



## CHECKLIST DARK-SKY COMPLIANT OUTDOOR LIGHTING

- Necessity:** Determine whether the lighting is necessary and if it could be replaced by reflective markers.
- Correlated Color Temperature (CCT)** in Kelvin (K): Between 2200 K and 2700 K to minimize biologically harmful blue light and reduce skyglow. 3000 K may be used if no other option for the task exists.
- Brightness:** The illuminance level shall not exceed the values recommended by the Illuminating Engineering Society (IES) for the specific application by more than 50% unless there are extenuating circumstances related to safety and security that justify an exception.
- Shielding:** To minimize uplight, uplight rating of U0 (using the BUG rating system\*). Also referred to as *fully shielded*, meaning an outdoor luminaire constructed so that, in its installed position, all of the light emitted by the luminaire is projected below the horizontal plane that passes through the lowest light emitting part of the luminaire. See Figure 1 (right).
- Glare:** BUG rating of G0/G1 preferred and no greater than G2 to improve visibility.
- Backlight:** BUG rating of B0/B1 preferred and no greater than B2 to minimize trespass.
- Lighting Controls:** Use "smart" controllers, dimmers, motion controls and/or timers to maximize energy savings by using light only when needed and at the level that is required or appropriate for the task.
- Add-on Shields:** "House-side" and cul-de-sac shielding for cobra head lights, where necessary to eliminate light trespass.
- Public Engagement:** A public product demonstration with at least three luminaire options (including at least one CCT option of less than 2700 K and at least one fixture with the recommended BUG rating) and polling of the community to assess its preferences is highly recommended to ensure community satisfaction.

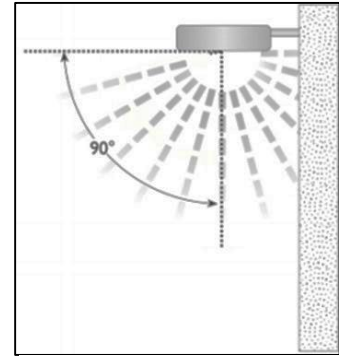


Figure 1. Fully shielded luminaire

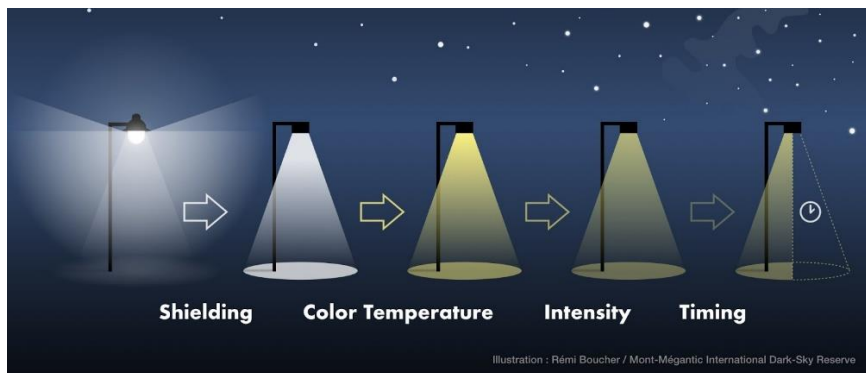


Figure 2. Fundamentals of dark-sky-compliant outdoor lighting

\* Best-to-worst values of 0 to 5 for backlight (B), uplight (U), and glare (G), as defined by the Illuminating Engineering Society; see <https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf>