalised by CWC / MOWR.

2.1.1.25. Water and irrigation benefits from the Project will be shared by Delhi, Uttar Pradesh, Rajasthan, Uttarakhand and Himachal Pradesh. The Project shall also help in controlling flood in River Yamuna.

2.1.1.26. Project cost excluding IDC is Rs 7193.24 crore at June, 2010 PL. Tariff will be worked out after final apportioning of cost between water and power components by MoWR.

2.1.1.27. Generation envisaged from Kishau Project is 1851.51 MU. In addition, there will be additional generation of 472.32 MU from existing downstream projects.

2.1.1.28. GoU formally allotted the Project to UJVN Limited on 06.06.2011.

2.1.1.29. Revised DPR with revised cost estimate based on PL June, 2010 was submitted to CWC on 15th Oct-2010. Replies to the comments of 5 Directorates of CWC/CEA were submitted by UJVN Limited.

2.1.1.30. GoU decided to execute the project in JV of GoU & GoHP.

2.1.1.31. Principal Secretary, PM Office, convened a joint meeting of Secretary, MoWR, Secretary, MoP, Secretary, Planning Commission and Chief Secretaries of Uttarakhand & Himachal Pradesh to expedite implementation of this vital "National Project" on 13.09.14 in New Delhi. In the meeting it was agreed that 90% cost of power component shall also be funded by Govt. of India. The issue shall be taken up with GoI on formation of Joint Venture by GoU & GoHP & registration of JV.

2.1.1.32. Director (IA), MoEF, GoI has been requested for issue of TOR for EIA/EMP studies of the Project on 28.04.2015 but this will be expedited after formation of the company.

2.1.1.33. Consensus has emerged on the MoU for Joint Venture formation in the meeting of Chief Secretaries of both the States held on 16.05.2015 in Dehradun.

2.1.1.34. MoU has been signed between Govt. of Himachal Pradesh and Govt. of Uttarakhand for Joint Venture formation on 20.06.2015 in presence of Hon'ble Chief Minister, Uttarakhand.

2.1.1.35. A meeting was held on 21.08.2015 at Shimla between MD, HPPCL and MD, UJVNL regarding finalization of modalities for formation of Joint Venture, wherein it was decided to form a company Kishau Multipurpose Project Development Corporation Limited. Process for registration of the company is in progress.

2.1.1.36. Principal Secretary (Energy), GoU has requested Secretary, MoWR, GoI to forward proposal for approval of funding of 90% cost of Power Component also by Govt. of India.

2.1.1.37. Tentative dates for execution of the project are as under:

Start of major works	Mar, 2018
Month/Year of Commissioning	Mar, 2027

1. The meeting between Chief Secretary, Government of Uttarakhand & Chief Secretary, Government of Himachal Pradesh was held on 16.05.2015 at Uttarakhand Secretariat, Dehradun regarding

DIRECTOR (FINANCE)
UJVN LIMITED

finalization of MoU for implementation of Kishau Multipurpose Project (660 MW) on river Tons in Sirmour District in Himachal Pradesh & Dehradun District in Uttarakhand.

2. The final MoU between Government of Uttarakhand & Government of Himachal Pradesh for the execution of Kishau Multipurpose Project (660 MW) has been signed between Principal Secretary (MPP & Power), Government of Himachal Pradesh and Secretary (Energy), Government of Uttarakhand on dated 20.06.2015. (copy enclosed).

3. A meeting was also held in Shimla, Himachal Pradesh on 21.08.2015 between M.D., UJVNL, alongwith Director (Projects) & other senior officers and M.D., HPPCL, alongwith Director (Civil), Director (Finance), Director (HR) & other senior officers for working out modalities for formation of SPV (Special Purpose Vehicle).

4. It has been agreed in the meeting held on dated 21.08.2015 at Shimla that all the issues i.e. environment clearance, EIA/EMP studies, Techno economic clearance, approval from CWC/CEA, GOI, Forest case, land acquisition etc. shall be undertaken by new company (SPV), once it comes in to existence. Till formation of SPV observation of CWC/CEA may be prepared jointly and application of TOR to MoEF may be filed jointly by two corporations.

5. As per item no. 9 of Minutes of Meeting circulated vide letter no. HPPCL/CP/Kishau/Vol-V/2015-10665-68 dated 09.09.2015 (copy enclosed) the Memorandum of Association (MOA) and Article of Association (AOA) of proposed SPV (Special Purpose Vehicle) was to be drafted by Company Secretary, HPPCL. The same has been received from Company Secretary, HPPCL on dated 29.10.2015 and submitted to Company Secretary, UJVNL and Sr. Law Officer UJVNL for their comments and observations on dated 30.10.2015.

6. After finalization, the Memorandum of Association (MOA) and Article of Association (AOA) of proposed SPV (Special Purpose Vehicle) would be submitted to the respective state Governments for approval before registration of the company under Companies Act 2013.

Sirkari Bhyol Rupsiabagar Hydroelectric Project (210 MW)

Background

2.1.1.38. Sirkari Bhyol Rupsiabagar HEP was allotted to UJVNL by GoU on 9th Dec, 2004.

2.1.1.39. Sirkari Bhyol Rupsiabagar Project (4X42 MW) is a run-of-river scheme on river Gori Ganga with 1200 meter of HRT in district Pithroagarh. About 30 Km long pedestrian route is available only for approaching the project site but the road is under construction by Border Roads & is expected to be completed by the time DPR is approved from CEA.

2.1.1.40. Total power generation is 662.08 MU. Project cost including IDC is Rs 1233.79 crore at Feb. 2014 Price level and tariff is Rs 4.23. Construction schedule of project is 54 months.

2.1.1.41. Work of preparation of DPR was allotted to M/s SMEC International Pty Ltd., Gurgaon. Agreement and work is under progress as per revised scope of work assigned to the firm.

2.1.1.42. Due to unprecedented flood occurred in June, 2013, topographical changes at barrage site were observed. These topographical changes lead to further revision of capacity and layout as a result of which project capacity is revised to 168 MW. Layout optimization study was carried out by the consultant and same was got reviewed by UJVNL.

2.1.1.43. Hydrology and Power Potential report was prepared and submitted to CEA/CWC in 24/09/2013 & 30/11/2013 respectively. The hydrology chapter was resubmitted on 29/08/2014. Fresh observations have been received in December 2014. Project layout was revised and approval on FRL/TWL of project along with revised capacity of 168 MW has been accorded by GoU vide letter dated 03.12.2014.

2.1.1.44. Geotechnical & Geological Investigation work is in progress. Drifting / Drilling Completed – 300 m out of total 650 m / 1000 m out of 1000 m. Later, in compliance to GSI observation in meeting on 24/12/14 and First Consultation meeting on 20/07/2015, the quantity of drilling and drifting was increased. At present, 1600m additional drilling and 310m additional drifting is proposed to be carried out as per direction of GSI/CEA.

2.1.1.45. G&D site was washed in June, 2013 flood. Establishment of new G & D site has been completed by Dec. 2014. In view of requirement of additional site details & geographical changes, consultant has requested for re-surveying for which action is being taken.

2.1.1.46. First stage clearance was accorded with approval of TOR on 17/08/2009. Distance of Barrage and Powerhouse from boundary of Askot Musk Deer Park is 23.57 km & 21.68 km respectively. Some EIA/EMP studies were conducted by WAPCOS but the same could not be completed.

2.1.1.47. Request was submitted to MoEF for issuance of fresh ToR for conduction EIA/EMP studies afresh & to complete balance geo technical works. Presentation was given in MoEf before EAC on 27-10-2015. The EIA/EMP studies shall be carried out as per requirement of ToR issued by MoEF.

Table 10: Construction Schedule of the Sirkari Bhyol Rupsiabagar HEP

Award of major works	March, 2017
Month/Year of Commissioning	Sep, 2021

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Capital Expenditure:

The plant is under the investigative and the planning stage and the finalization of the cost estimation is yet to be done. The expenditure on the investigation and planning for the HEP during the control period, FY 2017-FY 2019 will be Rs. 4.50 crores. The detailed year wise phasing of the expenditure has been given below:

Table 11: Capital Expenditure during the Control Period – Sirkari Bhyol Rupsiabagar Project

Particulars	Current Year (2015-16)			FY 2016-17	FY 2017-18	FY 2018-19
	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total			
a) Land						
b) Building						
c) Major Civil Works						
d) Plant & Machinery						
e) Vehicles						
f) Furniture and Fixtures						
g) Office Equipment & Others						
h) Others	0.71	2.00	2.71	2.50	1.00	1.00
Total	0.71	2.00	2.71	2.50	1.00	1.00

Table 12: Financing Plan of the Capital Expenditure during the control period

Particulars	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Capital Expenditure	2.71	2.50	1.00	1.00
Debt (70%)	1.90	1.75	0.7	0.7
Equity (30%)	0.81	0.75	0.3	0.3

The details of the Capital Expenditure have been attached in Annexure -4

DIRECTOR (FINANCE)
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Bowala Nand Prayag Hydroelectric Project (300 MW)

Background

2.1.1.48. Bowla Nand Prayag Project (4X75 MW) is a run-of-river scheme on river Alaknanda in district Chamoli. Bowala Nandprayag HEP was allotted to UJVNL on 1st July, 2002.

2.1.1.49. Total generation envisaged is 1340.06 MU. Project cost including IDC is Rs 2226.56 crore and Levelised tariff is Rs 3.41 at Feb., 2014 PL. Construction schedule of project is 60 months.

2.1.1.50. Clearance has been accorded by almost all the directorates of CEA/CWC & final Techno Economic Concurrence (TEC) from CEA is expected by end of Nov-2015.

2.1.1.51. TOR for revised project capacity of 300 MW was issued by MoEF on 09.09.2008. Report of EIA/EMP studies conducted by M/s Rites has been submitted by UJVNL to MoEF in April, 2011.

2.1.1.52. Public hearing has been successfully re-conducted on 18.10.2014 at Project site in the presence of ADM (Chamoli), officials of State Environment Protection & Pollution Control Board and the minutes have been forwarded by SEP & PCB on 20.11.2014 to MoEF. MoEF has been requested to issue environmental clearance for this project.

2.1.1.53. The Forest land case has been prepared in 07 nos. of copies as per requirement. Joint Inspection, Area demarcation and Tree counting has been completed. Total 8.604 Ha. Private land is required and Land case has been prepared & submitted to District Land Acquisition Officer.

2.1.1.54. The barrage of project is at 3.5 Km from the boundary of Kedarnath Wild Life Sanctuary (< 10 Km Periphery). Thus, clearance from NWLB is required for which case was submitted to Dy. C. F., Kedarnath Van Prabhag, Gopeshwar. No objection/ clearance from Wild life is awaited.

