



F. No. 367-12/1/2022-GEC

**Government of India**  
**Ministry of New and Renewable Energy**  
**(Green Energy Corridor Division)**

Block 14, CGO Complex, Lodhi Road  
New Delhi – 110003; dated: 4<sup>th</sup> March 2022

To

- i) Principal Secretaries (Power/Energy) of the States of Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh
- ii) Managing Directors of State Transmission Utilities of the States of Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh

**Subject: Implementation of the scheme “Intra-State Transmission System Green Energy Corridor Phase-II” in the States of Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh**

Sir/Ma'am,

In accordance with the approval of the Cabinet Committee on Economic Affairs (CCEA) in its meeting held on 06.01.2022, I am directed to convey the sanction of the President of India for implementation of the scheme “Intra-State Transmission System Green Energy Corridor (GEC) Phase-II”.

2. **Objective:** The GEC Phase-II scheme is for addition of 10,753 circuit kilometres (ckm) of transmission lines and 27,546 Mega Volt-Amperes (MVA) capacity of sub-stations in seven States, namely Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh. The scheme will facilitate power evacuation from renewable energy (RE) power projects of approx. 20 GW capacity in these States. The scheme will be implemented by the respective State Transmission Utilities (STUs). The scheme is to be completed by Financial Year 2025-26.

3. **Central Financial Assistance:** The total estimated project cost is Rs.12,031.33 crore [excluding the Interest During Construction (IDC)] and the approved Central Financial Assistance (CFA) @ 33 percent of the project cost is Rs. 3970.34 crore. The State-wise project cost and the approved CFA is as under:

State	Project cost without IDC (Rs. Crore)	Central Financial Assistance (Rs. Crore)
Gujarat	3636.73	1200.12
Himachal Pradesh	489.49	161.53

Karnataka	1036.25	341.96
Kerala	420.32	138.71
Rajasthan	880.92	290.70
Tamil Nadu	719.76	237.52
Uttar Pradesh	4847.86	1599.80
<b>Total</b>	<b>12,031.33</b>	<b>3970.34</b>

4. **Financial Model:** The balance 67% of the project cost is available as loan from KfW/REC/PFC. A Joint Declaration of Intent for concessional loans for establishment of Green Energy Corridors has been signed between the Governments of India and Germany. Under this Declaration, concessional loans of total EUR 400 Million is available as committed by KfW, Germany.

5. The list of projects sanctioned under the scheme is placed at **Appendix-I**. As the projects under GEC Phase-II are different from those in GEC Phase-I, the funds for GEC Phase-II will not be used by the States for projects under GEC Phase-I. Further, for the States which are also implementing GEC Phase-I, the CFA under GEC Phase-II will be disbursed only after commissioning of all the projects under GEC Phase-I in that State.

6. **Project Implementation:** The State Transmission Utilities (STUs) shall implement the scheme as per guidelines of the Scheme enclosed at **Annexure-I**. The STUs may divide the projects (as per list in Appendix-I) into various packages for ease of tendering and implementation. The STUs shall submit the list of packages along with their respective DPR costs [i.e. the cost excluding the Interest during Construction (IDC) already approved by Central Electricity Authority (CEA)] to the Ministry within four weeks of issue of this sanction order. The CFA under the scheme will be given at 33% of DPR cost or Awarded cost – whichever is lower and will be computed for each package separately. All the packages must be tendered and awarded to the contractors by the STUs within a period of two years, i.e. by 31<sup>st</sup> December 2023.

7. For a particular package, variation in the project components (i.e. conductors, no. of towers, etc. in transmission lines, and transformers, bays, reactors, etc. in substations) and cost after award of project within a State may be allowed with the approval of Minister In-charge of MNRE without any enhancement in the CFA approved for that particular State. Further, if there is need for any amendment to the Scheme guidelines for better implementation, such amendments will be done with the approval of Minister-in-charge of MNRE within the broad framework of the CCEA approval.

8. The funds for implementation of the above scheme would be met from Demand No.70-Ministry of New & Renewable Energy; Major Head: 2810-New & Renewable Energy, Minor Head: 00.101-Grid Interactive & Distributed Renewable Power, Sub Head: 01- Grid Interactive

Renewable Power; 05-Green Energy Corridors, 01.05.35 – Grants for Creation of Capital Assets during the year 2021-22 (Plan).

9. This sanction is issued in exercise of the delegated powers conferred on the Ministry and in consultation with IFD vide their Dy. No. 308 dated 04.03.2022 & Election Commission of India vide their letter No. 437/6/CG/LA-Multi/ECI/LET/FUNCT/MCC/2022/604 dated 10.02.2022.

Yours faithfully,

  
04/03/2022  
**(Irfan Ahmad)**  
Chief Engineer  
011-24361151  
Email id: ahmad.irfan@nic.in

Encl.: As above

Copy for information and necessary action to:

- i) Central Government Ministries/Departments (DoE/DEA/NITI Aayog/MoP/MoEFCC)
- ii) Chairperson, Central Electricity Authority
- iii) Principal Director of Audit, Scientific Departments, DGACR Building, IP Estate, Delhi

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) CCA, MNRE / Cash Section
- vi) The Pay & Accounts Officer, MNRE
- vii) Director (NIC) to upload this on the Ministry's website.
- viii) Hindi Section for Hindi version
- ix) Sanction folder

  
04/03/2022  
**(Irfan Ahmad)**

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**Scheme Guidelines for Implementation of the Scheme**

**INTRA STATE TRANSMISSION SYSTEM GREEN ENERGY CORRIDOR PHASE-II**

**1. BACKGROUND**

1.1 **GEC Phase-I:** In 2012, a need was felt to create dedicated infrastructure for evacuation and transmission of RE power in RE potential rich states. Based on the assessment done by Power Grid Corporation of India Limited (PGCIL), 8 RE rich States (Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu) submitted their proposals for setting up Intra-State transmission infrastructure and MNRE formulated the Intra-State Transmission System (InSTS) Green Energy Corridor (GEC) Phase-I scheme. The InSTS GEC Phase-I is currently under various stages of completion.

1.2 **GEC Phase-II:** For Phase-II of InSTS GEC, proposals were received from 10 States. Based upon the discussions and the assessment of likely additional renewable energy capacity addition, proposals from 7 States, namely Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh, were shortlisted. This scheme has been formulated by MNRE considering the fact that the States face financial constraints in setting up Intra-State transmission infrastructure for integration of RE projects. The CFA in the proposed scheme will help in offsetting the Intra-State transmission charges and thus keeping power costs down.

**2. OBJECTIVE**

2.1 This scheme will help to create intra-state transmission infrastructure required for power evacuation of Renewable Energy (RE) power projects of approx. 20 GW capacity in 7 implementing States of Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh.

2.2 The scheme is for addition of 10,753 circuit kilometres (ckm) of transmission lines and 27,546 Mega Volt-Amperes (MVA) capacity of substations over a period of 5 years, i.e. FY 2021-22 to FY 2025-26. The scheme will be implemented by the respective State Transmission Utilities (STUs). The state-wise brief of transmission projects under the scheme, as appraised by Central Electricity Authority (CEA), are as under:

<b>State</b>	<b>Length of transmission lines (ckm)</b>	<b>Capacity of substations (MVA)</b>	<b>RE addition envisaged (MW)</b>
Gujarat	5138	5880	4000
Himachal Pradesh	62	761	317
Karnataka	938	1225	2639

Kerala	224	620	452
Rajasthan	1170	1580	4023
Tamil Nadu	624	2200	4000
Uttar Pradesh	2597	15280	4000
<b>Total</b>	<b>10753</b>	<b>27546</b>	<b>19431</b>

### 3. FINANCIAL MODEL

3.1 The scheme has been approved at an estimated project cost of Rs 12031.33 Crore [excluding the Interest during Construction (IDC)] with Central Financial Assistance (CFA) @33 % of the project cost i.e. Rs 3970.34 crore. The State-wise project cost and the approved CFA is as under:

State	Project cost without IDC (Rs. Crore)	Central Financial Assistance (Rs. Crore)
Gujarat	3636.73	1200.12
Himachal Pradesh	489.49	161.53
Karnataka	1036.25	341.96
Kerala	420.32	138.71
Rajasthan	880.92	290.70
Tamil Nadu	719.76	237.52
Uttar Pradesh	4847.86	1599.80
<b>Total</b>	<b>12,031.33</b>	<b>3970.34</b>

3.2 The balance 67% of the project cost is available as loan from KfW/REC/PFC.

3.2.1 **Concessional Loans from KfW, Germany:** A Joint Declaration of Intent for concessional loans for establishment of Green Energy Corridors has been signed between the Governments of India and Germany. Under this Declaration, concessional loans of total EUR 400 Million is available as committed by KfW, Germany. This can be availed by the seven States.

### 4. PROJECT IMPLEMENTATION

4.1 The list of projects sanctioned under the scheme is placed at **Appendix-I**. The STUs may divide these projects into various packages for ease of tendering and implementation. The STUs shall submit the list of packages along with their respective DPR costs [i.e. the cost excluding the Interest during Construction (IDC) already approved by Central Electricity Authority (CEA)] to MNRE within four weeks of issue of the sanction order. All the packages must be tendered and awarded to the contractors by the STUs within a period of two years, i.e. by 31<sup>st</sup> December 2023.

4.2 Any major changes in the sanctioned projects before the award of work (like addition of new transmission line / substation, etc.), with proper technical justification, may be done with technical appraisal of CEA and sanction of MNRE within a period of two years, i.e. by 31<sup>st</sup> December 2023. The sanction of MNRE will be a pre-requisite before the tender is awarded. After sanction of all the major changes, if any, the total CFA for a particular State shall be limited to the CFA as approved by the CCEA for that particular State. Any additional costs shall be borne by STUs.

4.3 As the projects under GEC Phase-II are different from those in GEC Phase-I, the funds for GEC Phase-II will not be used by the States for projects under GEC Phase-I. Further, for the States which are also implementing GEC Phase-I, the CFA under GEC Phase-II will be disbursed only after commissioning of all the projects under GEC Phase-I in that State.

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

5.1 The scheme has been approved as a Central Sector Scheme and the extant rules of the Ministry of Finance for Central Sector Schemes will be followed for disbursement of CFA.

5.2 The request for availing the eligible CFA shall be submitted by the STU to the Central Electricity Authority (CEA) with copy to the Ministry of New and Renewable Energy along with the documents mentioned in paras 6 and 7 below. All requests from State Transmission Utilities should be addressed to “Joint Secretary / Equivalent (Green Energy Corridor), Ministry of New and Renewable Energy, Block No. 14, CGO Complex, Lodhi Road, New Delhi-110003”, and to “Chief Engineer (Power System Planning and Appraisal - I), Central Electricity Authority, Sewa Bhawan, R.K. Puram, Sector-1, New Delhi - 110066.”

5.3 Chief Engineer (PSP&A-I), CEA will evaluate the STU’s requests and provide a recommendation report to MNRE according to paras 6 and 7 below. All such requests from the STUs would be disposed off within six (6) weeks of receipt of the proposal by CEA.

5.4 A Project Appraisal Committee (PAC) will be constituted with the approval of Secretary, MNRE. The PAC will evaluate and recommend the proposals to MNRE (package-wise), based on the recommendation reports received from CEA. The PAC will consist of officials from MNRE, CEA and PGCIL. The representatives from the concerned implementing agencies (STUs) will be invited to the meetings of the PAC. MNRE will release the funds upon receipt of recommendations from CEA and PAC, subject to availability of funds/budget.

5.5 Mere submission of requests or in those scenarios where additional information is sought by MNRE or CEA, would not tantamount to eligibility for the CFA.

5.6 The STU shall open a separate interest bearing & zero balance account for GEC Phase-II scheme and submit the bank account details to MNRE. The interest accrued on the released amount/unspent balance shall be refunded to MNRE in accordance to the rule no.230 (8) of General Financial Rules (GFR) 2017.

## 6. **RELEASE OF CENTRAL FINANCIAL ASSISTANCE (CFA)**

6.1 The STUs may divide the projects into various packages for ease of tendering and implementation. The CFA under the scheme will be given at 33% of DPR cost or Awarded cost – whichever is lower and will be computed for each package separately. The CFA will be disbursed to the STUs in two instalments, viz. 70% after award of work and 30% after commissioning of work.

6.2 **The first instalment of 70% CFA** for a particular package will be subject to the following conditions:

- i) Work included in sanction order of MNRE is tendered and awarded to the contractor;
- ii) For transmission lines: all statutory clearances (like crop compensation, forest clearances etc.) are available for a contiguous line length which is at least 80% of the total line length;
- iii) For Sub-stations: 100% land required should be acquired by the STU.

6.2.1 Accordingly, the request for the first instalment of 70% CFA from STU shall be accompanied by the following documents (separately for each package):

- a) An Undertaking on the STU letter head duly signed by the Managing Director of the STU, mentioning the following:
  - i) DPR cost of the package.
  - ii) Awarded cost of the package.
  - iii) Stating that the project(s) is in line with the DPR appraised by CEA.
  - iv) For transmission lines: stating that all statutory clearances are available for a contiguous line length which is at least 80% of the total line length (the details of the relevant clearances like crop/land compensation order by the concerned District Authorities, forest clearances by forest Department, etc. must be mentioned).
  - v) For substations: stating that 100% land required has been acquired by the STU.
- b) Copy of DPR as approved by CEA along with its approval letter.
- c) Copy of Notice Inviting Tender (NIT).
- d) Copy of Award of Contract.
- e) Copy of crop/land compensation orders issued by the concerned District Authorities, stage-I forest clearances by Forest Department, etc. for transmission lines.
- f) Copy of documents w.r.t. land procurement upon purchase or lease for substations.

6.3 **Balance 30% CFA** will be released after successful commissioning of the project and performance testing of the project which would inter-alia imply operation of the project for three months. Release of balance 30% of CFA will be based on following pre-requisites:



- a) Completion of work and 3 months performance testing by Implementing Agency.
- b) Recommendation report from CEA which would evaluate the CFA claims based on below documents submitted by the STUs:
- i) Work Completion Certificate/Report: A certificate on STU letter head duly signed by officer of the rank of Director (Projects) or equivalent of the State Transmission Utility/entity, stating that all the works have been completed satisfactorily.
  - ii) Certificate of synchronization of the commissioned substation/transmission line with the grid along with date of synchronization. The certificate of synchronization to be submitted by States needs to be duly signed by Head of concerned State Load Despatch Centre (SLDC).
  - iii) Performance testing of the Project: States are required to submit a certificate duly signed by Head of concerned State Load Despatch Centre (SLDC) showing the real time power flows on each of the commissioned substation/transmission line for the last 3 months. The data needs to be furnished in soft copy. The signed data may be furnished for a representative day in a week for the last 3 months (about 13 weeks). The representative day in a week could be chosen as the day on which maximum power flow occurs in the format as given below:

Substation / Transmission Line (Representative week day power flow)

Hours	Week 1	Week 2	Week 3	Up to Week 13
00.00 hrs				
01.00 hrs				
02.00 hrs				
Up to 23.00 hrs				

- iv) An Undertaking on STU letter head duly signed by the Managing Director of the State Transmission Utility (STU) stating whether there is any deviation from the work which was awarded and for which 70% CFA was given. Package wise details to be provided as per format given below:

Package Name	Description/ Details of components	DPR Cost	Awarded Cost	Whether any deviation (in terms of scope, quantity etc.) from awarded Cost (if yes, give details) *	Remarks

\* Also mention whether deviations have been approved by CEA/MNRE.

- v) Additional information which may be given:
- State's RE installed capacity when the GEC-II was sanctioned.
  - Total RE capacity for which the GEC-II was sanctioned.

- Pooling station wise details of total RE capacity planned with GEC-II scheme (New pooling station under GEC-II or existing substation with or without augmentation) along with RE project commissioning status.
  - RE installed capacity associated with the GEC-II scheme commissioned as on date when request for balance 30 % CFA has been made.
  - Plan for commissioning of the balance RE capacity associated with the GEC-II scheme along with their detailed timeline.
- c) Recommendation of the Project Appraisal Committee.
- d) Utilization Certificate (UC) with respect to previous releases.
- e) Audited Statements of Expenditure (ASoE) indicating the actual expenditure for the projects under consideration for balance 30% CFA (including equity, loan, CFA, etc.).
- f) Consideration of quantity variation in the projects, if any, as per para 7 below.

## **7. VARIATION IN THE COMPONENTS AND COST OF A PACKAGE**

7.1 During implementation, depending upon technical requirements, there may be a need for some variation in the components of a package (i.e. length & type of conductors, no. of towers, etc. in case of transmission lines, and transformers, bays, reactors, etc. in substations, etc.) after award of work. The variation in the package components and cost within a State under GEC Phase-II will be allowed with the approval of Minister In-charge of MNRE without any enhancement in the CFA approved for that particular State.

7.2 As per rule no. 141 of GFR 2017, quantity variation and new items upto 10% of the approved cost (i.e. the cost at which the CFA has been calculated, i.e. DPR cost or Awarded cost: whichever is lower) may be allowed, for each package separately, subject to the following:

- a. The quantity variation will be considered for the same transmission line / substation as per the sanction of MNRE.
- b. The items considered for quantity variation should be the same as per the sanctioned project's bill of quantities i.e. BOQ (example: if a transformer has been sanctioned, it cannot be replaced by a reactor).
- c. The proposal for quantity variation must be submitted by STUs with detailed technical justification.
- d. The approval of the Board of the STU must have been accorded before submission of the quantity variation proposal to CEA/MNRE.
- e. The project cost due to quantity variation would be capped at the DPR cost of the package, i.e.
  - (i) if the DPR cost is lower than the Awarded cost, no quantity variation would be allowed beyond the DPR cost of the package; and

(ii) if the Awarded Cost is lower than the DPR Cost, quantity variation of up to 10% would be allowed subject to the upper ceiling of DPR cost of the package.

