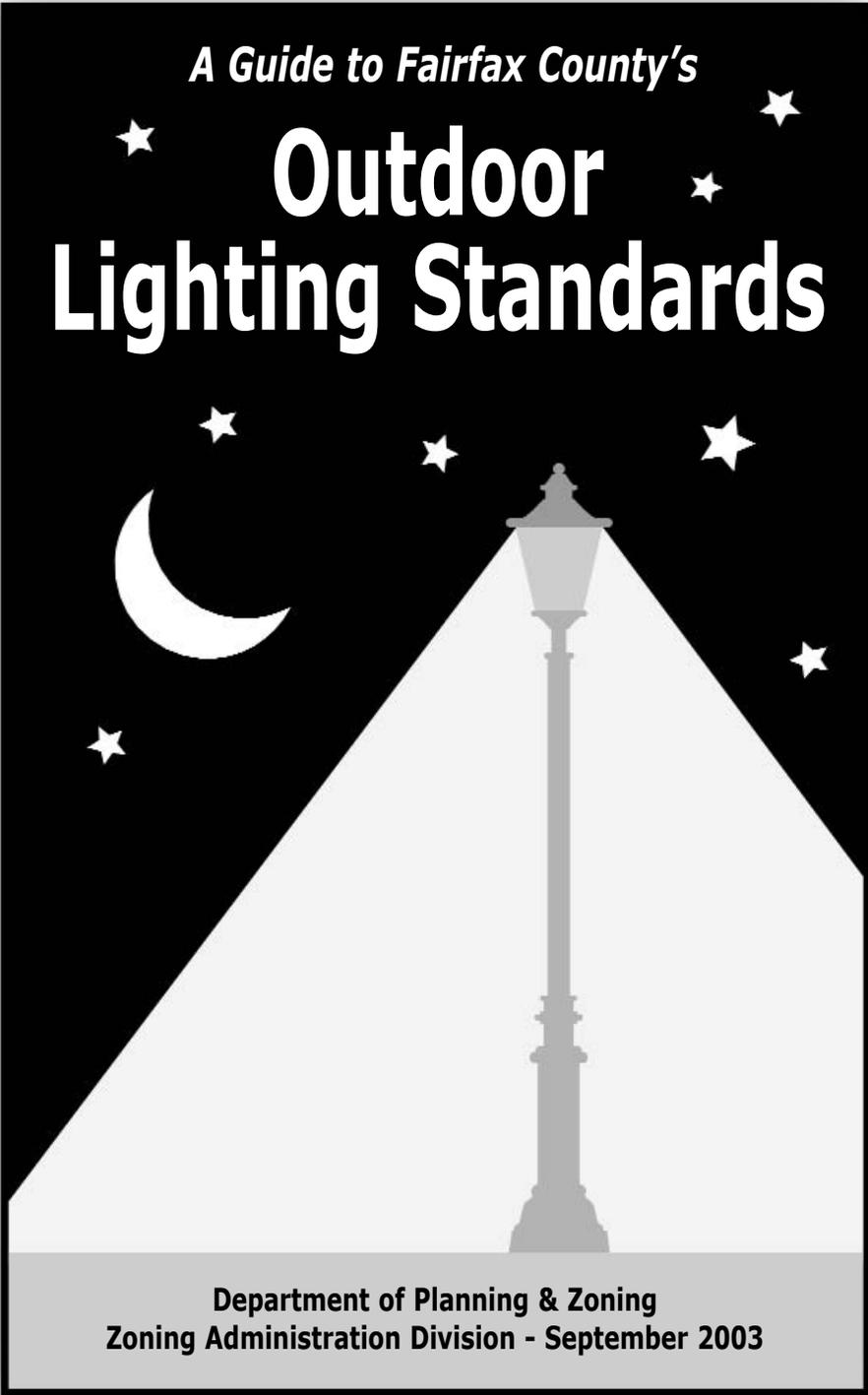


*A Guide to Fairfax County's*

# Outdoor Lighting Standards



Department of Planning & Zoning  
Zoning Administration Division - September 2003

*A Guide to Fairfax County's*

# **Outdoor Lighting Standards**

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### **INTRODUCTION**

The Zoning Ordinance outdoor lighting standards that are summarized in this guide became effective on June 17, 2003 and replace the outdated glare performance standards that were initially developed in the early 1970's and implemented in conjunction with the adoption of the current Zoning Ordinance in 1978.

