

2009 Town of Woodfin Outdoor Lighting Ordinance

Chapter 152: Outdoor Lighting

SECTION 1- INTENT AND PURPOSE:

It is the intent of this chapter to encourage lighting practices and systems that will minimize light pollution, glare, light trespass; conserve energy and resources while maintaining night time safety, utility, comfort, security, and productivity; and reduce the degradation of the night time visual environment.

SECTION 2- APPLICABILITY:

A. NEW LAND USES, BUILDINGS AND ADDITIONS: This ordinance is applicable to all proposed new land uses, developments, buildings, street lighting (both private and public), parking lots, and structures. For all building additions and expansions and expansion of parking areas, the applicant shall only have to meet the requirements of this chapter for any new outdoor lighting provided. Improvements to a property in excess of thirty-five percent (35%) of the present taxable value of the property shall constitute a new use for the purposes of this code.

B. CHANGE OF USE/INTENSITY: Whenever the use of any existing building, structure, or premises is changed to a new use, or the intensity of use is increased through the incorporation of additional dwelling units, gross floor area, seating capacity or other units of measurement specified herein, and which change of use or intensification of use creates a need for an increase in the total number of parking spaces by four (4) new spaces or twenty-five percent (25%) or more of existing spaces, whichever is greater, then all outdoor lighting facilities shall meet the requirements of this chapter for the entire property. For changes of use or intensity which require an increase in parking of less than twenty-five percent (25%) of existing spaces, the applicant shall only have to meet the requirements of this chapter for any new outdoor lighting provided.

C. MAINTENANCE: Existing Street and security lighting shall be brought into compliance according to the following:

1. All existing street lights must be brought into compliance with the standards set forth in this section at the time of ballast failure or fixture replacement.
2. For privately owned security lights; also known as dusk-to-dawn lights or pole lights, fixtures shall be replaced with fully shielded fixtures at the time of bulb or ballast replacement or other maintenance. However, if the Town of Woodfin receives a valid, confirmed and verified complaint for light trespass or glare emitted from such a light, the offending fixture must be made fully shielded or removed.

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3. Security lights leased from a utility shall be replaced with fully shielded fixtures or removed at the time of the expiration of the contract period or within five (5) years of the adoption date of this ordinance, whichever comes first. If the Town of Woodfin receives a valid, confirmed and verified complaint for light trespass or glare emitted from such a light, and the offending fixture is still within its original contract period with an energy supplier, it must be made fully shielded or removed at the end of the original contract period.

SECTION 3: MATERIALS AND METHODS OF INSTALLATION/OPERATION:

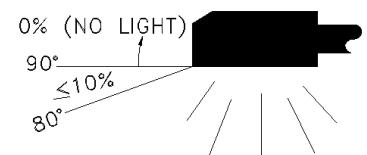
A. Preferred Source – The preferred illumination source for outdoor lighting throughout the Town of Woodfin shall be that which, allowing for future technological advances is the most energy efficient and has the lowest negative environmental impact while satisfying Section 1 of this Ordinance. Additional considerations, as a minimum, should include lifetime cost of purchase and operation and requirements for public safety. All light fixtures must minimize glare and meet the shielding and lumen criteria set forth in Section 6 of this Ordinance.

B. The provisions of this chapter are not intended to prevent the use of any design, material, or method of installation or operation not specifically prescribed herein, provided any such alternate has been approved by the Town Administrator. The Town Administrator may approve any such proposed alternate provided it is determined the proposal is equivalent to or exceeds the applicable specific requirements and intent of this Ordinance.

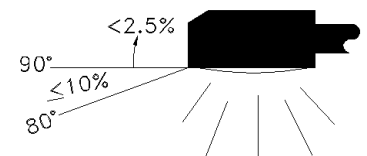
SECTION 4- DEFINITIONS

A. LIGHT FIXTURE CLASSIFICATIONS

Fully Shielded Fixture - An outdoor light fixture shielded in such a manner that all light emitted by the fixture, either directly from the lamp or indirectly from the fixture, is projected at angles below the horizontal plane drawn through the bottom of the fixture, and no more than ten percent (10%) of the lamp's light intensity is emitted at an angle ten (10°) degrees below that horizontal plane, as determined by photometric test or certified by the manufacturer. This is the equivalent of the IESNA Full Cutoff fixture.



