

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 112/MP/2025

Coram:

Shri Jishnu Barua, Chairperson

Shri Ramesh Babu V., Member

Shri Harish Dudani, Member

Date of order: 7th February, 2025

In the matter of:

Petition under section 79(1)(k) of the Electricity Act, 2003 read with Regulation 13 of Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 and Regulation 19(2) & 19(3) of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 seeking permission for injection of infirm power beyond 30.09.2024 in case of Parbati-II Hydroelectric Project (800MW).

And

In the matter of

NHPC Limited,
NHPC Office Complex,
Sector-33, Faridabad-121003.

..... **Petitioner**

Vs.

**1. Northern Regional Load Despatch Centre,
(Power System Operation Corporation Limited),**
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi -110016.

2. Northern Regional Power Committee,
18-A, Qutab Institutional Area,
Shaheed Jeet Singh Marg,
New Delhi-110030.

3. Power Grid Corporation of India Limited,
"Saudamini", Plot No.2,
Sector-29, Near IFFCO Chowk,
Gurgaon-122001, Haryana.

4. Parbati Koldam Transmission Company Limited,
5th Floor, JMD Galleria, Sector-48,
Sohna Road, Gurgaon-122018, Haryana.

5. Punjab State Power Corporation Limited,
The Mall, Near Kali Badi Mandir,
Patiala-147001, Punjab.

6. Haryana Power Purchase Centre,
Shakti Bhawan, Sector-6,
Panchkula-134109, Haryana.

7. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14-Ashok Marg,
Lucknow-226001, Uttar Pradesh.

8. The Chief Engineer & Secretary,
Engineering Dept., 1st Floor,
UT Chandigarh, Sector-9 D,
Chandigarh-160009.

9. BSES Rajdhani Power Ltd.,
BSES Bhawan,
Nehru Place,
New Delhi-110019.

10. BSES Yamuna Power Limited,
Shakti Kiran Building,
Karkadooma, Delhi-110072.

11. Tata Power Delhi Distribution Limited,
Erstwhile North Delhi Power Ltd.,
Grid Sub-station Building,
Hudson Lines,
Kingsway Camp, Delhi-110009.

12. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House,
Shimla-171004, Himachal Pradesh.

13. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248001, Uttarakhand.

14. Jaipur Vidyut Vitaran Nigam Limited,
Vidyut Bhawan, Janpath,
Jyoti Nagar, Jaipur-302005, Rajasthan.

15. Ajmer Vidyut Vitaran Nigam Limited,
Old Power House, Hatthi Bhatta,
Jaipur Road,
Ajmer-305001, Rajasthan.

16. Jodhpur Vidyut Vitaran Nigam Limited,
New Power House,
Industrial Area,
Jodhpur-342003, Rajasthan.

17. Power Development Department,
New Secretariat,
Jammu (J&K)-180001.

....Respondents

ORDER

This Petition has been filed by the Petitioner, NHPC Limited (hereinafter referred to as 'the Petitioner'), seeking permission from the Commission for injection of infirm power beyond 30.9.2024 in case of Parbati-II Hydroelectric Project (800MW) in the State of Himachal Pradesh in terms of Regulation 13 of the Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 (hereinafter referred to as 'the GNA Regulations') and Regulation 19(2) & 19(3) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 (hereinafter referred to as 'the Grid Code'). The Petitioner has made the following prayers:

“ (1) Allow extension of time for injection of infirm power from all the four units of Parbati-II Hydroelectric Project beyond 30.09.2024 and upto 31.03.2025 or actual COD of individual units whichever is earlier, as per provisions of Regulation 13 of Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 and Regulation 19(2) & 19(3) of Central Electricity Regulatory Commission (Indian Electricity Grid

Code) Regulations, 2023.

(2) Pass such further order or orders as may be deemed fit and proper in the facts and circumstances of the case.”

2. The Petitioner has submitted that the Petitioner company is constructing the 800MW (4x200MW) Parbati-II Hydroelectric Project in the State of Himachal Pradesh (hereinafter referred to as ‘the Project’) so as to harness the hydro potential of the lower reaches of the river Parbati with expected annual generation of 3124.60 MUs. As per the CCEA sanction accorded by the Ministry of Power, Govt of India on 11th September 2002, the project was supposed to be completed within 7 years from the date of Govt. approval, i.e., by 11th September 2009. However, due to hindrances on account of various reasons such as delayed Forest clearance, natural calamities, strikes, uncertain & unpredictable adverse geological conditions in Himalayan terrain, delay on account of nation-wide lockdown due to the COVID-19 pandemic, etc., the project is now anticipated to be completed in March 2025 with a delay of 186 months as per the revised construction schedule.

