

EXIHIBIT A: Exterior Lighting Guidance

The International Dark Sky Association is the authoritative voice on light pollution. IDA educates lighting designers, manufacturers, technical committees and the public about controlling light pollution. They also have developed a Fixture Seal of Approval program to provide objective, third-party certification for lighting that minimizes glare, reduces light trespass and doesn't pollute the night sky. All products approved in the program are required to be fully shielded and to minimize the amount of blue light in the nighttime environment. To minimize the harmful effects of light pollution, lighting should

- Only be on when needed
- Only light the area that needs it
- Be no brighter than necessary
- Minimize blue light emissions
- Be fully shielded (pointing downward)



The case against blue light is well founded

with regard to discomfort, glare, circadian rhythm disruption, light scattering, skyglow and biological system disruption in wildlife. Outdoor lighting with high blue light content is more likely to contribute to light pollution because it has a significantly larger geographic reach than lighting with less blue light. In natural settings, blue light at night has been shown to adversely affect wildlife behavior and reproduction.

Fixtures which aim most of their light output down towards the ground reduce glare and improve visibility. This allows reduced wattage and fewer fixtures to light an area, saving energy and money.

In selecting exterior fixtures, the benefits are greatest by adopting fully-shielded fixtures, followed by the spectrum or color of the type of lightbulb and thirdly by the overall amount (lumens) of light

- **Shielding of fixtures**

Research has shown that properly-shielded fixtures can reduce light pollution by 50% to 90% compared to conventional unshielded fixtures. Shielded fixtures are constructed and mounted such that all light emitted by the fixture, either directly from the lamp, or indirectly by reflection or refraction from any part of the light fixture, is projected below the horizontal (of a light fixture).



On the left: Unshielded porch lights shine in your eyes (and across the street) and reduce visibility. On the right: Shielded fixtures reduce glare and make it easier to see.

Spectrum of light sources

Cool-temperature lamps emit large amounts of the blue and green spectra. This increases light pollution and is also harmful to wildlife. LED lamps commonly used increase light pollution by as much as a few hundred percent compared to other forms of light. Warmer-color lamps minimize this – shifting towards amber and away from cool whites, preferably selecting lamps below 2500 degrees Kelvin. Through careful selection, spectrum can be managed using almost any type of bulb.

Amount of light

Many homeowners relocating from more urban or suburban areas where there are many competing lights in the area (streetlights, traffic lights, nearby houses, frequent vehicles passing) are surprised by how little light is necessary in the mountains to achieve a similar level of visibility. A standard 60w outdoor bulb can create so much glare that it is harder to see at night. Consider starting out with lower wattage lamps as a little light goes a very long way in Bear River Lodge.

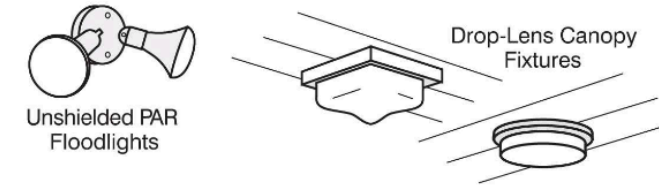
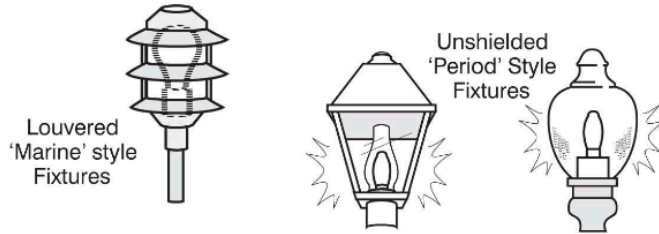
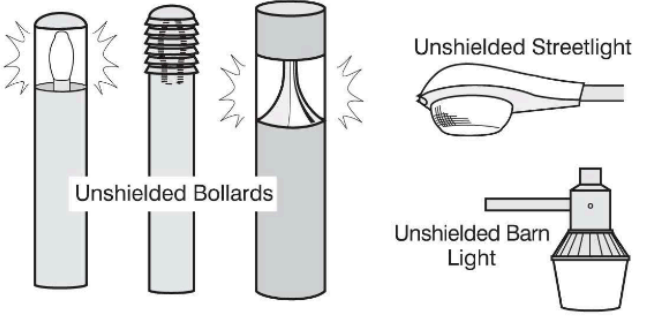
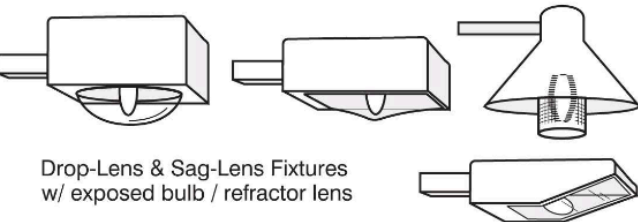
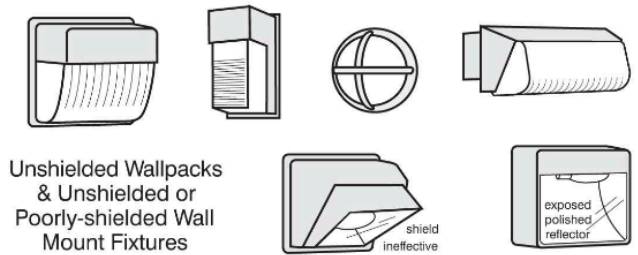
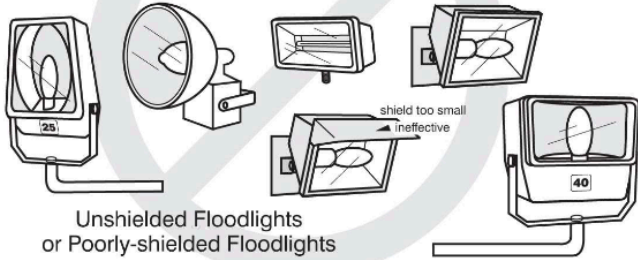


The illustrations below, published by the IDA, provide an easy visual guide to understand the differences between unacceptable, unshielded light fixtures and those fully shielded fixtures that minimize skyglow, glare and light trespass.

Dark Sky Initiative Recommended Exterior Fixtures 2023

Unacceptable / Discouraged

Fixtures that produce glare and light trespass



Acceptable

Fixtures that shield the light source to minimize glare and light trespass
and to facilitate better vision at night

