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Application guide for assessing the capacity of networks containing distributed generation

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Issue	Date	Amendment
Issue 2	December, 2014	Minor amendment to incorporate requirements for Demand Side Response (DSR). Document converted to the new ENA Engineering Report (EREP) template. This issue includes the following principal technical changes. Clause 3: New definition for DSR added. Footnote added for definition of Latent Demand. Clause 4.1: Added requirement to consider the contribution from DSR. Added explanation that DSR can be treated as either a reduction in Group Demand or an increase in System Capacity. Clause 6.10: New clause added for DSR. Clause 7.1: Added requirements for assessing the contribution from DSR. Annex A.4: Deleted reference to “ER G75/1”. Details of all other technical, general and editorial amendments are included in the associated Document Amendment Summary for this Issue (available on request from the Operations Directorate of ENA).

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Foreword

This Engineering Report (EREP) is published by the Energy Networks Association (ENA) and comes into effect from December, 2014. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the GB Distribution Code Review Panel (DCRP). The approved abbreviated title of this engineering document is “EREP 130”, which replaces the previously used abbreviation “ETR 130”.

This document replaces and supersedes ETR 130, Issue 1.

Introduction

The provisions contained in Engineering Recommendation P2/5 (ER P2/5) for assessing the contribution to System Security as provided by DG were limited to large steam and open cycle gas turbine (OCGT) sets that were prevalent at the time ER P2/5 was published in 1978. With the growth of DG in the UK all stakeholders agreed that it was necessary to carry out a limited revision of ER P2/5 to ensure that the possible security contribution from modern types of DG plant could, where appropriate, be properly recognised.

The task of revising ER P2/5 was given to a joint working group of DNOs, Generators, the Regulator, academics and consultants. A major part of the work of this group was the production of three reports for Future Energy Solutions (FES) [N2, N3 and N4], (FES being the agency responsible for managing technical projects on behalf of the DTI). These three reports formed the basis of the revised text in Engineering Recommendation P2/6 (ER P2/6) [N1].

This Engineering Report uses the information contained in the three FES reports to provide background information on the requirements contained in ER P2/6 [N1]. The intention is that this information will guide users of ER P2/6 [N1] to make a consistent interpretation of the requirements therein.

The purpose of this Engineering Report is to support ER P2/6 [N1] by providing guidance on how to assess the ER P2/6 [N1] compliance of a network containing DG.

1 Scope

This Engineering Report provides guidance on how to assess whether a system comprising both network assets and DG meets the security requirements specified in ER P2/6 [N1]. In order to achieve this, there is a need to establish the Group Demand, and to assess the security contribution provided from both network assets and DG, taking into account DSR. This EREP provides technical guidance on both these issues. The procedures described in this report are based on the same principles that underpinned the previous standard, ER P2/5.

The contribution to System Security from DG plant specified in ER P2/6 [N1] and this EREP have been derived from the best data available at the time. In the event that more accurate data becomes available it may be appropriate to review the contributions quoted in ER P2/6 [N1] and this EREP.

This report also provides general guidance on the likely contractual considerations that a DNO might need to consider when looking to include the contribution from a DG plant(s) to satisfy the requirements of ER P2/6 [N1]. However the detailed form that any contractual and commercial considerations might take is outside the scope of this technical document.

The definitions and numbering of Table 2 (including sub-tables 2-1 to 2-4) used in this report align with those used in ER P2/6 [N1].

2 Normative references

The following referenced documents, in whole or part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Other publications

[N1] ENA Engineering Recommendation P2/6, *Security of Supply 2006*

[N2] Security Contribution from Distributed Generation, November 2002. Final report by UMIST for FES. Project K/EL/00287

[N3] Data Collection for Revision of Engineering Recommendation P2/5, January 2004 Final report by Power Planning Associates (PPAL) for FES. Project K/EL/00303/05.

[N4] Developing the P2/6 Methodology, April 2004. Final report by UMIST for FES. Project DG/CG/00023/00/00

[N5] ENA Engineering Report 131, *Analysis Package for Assessing Generation Security Capability – Users' Guide*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE: Defined terms are capitalised where they are used in the main text of this report.

3.1
ASC
authorised supply capacity

3.2
Capped
limited (contribution to System Security) during the assessment stage to ensure that the DG plant does not exceed the materiality criteria for the network under consideration

NOTE: The term "Capping" should be interpreted as having the same meaning.

3.3
CCGT
combined cycle gas turbine

3.4
Circuit
part of an electricity supply system between two or more circuit breakers, switches and/or fuses inclusive

NOTE: Circuits may include transformers, reactors, cables and overhead lines. Busbars are not considered as Circuits and are to be considered on their merits.