

1 INTRODUCTION

This is the first Transmission Forecast Statement (TFS) to be published by EirGrid which has recently taken on the role of Transmission System Operator (TSO), formerly carried out by ESB National Grid. Prior to EirGrid vesting, this TFS was prepared by ESB National Grid, in accordance with Section 38 of the Electricity Regulation Act, 1999.

The national grid is a high voltage system of networks which transports power from generators to demand centres. The flow of power is determined by the levels of demand at all parts of the system and by the size and location of generation supplying that demand. Interconnection with other systems can be a source of generation or a demand for power.

Transmission Forecast Statement 2006-2012 presents factual information on and current TSO projections for the grid, electricity demand, generation, and interconnection with other electricity systems. The appendices provide customers with detailed information to carry out their own power flow analysis, if desired.

In addition, the TFS includes the results of analyses that indicate the most suitable locations for the connection of new generation or customer demand. The analyses were based on the factual information, forecasts and assumptions described in the statement. When considering the results of the various analyses, customers are advised to review carefully the TFS assumptions.

The TSO published its *Generation Adequacy Report 2006-2012* (GAR) in November 2005. That document deals with the requirement for additional generation capacity to meet forecast demand over the seven-year period to 2012. The GAR complements the demand information presented in *Transmission Forecast Statement 2006-2012*.

This year the TSO produced its first five-year Transmission Development Plan. The plan provides details of the network developments expected to be progressed in the 2006-2010 period, which are accounted for in this TFS.

1.1 OUTLINE OF THE TRANSMISSION FORECAST STATEMENT

Chapter 2 describes the existing transmission network including interconnection with Northern Ireland and provides a brief outline of the TSO's network development plans which are detailed in its *Transmission Development Plan 2006-2010*. These documents present a snapshot of the development plans at a point in time. However, the planning and development process is dynamic and may be refined in light of more up-to-date information. As such, network development plans should be confirmed with the TSO before any business decisions are taken based on the content of this document. Maps,

schematic diagrams and network details are included in Appendix A and Appendix B. Geographical maps of the transmission system are provided in A3 format in Appendix K.

Chapter 3 describes the demand forecasts and Chapter 4 describes the generation projections. Details of the demand forecasts and generation assumptions are in Appendix C and Appendix D respectively.

The assumptions presented in Chapters 2 to 4 form the basis of the analyses of power flows and short circuit currents presented in Chapter 5 and the analysis of transfer capabilities described and reported in Chapters 6 to 10. Appendix E presents forecast short circuit currents at all grid stations.

Appendix F provides information on the potential network constraints that were identified as limiting opportunities for new generation, demand or interconnector transfers, and describes the TSO's plans to deal with these constraints. Appendix G describes in detail the analysis methods used in the preparation of this statement. Appendix H contains a list of abbreviations and a glossary of terms used in the statement and Appendix I is a list of reference documents. Diagrams are presented in Appendix J which show typical power flows on all the circuits of the grid for a number of different conditions.

While the assumptions represent a reasonable view of the future, customers should note that variations in these assumptions are likely and could significantly alter the available opportunities as reported. In particular, the connection of any large new 400 MW generator, in the context of the Irish system with a peak demand of about 5,000 MW, will have a major impact on network power flows and available capacity in the network for other use.

The results of the analyses and opportunity for generation, demand and interconnection are presented for three specific years, each incorporating the summer and following winter:

- 2007 (the second year of the seven-year period);
- 2009 (the middle year);
- 2012 (the final year of the seven-year period).

1.2 IMPROVEMENTS IN THIS TRANSMISSION FORECAST STATEMENT

Following feedback received from customers, a number of enhancements have been made to make this TFS more useful and meaningful:

- The number of stations analysed for generation opportunities has been increased to 50. This represents an increase of two on the number analysed in last year's TFS.

- A total of 28 110 kV stations have been analysed for demand opportunities, an increase of six on last year.
- As stated above, opportunities for generation and demands have been analysed for years 2, 4 and 7 of the seven-year period. In previous Transmission Forecast Statements, the three years studied were the first, middle and last year of the seven-year period. However, anyone using this statement for information prior to making an application for connection is unlikely to want to connect in 2006. Analysis has been carried out for the second year instead of the first as the results for 2007 are likely to be more useful than for 2006. This change is intended to provide more useful information for developers currently considering a connection.
- In testing the capability of the network to deal with new generation, a different approach has been taken to modelling the output of existing generation in the south-west which allows for wind generation and thermal generation not being simultaneously at maximum. The new approach is described in Section G.1.3.2 in Appendix G.
- In Appendix B unique capital project numbers have been added to allow easy cross-reference with the TSO's Transmission Development Plan.
- Station demand forecasts are provided for each year of the seven-year period.
- An additional table has been added in Appendix D to present the Generators' contracted MEC values.
- The table of generators' maximum continuous ratings (MCR) has entries for each of the seven years.
- Information has been included on potential network constraints for demand and small generation opportunities; the information on constraints is more clearly linked to transmission development plans.

1.3 TREATMENT OF SINGLE ENERGY MARKET

The governments of the Republic of Ireland and the UK have jointly initiated an All-Island Project, of which the main objective is a Single Electricity Market (SEM) for the island of Ireland. The treatment of the interconnectors with Northern Ireland was reviewed for this TFS in the context of the expected start-up in 2007 of the new SEM.

Traditionally in the TFS a zero transfer is assumed across the interconnector in the base cases. Consideration was given to an all-island dispatch as a starting point for analysis of generation and demand opportunities. However, the likely predominant flow is not known. Market modelling work has indicated that forecasts of inter-system transfers depend very much on assumptions such as fuel price projections. Making an assumption

on a certain flow direction would have had implications for the opportunities identified in the TFS for generation and demand. The analysis was carried out on the basis of zero initial transfer across the interconnectors, except for the winter 2012/13 case where, for the purposes of the analysis, additional generation was assumed to be provided from Northern Ireland. However, the TFS also includes results for some sensitivities which may occur in the SEM situation.

1.4 DATA MANAGEMENT

System development is continuously evolving. In order to carry out the analyses in the TFS, the TSO froze all data relating to demand, generation and the grid at the end of December 2005. This was the most accurate data available at that time.

Since the data freeze date, a number of changes in projections have emerged which may impact on results presented in this TFS.

- Connection agreements for 94 MW of wind generation, 80 MW of which will be embedded;
 - 60 MW in Co. Donegal,
 - 19 MW in Co. Wexford,
 - 15 MW in Co. Cork.
- An agreement was signed for the connection of a demand customer to a new transmission station between Newbridge and Monread 110 kV stations;
- The DSO withdrew its application for connection of Great Connell 110 kV station;
- The ESB announced its intention to close Tarbert generation station;
- The following grid developments have been initiated as projects:
 - Refurbishment and uprating of Ardnacrusha-Limerick 110 kV line;
 - Refurbishment and uprating of Ardnacrusha-Killonan 110 kV line;
 - Refurbishment and uprating of Killonan-Knockraha 220 kV line;
 - Refurbishment and uprating of College Park-Mullingar 110 kV line;
 - Refurbishment and uprating of Bellacorick-Castlebar 110 kV line.

The impact of these changes is discussed at the end of each chapter dealing with network capability.

1.5 PUBLICATION

This TFS is available in hard-copy paper format and in pdf format on the EirGrid website (www.eirgrid.com). For a hard-copy version, please send a request to info@eirgrid.com. Network data is also available on the website in electronic format.