

Annex 2 – Calculation methodology for mandatory KPIs

D.1.2.1: KPIs definition and mapping involved stakeholders

Introduction:

This annex serves as a comprehensive guide defining the calculation methodology for determining the mandatory Key Performance Indicators (KPIs) associated with peak load reduction. Its fundamental objective is to establish a standardized approach, ensuring uniformity and consistency in the calculation process across all pilot actions. By adhering to a common methodology outlined herein, stakeholders can effectively gauge and compare data, facilitating seamless analysis and interpretation.

The significance of this methodology extends beyond mere computation; it lays the groundwork for coherent decision-making and strategic planning aimed at optimizing energy efficiency. With a shared understanding of the calculation framework, stakeholders can accurately assess performance metrics, identify areas for improvement, and devise targeted interventions to achieve sustainable peak load reduction objectives.

The use of a standardized methodology fosters synergy among diverse stakeholders and promotes interoperability within the energy ecosystem. Consistency in data interpretation streamlines internal processes and also enhances external communication and collaboration with regulatory bodies and other relevant entities.

This document is like our guidebook. It gives us the tools we need to make our energy-saving efforts stronger and more effective.

The data that will be obtained based on the calculations below will be presented in deliverable D.1.3.1.

Calculation methodology:

1. The percentage (%) of network's peak load reduction achieved

Calculation method:

The percentage of network peak load reduction achieved is a measure of how much the peak demand on the network has been reduced compared to its maximum peak load of energy network by previous month / year. This reduction is the result of demand-side management (in case of SI, this will be the support of the battery that is in the electric car, in case of HR, BG and BA pilot it is energy battery, in UA it is storage of heated water, in DE & AT it is a smart management of other capacities (the entire system, water, etc.) and in HU it is the total indicative power of the power plant that the energy community will build in the future.

In case that the load reduction of the electricity network is displayed only for a few months, the same calculation is made for an individual month as indicated below for the annual reduction. Then all the monthly load reduction calculations are added up and the result is divided by the number of months we processed.

The data we need for the calculation is taken from the existing databases on the operation of the electricity network, as well as from the databases of the smart metering system.

The formula to calculate the percentage of peak load reduction is:

$$\text{Peak load reduction (\%)} = \frac{\text{max peak load of the system} - \text{peak load with reduction}}{\text{max peak load of the system}} \times 100$$

Measurement unit:

%

2. The amount of kilowatts (kW) of network's peak load reduction achieved

Calculation method:

To determine the amount of kilowatts (kW) of network peak load reduction achieved, we would deduct the peak load with reduction from the peak load without reduction. This data/information is already shown in the previous indicator, namely from the upper part of the formula: (max peak load of the system – peak load with reduction). The data is important because it shows the power for which it was possible to reduce the load on the electrical network and will serve us in the future for calculations of the wider impact of the pilots in case of replication.

The formula to calculate:

$$\text{Peak load reduction (kW)} = \text{Total peak load of the system by previous month/year} - \text{Peak Load with Reduction by month/year after installation of pilot}$$

Measurement unit:

kW

3. The amount of energy (kWh) used »internally« – off-grid power

Calculation method:

To calculate the amount of energy (kWh) used internally ...

in SI: with the support of car battery,

in HR, BG and BA: with the support of energy battery,

in UA: with the support of heated water storage,

in DE & AT: with the support of smart management of other capacities (the entire system, water, etc.),

in HU: total indicative production of energy from renewable sources by the power plant that the energy community will build in the future

... (off-grid power), we would need to sum of the energy consumption of all devices/systems that operate independently of the main electric grid in building.

We need to find the difference in the amount of energy that was produced locally and stored in existing battery (or other) capacities and then used to operate devices within the local system in building. These are (renewable) energy flows that have no need and do not affect the electricity grid.

The calculation formula for the total amount of energy used "internally" or off-grid:

Total off-grid energy used = Total use of electricity - Use of electricity from the grid

Measurement unit:

kWh