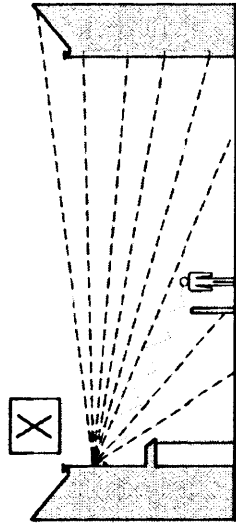
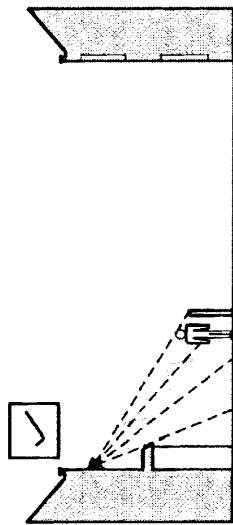


When aiming floodlights make sure you only light the area that needs lighting. The aim of the floodlight can easily be checked at night when you can see the actual area being lit.

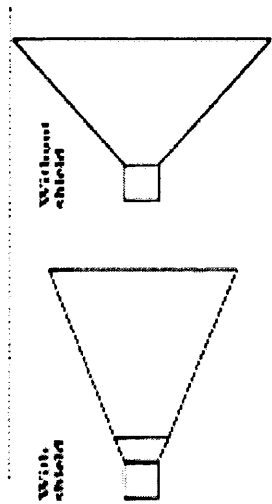


Be careful not to put light onto other peoples properties or into windows as this can be very upsetting and a constant source of complaint.



If a neighbour does approach you about your security lamp listen carefully and try to understand their complaint. If you can adjust the light to shine in a different direction or angle it down to reduce the light onto or into their property tell them that is what you will do and when you will do the work.

If after adjusting the angle and aim of the floodlight it is still causing annoyance and upset then consider fitting a hood or shield to control and restrict the light to the area to be lit.



Through this leaflet, we hope to help you overcome some of the problems and difficulties found when installing domestic security lights.

The Institution of Lighting Engineers

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United Kingdom

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www.ile.org.uk

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Institution of Lighting Engineers

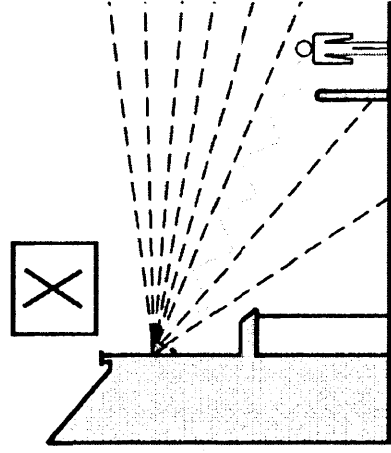
Domestic Security Lighting, Friend or Foe

Since the first cave dweller discovered fire, mankind has used light as a defence against animals and other predators. It is now simple and cheap to provide and operate outdoor lighting, which would have amazed our ancestors by the amount of light produced.

Well designed, installed and maintained security lights bring comfort and well being to our lives providing us with a sense of security in our homes. However, much security lighting is installed without due consideration of its suitability for the task and its effect on neighbours and the environment. Domestic security lights should provide the minimum level of illumination necessary to light a property. Whilst you may be happy with a light that illuminates half the street your neighbours may not.

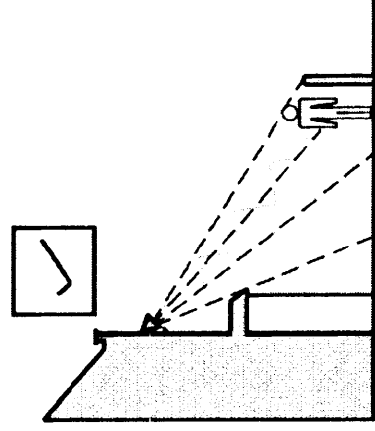
Because of price and ease of installation, many people install tungsten halogen floodlights. These units can provide satisfactory security lighting if correctly installed and aimed, however, it is rarely necessary to use a lamp of greater than 2000 lumens (150W) in such fittings. The use of a higher power only causes more glare and darker shadows. Glare affects our ability to see and dark shadows offer a convenient hiding place for criminals.

