

ZONING TEXT AMENDMENT: LIGHTING STANDARDS &  
CITY CODE OF ORDINANCES AMENDMENT: STREET LIGHTING  
(P22-100-ZTA)

CITY OF HENDERSONVILLE - COMMUNITY DEVELOPMENT STAFF REPORT

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## PROJECT SUMMARY

- Project Name & Case #:
  - Lighting Ordinance
  - P22-100-ZTA
- Applicant:
  - City of Hendersonville
- Zoning Code Articles Amended:
  - Article VI. General Provisions
    - Addition of Sec. 6-19
    - Amendment to Sec. 6-2
    - Amendment to Sec. 6-13
  - Article VII. Development Review
    - Amendment to 7-3-4.3 Contents of Final Site Plan
  - Article XII. Definition of Terms
- City Code of Ordinances Amended:
  - Chapter 46 – Streets, Sidewalks, and Other Public
    - Article VI – Street Lights
- Planning Board - Legislative Committee Meeting
  - October 18, 2022
- Business Advisory Board
  - December 5, 2022
- Summary Basics:
  - The petition proposes to set lighting standards for Non-residential and Multi-Family uses
  - Standards do not apply to Single & Two-Family Residential uses.
  - Proposes: Zero Uplight; IES standards; CCT limit 4,000K; CRI limit 70; prohibition of unshielded floodlights and wall packs; max footcandles at property lines; protection of stream buffer



### *Summary of Amendment Petition:*

*The City of Hendersonville initiated efforts related to this text amendment at the behest of City Council and the Planning Board in early 2021. Initial request revolved around the concept of “Dark Sky compliance”. Initial drafts of the ordinance were based on the Model Light Ordinance (MLO) provided by the International Dark Sky Association in conjunction with the Illuminating Engineering Society (IES). A local “Lighting Ordinance Subcommittee” as well as the Business Advisory Council reviewed these initial drafts in 2021. Ultimately it was determined that a simplified Lighting Ordinance would be preferred. The current draft is based on the efforts to create a simple but effective set of standards for exterior, commercial and multi-family lighting.*

*Many of the basic standards of the proposed text amendment were provided by representatives of the Business Advisory Council. The proposed draft combines this input with the input from staff and elected and appointed officials. A version of the current draft was reviewed by the Legislative Committee of the Planning Board in October 2022. At least one member of this committee also participated in the Lighting Ordinance Subcommittee which convened across 2021.*

*The proposed standards apply to non-residential and multi-family uses while single-family and two-family residential uses are exempt. The proposal also addresses streetlighting with a provision in the City Code of Ordinances restricting lighting on local streets to ensure there is limited uplight.*

## AMMENDMENT ANALYSIS – AMENDMENT OVERVIEW

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The effort to establish a Lighting Ordinance for the City of Hendersonville has been underway for over two years. Advocacy efforts to address local light pollution were initiated by the concept of becoming “dark sky compliant”. Over the course of many conversations with elected and appointed officials, stakeholders and local advocates, the details of how to address concerns related to light pollution were illuminated.

Over the two years that this topic has been researched and discussed, numerous rounds of meetings have been held and many of hours of staff time have been devoted to it. Initial efforts to draft the ordinance were done by staff in conjunction with an appointed Lighting Ordinance / Dark Sky Committee. This committee was comprised by members of the Planning Board, the Historic Preservation Commission, Dark Sky advocates and local lighting experts. The initial “Model Light Ordinance” based draft was supported by this committee. The Business Advisory Committee also reviewed the MLO-based draft and expressed concerns with some of the proposed standards. After multiple meetings with the BAC, Planning staff put the ordinance on hiatus while efforts were made to collaborate with local lighting experts from GE, representatives appointed by the BAC and Duke Energy. This collaboration led to the restructured ordinance that is presented in this staff report.

Current language in the Zoning Code regarding exterior lighting is found in one sentence in Section 6-13. Nuisances. This nuisance standard lacks measurable outcomes and does not set clear goals for development/redevelopment nor does it reflect the desired outcomes of the community when it comes to the cumulative effect of exterior lighting – i.e. light trespass, sky glow, impact on natural environment, and energy consumption.

The current language in the Zoning Code reads as follows:

Section 6-13-4 - Lighting.

Lighting facilities, if provided, shall be aimed, directed, shielded or arranged so the light sources for such facilities do not cause undue glare on neighboring properties or interfere with the safe use of public rights-of-way.

The proposed draft Lighting Ordinance is based on an effort to establish standards which:

- 1) Are easily understood and achievable
- 2) Can be reviewed and enforced by City staff
- 3) Addresses both publicly-owned and privately-owned lighting facilities
- 4) Meets the “intent” stated in Section 6-19 below.

