

## Dynamics Model Register

This document outlines the current status of the wind turbine generator dynamic models with respect to the Planning Code Appendix of the Grid Code.

The relevant sections of the **Planning Code Appendix** (PCA4.10.1) can be found here<sup>1</sup>.

All transmission and distribution connected wind farms greater than 5 MW are required to submit with their application a dynamic model in compliance with PCA4.10.1. 2.

Wind farms which had 'live' connection offers or had signed connection agreements as of the 9<sup>th</sup> July 2004 are required by CER Direction CER/04/245 9th July 2004 to provide the dynamic model no later than 120 business days prior to their scheduled date of connection to the power system. The CER Direction CER/04/245 can be found here<sup>2</sup>.

This document lists the models that have been provided to EirGrid and assesses their compliance with the Planning Code Appendix (PCA4.10.1. 2).

Please note all dynamic models must be compliant with PSS/E versions 29 and 30.

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<sup>1</sup> <http://www.eirgrid.com/EirGridPortal/uploads/Regulation and Pricing/MPID 126 Approved.pdf>

<sup>2</sup> <http://www.eirgrid.com/EirGridPortal/uploads/Regulation and Pricing/Wind Connection Policy - cer04245.pdf>

<b>Manufacturer</b>	<b>Model</b>	<b>MW Size (MW)</b>	<b>Version Number</b>	<b>Compliant with Grid Code (Note1)</b>	<b>Reason for non compliance</b>	<b>Remark</b>
<b>Siemens - Bonus</b>	1.3 MW (Active Stall)	1.3	Ver_09	✓		Received a new version 9 of the model which solved the non convergence issue.
	2.3 MW (Active Stall)	2.3	Ver_09	✓		Received a new version 9 of the model which solved the non convergence issue.
	3.6 MW	3.6	Ver_1	✓		Comments on this model have been sent to Siemens.
	2.3 MW (82 m rotor diameter)	2.3				This variable speed model was received from Siemens on the 01/12/06 This model is being tested.
	2.3 MW (93 m rotor diameter)	2.3				This variable speed model was received from Siemens on the 01/12/06 This model is being tested.
<b>DeWind</b>	D6 1.25 MW	1.25	Ver1.2	✓		

<b>Manufacturer</b>	<b>Model</b>	<b>MW Size (MW)</b>	<b>Version Number</b>	<b>Compliant with Grid Code (Note1)</b>	<b>Reason for non compliance</b>	<b>Remark</b>
<b>DeWind</b>	D8 2 MW	2	Ver1.2	✓		
<b>Enercon</b>	E40	0.6	Ver 5.3	✓		
	E48	0.8				
	E66	2.0 /2.3				
	E70	2				
<b>Enercon</b>	E44	0.9	Ver 5.3	-		This model version was received on 12/07/06.
<b>Gamesa</b>	G5X (G52 & G58)	0.85	Ver5.2	✓		
	G8X	2	Ver5.3	✓		
<b>GE</b>	1.5 MW	1.5	Ver1.0.0	✓		
	3.6 MW	3.6	Ver1.0.0	✓		

<b>Manufacturer</b>	<b>Model</b>	<b>MW Size (MW)</b>	<b>Version Number</b>	<b>Compliant with Grid Code (Note1)</b>	<b>Reason for non compliance</b>	<b>Remark</b>
<b>Nordex</b>	N80	2.5	Ver1.05	-		Comments on this model were sent to Nordex on the 24/08/06. Awaiting response from Nordex.
<b>Vestas</b>	V47	0.66		✓		New model received from PTI on 15/10/06. Preliminary tests have been carried out on the model.
	V52	0.85	Ver5.4	✓ (Note2)		Vestas have engaged in meaningful discussions with EirGrid and have submitted a satisfactory proposal to develop a compliant model.  EirGrid attended a workshop with Vestas on 11/12/06
	V66	1.75	Rev 4	✓ (Note2)		
	V80	2	Ver5.4	✓ (Note2)		
	V90	3	Ver5.4	✓ (Note2)		

**Notes:**

1. Compliance with the Grid Code is assessed based on the requirements of the Planning Code Appendix (PCA.4.10.1). At present, a model can be deemed compliant with PCA4.10.1 without having fulfilled the requirements of the section titled "Validation of Model" (PCA4.10.1.3)
2. The Vestas models have been deemed compliant on the basis of the "Time to Comply" clause in the Grid Code (PCA4.10.1.2.6). However, these models (version 5.4) still do not fully meet our requirements and cannot be viewed as a long term solution.