Many of these floodlights are fitted with detectors to sense the movement of intruders. Unfortunately if badly installed they also detect small animals roaming around the garden causing the light to switch on and off throughout the night. This can be a nuisance to neighbours



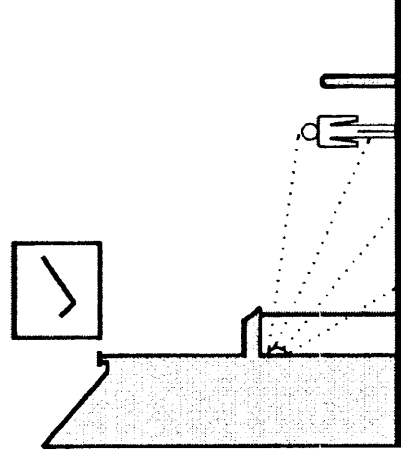
Movement detectors can be useful if they are correctly installed and aimed. Unfortunately, many systems do not allow the detector to be separately aimed from the floodlight.

Remember when buying such equipment check to see if the detector can be separately aimed or better still purchase a separate detector, which can be installed in the best position and correctly aimed to minimise unnecessary switching.



Floodlights and detectors should be aimed to only detect and light people on your property. They should not detect a person or animals walking down the street. If the floodlight is fitted with a timer, this should be adjusted to the minimum to reduce the operation of the light.

For many properties, a better solution for security lighting is to use a bulkhead or porch lights fitted with a low power 600-900 lumens (9/11w) compact fluorescent lamp. These units can be left lit all night, providing all night security, for only a few pounds of electricity per year.



Besides being cheap to run, this type of light is kinder to the environment providing a gentle wash of light with reduced glare. Bulkhead and porch lights cast fewer shadows reducing the hiding places for criminals. These units can be fitted with a movement detector if required. These units are generally mounted lower and are therefore less susceptible to nuisance switching and complaints from neighbours.

Art. XV Utilities (con't)

IF	THEN
	distribution lines for possible future addition to the OWASA system.
d. Lots within the subdivision are to be served by individual wells.	The OCHD must certify to the Town that each lot intended to be served by a well can be served in accordance with applicable health regulations.

(c) Any certification by OWASA pursuant to (b)2.a. or (b)4.b. of this section shall identify on appropriate project plans, the locations of all easements which OWASA will require from the developer. (AMENDED 5/3/88)

Section 15-242 Lighting Requirements.

(a) Subject to subsection (b), all streets, sidewalks, and other common areas or facilities in subdivisions created after the effective date of this chapter shall be sufficiently illuminated to ensure the security of property and the safety of persons using such streets, sidewalks, and other common areas or facilities.

(b) To comply with subsection (a), the developer shall coordinate with the electric utility company to see that all facilities necessary for eventual installation of street lights are put in place. However, the town shall be responsible for requesting the electric utility company actually to install such street lights at the time the town accepts the streets for maintenance. The developer shall be entirely responsible for the placement of necessary lighting in common areas not dedicated to public use.

(c) All roads, driveways, sidewalks, parking lots, and other common areas and facilities in unsubdivided developments shall be sufficiently illuminated to ensure the security of property and the safety of persons using such roads, driveways, sidewalks, parking lots, and other common areas and facilities.

(d) All entrances and exits in substantial buildings used for non-residential purposes and in multi-family residential dwellings containing more than four dwelling units shall be adequately lighted to ensure the safety of persons and the security of the building.

Section 15-243 Excessive Illumination (AMENDED 05/25/99)

(a) Outdoor lighting (not including sign lighting) shall be controlled in both height and intensity as provided in this section.

