

Luminaire Classification System for Outdoor Luminaires



IESNA TM-15-07

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Lighting

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Lighting

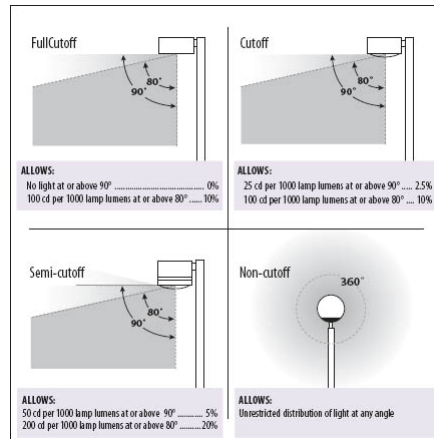
Outdoor Lighting Criteria

- Background on IESNA RP-8
 - 1960's
 - Lateral distribution (Type I – Type V) was redefined
 - Defined vertical distribution criterion for short, medium and long distribution
 - Included high angle “glare” control for cutoff, semi-cutoff and non-cutoff classifications
 - 1990's
 - Expanded cutoff classifications to include full cutoff for products with no uplight

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IESNA Cutoff Classifications

- Classifications based on intensity per 1000 lamp lumens at or above 80 and 90 degrees



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What are the Issues with Cutoff Classifications?



- It was designed to evaluate high angle brightness only at 80 and 90 degrees
- It is based on intensity per 1000 lamp lumens
 - Difficult to describe to non-lighting professionals
 - Allows a higher intensity for higher wattage lamps
- It was not designed to evaluate obtrusive lighting factors, but was commonly misapplied in ordinances and regulations
 - Sky glow
 - Light trespass

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Cutoff Classifications and Uplight

IESNA Cutoff Classification	Typical Range of Upward Distribution (% of luminaire lumens)
Full cutoff	0%
Cutoff	0%-20%
Semi-cutoff	0% - 40%
Non-cutoff	2% - 100%

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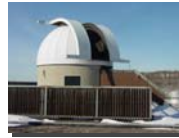
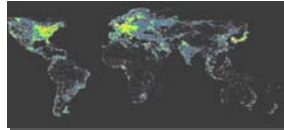
Outdoor Municipal Ordinances

- Proliferation of ordinances attempting to prevent obtrusive lighting
 - Many are based on simplistic or non-technical criteria such as pole heights or lamp wattages
 - Often require full cutoff or “fully shielded” luminaires for all applications
 - Typically developed to prevent the most offensive designs but also restrict good lighting designs
 - Some result in unintended consequences that do not support quality lighting

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The New Era for Outdoor Lighting

Outdoor lighting is no longer just about lighting for visibility or security



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New IESNA System to Classify Outdoor Luminaires

- Describes the zonal distribution of light into photometric solid angles of significant interest
- Does not currently describe acceptable or offensive levels
- Does not replace current roadway classifications to describe the directional distribution



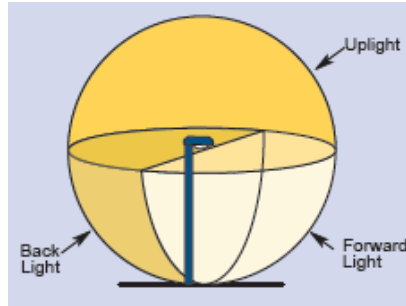
LFI 2007 Innovation Award

Research, Publications, Software & Unique Applications

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Luminaire Classification System (LCS)

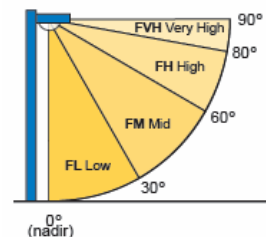
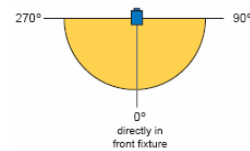
- Forward Light
- Back Light
- Uplight



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Forward Light

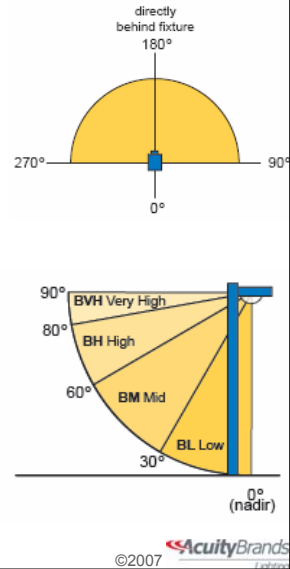
- Describes the light distributed in front of the luminaire
 - Quantifies light in solid angles for light distributed near the pole and at a further distance from the pole
 - Provides the ability to evaluate the potential for excessive high angle brightness



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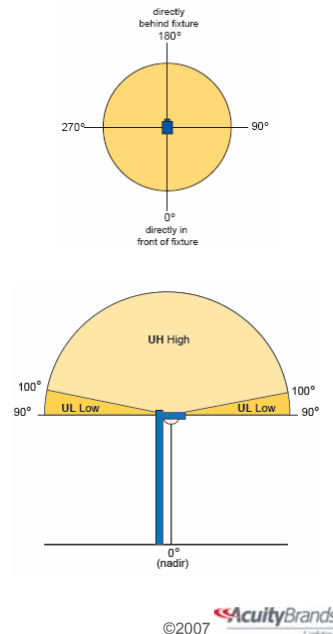
Back Light

- Describes the light distributed behind the luminaire
 - Quantifies light in solid angles for light distributed near the pole and at a further distance from the pole
 - Provides the ability to evaluate the potential for light trespass when luminaires are located on or near the property line

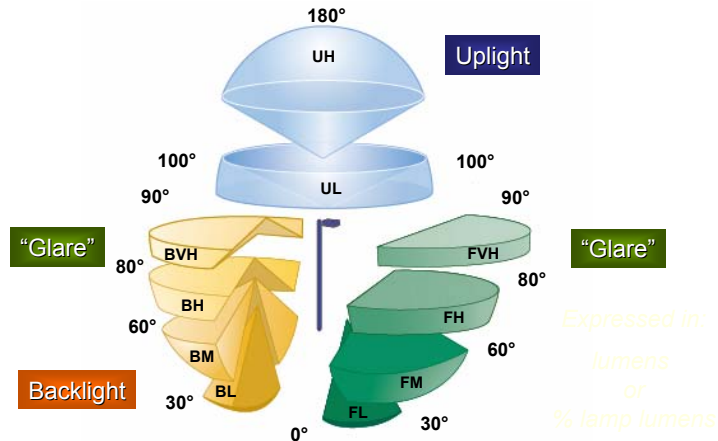


Uplight

- Describes the light distributed above the luminaire
 - Quantifies light in a solid angle at or near horizontal, which has a higher impact on light scattering in the atmosphere and contributing to sky glow



The LCS System



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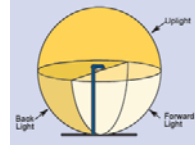
Photometric Data



- Based on existing testing procedures and test data...**BUT**
 - Should include sufficient data to accurately describe the photometric distribution
 - Upper hemisphere when appropriate
 - Sufficient vertical and horizontal test data

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LCS Summary



- LCS provides more meaningful information about the optical control of the luminaire
 - Can be used to evaluate various aspects of obtrusive light, not just high angle brightness
 - Easy to define using existing photometry
- Supersedes the IESNA cutoff classifications
- Evaluation of solid angles must correspond to installed orientations and tilt
- Does not replace the current IESNA Roadway Distribution types
 - I, II, III, IV, V
 - short / medium / long