



CASE STUDY TITLE

Development of a Standard Recommendation on Solar Photovoltaic Micro-Generators



SUMMARY

Standards provide a powerful tool for organizations to deliver products, services and systems of the highest quality utilizing cutting edge techniques. Adherence and compliance to relevant standards allow organizations and end-users to achieve a level of confidence that is unparalleled.

Standards also have a key role to play in supporting the construction sector to adhere to the Sustainable Development Goals, including SDG 13 on Climate Action.

However, there are thousands upon thousands of standards published worldwide through various international and national standards bodies. This can often prove to be quite overwhelming, particularly for smaller organizations. It can therefore oftentimes be beneficial to develop guidance for particular emerging areas of interest.

This case study will review the development of a national Standard Recommendation on the installation of solar photovoltaic (PV) micro generators for dwellings (S.R. 55) by the National Standards Authority of Ireland (NSAI), in support of SDG 13.

BACKGROUND

The Irish Government's Climate Action Plan (CAP) 2021 put in place a wide-ranging decarbonization pathway to 2030, highlighting the importance of the built environment, it states that: 'The transition to an energy efficient and fossil fuel free built environment will provide extensive social, economic and environmental benefits in the short- as well as long-term.' CAP 2021 Action 138 calls for NSAI to publish a standard recommendation for the design, installation, and commissioning of solar PV panels in new and existing dwellings.

AT A GLANCE

COUNTRY

- Ireland

LEVEL

- National

SDG ADDRESSED

- SDG 13 - Climate Action

Two Government bodies, the NSAI and the Sustainable Energy Authority of Ireland (SEAI), jointly initiated the creation of a new standard recommendation S.R. 55.

It was agreed that a consensus-based document was the best tool to address the gap identified in increasing uptake of PV technology. The target audience were professionals and installers involved in the design, specification, installation and commissioning of such PV systems.

It was noted that three-quarters of all new homes were installing solar PV, and in the retrofit market installations had also shifted from solar thermal to photovoltaic with double the number of solar PV systems being installed. This trend is set to continue with the introduction of a micro-generation scheme which now



BACKGROUND

allows the sale of excess generated electricity back to the grid. This scheme will further incentivize the installation of these systems and increase the demand for standards-based guidance.

Microgeneration and solar photovoltaic continues to be a key part of Ireland's Climate Action Plan, and Europe's Renewable Energy Directive. Promotion of these technologies and development of standards that support them will help contribute to the United Nations Sustainable Development Goal; SDG 13 'Climate action'.

STRATEGY

Following approval for the production of this standard it was important to establish a strong committee of experts to carry out the work. This involved acquiring stakeholders from various fields including Government, academia, and industry professionals.

The drafting of the document involved the collection and review of over forty relevant international, European, and national standards such as;

- I.S. EN 1991-1-4:2005 (+NA:2013), Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions,
- IEC 62548:2016, Photovoltaic (PV) arrays – Design requirements, and
- I.S. EN 50530:2010, Overall efficiency of grid connected photovoltaic inverters.

A draft was also issued for public consultation allowing all members of the public a chance to contribute by providing comments and input. S.R. 55 was published in 2021.

RESULTS & IMPACT

The result has been a comprehensive Standard Recommendation document that provides guidelines for the design, installation, commissioning and maintenance of solar PV systems that operate in parallel with the low voltage electrical supply of dwellings. This deliverable has the support of the government bodies who participated in the process.

This document provides installers and home-owners with a confidence and assurance that their installation is compliant with relevant regulations, is robust in its design, and follows the recommendations from a vast array of experts worldwide on all areas of the installation from wind loadings, electrical requirements, and PV module testing.

S.R. 55 has had a positive impact in Ireland within the projects it has been utilized in. It has encouraged uptake of this renewable technology and will ultimately play its part in the push towards a carbon neutral society.





CHALLENGES & LESSONS LEARNED

The benefit of having industry expert committee members assist in the drafting of a standard such as this cannot be overstated. This group provided years of lessons learned based on challenges and issues they faced in their own work. This experience influenced the content and focus of the document.

One such example came from a committee member who has experience installing many PV systems of varied size and type over many years including an installation in an area of the country that can sometimes be exposed to strong winds.

This installation was situated only 18km from the location of the highest wind speeds ever recorded in Ireland, of 191 km/hr. during storm Ophelia in 2017. However, the system suffered no ill consequences. I.S. EN 1991-1-4:2005 (which was utilised in this design) provides guidance on wind actions on structures and has a national annex that considers conditions specific to Ireland.

S.R. 55 built upon the guidance within this document and others like it to help ensure that all relevant learnings, challenges, and potential issues were addressed within the standard.

POTENTIAL FOR REPLICATION

The development process for this Standard Recommendation document will continue to be a very useful method for providing guidance to relevant stakeholders in areas of increasing interest or complexity. The ability to successfully draw on a wide range of expertise in the creation of such a document can help guarantee quality and confidence.

S.R. 55 and similar standards will continue to help encourage organizations and end-users to develop products and systems that can contribute to the UN Sustainable Development Goals, and ultimately the improvement of human lives and protection of the environment.

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