(b) No development shall be permitted to produce a strong light or reflection of that light beyond its lot lines onto neighboring properties, or onto any street so as to impair the vision of the driver of any vehicle upon such street.

Art. XV Utilities (con't)

(c) Light fixtures may not exceed fifteen (15) feet in height, and luminaries shall be shielded or configured to cast the light downward and to prevent light from shining beyond the lot lines into neighboring properties or public ways. The permit issuing authority may by condition impose additional requirements as necessary to prevent adverse impacts to adjoining properties and residents. Notwithstanding the foregoing, this section shall not apply to the lighting of recreational facilities provided that, to the maximum extent practicable, potential light pollution can be otherwise minimized through the use of shielding and limits on hours of use.

(d) Under no circumstances may the light level at the lot line exceed 0.2 foot-candles, measured at ground level.

Section 15-244 Electric Power.

Every principal use and every lot within a subdivision shall have available to it a source of electric power adequate to accommodate the reasonable needs of such use and every lot within such subdivision. Compliance with this requirement shall be determined as follows:

- (1) If the use is not a subdivision and is located on a lot that is served by an existing power line and the use can be served by a simple connection to such power line (as opposed to a more complex distribution system, such as would be required in an apartment complex or shopping center), then no further certification is needed.
- (2) If the use is a subdivision or is not located on a lot served by an existing power line, or a substantial internal distribution system will be necessary, then the electric utility company must review the proposed plans and certify to the town that it can provide service that is adequate to meet the needs of the proposed use and every lot within the proposed subdivision.

Section 15-245 Telephone Service.

Every principal use and every lot within a subdivision must have available to it a telephone service cable adequate to accommodate the reasonable needs of such use and every lot within such subdivision. Compliance with this requirement shall be determined as follows:

- (1) If the use is not a subdivision and is located on a lot that is served by an existing telephone line and the use can be served by a simple connection to such power line (as opposed to a more complex distribution system, such as would be required in an apartment complex or shopping center), then no further certification is necessary.
- (2) If the use is a subdivision or is not located on a lot served by an existing telephone line or a substantial internal distribution system will be necessary, then the electric utility company must review the proposed plans and certify to the town that it can provide service that is adequate to meet the needs of the proposed use and every lot within the proposed subdivision.

STREET LIGHTING POLICY

Approved July 6, 1993 by Carrboro B.O.A.
(Modified February 11, 2002 by Street Superintendent)

The Town of Carrboro is responsible for lighting all dedicated streets within its municipal limits. This policy was developed to address the concerns of uniformity, standardization, safety, and economizing of street lighting. The goals and objectives of this policy are: provide for safe use of Town streets by motorists, bicyclists, and pedestrians; discourage crime; assist individuals in locating destinations; and serve resident and business needs. Adequate, but not excessive, street lighting is necessary to ensure the safety of motorists, bicyclists, pedestrians, and businesses.

The Illumination Engineer Society (IES) sets street lighting standards for different roadway categories in order to give Departments of Transportation and municipalities guidelines. These standards, which vary according to street classification, provide foot-candle and uniformity ratios that municipalities should meet in order to maintain a fairly consistent level of illumination. Meeting these standards must be weighed against the feasibility and desirability of the suggested levels of illumination. In residential areas uniformity ratios are more difficult to meet because only intersections are usually lit.

RESIDENTIAL

In residential areas, the Town of Carrboro shall place lights every 400 to 500 feet and at every intersection and cul-de-sac. When a street exceeds 500 feet in length, the lights should be placed in the middle of the block, or so light is provided at least every 500 feet.

The Town shall use High Pressure Sodium (HPS) 9,500 lumen (100 watts), 16,000 lumen (150 watts), or 27,500 lumen (250 watts) luminaries, mounted on 25' - 30' salt-treated wood or fiberglass poles. The standard light fixture shall be the Nema design, although some Cobra-head fixtures may be used.