2.1.1.55. As per Forest Right Act 2006, NOC is required from villages of Van Panchayat i.e Bowala 9.282 Ha, Ropa 1.0 Ha., Pursari 13.667 Ha., Dusat 3.97 Ha. Efforts are in progress to get desired NoC from affected villages.

2.1.1.56. The approval of GoU was received in Nov-2011 to execute Bowala Nand Prayag & Nand Prayag Langasu Projects in Joint Venture through open bidding process. RFQ cum RFP document, Joint Venture Agreement & Share Holding Agreement have been finalized and submitted to GoU for approval on 18.01.2012. The same are under examination in Finance Department, GoU.

2.1.1.57. After discussion with Secretary (Energy), a note regarding implementation of Bowala Nand Prayag and Nand Prayag Langasu Projects through separate Joint Ventures has been forwarded to GoU on 20.12.2014.

2.1.1.58. The proposed construction schedule as approved by CEA is as below:

Table 13: Construction Schedule of the Bowala Nand Prayag

Start of major works	Oct, 2016
Month/Year of Commissioning	Sep, 2021

Capital Expenditure:

The estimated cost of the project at May 2012 price level is Rs. 3007.24 Crores including IDC of 612.39 Crores and Rs. 290.35 Crores for Financing Charges. It has been estimated that an amount of Rs. 422.61 crores will be spent on the project. The detailed year wise phasing of the capital expenditure has been given below:

Table 14: Capital Expenditure during the Control Period – Bowala Nand Prayag Project

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Particulars	Current Year (n)		Total Expenditure Incurred upto Current Year	Ensuing Year (n+1)	Ensuing Year (n+2)	Ensuing Year (n+3)
	Apr-Sep (Actual)	Oct-Mar (Estimated)				
a) Land				25.50	0.10	0.00
b) Building				8.00	17.30	4.90
c) Major Civil Works				1.00	131.45	158.20
d) Plant & Machinery				0.00	0.50	74.01
e) Vehicles				0.20	0.50	0.50
f) Furniture and Fixtures				0.10	0.05	0.00
g) Office Equipment & Others				0.20	0.10	0.00
h) Others	0.40	1.38	1.78			
Total	**0.40**	**1.38**	**1.78**	**35.00**	**150.00**	**237.61**

Financing of Capital Expenditure:

The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 422.61 Crores planned during the control period, debt will be Rs. 295.83 Crores and equity contribution will be Rs. 126.78 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt is yet to be tied-up with financial institutions. Equity contribution will be 26% from UJVN Limited and 74% by JV partner. Free equity offered by the probable JV partner over and above 10% threshold equity to UJVN Limited will be the basis of selecting the JV partner, thus UJVN Limited will be required to invest 16% or less of the equity component in the project. The equity contribution by UJVN Limited will be considered as investment in its books of accounts. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 15: Funding Pattern during the Control Period – Bowla Nand Prayag Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Capital Expenditure	1.78	35.00	150.00	237.61
Debt (70%)	1.25	24.5	105.00	166.33
Equity (30%)	0.53	10.5	45.00	71.28

Capex at various power stations is subject to necessary approval from competent authority

The details of the capital Expenditure have been attached in the **Annexure - 5**

DIRECTOR (FINANCE)
UJVN LIMITED

Nand Prayag Langasu Hydroelectric Project (100 MW)

Background

2.1.1.59. Nand Prayag Langasu Project (4X25 MW) is a run-of-river scheme on river Alaknanda in district Chamoli. Nand Prayag Langasu HEP was allotted to UJVNL by GoU on 6th Oct, 2005.

2.1.1.60. Total power generation is 490.45 MU. Project cost including IDC is Rs 1401.4 crore and tariff is Rs 4.70 on August 2010 PL. Construction schedule of project is 66 months.

2.1.1.61. DPR was prepared & submitted to CEA/CWC for TEC in March 2011. Observations of CEA & different directorates were received. Necessary action is in progress.

2.1.1.62. GSI observation on Geology has been replied on 05/03/2013 & further Revised work Program for Balance geotechnical activities at project site has been submitted on 01/03/2014. Some geotechnical investigations are balance which can be taken up on extension of ToR by MoEF. G&D site is in running condition and regular discharge measurements are being taken.

2.1.1.63. Approvals on the following aspects have been received till date:

1. Hydrology (CWC) on 20/10/2010
2. International (MOWR) on 07/06/2011
3. Inter State (CWC) on 20/01/2012
4. GSI on 25.11.2014

2.1.1.64. TOR was issued by MoEF on 21/10/2010 with a validity period of 2 years. MoEF was requested to increase the validity period of ToR of project for upto December 2016.The approval for extension of validity of ToR is still awaited.

2.1.1.65. Work for carrying out EIA/EMP studies was allotted in Jun-2012. EIA/EMP report has been submitted to MoEF & State Environment Protection & Pollution Control Board. Public hearing will be scheduled in December 2015.

2.1.1.66. GOU has decided to implement the project on JV & documents related to JV formation are under examination in GoU.

2.1.1.67. DPR work will be completed by December 2016 & techno economic clearance is expected by June 2017.

Table 16: Construction Schedule of Nand Prayag Langasu HEP

Start of major works	April, 2018
Month/Year of Commissioning	Sep, 2023

Capital Expenditure:

The estimated cost of the project at August 2010 price level is Rs. 1401.19 Crores including IDC & Financing Charges of 261.00 Crores.Capital expenditure of Rs. 4 Crores is projected to be incurred during the control period. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 17: Capital Expenditure during the Control Period – Nand Prayag Langasu Project

DIRECTOR (FINANCE)
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Particulars	FY 2015-16			FY 2016-17	FY 2017-18	FY 2018-19
	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April-March)			
a) Land						
b) Building						
c) Major Civil Works						
d) Plant & Machinery						
e) Vehicles						
f) Furniture and Fixtures						
g) Office Equipment & Others						
h) Others	0.2	0.61	0.81	1.00	2.00	1.00
Total	0.20	0.61	0.81	1.00	2.00	1.00

The details of the capital Expenditure have been attached in the **Annexure - 6**

Financing of Capital Expenditure:

The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 4 Crores planned during the control period, debt will be Rs. 2.8 Crores and equity contribution will be Rs. 1.2 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt is yet to be tied-up with financial institutions. Equity contribution will be 26% from UJVN Limited and 74% by JV partner. Free equity offered by the probable JV partner over and above 10% threshold equity to UJVN Limited will be the basis of selecting the JV partner, thus UJVN Limited will be required to invest 16% or less of the equity component in the project. The equity contribution by UJVN Limited will be considered as investment in its books of accounts. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 18: Funding Pattern during the Control Period – Nand Prayag Langasu Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Capital Expenditure	0.81	1.00	2.00	1.00
Debt (70%)	0.57	0.70	1.40	0.70
Equity (30%)	0.24	0.30	0.60	0.30

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Tamak Lata Hydroelectric Project (250 MW)

Background

2.1.1.68. Tamak Lata Project (4X62.5 MW) is a run-of-river scheme on river Dhauli Ganga in district Chamoli and situated in tribal areas. Tamak Lata HEP was allotted by GoU to UJVNL on 6th Oct, 2005.

2.1.1.69. Total power generation is 1041.13 MU. Project cost including IDC is Rs 1052.99 crore at Nov-2007 PL. Construction schedule of project is 42 months.

2.1.1.70. Hydrology and Power Potential Chapters were submitted to CEA in July,2007. Revised Power Potential chapter shall be resubmitted after finalization of new project layout. Hydrology of the project has been approved in 18/10/2011.

2.1.1.71. MoEF raised observations on project layout and directed to leave free riverine stretch as per MoEF guidelines. In compliance project layout was modified and Power House was shifted approximately 2.5 Km u/s from original location. MoEF has approved the location of Dam & Power House of the project with reduced capacity of 190 MW.

2.1.1.72. G&D site is in running condition and regular measurements are being taken.

2.1.1.73. Geotechnical & Geological investigation works has been completed at new Barrage location. The drawing with locations of Bore holes to be drilled at New Power House has been provided. The Drilling work shall commence after clearance from Supreme Court.

2.1.1.74. First stage clearance accorded with approval of TOR on 08/11/2005 which has been expired in 2007.

2.1.1.75. Combined Power Potential Studies was carried out by M/s THDC for Malari Jhelam, Jhelam Tamak & Tamak Lata & same was presented before EAC (MoEF) 57th meeting held on 27/04/2012, wherein, Approval has been granted by MoEF. Therefore, Tamak Barrage is at its original location, however, powerhouse is shifted to 2.5 km upstream to ensure free riverine stretch as per MoEF observation.

2.1.1.76. Reply to the observations of Expert Appraisal Committee for providing ToR for conducting EIA/EMP studies have been framed and same has been submitted on 16.03.2013 & 08.07.2013.

2.1.1.77. The approval of GoU was received in Nov-2011 to execute Tamak Lata Project in Joint Venture through open bidding process. RFQ cum RFP document, Joint Venture Agreement & Share Holding Agreement was finalized and submitted to GoU for approval in Feb-2012. The same are under examination in Finance Department, GoU.

