

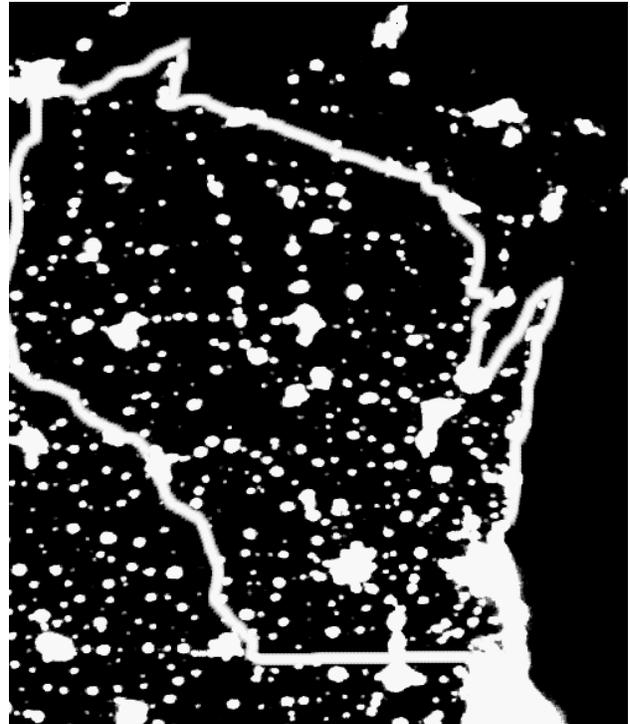
## Light Pollution - It's 1% Of Total Sales

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Have you seen a picture of the United States at night from space? The inset at right shows the lights from Wisconsin cities as they shine upward into the night sky. Beautiful? Perhaps, but research done at UW-Madison and elsewhere suggests that 1% of total electrical sales in Wisconsin is wasted lighting the night sky.

Light pollution is a new phrase for an old concept: waste. In Wisconsin, municipal, commercial and residential exterior lighting that is poorly designed and installed, wastes 650,000 Mwh of electricity each year. Use the rates you pay for electricity to figure the cost.



Does that seem like a lot of money to light the night sky? We thought so too, so we made estimates using two different methods. First we used data from satellite measurements to estimate the amount of light loss per person per year. Our second estimate was based on electrical consumption for municipal street lighting in Dane County. The results were comparable: about 1 percent of total electrical sales as waste from exterior lighting.

Where is all this wasted light coming from? Have you noticed that car dealerships, service stations and convenience stores are becoming brighter; dusk-to-dawn security lights have become commonplace; and municipal lighting has spread as communities grow? Then you do have an idea about the source of light pollution.

But increased use of exterior lighting isn't the only source of the problem. Poorly designed exterior light fixtures can waste 30 percent of their light output through glare and over-lighting that directs light where it is not needed or uses much more light than is necessary to do the job.

What can be done to reduce this waste of energy? Eliminating glare and over-lighting is key to reducing light pollution while saving energy. Sensible exterior lighting puts light only where, and uses only as much light as, needed. For example: a full-cutoff streetlight can adequately illuminate the roadway while saving 1/3 the electricity, as compared to an unshielded light. Similar savings are possible from well designed residential and commercial lighting: as lighting effectiveness goes up, energy needs go down.

To find out more about how your utility can help improve the quality of exterior lighting while promoting energy efficiency, contact the University of Wisconsin-Extension, Solid and Hazardous Waste Education Center at 608/262-0385 or [liebl@epd.engr.wisc.edu](mailto:liebl@epd.engr.wisc.edu).