Trees, winding streets, high crime, traffic, school areas, and existing pole spacing influence the effectiveness and needs of street lighting. Lights shall be placed at shorter intervals and at higher lumen levels when traffic or pedestrian safety, or other extenuating circumstances, indicate a need for more dense lighting. The Director of Public Works shall be responsible for determining the necessary lighting spacing and luminaire requirements under any unusual conditions.

COMMERCIAL

In commercial areas and the central business district, the Town shall place lights at 150' intervals. The Town shall use HPS - 27,500 lumen luminaries on 25 - 30' wooden, fiberglass, aluminum, or metal poles with 6' arms. The standard light fixture shall be the Cobra-head design.

INTERSECTIONS

The Town shall light all intersections. The light should face the more heavily traveled street. When an unusual number of trees are present at an intersection, or when trees exceed 36 inches in width, two lights are to be used, placed diagonally on the corners.

ALTERNATIVE LIGHTING OPTIONS

Alternative lighting fixtures and poles are not acceptable. These lights do not meet the policy guidelines of producing uniform, standard and adequate light economically.

The only exception to this policy will be if a developer or a Homeowners' Association requests, in writing, to the Director of Public Works that an exception of alternative lighting for the entryway of a development be allowed. If the Director of Public Works grants the exception, then the developer or Homeowners' Association requesting the lighting must pay all monthly rental and installation costs for the alternative lights to the appropriate utility company.

ADDITIONS, DELETIONS, & RELOCATIONS

Request for lighting changes, including additions, deletions, relocations, spacing, type or size, shall be examined by and acted upon at the discretion of the Director of Public Works. The Town may request the appropriate utility company to erect additional lights or relocate existing lights when deemed necessary.

GENERAL

Street lighting loses effectiveness in the spring, summer, and fall because of the full growth on trees. An active tree maintenance policy must be followed in conjunction with this street lighting policy to ensure maximum lighting effectiveness. The Director of Public Works or his designee shall work closely with any tree trimming or removal necessary to improve the lighting efficiency for a particular light.

AMENDMENTS

This policy may be reviewed and amended at anytime, with the support of the Director of Public Works, Town Manager, and Board of Aldermen.

**An Ordinance Amending the Zoning Ordinance
Of Orange County**

Be it ordained by the Board of Commissioners of Orange County that the Orange County Zoning Ordinance is hereby amended as follows:

Section 1. ZONING ORDINANCE. Amend Table of Contents, Article VI to add new provisions entitled "Outdoor Lighting Standards" and to identify it as Section 6.31 with corresponding subheadings and nomenclature as specified in this Ordinance amending the Zoning Ordinance of Orange County.

Section 2. ZONING ORDINANCE. Amend Article 6 by adding a new requirement to read as follows:

6.31 Outdoor Lighting Standards

6.31.1 Purpose and Intent

A. Outdoor lighting is provided for a variety of purposes to the benefit of modern society. For work or recreation, it enables people to see essential detail in order that they may undertake their activities at night. It facilitates the safety or security of persons or property, for example through lighting on roads and pathways. It may be used to emphasize features of architectural or historical significance, and to light parks and gardens. It is used for advertising or display to promote products or services, or to call attention to commercial premises by means of area lighting or signs.

B. 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, and curtail the degradation of the nighttime visual environment.

6.31.2 Definitions

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 horizontal plane of the fixture.

Direct Light: Light emitted directly from the lamp, off of the reflector diffuser, or through the refractor or diffuser lens, of a luminaire.

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.

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.

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.

Footcandle: (fc) The illuminance measured one (1) foot from a one (1) candela source.

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.

Fully Shielded: Outdoor light fixtures shielded or constructed so that no light rays are emitted by the installed fixture at angles above the horizontal plane as certified by a photometric test report.

Glare: Light emitting from a luminaire with an intensity great enough to reduce a viewer's ability to see, and, in extreme cases, causing momentary blindness.

IESNA: The Illuminating Engineering Society of North America, a non-profit professional organization of lighting specialists that has established recommended design standards for various lighting applications.