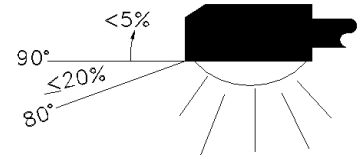
Shielded Fixture - An outdoor light fixture shielded in such a manner that less than two and a half percent (2.5%) of the light emitted directly from the lamp or indirectly from the fixture is projected at angles above the horizontal plane drawn



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through the bottom of the fixture, and no more than ten percent (10%) of the lamp's light intensity is emitted at an angle ten degrees (10°) below that horizontal plane, as determined by photometric test or certified by the manufacturer. This is the equivalent of the IESNA Cutoff fixture.

Partially Shielded Fixture - An outdoor light fixture shielded in such a manner that less than five percent (5%) of the light emitted directly from the lamp or indirectly from the fixture is projected at angles above the horizontal plane drawn through the bottom of the fixture, and no more than twenty percent (20%) of the lamp's light intensity is emitted at an angle ten degrees (10°) below that horizontal plane, as determined by photometric test or certified by the manufacturer. This is the equivalent of the IESNA Semi-cutoff fixture.



Non-Shielded Fixture – An outdoor light fixture without restriction to light emissions above the horizontal plain.



B. OTHER DEFINITIONS

Accent Lights – Lighting, other than signage, attached to the exterior of a building to draw attention to specific features of a building or which constitute decorative features in their own right.

Ballast - A device used with an electric-discharge lamp to obtain the necessary circuit conditions (voltage, current, and waveform) for starting and operating.

Directional Lighting – Lighting provided on the work plane or on an object. Light that is predominantly from a preferred direction.

Fixture – See luminaire

Flood Lamp/Light – A form of lighting designed to direct its output in a specific direction.

Foot-Candle (FC) – A quantitative unit measuring the amount of light (illumination) falling onto a given point. One foot-candle equals one lumen per square foot. Foot-candle measurements are taken with a light meter.

Glare – The effect produced by a light source within the visual field that is sufficiently brighter than the level to which the eyes are adapted and may cause annoyance, discomfort, and through direct glare may affect performance and reduce the quality of one's overall visual capability.

Direct glare resulting from high luminances or insufficiently shielded light sources is usually associated with bright areas that are outside the visual task or region being viewed.

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Grandfather clause – An exception to new legislation that permits an existing structure or fixture to remain as it is until the reason for the exception no longer exists at which time the exception will become null and void.

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.

Illuminance – The amount of light (luminous flux incident) at a point on a surface (measured in lux or foot-candles).

Light Fixture (Luminaire) - A complete lighting unit consisting of one or more electric lamps, the lamp holder, any reflector or lens, ballast (if any), and any other components and accessories.

Light Trespass – Unwanted light, or light which creates glare, that results in spillage onto adjacent property and is in excess of light limits permitted by this ordinance,

Lumen – A quantitative unit used to identify the amount of light emitted by a light source. A lumen is equal to one foot-candle falling on one square foot of area.

Outdoor Light Output; Total - The maximum total amount of light as measured in lumens from all outdoor light fixtures. For lamp types that vary in their output as they age (such as high pressure sodium and metal halide), the initial output, as defined by the manufacturer, is the referenced lumen value to be considered.

Shield – A device that is attached onto or inserted into a luminaire to alter the direction of light being emitted.

Up-light – The portion of light from a luminaire emitted at angles above the horizontal.

Vehicular Canopy – A roofed, open, drive-through structure designed to provide temporary shelter for vehicles and their occupants while making use of a business' services; for example automotive servicing facilities.

Wall Pack/Wall Mounted Fixture – A type of light fixture that is either flush-mounted or attached to a vertical wall surface.

C. Light Measurement Technique

Light level measurements shall be made at the property line of the property upon which light to be measured is being generated. If measurement on private property is not possible or practical, light level measurements may be made at

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the boundary of the public street right-of-way that adjoins the property. Measurements shall be made at waist height with the light-registering portion of the meter pointed at the light source to be measured. The meter shall have cosine and color correction and have an accuracy tolerance of no greater than plus or minus five percent. Measurements shall be taken with a light meter that has been calibrated within two years. Light levels are specified, calculated and measured in foot-candles.

