NHPC Limited

Credit Perspective

August 2022

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RATING ACTION

Rating reaffirmed

Long - term Rating

[ICRA]AAA (Stable)

Issuer Rating

Not applicable

Medium - term Rating

Not applicable

Short - term Rating

Not applicable

Total Limits Rated

Rs. 5,299.30 crore

Rating Without Explicit Credit Enhancement

Not applicable

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Rating Rationale

The reaffirmation of NHPC Limited's (NHPC) rating factors in its strategic importance to the Government of India (GoI) as India's largest hydropower generation utility, also reflected in the GoI's shareholding of 70.95% in the entity as on March 31, 2022. Its operational assets (aggregating 7,071 MW on a consolidated basis) have cost-plus tariff norms set by the CERC, which ensure regulated returns and result in low business risks. ICRA also notes the competitive tariff level for the company's power plants and the strong operating efficiencies, as reflected in its plant availability factor (PAF) over the years. Further, the rating continues to factor in the healthy track record of power generation from the operational hydel power projects, aided by a favourable hydrology. ICRA expects its revenue and cash flows to scale up significantly post the commissioning of its two critical projects - Subansiri Lower project (2,000 MW) and Parbati II project (800 MW) - over the next 12-18 months.

ICRA, however, takes cognisance of the execution risks, including the risk of time and cost overruns, inherent in greenfield hydropower projects. Several of NHPC's recent and ongoing hydropower projects have seen significant time and cost overruns and further overruns cannot be ruled out.

The company's credit profile is also supported by a comfortable financial risk profile, reflected in a debt-to-equity ratio of 0.74 times, interest coverage of 10.26 times and total debt/OPBITDA of 5.15 times on a consolidated basis as on March 31, 2022. The liquidity remains strong, evident from cash and bank balances of Rs. 3,186 crore on a consolidated basis as on March 31, 2022. Further, the company continues to benefit from the long tenure of debt, including subordinate debt from the GoI, at a low interest rate for some projects in Jammu and Kashmir (J&K). NHPC has superior financial flexibility for having a strong parent and a long life of its hydro projects, which support its liquidity.

Rating Outlook

The Stable outlook on the [ICRA]AAA rating reflects ICRA's opinion that NHPC will be able to sustain its power generation performance, with satisfactory collection efficiency, and its under-construction projects are likely to be completed without significant time and cost overruns.

Key Rating Drivers

Credit Strengths

- Significant ownership of GoI and support extended by Government
- Regulated tariff ensures stable returns
- Stable operational efficiency
- Comfortable financial risk profile
- Policy measures to promoter hydropower sector by Ministry of Power
- Grid balancing role of hydropower

Credit Challenges

- Counterparty credit risk on account of exposure to state distribution utilities
- Execution risk associated with under-construction projects
- Cost competitiveness of power from new projects
- Regulatory risk due to cost-plus regime

Rating Sensitivities

Positive factors – Not applicable

Negative factors – The rating could be downgraded if the debtors get reduced from the current levels and/or there is significant disapproval for cost and time overruns for under-construction projects by the CERC/SERC. The rating could also be revised due to a material change in the regulatory cost-plus regime for determining the tariffs of hydropower projects, impacting the company's returns. Negative pressure on the rating could also arise from a material change in the shareholding of the GoI and/or change in linkage with GoI.

Liquidity Position: Strong

The liquidity of the company is strong. The cost-plus tariff and superior operating performance is expected to result in strong coverage indicators. While free cash flows will remain subdued on account of the consistent capital expenditure to be incurred over the next few years (Rs. 8,000 – Rs. 9,000 crore) and sizeable repayment obligations (Rs 1,527 crore in FY2023, Rs 1,824 crore in FY2024 and Rs 2703 crore in FY2025), ICRA takes comfort from the superior financial flexibility of the company for raising project debt in a timely manner and its superior refinancing ability by virtue of its strong parentage and the long economic life of the hydro projects (40 years as per prevailing CERC regulations). The company had cash and liquid investments of Rs 3,186 crore and unutilised cash credit limits of Rs 925 crore as on March 31, 2022 on a consolidated basis.

Industry Outlook - Stable

The outlook for the renewable energy sector (solar/wind/hydro) remains Stable, led by strong policy support from the Government of India, high tariff competitiveness, large growth potential and the presence of creditworthy central nodal agencies as intermediary procurers. Several measures have been announced by the Government of India to support hydropower capacity additions, including access to infrastructure related capital subsidy, tariff rationalisation, hydro purchase obligation roadmap etc. These measures should offset the tariff risks from typical challenges related to execution risks, delays in clearances and time overruns. Hydropower projects are instrumental for grid stability, especially as sizeable intermittent sources of power (solar and wind) are expected to be added over the next decade, led by strong policy push, low gestation period and competitive tariffs.

Business and Financial Outlook

The operating income in FY2023 is expected to be largely in line with FY2022 and thereafter improve with the commissioning of under-construction projects, namely Parbati II (800 MW), Subansiri Lower (2,000 MW) and the solar projects (1,000MW) under CPSU scheme by FY2024. The operating profit margin (OPM) is expected to remain stable in the near term with the commissioning of the under-construction projects, aided by cost-plus tariffs. The return on capital employed (RoCE) will be supported by a satisfactory operational performance of the company. The leverage (TD/OPBITDA) is likely to see some deterioration, despite healthy accruals from operations, on account of the capital expenditure for the under-construction projects that shall be funded through debt. The debt service coverage indicators (DSCR) are expected to remain healthy at above 2.6 times in FY2023.

