



VILLAGE OF NEW PALTZ

Ulster County, New York

Outdoor Lighting Standards

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Village of New Paltz

Prepared for:
Village of New Paltz Board of Trustees

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LIGHTING STANDARDS

Outdoor lighting has a significant effect on the quality of site development and the nighttime character of the Village. When properly designed, outdoor lighting provides better visibility and a sense of security, while minimizing energy use and light pollution. Well-designed outdoor lighting is more cost effective, and it creates less sky glow, permitting us to enjoy the beauty of the dark night sky. Poorly designed outdoor lighting, on the other hand, can cause glare that hampers the vision of drivers and pedestrians, creating a hazard rather than increasing safety. It can shine light onto neighboring properties, reducing privacy and hindering sleep. And improperly designed lighting can create sky glow that washes out our view of the stars and planets.

The purpose of this publication is to provide standards for outdoor lighting to encourage lighting that conserves energy and resources while providing safety, utility and security. The standards are intended to promote lighting that minimizes glare, protects the privacy of residences, and enhances the Village's nighttime character.

The standards, accompanied by a description of their purpose, appear in Section 2. Section 3 describes submission standards and additional requirements. A checklist designed to help applicants design their projects appears in Section 4. The final section includes definitions of terms used in this document.

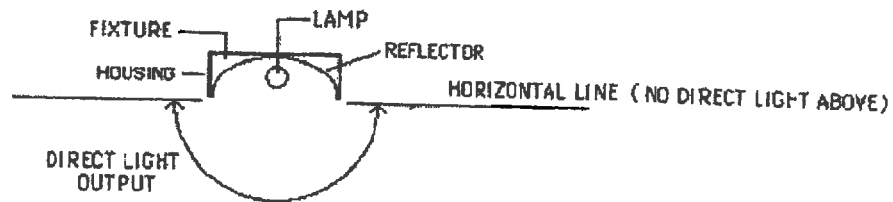
The Outdoor Lighting Standards apply to all Zoning districts in the Village, and compliance with the standards is required of all projects that require Subdivision, Site Plan, and Special Use Permit approval as well as Historic Certificates of Appropriateness. Since the standards will benefit everyone who lives and works in the Village, it is recommended that all property owners follow the recommendations of this publication. Doing so will promote neighborliness and create a more livable community for everyone.

LIGHTING STANDARDS

A. GOOD LIGHTING IS FULLY SHIELDED

A fully shielded fixture is one that does not allow any light dispersion or direct glare to shine above a 90 degree, horizontal plane from the base of the fixture. Fully shielded fixtures keep light in the intended area and minimize glare. Such fixtures are more cost effective because they do not waste light by shining it in areas where it is not needed (such as the sky), and they increase safety because they do not create glare. Glare, which occurs when you can see light directly from the fixture or bulb, can hamper the vision of pedestrians and drivers, creating a hazard rather than increasing safety.

Fully shielded fixtures must be installed in a horizontal position as designed or the purpose of the design is defeated and direct glare will result.



A fully shielded fixture does not allow any light dispersion above a horizontal plane from the base of the fixture.

Standards

- ✓ All outdoor fixtures, with the exception of those lamps not requiring shielding cited in Table 1, shall be fully shielded so that no light is emitted above a horizontal plane running through the lowest part of the fixture. The lighting shall also be shielded to prevent direct glare and/or light trespass, and shall be, as much as physically practical, contained to the target area.
- ✓ All light fixtures that are required to be fully shielded shall be installed and maintained so that the shielding is effective as described in the definition of fully shielded fixture in Section 5.
- ✓ Unshielded "wallpack" type fixtures are prohibited.