As part of the development of these outdoor lighting standards, an effort was made to establish standards that are both clear and comprehensive. The new standards place an emphasis on reducing glare by requiring, in most instances, full cut-off lighting fixtures. (See LIGHTING FIXTURE and FULL CUT-OFF LIGHTING FIXTURE definitions on Pages 14 and 15 and Figure 1) In recognition of the unique nature of certain types of uses, additional and/or specific outdoor lighting requirements are provided to address lighting concerns related to service station canopies, vehicle sale display lots and sports facilities. The new standards are designed to reduce the impacts of glare, light trespass and overlighting, and to promote safety, security and energy conservation.

The new standards are also designed to be implemented and enforced with the use of existing County resources. It is believed that the new standards will provide a wide range of solutions to existing problems associated with increasing levels of outdoor lighting in the County. Information on where to find the full Zoning Ordinance text can be found on Page 16.

### **APPLICABILITY**

These outdoor lighting provisions apply to the installation of new outdoor lighting fixtures or the replacement of existing outdoor lighting fixtures. Replacement of a lighting fixture is defined as a change of fixture type, or change to the mounting height or location of the fixture. Routine lighting fixture maintenance, such as changing lamps or light bulbs, ballast, starter, photo control, housing, lenses and other similar components, does not constitute replacement and is allowed provided such changes do not result in a higher light output.

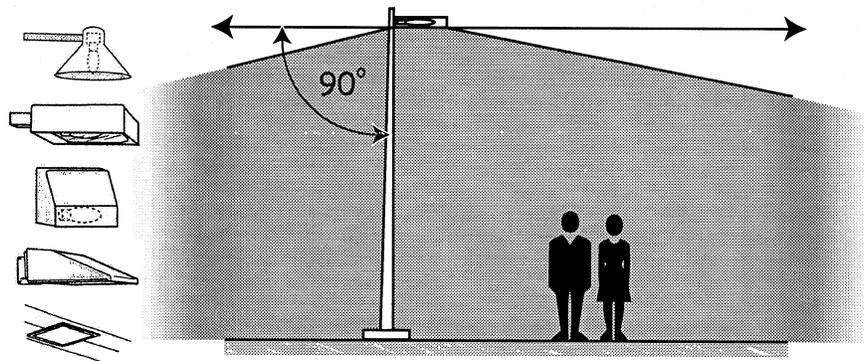
## Outdoor Lighting Standards

Outdoor lighting fixtures lawfully existing prior to June 17, 2003, that do not conform to these standards, are deemed to be a lawful nonconforming use and may remain. A nonconforming lighting fixture that is changed to or replaced by a conforming lighting fixture is no longer nonconforming and is subject to these outdoor lighting standards.

### GENERAL PROVISIONS

- **Full Cut-Off Lighting Fixtures** - Full cut-off lighting fixtures are required for all outdoor walkway, parking lot, canopy and building/wall mounted lighting, and all lighting fixtures located within those portions of open-sided parking structures that are above ground. An open-sided parking structure is a parking structure which contains exterior walls that are not fully enclosed between the floor and ceiling. Full cut-off lighting fixtures are shown in Figure 1.

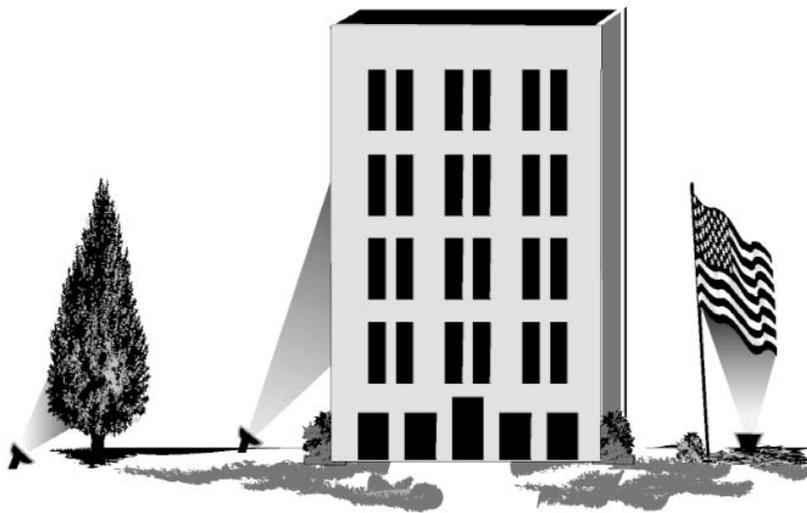
**FIG. 1, EXAMPLES OF FULL CUT-OFF LIGHTING FIXTURES**