Exhibit 1: Outlook for next 12-24 months

Parameters	ICRA's Comments
Revenue growth	Revenue on a consolidated basis in FY2023 is largely in line with FY2022 as no major capacities are expected to be commissioned. Thereafter, with the addition of Parbati II, Subansiri Lower and the 1,000-MW solar project under CPSU scheme, the revenue is expected to improve in FY2024 and FY2025.
Profitability indicators	OPM expected to remain stable in a range of 56-57% in FY2023 and subsequently expected to improve with the commissioning of its critical projects in FY2024 and FY2025. RoCE to be supported by satisfactory operational performance of the company.
Repayment obligations	Rs. 1,527.9 crore in FY2023 Rs. 1,824.1 crore in FY2024 Rs. 2,702.6 crore in FY2025
Capital expenditure plans	Rs 6,000 crore in FY2023 and Rs 8,000 crore each in the next two fiscal years i.e. FY2024 and FY2025 on a consolidated basis. Project capex to be funded through debt: equity of 70:30 in case of hydro and 80:20 in case of solar power projects
Leverage and coverage indicators	Leverage (TD/OPBITDA) likely to moderate at above 6.0 times in FY2023 on account of large debt-funded capex which will elevate the debt levels. TD/OPBIDTA to remain high at above 6 times in FY2023. Interest cover to remain above 8 times in the next two years.
Working capital intensity	NWC/OI stood at 25% in FY2022; likely to remain at current level
Liquidity	Free cash flows will remain subdued on account of the consistent capital expenditure to be incurred over the next few years (Rs. 8,000-Rs. 9,000 crore) and sizeable repayment obligations. However, ICRA takes comfort from the superior financial flexibility of the company for raising project debt in a timely manner and its superior refinancing ability by virtue of its strong parentage and the long economic life of the hydro projects (40 years as per prevailing CERC regulations) Undrawn working capital limits of ~ Rs. 925 crore with available free cash & liquid investments of ~ Rs. 3,186 crore as on March 31, 2022

Source: Company, ICRA Research; All ratios as per ICRA's calculations; NA: Not available; OPBDIT: Operating Profit before Depreciation, Interest, Taxes and Amortisation; TOL: Total Outside Liabilities; TNW: Tangible Net Worth

Peer Comparison

Exhibit 2: Peer comparison

In Rs. crore	NHPC Limited		Nuclear Power Corporation of India Limited		THDC India Limited		NEEPCO	
Rating	[ICRA]AAA(Stable)		[ICRA]AAA(Stable)		[ICRA]AA(Stable)		[ICRA]AA+(Stable) /[ICRA]A1+	
	FY2021	FY2022	FY2020	FY2021	FY2020	FY2021	FY2020	FY2021
Operating Income (Rs. Crore)	10,194	9,461	12,637	13,335	2,399	2,498	2,166	2,554
PAT (Rs. Crore)	3,588	3,776	4,459	4,370	920	1,092	166	48
OPBDIT/OI (%)	57.8%	57.7%	58.8%	51.7%	75.0%	75.2%	36.7%	49.0%
PAT/OI (%)	35.2%	39.9%	35.3%	32.8%	38.3%	43.7%	7.7%	1.9%
TOL/ TNW (times)	1.0	1.1	1.5	1.6	0.7	0.8	1.4	1.4
Total debt/OPBITDA (times)	4.3	5.2	6.2	8.0	3.2	3.3	10.1	6.3
Interest coverage (times)	9.1	10.3	8.9	9.2	7.5	10.3	4.6	2.5

PAT: Profit after tax; OPBDIT: Operating profit before depreciation, interest, taxes and amortisation
Note: Amount in Rs. crore; All calculations are as per ICRA research
Source: Annual reports and ICRA Research

Detailed Credit Considerations

Significant ownership of GoI and support extended by Government

NHPC, with a GoI ownership of 70.95%, is the largest hydropower company in the country and a Mini Ratna Category I public sector undertaking (PSU). The company has an installed capacity of 5,551 MW on a standalone basis (including 50-MW solar and 50-MW wind power capacity) and 7,071 MW (including 1,520 MW of its 51.08% owned subsidiary, NHDC) on a consolidated basis. It plays an important role in implementing the GoI's planned capacity addition in the hydel power sector. The strategic importance of NHPC is also evident from the long-term loans extended by the GoI at concessional rates for some of its hydropower projects in Jammu and Kashmir (J&K).

Thus, ICRA continues to factor in the NHPC's strategic role in the power sector as India's largest hydropower utility and its strategic importance to the Government of India (GoI).

Regulated tariff ensures stable returns

Tariff for all the hydropower projects of the company are determined on a cost-plus basis, as per CERC norms. The tariff comprises capacity and energy charge for hydropower projects. The annual fixed charge comprises five components - return on equity (RoE), tax on RoE, interest on loan capital, depreciation, interest on working capital and operation and maintenance expenses. The fixed charges to be recovered by hydropower stations will be computed on an annual basis and will be recovered on a monthly basis as capacity charges (including incentive) and energy charges.

In the tariff regulations for FY2020-24, CERC has continued the existing norms for allowing RoE at 15.5%/16.5% for Run on River/Run on river with small pondage. The base rate of return on equity shall be grossed up with the effective tax rate of the respective financial year. As per the approved regulations, the O&M expenses for hydro generating plants declared under commercial operations on or after April 1, 2019 with capacity up to 200 MW would be computed at 5% of the project cost (against 4% in CERC norms for FY2014-19). For hydro generating stations with capacity of more than 200 MW, the normative O&M expenses are approved at 3.5% of the project cost (as against 2.5% in CERC norms for FY2014-19). The rate of increasing the O&M expenses YoY has been lowered to 4.77% per annum against 6.64%, as per the CERC norms for FY2014-19.

The fixed charges to be recovered by hydro power stations will be computed on an annual basis and will be recovered on a monthly basis as capacity charges (including incentive) and energy charges. The capacity charges payable on a monthly basis will be calculated as "annual approved fixed costs X 0.5 X (actual plant availability/ normative plant availability) X (number of days in a month/ number of days in a year)". The capacity charges are linked to the actual plant availability, which is calculated as declared capacity/installed capacity (adjusted for auxiliary consumption). The declared capacity is the ex-bus power that the station can deliver for at least three hours as certified by the nodal load dispatch centre after the day is over. As a result, for achieving high plant availability, the hydro station will have to operate closer to the installed capacity for at least three hours and earn incentives instead of operating at a steady load for longer periods.