LIGHTING STANDARDS

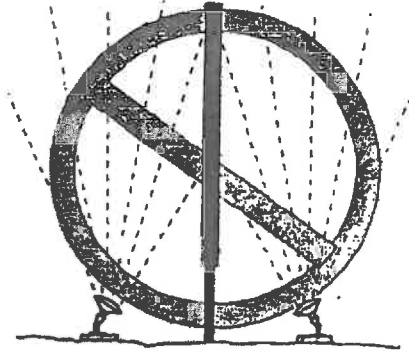
- ✓ Floodlighting is discouraged and, if used, must be shielded to prevent: direct glare for drivers and pedestrians; light trespass beyond the property line; and light above a 90-degree, horizontal plane.
- ✓ Lighting for outdoor recreational facilities, both public and private, shall be fully shielded.

TABLE 1: SHIELDING REQUIREMENTS	
Fixture Lamp Type	Shielded
Low/High Pressure Sodium, Metal Halide, Quartz, and Fluorescent over 50 watts	FULLY
Incandescent greater than 160 watts	FULLY
Incandescent 160 watts or less	NONE
Any light source of 50 watts or less	NONE
Fossil Fuel	NONE
Other sources	As approved by the Planning Board

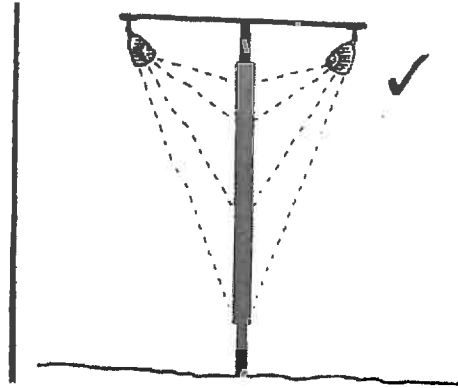
B. GOOD LIGHTING IS DIRECTED DOWNWARD

Lights that are directed upwards at the object they intend to illuminate create an adverse sky glow that washes out our view of the dark night sky and detracts from our ability to enjoy the beauty of the stars and planets. In addition, up-lighting is wasteful because it illuminates far more than the object intended. This results in high operating costs and increased environmental pollution from the extra power generation needs. In the United States alone, we waste over a billion dollars a year lighting up the sky. Signs, buildings and other objects that we wish to illuminate can just as easily be lit downwards, without these adverse impacts.

LIGHTING STANDARDS



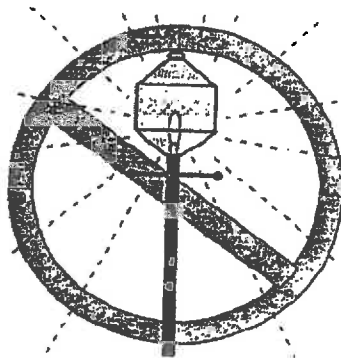
Ground mounted lights shine upwards, wasting energy and illuminating the night sky.



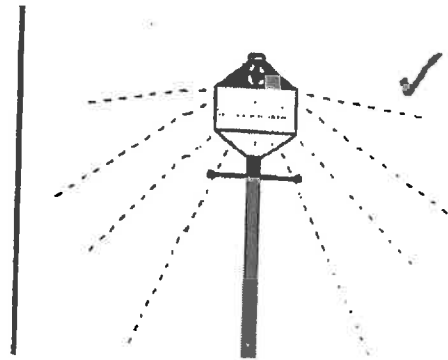
Top mounted lights illuminate only the intended object, preventing glare and sky glow.

Standard

- ✓ Externally lit signs, displays, buildings, structures, streets, parking areas, recreational areas, landscaping, and other objects lit for aesthetic or other purposes must be lit from the top and shine downward. Uplighting is prohibited.



Post lamp that broadcasts light



Post lamp that directs light downward.

C. GOOD LIGHTING PREVENTS LIGHT TRESPASS

Light trespass refers to light from an artificial light source that intrudes into an area where it is not wanted or does not belong. It includes glare from direct light,

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which causes discomfort or loss in visual performance, as well as unwanted spill light.