3. The Petitioner has submitted that the scheduled COD of the generating station was 11.9.2009. Unit-I and Unit-II of the generating station were first synchronized with the grid on 14.9.2018 and 22.9.2018, respectively, with available water from Jiwa Nallah. However, due to the unavailability of surplus water, unit-I and unit-II could not be declared under commercial operation. Accordingly, with the prior permission of NRLDC, unit-I and unit-II of the generating station were re-synchronised with the grid on 5.7.2019 and 6.7.2019, respectively.

4. The project has been generating infirm power since the synchronization of its units

depending upon the availability of water. The total quantum of infirm power generated by the Project till date, i.e., 4.12.2022, is to the tune of 1089.58 MUs, including 42 MUs generated till 8.12.2018. The total quantum of infirm power generated by the Project till 4.12.2022 is to the tune of 1089.58 MUs, including 42 MUs generated till 8.12.2018. The Petitioner has submitted that it is selling infirm power in the Power Exchange after implementation of the DSM Regulations, 2022, and it has sold 15.47 MUs in the market till 15.10.2024.

5. The Commission, in its order dated 11.1.2024 in Petition No. 10/MP/2024, had allowed the injection of infirm power of all four units of the Project up to 30.9.2024. The Petitioner has submitted that the units could not be declared under commercial operation within the given timeframe due to the following reasons:

(a) Balance HRT Works: Completion of HRT is a critical path for the COD of the Project. Excavation of HRT was completed on 3.9.2024 and at present, concrete lining and grouting works are in progress. Balance HRT works (as on 30.9.2024) are as follows:

S.No.	Activity	Unit	Total	Completed	Balance	Remarks
1	Overt lining of HRT	m	31557	31138	419	Progress Sketch attached
2	Invert Lining of HRT	m	31557	26913	4644	
3	Grouting works	m	31557	27005	4552	

(b) The major reasons for delay are as follows:

(i) HRT through Face-4: Excavation from face-4, i.e., TBM face, was done through highly abrasive and high-strength quartzite rock. Major hindrances resulting in delay since the re-synchronisation of Unit-1 are as follows:

- Rock bursting during and after excavation resulted in an increase in the quantum of support systems like fore polling, continuous installation of ribs, McNally plates, etc. which consumed considerable time.
- Hard rock conditions resulted in frequent change of cutters which consumed considerable time.
- Frequent faults in hydraulic systems in TBM also resulted in hindrances; the faults were rectified in the month of June 2019 after taking a maintenance stopover.
- The second scheduled stopover for maintenance was also taken from 1st August to 7th August 2019.
- Ingress of water of the order of 4000 lpm in the month of August 2019 hampered the excavation progress.
- Formation of large cavities (up to 4m high) due to rock fall from the crown during the months of September 2019 & October 2019 resulted in less progress.
- The third scheduled stopover for maintenance of cutter head buckets, gripper cylinders, and thrust cylinders was taken from 30.12.2019 to 10.01.2020.
- Two Gripper cylinders and two main drive motors had to be replaced in the month of March 2020.

- Excessive Rock-fall and formation of large cavities during the month of March 2020 hampered the progress. As a result, progress of only 8.70m could be achieved during the month.
- Work came to standstill due to lockdown w.e.f., 22.3.2020 in view of Covid-19 pandemic. Work was resumed on 23.4.2020. However, the work suffered due to various restrictions imposed by the Central and State Governments.
- Progress further suffered as a rock fall occurred on 13.05.2020, followed by intermittent rock falls due to rock bursting/weak rock mass; consequently, no excavation could be done up to the end of May 2020. Due to delays in excavation, concrete lining work also suffered as it is a dependent activity.
- Major maintenance of TBM was done from 27.04.2021 to 17.05.2021. During maintenance, repair, and testing works of Thrust and Gripper Cylinders (including removal and re-installation), cutter head face hardening, and Main bearing seal replacement were carried out.
- Excavation activities were hampered due to various travel restrictions imposed by Govt during the second wave of COVID-19. Also, the oxygen cylinders available with the contractor were taken over by the District Administration. Due to the shortage of Oxygen, maintenance activities were hampered.
- Progress was hampered due to hard rock conditions in July 2021 and August 2021.
- Problems with mechanical parts of the machine-like Kelly, gripper, thrust cylinder, etc., and due to the ingress of water from the face, there was intermixing of muck with water. The silt accumulated in the invert of the L-1 and L-2 areas and beneath the California deck. The material had to be removed manually and using a sludge pump. This affected the progress of works during Feb'22, March 2022 & April 2022.