- **Roof and Canopy Lighting** - Outdoor lighting fixtures that are enclosed in clear, white, off-white or yellow casing are not allowed on the roofs of buildings or on the sides of canopies. Internally illuminated signs are an exception to this rule and are discussed on the following page.

- ***Architectural and Landscaping Lighting*** - Outdoor lighting used to illuminate flags, statues, signs or other objects mounted on a pole, pedestal or platform, spotlighting or floodlighting used for architectural or landscape purposes, must use full cut-off or directionally shielded lighting fixtures that are aimed and controlled so that the directed light is substantially confined to the object intended to be illuminated. Figure 2 shows how directionally shielded lighting fixtures may be used for architectural and landscaping purposes. (See DIRECTIONALLY SHIELDED LIGHTING FIXTURES definition on Page 14)

**FIG. 2, ARCHITECTURAL/LANDSCAPE LIGHTING EXAMPLES**



Lighting used for architectural/landscaping lighting shall be aimed and controlled so that light is confined, as much as possible, to the objects that are intended to be lit.

- ***Internally Illuminated Signs*** - Internally illuminated signs, except those which bear a state or federal registered trademark, must have an opaque background and translucent text and symbols, or must have a translucent background that is not white, off-white or yellow in color. An opaque background is a background through

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which light cannot penetrate, and a translucent background or text is a background or text through which light can penetrate. Examples of compliant and noncompliant internally illuminated signs are shown in Figure 3.

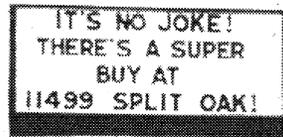
**FIG. 3, EXAMPLES OF INTERNALLY ILLUMINATED SIGNS**



Compliant (illuminated letters, opaque background)



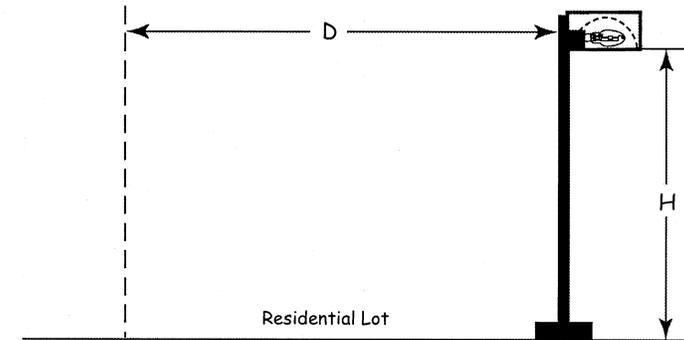
Compliant (illuminated, translucent background, trademark protected)



Noncompliant (illuminated, translucent background)

- ***Setback or Shielding Requirement*** - On lots which abut property that is residentially zoned and developed, vacant or homeowner's association open space, all outdoor lighting fixtures must be set back a minimum prescribed distance from the nearest residential lot line or "house-side shielding" must be used on the residential property side of the lighting fixture as indicated in Figure 4. A house-side shield typically consists of a visor or shielding panel that attaches to a lighting fixture. This provision is applicable for both light poles and lighting fixtures mounted on the side and/or top of a building or structure.
- ***Disability Glare*** - All outdoor lighting fixtures must be aimed, located and maintained to prevent disability glare, which is a form of glare that causes reduced visibility and visual performance.

**FIG. 4, SETBACK OR SHIELDING REQUIREMENT**

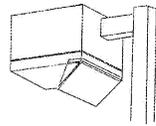


Outdoor lighting fixtures are allowed with no additional "house-side shielding" in accordance with the following formula:

$$\text{HEIGHT} \leq 3 + (D/3),$$

where D = Distance in feet from light source to nearest residential lot line (extended vertically).