SECTION 5 – EXEMPTIONS AND PROHIBITIONS

A. The following conditions are exempt from the standards set forth in this subsection:

1. Seasonal displays using multiple low wattage bulbs of fifteen (15) lumens or less per bulb, provided that they do not constitute a fire hazard, create a nuisance, and are maintained in a safe condition.
2. Lighting used during an emergency.
3. Exit signs and other illumination required by building codes.
4. Low voltage landscape lighting, but such lighting should be shielded in such a way as to eliminate glare and light trespass.
5. Up-lighting of the United States flag, including other flags or pennants flown on the same halyard and stationary flagstaff; i.e., the State of North Carolina and the municipal flag, during hours of official darkness, is permitted.
6. This ordinance shall apply to all zoning districts of the Town of Woodfin with the exception of the Heavy-Industrial (H-I) Zoning District. However, for instances that would otherwise be subject to this ordinance, businesses or individuals in the Heavy-Industrial (H-I) Zoning District will make a good faith effort to comply with the spirit of this ordinance.

B. The following types of outdoor lighting are specifically prohibited:

1. Lighting that could be confused for a traffic control device.
2. Lighting that is oriented upward, except as otherwise provided for in this ordinance.
3. Search lights, laser source lights, or any similar high intensity lights except for those used in emergencies by police or fire

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personnel or at their direction, or for approved temporary lighting under a special event permit issued by the Town of Woodfin.

4. Blinking, flashing, moving, flickering, changing intensity, changing color lights not otherwise permitted in this ordinance. To the extent that any such lighting is an integral part of a sign, the sign ordinance shall take precedence.
5. Any lamp or bulb when not within a light fixture and which is visible from the property boundary line of the parcel on which it is located, except for landscape ornamental lighting.
6. A suspended string of lights, of which individual lamps are rated larger than forty-five (45) lumens, unless used only for seasonal decorations.
7. Any lighting fixture or device that is operated in such manner as to constitute a hazard or danger to persons, or to safe vehicular operation.
8. Building mounted accent lights employing luminous tube; such as, neon, LED, or other similar technology. To the extent that any such lighting is an integral part of a sign, the sign ordinance shall take precedence.

SECTION 6- GENERAL REQUIREMENTS:

A. All outdoor floodlights shall be equipped with a top shield and installed so that the fixture shall be aimed down at least sixty degrees (60°) from vertical. No floodlights shall be permitted in residential districts or within thirty (30) feet of a residential district or public street right-of-way. Flood lights and display lights shall be positioned such that any such fixture located within sixty (60) feet of a public street right-of-way or residentially zoned district is mounted and aimed to minimize glare or light trespass to the right-of-way or residential neighbors.

B. All light fixtures that are required to be shielded shall be installed in such a manner that the shielding is effective as described in Section 4.

C. All light fixtures, except street lights, shall be located, aimed, or shielded so as to minimize stray light trespassing across property boundaries. Maximum light trespass limits shall be 0.25 horizontal maintained foot-candles (FC) at all residential to commercial property lines. All street lights shall be fully shielded or be full cutoff fixtures to minimize adverse light trespass, light pollution and glare impacts.

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D. All outdoor lighting used for, but not limited to, outdoor sales or eating areas, assembly or repair areas, advertising and other signs, recreational facilities and other similar applications are permitted until 9:00 p.m. or for as long as the area is in active use. This does not pertain to security lighting. It is strongly recommended that security lighting used after 9:00 p.m. utilize motion sensors.

E. Illumination for outdoor recreation facilities must conform to the shielding requirements of Table 1 below, except when such shielding would interfere with the intended activity. For such facilities, shielded or partially-shielded luminaires are permitted. Examples of activities where shielded or partially shielded luminaires are permitted include, but are not limited to athletic fields. Lights bordering residential areas and uses shall be fully shielded or shielded to prevent glare and light trespass onto the residential properties and uses.

F. External illumination for signs, including billboards, shall conform to the provisions of this chapter. Specifically, lights shall be located, aimed, or shielded so as to focus solely on the intended sign façade thereby reducing glare and stray light trespassing across property boundaries. Upward lighting of signs and billboards is prohibited.

G. The maximum height for street lights on public or private streets in residential areas shall be twenty-five (25) feet. The maximum height for street lights in all other areas shall be thirty (30) feet. A 2-foot raised base is allowed in parking areas where needed.

The maximum height for pole mounted lights, when fully shielded, are not to exceed twenty-five (25) feet above finished grade or the roof line of the residential building, whichever is lower, in residential zoning districts and thirty (30) feet above finished grade in all other zoning districts. A 2-foot raised base is allowed in parking areas where needed.

H. Total outdoor light output (excluding street lights used for illumination of public rights-of-way) of any development project shall not exceed 150,000 lumens per net acre averaged over the entire project. Furthermore, no more than 5,500 lumens per net acre may be accounted for by lamps in partially-shielded fixtures permitted in Table 1.

