4 GENERATION

This chapter gives information about existing generation capacity and projections for the seven years to 2013. 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 2007, when data was frozen in order to permit TFS analyses to be carried out, some 6,737 MW (net) of generation capacity was installed in the Republic of Ireland. Of this 6,148 MW is connected to the national grid and 589 MW is connected directly to the distribution system. Sections 4.1 to 4.4 detail planned developments with respect to generation over the period covered by this TFS.

It should be noted that the Transmission System Operator (TSO) is currently processing more than 1,300 MW of wind generation connection applications under the Commission for Energy Regulation's "Gate 2" direction on wind farm connections. Due to the fact that none of the applicants had signed connection agreements at the time of the data freeze, "Gate 2" wind generation was not included in the network models used for the purposes of the TFS analyses. Information on "Gate 2" wind generation is provided in Section 4.4.

4.1 EXISTING AND PLANNED GRID-CONNECTED GENERATION

The 6,148 MW figure for grid-connected generation capacity includes generators that connected to the grid in 2006, namely the Coomagearlahy wind farm in Co. Kerry (42.5 MW) and Ratrussan wind farm in Co. Cavan (48 MW). An additional 22 MW of wind generation is scheduled to connect at Ratrussan towards the end of 2007. This will bring the total installed generation capacity of the Ratrussan wind farm to 70 MW.

A number of generators have applied for connection to the grid. At the time of the data freeze, eight contracts had been signed, agreeing to connect a total generation capacity of 622 MW to the grid. The 29.8 MW Glanlee wind farm in Co. Kerry and the 403 MW Huntstown 2 combined cycle gas turbine (CCGT) in north Co. Dublin were connected in January and June of 2007 respectively. The other planned generators are listed in Table 4-1 with their expected connection dates as at the time of the data freeze.

Since *Transmission Forecast Statement 2006-2012* Arklow Banks wind farm signed a termination agreement with the TSO meaning the project will not now go ahead.

Following connection agreements signed since the data freeze, two CCGTs are now planned to connect to the grid in Co. Cork. They are the Aghada CCGT, which will have a maximum export capacity (MEC) of 431 MW, and the WhiteGen CCGT, which will have an MEC of 445 MW. The connection agreement for the Aghada CCGT limits the overall MEC of the Aghada generation station to 690 MW until deep reinforcements are in place, which is likely to be beyond the period covered by this TFS.

Table 4-1 Planned Grid-Connected Generation as at December 31st 2006

Generator	Description	Expected Connection Date
Coomacheo	42.5 MW wind farm in Co. Kerry	Dec-07
Moneypoint Wind Farm	21.9 MW wind farm located at Moneypoint coal-fired power station in Co. Clare	Mar-08
Mountain Lodge	24.8 MW wind farm in Co. Cavan	Apr-08
Athea	51 MW wind farm in Co. Kerry	Jun-08
Pallas	37.8 MW wind farm located in Co. Kerry	Jan-09
Meentycat	14 MW wind farm extension in Co. Donegal	Jun-09

In June 2006, the Commission for Energy Regulation (CER) directed the TSO to proceed with the processing of generator applications on a working assumption that system capacity equivalent to more than 800 MW of conventional generation plant should be held in reserve in the south-west region. As such, for the purposes of the TFS analyses, the Aghada and WhiteGen CCGTs were included in studies from 2010 onwards. It should be noted however that at the time of the data freeze the MEC applied for by ESB for the Aghada CCGT was 425 MW, not the 431 MW finally agreed. As such, the capacity of the Aghada CCGT in the TFS studies was assumed to be 425 MW.

Two generators have obtained MEC increases since the data freeze. The planned Mountain Lodge wind farm referred to in Table 4-1 was granted an MEC increase of 5.8 MW and the Huntstown 2 CCGT was granted an MEC increase of 9 MW. The MEC increase at Mountain Lodge wind farm arises from an extension to the wind farm, the application for which was processed under the CER's "Gate 2" direction on wind farm connections.