When light trespasses from the area for which it is intended, it can shine onto neighborhood properties, creating annoyance and producing an unattractive appearance. Light that shines into bedroom windows reduces privacy and hinders sleep. Good lighting illuminates only the intended area and prevents light trespass.

Standards

- ✓ All outdoor lights and illuminated signs shall be designed, located, installed, and directed in such manner as to prevent objectionable light at and across the property lines, and to prevent direct glare at any location on or off the property.
- ✓ Light trespass from a property shall be designed not to exceed 0.25 footcandles at the property line. Adjacent to residential property, no direct light source shall be visible at the property line at ground level or above.
- ✓ The use of laser lighting for outdoor advertising or entertainment, and the operation of searchlights for advertising purposes are prohibited.
- ✓ Roof mounted area lighting is prohibited.
- ✓ Island canopy ceiling fixtures in auto/truck filling stations shall be fully recessed to avoid off-site glare.

D. GOOD LIGHTING IS HUMAN SCALE

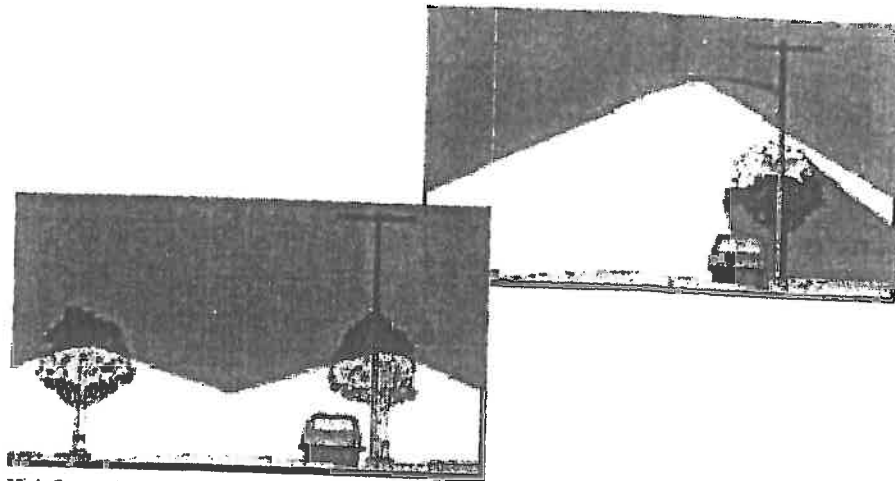
The scale of lighting is as important as it's shielding. Even well shielded fixtures will create glare and light trespass if they are placed on tall poles. A few bright fixtures can create "hot spots" that make the less lit areas in between seem dark. This can create a safety problem. Tall poles also broadcast light farther, creating light trespass. To create a safe and inviting environment, it is better to illuminate the area uniformly on human scale poles. The use of lower, evenly spaced poles of a height no more than 10 to 15 feet will create a more attractive and secure environment.

Standards

- ✓ Except for recreational facilities, such as baseball and other field sports, the maximum allowable height of a freestanding luminaire shall be 16 feet above the average finished grade. Exceptions to the maximum height limitations up to 25 feet above the average finished grade may be made when it can be demonstrated that glare to off-site locations will not occur with such higher fixture.

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- ✓ The maximum allowable height of a building- or structure-mounted luminaire shall be 35 feet.
- ✓ The space between fixtures should be approximately four times the height.



High fixtures broadcast light over the street, but often cast shadows on sidewalks. Historic quality and pedestrian scale fixtures focus light on streets, sidewalks, and storefronts in centers, not the upper floor windows.

- ✓ Street lighting shall utilize cast-iron posts not exceeding twelve (12) feet in height.
- ✓ To improve the aesthetics of the area, electrical feeds to lighting standards shall be run underground, not overhead.

E. GOOD LIGHTING IS ADEQUATE, NOT EXCESSIVE

Good lighting provides adequate light for the intended task, but does not overlight. Overlighting creates glare, which can reduce, rather than improve, safety. Excessively bright lighting is offensive and gives a poor image. It also wastes energy and increases operating costs. Lighting should be sufficient to illuminate the intended area, but not excessive. This can be accomplished by following the latest recommended levels for outdoor lighting set by the Illuminating Engineering Society of North America.

