

Article Six (6) Section 6.31 Outdoor Lighting :
Proposed new regulations becoming Section 50-115 of the UDO

<p>SECTION 50-115 (a)</p> <p><i>Formerly section(s) 6.31 and 6.31.1 of the current zoning ordinance.</i></p> <p><i>Staff has incorporated some of the comments made by the Planning Board at their October 7, 2009 regular meeting.</i></p>	<p>Outdoor Lighting Standards - Purpose and Intent:</p> <ol style="list-style-type: none"> 1. It is the intent of this ordinance to preserve, protect, and enhance the lawful nighttime use and enjoyment of any and all property through the use of appropriate lighting practices and systems. Such individual fixtures and lighting systems are designed, constructed, and installed to maintain safety, security and productivity, reduce glare, and curtail the degradation of the nighttime visual environment in addition to promoting conservation of energy. It is the intent of these regulations that lighting unnecessary for safety or security be discouraged. 2. The purpose of outdoor lighting standards is to balance the public safety need for outdoor lighting fixtures while at the same time promote nighttime vision, community values, and aesthetics by establishing standards for the designing, application, and use of outdoor lighting resources and fixtures. 3. Accordingly, specific regulatory objectives of the standards contained herein are as follows: <ol style="list-style-type: none"> a. Promote nighttime visibility by directing appropriate levels of illumination upon the intended areas of a parcel of property, b. Limit light trespass and its effects upon nearby property and roadways, c. Limit light pollution in an effort to restore the natural cycles of light of light and dark to the indigenous natural environment and darken the night sky by reducing unnecessary transmission of upward light both directly from an unshielded source and indirectly from ground-level reflections caused by excessive downward light.
<p><i>The definitions section will be moved to Article Five (5) of the proposed UDO. We will no longer have definitions scattered throughout the</i></p>	<p>Definitions:</p> <p>AASHTO: American Association of State Highway and Transportation Officials</p> <p>Cutoff Fixture: An outdoor lighting fixture shielded or constructed in such a manner that no more than two and one half (2 ½) percent of the total light emitted by the fixture is projected above the</p>

<p><i>various land use regulatory documents like we have now.</i></p> <p><i>Staff is keeping the definitions here at this time for reference purposes.</i></p> <p><i>Staff has added the following definitions:</i></p> <p><i>Light Trespass</i></p> <p><i>Fully shielded fixture</i></p> <p><i>Light source</i></p>	<p>emitted by the fixture is projected above the horizontal plane of the fixture.</p> <p>Direct Light:: Light emitted directly from the lamp, off of the reflector diffuser, or through the refractor or diffuser lens, of a luminaire.</p> <p>Fixture: The assembly that houses the lamp or lamps and can include all or some of the following parts: a housing, a mounting bracket or pole socket, a lamp holder, a ballast, a reflector or mirror, and/or a refractor or lens.</p> <p>Flood Lamp: A form of lighting designed to direct its output in a specific direction with a reflector formed from the glass envelope of the lamp itself. Such lamps are so designated by the manufacturers and are typically used in residential outdoor area lighting.</p> <p>Floodlight: A form of lighting designated to direct its output in a diffuse, more or less specific direction, with reflecting or refracting elements located external to the lamp.</p> <p>Footcandle (fc): The amount of light falling onto a surface.</p> <p>Full Cutoff Fixture: An outdoor lighting fixture shielded or constructed in such a manner that it emits no light above the horizontal plane of the fixture.</p> <p>Fully-shielded fixture:</p> <p>Glare: Light emitting from a luminaire with an intensity great enough to reduce a viewer's ability to see or to cause annoyance, and, in extreme cases, causing momentary blindness.</p> <p>Holiday Decoration: Holiday displays, decorations and greetings, which relate to any federally designated holiday, legal holiday or religious holiday.</p>
--	---

