New York Energy $mart[SM] Small Commercial Lighting Program (SCLP)
Glossary of Lighting Terms

This glossary lists terms commonly used in the Small Commercial Lighting Program and provides definitions and usage as the terms apply specifically to the Program.

Accent Lighting:

Spotlighting used to provide higher levels of light in a focused pattern to accentuate selected objects in relation to their surroundings. Accent lights count toward the energy load, but do not have to meet the spacing or luminous intensity criteria of the Program.

Ambient Light Level:

General uniform lighting using light fixtures that distribute the light widely, directly or indirectly.

Bay Fixtures:

The term Bay Fixtures, as used in SCLP, refers to both High Bay and Low Bay Fixtures. These can be HID, fluorescent, or compact fluorescent.

Ballast:

A device used to operate fluorescent and HID lamps. The ballast provides the necessary starting voltage, while limiting and regulating the lamp current during operation. A ballast can be magnetic, electronic**,** or a hybrid of magnetic and electronic.

Candela:

A unit of luminous intensity, describing the intensity of a light source in a specific direction. In the SCLP, qualifying luminaires may not exceed certain luminous intensity limits. These criteria help limit excessive glare.

Color Rendering Index (CRI):

A scale for the effect of a light source on the color appearance of an object in comparison with the color appearance under a reference light source. Expressed on a scale from 0 to 100, where 100 indicates no color shift. In general, a low CRI rating indicates that the colors of objects will appear unnatural under that light source. A high rating indicates that the colors of objects will appear natural under that light source.

For most applications the SCLP requires a CRI of 70 or higher for all lamps, and recommends 80 or higher for the health care and retail industries. Some common examples of CRI:

Incandescent:	98 CRI
Compact Fluorescent Lamps:	82 CRI
F32T8/841:	85 CRI
F32T8/741:	75 CRI
Fluorescent Cool White:	62 CRI
Metal Halide Clear:	65 CRI
Metal Halide Coated:	70 CRI
Metal Halide Color Improved:	80-96 CRI
Mercury Vapor:	20-50 CRI
High Pressure Sodium Standard:	20-25 CRI
High Pressure Sodium Color Improved:	60-65 CRI
Low Pressure Sodium	0 CRI

Compact Fluorescent Lamps:

A small fluorescent lamp that is often used as an alternative to incandescent lighting. Also referred to as PL, DL, CFL or BIAX lamps. These may be a plug in lamp, or they can include a ballast and have a screw in base.

Daylight Dimming:

A dimming system controlled by a photocell that reduces the output of the lamps when daylight is present. This energy saving technology is used in areas with significant daylight contribution. Dimming ballasts are needed for fluorescent and HID systems.

Direct Glare:

Glare that is produced by a direct view of light sources *(see Glare)*.

Direct Luminaire:

Lighting by luminaires distributing 90-100% of the emitted light in the direction of the surface to be illuminated. The term usually refers to light emitted in a downward direction.

Direct/Indirect Luminaire:

Lighting by luminaires that combine direct and indirect lighting. The percentage of up-light and down-light will vary for each luminaire.

Energy Conservation Construction Code of New York State:

Contains the lighting power allowances for commercial buildings in New York State.

Fixture:

See luminaire.

Footcandles (fc):

A unit of measurement of the illuminance (or light level) on a surface. One footcandle is equal to one lumen per square foot.

Glare:

The effect of brightness, or differences in brightness, within the visual field sufficiently high to cause annoyance, discomfort, or loss of visual performance.

HID:

An abbreviation for High Intensity Discharge**.** This is a generic term used to describe mercury vapor, metal halide, and high pressure sodium light sources.

Horizontal Mean Illuminance:

This refers to the average light level (expressed in footcandles) on the horizontal work plane. The SCLP uses the IESNA recommended light levels. The recommended footcandle level depends on the task, and refers to the average ambient light level over the entire area.

IESNA:

The Illuminating Engineering Society of North America (IESNA). The SCLP follows the recommendations of the IESNA for proper light levels.

