

# Revision of Primary Energy Factors in EU Legislation

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A EURELECTRIC view

August 2015

***EURELECTRIC is the voice of the electricity industry in Europe.***

*We speak for more than 3,500 companies in power generation, distribution, and supply.*

***We Stand For:***

***Carbon-neutral electricity by 2050***

We have committed to making Europe's electricity cleaner. To deliver, we need to make use of **all low-carbon technologies**: more renewables, but also clean coal and gas, and nuclear. Efficient electric technologies in **transport and buildings**, combined with the development of smart grids and a major push in **energy efficiency** play a key role in reducing fossil fuel consumption and making our electricity more sustainable.

***Competitive electricity for our customers***

We support well-functioning, distortion-free **energy and carbon markets as** the best way to produce electricity and reduce emissions cost-efficiently. Integrated EU-wide electricity and gas markets are also crucial to offer our customers the **full benefits of liberalisation**: they ensure the best use of generation resources, improve **security of supply**, allow full EU-wide competition, and increase **customer choice**.

***Continent-wide electricity through a coherent European approach***

Europe's energy and climate challenges can only be solved by **European – or even global – policies**, not incoherent national measures. Such policies should complement, not contradict each other: coherent and integrated approaches reduce costs. This will encourage **effective investment to** ensure a sustainable and reliable electricity supply for Europe's businesses and consumers.

***EURELECTRIC. Electricity for Europe.***

# Revision of Primary Energy Factors in EU Legislation

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EU energy efficiency legislation seeks to develop a methodology to compare the primary energy consumption of products (e.g. heating) using different energy carriers (including electricity vs. oil or gas). The methodology which has been chosen by EU policy makers is the use of a primary energy factor (PEF). EURELECTRIC recognises the benefits of being able to compare different energy carriers in their efficiency. However, the current application and calculation of this policy tool is in strong need of revision since, in its current form, the PEF undermines the EU's climate and energy goals and slows down the process for the EU's transition to a sustainable economy & society. EURELECTRIC therefore calls for the adoption of a forward looking conversion factor.

## **The application of Primary Energy Factors**

Primary Energy Factors (PEFs) estimate how much energy is needed to produce the energy product required to satisfy final energy demand, the energy product being electricity, gas, gasoline or heat. Such estimates are centred on the primary energy conversion factor for electricity which is effectively the principal metric by which energy efficiency is measured today. The methodology in current EU legislation compares the energy consumption of technologies using different energy carriers (e.g. electricity vs. oil or gas) according to their primary energy consumption, and applies a 'conversion factor' to electricity to calculate how much primary energy is contained in a single unit (e.g. a unit of electricity). EU legislation applies a PEF of 2.5 when calculating the energy efficiency of nearly all 'electricity using' products. This means that for every single unit of electricity used by an appliance, the current PEF methodology assumes that two and a half times as much primary energy (the fuel used to generate the electricity) has been consumed. In other words, the current PEF assumes that all power generation in the EU is delivered at 40% efficiency (100% divided by 2.5 = 40%).

## **The impact of the current policy and related problems**

The PEF is a useful tool when it is used by government bodies or statistical agencies in providing overviews of energy consumption and in making analyses of targets and measures aimed at reaching energy policy goals. However, it becomes more complicated when it is used to inform customers as to how to compare the efficiency of products using different energy carriers. The energy solutions available at the consumer level are key parts of the total energy system. In order to reach the EU's long term climate targets, it will be crucial to build a low carbon energy system also at the consumer level.

Problems arise when the calculation of the applied PEF is both static and backward looking. The 2.5 factor as used today was set at a time before the transformation of the power sector began and even before the EU ETS was established. It therefore does not take into account the decreasing energy intensity of power generation which resulted from efficiency improvements or the rapid large scale penetration of renewables. It also ignores the scarcity or abundance of primary energy consumed (fossil vs. non-fossil resources). Finally, it does not account for any GHG reductions in the future.

Through the current policy and methodology even the most efficient electric heater on the market can never compete with its fossil counterpart as the application of the PEF will always translate it into a less "efficient" product. A heating unit bought today should operate for around 30 years - if it is a fossil heating system, the GHG emissions will therefore be "locked in" to the energy mix until around 2045, with limited chance of decarbonisation. By that time, Europe's electricity system will be close to full decarbonisation. Retaining the current practice therefore prevents emission reductions on the demand side.

The impacts of the current PEF can be summarised as follows:

- The PEF influences the energy efficiency rating of electric products as they are presented to the final customer - it therefore also influences purchasing decisions.
- Even the most efficient electricity using product on the market cannot compete with its fossil counterpart as the application of the PEF will always translate it into a less “efficient” product.
- As a result, the application of PEFs leads to a promotion of fossil based solutions in long term investments (such as heating systems).
- Every investment in fossil based solutions today prolongs the need for importing the fuel to run it, thus increasing energy import dependence if the required fuel is not produced domestically.
- The Primary Energy Factor therefore undermines the decarbonisation of the demand side by promoting fossil based solutions over electricity.

### **EURELECTRIC Recommendation: A future-oriented PEF / Linear reductions:**

Europe’s greenhouse gas emission reduction targets for both the medium and longer term are clear and have been agreed. The power sector will be a major contributor to achieving these targets and has pledged to become carbon neutral by 2050. The most important tool to reach the EU’s objective of 80-95% decarbonisation by 2050 is the EU ETS. EURELECTRIC believes that in view of the future changes in the power generation mix, they should be reflected in the development of efficiency calculation methodologies including conversion factors. This will allow electric products to benefit from their growing sustainability (in line with the generation mix) while at the same time still providing customers with full transparency in product choice.

Adjusting the existing methodology for calculating the primary energy factor in order to ensure that it is calculated on a forward looking basis would improve the signals given to investors and decision-makers enabling them to select the best technologies in terms of economic and environmental sustainability. It would ideally be defined as a single European value in order to not undermine the internal market. A forward looking PEF should be calculated according to the projected primary energy inputs to electricity over the next 10 – 15 years. This should incorporate a value of 1 (i.e. 100% conversion) for RES and other carbon neutral components in the mix. Such an approach would also imply lowering the 2.5 factor in line with the expected EU generation mix in, for example, 2020, 2030 etc. It will also provide an incentive to invest in energy using products based on carbon neutral electricity rather than continued reliance on fossil fuels.

### **Next steps**

EURELECTRIC believes that the next step should be to analyse how a forward looking PEF could be best implemented and governed. The best vehicle for this analysis appears to be the study on the subject matter commissioned by DG Energy as announced during the Consultation Forum in December 2014. EURELECTRIC will remain an active, constructive stakeholder in this debate and looks forward to further exchanges.





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