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KARNATAKA POWER TRANSMISSION CORPORATION LIMITED

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KPTCL/B28(a)/CEE/RT&R&D/KCO-78/459/2016-17/44

Date: 11-1-17

CIRCULAR

Sub: Providing Low Voltage Ride Through (LVRT) Protection to Wind Generators-reg.

- Ref:**
- 1) CEA [Technical Standards for Connectivity to the Grid] Regulations-2007, (amendment dated 15.10.2013).
 - 2) Hon'ble CERC Order in Petition No. 420/MP/2014 dated 05.01.2016.
 - 3) Minutes of special SRPC meeting held on 17.06.2016 and special TCC meeting held on 02.08.2016.
 - 4) Note no CEE/RT&R&D/KCO-78/459/2016-17/44 dated 28.06.2016 of the CEE (RT&R&D), KPTCL approved by MD, KPTCL on 19.12.2016.

Sudden pull out of huge quantity of wind generation from the Grid in the event of Grid Incidents / disturbances / transient faults near wind energy area was observed on several occasions. Such occurrences were mainly due to the dip in the voltages associated with the Grid incidents / disturbances / Transient faults in the transmission system and the inability of Wind Turbine Generators to sustain such dips in the system voltages. Such sudden pull out of Generation from the Grid due to Grid Incidents / disturbances / Transient faults is not a desirable phenomenon from the Grid stability, safety and security point of view.

The CEA (Technical Standards for Grid Connectivity) Regulations-2007 (amendment dated 15.10.2013) provides for enforcement of Low Voltage Ride Through (LVRT) features in all the Wind Turbine Generators (WTGs) getting connected to the Grid on or after 15.4.2014 to overcome the problems of pulling out of WTG's due to disturbances in the Grid. The said Regulations, also stipulates that in respect of WTG's already connected to the Grid prior to 15.4.2014, the Generating stations and the Licensee to whose system such Generating stations are connected shall mutually discuss and agree on the measures which can be taken to comply with the requirement under the Regulations subject to technical feasibility. Southern Regional Load Dispatch Center (SRLDC)

sensing serious threat to the security of the Grid filed a Petition before Hon'ble Central Electricity Regulatory Commission (CERC) in Petition No: 420/MP/2014 seeking

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EE (IT)	✓
EE (MIS)	✓
DCA (IT)	
SEE (IT&MIS)	

REE-4/RE-1
16/1/17 2017

directions. The Hon'ble CERC while disposing off the Petition on 05.01.2016 has ordered that:

1. LVRT should be implemented for all WTG's (except Stall Types) commissioned before 15.04.2014, having installed capacity equal to or more than 500 KW irrespective of voltage category. In case of WTG's of less than 500 kW and installed before 15.04.2014, Central Electricity Authority has been directed to conduct a study regarding technical feasibility of installation of LVRT in these turbines and submit a report to the Commission within 06 months of issue of this order.
2. CEA is requested to consider issuing necessary amendment to the CEA (Technical Standards for Connectivity) Regulations-2007 to make LVRT mandatory for all types of Solar plants including roof top as early as possible.

The above issues were deliberated in the special meeting held at Southern Regional Power Committee (SRPC), Bengaluru on 17.06.2016 and also in special TCC meeting held on 02.08.2016 at SRPC, Bengaluru to discuss about the status of availability of Low Voltage Ride Through (LVRT) feature in WTG's in Karnataka.

SRPC during the discussion has informed KPTCL to diligently ensure the implementation of LVRT feature and other technical requirements stipulated by CEA and in order dated 05.01.2016 of Hon'ble CERC in all upcoming, newly getting connected Wind Generators. Also, KPTCL was directed to obtain an undertaking from the Generators regarding provision of LVRT before synchronizing Generators to the Grid. Both SRLDC and SRPC suggested for ensuring all the technical requirements are adhered to before issuing any type of connectivity.

In view of the above and to adhere strictly with the directives narrated above, strict monitoring shall be ensured to see that the Wind Generators (except stall type) of capacity 500kW and above connected to the grid prior to and on or after the date of this Circular shall only be allowed to get connected with the Grid provided they have LVRT capability. The checks and balances to be exercised by various officers associated with the process of allowing connectivity of Wind Generators with the Grid is appended below for strict compliance.

Sl. no.	Designations of the officers who are required to exercise checks and balances	Checks that needs to be ensured
1	Chief Engineer Electy., (P&C) and Deputy General Manager (Tech), KPTCL.	<ul style="list-style-type: none">• To incorporate adherence to CEA Technical Standards for Connectivity Regulations-2007 (amended from time to time) as one of the condition to be complied with while communicating evacuation facilities / Transmission Service Agreements.• To insist for production of type test reports from the Wind Generators prior to issuing interconnection facilities.
2	Executive Engineer (EI), TL&SS Division / SEE, R.T. concerned	To confirm availability of LVRT features and to verify the settings before interconnecting wind machines with the Grid.
3	Chief Engineer Electy., SLDC, KPTCL.	Consolidating the certifications given by wind Generators, preparation and submission of quarterly reports to SRPC with regard to monitoring of installation and performance of LVRT installed on existing wind machines.
4	Chief Engineer Electy., Transmission Zone, KPTCL.	To ensure that the wind generators of 500kW & above(except stall type) connected to the grid prior to the date of this order are equipped with LVRT features. This shall be implemented through mutual discussion with the generator and allow them sufficient time for the implementation.


Deputy General Manager (Tech)
KPTCL

To:

1. The Managing Director, BESCOM, HESCOM, MESCOM, CESC, GESCOM,
2. The Director(Technical), BESCOM, HESCOM, MESCOM, CESC, GESCOM.
3. All Chief Engineers (Electy), KPTCL.
4. All Superintending Engineers (EI), W & M/Works Circles, KPTCL.
5. All Executive Engineers (EI), RT/MWD/TL&SS Divisions, KPTCL.
6. PS to the Managing Director, KPTCL, Kaveri Bhavan, Bengaluru.
7. PS to the Director(Transmission), KPTCL, Kaveri Bhavan, Bengaluru.

Copy to:

8. The Superintending Engineer (EI), IT & MIS with a request to arrange to upload this Circular in the KPTCL website for view of the officers of KPTCL.