The proposed Lighting Ordinance reads as follows:

## Article VI. - General Provisions

### **Section 6-19. Lighting.**

Intent. The purpose of these standards is as follows:

- a) Minimize adverse offsite impacts of lighting such as light trespass and obtrusive light.
- b) Curtail light pollution, reduce skyglow and improve the nighttime environment.
- c) Help protect the natural environment from the adverse effects of artificial lighting at night.
- d) Conserve energy and resources to the greatest extent possible.

**6-19.1. General Standards of Applicability.** The lighting standards of this section shall be applicable as follows:

- a) Non-residential uses shall be subject to these standards. For the purposes of these standards non-residential shall include, but not be limited to, commercial, institutional, educational, industrial, etc.
- b) Multi-family residential uses shall be subject to these standards. For the purposes of these standards multi-family residential shall include all residential uses with three or more attached dwelling units.
- c) Residential uses shall be exempted from these standards. For the purposes of these standards, residential uses shall include all single family & two-family residences.
- d) Street and roadway lighting shall be exempt from these standards. Street and roadway lighting are subject to the standards of the City of Hendersonville Code of Ordinances (Chapter 46, Article VI).
- e) For the purposes of these standards the term “stream buffer” shall refer to the term as defined in Section 17-3 of this ordinance.

### **6-19.2. Standards**

All new exterior lighting installed, after the effective date of this Ordinance and within the zoning jurisdiction of the City of Hendersonville, shall comply with the following standards:

- a) Lighting levels and placement shall be designed in accordance with applicable Illuminating Engineering Society (IES) recommended practices.
- b) Lighting shall be designed to an Uplight ratio of zero (0) and designed to limit Backlight trespass.
  - a. Exceptions. Lighting for flagpoles, sports facilities, temporary construction sites, correctional facilities, lighting used solely for signage (see sign regulations), lighting as needed under emergency conditions, low voltage landscape lighting, temporary seasonal lighting, and ornamental and architectural lighting of bridges, public monuments, statuary and public buildings.
- c) The nominal CCT limit shall be  $\leq 4,000K$

- d) The CRI limit shall be  $\geq 70$ .
- e) New floodlights shall be prohibited. Replacement area lighting shall be shielded to prevent uplight and to prevent front, side, and/or back light depending on the implications on surrounding properties.
- f) All wall pack lights shall be full cutoff and shielded.
- g) The maximum light level using maintained lumens shall be no more than 0.5 foot candles for a non-residential to residential/multi-family residential use interface.
- h) The maximum light level using maintained lumens shall be no more than 0.25 foot candles for a multi-family residential-to-residential interface.
- i) The maximum light level using maintained lumens shall be no more than 0.0 foot candles for a non-residential/multifamily residential to Stream Buffer interface.
- j) No lights shall be installed within a Stream Buffer except as described below. Lighting may be permitted within a Stream Buffer only where facilities exempted under Section 17-3-5 are located and shall be oriented to minimize light intrusion within the Stream Buffer.

### **6-19-3. Existing Exterior Lighting.**

Non-compliant lighting installed prior to the effective date of this ordinance shall be considered non-conforming and may continue to be used in accordance with the non-conforming standards found in Section 6-2-5 with the following exception:

- a) Amortization. On or before [INSERT 10 YEARS FROM EFFECTIVE DATE], all exterior lighting shall comply with this Code.

## **Section 6-2. - Nonconformities**

### **6-2-5 Nonconforming Exterior Lighting.**

The following applies to existing non-compliant lighting installed prior to [adoption date of ordinance].

#### **6-2-5.1 Thresholds for compliance.**

Full compliance with the lighting requirements in Section 6-19 shall be required under the following circumstances:

- a) When repairing 50% or more of total existing exterior lighting fixtures on a site within any 12-month period.
- b) When expanding, moving, or altering 50% or more of an existing parking or lighted area.
- c) When structures on a site with non-conforming lighting are renovated and the total cost of renovations exceeds 50% of the assessed value of the building according to Henderson County tax records

## **Section 6-13. - Nuisances**

### **6-13-4 Lighting.**

Lighting facilities, if provided, shall be aimed, directed, shielded or arranged so the light sources for such facilities do not cause undue glare on neighboring properties or interfere with the safe use of public rights-of-way to mitigate off-site lighting trespass to surrounding properties.

