

## **Annexure-E**

### **Scope for earthing adequacy study for EHV substation**

#### **Scope of work:**

1. Comprehensive earthing health assessment study of the entire substation grounding system shall be carried out to determine the effectiveness of the earthing system.
2. Study shall be carried out in accordance with the standards IEEE 80 2000, IEEE 81 2012, guidelines given in CBIP manual 311, IS 3043 and other relevant standards.
3. To measure existing Earth pit resistance using Wenner 3-point method.
4. To identify defective risers and grid conductors by performing riser and grid integrity test with current Injection method. Low current (in terms of 10-15 A) at low voltage shall be applied at off grid frequency and a TVM shall be used to measure the voltage by eliminating the noise by filtering the unwanted frequencies. It shall be ensured by bidder that no any unwanted tripping of transformer/feeder, etc shall be there in the event of this current injection test.
5. To measure grid resistance either through FOP (fall of potential) method or TAGG slope method as per IEEE 81 2012.
6. To check physical condition of existing rods, earth pits and aging/damage of existing earthing arrangement.
7. Verification of earthing for safety of electronic equipments with reference to fault level of switchyard.
8. Any investigation resources like excavation, equipments, test equipments, man power etc. shall be part of study/contract. All the safety precautions shall

be taken care by contractor during the measurement exercise in the live switchyard.

9. Soft copies of all design and drawings shall be submitted to us.
10. Earthing adequacy report (preferably in spiral binding) consisting above all parameters shall be submitted (in 4 copies) in proper format which shall be kept as a reference document for future use.