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OVERHEAD LINE SEPARATION FROM WIND TURBINES

PURPOSE AND SCOPE

This document gives the separation distances from commercial wind turbines to be applied for overhead line circuits operating at nominal voltages of 275kV and above on the National Grid transmission system.

Commercial wind turbines produce significant turbulence in their wake, while conductors on overhead lines are susceptible to damage from vibration initiated by wind. This policy sets out measures to reduce the likelihood of premature wear on conductors and fittings which, if uncontrolled, may lead to a significant reduction in asset life, increased maintenance, unplanned outages or ultimately conductor failure. A reduction to the separation distance previously required has been made as a result of research work carried out by Manchester University on behalf of National Grid; this is recorded in TR(E) 453. Further research partly financed by Innovation Funding Incentive (IFI) is ongoing within the UK Electricity Supply Industry to further investigate the effects of wind turbine wake particularly on bundled conductors. Where the opportunity arises, field trials will be undertaken to monitor the performance of overhead lines adjacent to new wind turbines. Following the outcome of the longer term work, this Policy will be reviewed and updated if appropriate.

PART 1 – POLICY

1 DISTANCE FROM WIND TURBINES

1.1 New Overhead Lines

New overhead line routes shall be designed in accordance with TS 2.27. In addition they must be located at a separation distance of more than three times the rotor diameter of existing wind turbine structures.

1.2 Existing Overhead Lines

The requirements of 2002 Electricity Safety, Quality and Continuity Regulations shall be met in regard to both the nature of the equipment and the surrounding land use. Appropriate measures must be made to safeguard existing overhead line assets by seeking to ensure new wind turbines are constructed at a separation distance of more than three times their rotor diameter away from transmission overhead lines.

Proposed turbine installations positioned just inside the three times rotor diameter distance may be given special consideration by Asset Policy if it can be demonstrated that the risk of overhead line damage is significantly reduced by local conditions, e.g. elevation difference and prevailing wind direction exposure.

As an absolute minimum, wind turbines must be positioned no closer than their “fall over distance”, i.e. the maximum height of the turbine to the tip of the blade, plus 10% from the closest conductor in still air. This minimum distance is in line with the Companion Guide to PPS22, and is for safety purposes only; it takes no account of the damage that might occur in the longer term to the overhead line due to increased turbulence.