

**Part 2: Evaluation of energy generated on or near a building using the PER system**

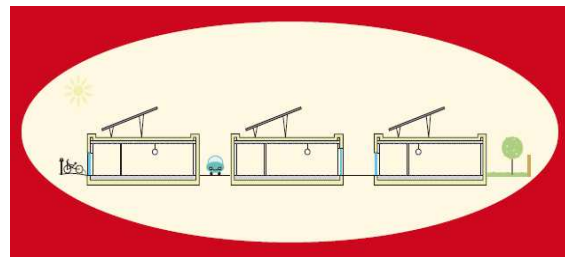
**Generation and demand remain separate**

Electricity which is generated by a photovoltaic system on the roof of a building is an example of primary electricity and has a PER factor of 1.0. It is fed into the power grid and is not offset against the energy demand of the building, even if energy storage in the building exists. Demand is calculated using the PER model. Calculating the electricity that is supplied by a photovoltaic system in the summer directly to the heating energy required in winter is incorrect because the energy generated in the summer can only be transferred to the winter via long-term storage, incurring high losses. Incorrect optimisation will be the result if this is not taken into account when planning buildings. In contrast, the new system of renewable primary energy provides the possibility of optimisation for a future-oriented building too. The effects of any storage facilities that are present in the building are also covered at the same time by the PER factors for the supply of electricity.

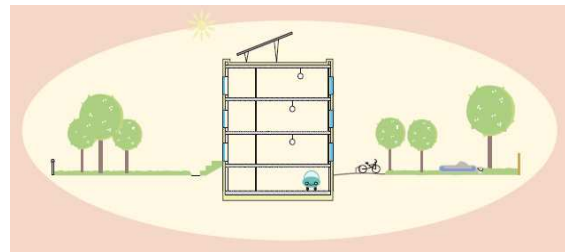
**Energy generation based on the projected building footprint**

Energy demand and energy generation are often based on the useful or treated floor area (TFA) of a building. The result of this, is that a building can generate a certain amount of energy with a photovoltaic system on the roof. The more storeys (and therefore living area) there are in this building, the less energy will be generated per m<sup>2</sup> of floor area or useful area. In this way, single storey bungalows will be favoured over terraced houses or multi-family buildings, even though bungalows have much higher consumption of land and resources. This evaluation leads to errors in optimisation.

That is why using the Passive House Institute's new concept, energy generation is based on the projected building footprint. In this way, bungalows and multi-family buildings will be assessed on a comparable scale with reference to energy generation. This is the correct approach for evaluation: each building occupies an area which is no longer available for other uses. If electricity is generated on this area, this creates an additional benefit. Evaluation of the additional benefit based on exactly that area does justice to this fact. After all, the sun shines on the roof and not on the useful area in the stacked storeys.



**Illustration:** Energy generation based on the useful area leads to incorrect optimisation.



**Illustration:** It makes more sense to use the projected building footprint of the building as a reference for generated energy.

Dr. Benjamin Krick | Passive House Institute

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Further information and sources

[www.passipedia.de](http://www.passipedia.de)

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