7.3 It may be mentioned that with quantity variation of all packages in a State, the total CFA for a particular State shall be limited to the CFA as approved by the CCEA for that particular State. Any additional costs shall be borne by STUs.

7.4 The proposal for quantity variation must be submitted by the STUs for each package separately and shall be submitted along with the balance 30% CFA proposal for the package. CEA will evaluate the proposals and submit recommendation report to MNRE. The Project Appraisal Committee under the scheme shall consider the quantity variation proposals based on reports from CEA and recommend the case to MNRE. A representative from Integrated Finance Division (IFD) of MNRE and the representatives from the concerned implementing agencies (STUs) will be invited to the meetings of the PAC when any quantity variation proposal is considered.

## **8. MONITORING FRAMEWORK**

8.1 Central Electricity Authority (CEA), the technical arm of Ministry of Power, Government of India is entrusted with monitoring of the project and ensure that the projects follow all the norms (including safety standards) prescribed by Central Government and State Government..

8.2 All the STUs will submit monthly progress report to Power System Project Monitoring (PSPM) Division of CEA and GEC Division of MNRE in a format to be prescribed by MNRE. Further, CEA will monitor the progress in close coordination with the States and submit detailed quarterly reports to MNRE.

8.3 A framework for monitoring the output-outcome parameters under the scheme will be put in place by MNRE in consultation with NITI Aayog.

8.4 A web portal dedicated to GEC monitoring will be developed by MNRE. It will be mandatory for the STUs to update the progress of the projects on the portal on monthly basis. At the time of release of CFA, updation of the status of all ongoing projects will be a pre-requisite.

8.5 For all sanctioned projects, the respective STUs shall submit month wise performance data on quarterly basis to CEA and MNRE for a period of five years after commissioning.

## **9. OTHER TERMS AND CONDITIONS**

i) States are advised to use 'Made in India' equipment/material as much as possible.

- ii) In terms of Rule 230 (1) of GFR, 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.
- iii) In terms of Rule 230 (7) of GFR 2017 and instructions of Ministry of Finance, the STUs shall record the receipt of CFA and the expenditure therefrom in the EAT module of PFMS. Subsequent release would be contingent upon updation in the EAT module and the actual unspent balance recorded therein.
- iv) CFA released in a financial year is to be utilized by the end of next financial year and Utilisation Certificate (UC) will be generated against the said sanction order. If any CFA amount is left unutilized, then carry forward of funds to the next financial year can be done by the STU only with specific approval of this Ministry. Example: if CFA is released vide a sanction in FY 2021-22 then the CFA is to be utilized by 31.03.2023 and UC is to be generated as on 31.03.2023. If any amount of CFA is left un-utilized, then carry forward request to FY 2023-24 is to be submitted by STU in April 2023 itself. The UC must be duly signed by Managing Director and Director (Finance) of the STU in the prescribed format of the GFR 2017 (Form 12-C) duly reflecting the interest accrued on the CFA received/unspent balance.
- v) The STU 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.
- vi) 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 the Ministry.
- vii) If STUs avail KfW loan, then tendering is to be ensured as per KfW guidelines in accordance with the Manual for the Procurement of Works issued by Department of Expenditure, Ministry of Finance. If the STU does not avail KfW loan and opts for domestic funding, then the tendering is to be ensured as per the extant provisions of GFR 2017.
- viii) The STUs 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, for approval of the Competent Authority, before the expiry of the approved period of the project.
- ix) The STU 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.
- x) 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 of the scheme/sanctions.

## **10. POWER TO REMOVE DIFFICULTIES**

If there is need for any amendment to the Scheme guidelines for better implementation, such amendments will be done with the approval of Minister-in-charge of MNRE within the broad framework of the CCEA approval.

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**List of projects sanctioned under the scheme:****A. Gujarat**

