

F. No. 367-12/4/2023-GEC  
**Government of India**  
**Ministry of New and Renewable Energy**  
**(Green Energy Corridor Division)**

Atal Akshay Urja Bhawan  
Opposite CGO Complex Gate no.2,  
Lodhi Road, New Delhi – 110003;  
Dated: 15 February 2024

To  
The Pay & Account Officer,  
Ministry of New and Renewable Energy,  
New Delhi-110003

**Subject: Sanction of the project “Green Energy Corridor Phase-II – Inter-State Transmission System for 13 GW Renewable Energy Project in Ladakh”**

Sir/Madam,

In accordance with the approval of the Cabinet Committee on Economic Affairs (CCEA) in its meeting held on 18.10.2023, I am directed to convey the sanction of the President of India for implementation of the project “Green Energy Corridor Phase-II – Inter-State Transmission System for 13 GW Renewable Energy Project in Ladakh (ISTS GEC-II)” .

2. **Objective:** The ISTS GEC-II project envisages setting up of about 713 km [or 1268 circuit kilometres (ckm)] transmission lines and two nos. of 5 GW capacity of High Voltage Direct Current (HVDC) terminals – one each at Pang (Ladakh) and Kaithal (Haryana). The project details are mentioned in the project implementation guidelines enclosed at **Annex-I**. The project will facilitate evacuation of power from renewable energy (RE) power project comprising of 13 GW capacity along with 12 GWh Battery Energy Storage System (BESS) in Ladakh. The project will be implemented by Power Grid Corporation of India Limited (POWERGRID). The project will be implemented in a single phase and is scheduled to be completed by Financial Year 2029-30.

3. **Central Financial Assistance:** The total estimated project cost is Rs. 20,773.70 Crore [excluding the Interest During Construction (IDC)]. The approved Central Financial Assistance (CFA) @ 40% of the project cost is Rs. 8,309.48 Crore. The CFA will be capped at Rs. 8,309.48 Crore or 40% of the DPR cost or 40% of project completion cost, whichever is lower.

4. **Financial Model:** The balance project cost is to be arranged by POWERGRID through debt and equity. As recommended by the Public Investment Board (PIB), Department of

Expenditure, the Return on Equity (RoE) for the transmission project under ISTS GEC-II will be capped at 14% (post-tax). The other components of tariff will be governed by extant CERC tariff regulations for Regulated Tariff Mechanism (RTM) projects and its amendments thereof.

5. **Project Implementation:** The project implementation guidelines are enclosed at **Annex-I**. The Ministry of New and Renewable Energy (MNRE) will coordinate with Ministry of Power to ensure that RE generation and the transmission projects are planned and executed in a systematic manner to ensure efficient and optimal utilization of the RE transmission system.

6. **Project Monitoring:** The project will be monitored closely by CEA and CTUIL. A monthly management summary report / dashboard shall be prepared by POWERGRID and will be submitted to CEA and MNRE.

7. The funds for implementation of the above project would be met from Demand No.71- Ministry of New & Renewable Energy; Major Head: 2810-New & Renewable Energy; Minor Head: 00.101-Grid Interactive & Distributed Renewable Power; Sub Head: 10- Storage and Transmission; 01-Green Energy Corridor, 10.01.35 – Grants for Creation of Capital Assets during the year 2023-24.

8. This sanction is issued in exercise of the delegated powers conferred on the Ministry and in consultation with IFD vide their Dy. No. 420 dated 15/02/2024.

Yours faithfully,



**(Tarun Singh)**

Scientist "E"

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Encl.: As above

Copy for information and necessary action to:

- i. Central Government Ministries/ Departments (Department of Expenditure / Department of Economic Affairs / NITI Aayog/ Ministry of Power / Ministry of Environment, Forest and Climate Change/ Department for Promotion of Industry and Internal Trade)
- ii. Chairperson, Central Electricity Authority
- iii. Principal Secretaries (Power/Energy) of the States/UTs of Ladakh, Himachal Pradesh, Punjab and Haryana
- iv. Principal Director of Audit, Scientific Departments, DGACR Building, IP Estate, Delhi
- v. Chairman and Managing Director, POWERGRID
- vi. Chairman, CTUIL