Additional "house-side shielding" shall be added in all cases where height  $> 3 + (D/3)$ .



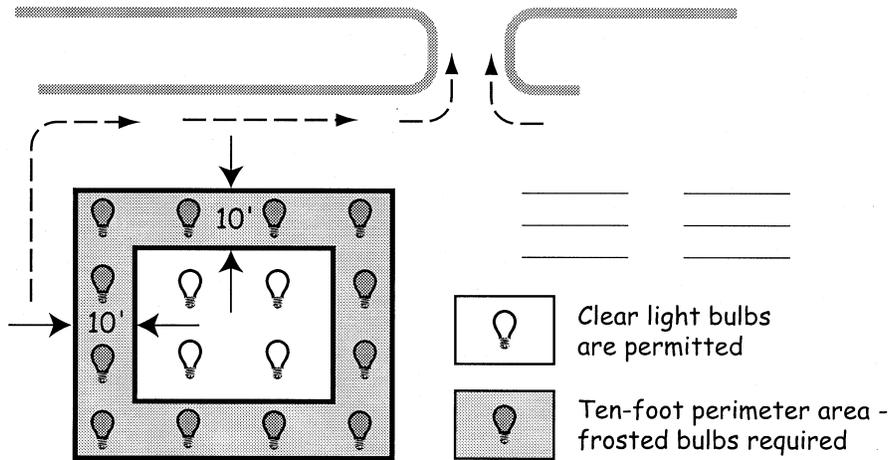
"house-side shielding"

- **Parking Lot Lighting Curfews** - On all nonresidentially developed lots which contain a minimum of 4 parking lot light poles, parking lot lighting levels for ground surface parking lots and the top levels of parking decks or structures must be reduced by at least 50% of full operational levels within 30 minutes after the close of business. Lighting levels may be reduced by turning off 50% of the parking lot lights or by dimming parking lot lighting levels to no more than 50% of the levels used during business or activity hours within 30 minutes of the close of business, or by some combination thereof.

Given that a certain minimum lighting level is recommended for safety and security purposes, this provision does not require parking lot lighting levels to be reduced to less than 0.2 footcandles as measured horizontally at the surface on which the light pole is mounted. (See FOOTCANDLE definition on Page 14)

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**FIG. 5, CONSTRUCTION LIGHTING REQUIREMENTS**



OVERHEAD VIEW - BUILDING UNDER CONSTRUCTION

- **Construction Lighting** - All construction site lighting fixtures must be full cut-off or directionally shielded fixtures that are aimed and controlled so the directed light is substantially confined to the object intended to be illuminated. Frosted light bulbs must be used to light the 10 foot outermost perimeter area of the interiors of the buildings under construction which contain 5 or more stories. A building is no longer considered under construction once exterior walls and windows are installed and permanent lighting replaces temporary lighting as the primary source of light for the building. Figure 5 depicts where frosted light bulbs are required.
- **High Intensity Light Beams** - Outdoor searchlights, lasers or strobe lights are prohibited.

### SERVICE STATION CANOPY AND VEHICLE SALES AREA LIGHTING

In addition to the previously listed general provisions, outdoor lighting fixtures associated with service stations, service station/mini-marts and vehicle sale, rental and ancillary service establishments are

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subject to the following:

- **Maximum Lighting Levels** - Service station and service station/mini-mart canopy lighting and outdoor display area lighting used in conjunction with a vehicle sale, rental and ancillary service establishment must not exceed a maintained lighting level of 30 footcandles as measured horizontally at grade. Higher levels, up to 50 footcandles, or lower levels, less than 30 footcandles, may be approved by the Board in conjunction with the approval of a special exception, development plan or proffered rezoning. (See MAINTAINED LIGHTING LEVEL definition on Page 15)
- **A Photometric Plan** is required and must be submitted as part of a special exception, development plan or rezoning application, as part of a site plan submission or as a separate submission, when one of the above is not also required, for a service station, service station/mini-mart, or vehicle sale, rental and ancillary service establishment. A photometric plan must contain the following information:
  - (a) Location and limits of the canopy or outdoor display area.
  - (b) Location and height of all canopy lighting for service stations and all pole, building or ground mounted lighting fixtures for outdoor display areas of vehicle sale, rental and ancillary service establishments.
  - (c) A photometric diagram showing predicted maintained lighting levels of the proposed lighting fixtures.
- **Fees** - When site plan approval is not required and the photometric plan is submitted as a separate submission, the photometric plan must be submitted to the Department of Public Works and Environmental Services with a \$500 submission fee.

