



EUROPEAN FEDERATION
OF INTELLIGENT ENERGY EFFICIENCY SERVICES

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EFIEES' comments on the proposed method for the calculation of the Primary Energy Factor (PEF) for electricity

Summary:

- Various European policies require the use of different PEFs: if a single PEF, average at the EU level is acceptable for the application of laws relating to products, it is absolutely not possible for the ones applicable to buildings.
- Indeed, the PEF depends greatly on the geographic area of the building and the seasonal needs for calculating the energy performance of a building, so one has to use a minimum seasonal PEF calculated at the national level.
- The "average" method cannot be used for new buildings, which use the means of production of marginal electricity.
- The PEF must be calculated with reliable real data, not by using uncertain projections.
- Self-consumed renewable electricity is not available on the network, and therefore cannot be included in the calculation of the PEF.
- The PEF of electricity produced by cogeneration should lead to additional works to reflect rigorously the primary energy savings.
- *As explained in the present note, the "raison d'être" of the PEF is to compare the energy performance when several energy sources are used. The PEF has to be representative enough of the situation in order to allow this comparison in primary energy, on the basis of the real conditions: geographical zone, and temporality of the consumption, notably. As far as buildings are concerned, a unique PEF as envisaged will lead to wrong results, and will not steer decision-makers towards the optimal solutions in terms of energy efficiency.*

EFIEES considers that EU policies should aim at promoting **prioritisation of energy savings in all sectors**. They should not however aim at consistently achieving zero energy consumption in buildings and industrial processes: in fact, the marginal cost of the last avoided kWh grows very quickly, and operations are not "cost-effective" anymore.

Energy savings should therefore target the entire energy chain (production, transportation, distribution, end-use), and the indicator used to find energy savings regardless of their place in the energy chain is naturally **primary energy**.

Primary energy is also a fundamental value for comparing the energy performance when multiple energy sources are used, thus it is a value to be used as soon as the energy mix is composed of several different types of energy, either in a building, a neighborhood, a city, or a Member State (Article 3 of the Energy Efficiency Directive).

EFIEES therefore supports the approach of the European Commission to make the method used to calculate the Primary Energy Factor (PEF) of electricity more rigorous, more transparent and more adapted to the realities of the European markets.

That being said, the discussion paper on the review of the PEF dated 19 May 2016 by the European Commission contains a number of inaccuracies and shortcuts, which call for the following remarks and comments:

1. A unique "average" PEF throughout the European Union cannot be used to calculate the energy performance of a building

Within the framework of the Ecodesign and Energy Labelling Directives for which products are subject to the same rules throughout the European Union at the placing on the market and then circulate freely, it is acceptable to adopt an agreed average PEF value, representative of the average electricity mix of the EU. This simplification is even more acceptable as there are not many product families, with the notable exception of heating and hot water systems in which products that work with different types of energy should be compared: for most appliances (lamps, refrigerators, television sets, washing machines, etc.), all products are electric.

However, this simplification is absolutely inapplicable to all regulations relating to buildings: building regulations for new buildings, energy performance certificates, labels and certifications, etc. Indeed, the electricity content used by a building depends strongly on the place and time of consumption.

In addition, **the "average" method cannot be used for new buildings**, since they cause additional power consumption that uses marginal inputs. **The marginal method allows to better reflect the impact of a new building on the electricity market.** The European Commission justifies not retaining the latter because of its complexity: it is true that it requires more calculations than the "average" historical method, however, it is not unaffordable, and it would be paradoxical to develop complex methods assessing the energy performance of new buildings and then to supply them with input data roughly calculated.

2. The PEF depends greatly on the geographical layout of a building

The electricity mix of different Member States are very different, and despite a growing percentage of interconnection, it is today not possible to say that the average PEF throughout the European Union may be representative of the electricity used at the level of a building.

The buildings do not circulate within the European Union, therefore having a different PEF in Member States poses no particular problem. Rather, it allows to reflect more accurately the reality, and thus the value of the property on the market.

The differences between the various Member States should therefore not be embedded in an average PEF, but instead must be rather considered, on the basis of a reliable, robust, transparent and homogeneous method of calculation.

3. The PEF depends greatly on the time of consumption

The electricity mix depends not only on the geographical area, but also on the time of year (seasonal) and even on time of day (daily changes) during which electricity is consumed. For a product consuming electricity continuously, such as for example a refrigerator, the average value may be suitable. However, for the building's heating needs, air conditioning, hot water or lighting where energy consumption levels vary widely with seasons and times of day, this simplification would lead to completely wrong assessments of the energy performance of a building. Moreover, it would be impossible to promote the 'demand response'.

The discussion paper by the European Commission indicates that seasonal PEF would be more representative of reality, but require more complex calculations. This is not an obstacle to the implementation of this method: it is indeed quite realistic to have reliable statistics on the seasonal electric mix of the Member States, particularly by the transmission and distribution system operators of electricity.

4. The method must use robust data, not uncertain projections

The European Commission proposes that the PEF corresponding to the electricity mix would be that of the European Union in 2017-2018 horizon: **it is not reasonable to rely on uncertain theoretical data to calculate a coefficient that has important regulatory implications.**

EFIEES therefore strongly suggests that the PEFs are calculated on the basis of reliable, currently available statistical data and regularly reviewed by using transparent and predefined methods, which allow to reflect the evolutions of the electricity mix and technologies.

5. Double counting of self-consumed renewable electricity

The method proposed by the European Commission includes in the calculation of the PEF **renewable electricity which is produced and consumed on-site, leading to double counting:** on the one hand, the self-consumed electricity is taken into account to compensate for the poor energy performance of a building (offset), and on the other hand, it is taken into account in calculating the total PEF while it is by definition not available on the network.

6. Incorrect treatment of electricity produced by cogeneration

The discussion paper by the European Commission sets out two existing methods for determining the PEF for electricity produced by cogeneration ("IEA method" and "Finnish method"), but they are subsequently misused, leading to erroneous results, which do not reflect the primary energy savings generated by this technology. It is important that the CHP is treated in a fair and rigorous manner, for example under the auspices of CEN.