4 GENERATION

This chapter gives information about existing generation capacity and projections for the seven years to 2012. All generation capacity and dispatch figures in this Transmission Forecast Statement (TFS) are expressed in exported or net terms i.e., generation unit output less the unit's own auxiliary load.

At the beginning of 2006, some 6,524 MW (net) of generation capacity was installed in the Republic of Ireland. Of this 6,057 MW is connected to the national grid and 467 MW is connected directly to the distribution system.

4.1 EXISTING AND PLANNED GRID-CONNECTED GENERATION

The 6,057 MW figure includes a number of generators connected to the grid in 2005. They are the Ballywater, Booltiagh and Derrybrien wind farms and the Sealrock CHP plant connected at Aughinish and the CCGT plant at Tynagh.

The maximum continuous rating (MCR) of the Dublin Bay Power plant is 403 MW and not 409 MW as was advised by the generator for *Transmission Forecast Statement 2005-2011*.

In July 2003, ESB and NIE signed an agreement by which NIE would procure energy and capacity from a power station in Ballylumford, Co. Antrim and deliver it to ESB over the main interconnector. The maximum amount of power that can be delivered at the interconnector under this contract is 167 MW. As advised by ESB, this contract was terminated on 31st March 2006.

A number of generators have applied for connection to the grid. At the time of data freeze, 10 contracts had been signed, agreeing to connect a total generation capacity of 780 MW to the grid. Coomagearlahy, a 42.5 MW wind farm in Co. Kerry, was connected in March 2006. The other planned generators are listed in Table 4-1 with their expected connection dates as at the time of the data freeze.

Table 4-1 Planned Grid-Connected Generation

Generator	Description	Expected Connection Date
Glanlee	29.8 MW wind farm in Co. Kerry	Mar-06[8]
Huntstown 2	400 MW combined cycle gas turbine (CCGT) in north Co. Dublin	Nov-06

[8] Glanlee wind farm is now expected to be connected later in 2006.

Table 4-1 Planned Grid-Connected Generation (continued)

Generator	Description	Expected Connection Date
Moneypoint Wind Farm	21.9 MW wind farm located at Moneypoint coal-fired power station in Co. Clare	Dec-06
Mountain Lodge	24.8 MW wind farm in Co. Cavan	Jan-07
Ratrussan	70 MW wind farm in Co. Cavan	Jan-07
Pallas	37.8 MW wind farm located in Co. Kerry	Mar-07
Athea	51 MW wind farm in Co. Kerry	Jul-07
Arklow Banks	60 MW offshore wind farm, located off the coast of Co. Wicklow	Dec-07
Coomacheo	42.5 MW wind farm in Co. Kerry	Dec-07

4.2 ADDITIONAL GENERATION REQUIREMENTS FOR 2012 STUDIES

Despite the planned connection of Huntstown 2 and the increase in committed wind generation further generation is required in the 2012 network model to carry out meaningful analyses for this TFS. A 100 MW import from Northern Ireland was assumed in the 2012 winter peak case.

This should not be interpreted as indicating that just 100 MW additional generation capacity will be required by 2012. Please refer to *Generation Adequacy Report 2006-2012* for an assessment of future capacity requirements.

4.3 GENERATION UNIT RETIREMENTS

The closure of generation plant could have a significant impact on the ability of the grid to comply with standards. Under the Grid Code, a minimum of 24 months notice is required by the TSO to address the potential implications of any generation closures.

The connection agreements for the peaking units at Aghada and Tawnaghmore run up to the end of 2006. As such, it was assumed for this TFS that these units would no longer be available after 2006.

The Rhode peaking units, which were assumed in the *Transmission Forecast Statement 2005-2011* to retire by the end of 2007, are now expected to remain in service beyond

the TFS Period. The CER has advised that these plants should be given non-firm access. They will not, therefore, delay other generation through reservation of network capacity.

At the time of the data freeze no further notice of plant closures had been received. For the purposes of the TFS analysis, therefore, all other existing generation capacity was assumed to remain in service. Since then the ESB has announced its intention to close Tarbert generation station. This is discussed in the chapters describing the capability of the network to deal with increased generation or demand.

4.4 EMBEDDED GENERATION

At the beginning of 2006, there was approximately 467 MW of embedded generation plant i.e., plant connected to the distribution system or to the system of a directly-connected demand customer. This figure comprises combined heat and power (CHP) schemes and small thermal units and renewable generation from wind, small hydro, land-fill gas (LFG) and biomass sources. Table 4-2 lists the existing embedded generation capacity totals by generation type. Table D-3 in Appendix D provides details of the existing embedded wind farms and their capacities.