	<p>Lamp: The source of electric light: the bulb. To be distinguished from fixture and luminaire.</p> <p>Light Trespass The intrusion of direct light projected from one property or roadway onto another property or roadway</p> <p>Lumen: A unit of luminous flux. One foot-candle is one lumen per square foot. For the purposes of this ordinance, the lumen-output values shall be the INITIAL lumen output ratings of a lamp.</p> <p>Luminaire: A complete lighting system that includes a lamp or lamps and a fixture.</p> <p>Semi-Cutoff Fixture: An outdoor fixture shielded or constructed in such a manner that it emits no more than five (5) percent of its light above the horizontal plane of the fixture, and no more than twenty (20) percent of its light ten (10) degrees below the horizontal plane of the fixture.</p> <p>Upward: Projection of light above the horizontal plane.</p>
<p>SECTION 50-115 (b) <i>Formerly Section 6.31.3 of the Ordinance.</i></p>	<p>Applicability:</p> <p>A. All outdoor lighting installed on public or private property shall comply with the outdoor lighting standards as contained in Section 6.31, unless exempted in Section 6.31.4.</p> <p>B. In the event of a conflict between the outdoor lighting standards as contained in Section 6.31 and any other section of this ordinance, the more stringent requirement shall apply.</p>
<p>SECTION 50-115 (c) <i>Formerly Section 6.31.4 of the Ordinance</i></p>	<p>Exemptions:</p> <p>The following are exempt from the provisions of the outdoor lighting standards as contained in Section 6.31:</p>

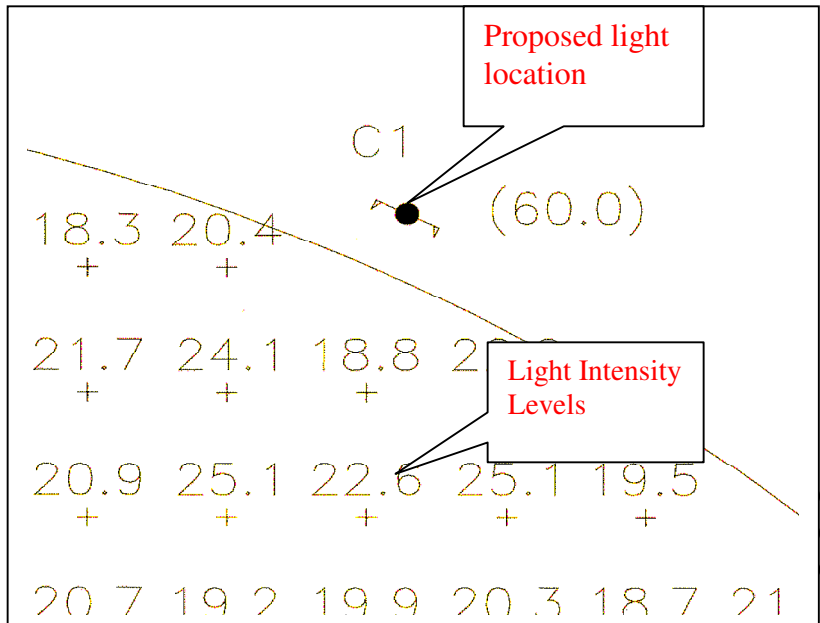
	<p>A. All outdoor lighting lawfully installed prior to the effective date of the outdoor lighting standards contained in Section 6.31, except the replacement of mercury vapor luminaires. Mercury vapor luminaires, except for single-family residences, must be replaced in conformity with the Outdoor Lighting Standards upon the earlier occurrence of the replacement of the fixture or the lamp.</p> <p>B. Any outdoor lighting, including mercury vapor, used for an individual single-family residence, where the residence is constructed as of the effective date of the outdoor lighting standards contained in Section 6.31.</p> <p>C. Bona fide agricultural uses.</p> <p>D. Traffic control signals and devices.</p> <p>E. Temporary emergency lighting (i.e. fire, police, repair workers, highway maintenance and construction, etc.).</p> <p>F. Moving vehicle lights.</p> <p>G. Navigation lights (i.e. airports, heliports, radio/television towers, communication towers, etc.).</p> <p>H. Holiday decorations using typical unshielded low-wattage incandescent lights, which are in place no longer than 60 days.</p> <p>I. Security lights of any wattage that are controlled by a motion-sensor switch, which do not remain on longer than 15 minutes after activation, and do not exceed 2200 lumens per bulb.</p> <p>J. Roadway lighting, installed as of the effective date of the outdoor lighting standards, as contained in Section 6.31, within State maintained rights-of-way provided that the standards of Sections 6.31.5.E and Section 6.31.6.I are met, except for mercury vapor luminaires. Mercury vapor luminaires used for roadway lighting must be replaced in conformity with the outdoor lighting standards contained in Section 6.31 upon the earlier occurrence of the replacement of the fixture or the lamp.</p>
SECTION 50-115 (d)	Submittal Requirements:

*Formerly Section
6.31.5 of the
Ordinance*

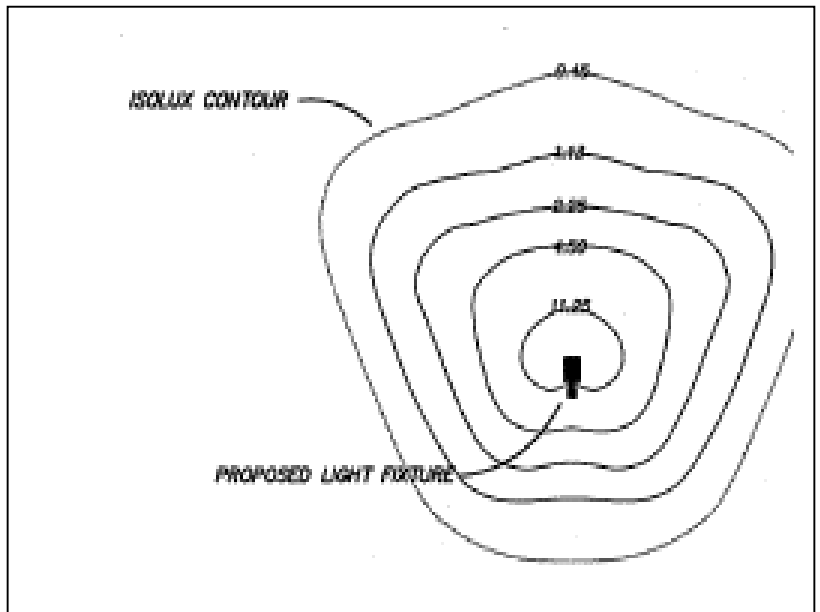
With the exception of single-family and duplex residential site plan submittals, a lighting plan shall be submitted with site plan or preliminary plan approval documents when outdoor lighting fixtures are proposed.

The overall scope and purpose of the lighting plan is to allow staff to work with the property owner to prevent excessive and unnecessary lighting on the property prior to installation of the proposed fixtures and to avoid costly compliance remedies later upon completion of the project. The plan shall contain the following information:

- A. Lighting plans shall be completed and sealed by a professional engineer and shall contain all required information as detailed herein as well as outlined within Article Fourteen (14) of this Ordinance,
- B. Plans, drawn to scale at a maximum of one (1) inch equaling forty (40) feet, showing the exact proposed location, type, and height of outdoor luminaires including both building, pole and ground fixtures;
- C. A description of the luminaires, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations and product specifications from the manufacturer. As part of this requirement, all lighting plans shall contain inset drawings of all proposed lighting fixtures including any and all directional controls (i.e. shields, reflectors, refractors, etc.) that will aim and limit the angle of illumination. The lighting detail shall also show the vertical angle of illumination for all proposed fixtures that will be used to determine the required shielding angle,
- D. A lighting plan shall delineate the horizontal position of all lighting fixtures proposed for a parcel of property,
- E. Photometric data, such as that furnished by the manufacturer, showing the angle of light emission and lumen output. An example of a photometric plan is as follows:



F. Foot-candle data shall also be required for all proposed lights. An example of the data necessary to comply with this requirement is as follows:



In this example, the proposed light pole generates the specific foot-candle limits on the property. Staff will be responsible for utilizing this data to verify the compliance of the fixture within the provisions of the Ordinance.

	<p>G. Additional information as may be required by the Planning Department in order to determine compliance with Section 6.31.</p> <p>H. Roadway lighting installed on state maintained roads must meet ASSHTO requirements for light levels and uniformity. Roadway lighting submittal requirements can be obtained in the NCDOT publication titled “Policies and Procedures for Accommodating Utilities on Highway Rights-of-Way”.¹</p>
<p>SECTION 50-115 (e) <i>Formerly Section 6.31.6 of the Ordinance</i></p>	<p>General Standards For All Areas:</p> <p>A. Within areas of the County designated as ‘urbanizing’, as delineated on the Growth Management Systems Map, or within Rural Community Activity Nodes, as delineated on the Orange County Land Use Element Map, the following lighting standards shall be observed:</p> <ol style="list-style-type: none"> 1. The maximum light level permitted along common property lines shall be 0.5 foot-candles at any adjoining residential property line and/or 1.0 foot-candle at any adjoining non-residential property line. <p>B. Within areas of the County designated as ‘rural’, as delineated on the Growth Management Systems Map, or within Rural Neighborhood or Rural Industrial Nodes, as delineated on the Orange County Land Use Element Map, the following lighting standards shall be observed:</p> <ol style="list-style-type: none"> 1. The maximum light level permitted along common property lines shall be 0.25 foot-candles at any adjoining residentially zoned property line and/or 0.5 foot-candle at any adjoining property line with a non-residential land use. <p>C. All floodlights shall be installed such that the fixture shall be aimed down at least forty-five (45) degrees from vertical, or the front of the fixture is shielded such that no portion of</p>