Capital Expenditure:

The estimated cost of the project at November 2007 price level is Rs. 1053.45 Crores excluding IDC & Financing Charges. Capital expenditure of Rs. 2 Crores is projected to be incurred during the control period. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 19: Capital Expenditure during the Control Period – Tamak Lata Project

DIRECTOR (FINANCE)
UJVN LIMITED

Particulars	FY 2015-16			FY 2016-17	FY 2017-18	FY 208-19
	Apr-Sep (Actual)	Oct-Mar (Estimated)	Total (April-March)			
a) Land						
b) Building						
c) Major Civil Works						
d) Plant & Machinery						
e) Vehicles						
f) Furniture and Fixtures						
g) Office Equipment & Others						
h) Others	0.08	0.10	0.18	0.50	0.50	1.00
Total (A)	0.08	0.10	0.18	0.50	0.50	1.00
B) Break up of sources of financing						
a) Loans/ Borrowings	0.06	0.07	0.13	0.35	0.35	0.70
b) Equity	0.02	0.03	0.05	0.15	0.15	0.30
c) Others (Please specify)						
Total	**0.08**	**0.10**	**0.18**	**0.50**	**0.50**	**1.00**

The details of the capital Expenditure have been attached in the **Annexure - 7**

Financing of Capital Expenditure:

The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 2 Crores planned during the control period, debt will be Rs. 1.4 Crores and equity contribution will be Rs. 0.6 Crores. Equity will be provided from the budgetary support of GoU envisaged for UJVN Limited while debt is yet to be tied-up with financial institutions. Equity contribution will be 26% from UJVN Limited and 74% by JV partner. Free equity offered by the probable JV partner over and above 10% threshold equity to UJVN Limited will be the basis of selecting the JV partner, thus UJVN Limited will be required to invest 16% or less of the equity component in the project. The equity contribution by UJVN Limited will be considered as investment in its books of accounts. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 20: Funding Pattern during the Control Period – Tamak Lata Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Capital Expenditure	0.18	0.50	0.50	1.00
Debt (70%)	0.13	0.35	0.35	0.70
Equity (30%)	0.05	0.15	0.15	0.30

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Upcoming SHPs

There are many SHPs that are under various stages of the construction with the petitioner. The

Table 21: Capital Expenditure during the control period on the upcoming SHPs

All figures in Crores	Actual (2015-16)	Projected (2015-16)	Total (2015-16)	2016-17	2017-18	2018-19
Asiganga - I SHP (2X2250 kW)	0.00	0.00	0.00	16.19	10.64	0.00
Asiganga - II	0.27	0.00	0.27	0.50	0.50	0.50
KALIGANGA-I	0.00	3.81	3.81	21.47	16.82	0.00
KALIGANGA-II	0.00	6.32	6.32	24.18	17.15	11.68
Limchagad SHP (2X3500 kW)	0.01	0.00	0.01	0.50	0.50	0.50
MADHYAMAHESHWAR	0	15.17	15.17	57.75	68.11	47.96
Sawarigad SHP (2X1000 kW)	0.01	0.00	0.01	0.50	0.50	0.50
Bhilangana-II (A)	0.06	0	0.06	0	0	0
Sonegad SHP (2X3500 kW) (New Project)	0	0	0.00	0	0.5	0.5
URGAM-I	0	1.5	1.50	6.444	1.4395	0

*Capex at various power stations is subject to necessary approval from competent authority.

The details of the capital Expenditure have been attached in the **Annexure - 8**

DIRECTOR (FINANCE)
UJVN LIMITED

3. CAPITAL EXPENDITURE PLAN – EXISTING PROJECTS

Chibro Power Station (240 MW)

Background

3.1.1.1. Chibro Power Station is a Run-of-River scheme with an underground Power Station. It was the first underground Power Station in the North India and was commissioned in the year 1975. The Power Station draws water from Ichari dam located on the river Tons, one of the major tributary of river Yamuna.

3.1.1.2. Chibro Power Station is a unique engineering marvel in the country and was the first experience in carrying out tunnelling in the Himalayan Thrust Zones, which was a challenge due to varied rock structure and strength. There were unexpected challenges in the tunnelling effort. The water from Ichari Dam is fed into the Power Station through a 6.2 km long Head Race Tunnel (HRT). The Power Station comprising of 4 units of 60 MW each with Francis turbines of 62.66 MW output, is housed in a rock cavern with the major challenge of maintaining fresh air and safety measures due to constraint of space. Design head of the project is 110m.

3.1.1.3. On 5th of March 2008, UJVN Limited entrusted the Consultant, Lahmeyer International GmbH., with a comprehensive study for the modernisation and upgradation of the station. The study is financed by the Kreditanstalt fur Wiederaufbau (KfW), Germany.

Capital Expenditure

3.1.1.4. Capital Expenditure for the annual maintenance and the regular works works for the control period is estimated at Rs. 26.79 Crores.The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The cost under this head includes the expenses under the DRIP during the control period. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 22: Capital Expenditure during the Control Period – Chibro Project

Capital Expenditure (in Cr.)	7.38	17.83	5.49	3.47

Financing of Capital Expenditure:

3.1.1.5. The Project will be financed through a Debt: Equity ratio of 70:30. Out of Capex of Rs. 26.79 Crores planned during the control period, debt will be Rs. 18.75 Crores and equity contribution will be Rs. 8.04 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt will be provided by financial institutions like PFC, REC, NABARD, IREDA etc. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 23: Funding Pattern during the Control Period – Chibro Project

Capital Expenditure (in Cr.)	7.38	17.83	5.49	3.47
Debt (70%)	5.17	12.48	3.84	2.43
Equity (30%)	2.21	5.35	1.65	1.04

DIRECTOR (FINANCE)
UJVN LIMITED

Capitalization Schedule:

3.1.1.6. Total capital expenditure of Rs. 26.79 Crores will get capitalized during the control period. The year wise capitalization has been done to avoid the tariff shocks. The details of the additional capitalization have been provided in the **ANNEXURE – A**. Year-wise capitalization during the control period is provided in the table below:

Table 24: Capitalization during the Control Period – Chibro Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	1.72	1.72	0.86
Major civil works	2.00	5.19	0.00	0.00
Plant & Machinery	5.01	10.65	3.50	2.50
Vehicles	0.00	0.06	0.06	0.06
Furniture & Fixtures	0.13	0.04	0.04	0.04
Office Equipment	0.24	0.16	0.16	0.00
Total	**7.38**	**17.83**	**5.49**	**3.47**

DIRECTOR (FINANCE)
UJVN LIMITED

Khodri Power Station (120 MW)

Background:

3.1.1.7. The Power Station is located downstream of the Chibro Power Station and was commissioned in the year 1984. The Power Station draws water through a tunnel 5.6 km long and 7.5 m in diameter, directly from the collection gallery of the Chibro Power Station. The surface Power Station comprising 4 units of 30 MW each with Francis Turbines of 43,600 HP output is located on the banks of Yamuna. The outlet of the water from the Power Station is in river Yamuna, upstream of the Dakpathar Barrage. Design head of the Power Station is 57.9 m.

3.1.1.8. The operation of Chibro Power Station and the Khodri Power Station is another engineering marvel. The tandem control scheme between Chibro and Khodri Power Stations is in operation since January, 1984 and is the first of its kind in the country which optimizes the utilization of water for generation besides maintaining the safety of both the stations in case of outages.

3.1.1.9. On 5th of March 2008, UJVN Limited entrusted the Consultant, Lahmeyer International GmbH., with a comprehensive study for the modernisation and upgradation of the station. The study is financed by the Kreditanstalt fur Wiederaufbau (KfW), Germany.

Capital Expenditure:

3.1.1.10. Capital Expenditure for the annual maintenance and the regularworks is estimated at Rs. 29.02 Crores. The expenses under the DRIP head has been included in this figure. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 25: Capital Expenditure during Control Period – Khodri Project

Capital Expenditure (in Cr.)	3.22	13.69	8.00	7.33

Financing of Capital Expenditure:

3.1.1.11. The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 29.02 Crores planned during the control period, Rs. 20.31 Crores will be funded through debt and Rs. 8.71 Crores through equity. Equity will be provided by GoU through budgetary support envisaged for UJVN Limited while debt will be provided financial institutions like PFC, REC, NABARD and IREDA etc. Year wise phasing of debt and equity for the control period is provided in the table below:

Table 26: Funding Pattern during the Control Period – Khodri Project

Capital Expenditure (in Cr.)	3.22	13.69	8.00	7.33
Debt (70%)	2.25	9.58	5.60	5.13
Equity (30%)	0.97	4.11	2.40	2.20

DIRECTOR (FINANCE)
UJVN LIMITED

Capitalization Schedule:

3.1.1.12. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 27: Capitalization during the Control Period – Khodri Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.86	0.86	0.43
Major civil works	1.00	2.60	0.00	0.00
Plant & Machinery	2.08	10.10	7.00	6.85
Vehicles	0.00	0.03	0.03	0.03
Furniture & Fixtures	0.02	0.02	0.02	0.02
Office Equipment	0.12	0.08	0.08	0.00
Total	**3.22**	**13.69**	**8.00**	**7.33**

The details of the Additional capitalization has been attached in the ANNEXURE - B

Dhakrani Power Station (33.75 MW)

Background:

3.1.1.13. The Power Station is located on the downstream of the Dakpathar Barrage at a distance of 8 km on the Power Channel which takes off from the Barrage. The Power Station was commissioned in the year 1965.

3.1.1.14. The surface Power Station comprises of 3 units of 11.25 MW each with Kaplan Turbines of 14300 HP output. Water from Dhakrani Power Station feeds Dhalipur Power Station on its downstream side through the same Power Channel. Design head of the Power Station is 19.8 m.

3.1.1.15. On 5th of March 2008, UJVN Limited entrusted the Consultant, Lahmeyer International GmbH., with a comprehensive study for the modernisation and upgradation of the station. The study is financed by the Kreditanstalt fur Wiederaufbau (KfW), Germany.

Capital Expenditure:

3.1.1.16. Capital Expenditure for RMU works is estimated at Rs. 112.89 Crores.Capital expenditure of Rs. 51.22 Crores is projected to be incurred during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The total additional capital expenditure including RMU and DRIP expenses during the control period has been estimated at Rs. 75.26 crores. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 28: Capital Expenditure during the Control Period – Dhakrani Project

DIRECTOR (FINANCE)
UJVN LIMITED

Capital Expenditure (in Cr.)	1.87	27.28	19.20	28.77

Capex at various power stations is subject to necessary approval from competent authority

Financing of Capital Expenditure:

3.1.1.17. The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 75.26 Crores planned during the control period, debt will be Rs. 52.68 Crores and equity contribution will be Rs. 22.58 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt will be provided by KfW & PFC. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 29: Funding Pattern during the Control Period – Dhakrani Project

Capital Expenditure (in Cr.)	1.87	27.28	19.20	28.77
Debt (70%)	1.31	19.10	13.44	20.14
Equity (30%)	0.56	8.18	5.76	8.63

Capitalization Schedule:

3.1.1.18. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 30: Capex & Capitalization during the Control Period – Dhakrani Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.24	0.24	0.12
Major civil works	0.20	9.89	0.00	1.62
Plant & Machinery	1.56	17.05	18.52	27.01
Vehicles	0.00	0.01	0.08	0.01
Furniture & Fixtures	0.05	0.06	0.01	0.01
Office Equipment	0.05	0.04	0.36	0.00
Total	**1.87**	**27.28**	**19.20**	**28.77**

The details of the additional capitalization of has been provided in the ANNEXURE - C

DIRECTOR (FINANCE)
UJVN LIMITED

Dhalipur Power Station (51 MW)

Background:

3.1.1.19. The Power Station is located on the downstream of the Dhakrani Power Station at a distance of 4 km on the Power Channel which takes off from the Dakpathar Barrage. The Power Station was commissioned in the year 1965.

3.1.1.20. The surface Power Station comprises 3 units of 17 MW each with Francis Turbine of 24,000 HP output. The water from the Tail Race of the Power Station joins Asan River at Asan Barrage. Design head of the Power Station is 30.48 m.

