Revision of the EU Green Public Procurement Criteria (GPP) for Road Lighting

EEB comments on the 2nd draft of the JRC technical report and GPP criteria proposal

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Summary

The European Commission (EC) is revising the EU Green Public Procurement (GPP) criteria for Road Lighting and Traffic Signals. In August 2017, the Joint Research Centre (JRC) of the EC published the second draft of their technical report including proposals for draft GPP criteria. EU GPP criteria are formulated either as Selection criteria (SC), Technical specifications (TS), Award criteria (AC) or Contract performance clauses (C). For each set of criteria there is a choice between two levels of environmental ambition: core criteria and comprehensive criteria.

Based on the discussions of JRC's proposals during two webinars on 19 and 21 September 2017, this paper provides recommendations and comments on the revision of the GPP criteria on behalf of the EEB. The EEB has consulted this input together with its member organisations and other environmental NGOs.

In particular, we welcome the following improvements:

- The introduction of a tiered approach for Luminaire luminous efficacy (TS1, AC1, CPC2), reflecting the fast-moving development of LED road lighting technology;
- The enhanced focus on dimming control capability and Minimum dimming performance (TS2, TS3, CPC3) to allow for further reduction of energy consumption and light pollution;
- The strict requirement for Zero Ratio of Upward Light Output (TS7) in all applications; and
- The precautionary approach adopted towards ecological light pollution and annoyance (TS8), using CCT values of 2700 and 3000 K as a proxy to improve public acceptance and lower potential impacts on biodiversity (including the option to further limit the blue light content).

But we also recommend that the proposal could be further improved or complemented regarding the following points of concerns:

- Provide additional guidance on how to lower lighting levels when switching from existing more yellow light sources towards warm white road lighting with LEDs;
- Provide additional guidance on how to maximise the benefits from dimming as the most adequate means to both mitigate energy consumption and light pollution;
- Provide additional guidance how to best ensure longer lifetime and upgradability of road lighting installations;
- Provide examples of how to include these aspects in the least Life-Cycle-Cost calculations;
- Provide additional guidance on how to support new business models around performance-based contracting to help small municipalities who may not have a lot of technical depth and/or financial means for renovating their roadway lighting systems to allow for gradual improvements and optimisation over time; and
- Provide more clarity on potential applications and implications of amber and low power LEDs or outlines conditions where you might still opt for non-LED solutions.

General comments

The actual purchase of road lighting equipment plus installation or maintenance services are only one important step where environmental considerations need to be taken into account. That is why the EEB recommends to the JRC to complement its GPP criteria proposal with some more guidance and clarity on additional considerations needed e.g. regarding adequate lighting levels, dimming, lifetime and upgradability of the installations, performance-based contracting before launching a call for tender based on the GPP criteria proposal.

Energy efficiency criteria

The EEB welcomes the main changes and improvements that the JRC integrated into their 2nd draft of GPP criteria proposal for road lighting. In particular, we appreciate the decision to adopt different tiers over time that take into consideration the progression of LED technology in roadway lighting.

The ambition of the GPP criteria proposal is important because energy-in-use is still the dominant factor in the LCA based modelling of environmental impacts, with roadway lighting consuming approximately 1.3% of all electricity consumed by the EU25 in 2005 (35 TWh).