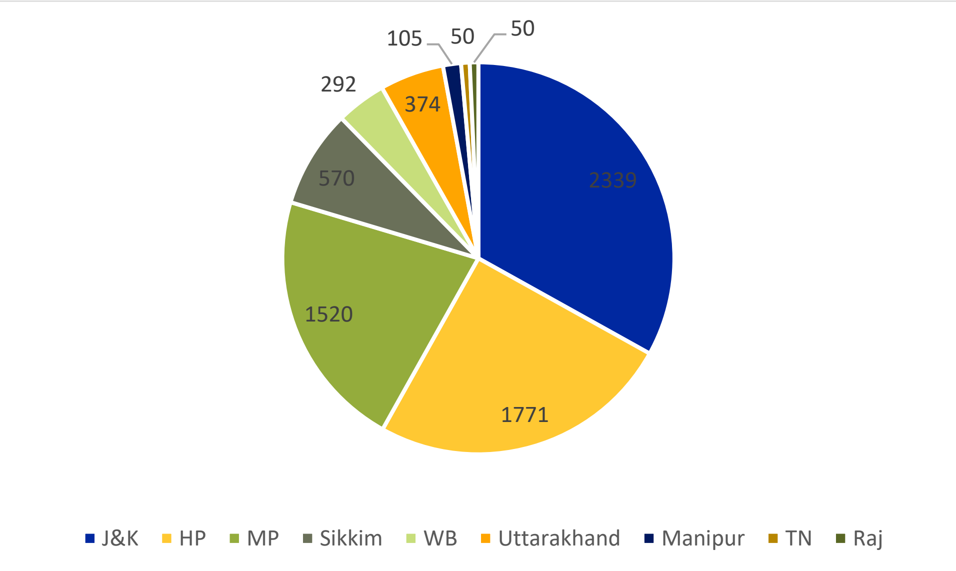
The energy charges payable on a monthly basis will be calculated based on the energy scheduled for supply. The energy charges recoverable from customers are equal to "energy rate per unit X scheduled energy per month, excluding free energy". The energy rate per unit is calculated as "Annual approved fixed costs X 0.5 X 10 / (annual design energy excluding free energy X (100 – auxiliary consumption))".

In case the energy charge rate (ECR) for a hydro generating station, computed as per clause (5) of this regulation, exceeds 120 paise per kWh, and the actual saleable energy in a year exceeds { DE x (100 ‑ AUX) x (100 ‑ FEHS) /10000 } MWh, the energy charge for the energy in excess of the above shall be billed at 120 paise per kWh only. DE is design energy, Aux is auxiliary consumption and FEHS is free energy for home state.

Stable operational efficiency

NHPC has demonstrated satisfactory operational performance, evident from plant availability of 83.4% in FY2017, 85.32% in FY2018, 84.84% in FY2019, 84.04% in FY2020, 84.87% in FY2021 and 88.2% in FY2022, for its operational hydel power plants. The total generation in FY2021 and FY2022 was 24,236 million units (Mus) and 24,494 million units, respectively, on a standalone basis; slight improvement in generation in FY2022 was due to hydrology-related factors. The generation for NHDC projects was 2,645 Mus in FY2022 against 4,236 Mus in FY2021, 4,110 Mus in FY2020 and 1,921 Mus in FY2019. The plant availability factor for NHDC projects remained low at 92.74% in FY2022 against 94.82% in FY2021, 94.32% in FY2020 and 93.89% in FY2019.

EXHIBIT 3: Well-diversified projects across states (capacity wise)



Source: Company, ICRA research

Comfortable financial risk profile

NHPC's financial risk profile remains comfortable despite high total debt/OPBITDA of 5.2 times on a consolidated basis as on March 31, 2022. High leverage is typical for all CPSUs in the power sector which have a mandate for capacity building. Although the leverage is high, debt servicing will remain supported by the cost-plus tariff and superior operating efficiencies. Further, the ability to scale up its cash flows post commissioning of its two critical projects - Subansiri Lower and Parbati II – remains a key monitorable.

Policy measures to promote hydropower sector a positive

The Ministry of Power, vide its notification dated March 08, 2019, has approved the following measures to promote the hydropower sector:

- **Declaring large hydropower projects (LHPs) (> 25 MW projects) as renewable energy sources** - LHPs have been declared as renewable energy sources. However, LHPs would not automatically be eligible for any differential treatment for statutory clearances such as forest clearance, environmental clearance, National Board for Wildlife (NBWL) clearance, related cumulative impact assessment and carrying capacity study etc available to small hydropower projects (SHPs) i.e. projects of capacity up to 25 MW.
- **Hydro purchase obligation (HPO) as a separate entity within non-solar renewable purchase obligation (RPO)**- HPO is notified as a separate entity within non-solar RPO. The HPO shall cover all LHPs commissioned after the issue of this notification as well as the untied capacity of the commissioned projects. The HPO will be within the existing non-solar RPO after increasing the percentage assigned for it so that existing non-solar RPO for other renewable sources remains unaffected by the introduction of HPO.
- **Tariff rationalisation measures for bringing down hydropower tariff** - Tariff rationalisation measures, including providing flexibility to the developers to determine the tariff by back loading of tariff after increasing the project life to 40 years, increasing debt repayment period to 18 years and introducing escalating tariff of 2%. The levelised tariff over the useful life of the project may be calculated on the basis of the norms specified in the CERC regulations and thereafter the determination of year-wise tariff for a long-term PPA for procurement of hydropower for a period of not less than specified years may be left to the developer and discoms as per their feasibility and depending upon the terms of repayment of loan.
- **Budgetary support for flood moderation/storage hydro electric projects (HEPs)-** In-principle approval for providing budgetary support through the budgetary grant of Ministry of Power for Flood Moderation component for storage HEPs to be set up in future. The amount required for flood moderation/ storage costs shall be released through MoP budgetary provisions after appraisal of each project on a case to case basis by PIB/ CCEA
- **Budgetary support to cost of enabling infrastructure ie roads/ bridges** - In-principle approval is accorded for providing budgetary support through the budgetary grant of the Ministry of Power for funding the enabling infrastructure for hydropower projects ie roads/ bridges. This support shall be applicable for projects starting construction after notification of the circular. The budgetary support would be provided after appraisal of each project by PIB/ CCEA. The limit of this grant would be Rs 1.5 crore per MW for projects upto 200 MW and Rs 1.0 crore/MW above 200 MW.