3.1.1.21. On 5th of March 2008, UJVN Limited entrusted the Consultant, Lahmeyer International GmbH., with a comprehensive study for the modernisation and upgradation of the station. The study is financed by the Kreditanstalt fur Wiederaufbau (KfW), Germany.

Capital Expenditure:

3.1.1.22. Capital Expenditure for RMU works is estimated at Rs. 121.83 Crores. Capital expenditure of Rs. 82.34 Crores is projected to be incurred during the control period.The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The total capital expenditure including the RMU for the control period has been estimated at Rs. 108.80 crores. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 31: Capital Expenditure during the Control Period – Dhalipur Project

Capital Expenditure (in Cr.)	15.65	33.36	38.33	37.11

Capex at various power stations is subject to necessary approval from competent authority

Financing of Capital Expenditure:

3.1.1.23. The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 108.80 Crores planned during the control period, debt will be Rs. 76.16 Crores and equity contribution will be Rs. 32.64 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt will be provided by KfW & PFC. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 32: Funding Pattern during Control Period – Dhalipur Project

Capital Expenditure (in Cr.)	15.65	33.36	38.33	37.11
Debt (70%)	10.96	23.35	26.83	25.98
Equity (30%)	4.70	10.01	11.50	11.13

DIRECTOR (FINANCE)
UJVN LIMITED

Capitalization Schedule:

3.1.1.24. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 33: Capitalization during the Control Period – Dhalipur Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.37	0.37	0.18
Major civil works	0.30	14.94	1.15	7.02
Plant & Machinery	15.18	17.63	36.71	29.88
Vehicles	0.00	0.01	0.01	0.01
Furniture & Fixtures	0.11	0.06	0.01	0.01
Office Equipment	0.07	0.34	0.08	0.00
Total	**15.65**	**33.36**	**38.33**	**37.11**

The details of the additional capitalization of has been provided in the ANNEXURE - D

DIRECTOR (FINANCE)
UJVN LIMITED

Kulhal Power Station (30 MW)

Background:

3.1.1.25. The Power Station is located on the downstream of the Asan Barrage at a distance of 4.5 km on the Power Channel which takes off from the Asan Barrage. The Power Station was commissioned in the year 1975.

3.1.1.26. The surface Power Station comprising three units of 10 MW each with Kaplan turbine is located on the Power Channel. The water from the tail race flows towards Khara Power Station in UP. Design Head of the Power Station is 18 m.

3.1.1.27. On 5th of March 2008, UJVN Limited entrusted the Consultant, Lahmeyer International GmbH., with a comprehensive study for the modernisation and upgradation of the station. The study is financed by the Kreditanstalt fur Wiederaufbau (KfW), Germany.

Capital Expenditure:

3.1.1.28. Capital Expenditure for RMU works is estimated at Rs. 118.72 Crores. Capital expenditure of Rs. 104.10 Crores is projected to be incurred during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.**The total additional capital expenditure for the control period has been estimated at Rs. 123.90 crores which includes the RMU expenses. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 34: Capital Expenditure during the Control Period – Kulhal Project

Capital Expenditure (in Cr.)	19.26	62.18	46.05	15.67

Capex at various power stations is subject to necessary approval from competent authority

Financing of Capital Expenditure:

3.1.1.29. The Project will be financed with the Debt: Equity ratio of 80:20. Out of Capex of Rs. 123.90 Crores planned during the control period, debt will be Rs. 86.73 Crores and equity contribution will be Rs. 37.17 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt will be provided by KfW & PFC. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 35: Funding Pattern during the Control Period – Kulhal Project

Capital Expenditure (in Cr.)	19.26	62.18	46.05	15.67
Debt (70%)	13.48	43.53	32.24	10.97
Equity (30%)	5.78	18.65	13.82	4.70

DIRECTOR (FINANCE)
UJVN LIMITED

Capitalization Schedule:

3.1.1.30. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 36: Capitalization during the Control Period – Kulhal Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.22	0.22	0.11
Major civil works	0.50	12.16	0.00	0.00
Plant & Machinery	18.56	49.70	45.75	15.55
Vehicles	0.00	0.01	0.01	0.01
Furniture & Fixtures	0.15	0.06	0.01	0.01
Office Equipment	0.05	0.04	0.07	0.00
Total	**19.26**	**62.18**	**46.05**	**15.67**

The details of the additional capitalization of has been provided in the ANNEXURE - E

Tiloth Power Station (90 MW)

Background:

3.1.1.31. Maneri Bhali Stage-I Project harnesses power potential of river 'Bhagirathi' between Maneri and Tiloth in district Uttarkashi for generation of electrical power. The Power Station was commissioned in the year 1984.

3.1.1.32. The Power Station consists of three generating units of 30 MW. Each Unit has vertical shaft, suspension type Hydro-Generator coupled to Francis type hydro turbines supplied by M/s. BHEL. The Hydraulic system of the Power Station consists of a diversion dam at Maneri and about 6.5 Km long, 6 m dia pressure tunnel, surge tank at the end of tunnel and a single penstock controlled by a gate at surge tank, trifurcating into three units penstock near the upstream of Power Station building, each controlled by a spherical valve of 1.8 m dia operating under a head of about 180 m. Each unit is connected to the tail race channel through the draft tube controlled by a draft tube gate. The tail race is a short open channel connecting to river Bhagirathi.

3.1.1.33. On 5th of March 2008, UJVN Limited entrusted the Consultant, Lahmeyer International GmbH., with a comprehensive study for the modernisation and upgradation of the station. The study is financed by the Kreditanstalt fur Wiederaufbau (KfW), Germany.

DIRECTOR (FINANCE)
UJVN LIMITED

Capital Expenditure:

3.1.1.34. Capital Expenditure for the annual maintenance and regular plant works including the DRIP is estimated at Rs. 58.72 Crores during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The year wise phasing of the capital expenditure during the control period is shown in the following table:

Table 37: Capital Expenditure during the Control Period – Tiloth Project

Capital Expenditure (in Cr.)	9.30	49.55	2.75	6.42

Capex at various power stations is subject to necessary approval from competent authority

Financing of Capital Expenditure:

The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 58.72 Crores planned during the control period, debt will be Rs. 41.10 Crores and equity contribution will be Rs. 17.61 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt will be provided by financial institution like PFC, REC, NABARD and IREDA etc. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 38: Funding Pattern during the Control Period – Tiloth Project

Capital Expenditure (in Cr.)	9.3	49.55	2.75	6.42
Debt (70%)	6.51	34.69	1.93	4.49
Equity (30%)	2.79	14.87	0.83	1.93

Capitalization Schedule:

The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 39: Capitalization during the Control Period – Tiloth Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.65	0.65	0.32
Major civil works	9.00	44.15	0.00	0.00
Plant & Machinery	0.20	4.65	2.00	6.00
Vehicles	0.00	0.02	0.02	0.02

DIRECTOR (FINANCE)
UJVN LIMITED

Furniture & Fixtures	0.01	0.02	0.02	0.02
Office Equipment	0.09	0.06	0.06	0.06
Total	**9.30**	**49.55**	**2.75**	**6.42**

The details of the additional capitalization of has been provided in the ANNEXURE - F

DIRECTOR (FINANCE)
UJVN LIMITED

Chilla Power Station (144 MW)

Background:

3.1.1.35. The Power Station is a Run-of-River scheme on river Ganga located upstream of the holy city Hardwar and was commissioned in the year 1980.

3.1.1.36. The Power Station has four units of 36 MW each. The four Kaplan Vertical Shaft Turbines operate at a head of 32.5 m. Water of River Ganga from Pashulok Barrage is diverted through a Power Channel to feed the turbines of Chilla Power Station.

3.1.1.37. Government of Uttarakhand (GoU) entered into an agreement with CCC, Canada for Chilla Hydroelectric Project Up-gradation Program.

Capital Expenditure:

3.1.1.38. Capital Expenditure for RMU works is Rs. 459.98 Crores including IDC and financing charges. Initially funding was to be provided by EDC line of credit but an agreement could not be reached between borrower and GoU, now funding is likely to be tied up with Financial Institution like PFC, REC, IREDA, NABARD etc. Capital expenditure because of RMU of Rs. 98.95 Crores is projected to be incurred during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The total additional capital expenditure to be done including the RMU cost and DRIP will be Rs. 106.11 crores during the control period. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 40: Capital Expenditure during the Control Period – Chilla Project

Capital Expenditure (in Cr.)	20.83	5.25	48.62	52.24

Capex at various power stations is subject to necessary approval from competent authority

Financing of Capital Expenditure:

3.1.1.39. The project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 106.11 Crores planned during the control period, debt will be Rs. 74.28 Crores and equity contribution will be Rs. 31.83 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt is required to be arranged from financial institutions like PFC, REC, NABARD and IREDA etc. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 41: Funding Pattern during the Control Period – Chilla Project

Capital Expenditure (in Cr.)	20.83	5.25	48.62	52.24
Debt (70%)	14.58	3.68	34.03	36.57
Equity (30%)	6.25	1.58	14.59	15.67

DIRECTOR (FINANCE)
UJVN LIMITED

Capitalization Schedule:

3.1.1.40. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 42: Capitalization during the Control Period – Chilla Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	1.03	1.03	0.52
Major civil works	17.00	2.60	0.00	0.00
Plant & Machinery	3.67	1.00	47.38	51.52
Vehicles	0.00	0.44	0.07	0.07
Furniture & Fixtures	0.02	0.06	0.03	0.03
Office Equipment	0.14	0.13	0.11	0.11
Total	**20.83**	**5.25**	**48.62**	**52.24**

The details of the additional capitalization of has been provided in the ANNEXURE - G

DIRECTOR (FINANCE)
UJVN LIMITED

Khatima Power Station (41.40 MW)

Background:

3.1.1.41. The Power Station is located on the downstream of the Banbasa Barrage over River Sharda at a distance of 16 km on the irrigation canal which takes off from the Barrage. The Power Station was commissioned in the year 1955 & 1956. The surface Power Station comprising 3 units of 13.8 MW each with Kaplan turbines of 19200 HP output is located on the unlined irrigation canal. The water is utilized for the irrigation purpose in the command area of the canal. Design Head of the Power Station is 17.98 m.

3.1.1.42. The Khatima Power Station is a low head station with a design discharge of 269 cum. The discharge in the canal is regulated by Irrigation Department of Uttar Pradesh depending upon the irrigation requirement in the command area of the Irrigation canal and is also limited to the capacity of the escape channel downstream of the Power Station in case there is no demand.