Illuminance (footcandle):

The amount of light falling on a surface. It is calculated as the number of lumens per unit area of surface**,** usually expressed as lumens (lm) per square foot or "footcandle." Footcandles ©) = lm/ft^2. The "IESNA Lighting Handbook, 2000" recommends illuminance values for a variety of lighting applications, categorized according to the level of complexity of the visual task being performed. These recommendations are the basis of the light level target criteria of the SCLP.

Illuminance Levels:

This refers to the average light levels measured in footcandles.

Illuminance Uniformity:

Uniformity is achieved by not exceeding the maximum to minimum light levels on the work plane, and throughout the work space. The SCLP uses luminaire fixture spacing criteria to control uniformity. Luminaires must be spaced within the fixture manufacturer's spacing criteria list on the photometric sheet.

Indirect Luminaire:

Lighting by luminaires distributing 90-100% of the emitted light upward.

Life Cycle Cost (LCC):

A method of comparing the cost of a lighting system over a period of time, usually the number of

years the system is expected to be in use. It includes the initial system cost, lamp replacement costs, and energy costs. NYSERDA provides a LCC tool on their website to help calculate the life cycle cost.

Lighting Power Density (LPD):

A measurement of the watts per square foot consumed by the lighting system. Total watts of the lighting system (including ballast watts), divided by the square footage of the space equals LPD. The energy requirements (LPD) for the SCLP must be at least 10% better (less) than the Energy Conservation Construction Code of New York State based on space type.

Lumen:

A unit of light flow. The lumen rating of a lamp is a measure of the total light output of the lamp. Lumen ratings are listed in the lamp manufacturer's specification guide. Because lumens depreciate over time for fluorescent and HID lamps, lumens are listed two ways. *Initial lumens* refer to the light output of the lamp after 100 hours of operations under laboratory conditions. *Mean lumens* refer to the light output of the lamp at 40% of its rated life under laboratory conditions. Comparing lumens of a similar light source (same size and shape) is one method of determining which lamp will provide more light.

Luminaire:

A complete lighting unit consisting of a lamp or lamps and ballasting (when applicable) together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps to the power supply (also referred to as a fixture).

Luminance (Candela per square meter):

The photometric quantity most closely associated with one's perception of brightness. It usually refers to the amount of light that reaches the eye of the observer measured in units of luminous intensity (candela) per unit area (meter^2).

Luminous Flux (light output or lumen output):

The total luminous flux (light output) of a light source expressed in lumens. Whereas a lamp will have many candela values, depending upon the direction of interest, it will have only one lumen output rating. The lumen rating can be considered as the measure of the summation of light output of a lamp. Ratings are determined and published by the lamp manufacturer. Initial lumen rating of the lamp is required for each lamp used on an SCLP project in order to determine the amount of light in the space.

Luminous Intensity (Candela):

Refers to the intensity of a light source in a specific direction, expressed in candelas (cd). Any given light source will have many different intensities, depending upon the direction considered. Since the intensity is the a property of the source itself, the candlepower (luminous intensity expressed in candelas) for a specified direction remains the same, regardless of distance from the source. To help avoid excessive glare, the SCLP has criteria for the maximum luminous intensity measured in candelas. It is based on the candle power summary chart on the fixture photometric sheet.

MR16 Lamp:

A low-voltage quartz reflector lamp, two inches in diameter. Typically the lamp and reflector are one unit. These lamps are able to direct light in a sharp, precise beam of light.

Occupancy Sensors:

Devices that sense occupancy of people within a space. Luminaires are dimmed or turned off when the space is not occupied. These energy saving devices may be wall mounted, ceiling mounted, or built into the luminaire.

Open Office Space:

For the purposes of the SCLP, an open office shall be defined as any office area where general office tasks are performed that is greater than 300 square feet. The SCLP luminous intensity

criteria for open offices is different than other areas because concern for glare control in these spaces.

Overhead Glare:

Glare caused by excessive brightness directly above the user *(see Glare).*

Par Lamp:

A Parabolic Aluminized Reflector Lamp, used to redirect light from the source, using a parabolic reflector. Halogen Par Lamps are available with very precise beam control, from very narrow spots to very wide floods.