Ministry of Power, vide its latest notification dated July 22, 2022, has revised the trajectory of RPO, including the long-term trajectory for hydropower purchase obligation (HPO), considering the large hydro projects commissioned after March 08, 2019. The Ministry of Power has specified the following RPO trajectory beyond the period of 2021-22:

EXHIBIT 4: RPO trajectory specified by MoP

Year	Wind RPO	IIPO	Other RPO	Total RPO
FY2023	0.81%	0.35%	23.44%	24.61%
FY2024	1.60%	0.66%	24.81%	27.08%
FY2025	2.46%	1.08%	26.37%	29.91%

FY2026	3.36%	1.48%	28.17%	33.01%
FY2027	4.29%	1.80%	29.86%	35.95%
FY2028	5.23%	2.15%	31.43%	38.81%
FY2029	6.16%	2.51%	32.69%	41.36%
FY2030	6.94%	2.82%	33.57%	43.33%

Source: Ministry of Power

From FY2023 onwards, the energy from all hydropower projects (HPPs) will be considered as a part of RPO. The HPO trajectory, notified earlier, will continue to prevail for large hydropower projects (LHPs) commissioned after March 08, 2019. All other HPPs will be considered as part of RPO under the category of 'other RPO'.

HPO benefit may be met from the power procured from eligible LHPs commissioned on and after March 08, 2019 and upto March 31, 2030.

The Hydro Energy Certificate mechanism under regulation to be developed by CERC to facilitate the compliance of HPO obligation would have a capping price of Rs 5.50 per unit of electrical energy wef March 08, 2019 to March 31, 2021 and with annual escalation @5% thereafter for purposes of ensuring HPO compliance. Hydropower imported from outside India shall not be considered for meeting HPO. The said HPO trajectory shall be trued up on an annual basis depending on the revised commissioning schedule of hydro projects.

Further, the SERCs may consider notifying the RPO trajectory, including HPO, for their respective states in line with the aforesaid RPO trajectory. However, ICRA notes that the implementation of these HPO norms remain critical.

Grid balancing role of hydropower

With the GoI's present initiative of extensive renewable energy development, particularly large-scale deployment of solar power, hydropower would be required for grid balancing/stability. Hydropower plays a crictical role in terms of meeting the peak power requirements in the system

Counterparty credit risk on account of exposure to state distribution utilities

NHPC has exposure to relatively weak state distribution utilities like Uttar Pradesh Power Corporation Limited, PDD J&K, West Bengal State Electricity Board, Punjab State Power Corporation Limited etc on a standalone basis. On a consolidated basis, Madhya Pradesh Power Management Company Limited is among the top revenue contributors as the PPA for NHDC projects are signed with MPPMCL. The revenue contribution of these distribution utilities is as follows:

EXHIBIT 5: Revenue contribution of top customers on consolidated basis

Customer	FY2018		FY2019		FY2020		FY2021	
	Revenue (Rs Cr)	% Revenue	Revenue (Rs Cr)	% Revenue	Revenue (Rs Cr)	% Revenue	Revenue (Rs Cr)	% Revenue
UPPCL (Uttar Pradesh)	1,132.0	*14.6%*	1,476.0	*16.5%*	1,616.6	*16.2%*	1,463.4	*15.2%*
PDD, J&K	1,275.0	*16.4%*	1,380.0	*15.4%*	1,479.1	*14.8%*	1,452.3	*15.1%*
MPPMCL(Madhya Pradesh)	785.0	*10.1%*	805.0	*9.0%*	1,273.4	*12.7%*	1,158.4	*12.0%*
WBSEB (West Bengal)	651.0	*8.4%*	909.0	*10.1%*	865.7	*8.6%*	1,302.3	*13.5%*
PSPCL (Punjab)	776.0	*10.0%*	867.0	*9.7%*	849.4	*8.5%*	769.3	*8.0%*
Total	**4,618.0**	***59.6%***	**5,437.0**	***60.6%***	**6,084.2**	***60.8%***	**6,145.7**	***63.7%***

Source: Company

Customer concentration for NHPC Limited is in line with the location of the projects which are concentrated in the northern and north-eastern states of India for a standalone basis and including Madhya Pradesh on a consolidated basis. Going forward, the concentration is expected to remain high in the northern and north-eastern states as the under-construction projects are in these regions. This is significantly different from PGCIL and NTPC Limited, which have exposure to majority of the state distribution utilities in India, leading to relatively low counterparty credit risk.

The top four distribution utilities contributed 58.6% to the revenue in FY2021 on a consolidated basis, while the top five distribution utilities contributed 55.8% to the revenue in FY2021 on a consolidated basis. These distribution utilities have weak financial and operational profiles, evident from the ratings as per the Annual Integrated Rating of State Distribution Utilities by the Ministry of Power, Government of India on a scale of A+ to C (A+ being highest).

EXHIBIT 6: Counterparty credit risk as per Annual Integrated Rating by MOP

Customers	9th Annual IR
UPPCL (Uttar Pradesh)	B+/B/C+
PDD, J&K	NA
WBSEB (West Bengal)	B+
PSPCL (Punjab)	A
MPPMCL(Madhya Pradesh)	C+/B+

Definition of grading scale and grades along with distribution of state distribution utilities in each grade is as follows:

EXHIBIT 7: Distribution of state distribution utilities in Integrated Rating Exercise

Score Distribution	Grade	9th IR	Grading Definition
Between 80 and 100	A+	5	Very High Operational and Financial Performance Capability
Between 65 and 80	A	3	High Operational and Financial Performance Capability
Between 50 and 65	B+	10	Moderate Operational and Financial Performance Capability
Between 35 and 50	B	6	Below Average Operational and Financial Performance Capability
Between 20 and 35	C+	9	Low Operational and Financial Performance Capability
Between 0 and 20	C	8	Very Low Operational and Financial Performance Capability

Source: Annual Integrated Rating released by PFC

Grading of most of the distribution utilities, except Punjab and one distribution utility of Madhya Pradesh, are B+ or lower, which means moderate and lower operational and financial performance capability.