## Article VII Development Review

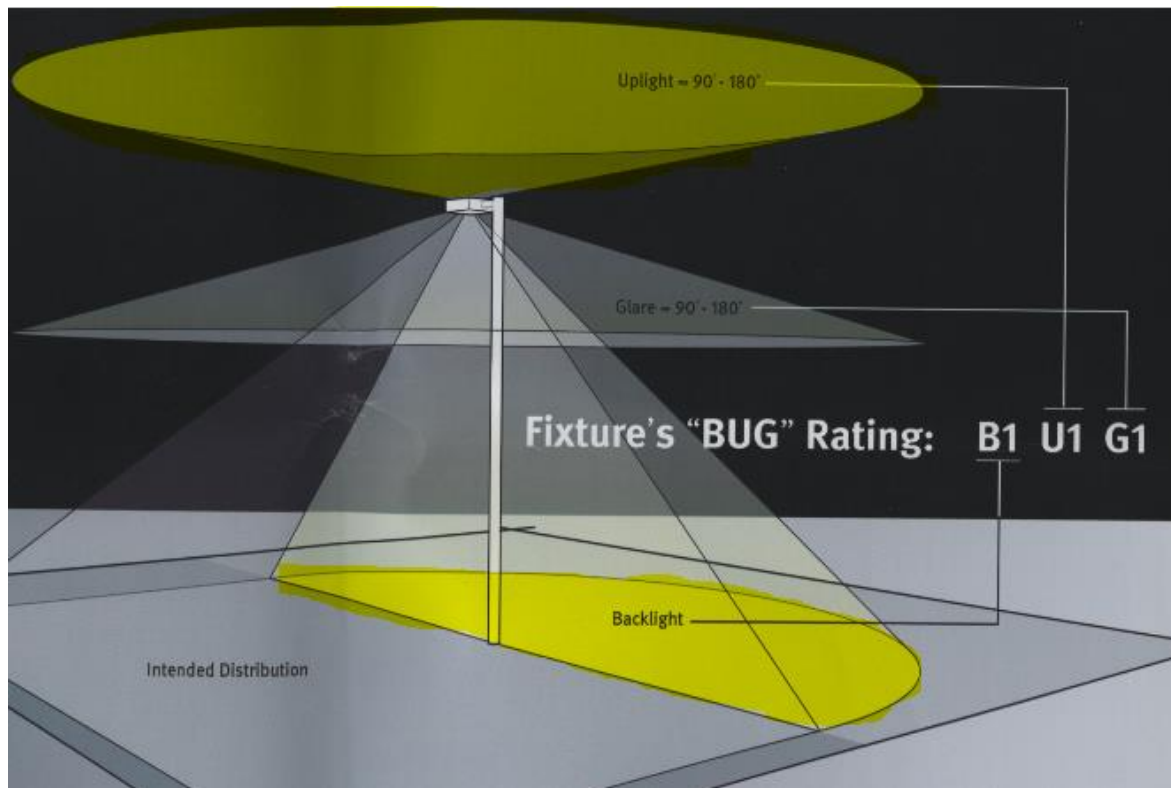
### 7-3-4.3 Contents of Final Site Plan.

r) Site Lighting Plan conforming with the standards established in Section 6-19 and Section 6-2-5. Such plan shall include proposed fixture list, location and orientation of fixtures, footcandle map, property lines and stream buffers at a minimum.

## Article XII. – Definition of Terms

Uplight – For an exterior light fixture, light output emitted into the hemisphere above the horizontal plane of the light emitting light opening (i.e. above 90° from straight down) (see Figure 1)

Backlight – For an exterior light fixture, light output emitted into the lower rear quarter sphere behind the fixture and opposite the intended aiming direction of the fixture. For a light fixture with a symmetric light output pattern, the backlight is the same as the forward light. (see Figure 1)



*Figure 1 (provided by International Dark Sky Association & Illuminating Engineering Society)*

Lumen - The unit of measure used to quantify the amount of light produced by a lamp or emitted from a luminaire (as distinct from “watt,” a measure of power consumption).

Footcandle (FC) - A unit of measure of the intensity of light falling on a surface, equal to one lumen per square foot

Correlated Color Temperature (CCT) - A description of the color appearance of a light source in terms of warmth (lower temperatures) or coolness (higher temperatures), as measured on the Kelvin (K) scale (i.e. High Pressure Sodium 2200K, Metal Halide 3000-4200K, moonlight 4100K)

Color Rendering Index (CRI) - A method to describe the effect a light source (from 0 poor to 100 best) has on the observer's ability to differentiate the true color of objects being illuminated (High Pressure Sodium 27, Metal Halide 65-80, LED 70-90, sunlight 100)

## CODE OF ORDINANCES AMENDMENT – STREET LIGHT STANDARDS

### **Chapter 46 – Streets, Sidewalks, and Other Public Places**

#### **Article VI – Street Lights**

##### **Sec. 46-184. – Definitions**

Whenever and wherever used in this article the following words and names shall have the following meanings:

Roadway or Highway Lighting shall mean lighting provided for freeways, expressways, limited access roadways, and roads on which pedestrians, cyclists, and parked vehicles are generally not present. The primary purpose of roadway or highway lighting is to help the motorist remain on the roadway and help with the detection of obstacles within and beyond the range of the vehicle's headlights.