Capital Expenditure:

3.1.1.43. Capital Expenditure for RMU works is estimated at Rs. 220.44 Crores. Capital expenditure of Rs. 62 Crores is projected to be incurred during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The total additional capital expenditure including the RMU expenses in the control period has been estimated at Rs. 63.35 crores. The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 43: Capital Expenditure during the Control Period – Khatima Project

Capital Expenditure (in Cr.)	35.99	50.54	12.49	0.32

Financing of Capital Expenditure:

3.1.1.44. The Project is being financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 63.35 Crores planned during the control period, debt will be Rs. 44.35 Crores and equity contribution will be Rs. 19.01 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while loan has been tied up with Power Finance Corporation. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 44: Funding Pattern during the Control Period – Khatima Project

Capital Expenditure (in Cr.)	35.99	50.54	12.49	0.32
Debt (70%)	25.19	35.38	8.74	0.22
Equity (30%)	10.80	15.16	3.75	0.10

DIRECTOR (FINANCE)
UJVN LIMITED

Capitalization Schedule:

3.1.1.45. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 45: Capitalization during the Control Period – Khatima Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.30	0.30	0.15
Major civil works	0.00	0.00	0.00	0.00
Plant & Machinery	35.86	50.20	12.15	0.15
Vehicles	0.00	0.01	0.01	0.01
Furniture & Fixtures	0.08	0.01	0.01	0.01
Office Equipment	0.04	0.03	0.03	0.00
Total	**35.99**	**50.54**	**12.49**	**0.32**

The details of the additional capitalization of has been provided in the ANNEXURE - H

DIRECTOR (FINANCE)
UJVN LIMITED

Ramganga Power Station (198 MW)

Background:

3.1.1.46. The Power Station is a Reservoir based scheme on river Ramganga located near the famous Jim Corbett Park in district Pauri Garwhal and utilizes the water dammed up for irrigation purpose. The Project was commissioned in the year 1975. The water in the irrigation channel is regulated by Irrigation Department of Uttar Pradesh. The generation from Power Station is dependent on the rains in the catchment area and also on the drawl of water for irrigation purpose in the command area of the canal. The surface Power Station is located at the toe of the dam and houses 3 units of 66 MW each with Francis turbines of 92400 HP. Design Head of the Power Station is 84.4 m.

3.1.1.47. The Ramganga Power Station is a medium head scheme with a design discharge of 285 cum. The Project has unique challenges in operation due to restriction imposed on the release of water in the water conductor system by Irrigation Department of Uttar Pradesh which is dependent on the demand of water in the command area of the canal based on the irrigation requirement. The generation in the station takes place after the monsoon season when the demand for irrigation picks up.

3.1.1.48. UJVN Limited has done comprehensive study in-house for the modernisation and upgradation of the station.

Capital Expenditure:

3.1.1.49. Capital Expenditure for RMU works is estimated at Rs. 455.22 Crores. Capital expenditure of Rs. 120.86 Crores is projected to be incurred during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The total additional capital expenditure including the RMU during the control period has been estimated at Rs. 146.09. The year wise phasing of the capital expenditure during the control period is shown in the following table.

Table 46: Capital Expenditure during the Control Period – Ramganga Project

Capital Expenditure (in Cr.)	2.08	6.62	46.19	93.28

Capex at various power stations is subject to necessary approval from competent authority

Financing of Capital Expenditure:

3.1.1.50. The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 146.09 Crores planned during the control period, debt will be Rs. 102.26 Crores and equity contribution will be Rs. 43.83 Crores. Equity will be provided from budgetary support of GoU envisaged for UJVN Limited while debt is yet to be arranged. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 47: Funding Pattern during the Control Period – Ramganga Project

Capital Expenditure (in Cr.)	2.08	6.62	46.19	93.28

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Debt (70%)	1.46	4.63	32.33	65.30
Equity (30%)	0.62	1.99	13.86	27.98

Capitalization Schedule:

3.1.1.51. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 48: Capex & Capitalization during the Control Period – Ramganga Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	1.42	1.42	0.71
Major civil works	0.00	0.00	0.00	1.19
Plant & Machinery	1.82	4.98	44.35	91.09
Vehicles	0.00	0.05	0.11	0.11
Furniture & Fixtures	0.06	0.04	0.04	0.04
Office Equipment	0.20	0.13	0.28	0.15
Total	**2.08**	**6.62**	**46.19**	**93.28**

The details of the additional capitalization of has been provided in the ANNEXURE - I

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Maneri Bhali - II Hydroelectric Project (304 MW)

Background:

3.1.1.52. Maneri Bhali Stage-II Hydroelectric Project utilizes a 285 m drop available in river Bhagirathi between the tail waters of Tiloth Power Station (Maneri Bhali Stage-I Project) and the head waters of Tehri Dam. The diversion structure is a baraage situated at Joshiyara, Uttarkashi which is about 152 km from Rishikesh, the nearest railhead. Joshiyara Barrage is designed to divert 142 cumecs of water through a 6 m dia. and 16 km long Head Race Tunnel to feed four Francis Turbines of the Power Station at MB-II.

3.1.1.53. This project has been commissioned in 2008 and is the second Power Project of UJVN Limited on river Bhagirathi.

3.1.1.54. Since its commissioning in the year 2008, Maneri Bhali Stage-II HEP has not been able to operate at its full capacity because of following reasons :

a. Restriction of reservoir level at 1104 m at Joshiyara Barrage instead of designed maximum level of 1108 m.

b. Heavy vibrations in the machines due to improper water evacuation through TRC, when load is increased beyond 275-280 MW.

c. For analyzing the issue of excessive vibrations, UJVN Ltd. approached various agencies and department to carry out the studies regarding TRC and finally the work of carrying out the CFD analysis of TRC was awarded to SVNIT, Surat.

d. The SVNIT faculty members along with Dr. Shrikant Bhave (retired expert of BHEL) visited the site and analyzed the problem. The remedy for the problem of excessive vibrations has been suggested by modifying the geometry of TRC.

Capital Expenditure:

3.1.1.55. Capital expenditure of Rs. 36.60 Crores is projected to be incurred during the control period. The expenditures of the head office have been equally apportioned among the various 10 LHPs based on the capacity of the LHPs. The apportionment sheet has been attached in the form of **Annexure-9.** The year wise phasing of the capital expenditure during the control period is shown in the table below:

Table 49: Capital Expenditure during the Control Period – Maneri Bhali - II Project

Capital Expenditure (in Cr.)	3.87	11.03	17.83	7.75

Financing of Capital Expenditure:

3.1.1.56. The Project will be financed with the Debt: Equity ratio of 70:30. Out of Capex of Rs. 36.60 Crores planned during the control period, debt will be Rs. 25.62 Crores and equity contribution will be Rs. 10.98 Crores. Year-wise allocation of debt and equity for the control period is provided in the table below:

Table 50: Funding Pattern during the Control Period – Maneri Bhali - II Project

Capital Expenditure (in Cr.)	3.87	11.03	17.83	7.75
Debt (70%)	2.71	7.72	12.48	5.43
Equity (30%)	1.16	3.31	5.35	2.33

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Capitalization Schedule:

3.1.1.57. The capital expenditure done year wise has been capitalized in the same year to reduce the effect of the tariff shocks. The details of the capitalization has been given below with the year wise phasing in the control period:

Table 51: Capex & Capitalization during the Control Period – Maneri Bhali - II Project

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
Land	0.00	0.00	0.00	0.00
Building	0.00	0.80	0.80	0.40
Major civil works	0.00	0.00	0.00	0.00
Plant & Machinery	3.69	10.00	16.80	7.20
Vehicles	0.03	0.03	0.03	0.03
Furniture & Fixtures	0.02	0.07	0.07	0.07
Office Equipment	0.13	0.13	0.13	0.05
Total	**3.87**	**11.03**	**17.83**	**7.75**

The details of the additional capitalization of has been provided in the ANNEXURE - J

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Refurbishment of Asan Barrage, at Dhalipur (Dehradun)

3.1.1.58. Yamuna Hydel Scheme Stage-IV envisages power generation by utilizing the tail race water of the Yamuna Hydel Scheme Stage-I along with flow of Asan River. To use water from river Asan, Asan Barrage is constructed at Dhalipur in District Dehradun along with a power channel to carry water to Kulhal power house of 30 MW installed capacity which has been constructed at the end of the power channel near village Kulhal. The construction of this project was completed in 1975.

3.1.1.59. Asan Barrage had been operated & maintained by Irrigation Department-Uttarakhand till 30th April, 2010 and since then it is being run and maintained by UJVN Limited.

3.1.1.60. In the last 35 years, no major repair of the Asan barrage and its associated structure has been done. Even it faced many floods. Due to record rainfall in August and September 2010, heavy floods have damaged treatment works in upstream as well as in downstream of the barrage.

3.1.1.61. The Asan Barrage, proposed for refurbishment has spent life of more than 36 years. Since commissioning of the project, it has been continuously under operation for diverting water to generating plants. It underwent heavy floods during monsoon period, every year carrying heavy logs and boulders with it. With the passage of time and continuous operation, a lot of defects in the infrastructure have developed. The sills and other components of Asan Barrage have gone weary. After creation of Uttarakhand state, the government has given a major thrust on the development of Hydo electric projects. A lot of work is being done by Uttarakhand Government towards making Uttarakhand an "Energy state". Under present scenario, apart from implementation of new projects it has become essential that maximum energy be harnessed from existing projects also. To ensure its reliable operation refurbishment of Asan Barrage is essentially required.

3.1.1.62. The refurbishment shall prevent the leakage of water from Asan Barrage, during lean season, which shall be utilized for generating more electricity. Further, its refurbishment is essential for its life extension and hassle free operation. Repair of damaged structures/components of Asan Barrage will certainly prevent further deterioration of structures/components so that threat to these structures and any loss of power generation may be averted in future.

3.1.1.63. The cost of Refurbishment of Asan Barrage is Rs 12.66 crores. The work is to be carried out under World Bank funded DRIP (Dam Rehabilitation and Improvement Project) Scheme. The expenditure shall be done in the year 2015-16 and 2016-17. In 2015-16 the expenditure will be Rs. 0.5 crores whereas in FY 2016-17 the expenses will be Rs. 12.16 crores, subject to approval by the DRIP Authorities. The expenses under this head has been booked under additional capital expenditure head for Kulhal HEP.

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Refurbishing of Ichari Dam, at Ichari, Koti (Dehradun)

3.1.1.64. Ichari Dam was built under Yamuna Hydro Electric Scheme Stage-II and it has been in operation since 1975. It is a straight Gravity Dam of 59.25 meter height from deepest foundation level with a live storage capacity of 5.11 million cum for diurnal variation. The total length of the dam at top is about 155 m with seven spilling bays each of 9.50 m clear opening. Spillways are provided with 16.50 m high and 9.5 m wide radial gates. The energy dissipation arrangement consists of slotted roller bucket in all spillway bays. Due to poor site conditions, special treatment on left bank of dam in D/S as well as in upstream has been made.

