

## "DEVELOPMENT OF TRANSITIONAL METHODS: PV expert meeting"

31<sup>st</sup> October at the JRC ESTI Ispra (VA), Italy

### **Building101, room 1302**

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Registration: <https://web.jrc.ec.europa.eu/remjrc/screen/meeting/362/registration-form>

Following the inclusion of the photovoltaic product group in the EcoDesign Working Plan 2016-19, a preparatory study has been launched on solar photovoltaic panels and inverters, in order to assess the feasibility of proposing EcoDesign and/or Energy Labelling requirements for this product group. This will also investigate in more detail the potential for environmental improvement, including aspects relevant to the circular economy, and provide the elements needed for the identification of policy options in the subsequent impact assessment.

The EU Ecolabel (set up under Regulation EC 66/2010) aims at reducing the negative impact of products and services on the environment, health, climate and natural resources. The Regulation stipulates in Annex I a standard procedure for the development and revision of EU Ecolabel criteria, taking into account the environmental improvement potential along the life cycle of products.

Green public procurement (GPP) is defined in COM(2008)400 as a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact through their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured. The Commission plans to take action on GPP, by emphasizing circular economy aspects in any new criteria, and supporting higher uptake of GPP.

The JRC undertook a detailed study of the situation regarding standardisation for these product groups. The conclusions of this study were presented in a report

*"Standards for the assessment of the environmental performance of photovoltaic modules, power conditioning components and photovoltaic systems" EUR 29247 EN*

### **Main Conclusions**

The situation for standards is varied and complex. There are over 100 relevant standards covering aspects of used materials, production, PV modules measurement and safety, power conditioning equipment, PV systems and their components and the design, construction and commissioning cycle. However, not all aspects are covered to the same degree:

- PV modules
  - This group is well covered by existing standards for materials efficiency, production, design qualification and type approval, power and energy yield. An extensive collection of operational data and correlation with laboratory testing results give confidence in building an appropriate definition of degradation effects, although an intermediate method may be required for quantifying them. The Operational Service Life (OSL) definition is still not fully clarified; however, following the future IEC TS 62994, the IEC/TR 62635 and the guidelines in the ISO 15686 series an agreed method will be achievable. The issues of recyclability, reparability and durability should be covered by the Mandate M/543 pre-norms. PV-specific standards deriving from the horizontal ones will be necessary, although we do not foresee particular problems here.

- Power Conditioning Equipment
  - For the PCEs the standards regarding materials and design are covered. Dedicated standards have been developed for PV inverter performance such as EN 50530. This however is officially marked as withdrawn, although the procedure for determining the “European Efficiency” is still considered technically valid. This would allow a transitional method for calculating a functional parameter in terms of AC power output for a nominal PV array. Regarding the definition of OSL the situation is similar to that for PV modules and again a transitional method may be required, also taking into account field data.
- PV Systems
  - The situation for PV system reflects a combination of the situation for PV modules and power conditioning components, as well as the system location and design. Aspects on PV system design are the subject of new draft norms, including the full construction cycle while local situation can have a significant effect on the final energy (and therefore on the material balance). On-site power measurement and verification standards exist. However, there is no actual single standard for the calculation of expected energy yield of a PV system. A transitional method would be required here, based on existing monitoring standards or on the module energy-rating standards but also integrating a model to include the effects of local environment relevant to the specific geophysical position.
- Degradation, Operational service lifetime and Circular economy issues.
  - The generic pre-norms being developed under mandate M/543 are applicable to the PV module, Power conditioning and PV system groups definition. PV-products specific standards deriving from the horizontal ones will have to be necessarily developed, coherently with the PEF guidelines developed for PV.

Given the results of the analysis of existing standards and standards under development, and taking into account the identified functional parameters per each product category, it can be expected that further technical work could be aimed to the formulation of ‘transitional methods’ (or parts of them), to be used by stakeholders in absence of relevant standards, for an assessment of:

1. Energy Yield of PV systems
2. Durability of PV modules
3. Durability of PV Inverters
4. Efficiency of PV Inverters (EN standard withdrawn)
5. Dismantlability of PV Modules
6. Disassemblability of PV Systems
7. Remanufacturing of PV Systems

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**Agenda October 31<sup>st</sup> 2018**

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- 09:00 Opening of meeting and DG GROW presentation (D. Polverini DG GROW)
- 09:30 Presentation of the conclusions of the report on standards for PV ECODESIGN (E. Dunlop JRC Ispra)
- 10:00 Transitional method for determination of the Energy Yield of PV systems ( A. Garcia JRC Ispra)
- 11:00 Coffee break
- 11:15 Transitional method for definition of the Efficiency of PV Inverters (A. Garcia JRC Ispra)
- 11:30 Transitional method for definition and evaluation of degradation of PV modules, Inverters, components and PV systems. (E. Salis JRC Ispra)
- 12:15 Transitional methods effect on definition of Durability and Operational Functional Lifetime of PV modules, Inverters, components and Systems (E. Salis JRC Ispra)
- 12:45 Discussion and conclusions of morning session (All)
- 13:00 Lunch
- 14:00 Horizontal standards for EcoDesign regarding Reparability of PV Systems, Disassemblability of PV modules and Systems, Dismantlability of PV Systems. (M. Cordella and F. Alfieri JRC Seville)
- 14:30 Specific considerations for transitional methods for photovoltaics under the horizontal standards. (N Espinosa JRC Seville)
- 15:00 Discussion of the afternoon session and conclusions (All)
- 16:00 End of Meeting

Possibility of informal visit to the European Solar Test Installation following closure of the meeting.