Street Lighting shall mean lighting provided for boulevards, major & minor thoroughfares, and local roads where pedestrians and cyclists are generally present. The primary purpose of street lighting is to help the motorist identify obstacles, provide adequate visibility of pedestrians and cyclists, and assist in visual search tasks, both on and adjacent to the roadway.

Ornamental Street Lighting shall mean a luminaire intended for illuminating streets that serves a decorative function in addition to providing optics that effectively deliver street lighting. It has a historical period appearance or decorative appearance, and has the following design characteristics:

- Designed to mount on a pole using an arm, pendant, or vertical tenon;
- Opaque or translucent top and/or sides;
- An optical aperture that is either open or enclosed with a flat, sag or drop lens;
- Mounted in a fixed position.

##### **Sec. 46-185. – Applicability**

All street lighting not governed by regulations of federal, state or other superseding jurisdiction.

##### **Sec. 46-186. - Light Shielding and Distribution**

All street lighting shall have no light emitted above 90 degrees with the following exception:

- a) Ornamental street lighting for specific districts or projects shall be permitted.



Legislative Committee of the Planning Board – October 18, 2022

The Legislative Committee reviews all text amendments prior to consideration by the Planning Board. Given the number of iterations and the level of review this topic has received over a two-year period, members of this committee were fairly familiar with the proposed standards as well as the modifications that occurred between the initial MLO-based draft and the current draft. Members of the committee preferred this simplified version and express support for its straightforward applicability for both developers and staff.

Business Advisory Committee – December 5, 2022

The Business Advisory Committee convenes quarterly to review policy decisions and to provide perspective on potential impacts on the business community. The initial MLO-based draft of the Lighting Ord was presented to the BAC in 2021 on multiple occasions. The Business Advisory Committee employed assistance from Partnership for Economic Prosperity (PEP) to advocate for many of the changes that are part of the current draft. Based on their feedback, the Ordinance was significantly simplified.

At their special-called meeting on December 5<sup>th</sup>, The BAC reviewed the current draft of the lightning ordinance and provided further criticism and reservations about the policies therein. There was a general sense that there was no need for the Lightning Ordinance, that this would create an undue burden, specifically, on the business community, that the measures would limit lighting for businesses and create safety issues. More specifically, their concerns centered on a few primary considerations, with some secondary concerns as well. Primary concerns/recommendations included:

**1) Expand the Footcandle restriction at property lines where commercial uses transition to residential uses from .5 Footcandles to 1 Footcandle.**

BAC Rationale: Original proposal by PEP was for 1 FC and it was reduced to .5 FC based on recommendation from Duke Energy.

**2) Eliminate the Amortization date or, at a minimum, expand it to 15 years.**

BAC Rationale: The use of amortization is rarely used, why use it in this case? The enforcement after the 10-year period will be very costly for the City and for taxpayers. The enforcement of footcandles at property lines is difficult to measure. And natural attrition of outdated lights will be sufficient.

**3) Clarify the implications of the word “altering” under 6-2-5.1 b) - nonconformity triggers.**

BAC Rationale: Altering could mean different things to different administrators. Does it include resurfacing an existing asphalt parking lot? Does it include paving a gravel parking lot? Etc.

Other secondary concerns included, the impact the measures would have on 24 hours businesses, concerns with the limitations in the stream buffer, and general concerns with the city’s ability to enforce footcandles.



