“planning on the urban fringe”
PPA 2007 Annual Conference

OUTDOOR LIGHTING
ISSUES FOR PLANNERS AND MUNICIPALITIES

Presented by:
The Pennsylvania Outdoor Lighting Council
PA Section of the International Dark-Sky Association
Topics

• OUTDOOR LIGHTING – AN ORIENTATION

• THE IMPORTANCE OF GOOD LIGHTING

• HOW MUNICIPALITIES CAN PLAN FOR, GET AND ENFORCE AN EFFECTIVE LIGHTING ORDINANCE
Lighting Trends

Light pollution and billions of dollars of wasted energy
Lighting Trends

Erie

Williamsport

Scranton & Wilkes-Barre

Hazleton

Easton & Allentown

Philadelphia

Pittsburgh

Harrisburg

York

Lancaster

Reading
Lighting Trends
LA Basin 99 Years Ago
Lighting Trends
LA Basin Now
Lighting Trends

Typical Suburban Sky Glow
The US in 2025?

Artificial Night Sky Brightness due to Light Pollution in North America
A preliminary picture of the growth from 1950 to 2025
A Case in Point

BOWLING ALLY PARKING LOT

$ 3,000 IN ENERGY COST WASTED A YEAR =
15 TONS OF COAL OR 55 BARRELS OF OIL
Case in Point

Light Pollution Viewed from Neighbor’s Window
Case in Point
Light Pollution Viewed on Neighbor’s Wall
Case in Point

• Predicament
  • Sleepless nights, health concerns
  • Useless ordinance
  • Unwilling owner

• Helped township create good lighting ordinance

• Owner applied to expand operation
  • New lighting, 400-watt fixtures aimed down and turned off after hours.
Case in Point

New Lighting
WHAT IS GOOD LIGHTING?

• Good lighting starts with:
  • Using the right amount of light
  • Using fixtures that place the light on the ground.
  • Using fixtures that shield the light source from peoples’ view.
  • Having lights on only when needed
  • Good lighting typically means using “cutoff,” “full-cutoff” or “fully-shielded” fixtures.
CUTOFF DEFINITIONS

Definitions
Definition of Cutoff is based on what proportion of a luminaire's output is being distributed at 80° and 90° above nadir.

Non-cutoff
A luminaire's light distribution is designated as Non-cutoff when there is no luminous limitation in any zone.

Full Cutoff
A luminaire's light distribution is designated as Full Cutoff when the candela at 90° above nadir is 0 and less than 10% of rated lumens at 80° above nadir.* See figure 9.2

Cutoff
A luminaire's light distribution is designated as Cutoff when the candela at 90° above nadir is less than 2.5% of rated lumens, and less than 10% of rated lumens at 80° above nadir.* See figure 9.3

Semicutoff
A luminaire's light distribution is designated as Semicutoff when the candela at 90° above nadir is less than 5% of rated lumens, and less than 20% of rated lumens at 80° above nadir.* See figure 9.4
STREET LIGHTS

FULL CUTOFF

SEMI CUTOFF
“SHOEBOX” FULL-CUTOFF FIXTURES
SHOPPING CENTER
PERIOD LIGHTING

Non-Cutoff
PERIOD LIGHTING

Cutoff
SPORTS LIGHTING
TYPICAL OFFENDERS

FLOODLIGHTS
AIMING FLOODLIGHTS TO REDUCE GLARE AND LIGHT POLLUTION

WITH FLOODLIGHT AIMED AT 45° OR LESS, LIGHT POLLUTION AND GLARE ARE CONTROLLED.

WITH HIGHER AIMING, GLARE AND LIGHT POLLUTION ARE UNCONTROLLED.

USEFUL LIGHT

SOURCE OF LIGHT POLLUTION AND GLARE
WALL PACKS

They can ruin an otherwise perfect job.

Full Cutoff

Non-Cutoff
POSTER CHILD FOR GLARE

BARN LIGHT, AKA DUSK-TO-DAWN LIGHT
UNCONTROLLED GLARE

Some light even reaches the ground!
SUMMARY

• Lighting is trending in the wrong direction

• Good lighting starts with the right amount of light from the right kind of fixtures that are on only when needed.

• A good ordinance can make a big difference
WHAT’S NEXT

• Goals of good lighting
• Lighting myths
• Negative lighting impacts
• Promoting quality lighting
• Lighting terminology
• Legal implications