



All Island Renewable Connection Report 36 Month Forecast (Q3 2012)

Note: This summary document has been produced by EirGrid and SONI for information and the forecast for renewable connections are indicative only.

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Executive Summary

The power system of Ireland and Northern Ireland is currently operating at high penetrations of wind never previously experienced on the island. In 2011, 16.7% of electricity demand on the island of Ireland was met by renewable generation. The level of installed renewable generation is expected to grow significantly over the coming years in line with the 40% renewable targets and obligations under the EU Climate Change package. By 2020, it is estimated that the synchronous island power system will have over 37% of its electricity from wind power generation. The remaining 3% is expected to be sourced from other renewable technologies including: hydro, bio-energy, renewable combined heat and power (RES CHP).

This transformation requires significant investment in the necessary grid infrastructure, which is being managed through the connection offer processes and long term strategic development plans in both jurisdictions. A high degree of policy, regulatory and financial certainty for would-be investors in the renewable electricity sector is also crucial to facilitating this transformation.

The purpose of this report is to provide a forecast range of expected renewable connections on the power system across the island over the next thirty-six month period. As wind generation will form the largest percentage share of renewable connections in Ireland and Northern Ireland out to 2020, the primary focus of this report is on expected wind connections over this timeframe.

The rate of these connections is contingent on a number of variables - many of which are outside the control of the system operators – making it difficult to provide a precise connection figure over this period. These variables might include difficulties with securing financing for proposed wind farm projects, obtaining the necessary planning permission, commercial decisions and the construction of the wind farm itself. To cater for this uncertainty, this report will use a MegaWatt (MW) range for renewable connections out to the end of Q2, 2015.

At the moment there is 2,461 MW of renewable generation installed on the power system of Ireland and Northern Ireland. In order to reach the 40% renewable electricity targets by 2020, EirGrid and SONI have estimated that the amount of installed wind generation across the island of Ireland will need to reach an installed capacity of between 4,800 MW and 5,300 MW by the end of 2020. This means that the yearly increase of additional renewable generation required on an all island basis to meet the 40% renewable electricity targets will need to be in the range of 310 MW to 370 MW.¹

¹ This projection is based on the 8 ½ years from June 2012 to December 2020.

1. Renewable Energy Policy Overview: Ireland and Northern Ireland

In Ireland, renewable energy policy is driven by a binding European legal requirement to ensure that 16% of the country's total energy consumption is derived from Renewable Energy Sources (RES) by 2020.² In order to achieve this total energy target, the Irish government is aiming for (40%) renewable electricity (12%) renewable heat (12%) and (10%) renewable transport. In the electricity sector, it has been estimated that between 3,500 - 4,000 MW of installed wind generation will be required to meet circa 37% of electricity demand in 2020. The remaining 3% is expected to be sourced from hydro generation, biomass, renewable CHP.³

In 2010, the Northern Ireland Assembly voted to approve an increase in the amount of electricity sourced from renewable sources to 40% by 2020.⁴ It is expected that a variety of technologies both onshore and offshore will contribute to the 40% target by 2020, although onshore wind is the most developed technology and would be expected to make a large contribution to meeting the target (circa. 1,300 MW). Over the last number of years, Northern Ireland has been focused on achieving its 2012 renewable electricity target that 12% of electricity demand be derived from renewable energy sources. In an effort to ensure the development of a diverse renewable portfolio, 15% of this 12% renewable electricity target should be derived from non-wind sources.

2. Purpose and Methodology

The purpose of this report is to provide a forecast range of expected renewable connections on the power system across the island over a thirty-six month period. The report will be issued to the Regulatory Authorities (RAs) and relevant Government Departments in Ireland and Northern Ireland for information. The report will be produced on a quarterly basis and will use Installed Capacity values for existing connections and contracted Maximum Export Capacity (MEC) values for future connections.⁵

There are a number of possible financial, policy and regulatory issues that can impact on the connection rates outlined in this report. The most important policy and regulatory decisions over the last year are the EU Commission decision on state-aid clearance for REFIT II in Ireland, and the SEM Committee decision on the Treatment of Price Taking Generation in Tie Breaks in Dispatch in the SEM and Associated Issues (SEM-11-105). The Irish Government finally received EU approval for REFIT II in March this year. In order to qualify for this REFIT support scheme a wind farm must be operational by the end of 2015 – a requirement included by the EU Commission as part of the State Aid clearance process. It is important to note that this condition may pose challenges for wind farm projects if they experience delays in planning

² See the EU renewable directive 2009/28/EC

³ Figures taken from the All-Island Generation Capacity Statement and the 2012 National Renewable Energy Action Plan update. Note: the capacity factor for wind generation estimates in 2020 is 31%.

