

December 27, 2021

**BY EMAIL**

Jason Tanko, CEO  
Tanko Lighting  
jason@tankolighting.com

**Re: The LED Fraud**

Dear Jason Tanko,

We wish to alert Tanko Lighting of the false statements being made by Tanko Lighting regarding LED radiation devices. Tanko claims that LEDs “save energy” as compared to High-Pressure Sodium.

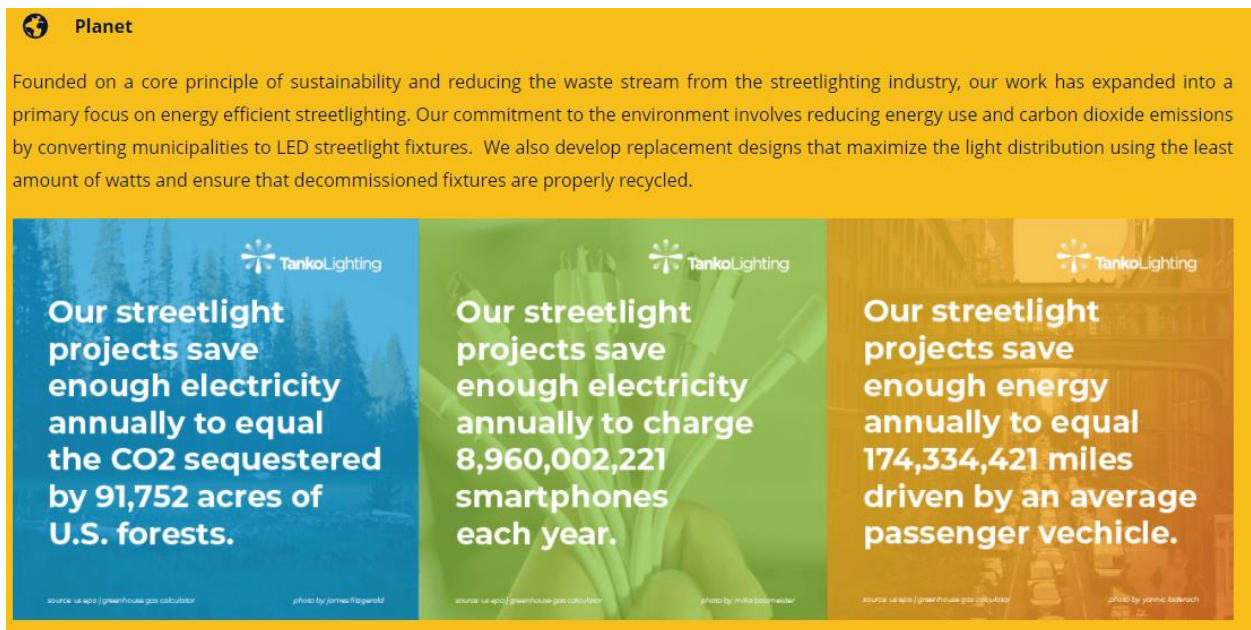


Figure 1 - Energy Savings Claim

The claim that Light Emitting Diodes are energy efficient is fraudulent. According to the US Department of Energy’s website, energy efficiency means “using less energy to get the same job done.”<sup>1</sup> The job, in the case of streetlighting, is to provide uniform illumination with minimal harm. LEDs do not produce uniform illumination<sup>2</sup>, but rather they emit radiation from a flat surface which creates a mix of

<sup>1</sup> [https://www.energystar.gov/about/about\\_energy\\_efficiency](https://www.energystar.gov/about/about_energy_efficiency)

<sup>2</sup> <https://ieeexplore.ieee.org/document/8879542>

energies that are not uniform. Since LEDs do not do the same job as an incandescent or High-Pressure Sodium, **the claim that LEDs are energy efficient cannot be made.**

Consider the diagram of an incandescent light and LED radiation device as shown in Figure 2.

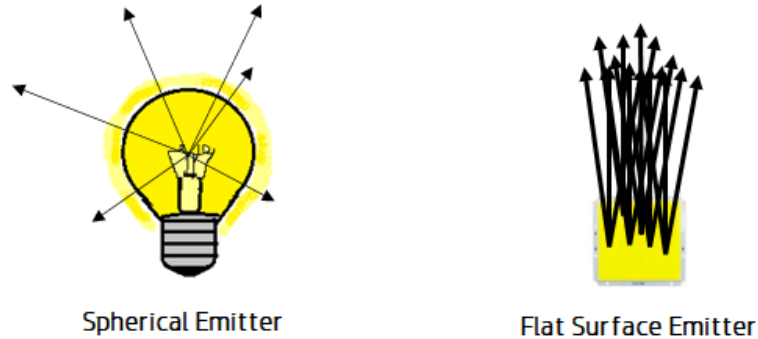


Figure 2 - Spherical vs. Flat Surface Emitter

As shown in Figure 2, a spherical emitter sends light in all directions in space. Because of the curvature of the emitter, the light rays do not overlap, and the radiation is spatially, spectrally, and temporally uniform. A flat surface emitter, such as an LED, sends light only in the forward direction. The light rays are confined to an 'escape angle' which is determined by the physical characteristics of the chip. There are thus overlapping rays, with the most overlap being in the center of the chip, and the least overlap being on the edges. The result is that every point in space has different spatial, spectral, and temporal properties. This non-uniform radiation profile is not suitable for illumination and not compatible with the human nervous system. **An energy efficiency comparison between an incandescent or High-Pressure Sodium and an LED cannot be made.**

Tanko may respond that "saving energy" is a true statement because less energy is being used to operate an LED streetlight versus an HPS streetlight. While this claim may or may not be true, the underlying basis for the claim is that LEDs are more energy efficient, which is not true. A city could also just as easily switched from a 100 watt HPS to a 50 watt HPS and reduce energy use by 50%.