4.2 PLANNED RETIREMENT/DIVESTITURE OF GENERATION PLANT

The divestiture or 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.

It was announced in November 2006 that an agreement had been reached between ESB and the CER to reduce ESB's share of the electricity market. Under the terms of the agreement ESB must close or divest 1,300 MW of plant by 2010. One of the provisions of the agreement is that ESB must sell peaking capacity plant totalling 208 MW, including sites and infrastructure, at Rhode and Tawnaghmore.

At the time of the data freeze, ESB planned to close/divest Tarbert generation station under the terms of the agreement. While it has been identified that Tarbert will feature in ESB's divestment strategy, the future for the contracted generation capacity at the site and for the station itself is unclear. For the purposes of this TFS it was assumed that Tarbert could not be relied upon to meet demand beyond 2010. However, for the purposes of the TFS generation opportunity analyses, it was assumed that the contracted capacity at the Tarbert site would remain beyond 2010 in light of the uncertainties mentioned.

In June 2007, ESB announced that it intends to close/divest a number of units at the Great Island and Poolbeg generation stations, in addition to those at the Tarbert station. It was also announced that the steam turbine at Marina will be decommissioned, although the larger gas turbine will remain operational.

At the beginning of 2007, the connection agreements for the peaking units at Aghada and Tawnaghmore were due to expire on the 30th of June 2007 and 31st of March 2007 respectively. Since the data freeze, the connection agreements for the units were extended to the 30th of September 2007 and the 30th of June 2008 respectively. In light of the agreement between ESB and the CER it was deemed reasonable to assume, for the purposes of the TFS analyses, that the units will remain operational for the forseeable future. The two units currently have non-firm access.

4.3 EMBEDDED GENERATION

At the beginning of 2007, there was approximately 589 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 industrial 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 as at December 31st 2006, MW

	Wind	Small Hydro	Biomass/ LFG	CHP	Industrial	TOTAL
Net Capacity (MW)	412	27	30	111	9	589

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[8]. The *Generation Adequacy Report 2007-2013* (GAR) forecasts the total CHP and non-wind renewable capacity to grow by about 5 MW per year.

4.4 WIND GENERATION

Over the past fifteen years wind power generation in the Republic of Ireland has increased from 6 MW (one wind farm) to 744 MW (68 wind farms) at the beginning of 2007.

Figure 4-1 shows existing and planned transmission-connected, distribution-connected and the total connected wind power capacity at year end from 1992 to 2010. The graph illustrates the increase in wind power in recent years.

