

9 NETWORK CAPABILITY FOR NEW DEMAND

The method to determine the capability of the grid to accommodate additional demand was described in Chapter 7. This chapter presents the results of the analysis carried out and discusses the opportunity for the connection of new or increased demand of a size typical of industrial development in Ireland.

Based on feedback from industry, a different set of stations to the ones chosen for generation was selected for the analysis of additional demand. It is intended that this new selection will make the results more meaningful to the potential developers. The twenty-two 110 kV stations selected, which feed principal towns and demand centres distributed throughout the country, are shown in Figure 9-1.



Figure 9-1 110 kV Stations Studied for Demand

In *Forecast Statement 2004-2010*, the capability to connect very large demands at 220 kV was also analysed. However, there are no demands connected at 220 kV in Ireland and following discussions with the IDA (Industrial Development Authority) it was decided that there was little interest in the assessment of demand at 220 kV. That analysis has not been repeated for this Forecast Statement.

9.1 INCREMENTAL TRANSFER CAPABILITY RESULTS FOR NEW DEMAND

The grid is being planned to meet anticipated demand growth at all stations on the grid. Users of the Forecast Statement should refer to Table C-1 in Appendix C for projections of demands at each station. Table 9-1 indicates the amount of additional demand, in excess of this

projected demand, that could be accommodated at each of the twenty-two 110 kV stations, without the need for additional grid reinforcement.

The results are given to the nearest 10 MW.

Some of the results are limited by low voltages which can be solved by short lead-time developments such as the addition of reactive compensation devices to areas of the network. A sensitivity study, with additional reactive compensation, was carried out to assess the impact on the results. The figures in brackets show what the capability could increase to.

Table 9-1 Capability for Additional Demand at 110 kV Stations (MW)

Station	2005	2008	2011
College Park	70	20	<10
Castleview	40	<10	30
Dunmanway	30	<10	<10
Raffeen	20	<10	20
Ballycummin	-	<10	30 (60)
Limerick	20	<10	50
Tralee	0	<10	30
Kilmurry	-	<10	<10
Wexford	0	<10	10 (20)
Cahir	50	<10	<10
Newbridge	0	20 (50)	<10 (20)
Portlaoise	20	<10	<10 (50)
Athlone	20	<10	<10
Castlebar	<10	<10	<10
Galway	10	<10	40
Letterkenny	10	<10	<10 (30)
Mullingar	10	<10	<10 (30)
Sligo	30	<10	10 (50)
Drybridge	<10	<10	100
Mullagharlin	40	<10	30
Navan	20	<10	<10
Shankill	<10	<10	40 (70)

9.2 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 the 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.

Currently there are opportunities for additional large demand at most 110 kV stations. In 2008, without further reinforcements beyond those selected, there will be limited opportunities for additional demand at all stations except for Newbridge in Kildare and College Park in Dublin, both of which can accommodate an extra 20 MW. In general, individual demands up to 10 MW can be connected to most stations on the grid. However, 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 9-2 illustrates the opportunities for demand in 2008 and 2011 based on the sensitivity analysis results. There will be significant demand opportunities at most 110 kV stations again, by the end of the decade.