⁴ Northern Ireland Strategic Energy Framework document: http://www.detini.gov.uk/strategic_energy_framework__sef_2010_-3.pdf

⁵ Installed capacity equates to the total of the ratings of each individual turbine connected on the wind farm site. Maximum Export Capacity is the contracted maximum capacity the wind farm is allowed to export onto the grid

decisions. However, in the meantime, the introduction of REFIT II is likely to provide additional financial certainty to wind farm investors over the medium term.

There was also a consultation in Northern Ireland in 2011 on the introduction of proposed changes to the Northern Ireland Renewable Obligation (NIRO) in 2013. The publication of a Government response to this consultation in August 2012 outlining the amended levels of incentivisation for various technologies has provided certainty to potential renewable developers in Northern Ireland.⁶

A second significant SEM Committee decision (December 2011) on the Treatment of Price Taking Generation in Tie Breaks in Dispatch in the SEM has created an increased level of uncertainty in the sector with many would-be investors arguing that the decision taken would disproportionately hit any new investment in the sector. After a period of review, the SEM Committee proposed decision on Tie Breaks was released on 3 October 2012.

In an effort to capture the range of unforeseen variables that can impact on the expected connection rate - including the availability of financing for developers, planning permission, network delivery or commercial decisions on behalf of renewable generators - this report includes a range for expected wind farm connections. Each graph in this report will contain the following information:

- **Maximum Possible Range** is based on a high scenario where 75% to 100% of the contracted wind farms get built.
- **Expected Connection Levels** is the MW range of contracted wind farms that are expected to connect each year. The expected connection levels are based on a connection rate of 50% to 75% of contracted wind farms getting built.
- **Minimum Range** is based on a low scenario where only 25% to 50% of contracted wind farms get built.
- **The Historical Average** is the level of actual RES connection each year over the previous three years (January 2009-December 2011). This is provided as a reference/context figure.

3. Data Sources

The information for this report is taken from a range of sources. Information on renewable connections for Ireland is derived from the Gate 3 process with updates on the distribution connected units provided by the Distribution System Operator (DSO). For Northern Ireland, information on connections is generated by SONI, with information on the current connection assumptions underpinning the anticipated development of Network 25 from Northern Ireland Electricity (NIE) too.

⁶ The DETI response published in August 2012 can be found at: http://www.detini.gov.uk/niro_2012_consultation_-_government_response.pdf.

The level of installed wind needed to reach the 2020 renewable electricity targets is derived from the All-Island Generation Capacity Statement (2012-2021) and the 2012 National Renewable Energy Action Plan update. The historical average connection rate is taken from Transmission System Operator (TSO) and DSO connection information.

4. Current All-Island Renewable Connections

At the end of Q2, 2012, there was 2,461 MW of renewable generation installed across the island of Ireland. This all-island figure is split between 1,989 MW in Ireland and 472 MW in Northern Ireland. The breakdown by MW and technology type is set out in Figure 1 below:

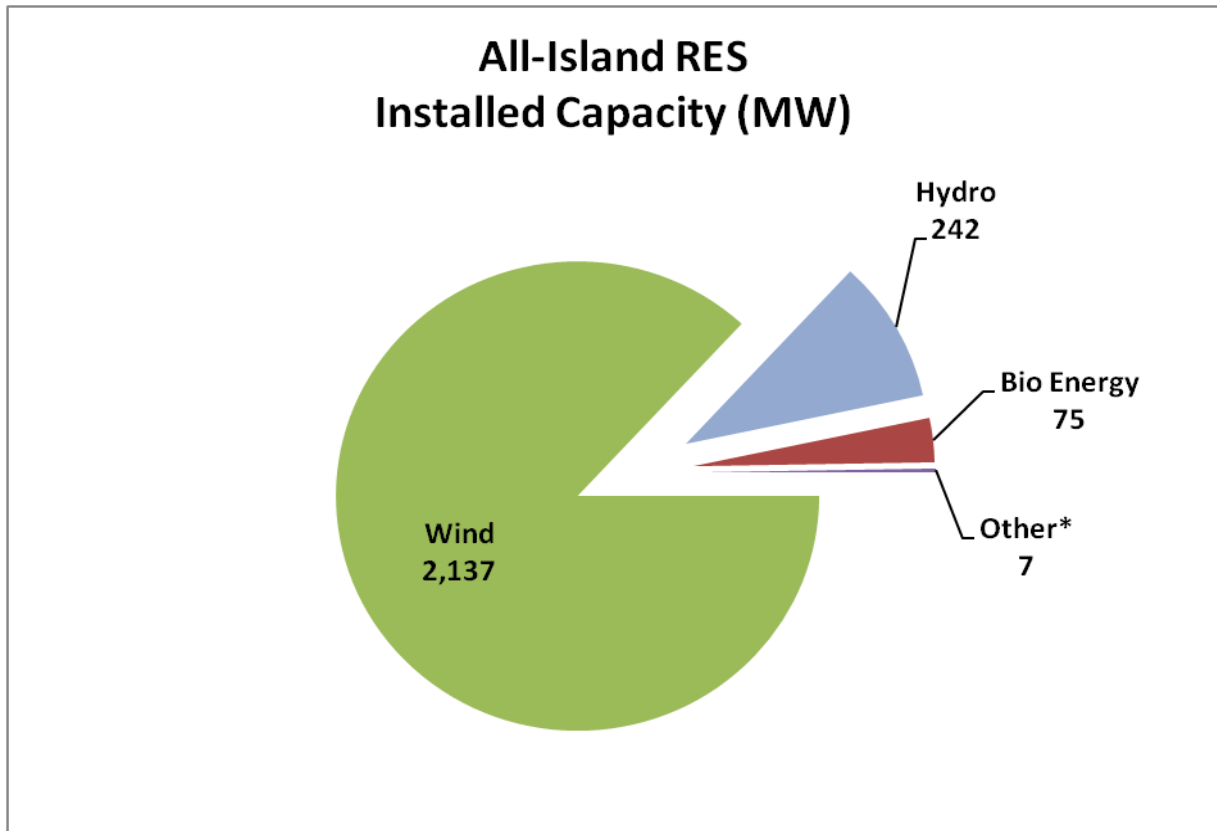


Figure 1: Current total All-Island RES Installed Capacity by Technology Type (July 2012).

* Other = CHP RES, Tidal, and Solar

Based on information in the All-island Generation Capacity Statement 2012-2021, it is projected that in order to meet the renewable electricity targets, the amount of wind generation across the island of Ireland will need to reach an installed capacity level of between 4,800 MW and 5,300 MW by 2020. This means the average yearly increase of additional renewable generation on an all island basis will need to be in the range of 310 MW to 370 MW to meet the 40% renewable electricity targets. For Ireland this translates into a connection range of 210 MW to 270 MW of wind generation on average each year. In Northern Ireland this translates into a connection level of 100 MW on average per year to the end of 2020.

5. Ireland – 36 Month Wind Forecast

Ireland currently has 1,683 MW of installed wind generation, 238 MW of hydro power and 68 MW of smaller renewable sources (ocean energy, RES CHP, solar and biomass). In 2011 this was enough installed renewable generation to contribute to 18.7% of overall electricity demand.⁷ Wind generation is split between the transmission and distribution systems.⁸ Figure 2 below sets out the existing and expected wind connections for Ireland to Q2, 2015.