Parabolic Luminaires:

A type of fixture which has a louver composed of aluminum baffles that are curved in a parabolic shape. The distribution can provide reduced glare and better light control. The parabolic can be different sizes and different depths.

Pendant Mount:

Refers to luminaires that are suspended from the ceiling (by chain, cable or rods).

Photometric Report:

A set of printed data from the manufacturer describing the light distribution, efficiency, and lumen output of a specific luminaire based on laboratory testing. The report for each luminaire used on a project must be submitted with the application and work sheet.

Prismatic Lens:

A type of lens that incorporates a series of small prisms. The lens scatters the light passing through it. The efficiency will depend on the specific lens.

Pulse Start Metal Halide:

Pulse start metal halide lamps require special ballasts. The combined ballast/lamp system may provide superior performance when compared to old design standard metal halide lamps. Specifically, there may be higher energy-efficiency, better color uniformity, faster warm-up and re-strike, and longer life. It is important to compare the specific lamp ballast combination as performance varies by manufacturer.

RP-1:

The 1993 American National Standard for Office Lighting ANSI/IES RP-1 sets standards for office lighting to limit distracting reflections in the visual display terminal (VDT), and to limit the potential for eye adaptation problems. Luminaires may be listed by the manufacturer as "meets IES Standard RP-1 (for areas of non-intensive use) or IES preferred RP-1 (for areas of intensive use) glare control recommendations." Even though a luminaire meets the RP-1 recommendations, it does not necessarily mean that it qualifies for the SCLP. It must meet the Program luminous intensity criteria in order to qualify for the Small Commercial Lighting Program.

Recessed:

Refers to luminaires that are mounted up in the ceiling.

Reflective Ceiling Plan:

Shows the layout of the luminaires on the ceiling.

Reflective Glare:

Glare resulting from reflections of light on polished or glossy surfaces. A common example of reflective glare is the reflection of light on computer screens *(see Glare).*

Semi-Specular:

A semi-specular finish on louvers or reflectors results in some of the light being reflected directionally, with some amount of scatter.

Spacing Criteria (SC):

The maximum distance that interior may be spaced from each other that ensures uniform illumination on the workplane. The luminaire height above the workplane, multiplied by the spacing criteria equals the recommended maximum center-to-center luminaire spacing. The SCLP

criteria require luminaires to be spaced within the recommended spacing criteria.

Spacing to Mounting Height Ratio (S/MH):

The ratio of the actual distance between luminaire centers to the mounting height above the workplane of the installed luminaires. The actual distance must me entered on the project application work sheet to verify the actual spacing does not exceed the spacing criteria.

Specular:

A specular finish on louvers or reflectors resembles a mirrored or polished surface. This can often create excessive glare.

Surface Mount:

Refers to luminaires that are mounted directly to the ceiling.

T5 Lamps:

Lamps with a diameter of 5/8". Used to refer to the high efficiency European lamps requiring a T5 electronic ballast. Currently only available in metric lengths. Available in both standard and high-output. T5 is also the dimension for many of the twin-tube compact fluorescent lamps.

T8 Lamps:

Lamps with a diameter of 8/8" (1 inch). Used to refer to high efficiency linear fluorescent lamps, which are commonly run on electronic ballasts. These lamps use a tri-phosphorous coating, which improves the color rendering when compared to standard cool white lamps.

Task Lighting:

Task lighting is the lighting, or amount of light that falls on a given task. In the SCLP, task lighting refers to lighting that is not part of the general lighting system, such as portable lighting (desk, floor, and table lamps), as well as lighting that is part of modular systems. Task lighting is not counted as part of the energy load for the SCLP energy criteria.

Troffer:

A recessed lighting unit, usually square or rectangular in shape**,** installed with the opening flush with the ceiling. The term is derived from “through” and “coffer” (a coffer being a recessed panel or dome in a ceiling).

Wall Wash:

Term used to describe the luminaires designed to illuminate vertical surfaces. In the SCLP wall washers must be mounted within three feet of the wall they are illuminating.

Workplane:

The level at which work is done and at which illuminance (light level) is specified. In a hallway the workplane would be at the floor, while in an office it would be a horizontal plane 30 inches above the floor (desk height).