However, despite having customer concentrated risk coupled with high exposure to relatively weak state utilities, the debtor levels have reported a declining trend over the past few years. As on date, NHPC has been able to recover its dues from all state discoms in a timely manner (expect some pending dues from J&K) and there have been no instances of any bad debt against the discoms' dues. The outstanding dues from J&K are around Rs. 1,400 crore as of July 2022 (out of which over 90-95% are more than 45 days). The dues pending from J&K are being recovered through (1) adjustment of water cess, (2) lumpsum payment received from the discom and (3) recovery under the various schemes such as Uday, Atmanirbhar schemes etc. There have been no instances of the TPA being invoked in the past by NHPC. With regards to the other discoms, majority of them are taking the benefit of availing bill discounting and thus, able to clear their dues in a timely manner. Further, there are no dues which are pending for more than 45 days (except J&K dues) as on date.

Execution risk associated with under-construction projects

NHPC is constructing two hydroelectric projects on a standalone basis, namely Parbati II and Subansiri Lower, with a total capacity of 2,800 MW. Parbati II (800 MW) is expected to be commissioned in Q4 FY2023, while Subansiri Lower (2000 MW), which was stuck since December 2011, resumed construction in October 2019 and is expected to be commissioned by Q2FY2024. NHPC is also developing a 1,000-MW solar power project under CPSU Scheme, Phase-II, Tranche-III in the e-Reverse auction conducted by Indian Renewable Energy Development Authority (IREDA) in September 2021. Subsequently, NHPC had awarded EPC contracts along with O&M for five years with a total contract price of Rs. 6,604.42 crore in May 2022 (which includes the price of O&M contract as well). It is likely to be commissioned by FY2025.

Additionally, the company is executing the 500-MW Lanco Teesta project, the 200-MW Jal Power Rangit project and the 850-MW Ratle project in J&K through its subsidiaries. The company also has several projects under clearance. NHPC's hydropower projects, including Parbati II and Subansiri Lower, have witnessed significant time and cost overruns in the past. Timely completion of the under-construction projects without further material time and cost overruns, and approval of the capital cost for tariff determination by the CERC, will remain key rating sensitivities.

EXHIBIT 8: Trend in capex

Rs crore	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023 (E)
Capex	2,615	2,793	2.438	2,722	2,213	4,155	3,568	5,166	5,862

Source: *Company*

Cost-competitive power from new projects

The under-construction power projects have high capital cost per MW, which will make the cost of power from such projects unattractive compared to thermal power projects and the prevailing wind/solar tariffs. Therefore, the ability of the company to complete the projects on time and within the budgeted cost, and the rationalisation of tariff through various measures will be critical to ensure the cost competitiveness of power. It may be noted that hydropower is required for grid stabilisation and hence it can command a premium over other sources of power. Moreover, the recent measures by the Ministry of Power, including hydropower purchase obligation, are expected to increase the demand for power from hydropower projects, going forward.

EXHIBIT 9: Estimated tariff for under construction projects

Project	Capacity (MW)	Design Energy (Mus)	Estimated Project Cost (Rs Cr)	Levelized tariff as per company estimates
Standalone				
Parbati II	800	3,125	9,898	5.61
Subansiri Lower	2000	7,422	19,992	5.00
Subsidiary				
Lanco Teesta VI	500	2,400	5,748	3.44
Rangit IV, Sikkim	120	508	938	4.20
Ratle, J&K	850	3,137	5,282	2.90
Joint Venture				
Kiru#	624	2,272	4,288	4.28
Pakal Dul#	1000	3,330	8,112	4.64
Kwar#	540	1,976	4,526	

Source: ICRA Research

#Projects being developed under Chenab Valley Power Projects Limited which is a Joint Venture of NHPC (49%), JKSPDC (49%) and PTC (2%)

The tariff of its major under-construction projects is relatively high compared to the average tariff of Rs. 3.36/kWh from its operational projects. However, it may be noted that hydro is essential for grid stability, considering the increasing share of wind and solar power projects which are intermittent in nature. Moreover, the recent measures taken by the Ministry of Power such as backloading of tariff, extension of repayment to 18 years from 12 years and hydro purchase obligation are a positive for the hydro sector in general and NHPC in particular. A combination of such measures can help reduce the tariffs shown in above table.

Regulatory risk due to cost-plus regime

The tariff for the company's hydel power projects is determined as per CERC norms that are revised every five years. The latest tariff norms have been notified on March 7, 2019 for FY2020-24, which provide visibility of regulatory norms for the period. However, in case stringent norms are finalised in the future (for instance, with lower return on equity), the company's profitability may be impacted.

Capital Expenditure and Funding Plans

Sizeable capex to be undertaken over the medium term

On a consolidated basis, the company has five under-construction hydel power projects, apart from solar and wind power projects under tendering. Out of the five hydel power projects, two projects, namely Subansiri and Parbati II are being executed on a standalone basis. The 500-MW Teesta VI is being executed on the books of Lanco Teesta Hydro Power Limited (100%

subsidiary of NHPC), the 120-MW Rangit IV project is being executed on the books of Jal Power Corporation Limited (100% subsidiary of NHPC) and the 850-MW Ratle project is on the book of Ratle Hydroelectric Power Corporation Limited (J.V. of NHPC and JKSPDC with equity participation of 51:49, respectively). Three projects - Pakal Dul, Kiru and Kwar - are being executed on the books of JV company Chenab Valley Power Projects Limited (51% NHPC, 49% JKSPDC). The projects are financed through a mix of debt and equity in the ratio of 70:30 as per CERC norms. The equity contribution for Subansiri and Parbati II is already infused to a large extent in the projects and the incremental capital expenditure shall be funded through debt. The company is also developing other hydropower, solar and wind power projects which may entail capital expenditure in the near term.