1	400/220 KV, 2 X 500 MVA, 220/66 KV, 2 X 160 MVA Keshod GIS substation (Dist. Junagadh) with 4 no.s of 400 KV feeder bays, 400 KV 1 x 125 MVAR Reactor with bay & 6 no.s of 220 KV feeder bays
2	400/220 KV, 2 X 500 MVA Kalavad GIS substation (Dist. Jamnagar) with 6 Nos. of 400 KV feeder bays and 400 KV, 1 x 125 MVAR Reactor with bay
3	400/220 KV, 2 X 500 MVA, 220/66 KV, 2 X 160 MVA Shivilakha GIS substation (Dist. Kutch) with 4 Nos. of 400 KV feeder bays, 400 KV, 1 x 125 MVAR Reactor with bay and 4 Nos. of 220 KV feeder bays
4	220/66 KV, 2 X 160 MVA KV Dhama substation (Dist. Surendranagar) with 6 Nos. 220 KV feeder bays
5	220/66 KV, 2 X 160 MVA Nichi Mandal (Vankda) / Shapar (Dist. Morbi) with 6 Nos. 220 KV feeder bays
6	220/66 KV, 2 X 160 MVA Khambhalia substation (Dist. Jamnagar) with 4 Nos. 220 KV feeder bays
7	220/66 KV, 2 X 160 MVA Kamlapur substation (Dist. Rajkot) with 8 Nos. 220 KV feeder bays
8	220/66 KV, 2 X 160 MVA Talaja substation (Dist. Bhavnagar) with 6 Nos. 220 KV feeder bays
9	220/66 KV, 2 X 160 MVA Giyavad substation (Dist. Morbi) with 4 Nos. 220 KV feeder bays
10	220/66 KV, 2 X 160 MVA Gomta substation (Dist. Rajkot) with 4 Nos. 220 KV feeder bays
11	400 KV D/C Kalvad - Keshod line (Twin AL-59) – 120 km
12	400 KV D/C Keshod - Shapar line (Twin AL-59) – 190 km
13	400 KV D/C Shapar – Chharodi line (Twin AL-59) – 90 km
14	400 KV D/C Bhachunda – Shivilakha line (Twin AL-59) – 210 km
15	400 KV D/C Shivilakha - Veloda (Sankhari) line (Twin AL-59) – 245km
16	400 KV D/C Veloda (Sankhari) - Prantij line (Twin AL-59) – 150 km
17	LILO of one circuit of 400 KV D/C Soja – Zerda line at Veloda (Sankhari) substation – 50 km
18	LILO of 400 KV S/C Chorania - Asoj line at 400 KV Pachham (Fedra) substation – 25 km
19	LILO of both circuit of 220 KV D/C Visavadar- Timbdi at 400 KV Keshod substation – 12 km
20	220 KV D/C (400KV) Keshod - Keshod line – 25 km
21	220 KV D/C Mansar (Halvad) - Dhama line (AL-59) – 110 km
22	220 KV D/C Dhama - Bechraji line (AL-59) – 45 km
23	220 KV D/C Dhama - Chharodi line (AL-59) -100 km
24	LILO of 220 KV S/C Bala (SSNNL) - Dhanki (SSNNL) at 220 KV Sarla substation– 45 km
25	LILO of both circuits of 220 KV D/C Bhimasar - Charadava line at 220 KV Nichimandal (Vankda) substation (M/C tower AL-59) -10 km
26	220 KV D/C Nichimandal – Shapar (400 KV S/S) line (AL-59) – 85 km
27	220 KV D/C Tappar - Radhanpur line (AL-59) – 170 km
28	LILO of both circuit of 220 KV D/C Tappar – Shivilakha line at Shivilakha (400 KV) substation (M/C tower AL-59) – 25 km

29	LILO of both circuit of 220 KV D/C Bhatia – Kalavad line at Khambhalia substation (M/C tower AL-59) – 20km
30	LILO of both circuits of 220 KV D/C Shapar - Babara line at 220 KV Kamlapur substation (AL-59) – 15 km
31	220 KV D/C Kamlapur - Bagodara line (AL-59) – 110 km
32	220 KV D/C Bagodara - Mogar line (AL-59) – 110 km
33	220 KV D/C Moti Gop - Gomta line (AL-59) – 125 km
34	220 KV D/C Gomta - Kamlapur line (AL-59) – 75 km
35	220 KV D/C Ghiyavad - Shapar (400 KV s/s) line (AL-59) – 50 km
36	LILO of one circuit of 220 KV D/C Hadala - Sartanpur line at 220 KV Ghiyavad substation (AL-59) – 10 km
37	LILO of both circuit of 220 KV D/C Otha – Sagapara line at Talaja substation (M/C tower AL-59) – 20 km
38	220 KV D/C Talaja - Maglana line (AL-59) – 60 km
39	LILO of both circuits of 220 KV D/C Jambuva - Karamsad line at Dhuvaran CCPP (by using existing LILO portions and through 220 KV D/C Pachham - Kasor line) – 40 km
40	220 KV D/C Maglana - Pachchham line (AL-59) – 100 km
41	400 KV, 50 MVAR line Reactor for 400 KV D/C Bhachunda - Shivilakha & Shivilakha - Veloda lines : 50 MVAR line reactor for each circuits at both the ends
Line bays of 400 KV (14 Nos.) & 220 KV (30 Nos.) at far end GETCO substations will be executed through in-house sources, for smooth execution under loose packages.	

## B. Himachal Pradesh

1	Construction of 220/66 kV, 80/100 MVA substation at Mindhal in Chenab basin in Distt. Lahaul & Spiti.
2	Construction of 132/33 kV, 31.5 MVA GIS substation upstream of Malana-11 HEP in Distt. Kullu along with LILO of one circuit of 132 kV Barsaini — Charor D/c transmission line
3	Construction of 132 kV D/c transmission line from Chanju-1 HEP to 220/132 kV substation at Mazra in Distt. Chamba.
4	Construction of 400/220 kV, 2x315 MVA GIS Pooling Station at Mazra along with LILO of 400 kV Chamera — I to Chamera — II S/c line in Distt. Chamba.

## C. Karnataka

1	2x100 MVA, 220/110/11 kV sub-station at Savalagi in Bagalkot district.
2	220 kV DC LILO Line from 220 kV Kudgi-Vajramatti DC line to Savalgi substation - 16.3 km
3	LILO of Todalbagi-Mamadapura 110 kV S/C line at 220/110 kV Savalagi sub-station using DC/MC towers - 2.414 km
4	LILO of 110 kV Mamadapura-Babaleshwara SC line at Savalagi sub-station - 15.889 km
5	LILO of 2nd circuit of 220 kV Mahalingapura-Kudachi DC line at 220 kV Athani S/s -25.6 km
6	2 No.s of 220 kV Terminal Bays at 220 kV Athani S/s
7	Conversion of 220 kV Bidnal-Soundatti-Mahalingapura S/C line to 220 kV Bidnal - Mahalingapur D/C line - 125.25 km
8	1 no. of 220 kV Terminal Bay each at 220 kV Bidnal S/s and 220 kV Mahalingapur S/s

