



# Finding the Optimal Approach for Allocating and Realising Distribution System Capacity: *Deciding between Interruptible Connections and Firm DG Connections*

EPRG Working Paper 1320

Cambridge Working Paper in Economics 1343

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**Abstract** The aim of this study is to perform a cost benefit analysis of the different options for connecting distributed generation (DG) customers in a specific constrained area (the March Grid), under the context of the Flexible Plug and Play trial. The study shows the importance of the development of levels of understanding and trust among the customers and suppliers of the system-level complexities of an interconnected grid that affect all involved, of the need to achieve acceptability for all involved and the development of a shared, confident forward awareness of future evolution capability, both technically and contractually. This research required a comprehensive revision of the current regulatory framework applied to DG and the search of the most recent estimations of generation costs with a focus on wind, solar PV and anaerobic digestion (AD) generators. Specific assumptions were made in terms of interruptible capacity quota, generation mix, embedded benefits, curtailment levels and load factors. The results are presented in four different scenarios. Two kinds of connection options have been assessed: smart option (non-firm or interruptible) and reinforcement option (firm). Results suggest that in general small wind generators will always have advantage over the large wind generators regardless the type of connection, solar PV would struggle to connect and AD generators would always connect.

**Keywords** cost benefit analysis, distributed generation, interruptible connections (non-firm)

**JEL Classification** D61, L51, L94, Q21, Q40, Q48

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Publication October 2013  
Financial Support UK Power Networks via the Low Carbon Networks Fund's Flexible Plug and Play Project

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