Light Trespass: The shining of light produced by a luminaire beyond the boundaries of the property on which it is located.

Lumen: A unit of luminous flux. One footcandle 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.

Luminaire: A complete lighting system that includes a lamp or lamps and a fixture.

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.

6.31.3 Applicability

- A. All nonresidential outdoor lighting fixtures installed on private or public property shall apply except as stated in Section 6.31.4.**
- B. All outdoor lighting fixtures existing and legally installed and operative before the effective date of this ordinance are exempt from these requirements. When existing lighting fixtures become inoperable, their replacements are subject to all the provisions of the Outdoor Lighting Standards.**
- C. Compliance with this Section shall be administered by the Orange County Planning Department.**
- D. In the event of a conflict with any other section of this article, the more stringent requirement shall apply.**

6.31.4 Exemptions

The following are exempt from the provisions of the Outdoor Lighting Standards:

- A. Any lighting used for single family residential or bona fide agricultural purposes.**
- B. Traffic control signals and devices.**
- C. Streetlights installed prior to the effective date of the adoption of this provision.**
- D. Temporary emergency lighting (i.e. fire, police, repair workers, etc.).**
- E. Moving vehicle lights.**

- F. Navigation lights (i.e. airports, heliports, radio/television towers, etc.).**
- G. Seasonal decorations with individual lights in place no longer than 60 days.**
- H. Security lights of any wattage that are controlled by a motion-sensor switch, do not remain on longer than 12 minutes after activation, and do not exceed 150 watts (2200 lumens).**

6.31.5 Submittal Requirements

A lighting plan shall be submitted with site plan or preliminary plan approval documents. The plan shall contain the following information:

- A. Plans showing the location, type, and height of luminaries including both building and ground fixtures;**
- B. A description of the luminaries, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations and product specifications from the manufacturer;**
- C. Photometric data, such as that furnished by the manufacturer, showing the angle of light emission; and**
- D. Additional information as may be required by the Planning Department in order to determine compliance with this Section.**

6.31.6 General Standards For All Areas:

- A. Unless otherwise specified, the maximum light level shall be 0.5 footcandle at any residential property line and 1.0 footcandle at any non-residential property line.**
- B. All flood lights 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 the light bulb extends below the bottom edge of an external shield.**
- C. 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.

- D. 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.
- E. All wall pack fixtures shall be cutoff fixtures.
- F. 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.
- G. Any luminaire with a lamp or lamps rated at a total of more than 1,800 lumens, and all flood or spot luminaires with a lamp or lamps rated at a total of more than 900 lumens, shall not emit any direct light above the horizontal plane through the lowest direct-light-emitting part of the luminaire.
- 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.
- 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 Orange County Outdoor Lighting Standards 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.
- J. Upward flagpole lighting is permitted for governmental flags only, and provided that the maximum lumen output is 1300 lumens. Flags are encouraged to be taken down at sunset to avoid the need for lighting.

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- K. 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.
- L. Any light fixture must be placed in such a manner that no light emitting surface is visible from any residential area or public/private roadway, walkway, trail or other public way when viewed at ground level.

6.31.7 Lighting in Parking Lots and Outdoor Areas

- A. Other than flood lights and flood lamps, all outdoor area and parking lot lighting fixtures shall be cutoff fixtures.
- 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.
- C. Any light fixture must be placed in such a manner that no light emitting source surface is visible from any residential area or public/private roadway.

6.31.8 Lighting for Vehicular Canopies

Areas under a vehicular canopy shall have a maximum point of horizontal illuminance of twenty-four (24) maintained footcandles (fc). Areas outside the vehicular canopy shall be regulated by Section 6.31.5. acceptable methods include one or more of the following:

- A. Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the vehicular canopy.
- 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 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.

