

Key criteria for a green lighting system

Include the key elements described here, as a minimum, to achieve quality of light and savings on energy and maintenance – and at the same time reducing the environmental impact of outdoor lighting.

Increase environmental impact

Reduce the energy use for outdoor lighting

- Ask for efficacy of luminaire above the minimum available on the market, and look at the energy efficiency of the whole lighting solution.

Preserve the dark sky

- Ask for dimming and avoid upward light.

Reduce the damage on nocturnal species and biodiversity

- Ask for colour temperature with limits of blue light, and ask for dimming.

Ensure long lifetime for the lighting solutions

- Ask for warranty, possibility to repair, and quality of all elements in the lighting solution.

Read more in related
LUCIA fact sheets

Energy use

The first criteria is to look at the efficacy of the luminaire

Here the luminaire efficacy should be higher than:

YEAR OF TENDERING	EFFICACY, lm/W
2021	137
2022	157

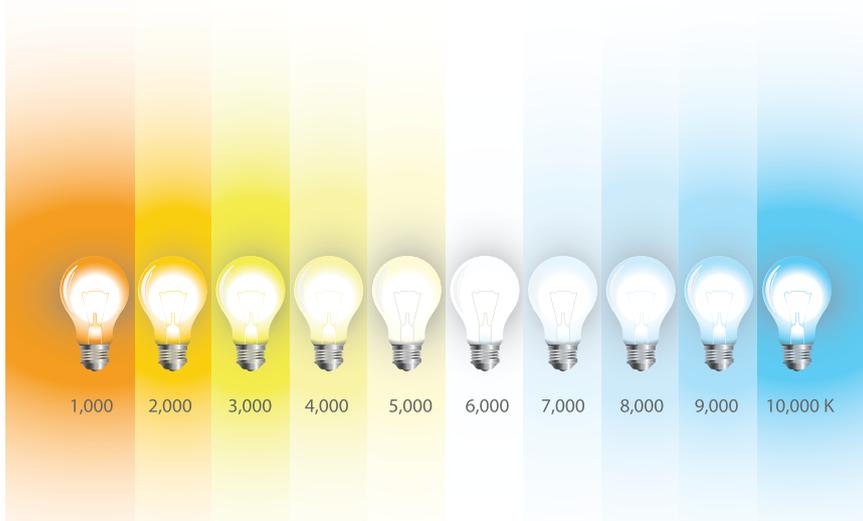
The value of efficacy is the core criteria in GPP. Due to development of the technology the value is higher in 2022 than in 2021.

In general it is important to demand energy efficiency for the full lighting system, and not only the luminaires. Energy use depends on both the luminaire efficacy, the colour temperature and the lighting management system.

See next page for more information ➤

○ Colour temperature and colour rendering

The combination of colour temperature and colour rendering is important for the quality of light, the ability to identify people and the surroundings, and for not spending more energy than necessary.



Colour temperature:

- Roads in urban areas and public spaces: 3.000 K.
- Roads in rural areas (if lighting at all) and roadtunnels: 4.000 K.
- Roads in rural areas with protection: 3.000 K.
- Bike and pedestrian paths in both urban and rural areas: 3.000 K.

Colour rendering:

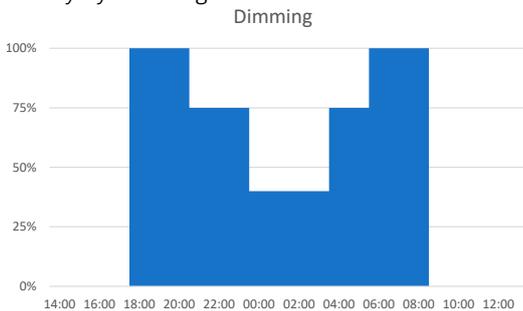
- Ra = 70

Colour rendering outdoor will then be sufficient for good lighting. Higher Ra will cause increase in cost and decrease in energy efficiency without significant effect.

Dimming and management system

The full impact of LED lighting comes from dimming and an intelligent management system in order to reduce light levels, when there is no need for light.

Save an extra 25-40% on top of the LED luminaire efficacy by dimming.



The programmed dimming profile in the management system ensure both safety, energy savings and protection of nature (luminaires are on, but not with more light than necessary).

Durability

The weakest point in the LED luminaire is not the LEDs (diodes) and panels, but the LED driver. Therefore it can increase costs if the warranty period is longer than the spare parts will last. Some LED panels are predicted to run for 100.000 hours, but LED has not been on the market for long enough to run the maximum hours yet. Some producers are offering 10 years of warranty today, but it can make the luminaire too expensive to go that high.

Ask for 7 years and include an agreement on the change of spare parts that causes abrupt failure.

References:

- 1 <http://www.premiumlightpro.eu>
- 2 EU GPP guidelines: https://ec.europa.eu/environment/gpp/pdf/toolkit/181210_EU_GPP_criteria_road_lighting.pdf
- 3 <https://lightingmetropolis.com/dk/vejledning-af-udendørsbelysning/> (danish and swedish)