Standards

- ✓ Light levels shall be designed so they do not to exceed the latest recommended levels for outdoor lighting set by the Illuminating Engineering Society of North America (IES) for the type of activity/area being lighted (see Table 2). The only exception to this are light levels

LIGHTING STANDARDS

required by the State of New York for ATM machines, which shall be in accordance with the New York State ATM Safety Act. Where no standard is available from IES, the applicable standard shall be determined taking into account the levels for the closest IES activity. The uniformity ratio (average to minimum) shall not exceed 3/1 for parking and traffic areas, nor 4/1 for pedestrian areas. Maximum to average light levels shall be kept within a 6/1 ratio.

- ✓ Design should establish a hierarchy of lighting to assure a smooth transition from bright areas to those with subdued lighting.
- ✓ Light levels shall be maintained at design levels with lamp or luminaire replacement as needed.
- ✓ All non-essential lighting shall be turned off after business hours, leaving only the necessary lighting for site security, which shall be reduced to the minimum level necessary. "Non-essential" can apply to: display, aesthetic, parking and sign lighting. Motion-sensor security lighting is recommended to promote safety and reduce the amount of night lighting in the Village.
- ✓ The use of Mercury Vapor lamps, which cast a very bright, unattractive light, is prohibited.

TABLE 2: ILLUMINANCE AND UNIFORMITY

Use/Task	Horizontal Illuminance (fc)		Uniformity Ratio (Average/Minimum)
	Average	Minimum	
Streets:			
Local residential	0.4	--	6/1
Local commercial	0.9	--	6/1
Parking:			
High activity, e.g., regional shopping centers; fast food facilities; major athletic, cultural, or civic events	3.6	0.9	4/1
Medium activity, e.g., community shopping centers; cultural, civic, or recreational events; office or hospital parking; commuter lots; residential complex parking	2.4	0.6	4/1
Low activity, e.g., neighborhood shopping (with > 5,000 sq. ft.);	0.8	0.2	4/1

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TABLE 2: ILLUMINANCE AND UNIFORMITY

Use/Task	Horizontal Illuminance (fc)		Uniformity Ratio (Average/Minimum)
	Average	Minimum	
Industrial employee parking; schools, church parking, wherever there is a requirement to maintain security at any time in areas where there is a low level of nighttime activity			
Walkways and Bikeways:	0.5	--	5/1
Building Entrances:			
Active (pedestrian and/or conveyance)	5.0	--	--
Inactive (normally locked, infrequently used)	1.0	--	--
	Dark Surroundings	Bright Surroundings	
Loading Platforms:	20		
Service Stations:			
Approach	1.5	3	
Driveway	1.5	5	
Pump Island	20	30	
Service Areas	3	7	
Retail Outdoor Lighting:	5	10	
Auto Sales Lots:	5	10	

F. STREET LIGHTS

Street lighting is a special category of lighting. All of the lighting standards cited above apply to street lights, including the need for fully shielded fixtures, avoiding glare and excessive lighting, and height limitations. Street lighting should be brought into conformance with the Village's Outdoor Lighting Standards when fixture or light source replacements are made or when funding becomes available to undertake a comprehensive lighting replacement project. The following standards will create an attractive and secure streetscape:

Standards

- ✓ Street lighting shall utilize cast-iron posts not exceeding twelve (12) feet in height.
- ✓ Street lighting shall be provided on one or both sides of all streets at intervals of no greater than seventy-five (75) feet on center and at intersections.

LIGHTING STANDARDS

- ✓ Lighting posts and fixtures for streetlights shall be of consistent architectural style on the street.
- ✓ Street lighting shall be located between the street curb or pavement and the sidewalk.