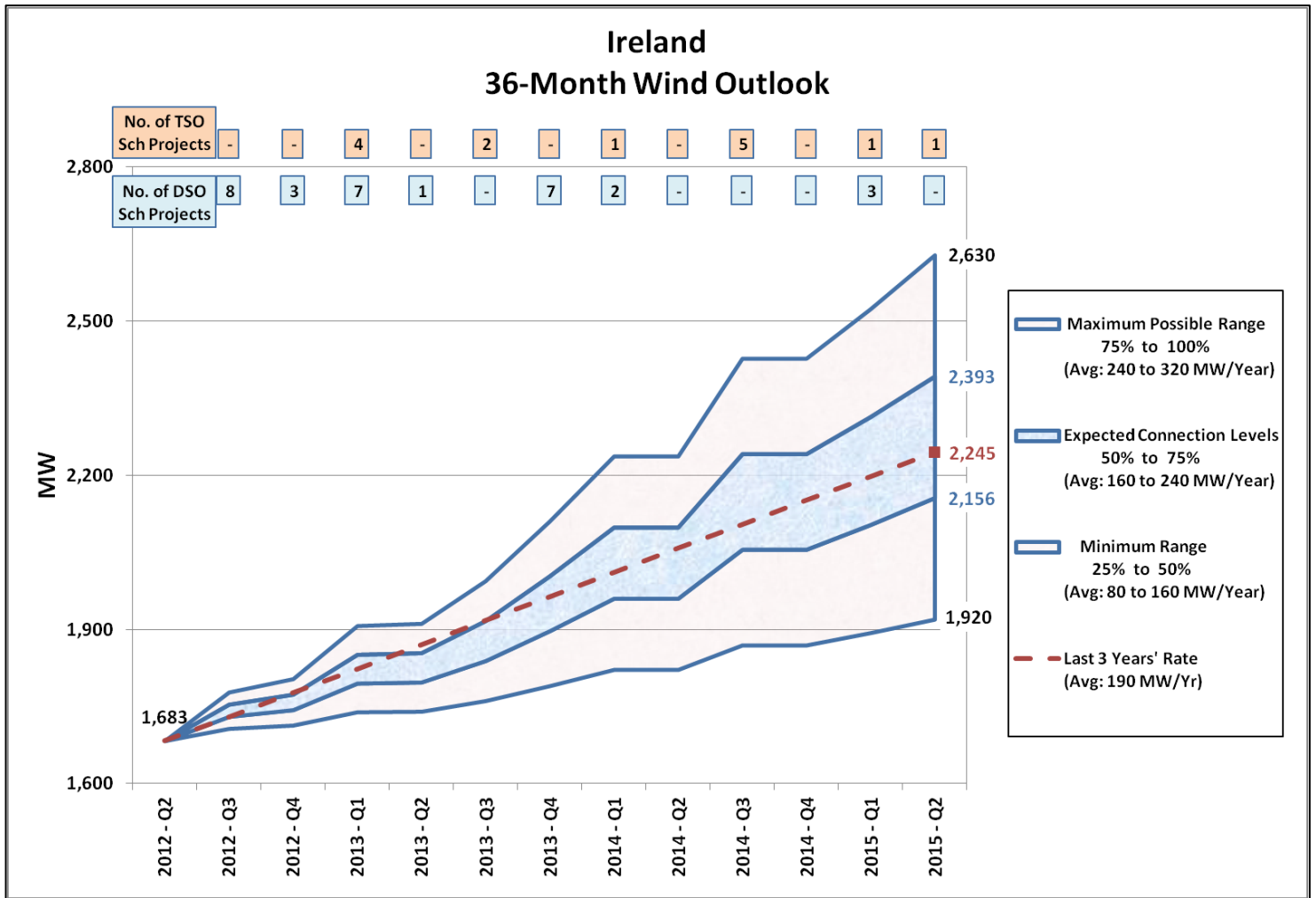


Figure 2: Existing and Estimated Ireland Wind Connections (MEC) to Q2, 2015

Note: the 100% connection figure is based on all contracted wind farms with scheduled dates proceeding on time.

⁷ This renewable figure does not use the normalised calculation as per the 2009 EU Renewable Directive.

⁸ Wind figures on the Distribution System are provided to EirGrid from the DSO. Existing Wind connections only includes one offshore wind farm in Ireland.

6. Northern Ireland – 36 Month Wind Forecast

In Northern Ireland there is currently 454 MW of wind generation and 17 MW of other RES (ocean energy, RES CHP, solar and biomass) connected to the power system and 11.8% of electricity demand was met by renewable energy sources in 2011. Figure 3 below sets out the existing and expected wind connections for Northern Ireland to Q2, 2015.