9	220/66/11kV sub-station at P.D.Kote in Chitradurga District with 2x100 MVA, 220/66 kV power transformer and 1x12.5MVA, 66/11 kV power transformer
10	LILO of 220 kV Hiriya (PGCIL) to Gowribidanur DC line at 220/66kV P.D.Kote - 34.338 km
11	LILO of 66 kV Hiriya - Kalamaranahalli -P.R.Pura line at 220/66 kV P.D.Kote - 12.332 km
12	LILO of 66 kV PD Kote - Hariyabbe DC line at 220/66kV P.D.Kote - 5.099 km
13	2x100 MVA, 220/110/11 kV sub-station at Ron in Gadag district
14	2 No.s of 220 kV Terminal Bays at 400 kV Gadag (Doni) S/s
15	220kV DC line from 400kV Doni S/s to 220/110kV Ron S/s - 43.577 km
16	LILO of 110 kV Gadag-Naragal-Ron DC line at 220/110kV Ron S/s using DC/MC towers - 7.515 km
17	LILO of 110 kV Ron-Gajendragad DC line at 220/110 kV Ron S/s using DC/MC towers - 0.991 km
18	Strengthening of existing 220 kV DC line having Drake conductor from 220 kV Gadag sub-station to 220 kV Lingapura s/s by Drake equivalent HTLS conductor for a distance of about 89.763 km - setting up of new transmission line utilizing corridor of existing transmission lines
19	Conversion of 220 kV Lingapura-Ittigi-Neelagunda-Guttur S/C line by 220 kV D/C line twin Drake conductor – 123.14 km -
20	Construction of one number of 220 kV Terminal Bay at Lingapura S/s
21	Construction of two numbers of 220 kV Terminal Bays at Ittigi S/s
22	Construction of one number of 220 kV Terminal Bay at 400/220 kV Guttur S/s
23	Construction of two numbers of 220 kV Terminal Bays at 220/66 kV Neelagunda S/s
24	2x100 MVA, 220/110kV sub-station at Santhpur in Bidar district
25	220 kV Halabarga-Santhpur DC Line - 28.276 km
26	2 Nos of 220 kV Terminal Bays at 220 kV Halabarga S/s
27	LILO of existing Halabarga-Santhpur 110 kV S/C line at proposed 220/110 kV Santhpur sub-station - 1.357 kms
28	LILO of existing Santhpur-Dongargaon 110 kV S/C line at proposed 220/110 kV Santhpur sub-station - 3.361 kms
29	LILO of existing Santhpur-Janwad 110 kV D/C line at proposed 220/110 kV Santhpur sub-station using MC towers - 2.750 kms
30	2x100 MVA, 220/66 kV, 1x12.5 MVA 66/11 kV sub-station at Hangal in Chitradurga district
31	220 kV Hiremallanahole (Jagalur)-Hangal D/C Line - 36.304 km
32	2 Nos of 220 kV Terminal Bays at 400/220 kV Hiremallanahole (Jagalur) S/s
33	LILO of existing Hangal-Gudikote 66 kV S/C line at proposed 220/66 kV Hangal substation with Drake conductor - 4.070 kms
34	LILO of existing Hangal-Nagasamudra (Ramapura) 66 kV D/C line at proposed 220/66 kV Hangal sub-station on MC towers with Coyote conductor - 5.895 kms
35	66 kV Konasagara-Hangal S/C Line with Coyote conductor - 11.536 km
36	1 No. of 66 kV Terminal Bay at 66/11 kV Konasagara S/s
37	2x100 MVA, 220/110 kV sub-station at Yelburga in Koppal district
38	LILO of 220 kV Doni-Ron DC Lines at proposed 220/110/11 kV sub-station on MC towers at Yelburga - 18.524 kms
39	220 kV Kushtagi-Yelburga D/C lines for a distance of 28.333 kms
40	2 Nos of 220 kV Terminal Bays at 220/110 kV Kushtagi S/s
41	110 kV Yelburga(old)-Yelburga D/C lines for a distance of 3.54 kms
42	110 kV Bevor-Yelburga D/C lines for a distance of 22.54 kms
43	2 Nos of 110 kV Terminal Bays at existing 110/33 kV Yelburga (old) S/s
44	2 Nos of 110 kV Terminal Bays at existing 110/33 kV Bevor S/s



## D. Kerala

1	2x100 MVA, 220/110 kV substation at Mannarkad
2	2x100 MVA, 220/33 kV substation at Kottathara
3	220 kV D/C line from Vettathur tap to Mannarkad – 28 km
4	220 kV D/C line from Mannarkad to Kottathara – 30 km
5	2x60 MVA, 33/110 kV substation at Anakkaramedu (near Ramakkalmedu)
6	Upgradation of Vazhathope substation - Construction of 2 no.s 110 kV feeder bays
7	100 MVA, 220/110 kV substation at Nirmala City (near Katta pana) with 4 nos. of 220 kV feeder bays and 6 no. of 110 kV feeders.
8	110 kV D/C line from Anakkaramedu to Nedumkandam substation – 9 km
9	2 nos. of 110 kV bays at Nedumkandam substation
10	20 km, 220/110 kV MCMV line from Kuyilimala to Nirmala City and 5 km 110 kV D/C line from Nirmala City to Kattappana along ROW of existing 66 kV S/C line.