SUBMISSION STANDARDS

A. SUBMISSION STANDARDS

An applicant for work involving outdoor lighting fixtures that requires Village permits or approvals as identified herein, shall submit, as part of the application, evidence that the proposed work will comply with these standards. The submission shall contain the following:

- (1) Plans indicating the location, height, orientation, type of illuminating device, and wattage of each outdoor lighting fixture.
- (2) Description of the illuminating fixtures, lamps, supports, reflectors, and other devices, including, but not limited to, catalog cuts by manufacturers and drawings (including sections where required).
- (3) Photometric data, such as that furnished by the manufacturers, or similar showing the angle of cut-off or light emissions.
- (4) Additional information that the Planning Board or Building Inspector determines is necessary, including, but not limited to, an iso-lux plan indicating levels of illumination in footcandles at ground level.

B. ADDITIONAL REQUIREMENTS

- (1) Lamp or Fixture Substitution. If any outdoor lighting fixture or the type of light source is changed after the permit has been issued, a change request must be submitted to the Building Inspector for revised approval. The Building Inspector shall review the change request to assure compliance with these standards. If the change request is not substantial, the Building Inspector may approve it. If the change request is substantial, the Building Inspector shall forward such request to the Planning Board for an amended approval, which must be received prior to substitution.
- (2) Post Installation Inspection. The Village reserves the right to conduct a post installation nighttime inspection to verify compliance with the outdoor lighting standards and, if appropriate, to require remedial action.

SUBMISSION STANDARDS

- (3) Maintenance. Lighting fixtures shall be maintained so as to always meet the requirements of the outdoor lighting standards.
- (4) Nonconforming Outdoor Lighting. No replacement or installation of new lighting fixtures shall be permitted unless in conformance with this Section. Non-conforming outdoor lighting that is the subject of Subdivision, Special Use Permit and/or Site Plan applications, Historic Certificate of Appropriateness, Certificates of Occupancy, No-violation Letters, or other permit, approval, entitlement, or authorization from the Village of New Paltz shall be subject to all of the terms and conditions of these Standards.
- (5) Exemptions. The following uses shall be exempt from the outdoor lighting standards:
 - (a) Temporary circus, fair, carnival, religious, historic, or civic uses.
 - (b) Construction or emergency lighting provided such lighting is temporary and is discontinued immediately upon completion of the construction work or abatement of the emergency necessitating said lighting.
 - (c) Temporary lighting, including holiday lighting for no more than two months per year.
 - (d) Lighting that is considered a landscape design element and is integral to the aesthetic value of the design, as determined by the Planning Board.
 - (e) All outdoor light fixtures producing light directly by the combustion of natural gas or other fossil fuels.
 - (f) Outdoor light fixtures installed on, and in connection with those facilities and land owned or operated by the federal government, the State of New York, the County of Ulster, Village or Town of New Paltz, or any department, division, agency or instrumentality thereof. Voluntary compliance with the outdoor lighting standards at those facilities is strongly encouraged.

CHECKLIST

This checklist will ensure that the lighting on your site complies with the Village's outdoor lighting standards. Simply review your photometric plan, and check off the boxes next to each point, where appropriate. If you do not understand the concepts mentioned in the checklist, refer back to the descriptions in the Lighting Standards discussion above.

A. FIXTURES ARE FULLY SHIELDED

- All fixtures requiring shielding are fully shielded.
- All fully shielded fixtures are properly installed.
- No unshielded "wallpack" type fixtures are proposed.
- If floodlighting is proposed, it will be shielded to prevent direct glare, light trespass, and light above a 90-degree, horizontal plane.
- Lighting for outdoor recreational facilities will be fully shielded.

B. LIGHTING IS DIRECTED DOWNWARD

- All lighting proposed for the site will be directed downward.