¹ The NCDOT’s standard 2’-6” curb and gutter, defined as a 6” vertical face curb on page 47.2 of the “Policies and Procedures for Accommodating Utilities on Highway Rights of Way” does not act as a barrier curb at speeds greater than 25 mph. It is considered a mountable curb as defined in AASHTO “A Policy on Geometric Design on Highways and Streets, 2001”. Therefore, the mountable curb and gutter section of the “Policies and Procedures for Accommodating Utilities on Highway Rights of Way” shall apply.

	<p>the light bulb extends below the bottom edge of an external shield.</p> <p>D. Any facilities that require floodlighting may not arrange the light in such a way that it will shine towards roadways, onto adjacent residential property or into the night sky.</p> <p>E. All flood lamps emitting 1,000 or more lumens shall be aimed at least sixty (60) degrees down from the horizontal, or shielded such that the main beam from the light source is not visible from adjacent properties or the public street right-of-way.</p> <p>F. All wall pack fixtures shall be full cutoff fixtures.</p> <p>G. All lights shall be shielded in such a way as to direct light towards the Earth's surface and away from reflective surfaces, except as expressly exempted from the provisions of these regulations.</p> <p>H. Any temporary outdoor lighting that conforms to the requirements of this Section shall be allowed. Nonconforming temporary outdoor lighting may be permitted by the Planning Director after considering: 1) the public and/or private benefits that will result from the temporary lighting, 2) any annoyance or safety problems that may result from the use of the temporary lighting, and 3) the duration of the temporary nonconforming lighting.</p> <p>I. If any subdivision proposes to have installed street or other common or public area outdoor lighting, the final plat shall contain a statement certifying that the applicable provisions of the outdoor lighting standards as contained in Section 6.31 will be adhered to. The required Lighting Plan and associated documents shall be submitted and approved by the Planning Department prior to installation of any regulated lighting.</p> <p>J. If any street will be taken over by NCDOT for maintenance, roadway lighting must meet AASHTO requirements, and must be installed and maintained according to the NCDOT publication titled "Policies and Procedures for</p>
--	--

² The NCDOT's standard 2'-6" curb and gutter, defined as a 6" vertical face curb on page 47.2 of the "Policies and Procedures for Accommodating Utilities on Highway Rights of Way" does not act as a barrier curb at speeds greater than 25 mph. It is considered a mountable curb as defined in AASHTO "A Policy on Geometric Design on Highways and Streets, 2001". Therefore, the mountable curb and gutter section of the "Policies and Procedures for Accommodating Utilities on Highway Rights of Way" shall apply.

	<p>Accommodating Utilities on Highway Rights-of-way”.²</p> <p>K. Upward flagpole lighting is permitted for national and state flags provided that the maximum lumen output is 1300 lumens per flagpole.</p> <p>L. Any interior-lighted signs may not be lit at night when the face of the sign is removed or damaged in such a way that the light may distract drivers or adjacent property owners.</p> <p>M. All outdoor lighting, with the exception of wall mounted security lighting, shall be extinguished within thirty (30) minutes from the close of business, as determined by the posted hours of operation, for non-residential land uses unless otherwise detailed herein.</p> <p>This shall not include security/motion sensor lighting designed to turn on when sensors detect movement and automatically turn off after fifteen (15) minutes.</p>
<p>SECTION 50-115 (f) <i>Formerly Section 6.31.7 of the Ordinance</i></p>	<p>Lighting in Parking Lots and Outdoor Areas:</p> <p>A. Other than floodlights and flood lamps, all outdoor area and parking lot lighting fixtures shall be full cutoff fixtures.</p> <p>B. The mounting height of all outdoor lighting, except outdoor sports field lighting and outdoor performance area lighting, shall not exceed thirty-six (36) feet above finished grade.</p> <p>C. Any light fixture must be placed in such a manner that no lamp surface is visible from any residential area or public/private roadway.</p>
<p>SECTION 50-115 (g) <i>Formerly Section 6.31.8 of the Ordinance</i></p>	<p>Lighting for Vehicular Canopies</p> <p>Areas under a vehicular canopy shall have a maximum point of horizontal illuminance of twenty-four (24) maintained foot-candles (fc). Areas outside the vehicular canopy shall be regulated by Section 6.31.6. Acceptable methods include one or more of the following:</p> <p>A. Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the vehicular canopy.</p>