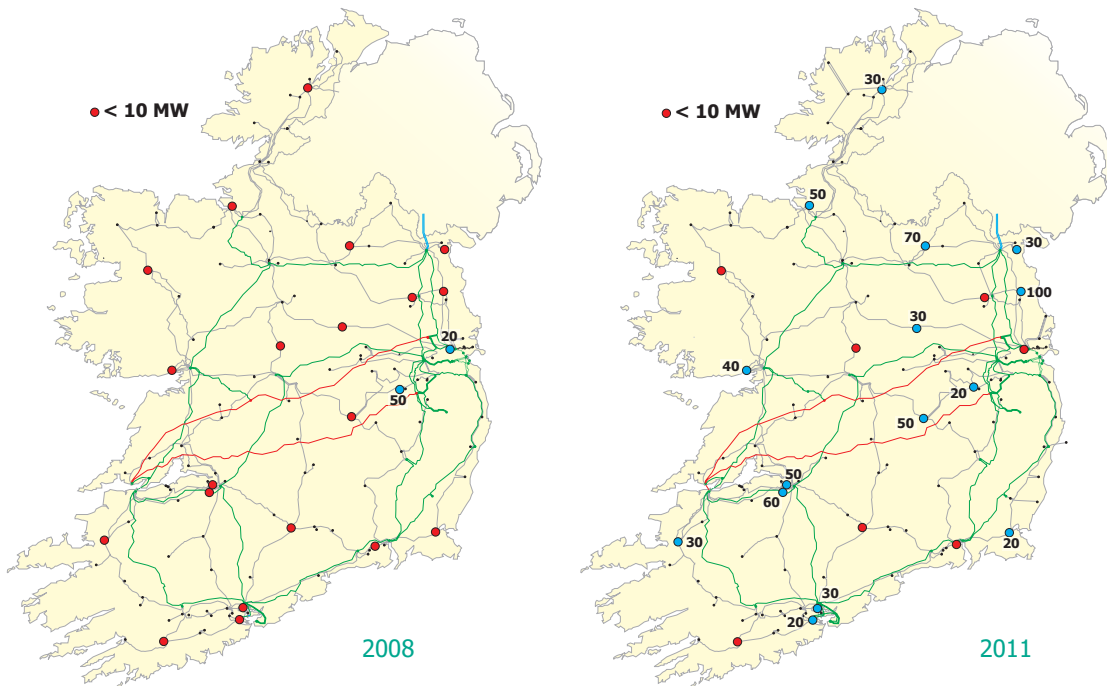


Figure 9-2 Capability for New Demand in 2008 and 2011

9.3 IMPACT OF CHANGES SINCE THE DATA FREEZE

Since the end of December 2004, a number of developments have been initiated which could improve the results presented in Table 9-1:

- The new Castlebar-Tonroe 110 kV line should increase grid capability at Castlebar.
- The new third Gorman-Navan 110 kV line should improve grid capability around Navan and other nodes in north-east.
- The new second Athlone-Shannonbridge 110 kV line should increase grid capability around Athlone.

9.4 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 Ireland should take the following approach for an indication of whether

their demand can be accommodated without the need for additional reinforcements that could potentially delay their connection.

This information applies to those connecting to the transmission system and to demands greater than 4 MVA connecting to the distribution system.

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 Table C-1 in Appendix C. The grid is being planned to meet this level of demand increase. However, if their proposed new demand is far greater than the annual forecast increase they should check the opportunity at the nearest 110 kV station presented in Table 9-1 in this chapter. They 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 near Monaghan town in 2009 ramping up to 12 MW (about 13 MVA) might use the Forecast Statement. The maps in Appendix A show that the nearest 110 kV station to Monaghan town is Lisdrum. Table C-1 shows that the demand at Lisdrum will be about 35 MW at winter peak 2004/05. This is forecast to grow by 5 MW between 2005 and 2008 or by less than 2 MW per annum. The proposed 12 MW is far greater than the total annual forecast increase. It therefore represents a step change in the demand at Lisdrum i.e., the type of increase that is the subject of the transfer capability analysis presented in this chapter.

Table 9-1 does not have an entry for Lisdrum. Shankill station is the closest to Monaghan town for which capability analyses were carried out. The results for Shankill show that the opportunity for increased demand is very limited in 2008, but that between 2008 and 2011 the opportunity will improve. The 70 MW figure for 2011 is displayed in brackets meaning that to achieve this figure additional developments are required; in this case it is assumed that a new capacitor could be installed if required within a relatively short time to deal with local voltage problems.

Based on this examination of the information provided, the user can ascertain that opportunities for large demands in the area will open up between 2008 and 2011. However, before making any commercial decisions the developers should contact the TSO for discussions on the proposed development.