NHPC proposes to set up a 1,000-MW solar power project under the central public sector undertaking (CPSU) scheme, Phase II, Tranche III, which will be financed through a mix of debt and equity in a ratio of 80:20. NHPC has already awarded EPC contracts along with five years of O&M in May 2022. The total contract price is Rs. 6,604.42 crore (which includes the price of O&M contract as well).

On a consolidated basis, the company had a total debt of Rs 23,638 crore as on March 31, 2022, comprising Rs 1,324 crore of short-term debt and Rs 22,314 crore of long-term debt. Out of the Rs 22,314-crore long-term debt, Rs 14,517 crore is long-term bond programme, Rs. 2,718.0 crore is term loan, Rs. 1,374 crore forex loan and Rs. 3,686 crore is subordinate debt from the GoI. The company had cash and bank balance of Rs 3,186 crore and undrawn cash credit limits of Rs 925 crore as on March 31, 2022.

Exhibit 10: Debt repayment

Particulars	o/s March 31, 2022	FY2023P	FY2024P	FY2025P
Annual debt repayments	28,113.5	1,527.9	1,824.1	2,702.6

Source: Company; Note: Amounts in Rs. crore; projected

Framework Overview

		Strong	Comfortable	Adequate	Moderate	Weak
Industry risk	Industry risk					
Business risk	Execution & Funding risk					
	Asset Diversification					
	Cost Competitive Position - Cost Competitiveness					
	Counterparty credit risk					
	Operating Risk					
	Renewable Source Availability					
	Fuel Availability					
Financial parameters	Leverage					
	Coverage					
	Cumulative DSCR					
	Minimum DSCR					

		Enhance	Neutral	Hinder
	Diversification			
Do these factors enhance or hinder the credit profile?	Liquidity			
	Financial Flexibility			
	Foreign Exchange Risk			
	Financial policy			
	Management, Governance & Financial Reporting			

		Very High	High	Moderate	Low
Parent support	Likelihood of Parent Support				
	Rating of Parent				

In accordance with ICRA's corporate credit rating methodology, published in July 2019, the ratings consider the limited execution and funding risk given the proportion of operational projects of the company, track record of fund raising, the asset diversification with presence across multiple states, the sufficiently long operating track record and the long-term PPAs for most of the capacity. However, the ratings factor in the receivable risk, given the exposure to state distribution utilities and the leveraged capital structure. The debt coverage indicators of the company remain strong. The ratings are enhanced by the strong financial flexibility enjoyed by the company being a CPSU.

ES Risks

Environmental considerations: NHPC generates power through renewable energy (hydro, solar and wind), which produces clean power and reduces greenhouse gases compared to other conventional mode of power generation. As per the disclosures made by NHPC, it has formulated a Corporate Environment Policy (CEP) which aims to resolve the environment and social concerns. All its operational units are compliant with all the environmental regulations and various statutory approvals/permits granted by the authorities. Thus, NHPC exhibits low environment risks.

Social considerations: NHPC is developing large hydropower projects and is thus exposed to resettlement & rehabilitation (R&R) issues. These issues result in resistance from the local population (near vicinity of the plant location) and thus, can delay the execution of their under-construction projects. While NHPC is taking all possible measures to reduce these issues, the company remains exposed to moderate social risks.

Exhibit 11: Analytical approach

Analytical Approach	Comments
Applicable rating methodologies	Corporate Credit Rating Methodology Impact of Parent or Group Support on an Entity's Credit Rating
Parent/Group support	The rating derives strength from the majority ownership of the Government of India (70.95% as on March 31, 2022) in NHPC, given its strategic importance and significant scale of operations in the hydropower sector in India.
Consolidation/Standalone	Consolidated

Status of non-cooperation with previous CRA: Not applicable

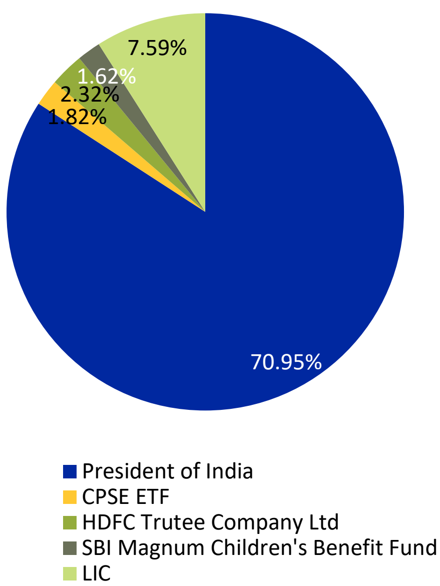
Any other information: None

Company Profile

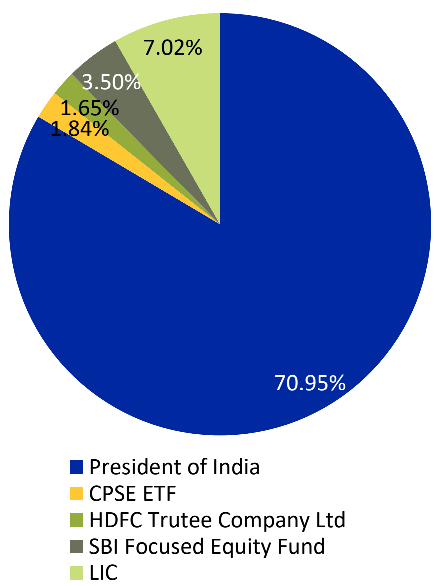
NHPC, a Mini Ratna category I public sector utility, is the GoI's flagship hydroelectric generation company. As on March 31, 2022, the GoI's shareholding in the company was 70.95%. It is the largest HEP developer in India with an installed capacity of 5,551 MW on a standalone basis and 7,071 MW on a consolidated basis (including 1,520 MW of its 51.08%-owned subsidiary NHDC) as on March 31, 2022. The company supplies power to distribution utilities, mainly in northern, eastern and north-eastern India under long-term PPAs.