3.1.1.65. Ichari Dam was being operated and maintained by Irrigation Department up to 30/4/2010. Since the midnight of 30/4/2010, the dam is being operated and maintained by UJVN Limited.

3.1.1.66. For the last 35 years the dam has encountered many floods and no major refurbishment of dam and its associated structures/equipment has been carried out. Heavy floods due to record rainfall in August and September 2010 have further damaged the treatment provided in upstream as well as downstream of the dam.

3.1.1.67. The Ichari dam proposed for refurbishing has spent life of more than 35 years. Since commissioning, the dam is continuously under operation for diverting water to generating plants. Every year it encounters heavy floods during monsoon period, carrying heavy logs and boulders with it. With the passage of time and continuous operation a lot of defects in the Hydro-mechanical equipment have developed along with wear & tear. The sills and other components of Ichari Dam have gone weary. After creation of Uttarakhand state, the government has provided a major thrust on the development of Hydo electric projects. A lot of work is being done by Uttarakhand Government towards making Uttarakhand an "Energy state". Under present scenario, apart from implementation of new projects it has become essential that maximum energy be harnessed from existing projects also.

3.1.1.68. Since no major repair works have been carried out on Ichari Dam so far, its refurbishment is essentially required. The refurbishing shall prevent the leakage of water from Ichari Dam during lean season which would be utilized for generating more electricity. Further, its refurbishment is essential in view of its life extension and hassle free operation. Repair of damaged structures/components of Ichari Dam will certainly prevent further deterioration of structures/components so that threat to these structures and any loss of power generation may be averted in future.

3.1.1.69. The cost of Refurbishment of Ichari Dam is Rs 10.79 crores. The work is to be carried out under World Bank funded DRIP (Dam Rehabilitation and Improvement Project) Scheme. The expenditure shall be done in the year 2015-16 and 2016-17.In 2015-16 the expenditure will be Rs. 3.0 crores whereas in FY 2016-17 the expenses will be Rs. 7.79 crores, subject to approval by the DRIP Authorities. The expenses of this category has been put under the additional capital expenditure of Chibro and Khodri HEPs on the basis of the capacity of these two plants.

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Rehabilitation Work of Virbhadra Barrage, Pashulok, Rishikesh

3.1.1.70. Virbhadra barrage was constructed and commissioned in the year 1980 and during its Thirty years of operation, various components of barrage have gone under heavy wear and tear and are posing troubles during operational activity for passing the flood safely into downstream. After construction of Tehri and Koteshwar Dam, Virbhadra Barrage, Pashulok is playing its important role round the year for consistent power generation. In view of its importance and to ensure reliable operation Virbhadra barrage needs to be rehabilitated. Following are the main components where rehabilitation is required:

a. All gates of barrage, head regulator and silt ejector.
b. Piers and apron of barrage
c. Afflux bund seepage drain of pond.
d. Service road of afflux bund.
e. Painting on steel structures of barrage.
f. Painting on civil structures of barrage.
g. Electro- mechanical components such as motors and brake shoes.
h. Luminaries of barrage.
i. Renovation of Barrage Control Room including improvement of sanitation facility
j. Installation of Trash Rack Cleaning Machine
k. Automation of Barrage

3.1.1.71. Closure for special repair of submerged parts of Power channel and hydro mechanical components is necessary as the above said project runs throughout the year without any interruption except in high flood condition. A lot of wear & tear of very serious nature in civil structures as well as hydro-mechanical equipment takes place every year and therefore routine maintenance of submerged parts of structures is not possible. Since the commissioning of this project no regular closure have been taken for inspection and repair works of power channel and hydro-mechanical equipments. Lining and bed of power channel is severely damaged and is required to be repaired. In view of expected extensive damage to the components leading to loss of generation from projects any delay in the repair of power channel is undesirable.

3.1.1.72. The cost of Rehabilitation work of Virbhadra Barrage is Rs 19.6 crores. The work is to be carried out under World Bank funded DRIP (Dam Rehabilitation and Improvement Project) Scheme. The expenditure shall be done in the year 2015-16 and 2016-17. In 2015-16 the expenditure will be Rs. 17.0 crores whereas in FY 2016-17 the expenses will be Rs. 2.6 crores, subject to approval by the DRIP Authorities. The expenses of this category has been put under the additional capital expenditure of Chilla HEP.

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Refurbishment of Dakpathar Barrage, at Dakpathar (Dehradun)

3.1.1.73. A Barrage of 543.3m length with head regulator was commissioned in 1965 as a run-of-river scheme across river Yamuna at Dakpathar in Dehradun. From the barrage a flow of 198 cum/sec is diverted and conveyed through a power channel to Dhakrani (33.75MW) Powerhouse and Dhalipur (51 MW) Powerhouse where heads of 19.80 m and 30.50 m respectively are utilized for power generation. After generating power at Dhalipur power house, the diverted water from Dakpathar Barrage meets Asan river/pond behind Asan Barrage.

3.1.1.74. Dakpathar Barrage is provided with 6 nos. under sluices and 19 nos. spillway bays to discharge floods of River Yamuna. The head regulator takes off at an angle of 110° towards left bank of barrage. The provision of stop log gates is not available at the barrage. Therefore, a closure of powerhouse is required to carry out the repair work of gates and other submerged components of barrage. No repair work of submerged part has been carried out since 2005. During last seven years several floods have passed through the barrage and especially due to record floods in August and September 2010, the sill beams of gates and other associated structures have got severely damaged. As such restoration works are required to be taken up

3.1.1.75. The Dakpathar Barrage proposed for refurbishing has spent life of more than 46 years. Since the commissioning of the project, it is continuously under operation for diverting water to generating plants. Every year it has encountered heavy floods during monsoon period carrying heavy logs and boulders with it. With the passage of time and continuous operation a lot of defects in the installed system have developed. The sills and other components of Dakpathar Barrage have gone weary. After creation of Uttarakhand state, the government has provided a major thrust on the development of Hydroelectric projects. A lot of work is being done by Uttarakhand Government towards making Uttarakhand an "Energy state". Under present scenario, apart from implementation of new projects it has become essential that maximum energy be harnessed from existing projects also.

3.1.1.76. Since no major repair works have been carried out on Dakpathar Barrage so far, its refurbishment is essentially required. The refurbishing shall prevent the leakage of water from Dakpathar Barrage during lean season which would be utilized for generating more electricity. Further, its refurbishment is essential in view of its life extension and hassle free operation. Repair of damaged structures/components of Dakpathar Barrage will certainly prevent further deterioration of structures/components so that threat to these structures and any loss of power generation may be averted in future

3.1.1.77. The cost of Refurbishment of Dakpathar Barrage is Rs 25.33 crores. The work is to be carried out under World Bank funded DRIP (Dam Rehabilitation and Improvement Project) Scheme. The expenditure shall be done in the year 2015-16 and 2016-17. In 2015-16 the expenditure will be Rs. 0.5 crores whereas in FY 2016-17 the expenses will be Rs. 24.83 crores, subject to approval by the DRIP Authorities. The expenses of this category has been put under the additional capital expenditure of Dhakrani and Dhalipur HEPs on the basis of the capacity of these two plants.

Refurbishment of Maneri Dam at Maneri, Uttrakashi

3.1.1.78. Maneri Dam is situated across river Bhagirathi at Maneri, 15 Km towards Gangotri from district Uttarkashi. It is a 39 m high concrete gravity dam with 4 nos. ogee spillways having crest elevation at 1280.5 m, each 13 m wide, separated by 4 m wide piers and followed by a roller bucket at an elevation of 1261 m.

3.1.1.79. The power intake consists of 4 bays with sill beam level at the elevation of 1283.25 m and is located on left bank of river and designed for a maximum discharge of 99 cumecs. Out of this discharge 70 cumec is carried out through 8.86 Km long head race tunnel for power generation at Tiloth Power House (90 MW) & rest is discharged through flushing tunnel. The capacity of the dam reservoir is 0.6 million cubic meters.

3.1.1.80. Maneri Bhali Stage-I (3 x 30 MW) was commissioned in the year 1984 and it was constructed by UP Irrigation Department and financed by UPSEB. Since then Operation & Maintenance was carried out by Irrigation Department but since 19.10.08, the Operation & Maintenance of Maneri Dam has been taken over from Irrigation department by UJVN Ltd.

3.1.1.81. During its life, the Maneri Dam has faced several floods including the disastrous flood in August 1978 and due to this flood the reservoir got silted fully up to crest and since then, the total sediment load carried by the river has been passing through the spillway. Further, due to heavy floods in August and September, 2010, the sill beam of gates and other associated structures have got damaged severely.

3.1.1.82. There is an acute bend just upstream of dam spillway structure with a reverse acute bend about 50 m downstream of spillway structure. In addition to this a protruding rock cliff exists on the left bank downstream of spillway/dam axis. The above topographical features combined with floods induce the asymmetrical flow of water in the dam structure in the Upstream as well as Downstream sides. Moreover, the rolling down boulders along with heavy sediment load pass through the spillway, which often damages the surface of spillway and roller bracket.

3.1.1.83. The refurbishment shall prevent the leakage of water from Maneri Dam, during lean season, which shall be utilized for generating more electricity. Further, its refurbishment is essential in view of its life extension and hassle free operation. Repair of damaged structures/components of Maneri Dam will certainly prevent further deterioration of structures/components so that threat to these structures and any loss of power generation may be averted in future.

3.1.1.84. The cost for Refurbishment of Maneri Dam is Rs 53.15 crores. The work is to be carried out under World Bank funded DRIP (Dam Rehabilitation and Improvement Project) Scheme. The expenditure shall be done in the year 2015-16 and 2016-17. In 2015-16 the expenditure will be Rs. 9.0 crores whereas in FY 2016-17 the expenses will be Rs. 44.15 crores, subject to approval by the DRIP Authorities. The expenses of this category has been put under the additional capital expenditure of Tioth HEP.

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Table 52 : Summary of expenses proposed under DRIP Scheme and Closure Works (in Rs. Crores)

Categories	FY 2015-16	FY 2016-17	Total
Virbhadra Barrage	17	2.6	19.6
Ichari Dam	3	7.79	10.79
MB-1	9	44.15	53.15
Dakpathar Barrage	0.5	24.83	25.33
Assan Barrage	0.5	12.16	12.66
Total	**30**	**91.53**	**121.53**

Capex at various power stations is subject to necessary approval from competent authority

MAJOR SHUTDOWN PLAN OF POWER STATIONS

Major Shutdown Plan of Power Stations

3.1.1.85. Availability of a generating unit is dependent on the outages taken for the unit, both forced and planned. While the forced outages are minimized by having a robust maintenance plan, the planned outages are necessary for the smooth functioning of the unit. Either or all the following is included in an outage:

a. Schedule Preventive Measures
b. Audit History based Maintenance
c. Overall Operational Constraints
d. Technological Upgradation
e. Performance Improvement Measures
f. Statutory Compliances
g. Life Sustenance, Extension, Enhancement Actions

3.1.1.86. For enhancing the life of the plant and to get generation on sustained basis from the power station, timely maintenance of the power station and replacement of old equipment is essential. Most of the Power Stations of UJVN Limited are quite old and their units, auxiliaries and associated systems need major repair/renovation, modernization and uprating for enhancing the Generation output, Plant Availability and to cope-up with the technological changes taking place from time to time. Identifying the need and importance of RMU of Old Power Stations, UJVN Limited is proactively taking up RMU of its different Power Stations.