## E. Rajasthan

1	400 kV D/C Line between 400 kV Jaisalmer-II-765 kV GSS Jodhpur (Kankani) – 200 km
2	2x500 MVA, 400/ 220 kV GSS Hanumangarh (Pakka Sarnan) along with 125 MVAR, 420 kV Bus reactor and 25 MVAR 220 kV Bus Reactor
3	LILO of 400 kV STPS- Bikaner line at proposed 400/220 kV GSS Hanumangarh (Pakka Sarnan) (85 km) along with 1x50 MVAR, 400 kV line reactor on Bikaner-Hanumangarh (Pakka Sarnan) section at Hanumangarh (Pakka Sarnan) end
4	LILO of 220 kV S/c Hanumangarh- Udyog Vihar line at proposed 400/220 kV GSS Hanumangarh (Pakka Sarnan) [with OPGW] (6 km)
5	LILO of 220 kV S/c Suratgarh- Padampur line at proposed 400/220 kV GSS Hanumangarh (Pakka Sarnan) [with OPGW] (55 km)
6	220 kV S/c Hanumangarh (Pakka Sarnan)- Rawatsar line [with OPGW] (80 km)
7	132 kV S/c Udyogvihar – Sriganganagar line (additional circuit) [with OPGW] -18km
8	1x160 MVA 220/132 kV and 40/50 MVA 132/33 kV Kolayat substation
9	220 kV D/c Kolayat- Bhadla line (93 km) (By utilization of already constructed 33 km 220 kV D/c Bhadla-Bhikampur line) along with Strengthening work of already constructed 33 km 220 kV D/c Bhadla-Bhikampur line
10	132 kV D/c Kolayat (220 kV GSS)- Kolayat (132 kV GSS) line – 42 km
11	2x220 kV feeder bays at 400 kV GSS Bhadla
12	2x132 kV feeder bays at 132 kV GSS Kolayat
13	220 kV D/c Kolayat- Panchu line – 67 km
14	25 MVAR, 245 kV switchable bus reactor at proposed 220 kV GSS Kolayat
15	Additional 1x160 MVA, 220/132 kV ICT at 220 kV GSS Panchu
16	2x220 kV feeder bays at 220 kV Panchu
17	160 MVA 220/132 kV and 40/50 MVA 132/33 kV GSS Sheo along with 25 MVAR, 245 kV bus reactor
18	LILO of 220 kV S/c Akal- Giral line at proposed 220 kV GSS Sheo – 8km
19	LILO of 220 kV S/c Akal- Barmer line at proposed 220 kV GSS Sheo – 8km
20	LILO of 132 kV S/c Jhinjhiyali- Sheo (132 kV GSS) line at proposed 220 kV GSS Sheo – 5km
21	LILO of 132 kV S/c Undoo- Sheo (132 kV GSS) line at proposed 220 kV GSS Sheo - 5 km
22	132 kV D/c line from the proposed 220 kV GSS Sheo to 132 kV GSS Undoo – 48km
23	2x132 kV feeder bays at 132 kV GSS Undoo

## F. Tamil Nadu

1	1400 MVA 400/230/110 kV Samugarengapuram substation
2	400 kV DC quad line on DC Towers from Udangudi switchyard to 400 kV Samugarengapuram Substation – 40 km
3	230 kV DC line from 230 kV S.R. Pudur substation to Samugarengapuram substation- 60km
4	230 kV DC line from 230 kV Muppandal substation to Samugarengapuram substation- 60km
5	110 kV SC line on DC tower from Kottaikarungulam substation to Samugarengapuram substation- 5 km
6	110 kV SC line on DC tower from Kudangulam substation to Samugarengapuram substation- 17 km
7	110 kV SC line on DC tower from Thandayarkulam substation to Samugarengapuram substation- 20 km
8	110 kV SC line on DC tower from Vadakankulam substation to Samugarengapuram substation- 28 km
9	110 kV SC line on DC tower from Navaladi substation to Samugarengapuram substation- 25 km
10	110 kV line from existing Samugarengapuram 10(1) substation to 400 kV Samugarengapuram substation
11	230/110 kV 200 MVA Digital substation at Poolavady
12	230 kV DC line from 400/230 kV Anaikadavu substation to Poolavady substation -15km
13	LILO of 230 kV DC line Palladam – Tirupur at Poolavady substation – 35 km
14	Conversion of existing 110 kV SC line on SC towers in the 110 kV Poolavady spur – line of 110 kV Udumalpet – Gudimangalam feeder into 110 kV DC line on DC towers -6.15 kms
15	Conversion of existing 110 kV SC line on SC towers from 110 KV Poolavady substation to 110 KV Kethanur substation into 110 kV DC line on DC towers for a distance of 26 kms. The second circuit will be connected from Poolavady to 110 kV Sultanpet substation
16	110 kV DC line from proposed 230 kV Poolavady substation to existing 110 kV Poolavady substation- 1 km
17	230/110 kV Muppandal Substation
18	230 KV DC line from 230/110 kV Muppandal substation to new Muppandal Substation-40 Km
19	110KV SC line on DC tower from 230/110 kV Muppandal Substation to 110/11KV Muppandal substation-1 km
20	10KV SC line/ DC tower to 110/11KV Aralvaimozhi substation to Muppandal substation-4km
21	110KV SC line on DC tower 110/11KV Kannanallur substation to Muppandal substation-5km
22	110KV SC line on DC tower 110/33/11kV Pazhavor substation to Muppandal substation-8km
23	300 MVA 230/110 kV substation at Kongalnagaram
24	LILO of 230 kV O.K.Mandapam- Myvadi DC line at Kongalnagaram substation-2km
25	LILO of 230 kV O.K.Mandapam- Ponnapuram DC line at Kongalnagaram substation-9km
26	LILO of 110 kV O.K.Mandapam- Udumalpet-I DC line at Kongalnagaram substation-2km
27	LILO of 110 kV O.K.Mandapam- Udumalpet-II DC line at Kongalnagaram substation-2km
28	LILO of 110 kV Udumalpet -Kongalnagaram DC line at Kongalnagaram substation-2km
29	110 kV DC line from 230 kV Kongalanagaram substation to 110 kV Kongalnagaram substation – 5km
30	Stringing of new 110 kV SC line in the free arm of the existing DC towers from 110 kV Kongalnagaram Substation to 230 kV Kongalanagaram substation – 5km

31	400kV Quad DC Lines for making LILO of both circuits of Karaikudi-Pugalur 400 KV DC Quad Line at Pudukottai – 210 km
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### G. Uttar Pradesh