- Progress was hampered due to machine faults such as malfunctioning of gripper cylinders and thrust cylinders and malfunction of the primary conveyor belt. Further, encountering hard rock conditions resulted in low penetration and slow progress thereof.
- Planned maintenance of TBM was carried out from 11.06.2022 to 15.06.2022 and 26.06.2022 to 30.06.2022. TBM hydraulic system repair and maintenance including flushing of valves and replacement of hydraulic oil, repair of thrust pumps, bucket no. 01 and 06 of cutter head repaired, hydraulic oil of the main tank and 01 no gripper cylinder was replaced.
- TBM maintenance work was again taken up from 26.07.2022 to 15.08.2022. Hard-facing of the cutter head, new stiffener fixing, installation of 7 no. gripper cylinders and 16 no. PRV on all gripper cylinders was done.
- Low TBM penetration rate due to extremely hard rock conditions encountered from 05.09.2020 to 16.09.2022. Rock bursting on 06.09.2022 at rib erection area and subsequent muck removal activities were carried out up to 19.09.2022.
- Due to heavy rock bursting, the TBM roof, Kelly, and invert scraper plates were damaged on 04.11.2022. Repair/maintenance of TBM carried out from 04.11.2022 to 15.11.2022 due to which excavation could not be carried out.
- Problem due to alignment issue resulted in cracking/damage of eye joint connecting left side shield support and invert scraper. Repair/maintenance carried out from 15.12.2022 to 28.12.2022. Excavation resumed from 29.12.2022.
- Damage to the gripper and thrust cylinders of TBM in the first half of April 2023 resulted in a complete stoppage of excavation activities. 04 spherical bearings of the gripper cylinder were damaged. These bearings were tailor-made and were not available in the local market. A supply order was placed to a

Bengaluru firm for providing the spherical bearing with a supply time of 6 weeks. TBM could be made fit for boring on 24.07.2023.

- Due to heavy rain in the project area, approach roads and transmission lines to sites were damaged. Further, a cloud burst in Pancha nallah in July 2023 damaging the already restored roads and transmission lines in addition to a fresh washout of roads at multiple locations.
- Excavation activity in Face-4 was completed on 26.09.2023. At present concrete lining and grouting of HRT is in progress. As on 30.09.2024, concrete lining and grouting are balanced at 12m and 210m, respectively.

a) HRT through Face-2, 3 & 6: These HRT works were awarded to M/s Valecha Engineering Ltd. in the year 2013. However, due to poor performance, the contract had to be terminated in December 2018. The tender for balance works was floated in 2019 but had to be extended multiple times due to poor response from the bidders, resulting in a delay in the award of works. Finally, a 1500 m stretch in face-3 was awarded to M/s Gammon Engineers and Contractors Private Limited on 02.06.2020.

- Mobilization activities were hampered as the site could not be handed over to the contractor due to agitation/hindrances created by labours/workers of the previous contractor. The site could be handed over to the contractor on 16.08.2020 after several rounds of negotiations involving labour unions, local people, the contractor, and the District administration. After completion of dewatering activities (as the tunnel was completely submerged in water) and other associated works like illumination and electrification, excavation activities started on 03.01.2021. Excavation of 646.85m was completed till 12.07.2021.
- Due to heavy ingress of water on 12.07.2021 when the tunnel face was at RD $\pm 5002\text{m}$, the tunnel got inundated up to RD $\pm 2370\text{m}$. Additional resources

were mobilized, and dewatering of the tunnel was carried out in the range of 10500-11500lpm, and the face was accessible on 28.09.2021. Channelization of ingress water and treatment works were undertaken. However, the treatment works were not successful.

- Based on the Tunnel Seismic Prediction test, the tunnel was detoured from 27m short of the already excavated face towards the left on 31.10.2021.
- On 01.12.2021, when the face was at RD + 61m, there was an ingress of water with silt, and the tunnel was again inundated. After dewatering, removal of muck, and installation of supports, excavation activities resumed on 24.01.2022.
- With continuous treatment works by drilling & grouting, fore poling, and the installation of support, the weak zone was successfully negotiated at around RD 91m.
- Further, after the advancement up to 100m, there was an episode of rock bursting at the face on 30.03.2022 followed by ingress of silt and water on 06.04.2022, 15.04.2022 and 13.05.2022 resulting in accumulation of silt/muck/fragments of quartzite. Drill Jumbo was completely buried in the muck. As a result, these excavations came to a complete halt from 30.03.2022 and could be resumed on 12.07.2022 after extensive treatment works like rib erection, backfilling, shotcrete, pipe roofing, fore-poling, drilling, and grouting, etc.
- Tunnel passed through a weak zone, and due to frequent popping and rock bursting, excavation was carried out with utmost caution by taking controlled blast followed by installation of supports viz. ribs with backfill concrete, shotcrete, rock anchors, pipe-roofing, fore-poling, pre-grouting, etc. Probe holes are being drilled at regular intervals to interpret the tunneling media. Stress relief holes are being drilled before excavation for abatement of stress-induced phenomena like rock bursting. This resulted in the slow progress of

works at this site. Excavation activities at Face-3 were completed on 25.10.2023.

- Due to encountering unfavorable geological conditions in HRT face-3, a steel liner was installed within 71m reach of the detour tunnel. Since, the zone had posed numerous problems during excavation, the installation of steel liner was done cautiously, resulting in the slow progress of erection.
- Overt lining is in progress at HRT face-3. Balance Overt lining from Face-2, Face-3, and Face-5 is 32m, 269m, and 106m, respectively.
- Invert lining in Face-3 is in progress and is balanced in 4500m. In addition to this, the Invert lining of 106m is balanced from Face-5.
- Grouting activity was taken up in Face-2. As on date, grouting in only 44m reach is balanced near the junction of Face-2 & Face-3 and shall be taken up at the time of Adit plugging.
- Grouting activity in HRT face-3 is in progress and is balanced in 4552m.
- Presently, Overt lining, Invert lining and grouting activities are being carried out as parallel activities.
- Excavation of Face-5 completed on 03.09.2024. This also marks the completion of the excavation of the 31557m long HRT.

6. The Petitioner has submitted that it has made all efforts to ensure the completion of the balance works of the Project, especially HRT works, within the stipulated time but could not succeed for reasons beyond its control and also, the reasons enumerated in paragraph 5 above, it was not able to complete the testing, including full load testing, within the prescribed period from the date of the re-synchronization of unit-I, unit-II Unit III and Unit- IV of the generating station and the project as a whole is expected to be commissioned by March 2025. Accordingly, the Petitioner has sought permission to inject infirm power till

31.3.2025 or the actual date of commercial operation of individual units, whichever is earlier.

The Petitioner has submitted that revenue earned from the injection of infirm power will be reduced from the capital cost of the project, which would decrease the tariff and it shall be beneficial to the beneficiary States of the Project. The Petitioner has submitted that in view of the above reasons, the entire project (4X200 MW) is expected to be completed by March 2025.

7. The Petition is admitted by circulation.

8. We have considered the submissions of the Petitioner. Regulation 13 of the GNA Regulations provides as under:

“13. Injection of infirm power and drawal of start-up power: Connectivity grantee shall be eligible to inject infirm power and draw start up power in accordance with the provisions of the Grid Code.”

9. Regulation 19 (2) and 19 (3) of the Grid Code provides as under:

“19. Drawal of start-up power and injection of infirm power

(1) A unit of a generating station including unit of a captive generating plant that has been granted connectivity to the inter-State Transmission System in accordance with GNA Regulations shall be allowed to inter-change power with the grid during the commissioning period, including testing and full load testing before the COD, after obtaining prior permission of the concerned Regional Load Despatch Centre:

Provided that the concerned Regional Load Despatch Centre while granting such permission shall keep grid security in view.

(2) The period for which such inter-change shall be allowed shall be as follows:

(a) Drawal of start-up power shall not exceed 15 months prior to the expected date of first synchronization and one year after the date of first synchronization; and

(b) Injection of infirm power shall not exceed one year from the date of first synchronization.

(3) Notwithstanding the provisions of clause (2) of this Regulation, the Commission may allow extension of the period for inter-change of power beyond the stipulated

period on an application made by the generating station at least two months in advance of the completion of the stipulated period.”

10. We have considered the submissions and the difficulties stated by the Petitioner, as quoted in paragraph 5 above. In the given facts and circumstances, we are inclined to invoke our power under the provision of Regulation 19 (3) of the Grid Code. In the exercise of the power, we hereby allow the injection of infirm power into the grid for commissioning tests, including full load testing of all four units of the generating station up to 31.3.2025. The Petitioner is hereby directed to make all possible efforts to commission the project by March 2025 as submitted. It is, however, clarified that the extension of time granted as above shall not automatically entitle the Petitioner for IEDC/IDC for the delay in declaration of COD from the scheduled COD, which shall be decided separately in accordance with the relevant provisions of the Tariff Regulations. Let an extract copy of the order be provided to the concerned Regional Load Despatch Centre, which will, while granting such permission, keep the grid security in view.

11. In terms of the above, the Petition No. 112/MP/2025 is disposed of.

Sd/-
(Harish Dudani)
Member

sd/-
(Ramesh Babu V.)
Member

sd/-
(Jishnu Barua)
Chairperson