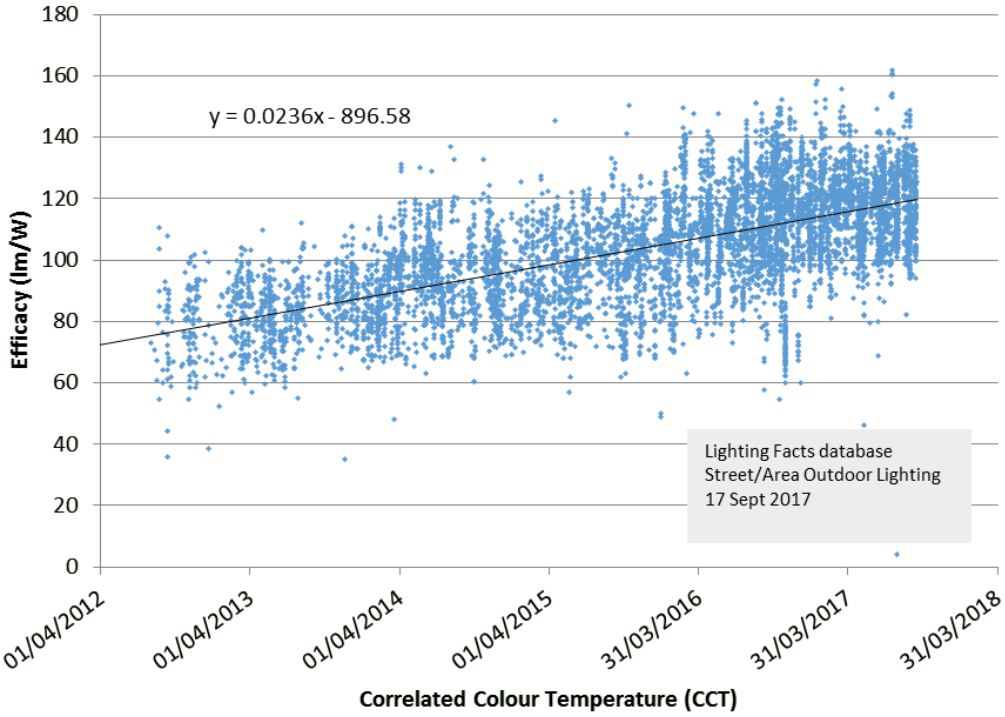
Luminaire efficacy (TS1, AC1, CPC2)

- The Luminaire luminous efficacy levels that the JRC is proposing in the current draft reflect the top 75% of LED models in the market for the core criteria and top 50% of the market for comprehensive criteria. The EEB welcomes these levels of ambition in the proposal and find it appropriate for the products that will be offered on the market during the period when these GPP criteria will be applicable.
- The EEB is happy to share an updated version of our data analysis including new LED models that became available on the market during the last six months. We uploaded the related Excel spreadsheets in the BATIS Forum for scrutiny by the Commission, their consultants and other stakeholders.
- These data confirmed that the trends we had observed in our previous comments are continuing - namely a progression of 8.6 lm/W per year.
- The new data analysis also illustrate that the efficacy improvement trends are consistent across different CCT values: the change in efficacy is only about 3 lm/W per 1000K of CCT. Unfortunately, the share of models available between 2000 to <3000 K is still very small and represent only 3% of all models included in the dataset.

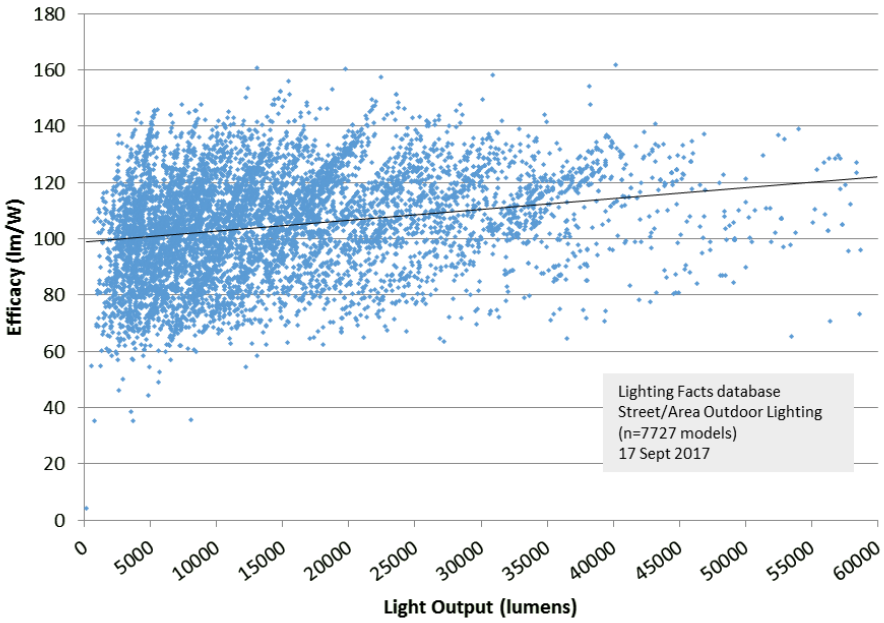
CCT (K)	Model Count (n=)	Model Count (%)	Average Efficacy (lm/W)
2000 to <3000	257	3%	106.7
3000 to <4000	2168	28%	101.7