COMPREHENSIVE PLAN CONSISTENCY	
Land Use & Development	<i>Strategy LU-3.5 Minimize negative impacts from growth and land use changes on existing land uses...</i>
	<p><i>Strategy LU-3.6. - Update the Zoning Code to ensure conformance with the Comprehensive Plan. The Zoning Code is the City’s primary regulatory tool in implementing the Comprehensive Plan. Amendments to the Zoning Code and Map will be necessary to reflect Comprehensive Plan recommendations and ensure orderly growth and development. [CONSISTENT]</i></p> <p><i>Action LU-3.6.1 Conduct a comprehensive review of the Zoning Code and Map to identify and prioritize necessary changes, including but not limited to:</i></p> <ul style="list-style-type: none"> <li>- <i>Landscaping and urban design guidelines and standards</i></li> </ul>
	<i>Section 8.2 Issues and Opportunities, Urban Design - There is strong support among Hendersonville citizens for green building and site development practices that maximize energy and water efficiency and respect the natural features on a site.</i>
Population & Housing	<b>There are no Goals, Strategies, or Actions that are directly applicable to this petition.</b>
Natural & Environmental Resources	<p><i>Chapter 3 Natural Resources provides specific support for “additional guidelines and provisions for low-impact building and site design.”</i></p> <p><i>Strategy NR-1.2: Protect land adjacent to streams in order to protect water quality, reduce erosion, and protect wildlife habitat.</i></p> <p><i>Action NR-1.2.2 Continue to enforce and improve upon the City Stream Buffer Protection Standards...additional guidelines and provisions for low-impact building and site design.</i></p> <p><i>Action NR-1.2.1 Encourage protection of streams and wetlands and land adjacent to them.</i></p>
Cultural & Historic Resources	<b>There are no Goals, Strategies, or Actions that are directly applicable to this petition.</b>
Community Facilities	<b>There are no Goals, Strategies, or Actions that are directly applicable to this petition.</b>
Water Resources	<b>There are no Goals, Strategies, or Actions that are directly applicable to this petition.</b>
Transportation & Circulation	<b>There are no Goals, Strategies, or Actions that are directly applicable to this petition.</b>

## GENERAL REZONING STANDARDS

Compatibility	<b>Whether and the extent to which the proposed amendment is compatible with existing and proposed uses surrounding the subject property –</b>
	<i>The proposed text amendment allows for the sufficient and safe lighting of sites while reducing negative impacts.</i>
Changed Conditions	<b>Whether and the extent to which there are changed conditions, trends or facts that require an amendment -</b>
	<i>Increases in light pollution, a regional as well as international issue, has brought greater attention to site lighting. Advancements by lighting industry leaders and improvements in lighting technology have provided solutions to mitigate the impacts of site lighting. Many solutions to light pollution are being implemented by the lighting industry without regulatory requirements.</i>
Public Interest	<b>Whether and the extent to which the proposed amendment would result in a logical and orderly development pattern that benefits the surrounding neighborhood, is in the public interest and promotes public health, safety and general welfare -</b>
	<i>The proposed text amendment allows for the sufficient and safe lighting of sites while reducing negative impacts of light pollution, i.e. sky glow, glare, light trespass, etc. A notable negative impact of light pollution on humans is sleep deprivation while flora and fauna are also disrupted by artificial light during hours of natural darkness.</i>
Public Facilities	<b>Whether and the extent to which adequate public facilities and services such as water supply, wastewater treatment, fire and police protection and transportation are available to support the proposed amendment</b>
	<i>Lighting for city-owned public facilities as well as public streetlighting were evaluated as part of this process. It is estimated that approximately \$20K would be needed to bring the City's lights into conformance with the proposed amendment.</i>
Effect on Natural Environment	<b>Whether and the extent to which the proposed amendment would result in significantly adverse impacts on the natural environment including but not limited to water, air, noise, storm water management, streams, vegetation, wetlands and wildlife -</b>
	<i>Studies have indicated that a range of flora and fauna are disrupted by artificial light during normal / natural dark hours. The proposed text amendment aims to protect stream buffers. Riparian corridors are locations of high levels of species richness. Additionally, reduced light pollution reduces energy waste and allows for more sustainable site development.</i>

## DRAFT COMPREHENSIVE PLAN CONSISTENCY AND REZONING REASONABLENESS STATEMENT

The petition is found to be [consistent] with the City of Hendersonville 2030 Comprehensive Plan based on the information from the staff analysis and the public hearing, and because:

*The petition aligns with the Comprehensive Plan's goals to minimize the negative impacts of growth (Strategy LU-3.5) and to protect wildlife habitat (Strategy NR-1.2).*

We [find] this city-initiated petition to be reasonable and in the public interest based on the information from the staff analysis and the public hearing, and because:

### *DRAFT [Rationale for Approval]*

- The proposed text amendment establishes standards which allow for the sufficient and safe lighting of sites while reducing negative impacts on people, plants and animals.*
- The proposed text amendment establishes standards which address light pollution, an issue of growing international, national and regional concern.*
- The text amendment would ensure that both public lighting and private, nonresidential lighting would meet standards that minimize light pollution.*

### *DRAFT [Rational for Denial]*

- The text amendment would place an undue burden on new commercial and multi-family residential developments.*
- The text amendment would place an undue burden on existing commercial and multi-family residential uses at the end of the amortization period.*