Internal Distribution:

- i. PS to Hon'ble Minister of Power and New & Renewable Energy
- ii. PS to Hon'ble Minister of State for New & Renewable Energy and Chemicals & Fertilizers
- iii. Sr. PPS to Secretary, MNRE
- iv. All Group Heads, MNRE
- v. Scientist 'D' (RT), MNRE
- vi. Cash Section, MNRE
- vii. Director (NIC) to upload this on the Ministry's website.
- viii. Hindi Section for Hindi version
- ix. Sanction folder



**(Tarun Singh)**

**Project Implementation Guidelines for**

**GREEN ENERGY CORRIDOR (GEC) PHASE-II – INTER-STATE TRANSMISSION SYSTEM (ISTS) FOR 13 GW RENEWABLE ENERGY PROJECT IN LADAKH**

**1. BACKGROUND**

1.1 Ladakh has very high solar insolation, and is therefore an appropriate site for setting up Gigawatt scale renewable energy (RE) generation capacity. The Ministry of New and Renewable Energy (MNRE) has prepared a plan to set up 13 GW RE generation capacity along with 12 GWh Battery Energy Storage System (BESS) in Ladakh. However, at present there is no infrastructure for power evacuation and transmission existing in the vicinity. For evacuating this huge quantum of power, it is necessary to create an inter-state transmission infrastructure.

1.2 In view of the complex terrain, non-existence of any transmission system and adverse climatic conditions in Ladakh, state-of-the-art Voltage Source Converter (VSC) based High Voltage Direct Current (HVDC) system and Extra High Voltage Alternating Current (EHVAC) systems will be deployed. Keeping in view the complex terrain and defence sensitivities, Power Grid Corporation of India Limited (POWERGRID) will be the Implementing Agency for this project. The project will be implemented by POWERGRID under Regulated Tariff Mechanism (RTM).

1.3 The Transmission system would pass through difficult mountainous terrain of high altitude and extreme climatic conditions viz. temperature going as low as minus 45°C, heavy snow (maximum standing snow of approx. 5-6 metres), etc. In order to counter the sub-zero temperature of the region, special kind of steel would have to be used in towers and its associated accessories. The transmission system would also be passing through avalanche prone zones and, thus, state-of-the art technology would be used to establish a first of its kind system in the world in such topography.

**2. OBJECTIVE**

2.1 This ISTS GEC-II project is to create inter-state transmission infrastructure required for power evacuation from RE power project of 13 GW capacity and Battery Energy Storage System (BESS) of 12 GWh capacity to be setup in Pang (Ladakh). The transmission line for evacuating this power will pass through Himachal Pradesh, Punjab and up to Kaithal in Haryana, where it will be integrated with the National Grid. An interconnection to be made from this project in Leh to existing Ladakh grid so as to ensure reliable power supply to the Ladakh. It will be connected to Leh-Kargil-Alusteng (Srinagar) line to provide power to UT of Jammu and Kashmir.

### 3. SCOPE OF WORK

3.1 The ISTS GEC-II project involves setting up of about 713 km [or 1268 circuit kilometres (ckm)] of transmission lines and two nos. of 5 GW capacity of High Voltage Direct Current (HVDC) terminals – one each at Pang (Ladakh) and Kaithal (Haryana). The project will be implemented in a single phase. The broad scope of the project is as follows:

#### A. HVDC Terminals

±350 kV, 5000MW VSC HVDC terminal each at Pang (Leh) and Kaithal (Haryana)

#### B. HVDC Line

± 350 kV HVDC line between Pang and Kaithal - 480 km

#### C. AC System

- i. 400 kV PS-1 (Pang) - Pang Double Circuit (D/C) line - 7 km
- ii. 400 kV PS-2 (Pang) - Pang D/C line - 27 km
- iii. 400 kV PS-3 (Pang) - Pang D/C line - 41 km
- iv. 220 kV Pang - Leh (Phyang) D/C line (single circuit strung) - 158 km

3.2 The detailed scope of work of the project will be as per the Detailed Project Report (DPR) submitted by POWERGRID in October 2022.