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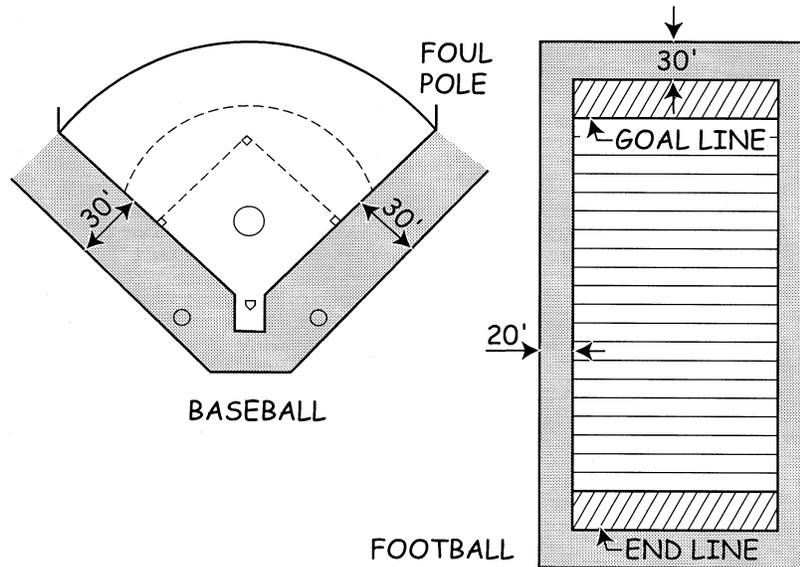
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### **OUTDOOR RECREATION/SPORTS FACILITY LIGHTING**

When an outdoor recreation/sports facility has lighted playing fields/courts that, individually or cumulatively, exceed 10,000 square feet in area, and/or have associated light poles that exceed 20 feet in height, the playing fields/courts are subject to the provisions listed below. Other parts of an outdoor recreation/sports facility, such as parking lots, administrative offices, restrooms, concession stands and spectator viewing areas, are subject to the general provisions previously discussed. In addition, an outdoor recreation/sports facility that has lighted playing fields/courts that, individually or cumulatively, are less than 10,000 square feet in area, and/or have light poles 20 feet or less in height, shall not be subject to the following provisions. The perimeter area discussed in (b) below must be included in the size of the playing field/court area.

- ***A Sports Illumination Plan*** must be submitted as part of a special exception, special permit, development plan or rezoning application, as part of a site plan submission or as a separate submission, when one of the above is not also required, for an outdoor recreation/sports facility. A sports illumination plan must contain the following information:
  - (a) Boundaries, dimensions and total land area of the outdoor recreation/sports facility property.
  - (b) Location and limits of playing field/courts, to include perimeter areas. Figure 6 shows the required perimeter areas for baseball/softball fields and rectangular playing fields, such as soccer, football and tennis. The perimeter playing area for all other playing/field courts extends 10 feet beyond the playing field boundary.
  - (c) Location, height and illustration of each style of all pole, building and ground mounted lighting fixtures for the playing/field court.

**FIG. 6, ATHLETIC FIELD PERIMETER AREA**



(d) A photometric diagram showing predicted maintained lighting levels for the proposed playing field/court and associated perimeter area lighting, not to exceed the levels permitted under Table IV in Part 9 of Article 14 of the Zoning Ordinance.