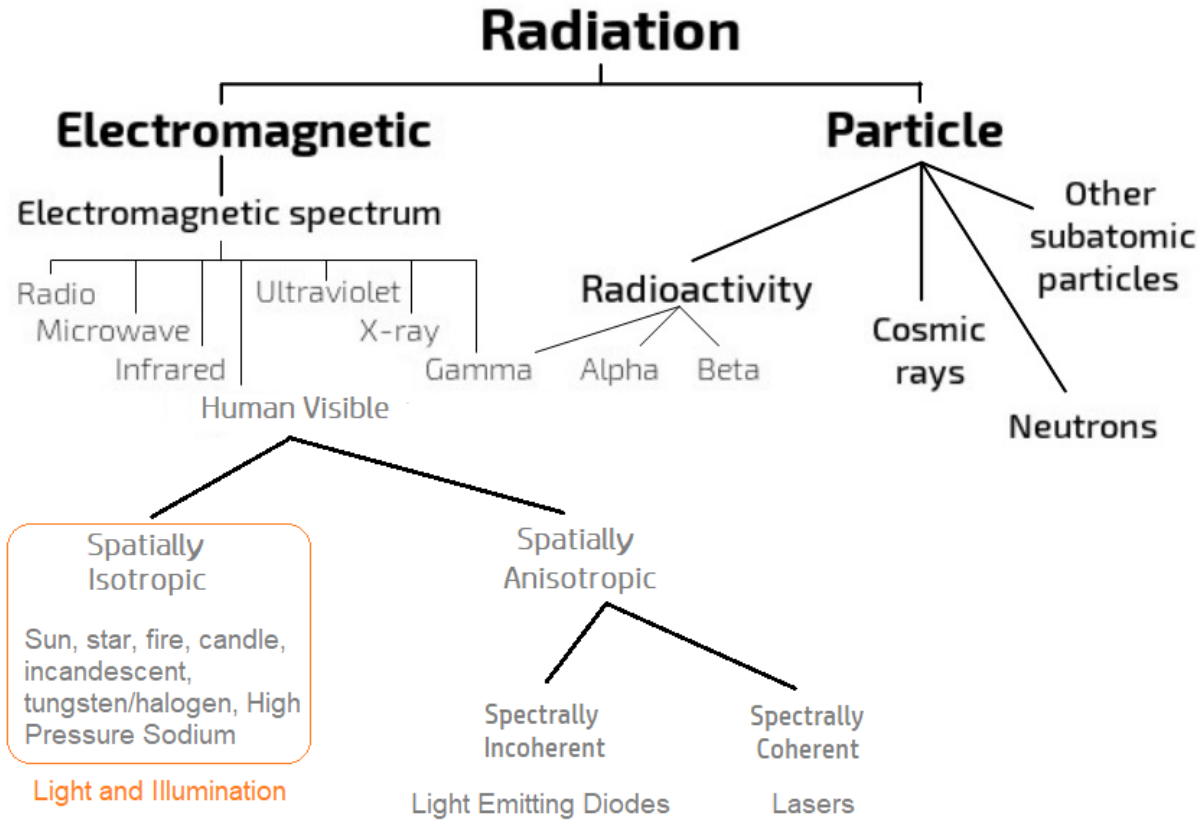
The truth is that LEDs are an extremely low-quality light because it is non-uniform. The center of the beam is extremely intense and does not spread evenly over the angle or steradian to be illuminated. The result of exposure to this type of radiation is sickness, epileptic seizures, migraines, psychological trauma, and thoughts of suicide.<sup>3</sup> Because LEDs do not emit uniform light, LED streetlights do not comply with standards such as the Illuminating Engineering Society IES RP-8-18 which was written only for spatially isotropic light sources.

Figure 3 shows the categorization of radiation and illustrates that *light* and *illumination* are spatially isotropic radiation in the human visible portion of the electromagnetic spectrum. Radiation emitted by LEDs do not meet the regulatory meaning of or comply with standards for the use of light as illumination.

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<sup>3</sup> [www.softlights.org/stories](http://www.softlights.org/stories)

## Regulatory Meaning of Light and Illumination



*Figure 3 - Radiation Types*

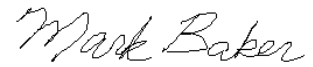
LED radiation is dangerous and can cause eye injury. As an example, consider this warning shown in Figure 4 from the company Gear Light.



*Figure 4 - LED Flashlight*

LED radiation devices must not be used for the task of illumination because LED devices are not safe, they are discriminatory, and they are not energy efficient. The LED fraud is detailed on our website at [www.softlights.org/led-fraud](http://www.softlights.org/led-fraud). The promotion by Tanko Lighting of the falsehood that LED streetlights are energy efficient makes Tanko Lighting liable for fraudulent claims.

Sincerely,

A handwritten signature in black ink that reads "Mark Baker". The signature is written in a cursive style.

Mark Baker  
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