Table 4-2 Existing Embedded Generation at December 2005

	Wind	Small Hydro	Biomass/ LFG	CHP	Industrial	TOTAL
Net Capacity (MW)	272	27	28	131	9	467

As described in Section 3-1 of Chapter 3, embedded generators reduce the demand supplied through the transmission interface stations. Forecasts of demand at the relevant transmission interface stations, presented in Table 3-1 of Chapter 3, take account of the contribution of the existing non-wind embedded generators[9]. The *Generation Adequacy Report 2006-2012* (GAR) forecasts the total CHP and non-wind renewable capacity to grow by about 5 MW per year.

4.5 WIND GENERATION

Over the past ten years wind power generation in the Republic of Ireland has increased from 20 MW (two wind farms) to 493 MW (49 wind farms) as at the end of December 2005. Figure 4-1 shows existing and planned transmission-connected, distribution-connected and the total connected wind power capacity at year end from 1992 to 2008. The graph illustrates the increase in wind power in recent years.

[9] Because of the variability of wind, a fixed contribution from embedded wind farms is not taken into account in the calculation of the peak transmission flow forecasts. Rather a number of wind scenarios are considered in the TFS analyses.

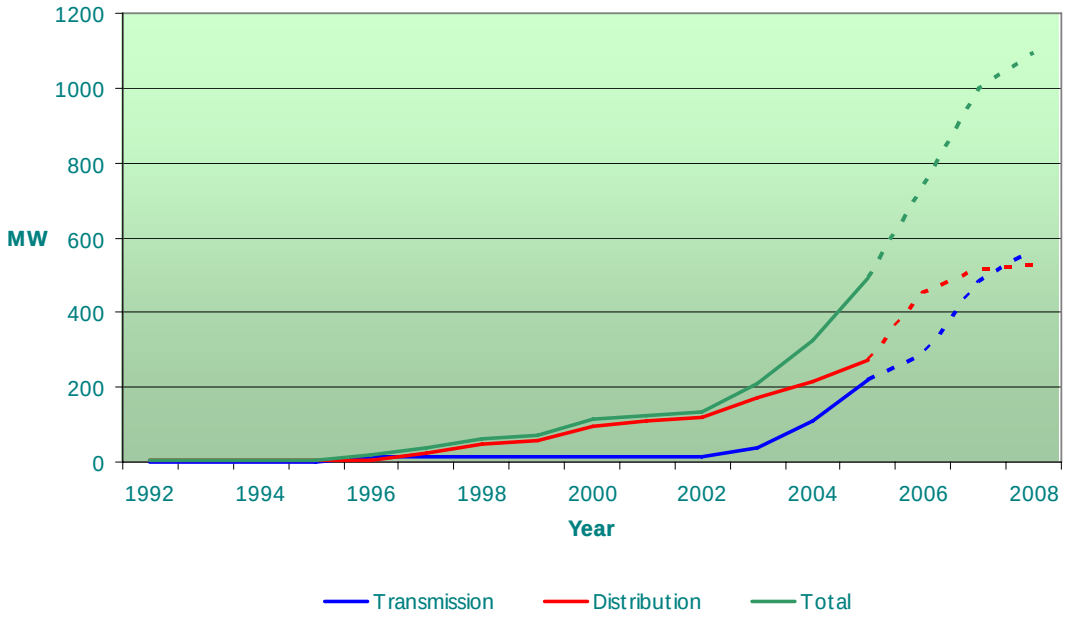

Figure 4-1 Growth in Wind Capacity, 1992 to 2008

As at the end of December 2005, 42 wind farms totalling 650 MW have signed connection offers and are committed to connecting to the transmission or distribution networks over the next few years. Table 4-3 shows the total amount of existing and committed wind generation capacity expected to be connected at the end of each year from the existing situation at the end of 2005 to 2012. The individual wind farm details are included in Appendix D.

Table 4-3 Existing and Committed Wind Capacity Totals, MW

Connection	2005	2006	2007	2008	2009	2010	2011	2012
Transmission	221	285	481	570	570	570	600	600
Distribution	272	456	516	526	526	526	543	543
Total	**493**	**741**	**997**	**1096**	**1096**	**1096**	**1143**	**1143**

The RES-E Directive of the European Parliament and Council (Directive 2001/77/EC) sets a target for the Republic of Ireland of 13.2% of total electricity consumption from renewable sources by 2010. Recently the Minister for Communications, Marine and Natural Resources, Mr. Noel Dempsey, announced an increased target of 15%. Wind power generation is expected to be the major contributor to meeting the renewable energy targets. The 15% target can be achieved with approximately 1,300 MW of wind power generation installed by 2010.

Between the December 2005 data freeze date and the end of June 2006, a further 10 contracts were signed for the connection of an additional 97 MW of wind generation. In addition, offers for wind farm connections totalling 57 MW have been made by the DSO,

but have not yet been accepted. The total for wind farms connected, with signed connection agreements and with live connection offers is 1,281 MW. This figure suggests that the 13.2% target is likely to be surpassed before 2010.

A further 202 applications for wind farm connections totalling 3,076 MW have been received by the TSO and DSO. Up to 1,300 MW of these are likely to be processed under the CER's "Gate 2" direction.