CCT (K)	Model Count (n=)	Model Count (%)	Average Efficacy (lm/W)
4000 to <5000	2668	35%	104.7
5000 to <6000	2586	33%	107.1
>=6000	48	1%	89.0
Total	7727	100%	

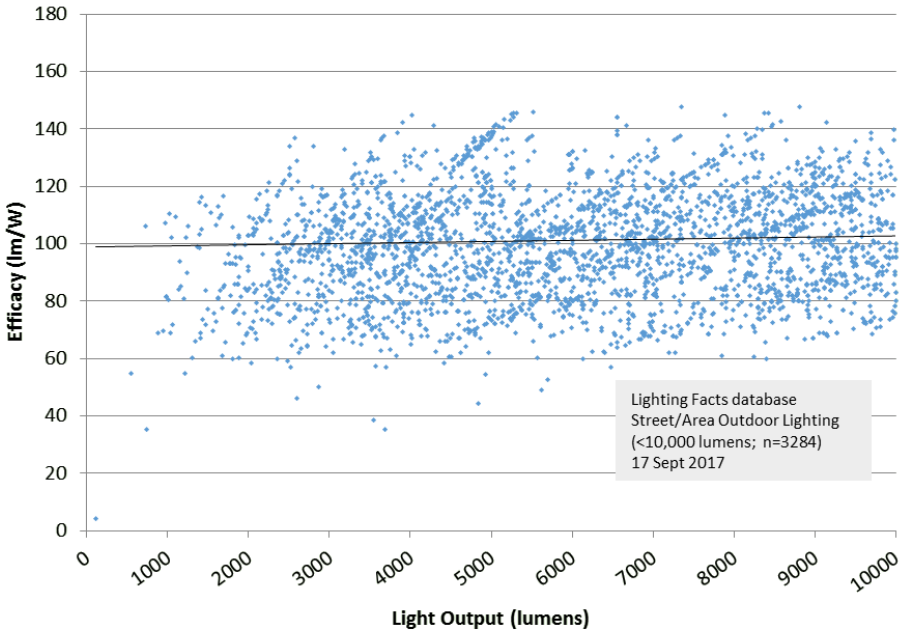
- Looking at 3000K to <4000K, we find the same trend for overall improvement in efficacy over time. We calculate an annual improvement of 8.2 lm/W per year – just 0.4 lm/W slower than the average pace overall between 2012 and 2017. The subset of data covering 3000K to <4000K looks like this:



- There was a question raised during the webinars about the market availability of low power LED-luminaires for road lighting. Due to the fact that LED road lighting is made up of many small light emitting LEDs, the technology is easily scalable from a luminance point of view, up or down. This can be achieved simply by making larger or smaller LED arrays, by using LEDs with lower flux output (lower drive currents) or of course by dimming the LEDs with intelligent controls. We prepared the following plot to illustrate the wide availability in the market of the more than 7000 models that we downloaded from the Lighting Facts database in September:



- And the same graph again, zooming in on the <10,000 lumen light output, which includes over 3000 models in that database. In other words, there is very good availability at the low power range of LED luminaires for road lighting.



- We also recommend that the JRC provides additional guidance on lower lighting levels needed when switching from more yellow light sources towards warm white LEDs.

- The EEB would also like to highlight the need for support of new business models around performance-based contracting to help small municipalities who may not have a lot of technical depth and/ or financial means for renovating their roadway lighting systems to allow for gradual improvements and optimisation over time.

