**logo.eps**

**Procurement criteria for outdoor lighting**

Draft version 1

December 2016

**Main Criteria**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Road lighting design** | **Premium requirement** | **Comments** |
| 1 | Competences of the design team | A minimum 15 relevant lighting projects in the last 3 years | Requirement defined by AEA |
| 2 | Annual energy consumption indicator,  power density indicator | PDI < 1,1 x 161/RW  AECI < 0,8 x 161/RW x 0,004 x E,m  PDI Power density indicator  AECI Annual Energy Consumption indicator  RW the total width of the road including emergency lanes, sidewalks and cycle lanes when they are in the target area  E,m is the minimum average maintained illuminance according to the road class | Requirement defined by GPP (Page 19-25)[[1]](#footnote-1)  GPP implemented a calculation of the PDI only in dependence of the road width.  *Is this calculation possible or should be used the calculation from the relevant new EN standard EN 13201-5[[2]](#footnote-2)?* |
| 3 | Light pollution (cut off, Colour temperature, colour rendering index ) | RULO respectively ULOR = 0%  Rulo upward light output ratio  Pedestrian path, cycle path CRI>80 | Requirement defined by AEA  *Should a requirement for colour temperature and colour rendering index be included for streets?*  *GPP includes colour temperature <3000K for specified street types and CRI<70?* |
| 4 | Least Life Cycle Costing | TBD | *Important criterion but approach to be discussed* |
| 5 | Metering | A Metering and measurement system will be installed (identifies failures and monitors the energy consumption) | Also addressed in GPP (Page 31) |
|  | **Road lighting installation** | **Premium requirement** | **Comments** |
| 6 | Competences of the installation team | Minimum 15 relevant lighting projects in the last 3 years | Requirement defined by AEA |
| 7 | Putting into service of lighting systems and controls | The contractor shall ensure that new or renovated lighting systems and controls are working properly and using no more energy than required respectively specified:   * Daylight linked controls shall be calibrated to ensure that they switch off the lighting when daylight is adequate * Traffic sensors shall be verified to detect vehicles, bicycles and pedestrians depending on the application. * Time switches or control scenes in software shall be set to appropriate switch off times to meet visual needs without excessive increase in energy consumption   If after the commissioning of the system, the lighting controls do not appear to meet all the above requirements, the contractor shall adjust and/or recalibrate the controls. | Adapted according to GPP |
| 8 | Correct installation | The contractor shall ensure that the lighting system is installed exactly as specified in the original design.  The contractor shall deliver a schedule of installed lighting equipment with appended manufacturers’ invoices or delivery notes, and confirmation that the equipment is installed as originally specified.  For a road segment randomly selected by the procurer, the contractor shall select two poles for which a measurement certificate shall be supplied that certify that the lighting system for this road segment is in accordance with the requirements specified in EN 13201-2.  For this road segment also the peak power [W] and energy consumption [kWh] shall be measured and/or calculated over a period of one week. Based on this data and the previous EN 13201-2 measurements of illuminance the PDI and AECI shall be calculated and verified with the design (+/- 10% tolerance max.).  In order to limit light pollution the boom angle of a set of luminaires in the selected road segment shall be measured and compared to the design specifications (+/- 2° tolerance max.). | Adapted according to GPP |
| 9 | Reduction and recover of waste | Reduction of waste during the installation of new or renovated lighting systems. All parts are to be separated and recovered in accordance with the WEEE | *Should a recycling concept be required?* |
|  | **Road lighting equipment** | **Premium requirement** | **Comments** |
| 10 | Efficacy and of luminaries | 120 lm/W | Requirement defined by GPP (Page 38)  *Value to be further analysed and confirmed* |
| 11 | Lifetime of luminaries | L80B10: 100.000 | Requirement defined by AEA  *Value to be further analysed and confirmed* |
| 12 | Compatibility with dimming and other controls | The luminaires are compatible with dimming and control systems (daylight, traffic, persons, weather etc.) | Also addressed by GPP |
| 13 | Product lifetime extension | Repair or replacement of the product shall be covered by the warranty terms for minimum ten years.  During the warranty or service agreement period:  c) Every defect light source, control gear and/or luminaire will be replaced without any cost. If the luminaire provides less output than initially specified it shall also be considered as a defect,  d) Every batch of lamps or luminaires will be completely replaced in case the number of defect units in the batch is more than 10% of the batch.  Outside the warranty are:  c) Luminaires defective because of vandalism, accidents, lightning or storm  d) Lamps or luminaires that have been working for a significant time under abnormal conditions (e.g. used with the wrong line voltage) in so-far that this can be proofed by the manufacturer. | Also addressed by GPP |
| 14 | Reparability | The tenderer shall make sure that the light source (lamp or LED module) and auxiliaries of the luminaire are easily accessible and replaceable and the replacement can be performed on site (i.e. at luminaire mounting height) | Also addressed by GPP |
| 15 | Ingress protection (IP) | Luminaires shall have an optical system that has an ingress protection rating of at least IP65 for all road classes. | Requirement defined by GPP (Page 44) |
| 16 | Efficacy of light sources | 160 lm/W | Requirement defined by GPP (Page 46)  *Value to be further analysed and confirmed* |
| 17 | lifetime of light sources | L80B10 100.000 | Requirement defined by AEA  *Value to be further analysed and confirmed* |
| 18 | Switching cycles | TBD | Requirement defined by AEA  *In case of a presence detection the switching cycles could be necessary.* |
| 19 | Failure rate of control gear | Failure rate 0,1% per 1000h | Requirement defined by GPP (Page 48)  The control gear often is a weak element in the (LED) luminaire life time. |
|  | **Operation and Maintenance** | **Premium requirement** | **Comments** |
| 20 | Supply voltage | 230 ± 10 % (EN 50160) | In Europe the voltage is 230V. Thus, the lamps must support this voltage.  *Necessity of requirement to be discussed* |
| 21 | Overvoltage protection | 10kV | Requirement defined by AEA |
| 22 | Thermal management | The luminaires must have an efficient thermal management in order to ensure the appropriate operating temperatures | Requirement defined by AEA |
| 23 | Control System | For easier programming and better failure detection, at least a power line control has to be installed | Requirement defined by AEA |
| 24 | Availability of spare parts | The availability of the spare parts has to be minimum 10 years | Requirement defined by AEA |
| 25 | Mark of conformity | CE, ENEC, Provision of Declaration of Conformity | Requirement defined by AEA |
| 26 | IEC protection classes | Class II | Requirement defined by AEA |
| 27 | Impact Protection (IK) | >IK07 | Requirement defined by AEA  Is IK07 necessary or is IK06 enough? |

