8 NETWORK CAPABILITY FOR NEW DEMAND

The national grid is being planned to meet anticipated demand growth at all stations on the grid. Appendix C provides projections of demand at each station. This chapter presents the results of analyses of the capability of the grid to accommodate increased demand, above projected demand levels, and discusses the opportunities for increased demand of a size typical of industrial development in the Republic of Ireland. Twenty-nine 110 kV stations, which feed principal towns and demand centres throughout the country, were chosen for this analysis. These are shown in Figure 8-1.

Figure 8-1 110 kV Stations Studied for Demand

8.1 INCREMENTAL TRANSFER CAPABILITY RESULTS FOR NEW DEMAND

The method of analysis used to determine the capability of the grid to accommodate additional demand is described in Chapter 6 and in more detail in Appendix G. The results of the analyses are presented in Table 8-1. These indicate the amount of additional demand, in excess of projected demand, that could be accommodated at each of the twenty-nine 110 kV stations, without the need for additional grid reinforcement. The results are given to the nearest 10 MW.

Table 8-1 Capability for Additional Demand at 110 kV Stations, MW

Region	Station	2008	2010	2013
North-east	Drybridge	100	110	100
	Mullagharlin	30	20	10
	Shankill	<10 P4	90	80
North-west	Carrick-on-Shannon	90	70	90
	Castlebar	20	10	50
	Letterkenny	60	60	50
	Moy	20	20	40
	Sligo	80	40	30
East	Carrickmines	<10 C1	<10 C1	<10 C1
	College Park	<10 P9	<10 P9	<10 P9
	Mullingar	40	20	20
	Newbridge	50	30	<10 F3
	Portlaoise	50	30	10
	Thornsberry	10	30	20
West	Athlone	30	<10 P1	40
	Cashla	50	100	90
	Galway	<10 P3	40	20
	Ennis	10	<10 P12	<10 P12
South-east	Arklow	<10 C1	<10 C1	<10 C1
	Carlow	70	70	<10 F9
	Kilkenny	<10 P11	<10 P11	<10 P11
	Killoteran	60	60	<10 F9
	Wexford	<10 F4	20	<10 F9
South-west	Barnahely	30	30	20
	Cahir	20	20	<10 F9
	Cow Cross	70	70	70
	Kilbarry	130	110	60
	Limerick	10	70	20
	Tralee	<10 P7	60	40

The superscripts in Table 8-1 provide a cross reference between the low Incremental Transfer Capabilities (ITCs) and the tables in Appendix F which provide additional information regarding the constraints limiting the ITCs and the likely scale of development required to increase the ITCs. Reference numbers prefixed with a "P" indicate that the Transmission System Operator (TSO) has initiated specific projects which will overcome the constraint; a "C" indicates that plans are being progressed to deal with the constraint; an "F" means that further investigation is required before a solution is selected. The numerical suffixes serve to uniquely identify the constraints for reference purposes.

8.2 OPPORTUNITIES FOR NEW DEMAND

"Opportunity" relates to where there is or will be capacity for greater use of the grid without the need for further reinforcements. However, if a developer chooses to connect a demand in an area that requires reinforcement, the TSO will progress relevant grid developments. Demand developers should consult the TSO early in their development process to explore options relating to their proposal thus enabling timely decision making.

As a general rule, opportunity at a particular station would tend to reduce over the course of the seven years covered by the Transmission Forecast Statement (TFS) as normal demand growth uses up available capacity. However, in many cases demand opportunities improve in later years as a result of planned network or generation developments.

In 2008 there will be opportunities for additional large demand at 21 of the 29 110 kV stations examined and in 2010 there will be opportunities at 23 stations. Taken together this represents a significant improvement on the results for 2009 in *Transmission Forecast Statement 2006-2012*. Co-ordinated operation of the transmission systems of the Republic of Ireland and Northern Ireland under the new Single Electricity Market is partly responsible for the marked improvement in demand opportunity in the north-west.

Opportunities for increased demands are spread around the country. In general, individual demands up to 10 MW can be connected to most of the other stations on the grid. An additional demand of 10 MW or more, over and above forecast demand, represents a significant increase for most locations. To put this in context, a demand of 10 MW represents the consumption of a typical pharmaceutical plant.

Figure 8-2 illustrates the opportunities for demand in 2010 and 2013. The graphics show that there will be significant demand opportunities in most parts of the country throughout the seven-year period to 2013. The TSO is currently considering plans for network developments that will improve opportunities for increased demand in Dublin and the south-east.

It should be noted that demand opportunity is tested for each station on an individual basis. As such, the opportunities presented are not cumulative i.e., if new demand connects in an area that is shown to have opportunity they will use up some or all of the available capacity in that area.

