

1 INTRODUCTION

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 2007-2013, prepared in accordance with Section 38 of the Electricity Regulation Act, 1999, presents factual information on and current Transmission System Operator (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 Transmission Forecast Statement (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 assumptions upon which the analyses were based.

The TSO published its *Generation Adequacy Report 2007-2013* (GAR) in November 2006. That document deals with the requirement for additional generation capacity to meet forecast demand over the seven-year period to 2013. The GAR complements the demand information presented in *Transmission Forecast Statement 2007-2013*.

The TSO will publish *Transmission Development Plan 2007-2011* later in 2007. The plan will provide details of the network developments expected to be progressed in the 2007-2011 period, which are accounted for in this TFS.

1.1 OUTLINE OF THE TRANSMISSION FORECAST STATEMENT

Chapter 2 describes the existing transmission network, including connections with Northern Ireland, and provides a brief outline of the TSO's network development plans. Detailed descriptions of these plans will be presented in *Transmission Development Plan 2007-2011*, which is due to be published later in 2007. 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 9. 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 grid circuits 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 a transmission 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:

- 2008 (the second year of the seven-year period);
- 2010 (the middle year);
- 2013 (the final year of the seven-year period).

1.2 TREATMENT OF THE SINGLE ELECTRICITY MARKET

In November 2004, the governments of the Republic of Ireland and the UK announced the initiation of a project the main objective of which is to establish a Single Electricity Market (SEM) on the island of Ireland. The purpose of creating an all-island wholesale electricity market is that both jurisdictions will benefit from increased competition, reduced energy costs and improved reliability of supply. The SEM is due to commence in November 2007.

The national grid is electrically connected to the transmission system of Northern Ireland by means of one 275 kV double circuit connection at Louth and two 110 kV connections at Letterkenny in Co. Donegal and Corraclassy in Co. Cavan. The TSO and Northern Ireland Electricity (NIE) are planning a new 400 kV cross-border circuit, which is due to be installed by 2012. Together with other reinforcements, the new circuit will facilitate a greater degree

of flexibility in the new market. In the context of the SEM, all cross-border circuits will essentially become internal circuits in the new market.

In *Transmission Forecast Statement 2006-2012*, Chapter 9 was dedicated to reporting the Total Transfer Capability (TTC) for power transfers to and from Northern Ireland, treating the existing 275 kV and planned 400 kV cross-border circuits as interconnectors. Given that generation will be dispatched on an all-island basis when the SEM commences, the TTC information previously presented is no longer relevant and will therefore no longer feature in this or future Transmission Forecast Statements.

In order to reflect the way in which the transmission systems of the Republic of Ireland and Northern Ireland will operate under the terms of the SEM, the capability of the grid to accommodate new generation, demand and interconnection was assessed with generation dispatched on an all-island basis in network models. As such, flows of power across cross-border circuits were permitted in the analyses carried out for this TFS. It is important to note however that only the performance and capability of the transmission system of the Republic of Ireland is considered. The performance and capability of the transmission system of Northern Ireland is addressed in SONI's Transmission System Seven Year Statement.

1.3 TREATMENT OF INTERCONNECTION

In July 2006, Minister Noel Dempsey TD, then Minister for Communications, Marine and Natural Resources, requested that the Commission for Energy Regulation (CER) arrange a competition to secure the construction of a 500 MW East-West interconnector between Ireland and Great Britain. The CER was also requested to instruct the TSO to carry out the technical work of selection of a sub-sea route and other sites for the construction of the interconnector and necessary grid reinforcement works.

As recommended by the TSO, the CER has since approved the choice of Woodland as the connection point on the Irish system for the interconnector. The connection point to the British transmission system has yet to be finalised. The interconnector is expected to be in place by 2012. For the purposes of the TFS analyses, the interconnector was included in all 2013 network models.

In March 2007 the government published a White Paper entitled "Delivering A Sustainable Energy Future For Ireland". The White Paper states that the TSO will be requested to analyse the feasibility of potential further interconnection with Great Britain i.e., additional to the planned East-West interconnector, or new interconnection with continental Europe. In this TFS, the capability of the grid to accept further imports from and exports to other transmission systems, additional to imports and exports across the planned East-West interconnector, was tested at nine potential points of interconnection located along the

east and south coasts. Analysis was carried out for 2013, the final year of the period covered by this TFS.

1.4 DATA MANAGEMENT

System development is continuously evolving. In order to carry out analyses for the TFS, the TSO froze all data relating to demand, generation and the grid at the end of December 2006. The data used to conduct the analyses for this TFS 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 891 MW of generation:
 - 445 MW WhiteGen combined cycle gas turbine (CCGT), Co. Cork;
 - 431 MW Aghada CCGT, Co. Cork;
 - 9 MW increase in maximum export capacity (MEC) of Huntstown Unit 2, north Co. Dublin;
 - 5.8 MW increase in MEC of Mountain Lodge wind farm, Co. Cavan.
- ESB plans to close/divest the Great Island and Poolbeg generation stations and to decommission the steam unit at Marina, in addition to the previously announced closure/divestiture of Tarbert generation station;
- The DSO signed an agreement for an alternative connection method for the planned Ballycummin 110 kV station;
- The following grid developments have been initiated as projects:
 - Installation of reactive support at Ardnacrusha;
 - Installation of reactive support at Drumline;
 - Installation of reactive support at Kilkenny;
 - Installation of reactive support at Killeel;
 - Installation of reactive support at Thurles;
 - Installation of a fifth 220/110 kV transformer at Finglas;
 - Uprating of the Cashla-Cloon 110 kV line;
 - Construction of a new 220 kV station at Balgriffin, north Co. Dublin, which will be tail-connected into Finglas 220 kV station.

The impact of these changes is discussed at the end of each of the chapters 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.