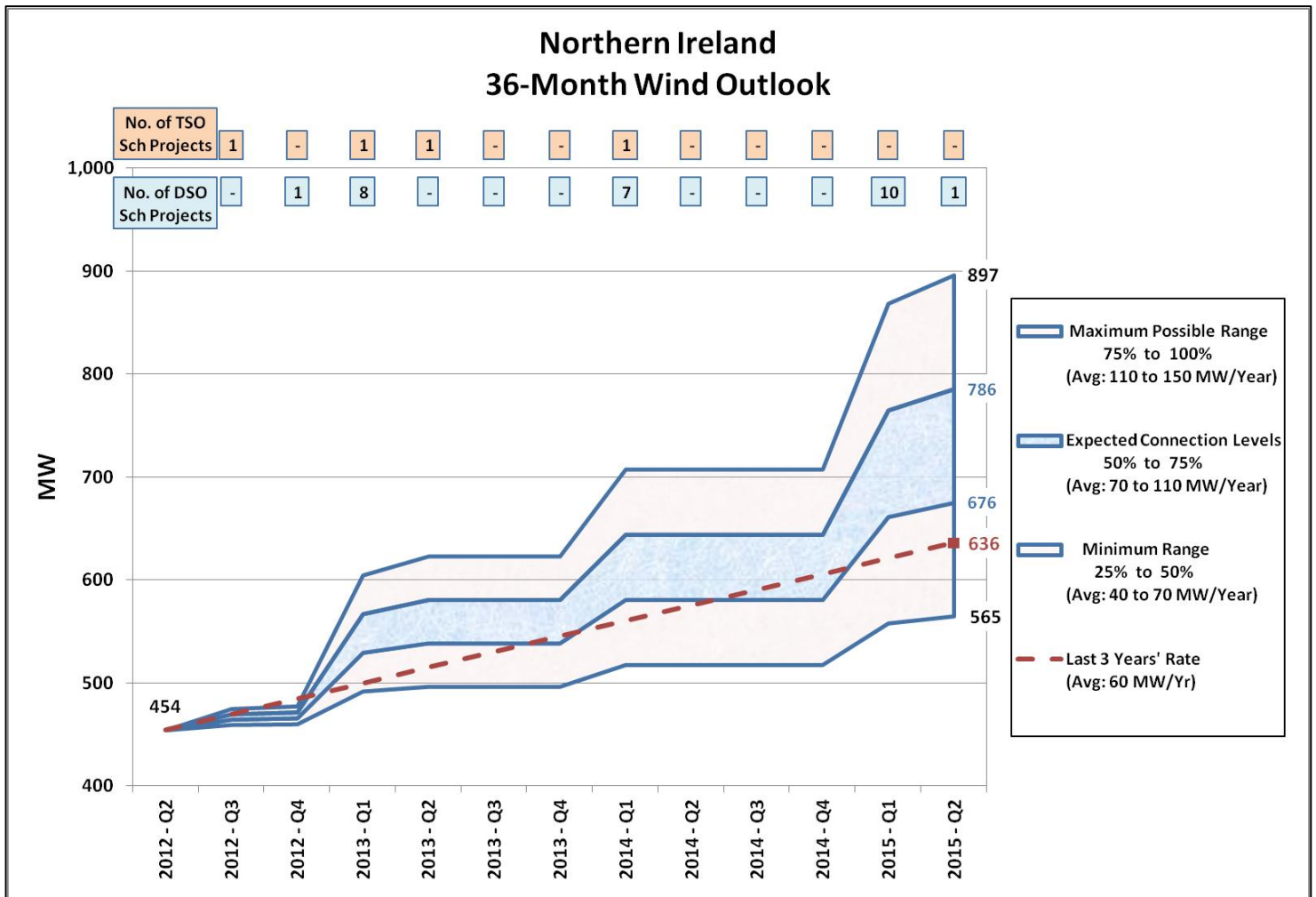


Figure 3: Existing and Estimated Northern Ireland Wind Connections (MEC) to Q2, 2015

Note: the 100% connection figure is based on all contracted wind farms with scheduled dates proceeding on time.

7. Projected All-Island Wind Connections

In 2011, 16.7% of electricity demand on the island of Ireland was met by renewable generation. This is expected to increase to 40% by 2020. The projected wind connections across the island over the next three years are set out in Figure 4 below.