C. LIGHT TRESPASS HAS BEEN PREVENTED

- Outdoor lights have been designed, located, installed and directed so as to prevent light trespass and direct glare at and across the property lines.
- Light trespass will not exceed 0.25 footcandles at the property line.
- Adjacent to residential property, no direct light source will be visible at the property line at ground level or above.
- Laser lighting and/or searchlights have not been proposed.
- No roof mounted area lighting is proposed.

CHECKLIST

- Island canopy ceiling fixtures will be fully recessed in auto/truck filling stations.

D. LIGHTING IS HUMAN SCALE

- The maximum height of freestanding luminaires will be 16 feet above the average finished grade.
- The maximum height of building or structure-mounted luminaires will be 35 feet.
- The space between fixtures will be approximately four times the height.
- Street lighting will use cast-iron posts not exceeding 12 feet in height.
- Electrical feeds to lighting standards will run underground.

E. LIGHTING IS ADEQUATE, NOT EXCESSIVE

- Lighting levels will not exceed the recommended levels set by the IES.
- The design establishes a hierarchy of lighting to assure a smooth transition from bright areas to those with subdued lighting.
- Light levels will be maintained at design levels with lamp or luminaire replacement as needed.
- All non-essential lighting will be turned off after business hours.
- Motion-sensor security lighting will be used to promote safety and reduce the amount of night lighting in the Village.
- Mercury Vapor lamps will not be used.

F. STREET LIGHTS

- Street lighting will use cast-iron posts not exceeding 12 feet in height.
- Street lighting will be provided on one or both sides of the street at intervals of no greater than 75 feet on center and at intersections.

CHECKLIST

- Street lighting posts and fixtures will be of consistent architectural style on the street.
- Street lighting will be located between the street curb or pavement and the sidewalk.

DEFINITIONS

A number of technical words are used throughout this document. The following definitions apply to these terms:

The *angle of cut-off* is the angle, measured up from the nadir, between the vertical axis and the first line of sight at which the bare source of light is not visible.

A *footcandle (fc)* is a unit of illuminance amounting to one lumen per square foot.

A *fully shielded fixture* is an outdoor lighting fixture that, by design of the housing, does not allow any light dispersion or direct glare to shine above a 90 degree, horizontal plane from the base of the luminaire. Fully shielded fixtures must be installed in a horizontal position as designed or the purpose of the design is defeated and direct glare will result.

Glare is the eye's line-of-sight contact with a direct light source that causes annoyance, discomfort, or loss in visual performance and ability. Glare occurs when you can see light directly from the fixture or bulb.

The *height of the luminaire* is the vertical distance from the ground directly below the centerline of the luminaire to the lowest direct-light-emitting part of the luminaire.

Illuminance is the emitted or reflected light from a surface. The unit of measurement for illuminance is footcandle or lux.

Light trespass refers to light from an artificial light source that intrudes into an area where it is not wanted or does not belong. Light trespass includes glare from direct light as well as unwanted spill light.

A *luminaire* is a complete lighting unit consisting of one or more lamps (light sources), together with the parts designed to control the light distribution and other mechanical and electrical components.

Lux is a unit of illuminance equal to one lumen per square meter.

Outdoor lighting is the nighttime illumination of an outside area or object by any man-made device located outdoors that produces light by any means.

An *outdoor lighting fixture* is an electrically powered illuminating device or other outdoor lighting fixture including all parts used to distribute the light and/or protect

DEFINITIONS

the lamp, permanently installed or portable, used for illumination or advertisement. Such devices shall include, but are not limited to, search, spot, flood, and area lighting for: buildings and structures; recreational areas, parking areas; landscaping; signs (advertising and other); streets; product display areas; building overhangs and open canopies.

A *recessed canopy fixture* is an outdoor lighting fixture recessed into a canopy ceiling so that the bottom of the fixture is flush with the ceiling.

Spill light is light shining beyond a facility that may annoy occupants of the adjacent property.

Uplighting is any light source that distributes illumination above a 90-degree horizontal plane.

A *wallpack fixture* is a lighting unit designed for direct mounting on building walls whose primary function is to light building exteriors.