	<ul style="list-style-type: none"> B. Light fixture incorporating shields, or shielded by the edge of the vehicular canopy itself so that light is restrained to five degrees or more below the horizontal plane. C. Surface mounted fixture incorporating a flat glass that provides a semi-cutoff fixture or shielded light distribution. D. Indirect lighting where light is beamed upward and then reflected down from the underside of the vehicular canopy. Such fixtures shall be shielded such that direct illumination is focused exclusively on the underside of the vehicular canopy.
<p>SECTION 50-115 (h) <i>Formerly Section 6.31.9 of the Ordinance</i></p>	<p>Outdoor Sports Field/Outdoor Performance Area:</p> <p>Outdoor sports field/performance area lighting serves a unique and specific purpose. The goal of such lighting is to provide performers adequate light to engage in approved activities at night and provide sufficient light levels allowing spectators to witness the activity.</p> <p>The goal of these regulations is to allow for reasonable development and use of such lighting fixtures while attempting to mitigate potential ancillary impacts on adjacent property owners.</p> <ul style="list-style-type: none"> A. Outdoor Sports Field/Outdoor Performance Area lighting shall only be allowed for those principal and accessory uses needing such fixtures to properly function as intended during evening hours. B. Within the urbanizing areas of the County, as defined herein, there shall be a limit on the allowable height of such fixtures to eighty (80) feet. In rural areas of the County, there shall be a limit on the allowable height of such fixtures to sixty (60) feet. C. All outdoor sports field and outdoor performance area lighting fixtures shall be full cutoff fixtures and shall be equipped with a glare control package (louvers, shields, or similar devices). If the manufacturer does not have a glare control package, the fixture specification must be changed to a manufacturer that offers one. D. All fixtures must be aimed so that their beams are directed and fall within the primary playing or performance area.

	<p>E. Within urbanizing areas of the County, the hours of operation for the lighting system for any game or event shall be no later than 11:00 p.m., except to conclude a scheduled event that was in progress before 11:00 p.m. and circumstances prevented concluding before 11:00 p.m.</p> <p>The maximum light level permitted along common property lines shall be consistent with the standard(s) contained within Section 6.31.6 (a) (2) of this Ordinance</p> <p>F. Within rural areas of the County, all outdoor sports field/outdoor performance area lighting shall be extinguished by 10:00 p.m. except to conclude a scheduled event that was in progress before 10:00 p.m. and circumstances prevented concluding before 10:00 p.m.</p> <p>Under no circumstances may lighting for an event extend beyond 11:00 p.m. within the rural areas of the County.</p> <p>The maximum light level permitted along common property lines shall be consistent with the standard(s) contained within Section 6.31.6 (b) (2) of this Ordinance</p>
<p>SECTION 50-115 (i)</p> <p><i>Formerly Section 6.31.10 of the Ordinance</i></p>	<p>Lighting of Outdoor Display Areas:</p> <p>A. Top mounted fixtures are required for legally existing lighted signs. Lighting fixtures used to externally illuminate an outdoor advertising sign shall be mounted on the top of the sign structure. All such fixtures shall comply with the shielding requirements of this Section. Bottom mounted outdoor advertising shall not be used. Notwithstanding this provision, the lighting or re-lighting of a nonconforming advertising sign will not be permitted if the light results in the expansion of the nonconforming use, pursuant to Article 11.</p> <p>B. Outdoor advertising signs of the type constructed of translucent materials and wholly illuminated from within do not require shielding. Dark backgrounds with light lettering or symbols are preferred, to minimize detrimental effects. Unless conforming to the above dark background preference, total lamp wattage per sign shall not exceed 41 watts.</p>

<p>SECTION 50-115 (j)</p> <p><i>Formerly Section 6.31.11 of the Ordinance</i></p>	<p>Lighting of Buildings and Landscaping</p> <p>Lighting fixtures shall be selected, located, aimed, and shielded so that direct illumination is focused exclusively on the building façade, plantings, and away from adjoining properties, public or private rights-of-way, and the night sky.</p>
<p>SECTION 50-115 (k)</p> <p><i>Formerly Section 6.31.12 of the Ordinance</i></p>	<p>Prohibitions</p> <ul style="list-style-type: none"> A. The use of laser source light or any similar high intensity light for outdoor advertising or entertainment, when projected above the horizon, is prohibited. B. The operation of searchlights for advertising purposes is prohibited. C. Electrical illumination of outdoor advertising off-site signs is prohibited. D. Use of mercury vapor luminaries is prohibited.