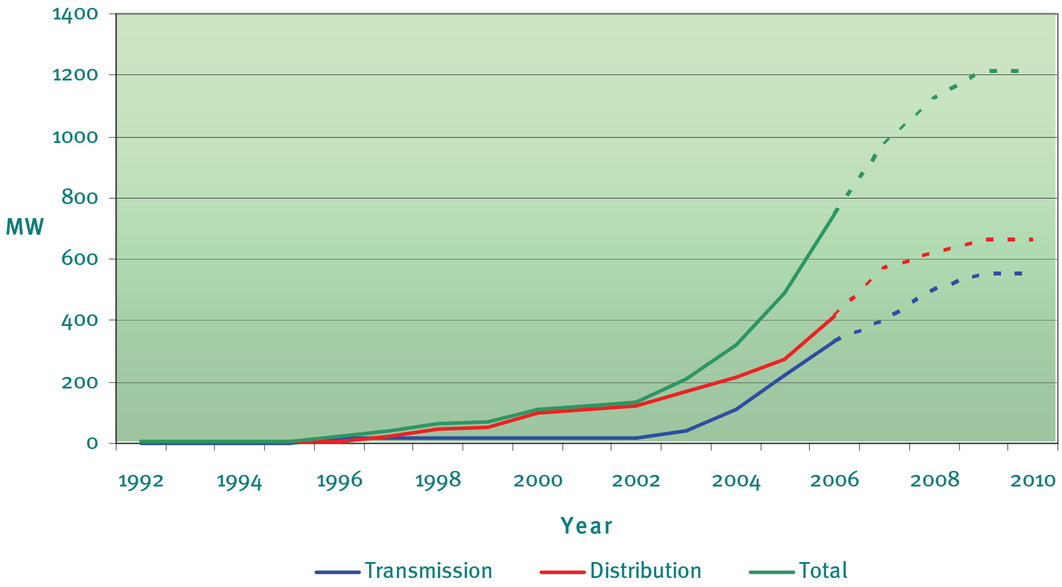

Figure 4-1 Growth in Wind Capacity, 1992 to 2010

As at the end of December 2006, 35 wind farms totalling 471 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 2006 to 2013. The individual wind farm details are included in Appendix D.

[8] 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.

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

Connection	2006	2007	2008	2009	2010	2011	2012	2013
Transmission	333	404	501	553	553	553	553	553
Distribution	412	569	623	663	663	663	663	663
Total	**745**	**973**	**1,124**	**1,216**	**1,216**	**1,216**	**1,216**	**1,216**

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. In June 2006, the then 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 1,350 MW of wind power generation installed by 2010.

At the time of the data freeze, a total of 216 applications for wind farm connections totalling 3,233 MW had been received by the TSO and DSO. A total of 1,316 MW of wind generation is currently being processed under the CER's "Gate 2" direction on wind farm connections. The connection studies are being carried out with "Gate 2" wind farms grouped geographically, as set out in the CER direction. Figure 4-2 and Table 4-4 illustrate how "Gate 2" wind generation is distributed across the country.

Table 4-4 "Gate 2" Wind Generation Area Totals

"Gate 2" Area	Total Generation (MW)
A (North West)	201
B (Mid North West)	104
C (Midlands)	13
D (Mid West)	66
E (South West)	592
F (South West)	44
G (North East)	14
H1 (Midlands-South West)	162
H2 (South East)	118
I (South)	2

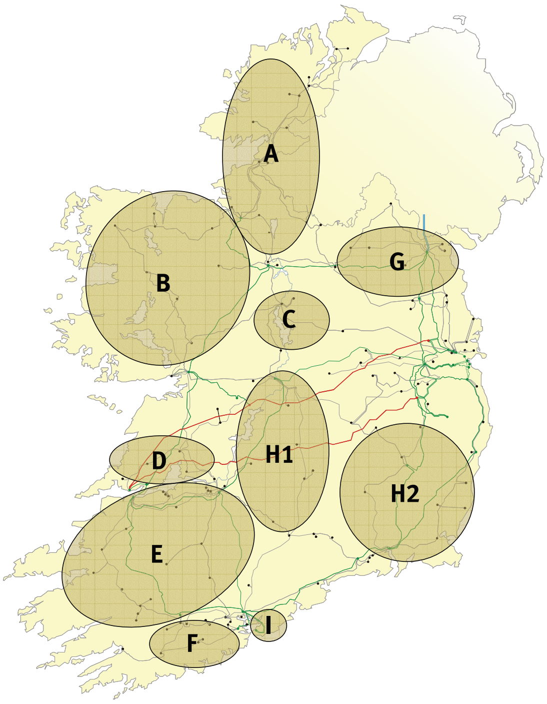

Figure 4-2 "Gate 2" Wind Generation Areas

Since the December 2006 data freeze date, a connection agreement was signed for the "Gate 2" extension to the Mountain Lodge wind farm, as mentioned in Section 4-1. In addition, offers for "Gate 2" wind farm connections totalling 12 MW have been made by the TSO, but have not yet been accepted. Offers for "Gate 2" wind farm connections made by the DSO total nearly 47 MW, of which approximately 7 MW have accepted. The total for wind farms connected, with signed connection agreements and with live connection offers is 1,281 MW. This figure suggests that somewhere in the region of an additional 70 MW of "Gate 2" wind will have to connect to the grid by 2010 in order to meet the renewable energy target of 15%. Since the data freeze, further connection applications totalling an additional 726 MW of wind generation have been received by the TSO and DSO bringing the total in the applications queue beyond "Gate 2" to 2,685 MW.