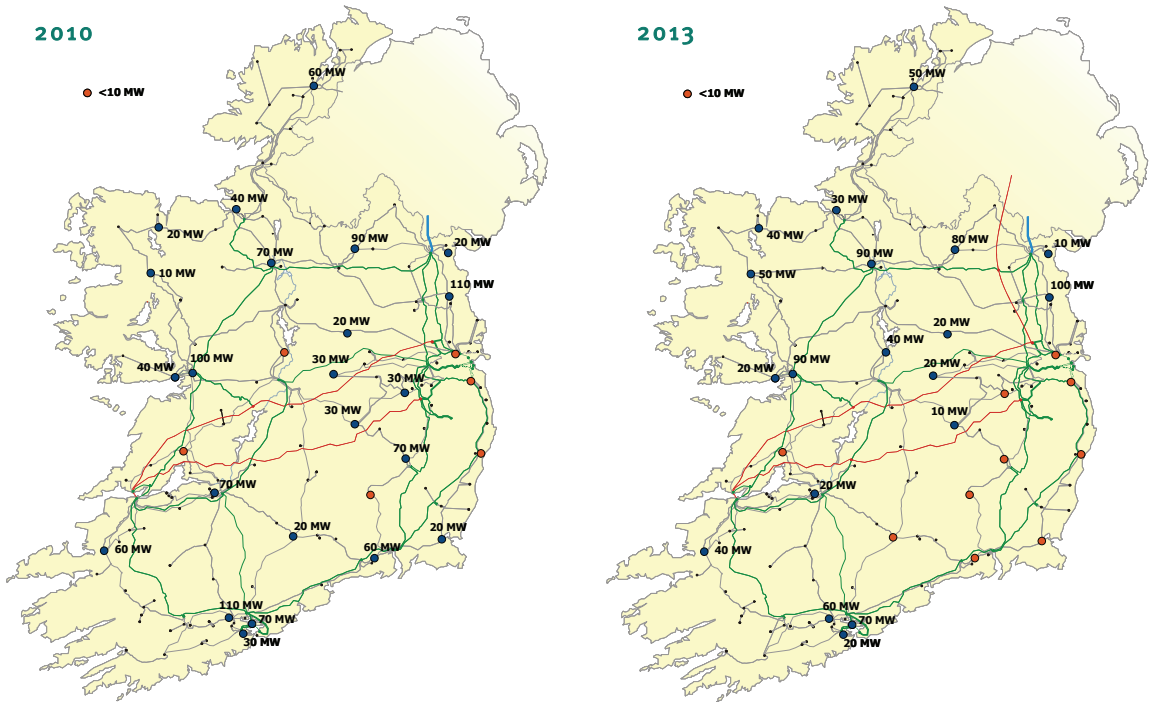

Figure 8-2 Capability for New Demand in 2010 and 2013

8.3 IMPACT OF CHANGES SINCE THE DATA FREEZE

Since the end of December 2006, a number of developments have occurred that could impact on the results in Table 8-1. The planned installation of reactive support at Ardnacrusha and Drumline should improve demand opportunity at Ennis and the planned installation of a fifth 220/110 kV transformer at Finglas should improve opportunity at College Park. The TSO also approved the installation of reactive support at Kilkenny 110 kV station, which should improve demand opportunity at Kilkenny. However, in June 2007 ESB announced that it intends to close/divest Great Island generation station. If ESB opts to close the station it is likely to reduce demand opportunity in the south-east.

8.4 HOW TO USE THE INFORMATION FOR DEMAND

Although not every station was considered, the results presented can be regarded as a guide to opportunities at other stations in the same area. Those considering development of a significant demand in the Republic of Ireland should take the following approach for an indication of whether their demand is likely to be accommodated without the need for additional reinforcements that could potentially delay their connection.

The first step is to consult the maps in Appendix A to find the nearest transmission station to the proposed development and where different, the nearest station for which opportunity has been assessed. The anticipated demand growth at the relevant station can be deduced

from the demand forecasts presented in Appendix C. The grid is being planned to meet this level of demand increase. However, if the proposed new demand is far greater than the annual forecast increase the potential developer should check the opportunity at the nearest 110 kV station presented in Table 8-1 in this chapter. The potential developer should then check the assumptions in Chapters 2 to 4 on which these results are based, and consider the impact of changes to the network since the analysis was carried out.

To illustrate this approach, the following is an example of how a developer planning to connect a new large demand of 12 MW (about 13 MVA) near Galway city in 2008 might use the TFS. The maps in Appendix A show that the nearest 110 kV station to the city is Galway station. Appendix C shows that the demand at Galway will be about 154 MW at winter peak 2007/08. This is forecast to grow by 12 MW between 2007 and 2010 i.e., by about 4 MW per annum. The proposed 12 MW is far greater than the annual forecast increase. It therefore represents a step change in the demand at Galway i.e., the type of increase that is the subject of the transfer capability analysis presented in this chapter.

The results for Galway presented in Table 8-1 show that the opportunity for increased demand is less than 10 MW in 2008. The table directs the potential developer to constraint P3 in Appendix F for additional information on the constraint and the plans that the TSO have in place to address the constraint. Table F-1 in Appendix F shows that potential overloading of one of the three Cashla-Galway 110 kV lines is responsible for limiting the opportunity. The overload occurs under summer peak trip-maintenance conditions. Capital project CP254, which entails the looping of the Cashla-Dalton 110 kV line into Galway thus creating a fourth Cashla-Galway 110 kV line, has been initiated by the TSO to relieve the constraint. Detailed information on capital project CP254 can be found in Appendix B. Following completion of the project towards the end of 2008 the opportunity at Galway increases to 40 MW in 2010. The opportunity decreases to 20 MW by 2013 as a result of normal demand growth in the area. This indicates that the network is likely to be capable of connecting and supplying the proposed demand once capital project CP254 has been fully implemented.