Light emitted from outdoor light fixtures is to be included in the total output as follows:

1. Outdoor light fixtures installed on poles (such as parking lot luminaires), light fixtures installed on the sides of buildings or other structures, and light fixtures installed under canopies, building overhangs, or roof eaves where the center of the lamp or luminaire is located within five (5) feet or closer to the nearest edge of the structure, canopy,

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overhang, etc, are to be included in the total outdoor light output by adding the lumen output of all lamps used.

2. Outdoor light fixtures installed under canopies, building overhangs, or roof eaves where the center of the lamp or luminaire is located greater than five (5) feet, but less than ten (10) feet from the nearest edge of the canopy or overhang are to be included in the total outdoor light output as though they produced only one-quarter (1/4) of the lamp's rated lumen output.

3. Outdoor light fixtures located under the canopy and ten (10) or more feet from the nearest edge of a canopy, building overhang, or eave are to be included in the total outdoor light output as though they produced only one-tenth (1/10) of the lamp's rated lumen output.

I. Vehicular Canopy Lighting, including gas stations and car washes. In addition to the calculations for paragraph H.2 and 3 above, the following requirements apply:

1. All luminaires mounted on the under surface of vehicular canopies shall be fully shielded and utilize flat glass or flat plastic (acrylic or polycarbonate) covers.

2. Areas under a vehicular canopy shall have an average maximum horizontal illuminance of twenty (20) maintained foot-candles (FC). All lighting mounted under the canopy, including but not limited to luminaires mounted on the lower surface of the canopy and auxiliary lighting within signage or panels over the pumps, is to be included toward the total light output calculation. Lighting under vehicular canopies shall be designed so as not to create glare off-site.

J. Outdoor recreational facilities are not subject to the lumens per net acre limit. However, 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. The hours of operation for the lighting system for any game or event shall not exceed one hour after the end of the event.

K. All wall mounted fixtures (wall-packs, etc.) shall be fully shielded regardless of lumen output.

L. Lighting of buildings and landscaping

1. Lighting fixtures shall be selected, located, aimed, and shielded so that direct illumination is focused exclusively on the building façade, plantings, and

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other intended site feature and away from adjoining properties and the public street right-of-way.

2. Illumination on any vertical surface or angular roof shall not exceed 5.0 FC average maintained and shall not spill over roof lines.
3. Lighting fixtures shall be directed downward rather than upward.
4. When upward aiming is permitted, fixtures with shields (as needed) shall be placed close to the building to graze the façade and minimize reflected light from windows and other surfaces. The lowest wattage that accomplishes the effect shall be used.
5. All landscape and residential façade lighting systems shall employ shielded luminaires not to exceed 400 initial lamp lumens per luminaire. The luminaires shall be aimed such that the light source cannot be seen from adjacent property or public areas or rights-of-way. Reflected glare bouncing off windows or other glazing that is visible from adjacent property is also prohibited.
6. Buildings equipped with skylights or other daylighting openings must control the light trespass and light pollution that is projected upward from the interior lighting system through the daylight glazing into the outdoor night environment. Shielding, louvers or other control devices must be installed to restrict light trespass, light pollution and glare.

Table 1

TABLE OF LAMP SOURCE AND SHIELDING STANDARDS

LAMP TYPE	Code
<u>Class 1 General Illumination Lighting:</u>	
All lamp types above 4,050 lumens	F

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All lamp types above 1,250 lumens and 4,050 lumens or less	S
All types 1,250 lumens or less	P
Security Lights (also known as dusk-to-dawn or pole lights)	F
<u>Class 3 Decorative Lighting (including Post-top fixtures):</u>	
All lamp types above 4,050 lumens	F
All lamp types above 1,250 lumens and 4,050 lumens or less	S
All types 1,250 lumens or less	P

Use Code:

F = Allowed, fully shielded (full cutoff)

S = Shielded (cutoff)

P = Partially shielded (semi-cutoff) lights allowed, (partially shielded lights limited to a maximum of 5,500 lumens per net acre.)

SECTION 7- INFRARED SECURITY LIGHTING:

Lights emitting infrared radiation used for remote security surveillance systems are permitted with the following restrictions:

- A. Fixed lights must be fully-shielded.
- B. Movable lights, such as spot lights attached to infrared-sensitive cameras, must be mounted such that the lights cannot be directed higher than twenty degrees below the horizontal, measured from the center of the light beam.