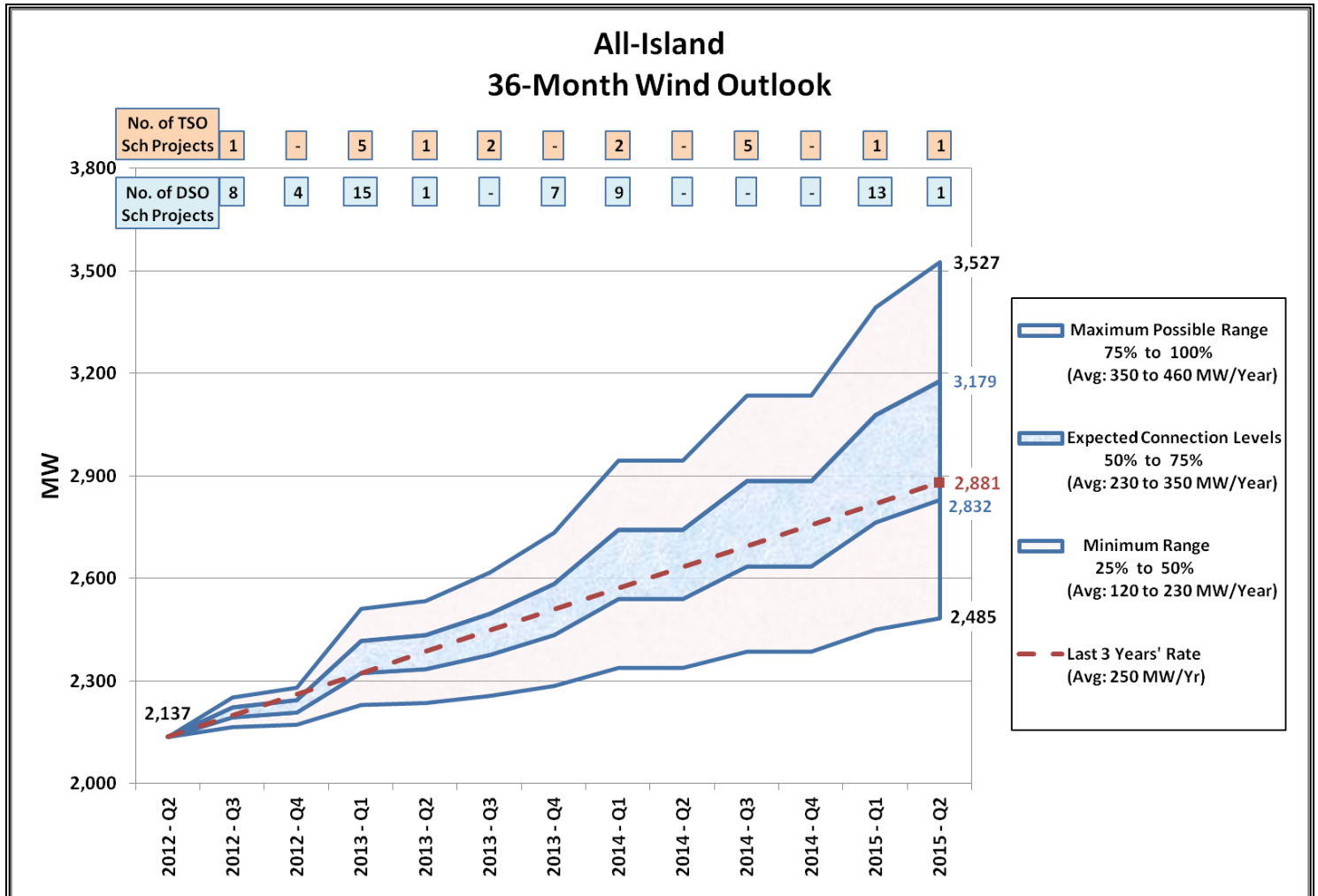


Figure 4: Existing and Estimated All-Island Wind Connections (MEC) to Q2, 2015

Note: the 100% connection figure is based on all contracted wind farms with scheduled dates proceeding on time.

8. Other RES (Renewables Excluding Wind)

Forecasting trends to Q2, 2015 indicate that wind generation will make up the largest percentage share of renewable connections in Ireland and Northern Ireland. However, it is not the only renewable technology expect to connect over this time period. It is expected that 60 MW of bio-energy will connect over the next three years.⁹ This is split between landfill gas, biomass and biogas.

9. The 40% Target

Ireland and Northern Ireland have set ambitious targets of producing 40% of electricity from renewable sources by 2020. The All-Island Generation Capacity Statement 2012-2021, estimates that in order to meet the renewable electricity targets, the amount of wind generation across the island of Ireland needs to reach an installed capacity level of between 4,800 MW and 5,300 MW by 2020. To reach this level of installed wind by 2020, the connection rate on an all-island basis will need to be in the range of 310 MW to 370 MW each year.