Dimming controls (TS2, TS3, CPC3)

- The JRC should develop additional guidance on how to maximise the benefits from dimming as the most adequate means to mitigate energy consumption and light pollution.
- The JRC should provide examples of how to include these aspects in the least Life-Cycle-Cost (LCC) calculations.
- The EEB supports the JRC's criteria proposal on dimming control capability and minimum dimming.

Metering (TS6)

- The EEB supports the JRC's criteria proposal on metering.

Light pollution criteria

The EEB appreciates that the JRC proposals also take into account other non-LCA modelled impacts, including sky glow and the wider ecological effects of artificial outdoor lighting during night times. Adding these aspects in the EU GPP criteria will highlight their relevance for the decision making process when municipalities develop their policies (e.g. on adequate lighting levels, limiting blue light content) and plan the future design and layout of the road lighting system that fit their needs for different applications.

Ratio of Upward Light Output (TS7)

- The EEB supports the proposal to have total cut-off luminaires in all applications.

Ecological light pollution (TS8)

- The EEB welcomes the promotion of warmer light (i.e. lower CCT values) in areas that are sensitive to light pollution and/ or where the procurer deems that 'cold' CCT would be unacceptable.
- We support the proposed CCT values of 2700 K for the core and 3000 K for the comprehensive criteria as a proxy to improve public acceptance and lower potential impacts on biodiversity (including the option to further limit the blue light content).
- We recommend that the JRC provides more clarity on potential applications and implications of amber or low power LEDs and conditions where you might still opt for non-LED solutions.

Lifetime

Regarding luminous flux, the EEB recommends that the JRC harmonise with the IEA 4E SSL Annex Quality and Performance Tiers published in November 2016 for Street Lighting. Here, the luminous flux maintenance is required to be: At 6,000h, ≥ 95.8% of initial (based on L70 ≥ 50,000h). The test method cited for this measurement should be IES LM-84 and IES TM-28, as this is expected to be adopted widely in 2017 and is the updated standard of the old combination of IES LM-80 and IES TM-21. Please see this link for further information on this criterion.

LED lamp product lifetime, spare parts and warranty (TS11, AC3)

Regarding the lifetime questions in the draft criteria, we recommend that the JRC reviews the product lifetime in the IEA 4E SSL Annex quality and performance tiers for street lights for further information on lifetime.

The EEB therefore recommends that the JRC sets 3 criteria addressing lifetime:

- Luminous flux maintenance: At 6,000h, ≥ 95.8% of initial (based on L70 ≥ 50,000h
- Maximum early failure rate: Either no failures at 3,000 hours or ≤10% failures at 6000 hours with a sample size of 10 units
- Minimum rated luminaire lifetime: At 50,000h < 50% have failed

Finally, we believe that test results must be provided by an accredited laboratory under the International Laboratory Accreditation Cooperation (ILAC) system, but it does not have to be third-party certified. It would be acceptable to be self-reported, as long as the laboratory has accreditation.

- The EEB also supports the proposed criteria from the JRC on warranty, service agreements and spare parts.

Reparability, Ingress Protection (IP rating), Failure rate of control gear (TS12, TS13, TS14)

- The EEB firmly agrees that it is important that luminaires are easy to maintain and repair, and not necessarily only with proprietary equipment which can be expensive, but normal tools including those listed in the criteria (TS12).
- We ask to have an ingress protection (IP) rating of 65 for all road classes required in TS13. This will help to ensure the lifetime of the luminaire.
- The EEB supports the proposed criteria (TS14) on the failure rate of control gear – both the derivation from the preliminary report which identified the higher quality units and then establishing the criteria at a failure rate of <0.2 per 1000 hours for core criteria and <0.1 per 1000 hours for comprehensive criteria.
- We recommend complementing the criteria proposal with some additional guidance how to best ensure longer lifetime and upgradability of road lighting installations.

Traffic signals

TS1 – Life Cycle Cost and Warranty (TS1, AC1, TS2, AC2)

- The EEB agrees with the chosen approach as LED technology now dominates this market and we do not see the risk of competition with other less efficient technologies.