

## 8 NETWORK CAPABILITY FOR NEW DEMAND

The grid is being planned to meet anticipated demand growth at all stations on the grid. Appendix C provides projections of demands at each station. This chapter presents the results of the network capability analysis and discusses the opportunities for increased demand, additional to the projected demand levels, of a size typical of industrial development in the Republic of Ireland. Twenty-eight 110 kV stations, which feed principal towns and demand centres distributed 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 analysis 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-eight 110 kV stations, without the need for additional grid reinforcement. The results are given to the nearest 10 MW.

Some of the results, marked by asterisks in the table, are limited by low voltages brought about by the additional demands studied. Higher capabilities could possibly be

achieved at these stations within the typical lead-time of a new transmission-connected demand development through the installation of reactive compensation devices.

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

Region	Station	2007	2009	2012
North-east	Drybridge	120	90	90
	Mullagharlin	40	30	20
	Shankill	<10 *	20 *	10 *
North-west	Carrick-on-Shannon	<10 (C4)	20	<10 (C4)
	Castlebar	<10 (P6)	<10 (C4)	<10 (C4)
	Moy	<10 (C4)	<10 (C4)	<10 (C4)
	Letterkenny	<10 (C4)	<10 (C4)	<10 *
	Sligo	<10 (C4)	<10 (C4)	<10 (C4)
East	Carrickmines	<10 (C12)	<10 (C12)	<10 (C12)
	College Park	20	20	<10 (C11)
	Mullingar	<10 (C4)	<10 (C4)	<10 *
	Newbridge	<10 *	10 *	<10 *
	Portlaoise	20	20	<10 *
	Thornberry	10 *	<10 *	<10 *
West	Athlone	10	<10 (P5)	<10 (F3)
	Galway	<10 (P6)	20	30
	Ennis	<10 (P2)	40	10
South-east	Arklow	<10 (P7)	50	<10 (F2)
	Carlow	30 *	40	<10 *
	Kilkenny	<10 *	<10 *	<10 *
	Waterford	70	40	60
	Wexford	<10 (P8)	<10 *	<10 *
South-west	Barnahealy	30	30	20
	Cahir	10	<10 (C7)	<10 (C7)
	Castleview	30	80	70
	Cow Cross	30	30	70
	Limerick	<10 (P2)	20	20
	Tralee	<10 (P2)	<10 (C10)	<10 (C10)

The figures in brackets in Table 8-1 provide a cross reference between the low ITCs and the tables in Appendix F which provide additional information regarding the plans to address the constraints, or the likely scale of development required to increase the ITCs. Reference numbers prefixed with a "P" indicate that the TSO has initiated 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.

A sensitivity analysis was carried out on the impact of assuming incremental transfers from Northern Ireland, in addition to flows from Dublin and the South. The results of the analysis showed that demand capabilities could be improved at Letterkenny in 2007 and Athlone in 2012.

## 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 them to make timely decisions.

As a general rule, opportunities at a particular station would tend to reduce over the course of the seven years as normal demand growth uses the available capacity. However, in many cases demand opportunities improve in later years as a result of planned network or generation developments.

In 2007 there will be opportunities for additional large demand at 10 of the 28 110 kV stations examined and in 2009 there will be opportunities at 16 stations. Taken together these represent a significant improvement on the results for 2008 in *Transmission Forecast Statement 2005-2011*. The increase in opportunities is due in certain cases to the inclusion of new projects that were not in the previous statement. In other cases the increase is due to a different approach taken to the association of bulk system constraints with demand increases following a review of the study methodology. The revised method is described in more detail in Section G.2.3 in Appendix G.

Opportunities for significant 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 average consumption of a typical pharmaceutical plant.

Figure 8-2 illustrates the opportunities for demand in 2009 and 2012. The graphics show that there will be significant demand opportunities near the main cities and in other parts of the network throughout the seven-year period to 2012. The TSO is currently considering plans for a network development that will increase opportunities for increased demand in the north-west.

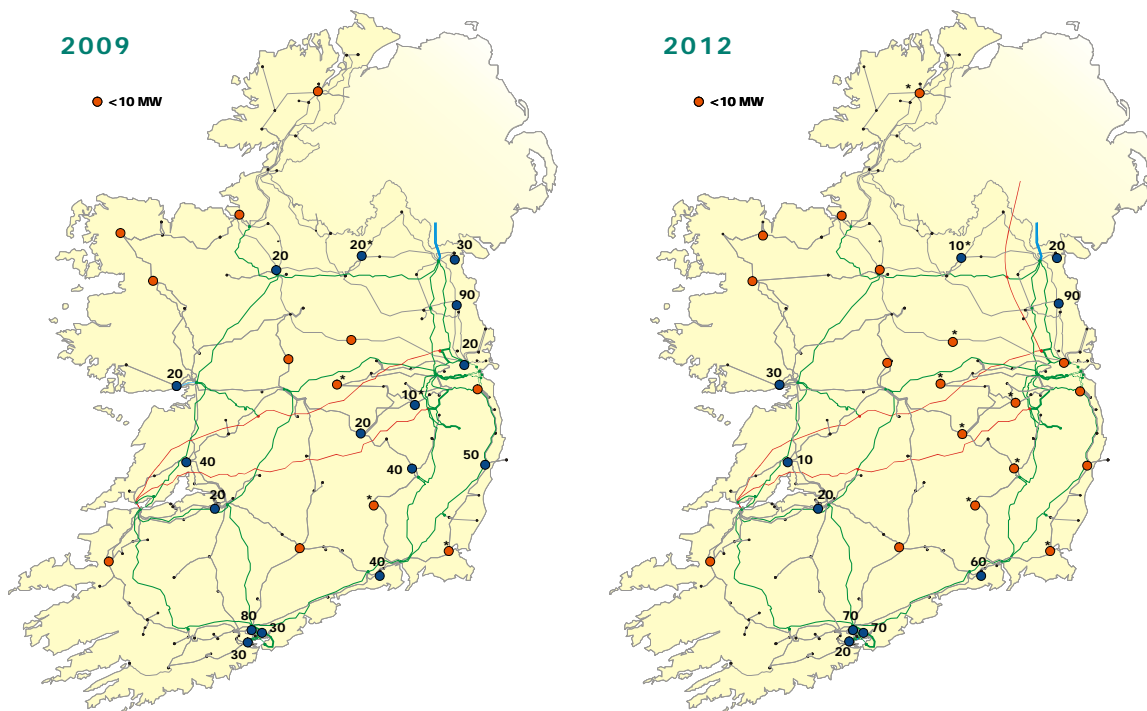


Figure 8-2 Capability for New Demand in 2009 and 2012

### 8.3 IMPACT OF CHANGES SINCE THE DATA FREEZE

Since the end of December 2005, a number of developments have been initiated that could impact on the results in Table 8-1.

ESB has announced its intention to close Tarbert power station by 2010. This will remove 589 MW of generation capacity from the south-west of the system. The impact on demand opportunities is likely to depend on the sequence and timing of the Tarbert unit closures, other potential generation connections and the timing of planned network reinforcements in the south-west. In particular, closure of Tarbert generation before the completion of the Moneypoint-Tarbert circuit and the 400 kV station near Nenagh would likely reduce demand opportunities significantly in the south-west.

### 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 to 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 Transmission Forecast Statement. 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 147 MW at winter peak 2006/07. This is forecast to grow by 12 MW between 2006 and 2009 i.e., by less than 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 2007, increasing to 20 MW in 2009, and to 30 MW by 2012. This indicates that the network is likely to be capable of connecting and supplying the proposed demand.