Triple E Eligibility Criteria

Category: Heating and Electricity Provision

Technology: Inverters

A high efficiency Inverter is defined as a device that converts direct current electricity into alternating current electricity.

Typically an inverter is used in a system to convert the output of a renewable energy device such as a solar photo-voltaic array, or a wind generator into an output suitable to connect the system to the main electrical supply

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Eligibility Criteria Overview

In order to be included on the Triple E Product Register*, the specific inverter equipment must meet all of the relevant requirements set out below.

Note: Supporting documentation that clearly demonstrates Triple E compliance according to the conditions below will be required as part of the Triple E checking process. Detailed information on the types of documents accepted can be found in the separate Supporting Documentation guidelines.

* known as the specified list as per the Finance Act

No.	Condition
1	Must have a power rating greater than 180W
2	Inverter must be of a Grid-tie type (also known as grid interactive, and also known as synchronous inverter) and output must be pure sine wave.
3	Inverter must be compliant with the requirements of EN 50438 with the specific Irish protection settings as shown in Table 1 below.
4	All equipment and/or components must be CE marked as required by the specific EU directive(s).
5	Inverter efficiency plots must be available for the end user as part of the main contract of sale and shall show the efficiency of the inverter at the various stages of load from 1-100%. Units must have a peak efficiency no less than 95%
6	Appropriate operating & maintenance manuals must be available for the end-user as part of the main contract of sale in order to optimise the achievement of any potential efficiency improvements.

Table 1: Micro-generation Interface settings for Republic of Ireland All type-testing must be carried out with these settings on board.

Parameter	Trip setting	Clearance time
Over voltage	230 V + 10 %	0,5 s
Under voltage	230 V – 10 %	0,5 s
Over frequency	50 Hz + 1 %	0,5 s
Under frequency	50 Hz - 4 %	0,5 s
An explicit Loss of Mains functionality must be included. Established methods such as, but not limited to, Rate of Change of Frequency, Vector Shift or Source Impedance Measurement may be used. Where Source Impedance is measured, this must be achieved by purely passive means. Any implementation which involves the injection of pulses onto the DSO network, shall not be permitted.		
ROCOF [where used]	0,4 Hz/s	0,5 s
Vector Shift [where used]	6 degrees	0,5 s

---------- End of Triple E eligibility criteria ----------
Please see next section for technical detail submission and supporting documentation guidance

The following information is not part of the official criteria document published within the relevant statutory Instrument; it has been added here for guidance purposes only in order to provide assistance with the submission of product details and the provision of the required supporting documentation.

Note: All information contained within this guidance document is subject to change without notice

Supporting documentation required

Described below is the list of documents that are accepted as proof of compliance for the specific inverter conditions.

Note: This information will only be requested AFTER you submit your product's basic details online.

Important Notes to Product Providers

Please ensure that you read the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.

Inverters

No.	Condition	Supporting Documentation Requirement
1.	Must have a power rating greater than 180W	Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition.
2.	Inverter must be of a Grid-tie type (also known as grid interactive, and also known as synchronous inverter) and output must be pure sine wave.	Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition.
3.	Inverter must be compliant with the requirements of EN 50438 with the specific Irish protection settings as shown in table 1 below.	A copy of the completed type test certificate showing conformance with this requirement. (Refer to Network connection authorities for guidance) NOTE: EN 50438 /CER 06/190 Test Type Certification will be accepted or G83 Certification will be accepted in lieu of EN50438
4.	All equipment and/or components must be CE marked as required by the specific EU directive(s).	Official and published manufacturer's technical data sheet or brochure that demonstrates CE marking compliance. **OR** A copy of an official signed declaration on headed paper which confirms CE marking compliance. Official declarations should explicitly state the product for which CE marking is being confirmed (i.e. do not provide a letter simply stating general compliance with the relevant Triple E Condition). Where a document is used to demonstrate conformance for a number of products or range of products it should clearly specify each individual product covered by that document.
5.	Inverter efficiency plots must be available for the end user as part of the main contract of sale and shall show the efficiency of the inverter at the various stages of load from 1- 100%. Units must have a peak efficiency no less than 95%	A copy of an official signed declaration on headed paper statement confirming that the appropriate efficiency plots are provided. Where applicable, information on the availability of technical documentation to download online should be given. **NB:** A signed declaration is required to comply with this condition in all cases. Submitting copies of user manuals is not sufficient and not required by this condition.

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No.	Condition	Supporting Documentation Requirement
6.	Appropriate operating & maintenance manuals must be available for the end-user as part of the main contract of sale in order to optimise the achievement of any potential efficiency improvements.	Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition.

Important Notes to Product Providers

General

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If product codes / names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and/or result in the product not being considered eligible.

Where the Triple E criteria or help documentation reference compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e. the product must be covered under the scope of a recognised standard.

If any product submitted is later found not to meet the performance or specification criteria, then this product will cease to be considered eligible for the Triple E.

Note: When supplying the supporting documentation through the online process you must ensure that the correct page number(s) of the document is referenced when compliance with the relevant condition is being demonstrated. An explanatory note should also be given where more than one page number is referenced.

Test Report

A test report must comprise of the following elements:
An outline of the complete test including introduction, details on test conditions, the specific model details of the product tested, the steps taken in the test, the results, graphical representations, and a conclusion. All documents should be on headed paper and the document should be officially signed off. **All documentation must be in English**, or include adequate translation.

Certification

Where certificates are provided, all tests must be carried out by an organisation that is accredited by a national accreditation body recognised via the European Cooperation for Accreditation (preferred) or the International Accreditation Forum. **All documentation must be in English**, or include adequate translation.

Scientific Equivalence

Some Triple E criteria conditions allow for scientifically equivalent tests and/or standards to be used. In the event that a product has not been designed, manufactured or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the Triple E condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the standards. However, submissions which reference such supporting documentation may take longer to process, and if

the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the Triple E. **All documentation must be in English**, or include adequate translation.

Note: Where specific standards are cited in a condition or in the Triple E help documentation, then documentation demonstrating that the relevant products have been designed, manufactured or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.

Representative testing

Where test information is required for a range of technically similar products (e.g. configurations of one base product) then in exceptional instances a form of representative testing may be utilised once agreed in advance with SEI. Such testing is where only representative products are tested from a technically similar group or range of products. Provided a clear correlation can be demonstrated between the tested product and technically similar non-tested product, and that such a correlation clearly demonstrates the compliance of the non-tested product, representative testing may form an acceptable basis for supporting documentation.

Note: Where representative testing is used for a group or range of products, if the tested or representative product is removed from the list of eligible products then all related products are also removed.