1	220/132/33 kV, 2x160+2x40 MVA Rampura (Jalaun) substation
2	Rampura - Sikandra (220) 220kV S/C on D/C line -30 km
3	220/132/33 kV, 2x160+2x40 MVA Talbahat (Lalitpur) substation
4	Talbahat (Lalitpur)-Babina (Jhansi) 220kV D/C line - 40 km
5	220/132/33 kV, 2x160+2x40 MVA Birdha (Lalitpur) substation
6	Birdha (Lalitpur)-Lalitpur (220) 220kV S/C on D/C line -35km
7	220/132/33 kV, 2x160+2x40 MVA Mandawra (Lalitpur) substation
8	Mandawra (Lalitpur)- Lalitpur (220) 220 kV S/C on D/C line -50 km
9	220 kV bays at Sikandra (1 no.), Babina (1 no.) & Lalitpur 220kV (2 nos.) substations
10	132/33 kV, 2x40 MVA Kadaura (Jalaun) substation
11	Kadaura-Hamirpur (Patara) 132kV S/C on D/C line -35km
12	132/33 kV, 2x40 MVA Kuthond (Jalaun) substation
13	Kuthond (Jalaun)-Madhogarh 132kV S/C on D/C line -25km
14	132/33 kV, 2x40 MVA Kurara (Hamirpur) substaion
15	Kurara (Hamirpur)-Bharua (Sumerpur) 132kV S/C on D/C line -32km
16	132/33 kV, 2x40 MVA Gohand (Hamirpur) substation
17	Gohand (Hamirpur)-Bharua (Sumerpur) 132kV S/C on D/C line -50km
18	132/33 kV, 2x40 MVA Moth (Jhansi) substation
19	Moth (New) Jhansi-Moth (existing Jhansi) 132kV S/C on D/C line - 10km
20	132/33 kV, 2x40 MVA Barokh Khurd (Banda) substation with creation of 132kV voltage level at Banda - installation of 220/132 kV, 2x160 MVA ICT at Banda 400 kV substation
21	Barokh Khurd (Banda)-Banda (400) 132kV S/C on D/C line -25km
22	400/220/132 kV, 2x500+2x160 MVA Maheba (Jalaun) substation with 1x125 MVAr reactor
23	LILO of one ckt Banda (400)-Orai (400) 400kV D/C (Quad) line at Maheba (Jalaun)-25km
24	220/132 kV, 2x160 MVA Sarila (Hamirpur) substation
25	Sarila (Hamirpur)-Maheba (Jalaun) 220kV D/C line with High Ampacity conductor- 104km
26	220/132/33 kV, 1x160+1x40 MVA Dakaur (Jalaun) substation
27	Dakaur-Maheba (400) 220kV S/C on D/C line -35km
28	220/132 kV, 1x160+1x40 MVA Panwari (Mahoba) substaion
30	Panwari (Mahoba)-Sarila (Hamirpur) 220kV S/C on D/C line-40km
31	132/33 kV, 2x40 MVA Muskara (Hamirpur) substation
32	Muskara (Hamirpur)-Sarila (Hamirpur) 132kV S/C on D/C line - 15km
33	765/400/220 kV, 2x1500+3x500 MVA Gurusarai (Jhansi) substation with 765kV bay at Mainpuri S/S, 1x125 MVAr, 420 kV Bus Reactor and 1x330 MVAr, 765 kV Bus Reactor
34	Gurusarai (Jhansi)-Mainpuri 765kV S/C line -185km
35	400kV Gurusarai-Orai (Quad) D/C line – 100km
36	400/220/132 kV, 2x500+2x160 MVA Farrukhabad substation with 1x125 MVAr, reactor
37	Maheba (Jalaun)-Farrukhabad 400kV D/C line -140km
38	Farrukhabad-Badaun 400kV D/C line -95km
39	Farrukhabad (400)-Neebkarori 220kV D/C line -50km
40	Farrukhabad (400)-Etah (220) 220kV D/C line -90km
41	220/132 kV, 1x160 MVA Charkhari (Mahoba) substation
42	Charkari (Mahoba)-Gurusarai (Jhansi) 220kV D/C line with High Ampacity

	conductor -80km
43	220/132/33 kV, 2x160+2x40 MVA Bamaur (Jhansi) substation
44	Bamaur (Jhansi)-Gurusarai (Jhansi) 220kV S/C on D/C line -12 km
45	220/132/33 kV, 2x160+2x40 MVA Bangra (Jhansi) substation
46	Bangra Jhansi)-Gurusarai (Jhansi) 220kV S/C on D/C line -15km
47	220/132/33 kV, 1x160+1x40 MVA Kabrai (Mahoba) substation
48	Kabrai (Mahoba)-Charkhari (Mahoba) 220kV SC on DC line -26km
49	765/400/220/132 kV, 1x1500+2x500+2x160 MVA Jakhora (Lalitpur) substation with 1x125 MVA, 420 kV Bus Reactor, 1x330 MVA, 765 kV Bus Reactor and 220 kV bays at Lalitpur TPS -2 nos
50	Jakhora (Lalitpur)-Gurusarai (Jhansi) 765kV S/C line -115km
51	Interconnection of Lalitpur TPS through 220kV Jakhora – Lalitpur TPS D/C line -50km
52	LILO of one ckt of Lalitpur TPS–Agra 765kV 2xS/C line at Jakhora S/S – 50 Kms and shifting of 330 MVAR 765kV line reactor of Lalitpur TPS–Agra 765kV S/C line at Lalitpur TPS end to Jakora end of the Jakhora–Agra 765 kV S/C line
53	220/132/33 kV, 2x160+2x40 MVA Baragaon (Jhansi) substation
54	Baragaon (Jhansi)-Gurusarai (Jhansi) 220kV S/C on D/C line -50km
55	220/132/33 kV, 2x160+2x40 MVA Jaitpur (Mahoba) substation
56	Jaitpur (Mahoba)-Charkhari (Mahoba) 220kV S/C on D/C line -22km
57	132/33 kV, 2x40 MVA Mehrauni (Lalitpur) substation
58	Mehrauni (Lalitpur)-Jakhora (Lalitpur) 132kV D/C line -45km
59	132/33 kV, 2x40 MVA Barh (Lalitpur) substation
60	Barh (Lalitpur)-Jakhora (Lalitpur) 132kV D/C line -26km

Note: The detailed project components (like bay extensions, bus reactors, conductor type, etc.) would be as per the technical appraisal of CEA.

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