**Optional Criteria – to be further specified**

|  |  |  |  |
| --- | --- | --- | --- |
| 28 | Quality of production | ISO 9001 or equivalent | Requirement defined by AEA |
| 29 | Power factor | For 100 % of nominal light output: PF >= 0,9  For 50 % of nominal light output (dimmed operation): PF >= 0,8  Additional information requirement: minimum level of dimming with PF = 0,8 | Requirement defined by AEA |
| 30 | Constant flux control | luminaires shall be equipped with an integrated constant flux control | Requirement defined by AEA |
| 31 | Luminaire design and structure | The luminaire shall primarily be constructed of metal.  In case the LED driver unit is mounted internally, it shall be easily accessible and replaceable on site with standard types of screwdrivers.  Any parts constructed of polycarbonate or acrylic shall be UV stabilized, any lens discoloration shall be considered a failure under warranty.  Luminaire shall consist of a heat sink with no fans, pumps or liquids and shall not degrade heat dissipation performance.  The maximum surface temperature of the luminaire (stable operation condition) shall not exceed 60 °C. | Requirement defined by AEA |

1. Source: “Revision of the EU Green Public Procurement Criteria for Street lighting and traffic signals” page 19 - 25 [↑](#footnote-ref-1)
2. EN 13201-5 Energy Performance Indicators [↑](#footnote-ref-2)