### 4. FINANCIAL MODEL

4.1 The project has been approved at an estimated project cost of Rs. 20,773.70 Crore [excluding the Interest During Construction (IDC)] with Central Financial Assistance (CFA) @ 40% of the project cost as Rs. 8,309.48 Crore. The CFA will be capped at Rs.8309.48 Crore or 40% of the DPR cost or 40% of project completion cost, whichever is lower. The CFA will be disbursed to POWERGRID as per financial progress of the project, i.e. 40% of the expenditure, on reimbursement basis. The CFA proposals are to be submitted by POWERGRID on quarterly basis.

4.2 The anticipated year-wise outgo of the CFA is as follows:

Financial Year	Anticipated Project Expenditure (in Rs. Crore)	Financial Progress (%)	CFA (in Rs. Crore)
2025-26	2,077.37	10	830.95
2026-27	3,739.27	18	1,495.70
2027-28	3,739.27	18	1,495.70
2028-29	4,154.74	20	1,661.90
2029-30	2,908.32	14	1,163.32
2030-31*	4,154.73	20	1,661.91
<b>Total</b>	<b>20,773.70</b>	<b>100</b>	<b>8,309.48</b>

\*The last instalment of CFA will be released after commissioning of the project.

4.3 The balance project cost is to be arranged by POWERGRID through debt and equity. As recommended by the Public Investment Board (PIB), Department of Expenditure, the Return on Equity (RoE) for the transmission project under ISTS GEC-II will be capped at 14% (post-tax). The other components of tariff will be governed by extant CERC tariff regulations for RTM projects and its amendments thereof.

4.4 The project cost also includes cost towards securing land for establishments of substations & transition stations, and land compensation (as per guidelines of Ministry of Power dated 15.10.2015 as amended/ supplement along with the guidelines / orders issued by respective State governments), crop/tree compensation, etc. for transmission lines.

4.5 POWERGRID will take measures to contain tariff cost, transmission losses, etc. within the perimeters as envisaged in the project to keep the project viable.

## 5. PROJECT IMPLEMENTATION

5.1 The implementation of the works will be done by POWERGRID through contracts placed by way of open tender. POWERGRID is conducting Front End Engineering and Design (FEED) studies for mitigating the environmental, technical and topographical challenges from Pang (Ladakh) to Kaithal (Haryana). The FEED study is expected to be completed by December 2024. Thereafter, the project will be tendered and awarded (i.e., by March 2025). The project will be completed in 5 years from award of work. Accordingly, the project timeline is 7 years, i.e., from FY 2023-24 to FY 2029-30.

5.2 Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 and the Central Electricity Authority (Safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations, 2011 and their amendments from time to time and other relevant CEA standards would be followed by POWERGRID for the setting up of transmission assets.

5.3 The year-wise targets set for outputs and outcomes of the project are as under:

Activities		Indicators	Target Value	Target				
				2025-26	2026-27	2027-28	2028-29	2029-30
Physical Progress	Addition of transmission line	km	713	--	--	200*	200*	313*
	Power Transmission capacity	MW	5000	--	--	--	--	5000

*\* In the initial two years, tower foundation and tower erection will be done. Stringing will be done from third year onwards and progressively uncharged line sections will be made ready.*

5.4 POWERGRID may utilize the PM-Gati Shakti National Master Plan for conducting the line survey, etc. for avoiding the forest areas, wildlife areas, etc. as much as possible. POWERGRID will prepare a detailed logistic plan keeping in mind the various environment and topographical related limitation. POWERGRID will also coordinate with Border Roads Organization (BRO) for development of road infrastructure including road widening, improvement of hairpin bends, gradient improvement, removal of protruded stones in hilly terrain and strengthening of bridges, construction of new bridges, etc.

5.5 Optical Ground Wire (OPGW) is envisaged at both peaks of transmission towers thereby providing direct optical fibre connectivity between Pang and Kaithal. The OPGW envisaged on the transmission line is primarily to meet the power transmission system requirements like control, protection, remote operation etc. Telecom facilities will be facilitated as per modalities in CERC Sharing regulations, 2020 through Power Teleservices Ltd (100% subsidiary of PGCIL).