3.1.1.87. Considering the present power requirement of Uttarakhand state, UJVN Ltd. has staggered the RMU of its Power Stations and the RMU is being done in phases. The outages of various units during routine annual maintenance are staggered and planned based on expected generation from various units and criticality of the outage requirement. The outage plan may change based on the exigencies of the business. The proposed outage plan for the various generating units of UJVN Limited during the control period is shown in the table below:

Table 53 : Outage Plan of UJVN Limited for FY 2015-16

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	Outage Plan for F Y 2015-16					
Sl. No.	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
1	**Chibro (4x60)**	**Unit 1**	21/11/2015	20/12/2015	30	AM
		Unit 2	16/10/2015	14/11/2015	30	AM
		Unit 3	27/12/2015	25/01/2016	30	AM
		Unit 4	01/02/2016	30/04/2016	90	CM
2	**Khodri (4x30)**	**Unit 1**	15-11-2015	24-12-2015	40	AM
		Unit 2	28-12-2015	05/02/2016	40	AM
		Unit 3	10/02/2016	20-03-2016	40	AM
		Unit 4	10/02/2016	20-03-2016	40	AM
3	**Dhakrani (3x11.25)**	**Unit 1**	15-11-2015	24-12-2015	40	AM
		Unit 2	28-12-2015	05/02/2016	40	AM
		Unit 3	10/02/2016	20-03-2016	40	AM
			15/03/2016	31/03/2016	16	**DRIP CLOSURE**
4	**Dhalipur (3x17)**	**Unit 1**	16/11/2015	31/12/2015	46	AM
		Unit 2	nil	nil		
		Unit 3	10/12/2015	31/03/2016	113	CM
			15/03/2016	31/03/2016		**DRIP CLOSURE**
5	Kulhal (3x10)	**Unit 1**	**05/11/2015**	16/12/2015	42	AM
		Unit 2	**19/12/2015**	29/01/2016	42	AM
		Unit 3	**02/02/2016**	14/03/2016	42	AM
			15/03/2016	31/03/2016	16	DRIP CLOSURE
6	**Tiloth (3x30)**	**Unit 1**	15/08/2015	10/09/2015	27	AM
			26-02-2016	27-03-2016	31	AM
		Unit 2	15-08-2015	07-09-2015	24	AM
			28-03-2016	26/04/2016	30	AM
		Unit 3	15-08-2015	12-09-2015	29	AM
			16-11-2015	25-02-2016	102	CM

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	Outage Plan for F Y 2015-16					
Sl. No.	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
7	MB-II (4x76)	Unit 1	15-11-2015	13-01-2016	60	AM
		Unit 2	01-04-2015	29-04-2015	29	AM
			25-11-2015	02-02-2016	70	
		Unit 3	01-04-2015	08-05-2015	38	AM
			11-01-2016	10-03-2016	60	
		Unit 4	22-02-2016	31-03-2016	39	AM
8	Chilla (4x36)	Unit 1	25-12-2015	15/01/2016	22	AM
		Unit 2	20-11-2015	15-12-2015	26	AM
		Unit 3	21-08-2015	15-09-2015	26	AM
		Unit 4	31-01-2016	31-03-2016	61	AM
		DRIP CLOSURE	18-11-2015	17-12-2015	30	
9	Ramganga (3x66)	Unit 1	15-11-2015	24-12-2015	40	AM
		Unit 2	28-12-2015	05/02/2016	40	AM
		Unit 3	09/02/2016	20-03-2016	41	AM
10	Khatima (3x13.8)	Unit 1	01/10/2012	27/05/2015	969	RMU
		Unit 2	14/06/2015	31/03/2016	292	RMU
		Unit 3	15/10/2015	31/03/2016	169	RMU

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Table 54: Outage Plan of UJVN Limited for FY 2016-17

UJVN Ltd.						
Outage plan for F Y 2016-17						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
1	**Chibro (4x60)**	**Unit 1**	20-12-2016	18-01-2017	30	AM
		Unit 2	16-11-2016	15-03-2017	120	CM
		Unit 3	25-01-2017	23-02-2017	30	AM
		Unit 4	01/03/2017	30-03-2017	30	AM
2	**Khodri (4x30)**	**Unit 1**	01/03/2017	30-03-2017	30	AM
		Unit 2	25-01-2017	23-02-2017	30	AM
		Unit 3	20-12-2016	18-01-2017	30	AM
		Unit 4	16-11-2016	15-03-2017	120	CM
3	**Dhakrani (3x11.25)**	**Unit 1**	15-11-2016	24-12-2016	40	AM
		Unit 2	28-12-2016	05/02/2017	40	AM
		Unit 3	09/02/2017	20-03-2017	40	AM
			01/04/2016	30/04/2016	30	**DRIP CLOSURE**
4	**Dhalipur (3x17)**	**Unit 1**	01/12/2016	31/03/2017	121	CM
		Unit 2	16/11/2016	31/12/2016	46	AM
		Unit 3	01/01/2017	17/02/2017	48	AM
			01/04/2016	30/04/2016	30	**DRIP CLOSURE**
5	**Kulhal (3x10)**	**Unit 1**	01/10/2016	31/03/2017	182	RMU
		Unit 2	16/11/2016	31/12/2016	46	AM
		Unit 3	01/01/2017	17/02/2017	48	AM
			01/04/2016	30/04/2016	30	**DRIP CLOSURE**
6	**Tiloth (3x30)**	**Unit 1**	NIL	NIL		
			01/07/2016	01/10/2016	93	R.E & CM
		Unit 2	15/08/2016	05/09/2016	22	AM

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UJVN Ltd.						
Outage plan for F Y 2016-17						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
			28/03/2017	26/04/2017	30	AM
		Unit 3	15/08/2016	05/09/2016	22	AM
			26/02/2017	27/03/2017	30	AM
7	MB-II (4x76)	Unit 1	01/11/2016	30/12/2016	60	AM
		Unit 2	01/12/2016	29/01/2017	60	AM
						AM
		Unit 3	11/01/2017	11/03/2017	60	AM
						AM
		Unit 4	01/04/2016	21/04/2016	21	AM
			22/02/2017	31/03/2017	38	AM
8	Chilla (4x36)	Unit 1	01/02/2017	31/03/2017	59	RMU
		Unit 2	10/12/2016	15/01/2017	37	AM
		Unit 3	01/11/2016	05/12/2016	35	AM
		Unit 4	20/01/2017	25/02/2017	37	AM
9	Ramganga (3x66)	Unit 1	01/07/2016	15/08/2016	46	AM
		Unit 2	16/08/2016	20/09/2016	36	AM
		Unit 3	21/09/2016	26/10/2016	36	AM
10	Khatima (3x13.8)	Unit 1	10/11/2016	24/12/2016	45	AM
		Unit 2	1/04/2016	05/05/2016	35	RMU
		Unit 3	1/04/2016	30/09/2016	183	RMU

Table 55: Outage Plan of UJVN Limited for FY 2017-18

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UJVN Ltd.						
Outage plan for F Y 2017-18						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
1	**Chibro (4x60)**	**Unit 1**	16-11-2017	15-03-2018	120	CM
		Unit 2	25-01-2018	23-02-2018	30	AM
		Unit 3	20-12-2017	18-01-2018	30	AM
		Unit 4	01/03/2018	30-03-2018	30	AM
2	**Khodri (4x30)**	**Unit 1**	20-12-2017	18-01-2018	30	AM
		Unit 2	25-01-2018	23-02-2018	30	AM
		Unit 3	16-11-2017	15-03-2018	120	CM
		Unit 4	01/03/2018	30-03-2018	30	AM
3	**Dhakrani (3x11.25)**	**Unit 1**	15-11-2017	24-12-2017	40	AM
		Unit 2	28-12-2017	05/02/2018	40	AM
		Unit 3	09/02/2018	20-03-2018	40	AM
4	**Dhalipur (3x17)**	**Unit 1**	nil	nil		
		Unit 2	01/11/2017	31/03/2018	151	RMU
		Unit 3	01/01/2018	17/02/2018	48	AM
5	**Kulhal (3x10)**	**Unit 1**	01/04/2017	30/09/2017	183	RMU
		Unit 2	01/10/2017	31/03/2018	182	RMU
		Unit 3	20/02/2018	05/04/2018	45	
6	**Tiloth (3x30)**	**Unit 1**	15/08/2017	05/09/2017	22	AM
			01/12/2017	31/12/2017	31	AM
		Unit 2	15/08/2017	05/09/2017	22	AM
			16/11/2017	25/02/2018	102	CM
		Unit 3	15/08/2017	05/09/2017	22	AM
			01/12/2017	31/12/2017	31	AM
	DRIP CLOSURE		01/12/2017	31/01/2018	62	DRIP
7	**MB-II (4x76)**	**Unit 1**	01/11/2017	30/12/2017	60	AM
		Unit 2	01/12/2017	29/01/2018	60	AM

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UJVN Ltd.						
Outage plan for F Y 2017-18						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
		Unit 3	11/01/2018	11/03/2018	60	AM
		Unit 4	01/04/2017	21/04/2017	21	AM
			22/02/2018	31/03/2018	38	AM
8	**Chilla (4x36)**	**Unit 1**	01/04/2017	31/01/2018	306	RMU
		Unit 2	01/02/2018	31/03/2018	59	RMU
		Unit 3	22/02/2018	27/03/2018	34	AM
		Unit 4	01/04/2018	30/04/2018	30	AM
9	**Ramganga (3x66)**	**Unit 1**	01/06/2017	31/01/2018	245	RMU
		Unit 2	01/07/2017	15/08/2017	46	AM
		Unit 3	16/08/2017	20/09/2017	36	AM
10	**Khatima (3x13.8)**	**Unit 1**	10/11/2017	24/12/2017	45	AM
		Unit 2	26/12/2017	08/02/2018	45	AM
		Unit 3	10/02/2018	24/03/2018	43	AM

