

CEER Citizens' Q&A

2nd CEER Report on Power Losses

21 February 2020

1 What are Power Losses?

Power losses are a component of every electrical grid and originate as a consequence of transmission and distribution of electricity. They constitute a significant amount of energy flows in transmission and distribution. A reduction of power losses comes with several positive aspects, such as an improvement of energy efficiency and grid reliability, and general economic and environmental benefits.

The easiest way to categorise losses is to divide them into technical and non-technical components. The former is a consequence of the laws of physics and, although it could be reduced with more efficient equipment, it cannot be fully and economically eliminated with current technology. The latter component consists of the energy delivered but not metered or billed and often depends on socio-economic conditions of a country. Non-technical losses can be further broken down into multiple subcomponents, some of which are not considered to be part of power losses in every country due to differing definitions.

The lack of harmonised definitions and rules regarding the components included in losses presents an obstacle to straightforward benchmarking across Europe. Most countries that contributed to the CEER Report on Power Losses, simply consider power losses to be the difference between the energy injected into and withdrawn from the grid.

2 What Does the Report Propose for Power Losses?

As a result of a 2019 CEER questionnaire, input from National Regulatory Authorities (NRAs) of 35 countries was received. Analysis of responses revealed that there are significant differences in the treatment of losses among the responding countries.

This report analyses the way power losses are defined, calculated, procured and treated by the regulatory framework of the responding countries. Moreover, it statistically investigates the relationship between losses and certain other variables. Most importantly, the report provides comparisons between countries' distribution, transmission and total losses as a percentage of energy injected in their distribution or transmission grid (or a total energy volume injected into a country in case of total losses). Readers of the report should keep in mind that definitions of distribution and transmission grids are not standardised and that the voltage levels included in each differ across Europe.

Nearly everywhere in Europe, system operators are tasked with forecasting losses in their grids and with the procurement of the energy needed to cover them. In a few cases, different parties are responsible for procurement of losses in transmission and in distribution within the same country. The associated cost is included in network tariffs in most countries. On the other hand, there is a minority of cases where suppliers or market participants are responsible for covering the cost.

Twenty responding countries have implemented incentives to reduce losses in distribution, while a few others are planning to introduce them in the future. Incentives to reduce losses in transmission are implemented in only 13 responding countries. One probable cause is that, unlike in distribution, losses in transmission are mostly technical and are hence more difficult to reduce.

The report includes the following key recommendations:

1. Harmonise definitions of power losses in order to simplify comparison and enable proper benchmarking among countries.
2. Incentivise parties responsible for procurement of energy to cover losses to make this process as economical and efficient as possible.
3. Ensure that the incentives in (2.) are set efficiently with appropriate target and timeframe so as to avoid unintended consequences on system operators.
4. Move toward greater required transparency on technical and non-technical components of losses so as to facilitate proper regulatory treatment of those losses.
5. Where appropriate, implement newer or more efficient transformers and/or operate higher voltages on distribution grids in order to reduce technical losses.
6. Incorporate the reduction of non-technical losses in calculating the benefits of smart meter roll-out, such that smart metering is further encouraged.
7. Increase monitoring of non-technical losses with a view to gauging the effectiveness of potential solutions, such as increased penetration of smart meters.

3 What is the Impact on Energy Customers?

Reducing losses, or at least maintaining them at a low level, plays an important role financially, environmentally and technically. It helps with Europe's energy efficiency and security of supply objectives. Reducing power losses is also an important part of CEER's mission of putting consumers first, as the costs of power losses are currently passed on to consumers. CEER advocates implementing incentives, particularly on system operators, to reduce power losses and thereby benefit consumers.