## **6. PROCEDURE FOR AVAILING CENTRAL FINANCIAL ASSISTANCE (CFA)**

6.1 The project has been approved under the Green Energy Corridor Phase-II Central Sector Scheme. The extant rules of the Ministry of Finance for Central Sector Schemes will be followed for disbursement of CFA.

6.2 The CFA will be disbursed to POWERGRID as per financial progress of the project, i.e., 40% of the expenditure, on reimbursement basis. The CFA proposals are to be submitted by POWERGRID on quarterly basis. The request for availing the eligible CFA shall be submitted to the Central Electricity Authority (CEA) with a copy to MNRE. CEA will evaluate the proposal and submit a report to MNRE, as is being done under the Intra-State component of GEC Phase-II scheme.

6.3 A Project Appraisal Committee (PAC) will be constituted with the approval of Secretary, MNRE. The PAC will evaluate the CFA proposal along with the CEA's report. The PAC will consist of the concerned Additional Secretary/Joint Secretary/Scientist G – in-charge of GEC in MNRE, representatives of Ministry of Power and CEA. The representatives from POWERGRID, RE project implementing agency (viz. SECI) may be invited to the meetings of the PAC. MNRE will release the funds upon receipt of recommendation from PAC.

6.4 A format for claiming the disbursement along with list of supporting documents will be issued by MNRE.

## **7. PROJECT MONITORING FRAMEWORK**

7.1 The project will be monitored closely by CEA and CTUIL. A monthly management summary report / dashboard shall be prepared by POWERGRID and will be submitted to CEA and MNRE.

## **8. OTHER TERMS AND CONDITIONS**

8.1 POWERGRID is advised to use 'Made in India' equipment/material as much as possible.

8.2 In terms of Rule 230 (1) of General Financial Rules (GFR) 2017, the grantee organization/institute will certify that it has not obtained or applied for grants for the same purpose or activity from any other Ministry or Department of the Government of India or State Government.

8.3 POWERGRID shall submit the year-wise Audited Statements of Expenditure including comments of the Auditor(s) regarding the observance of the condition governing the CFA within six months following the end of each financial year or whenever called for. POWERGRID will submit the Utilization Certificate (UC) in format as per the extant rules of GFR 2017. The UC of the previous CFA will be required before the release of the next CFA instalment. In accordance with rule 230 (3) of GFR 2017, the submission of UC by POWERGRID is not required after the last instalment (which would be released after commissioning of the project and on reimbursement basis).

8.4 As per the provisions contained in Rule 236 of GFR 2017, the accounts of the grantee organization shall be open to inspection by the sanctioning authority and audit, both by Comptroller and Auditor General of India under the provision of CAG (DPC) Act 1971 and internal audit by the Principal Accounts Office of MNRE.

8.5 If POWERGRID avails international / bilateral / multilateral loan, then tendering will be as per relevant guidelines. Where POWERGRID opts for domestic funding, then the tendering is to be ensured generally in line with the extant provisions of Manual for the Procurement of Works issued by DoE, Ministry of Finance.

8.6 POWERGRID shall ensure that the time schedule laid down for the execution of the project is strictly followed. Any request for extension of the project duration, for valid reasons, shall be placed before the PAC. Extension may be granted on recommendations of the PAC and approval of the Competent Authority. POWERGRID shall ensure that the extension request is submitted before expiry of the approved period of the project.

8.7 The grantee organization shall be liable for recovery of the whole or part amount of the CFA/subsidy, with accrued interest and applicable Penal interest, in case of non-compliance of the guidelines.

8.8 POWERGRID will arrange to display a Notice Board at prominent place at the project site to the effect that the project has been financially supported by Ministry of New & Renewable Energy (MNRE), Government of India.

## **9. POWER TO AMEND GUIDELINES**

9.1 MNRE may make necessary amendments in the Project Implementation Guidelines, as and when required with the approval of Hon'ble Minister, New & Renewable Energy, within the broad framework of the CCEA approval.

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