- **Maximum Lighting Levels** - The lighting for playing field/courts and associated perimeter areas must meet the maximum footcandles indicated for the specific uses in the Zoning Ordinance. Footcandle measurements must be measured horizontally 3 feet above grade level and represent maintained lighting levels.
- **Type of Lighting Fixtures** - All playing field/court lighting fixtures must either be full cut-off or directionally shielded lighting fixtures.
- **Curfews** - Generally, the use of playing field/court lighting is not permitted between 11:00 PM and 7:00 AM.
- **Fees** - When site plan approval is not required and the sports illumination plan is submitted as a separate submission, the sports illu-

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mination plan must be submitted to the Department of Public Works and Environmental Services with a \$500 submission fee.

### **EXEMPTIONS**

The following are exempt from the previously mentioned outdoor lighting provisions, provided that such fixtures, except for those set forth in the first two bullets, do not cause disability glare:

- Lighting fixtures and standards required by federal, state or county agencies, including street lights within the public right-of-way.
- Outdoor lighting fixtures used by law enforcement, fire and rescue, the Virginia Department of Transportation or other emergency response agencies to perform emergency or construction repair work, or to perform nighttime road construction on major thoroughfares.
- Holiday lighting fixtures.
- Neon lighting used to outline a structure.
- Motion activated light fixtures as follows:
  - (a) On lots developed with single family dwellings when such lighting fixtures emit initial lighting levels of 6000 lumens or less, are extinguished within 5 minutes upon cessation of motion and are aimed such that the lamp or light bulb portion of the lighting fixture is not directly visible at 5 feet above the property boundary. (See LUMEN definition on Page 15)
  - (b) On all other lots when such lighting fixtures are aimed such that the lamp or light bulb portion of the lighting fixture is not directly visible at 5 feet above the property line.
- On lots developed with single family dwellings, outdoor lighting fixtures with initial light outputs of 2000 lumens or less are not

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subject to the outdoor lighting general provisions. A 2000 lumen output is the approximate light level produced with a 100 watt incandescent light bulb.

### **LIGHT POLE HEIGHT AND LOCATION**

**Height** - Light pole height is measured from the grade or surface on which the light pole is mounted to the bottom of the lighting fixture and is limited as follows:

- Light poles on outdoor recreation/sports facilities - No maximum height restriction, but light pole heights must be shown on a sports illumination plan.
- Light poles on top of parking decks or structures - Maximum height of 20 feet.
- All other light poles - Maximum height of 40 feet.

The maximum allowable light pole heights are illustrated in Figure 7.

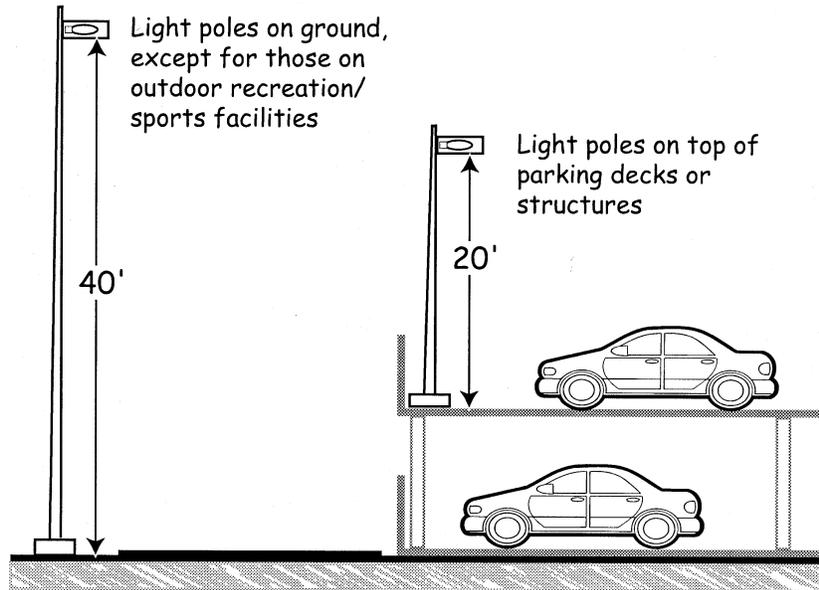
**Location** - Light poles may be located as follows:

- Light poles less than 7 feet in height may locate in any yard on any lot.
- Light poles on lots developed with single family dwellings that are taller than 7 feet in height are subject to the same location regulations for accessory structures contained in Article 10 of the Zoning Ordinance.
- Light poles on all other lots which are greater than 7 feet in height are subject to the minimum yard requirements, with the exception of angle of bulk plane, of the zoning district in which located.