SECTION 8 - APPLICATION REQUIREMENTS

- A. Whenever a person is required to obtain a building permit, electrical permit for outdoor lighting or signage, a Conditional Use Permit, subdivision approval, or development plan approval by the Town of Woodfin, the applicant shall, as part

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of said application, submit sufficient information to enable the Town of Woodfin to determine whether the proposed lighting will comply with this Chapter.

B. The application shall include the following:

1. A written statement that the lighting plan complies with these standards; or
2. When requested:
 - a. A site plan indicating the proposed location of all outdoor lighting fixtures and signs with a point-to-point array showing foot-candle values and uniformity ratios.
 - b. A description of each illuminating device, fixture, lamp, support, and shield. This description may include, but is not limited to, manufacturer's catalog cuts and drawings (including sections where required), lamp types, and lumen output.
 - c. Photometric data, such as that furnished by manufacturers, or similar, showing the angle of cut off of light emissions for the proposed luminaire(s).
3. If the proposed lighting does not comply with this Ordinance, the permit shall not be issued or the plan approved.

SECTION 9 - TEMPORARY LIGHTING PERMITS:

A. The Town Administrator may grant a permit for temporary lighting, as defined herein, if the following is verified:

1. The purpose for which the lighting is proposed is not intended to extend beyond thirty (30) days;
2. The proposed lighting is designed in such a manner as to minimize light pollution and trespass as much as is feasible;
3. The proposed lighting will comply with the general intent of this Chapter;
4. The permit will be in the public interest.

B. The application for the Temporary Lighting Permit shall include the following information:

1. Name and address of applicant and property owner;

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2. Location of proposed fixtures;
3. Type, wattage, and lumen output of lamp(s);
4. Type and shielding of proposed fixtures;
5. Intended use of the lighting;
6. Duration of time for requested exemption;
7. The nature of the exemption;
8. Such other information as the Town Administrator may request.

C. The Town Administrator may grant one (1) renewal of the permit for an additional thirty (30) days if it is determined that, because of an unanticipated change in circumstances; a renewal would be in the public interest. The Town Administrator is not authorized to grant more than one (1) temporary permit and one (1) renewal for a thirty (30) day period for the same property within one (1) calendar year, without approval of the Board of Aldermen.

SECTION 10 - NONCONFORMING LIGHTING:

A. Any construction permit which invokes Certificate of Occupancy requirements shall specify and require that any nonconforming sign, as to lighting, located within the boundaries of the development site authorized by said permit shall be brought into conformance with the provisions of this Chapter.

B. In the event that any nonconforming sign, as to lighting, is abandoned, or is damaged such that the damage exceeds fifty percent (50%) of the replacement value, exclusive of foundations, the sign shall be brought into conformance with the provisions of this Chapter.

C. Any lighting fixture lawfully in place or approved prior to the adoption of this ordinance shall be exempt from these requirements. Routine maintenance, including changing required components is permitted for existing fixtures, however, ballast failure or repairs that exceed fifty percent (50%) of the replacement value of said fixture requires the entire unit to be brought into conformance with the provisions of this Chapter.

D. All new security lights, dusk-to-dawn lights, and pole lights, whether installed by the homeowner or under contract with an energy supplier, must be fully shielded fixtures with a mounting height not to exceed twenty-five (25) feet, if attached to a pole, and eighteen (18) feet, if attached to a structure other than a pole, for example, a building.

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E. If the Town of Woodfin receives a valid complaint for light trespass or glare emitted from a security light, also known as dusk-to-dawn light or pole light, the fixture must be made fully shielded or removed. If the offending fixture is still within its original contract period with an energy supplier, it must be made fully shielded or removed at the end of the original contract period.

SECTION 11 - VARIANCES:

Any person desiring to install an outdoor lighting fixture which does not meet the requirements of this Division may apply to the Board of Adjustment for a variance from the regulation in question, as provided for in Chapter 150 of this Code, as amended.

SECTION 12 - CONFLICTING REGULATIONS:

In the event of conflict between the regulations set forth in this section and any other regulations applicable to the same area, the more stringent limitation or requirement shall govern.

SECTION 13 - VIOLATIONS AND ENFORCEMENT:

It shall be unlawful to install or operate an outdoor light fixture in violation of this Chapter. Violations of this Chapter Shall be punishable as outlined in Chapter 150.999.

SECTION 14 - SEVERABILITY:

If any of the provisions of this Chapter or the application thereof is held invalid, such invalidity shall not affect other provisions or applications of the Chapter which can be given effect, and to this end, the provisions of this Chapter are declared to be severable.