

Northern Ireland Electricity Networks

Distribution Code Amendments Consultation Paper: Rate of Change of Frequency

APPENDIX: Proposed Distribution Code Modifications (Redline)

31st March 2016

Following the completion of the public consultation it is proposed to amend the Distribution Code (D-Code) by adding in the text in red and deleting the text in blue.

CONNECTION CONDITIONS

7.12 Variations in System Frequency

7.12.1 In order to comply with its **Grid Code** obligations, the **DNO** requires that, apart from those circumstances set out in sub-paragraph ~~7.12.2~~~~7-7.2~~, all existing and new Independent Generating Plant ~~with an Output of 100kW or more~~ shall stay connected and operate:

- (a) continuously where the **Distribution System Frequency** varies within the range 49.5 to 52.0 Hz;
- (b) for a period of up to one hour where the **Distribution System Frequency** varies within the range 48.0 to 49.5 Hz; and
- (c) for a period of up to 5 minutes where the **Distribution System Frequency** varies within the range 47.0 to 48.0 Hz.
- (d) continuously where the **Distribution System Frequency** changes at a rate up to and including 2 Hz/s, measured over a rolling 500 millisecond period.
- (e) continuously where, in exceptional circumstances, voltage dips cause the **Distribution System Frequency** to change at a rate in excess of 2 Hz/s, measured over a period less than 500 milliseconds

7.12.2 The requirements of paragraph 7.12.1 do not apply where:

- (a) the G59 relay has operated correctly, consistent with the settings agreed pursuant to paragraph ~~7.13~~~~7-8~~; or
- ~~(b)(a) The **Distribution System Frequency** has changed at a rate greater than 1.0 Hz/s measured over a rolling 500 ms~~
- ~~(e)(b)~~ there is manual intervention ~~by the Generator.~~

7.13 Agreement of rate-of-change-of-frequency settings

7.13.1 Where **Power Stations** are equipped with rate-of-change-of-frequency relays or other devices which measure and operate in relation to a rate-of-change-of-frequency the procedure in paragraphs 7.13.2 to 7.13.5 below will be followed to ensure satisfactory operation of the **Power Station**.

- 7.13.2 At a reasonable time prior to a **Power Station** being connected to the **Distribution System**, and prior to any relevant modification to a **Power Station** or any relevant **Power Station Equipment**, the **Generator** shall contact the **DNO** with details of the proposed rate-of-change-of-frequency setting.
- 7.13.3 The **DNO** shall, within a reasonable period and in any case no more than 28 days after being contacted pursuant to paragraph [7.13.27-8-2](#), discuss with the **Generator** whether the proposed settings are satisfactory. The agreed settings shall be specified in the **Connection Agreement**.
- 7.13.4 In relation to any **Generator** which has agreed the settings with the **DNO** under these provisions, the **DNO** shall notify that **Generator** of any change of which it is aware in the expected rate-of-change-of-frequency on the **Distribution System** which may require new settings to be agreed.
- 7.13.5 Each **Generator** shall be responsible for protecting the **Generating Unit** owned or operated by it against the risk of damage which might result from any **Frequency** excursion outside the range 52 Hz to 47 Hz and for deciding whether or not to interrupt the connection between its **Plant** and/or **Apparatus** and the **Distribution System** in the event of such a **Frequency** excursion.

Glossary and Definitions

Manual Intervention

Discretionary intervention by the NIE Networks' control engineer in the event of system abnormalities which are serious but not of sufficient magnitude for automatic protection to operate.