The above location requirements do not apply to parking lot light poles; such poles may be located in any yard. All light poles, includ-

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**FIG. 7, ALLOWABLE LIGHT POLE HEIGHTS**



ing parking lot light poles, are subject to the setback or shielding provisions that were previously described and depicted in Figure 4.

### REQUIRED SITE PLAN INFORMATION

The following outdoor lighting information must be included with all site plan submissions:

- The location and height of all light poles, including parking lot and walkway light poles;
- Illustrations of each style of freestanding lighting fixture that show that such fixture is either a full-cut off or directionally shielded lighting fixture; and
- A statement from the owner/developer certifying that all required outdoor lighting provisions will be met.

## **GRANDFATHER PROVISIONS**

The following are grandfathered from the outdoor lighting provisions:

- Special permit, special exceptions, proffered rezonings, or developments plans accepted prior to June 17, 2003 that contain specific conditions that conflict with these outdoor lighting provisions.
- Building and site plans submitted on or before June 17, 2003, provided such plans are (a) approved within 12 months of the return of the initial submission to the applicant or agent, (b) the plan remains valid, (c) a building permit(s) for the structure(s) shown on the approved plan is issued and (d) the structures and uses are constructed in accordance with such building permit.

## **DEFINITIONS**

The following Zoning Ordinance definitions are applicable to outdoor lighting:

**FOOTCANDLE:** A measure of light falling on a surface. One (1) foot-candle is equal to the amount of light generated by one (1) candle shining on one (1) square foot surface located one (1) foot away. Footcandle measurements shall be made with a photometric light meter and with a specified horizontal orientation.

**LIGHTING FIXTURE:** A complete lighting unit consisting of the lamp, lens, optical reflector, housing and an electrical components necessary for ignition and control of the lamp, which may include a ballast, starter and/or photo control.

**LIGHTING FIXTURE, DIRECTIONALLY SHIELDED:** A lighting fixture which emits a light distribution where some light is emitted at or above a horizontal plane located at the bottom of a fixture. Such fixtures may contain visors, louvers or other types of shields or lenses which are designed to direct light onto a targeted area and to minimize stray light.

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**LIGHTING FIXTURE, FULL CUT-OFF:** A lighting fixture from which no light output is emitted at or above a horizontal plane drawn through the bottom of the lighting fixture. Lighting fixtures located within those portions of open-sided parking structures that are above ground which meet the angle requirements set forth above through the use of any portion of the ceiling or walls of the parking structure shall be deemed full cut-off lighting fixtures.

**LUMEN:** A quantitative unit measuring the amount of light emitted from a light source.

**MAINTAINED LIGHTING LEVEL:** A level of illumination which results when the initial output of the lamp is reduced by certain light loss factors. Such light loss factors typically include lamp depreciation and dirt accumulation on lenses and other light fixture components. For the purposes of this Ordinance, the maintained lighting level shall represent an average footcandle level measured over a specified area and shall be determined by multiplying the initial raw lamp output specified by the manufacturer by a light loss factor of not less than 0.72 for the metal halide lamps or 0.64 for high pressure sodium and mercury vapor lamps.

**PHOTOMETRIC DIAGRAM:** A diagram depicting the location of all light poles and building mounted lighting fixtures in a specified area and a numerical grid of the MAINTAINED LIGHTING LEVELS that the fixture will produce in that specified area. ■

## **CONTACT INFORMATION**

The complete text of **Fairfax County's Outdoor Lighting Standards**, contained in Part 9 of Article 14 of the Zoning Ordinance, is available online at:

<<http://www.fairfaxcounty.gov/dpz/zoningordinance>>.

For more information, or to request additional copies of this booklet, please contact the **Zoning Administration Division** at (703) 324-1314.

Additional phone numbers:

**Sign Permit Information** - Zoning Enforcement Branch at (703) 324-1300

**Rezoning, Special Permit or Special Exception Information** - Zoning Evaluation Division at (703) 324-1290

**Site Plan Information** - Office of Site Development Services at (703) 324-1720

**Building Permit Information** - Office of Building Code Services at (703) 324-1980