E. Other method approved by the Planning Director.

6.31.9 Outdoor Sports Field/ Outdoor Performance Area

- A. The mounting height of outdoor sports field and outdoor performance area lighting fixtures shall not exceed sixty (60) feet from finished grade unless approved by the Planning Director after receipt of sufficient evidence indicating the need for additional height.**
- B. All outdoor sports field and outdoor performance area lighting fixtures shall be equipped with a glare control package (louvers, shields, or similar devices). The fixtures must be aimed so that their beams are directed and fall within the primary playing or performance area.**
- C. The hours of operation for the lighting system for any game or event shall not exceed one hour after the end of the event.**

6.31.10 Lighting of Outdoor Display Areas

- A. Top mounted fixtures 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.**
- 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 property shall be less than 41 watts.**
- C. Compliance Limit. Existing outdoor advertising structures shall be brought into compliance within three (3) years from the date of adoption of this provision.**

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D. Prohibitions. Electrical illumination of outdoor advertising off-site signs between the hours of 11:00 p.m. and sunrise is prohibited.

6.31.11 Lighting of Buildings and Landscaping.

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.

6.31.12 Prohibitions

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 luminaires is prohibited.

6.31.13 Severability

Should any section, clause or paragraph of this Section be declared by court of competent jurisdiction to be invalid, the same will not affect the validity of the Ordinance as a whole or part hereof other than the part declared to be invalid.

Proposal for an Ordinance Amending the Zoning Ordinance of The Town of Carrboro

Be it ordained by the Carrboro Board of Aldermen that the Carrboro Land Use Ordinance is hereby amended as follows:

Section 1. LAND USE ORDINANCE. Amend Summary of Table of Contents, to add new provisions entitled "**Outdoor Lighting Standards**" and to identify it as **Article XXII** with corresponding subheadings and nomenclature as specified in this Ordinance amending the Land Use Ordinance of the Town of Carrboro.

Section 2. LAND USE. Amend by adding a new Article XXII to read as follows:

15-341 Lighting Standards

15-342 Purpose and Intent

- A. Outdoor lighting is provided for a variety of purposes to the benefit of modern society. For work or recreation, it enables people to see essential detail in order that they may undertake their activities at night. It facilitates the safety or security of persons or property, for example through lighting on roads and pathways. It may be used to emphasize features of architectural or historical significance, and to light parks and gardens. It is used for advertising or display to promote products or services, or to call attention to commercial premises by means of area lighting or signs.
- B. 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, and curtail the degradation of the nighttime visual environment.

15-343 Definitions

Cutoff Fixture: An outdoor lighting fixture shielded or constructed in such a manner that no more than two and one half (2.5) percent of the total light emitted by the fixture is projected above the horizontal plane of the fixture.

Direct Light: Light emitted directly from the lamp, off of the reflector diffuser, or through the refractor or diffuser lens, of a luminaire.

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.

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.

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.

Footcandle: (fc) The illuminance measured one (1) foot from a one (1)-candela source.

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.

Fully Shielded: Outdoor light fixtures shielded or constructed so that no light rays are emitted by the installed fixture at angles above the horizontal plane as certified by a photometric test report.

Glare: Light emitting from a luminaire with an intensity great enough to reduce a viewer's ability to see, or cause annoyance and discomfort, and, in extreme cases, causing momentary blindness.

IESNA: The Illuminating Engineering Society of North America, a non-profit professional organization of lighting specialists that has established recommended design standards for various lighting applications.

Internal Refractive Lens: A glass or plastic lens installed between the lamp and the sections of the outer fixture globe or enclosure. Refractive refers to the redirection (bending) of the light as it goes through the lens, softening and spreading the light being distributed from the light source thereby reducing direct glare.

Light Source: The element of a lighting fixture that is the point of origin of the lumens emitted by the fixture.

Light Trespass: The shining of light produced by a luminaire beyond the boundaries of the property on which it is located.

Lumen: A quantitative unit measuring the amount of light emitted by a light source. One footcandle 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.

Luminaire: A complete lighting system that includes a lamp or lamps and a fixture.

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.

Wall Pack: A type of light fixture typically flush-mounted on a vertical wall surface.

15-344: Applicability

- A. All nonresidential outdoor lighting fixtures installed on private or public property shall comply with these standards, except as stated in Section 15-35.
- B. Compliance with this Section shall be administered by the Carrboro Planning Department and the Carrboro Board of Aldermen.
- C. In the event of a conflict with any other section of this article, the more stringent requirement shall apply.

15-35: Exemptions

The following are exempt from the provisions of the Outdoor Lighting Standards:

- A. Bona fide agricultural uses.
- B. Traffic control signals and devices.
- C. Streetlights installed prior to the effective date of the adoption of this provision.
- D. Temporary emergency lighting (i.e. fire, police, repair workers, etc.).
- E. Moving vehicle lights.
- F. Navigation lights (i.e. airports, heliports, radio/television towers, etc.).
- G. Seasonal decorations with individual lights in place no longer than 60 days.

- H. Security lights of any wattage that are controlled by a motion-sensor switch, which do not remain on longer than 12 minutes after activation, and do not exceed 150 watts (2200 lumens).

15-346: Submittal Requirements

A lighting plan shall be submitted with site plan or preliminary plan approval documents. The plan shall contain but be not limited to, the following information, all or part of which may be part of or in addition to the information required elsewhere in the Ordinance:

- A. Plans showing the location, type, and height of luminaries including both building and ground fixtures. The plan would include a point-by-point footcandle array in a printout format indicating the location and aiming of illuminating devices, and indicate compliance with the maximum maintained footcandles required by the Ordinance;
- B. A description of the luminaries, including lamps, supports, reflectors, raised foundations, poles or other supports and shielding devices, which may be provided as electric utility catalogue illustrations, sheets and/or drawings, and product specifications from the manufacturer;
- C. Photometric data, such as that furnished by the manufacturer, showing the angle of light emission; and
- D. Demonstration of a consideration for reduced energy consumption through the selection of energy efficient as well as lighting reduction procedures, implemented by using timers or other methods (such as fixtures that automatically change wattage output).
- E. Additional information as may be required by the Planning Department in order to determine compliance with this Section.

15-347: General Standards For All Areas:

- A. Unless otherwise specified, the maximum light level shall be 0.5 footcandle at any residential property line and 1.0 footcandle at any non-residential property line including at any public street right-of-way. Vegetative buffers shall not be used to achieve this requirement.
- B. 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 the light bulb extends below the bottom edge of an external shield.
- C. 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.
- D. All flood lamps emitting 1,000 or more lumens shall be aimed at least sixty (60) degrees down from the horizontal, and shielded such that the main beam from the light source is not visible from adjacent properties or the public street right-of-way.
- E. All wall pack fixtures shall be full cutoff fixtures.
- F. 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.
- G. Any luminaire with a lamp or lamps rated at a total of more than 1,800 lumens, and all flood or spot luminaires with a lamp or lamps rated at a total of more than 900

lumens shall not emit any direct light above the horizontal plane through the lowest direct-light-emitting part of the luminaire.

- 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.
- 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 Carrboro Land Use Ordinance Outdoor Lighting Standards 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.
- J. Upward flagpole lighting is permitted for governmental flags, either publicly or privately owned, and provided that the maximum lumen output is 1300 lumens. Flags are encouraged to be taken down at sunset to avoid the need for lighting.
- K. 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.
- L. Any light fixture must be placed in such a manner that no light-emitting surface is visible from any residential area or public/private roadway, walkway, trail or other public way when viewed at ground level.
- M. 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 the light bulb extends below the bottom edge of an eternal shield. Flood lights and display lights shall be positioned such that any such fixtures located within fifty (50) feet of a public street right-of-way is mounted and aimed perpendicular to the right-of-way, with side to side horizontal aiming tolerance not to exceed fifteen (15) degrees from perpendicular to the right-of-way.
- N. Every fixture should have a timing device that will turn the device on at the appropriate time and off as soon as the need for light has ended.
- O. Service connections for all freestanding fixtures installed after application of this ordinance shall be installed underground.
- P. All light fixtures installed by public agencies, their agents, or contractors for the purpose of illuminating public streets are subject to these regulations.

15-348: Lighting in Parking Lots and Outdoor Areas

- A. All outdoor area and parking lot lighting fixtures shall be full cutoff fixtures.
- 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.
- C. Any light fixture must be placed in such a manner that no light emitting source surface is visible from any residential area or public/private roadway and in conformance with the standards herein.
- D. The lighting plan shall include an after hours lighting reduction control (where the lighting is reduced and limited to security control only).

15-349: Lighting for Vehicular Canopies

Areas under a vehicular canopy shall have a maximum point of horizontal illuminance of twenty (20) maintained footcandles (fc). Areas outside the vehicular canopy shall be regulated by 15-347. Acceptable methods include one or more of the following:

- A. Recessed fixture incorporating a lens cover that is either recessed or flush with the bottom surface (ceiling) of the vehicular canopy.
- 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 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.
- E. Other method approved by the Planning Director that meet the intent of this section as explained in 15-342 (B).

The lighting plan shall include an after hours lighting reduction control (where the lighting is reduced and limited to security lighting only).

15-350: Outdoor Sports Field/ Outdoor Performance Area

- A. The mounting height of outdoor sports field and outdoor performance area lighting fixtures shall not exceed _____ feet from finished grade unless approved by the Board of Aldermen after receipt of sufficient evidence indicating the need for additional height.
- B. All outdoor sports field and outdoor performance area lighting fixtures shall be equipped with a glare control package (louvers, shields, or similar devices). The fixtures must be aimed so that their beams are directed and fall within the primary playing or performance area.
- C. The hours of operation for the lighting system for any game or event shall not exceed eleven p.m.

15-351: Lighting of Outdoor Display Areas

- A. 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.
- 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.
- C. Compliance Limit. Legally existing outdoor advertising signs shall be brought into compliance within three (3) years from the date of adoption of this provision.
- D. D. Lighting fixtures shall have a maximum illuminance of twenty (20) maintained candles. Lighting shall include an after hours-lighting reduction control (where the lighting is reduced and limited to security lighting only).

15-352: Lighting of Buildings and Landscaping.

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.

15-353: Prohibitions

- 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 luminaires is prohibited.

15-354: Nonconformities

- A. Following approval of this regulation, the installation of outdoor lighting, replacement of outdoor lighting, and changes to existing light fixture wattage, type of fixture, mounting or fixture location shall be made in strict compliance with this Article. Routine maintenance is permitted for all existing fixtures not subject to subsection B below.
- B. All outdoor lighting fixtures existing and legally installed and operative before the effective date of this ordinance shall be shown to conform to this Ordinance, discontinued, removed or made to conform to this Ordinance within five and one-half years from the effective date of this Ordinance, or when they become inoperable, whichever occurs first. All such lights which are made nonconforming by a subsequent amendment to this Article or extension of areas in which this section is applicable shall be discontinued, removed or made to conform within five and one-half years after the date of such amendment or extension.

15-355: Light Measurement Techniques

Light level measurements shall be made at the property line of the property upon which the light to be measured is being generated. If measurement on private property is not possible or practical, light level measurements may be made at the boundary of the public street right-of-way that adjoins the property of the complainant or at any other location on the property of the complainant. Measurements shall be made at finished grade (ground level), with the light-registered portion of the meter held parallel to the ground pointing up. The meter shall have cosine and color correction and have an accuracy tolerance of no greater than plus or minus five (5) percent. Measurements shall be taken with a light meter that has been calibrated within the year. Light levels are specified, calculated and measured in footcandles (FC). All FC values are maintained footcandles unless specified otherwise.

15-354: Severability

Should any section, clause or paragraph of this Section be declared by court of competent jurisdiction to be invalid, the same will not affect the validity of the Ordinance as a whole or part hereof other than the part declared to be invalid.

Section 3. This ordinance is effective upon its adoption.