Ireland

In order to meet the renewable electricity targets in Ireland, it is estimated that 3500 MW to 4000 MW of wind generation will need to be installed by 2020. This translates into a connection range in Ireland of 210 MW to 270 MW of wind generation on average each year.

Northern Ireland

In Northern Ireland EirGrid and SONI have estimated that in order to meet the 2020 renewable electricity target in the region of 1300 MW of wind generation will need to be installed by 2020. This translates into a connection range in Northern Ireland of a yearly average of 100 MW to the end of 2020.

10. Conclusion

The aim of this report is to provide a forecast range of expected renewable connections on the power system across the island over the next thirty-six month period. The figures produced are indicative only and are based on the most recent available information on forthcoming connections.

At the end of Q2, 2012, 1,989 MW of renewable generation is connected to the electricity system in Ireland. In Northern Ireland, there is currently 472 MW of renewable generation connected. This gives a total all-island figure of 2,461 MW connected as of the end of Q2, 2012.

As noted, in order to meet the renewable electricity targets in Ireland and Northern Ireland a yearly average of between 310 MW - 370 MW of additional wind generation is needed out to the end of 2020. This report predicts that between 230 MW and 350 MW of wind generation can be expected to connect

⁹ Estimated connections for other RES are based on information from the DSO and SEAI.

to the power system of Ireland and Northern Ireland each year over the next three years. This range is based on a connection rate of between 50% - 75% of the contracted wind farms going ahead.

This would bring the total wind generation on the power system in Ireland and Northern Ireland to between approximately 2,820 MW and 3,190 MW out to Q2, 2015, and the total renewables MW figure on the island would be between 3,211 MW and 3,571 MW. This figure includes the full connection of 60 MW of contracted bio-energy.

Appendix 1

List of Projects to Connect in Q3 & Q4 2012¹⁰

Jurisdiction	Type	Project	MW	TSO/DSO	Comment
Q3, 2012					
NI	Wind	Carrickatane	20.7	TSO	Downgraded from 22.5MW
IRE	Wind	Garracummer	36.9	DSO	
IRE	Wind	Liskeran	0.499	DSO	Kennystown
IRE	Wind	Templederry	3.9	DSO	
IRE	Wind	Gibbet Hill	14.8	DSO	
IRE	Wind	Ballaman	3.6	DSO	
IRE	Wind	Ballycadden (1)	14.45	DSO	
IRE	Wind	Ballycadden (2)	11.5	DSO	
IRE	Wind	Knockaneden	9	DSO	
IRE	LFG	Corranure LFG	0.7	DSO	
IRE	LFG	Knockharley Landfill Phase 2	3.525	DSO	
IRE	Biogas	Rockbrook (Biogas / AD)	0.499	DSO	
IRE	LFG	Ballynagran	3.525	DSO	
IRE	Biogas	Greenfield (Biogas / AD)	0.499	DSO	
IRE	Biogas	Gorteen Lower	1.065	DSO	
IRE	Biomass	Aughrim Energy (Biomass CHP)	1	DSO	
Q4, 2012					
NI	Wind	Crockagarran	17.5	DSO	
IRE	Wind	Glanta Commons (2a)	11.5	DSO	
IRE	Wind	Kilvinane (2)	5.82	DSO	
IRE	Wind	Garranereagh	8.75	DSO	
Total MW			169.732		

¹⁰ The information in this table is based on all the scheduled connections going ahead on time and includes no percentage drop off.

Appendix 2

Expected Wind Connection Rates to the end of Q2, 2015

The table below provides a MW breakdown of expected wind connections on the TSO and DSO in Ireland, Northern Ireland and on an all-island basis. The expected connection levels are based on a connection rate of 50% (low) to 75% (high). The table also includes the yearly average wind connection rates.

36-Month Wind Outlook		Ireland			Northern Ireland			All-Island		
		Total	TSO	DSO	Total	TSO	DSO	Total	TSO	DSO
Currently Connected (MW) 2012 - Q2		1,683	767	916	454	65	389	2,137	832	1,305
Expected Connections (MW) 2015 - Q2	High (75%)	2,393	1,199	1,194	786	124	662	3,179	1,323	1,856
	Low (50%)	2,156	1,055	1,101	676	104	571	2,832	1,159	1,673
Avg Connection Rate (MW/Year) 2015 - Q2										
	High (75%)	240	140	90	110	20	90	350	160	180
	Low (50%)	160	100	60	70	10	60	230	110	120