Why Smart Outdoor Lighting Matters

RLEP
14 April 2018
Where Are You?

Light Pollution Map with Rappahannock County Highlighted
(dark, but not as dark as parts of West Virginia)

International Dark Sky Association (IDA) from the World Light Pollution Atlas
Dark Skies Map of Rapp. County
Rappahannock skies range between Bortle Class 3 (rural) and Bortle Class 4 (rural/suburban transition).

Video clip “Lost in Light” by Sriram Murali
Skies as seen from the Rappahannock County Park
Sept. 16, 2017
Washington, VA
(courtesy of Joyce Harman)
Rapp. County

NoVA

Rapp. skies are quite dark allowing view of about 5000 stars
Blackouts of 1965 and 2003
(not what we want!)

Todd Carlson: Ontario, Canada (2003)

Video clip
New York City Without Light Pollution
Skyglow Project
Fully Shielded: Targeted, Efficient, Safe

No light above the horizontal
Reduces sky glow, see stars
Reduces light trespass

Directs light power to desired areas
Better coverage for safety, security
Allows lower wattage lighting ($$)
Chicago: Reducing Glare and Sky Glow
Unshielded vs. Fully Shielded Fixtures
Additional Shielding is Available

Light trespass above and below horizontal

Shield orientation is adjustable
How Shielding Limits Light Trespass

Light trespass illuminates yard

Shield blocks light trespass
Light Color is Important

6000K LED

3000K LED
Light Color is Important

• Bright white lights contain a high proportion of blue light that makes it difficult for the eyes to focus
  - Shorter wavelength, light scatters inside eyes
  - Eyestrain and loss of night vision (disability glare)
  - Aging eyes especially vulnerable

• Bright white light from unshielded lights can affect the human circadian (24-hour) rhythm
  - Leads to no dark downtime
  - Disrupts brain wave patterns, hormone (melatonin) production and cell regulation
  - Can lead to insomnia, depression, cancer, diabetes and cardio-vascular disease

• Causes disoriented animal behavior
  - Foraging habits, reproduction, vulnerability to predators
Light Color at or Below 3000K is Preferred
Lighting Controls Can Help

• Motion detectors
  - Activates lighting on demand for a preset duration

• Timers
  - Hardwired (part of power circuit)
  - Programmable (configure as required)

• Dimmers
  - Hardwired controls (requires additional wiring circuit)
  - Field adjustable output on lighting fixture (at installation)
  - Programmable (configure as required)

• Scheduling
  - Set light intensity for specified blocks of time
  - Available on selected programmable light fixtures
How You Can Help

• Leased pole lights from REC (electrical company)
  - Change from unshielded metal halide to shielded LED
  - Contact the REC Call Center at 800-552-3904
  - Follow the telephone prompts to get to “Culpeper Engineering”
  - Provide your name, REC account number, physical address
  - Specifically request the ‘dark skies compliant’ model (3000K)
  - There is no charge

• Privately-owned outdoor lighting
  - Contact RLEP at 703-250-7943
  - Provide information and photos of your light(s)
  - RLEP will suggest choices of replacement lighting
  - RLEP will coordinate replacement by qualified electrician
  - There is no charge