Exhibit 12: Shareholding pattern

As on March 31, 2021



As on March 31, 2022



Source: Company

Promoter and Management Profile

NHPC Limited was incorporated in 1975 with an authorised capital of Rs 200 crore. The Government of India, through President of India, owns 70.95% in NHPC Limited as on March 31, 2022. NHPC Limited is the largest hydropower company in India, accounting for the country's 15% installed hydropower capacity. NHPC Limited is strategically important to the GoI for the promotion of hydropower generation in the country.

Exhibit 13: Promoter/Management profile

Name	Qualification	Experience
Abhay Kumar Singh	Civil Engineer, NIT	More than 35 years
Yamuna Kumar Chaubey	Civil Engineer, IIT Kharagpur	More than 30 years
Rajendra Prasad Goyal	M.com, University of Rajasthan	More than 34 years
Biswajit Basu	B E (Electrical), NIT	More than 33 years

Source: Company

Annexure I: Past financials

Standalone, (Rs. crore)	FY2018	FY2019	FY2020	FY2021	FY2022
Revenue & Profitability Indicators					
Operating income (OI)	8,146	9,286	10,008	10,194	9,461
Growth in OI	-11.0%	14.0%	7.8%	1.9%	-7.2%
OPBDITA	4,497	5,130	5,499	5,893	5,459
Profit after tax (PAT)	2,618	2,657	3,342	3,588	3,776
Net cash accruals (NCA)	1,891	2,762	1,672	2,795	2,756
OPBDITA/OI	55.2%	55.2%	54.9%	57.8%	57.7%
PAT/OI	32.1%	28.6%	33.4%	35.2%	39.9%
ROCE	10.7%	12.2%	9.1%	11.2%	8.3%
Short-term debt	280	416	714	726	1,324
Long-term debt	18,322	20,667	24,529	24,656	26,789
Total debt	**18,602**	**21,083**	**25,244**	**25,382**	**28,113**
Tangible net worth (TNW)	30,041	30,798	31,381	33,090	34,921
Total debt/TNW	0.56	0.63	0.74	0.71	0.74
Total debt/OPBDITA	4.14	4.11	4.59	4.31	5.15
Interest coverage	4.87	5.73	6.91	9.07	10.26
TOL/TNW	0.91	0.98	1.09	1.04	1.05
NCA /TD	10.2%	13.1%	6.6%	11.0%	9.8%
DSCR	1.66	1.95	2.23	2.33	2.72
Debtor days	64	116	145	109	75
Creditor days	-	-	-	-	-
Inventory days	15	16	15	19	21
NWC/OI	27.3%	47.6%	45.4%	33.5%	25.3%
Fund flows from operations	2,902	3,420	3,863	4,335	3,987
Retained cash flows	3,022	559	1,594	4,136	3,770
Free cash flows	1,096	(720)	(1,286)	3,229	(979)

Source: Company, ICRA Research; Note: Amounts in Rs. crore;

Annexure II: Details of limits rated

ISIN No	Instrument Name	Date of Issuance / Sanction	Coupon Rate	Maturity Date	Amount Rated (RS Crore)	Current Rating and Outlook
INE848E07120	LT Bonds- Q Series	12-Mar-12	9.25%	12-Mar-23	105.5	[ICRA]AAA (Stable)
INE848E07138	LT Bonds- Q Series	12-Mar-12	9.25%	12-Mar-24	105.5	[ICRA]AAA (Stable)
INE848E07146	LT Bonds- Q Series	12-Mar-12	9.25%	12-Mar-25	105.5	[ICRA]AAA (Stable)
INE848E07153	LT Bonds- Q Series	12-Mar-12	9.25%	12-Mar-26	105.5	[ICRA]AAA (Stable)
INE848E07161	LT Bonds- Q Series	12-Mar-12	9.25%	12-Mar-27	105.5	[ICRA]AAA (Stable)
INE848E07252,	LT Bonds- R Series- Tranche 1	11-Feb-13	8.70%	11-Feb-23	6.85	[ICRA]AAA (Stable)
INE848E07260,	LT Bonds- R Series- Tranche 1	11-Feb-13	8.70%	11-Feb-24	6.85	[ICRA]AAA (Stable)
INE848E07492,	LT Bonds- R Series- Tranche 1	11-Feb-13	8.70%	11-Feb-25	6.85	[ICRA]AAA (Stable)
INE848E07500,	LT Bonds- R Series- Tranche 1	11-Feb-13	8.70%	11-Feb-26	6.85	[ICRA]AAA (Stable)
INE848E07344,	LT Bonds- R Series- Tranche 2	11-Feb-13	8.85%	11-Feb-23	31.84	[ICRA]AAA (Stable)
INE848E07351,	LT Bonds- R Series- Tranche 2	11-Feb-13	8.85%	11-Feb-24	31.84	[ICRA]AAA (Stable)
INE848E07369,	LT Bonds- R Series- Tranche 2	11-Feb-13	8.85%	11-Feb-25	31.84	[ICRA]AAA (Stable)
INE848E07377,	LT Bonds- R Series- Tranche 2	11-Feb-13	8.85%	11-Feb-26	31.84	[ICRA]AAA (Stable)
INE848E07385	LT Bonds- R Series- Tranche 2	11-Feb-13	8.85%	11-Feb-27	31.84	[ICRA]AAA (Stable)
INE848E07435,	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-23	89.2	[ICRA]AAA (Stable)
INE848E07443,	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-24	89.2	[ICRA]AAA (Stable)
INE848E07450,	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-25	89.2	[ICRA]AAA (Stable)
INE848E07468,	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-26	89.2	[ICRA]AAA (Stable)
INE848E07476,	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-27	89.2	[ICRA]AAA (Stable)
INE848E07484	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-28	89.2	[ICRA]AAA (Stable)
INE848E07518	Tax Free Bonds-13-1A	2-Nov-13	8.18%	2-Nov-23	50.81	[ICRA]AAA (Stable)
INE848E07542	Tax Free Bonds-13-1B	2-Nov-13	8.43%	2-Nov-23	60.77	[ICRA]AAA (Stable)
INE848E07526	Tax Free Bonds-13-2A	2-Nov-13	8.54%	2-Nov-28	213.12	[ICRA]AAA (Stable)
INE848E07559	Tax Free Bonds-13-2B	2-Nov-13	8.79%	2-Nov-28	85.61	[ICRA]AAA (Stable)
INE848E07534	Tax Free Bonds-13-3A	2-Nov-13	8.67%	2-Nov-33	336.07	[ICRA]AAA (Stable)
INE848E07567	Tax Free Bonds-13-3B	2-Nov-13	8.92%	2-Nov-33	253.62	[ICRA]AAA (Stable)
INE848E07AH8	LT Bonds- W1 Series	15-Sep-17	6.91%	15-Sep-22	300	[ICRA]AAA (Stable)
INE848E07AI6	LT Bonds- W2 Series	15-Sep-17	7.35%	15-Sep-23	150	[ICRA]AAA (Stable)
INE848E07AJ4	LT Bonds- W2 Series	15-Sep-17	7.35%	15-Sep-24	150	[ICRA]AAA (Stable)
INE848E07AK2	LT Bonds- W2 Series	15-Sep-17	7.35%	15-Sep-25	150	[ICRA]AAA (Stable)
INE848E07AL0	LT Bonds- W2 Series	15-Sep-17	7.35%	15-Sep-26	150	[ICRA]AAA (Stable)
INE848E07AM8	LT Bonds- W2 Series	15-Sep-17	7.35%	15-Sep-27	150	[ICRA]AAA (Stable)
INE848E07AO4	LT Bonds- Y Series	7-Oct-19	7.50%	7-Oct-25	300	[ICRA]AAA (Stable)
INE848E07AP1	LT Bonds- Y Series	7-Oct-19	7.50%	7-Oct-26	300	[ICRA]AAA (Stable)
INE848E07AQ9	LT Bonds- Y Series	7-Oct-19	7.50%	7-Oct-27	300	[ICRA]AAA (Stable)
INE848E07AR7	LT Bonds- Y Series	7-Oct-19	7.50%	7-Oct-28	300	[ICRA]AAA (Stable)
INE848E07AS5	LT Bonds- Y Series	7-Oct-19	7.50%	6-Oct-29	300	[ICRA]AAA (Stable)
INE848E07AT3	LT Bonds- Y1 Series	3-Jan-20	7.38%	3-Jan-26	100	[ICRA]AAA (Stable)
INE848E07AU1	LT Bonds- Y1 Series	3-Jan-20	7.38%	2-Jan-27	100	[ICRA]AAA (Stable)
INE848E07AV9	LT Bonds- Y1 Series	3-Jan-20	7.38%	3-Jan-28	100	[ICRA]AAA (Stable)
INE848E07AW7	LT Bonds- Y1 Series	3-Jan-20	7.38%	3-Jan-29	100	[ICRA]AAA (Stable)
INE848E07AX5	LT Bonds- Y1 Series	3-Jan-20	7.38%	3-Jan-30	100	[ICRA]AAA (Stable)
INE848E07112	LT Bonds- Q Series	12-Mar-12	9.25%	12-Mar-22	105.5	[ICRA]AAA (Stable); withdrawn
INE848E07245	LT Bonds- R Series- Tranche 1	11-Feb-13	8.70%	11-Feb-22	6.85	[ICRA]AAA (Stable); withdrawn
INE848E07336	LT Bonds- R Series- Tranche 2	11-Feb-13	8.85%	11-Feb-22	31.84	[ICRA]AAA (Stable); withdrawn

ISIN No	Instrument Name	Date of Issuance / Sanction	Coupon Rate	Maturity Date	Amount Rated (RS Crore)	Current Rating and Outlook
INE848E07427	LT Bonds- R Series- Tranche 3	11-Feb-13	8.78%	11-Feb-22	89.2	[ICRA]AAA (Stable); withdrawn
INE848E07AG0	LT Bonds- W1 Series	15-Sep-17	6.91%	15-Sep-21	300	[ICRA]AAA (Stable); withdrawn
-	Unplaced bond programme	-	-	-	877.72	[ICRA]AAA (Stable); withdrawn

Exhibit 14: Details of limits rated on long-term scale

Not applicable

Exhibit 15: Details of limits rated on short-term scale

Not applicable

Exhibit 3: Details of debt instruments rated on short-term scale

Not applicable

Annexure III: Rating history for past three years

	Instrument	Current rating (FY2023)				Chronology of rating history for the past 3 years			
		Type	Amount rated (Rs. crore)	Amount outstanding as on May 31, 2022 (Rs. crore)	Date & rating in	Date & rating in FY2022	Date & rating in FY2021	Date & rating in FY2020	
					July 08, 2022	July 09, 2021	July 24, 2020	Sep 30, 2019	April 23, 2019
1	Long term bonds programme	Long-term	5,299.30	5,299.30	**[ICRA] AAA (Stable)**	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)
2	Long term bonds programme	Long-term	533.39	-	**[ICRA] AAA (Stable); withdrawn**	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)
3	Unplaced bond programme	Long-term	877.72	-	**[ICRA] AAA (Stable); withdrawn**	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)	[ICRA] AAA (Stable)

Annexure IV: List of entities considered for consolidated analysis:

Company Name	NHPC Ownership	Consolidation Approach
NHPC Limited	100.00% (rated entity)	Full Consolidation
NHDC Limited	51.08%	Full Consolidation
Loktak Downstream Hydroelectric Corporation Limited	74.83%	Full Consolidation
Bundelkhand Saur Urja Limited	86.67%	Full Consolidation
Lanco Teesta Hydro Power Limited	100.00%	Full Consolidation
Jal Power Corporation Limited	100.00%	Full Consolidation
Ratle Hydroelectric Power Corporation	73.53%	Full Consolidation
Chenab Valley Power Projects Limited	55.13%	Equity Method
National High Power Test Laboratory Private Limited	20.00%	Equity Method

Source: *Company*

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