Table 56: Outage Plan of UJVN Limited for FY 2018-19

UJVN Ltd.						
Outage plan for F Y 2018-19						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
1	**Chibro (4x60)**	**Unit 1**	01/03/2019	30/03/2019	30	AM
		Unit 2	01-25-2019	23-02-2019	30	AM
		Unit 3	20-12-2018	18-01-2019	30	AM
		Unit 4	16-11-2018	15-03-2019	120	CM
2	**Khodri (4x30)**	**Unit 1**	16-11-2018	15-03-2019	120	CM
		Unit 2	25-01-2019	23-02-2019	30	AM
		Unit 3	20-12-2018	18-01-2019	30	AM

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UJVN Ltd.						
Outage plan for F Y 2018-19						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
		Unit 4	01/03/2019	30-03-2019	30	AM
3	**Dhakrani (3x11.25)**	**Unit 1**	01/11/2018	31/05/2019	212	**RMU**
		Unit 2	28-12-2018	05/02/2019	40	AM
		Unit 3	09/02/2019	20-03-2019	40	AM
4	**Dhalipur (3x17)**	**Unit 1**	16/11/2018	30/12/2018	45	AM
		Unit 2	01-04-2018	31-05-2018	61	**RMU**
		Unit 3	01/11/2018	31/05/2019	212	**RMU**
5	**Kulhal (3x10)**	**Unit 1**	nil	nil		
		Unit 2	01/04/2018	30/06/2018	91	RMU
		Unit 3	01/07/2018	31/03/2019	274	RMU
		Closure for Common Works	01/11/2018	29/01/2019	90	RMU COMMON WORK
6	**Tiloth (3x30)**	**Unit 1**	15/08/2018	10/09/2018	27	AM
			26/02/2019	27/03/2019	30	AM
		Unit 2	15/08/2018	07/09/2018	24	AM
			28/03/2019	26/04/2019	30	AM
		Unit 3	15/08/2018	12/09/2018	29	AM
			16/11/2018	31/03/2019	136	RMU TILL OCT-19
7	**MB-II (4x76)**	**Unit 1**	01/11/2018	30/12/2018	60	AM
		Unit 2	01/12/2018	29/01/2019	60	AM
		Unit 3	11/01/2019	11/03/2019	60	AM
		Unit 4	01/04/2018	21/04/2018	21	AM
			22/02/2019	31/03/2019	38	AM
8	**Chilla (4x36)**	**Unit 1**				
		Unit 2	01/04/2018	31/01/2019	306	RMU
		Unit 3	01/02/2019	31/03/2019	59	RMU TILL MARCH-

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UJVN Ltd. Outage plan for F Y 2018-19						
SL NO	Name of Power Station	Unit No	Date of Start	Date of Completion	No of Days	Remarks
						20
		Unit 4	01/02/2019	31/03/2019	59	RMU TILL MARCH-20
9	**Ramganga (3x66)**	**Unit 1**	16/08/2018	20/09/2018	36	AM
		Unit 2	01/06/2018	31/01/2019	245	RMU
		Unit 3	01/07/2018	15/08/2018	46	AM
10	**Khatima (3x13.8)**	**Unit 1**	10/11/2018	24/12/2018	45	AM
		Unit 2	26/12/2018	08/02/2019	45	AM
		Unit 3	10/02/2019	24/03/2019	43	AM

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4. Trajectory of performance parameters

Gross Generation and Design Energy

Table 57: Gross Generation and Design Energy

S.N	Power Station	Design Energy	FY 2010-11 (MU)	FY 2011-12 (MU)	FY2012-13 (MU)	FY2013-14 (MU)	FY2014-15 (MU)
1	Chibro	750.00	795.7	849.0	873.3	949.79	871.20
2	Chilla	671.29	775.4	910.0	859.0	784.61	800.29
3	Dhakrani	156.88	143.0	152.7	148.7	170.64	149.51
4	Dhalipur	192.00	210.8	229.6	230.6	255.17	231.22
5	Khatima	194.05	155.9	163.9	155.1	114.77	45.77
6	Khodri	345.00	361.8	382.8	398.5	435.79	406.87
7	Kulhal	153.91	142.5	157.8	158.1	178.52	191.84
8	MB-II	1566.10	1336.0	1351.2	1153.6	833.09	888.10
9	Ramganga	311.00	325.6	416.4	246.4	233.50	265.67
10	MB-I	395.00	90.00	504.4	516.1	454.7	380.55

All the UJVN Limited Power Stations except Ramganga are run of the river stations and thus are highly dependent on water availability and monsoon for electricity generation.

Currently, UJVNL has a total existing operating capacity of 1284.85 MW. The total installed capacity consists of 1252.15 MW of LHPs and 32.70 MW of SHPs (namely Galogi, Mohamadpur and Pathri)

NAPAF

Table 58: NAPAF and PAF from FY 2013-14 to FY 2015-16

Sr. No	Name of Project	NAPAF Approved by Commission			PAF (Actual)		
		FY13-14	FY 14-15	FY 15-16	FY13-14	FY 14-15	FY 15-16 (Projected)
1	Chibro	62%	63%	64%	65.83 %	68.19 %	68.81%
2	Khodri	55%	56%	57%	59.35 %	60.73 %	60.63%
3	Chilla	74%			70.50 %	70.07 %	64.98%

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Sr. No	Name of Project	NAPAF Approved by Commission			PAF (Actual)		
		FY13-14	FY 14-15	FY 15-16	FY13-14	FY 14-15	FY 15-16 (Projected)
4	Tiloth	77 %	78%	79%	64.66 %	62.50 %	69.76%
5	Ramganga	19%			14.71 %	16.70 %	19.82%
6	MB-II	58.23 %	72%	73%	39.37 %	40.03 %	53.56%
7	Dhakrani	57%			70.30 %	64.00 %	63.16%
8	Dhalipur	57%			68.22 %	65.68 %	61.70%
9	Kulhal	65%			77.30 %	74.91 %	72.72%
10	Khatima	47%			52.31 %	15.36 %	38.62%

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PAF Trajectory during the control period

The plant availability during the control period considering maintenance schedule given above and forced outages expected is shown below:

Table 59: PAF trajectory during the control period, FY 2016-17 to Fy 2018-19

Sr. No	Name of Project	FY 2016-17	FY 2017-18	FY 2018-19
1	Chibro	67.61%	67.61%	67.61%
2	Khodri	60.24%	60.24%	60.24%
3	Chilla	70.22%	70.22%	70.22%
4	Tiloth	61.70%	51.84%	60.32%
5	Kalagarh	17.08%	17.08%	17.08%
6	MB-II	54.86%	54.86%	54.86%
7	Dhakrani	61.55%	66.68%	66.68%
8	Dhalipur	60.94%	66.03%	66.03%
9	Kulhal	70.09%	76.19%	76.19%
10	Khatima	45.3%	47/1%	47.1%

**On the basis of historical trends*

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Auxiliary Consumption and Transformation Losses

Table 60: Auxiliary Consumption for FY 2013-14 to FY 2015-16

Power Station	FY 2013-14			FY 2014-15			FY 2015-16			AUX Norms fix by Hon'ble UERC (in %)
	Gross Generation (MU)	Auxiliary Consumption (MU)	Auxiliary Consumption (in %)	Gross Generation (MU)	Auxiliary Consumption (MU)	Auxiliary Consumption (in %)	Gross Generation (MU)	Auxiliary Consumption (MU)	Auxiliary Consumption (in %)	
Chibro	950.62	13.03	1.37	871.73	12.09	1.39	896.66	8.281	1.33	1.20
Khodri	435.73	3.70	0.85	406.86	3.44	0.85	411.79	2.043	0.73	1.00
Dhakrani	170.64	3.39	1.99	149.51	2.44	1.63	147.92	0.000	0.00	0.70
Dhalipur	255.17	2.62	1.03	231.22	2.39	1.04	219.06	1.592	0.75	0.70
Kulhal	178.52	4.33	2.43	156.11	3.83	2.45	152.63	2.585	2.56	0.70
Tiloth (mb-i)	382.18	5.42	1.42	380.51	6.94	1.82	478.81	4.533	1.53	0.70
Dharasu (mb-ii)	833.08	7.15	0.86	888.23	8.31	0.94	1217.98	5.160	0.58	1.00
Chilla	784.61	14.72	1.88	800.54	13.77	1.72	748.63	5.471	1.20	1.00
Pathri	25.10	1.67	6.64	96.97	2.09	2.16	120	1.247	1.84	1.00
Mohd. Pur	41.87	0.86	2.05	51.81	1.39	2.68	51	0.693	2.44	1.00
Ramganga	233.57	0.92	0.39	265.67	1.02	0.38	311.54	0.840	0.37	0.70
Khatima	114.77	1.24	1.08	45.18	0.50	1.10	104.47	1.087	1.70	0.70
Galogi	2.87	0.09	2.96	5.35	0.10	1.78	6.1	0.045	1.52	1.00

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Table 61: Auxiliary Consumption for the control period, FY 2016-17 to FY 2018-19

Power Station	FY 2016-17			FY 2017-18			FY 2018-19		
	Gross Generation (MU)	Auxiliary Consumption (MU)	Auxiliary Consumption (in %)	Gross Generation (MU)	Auxiliary Consumption (MU)	Auxiliary Consumption (in %)	Gross Generation (MU)	Auxiliary Consumption (MU)	Auxiliary Consumption (in %)
Chibro	882.96	12.04	1.36	882.96	12.04	1.36	882.96	12.04	1.36
Khodri	404.37	3.28	0.81	404.37	3.28	0.81	404.37	3.28	0.81
Dhakrani	144.83	1.75	1.21	156.94	1.89	1.21	156.94	1.89	1.21
Dhalipur	217.48	2.04	0.94	235.83	2.22	0.94	165.82	1.56	0.94
Kulhal	144.85	3.59	2.48	133.99	3.32	2.48	118.24	2.93	2.48
Tiloth (mb-i)	407.00	6.47	1.59	402.00	6.39	1.59	406.00	6.46	1.59
Dharasu (mb-ii)	1209.28	9.59	0.79	1209.28	9.59	0.79	1209.28	9.59	0.79
Chilla	827.11	13.23	1.60	761.53	12.18	1.60	803.35	12.85	1.60
Pathri	120	2.21	1.84	120	2.21	1.84	120	2.21	1.84
Mohd. Pur	51	1.24	2.44	51	1.24	2.44	51	1.24	2.44
Ramganga	230.24	0.87	0.38	251.91	0.96	0.38	251.91	0.96	0.38
Khatima	181.00	2.34	1.29	236.00	3.05	1.29	236.00	3.05	1.29
Galogi	6.1	0.09	1.52	6.1	0.09	1.52	6.1	0.09	1.52

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