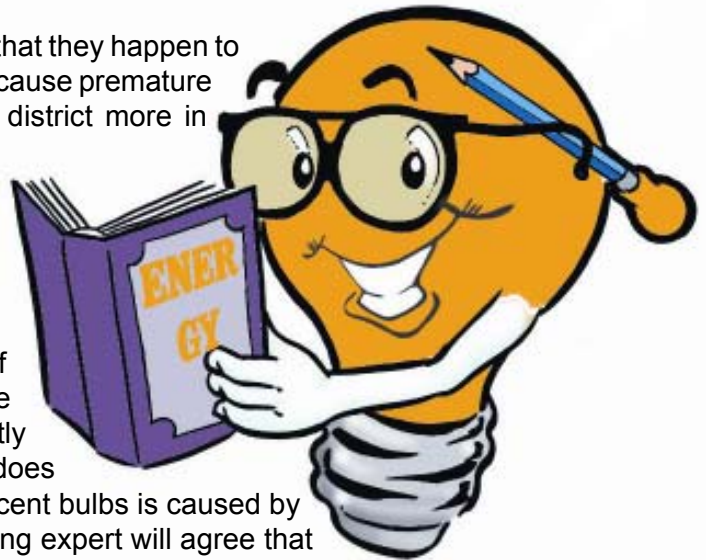


Lighting Myth vs. Fact

Frequently Watt Watchers is asked about the advisability of turning off fluorescent lights. The inquiring teacher (almost always a new Watt Watchers sponsor) is a little apologetic and quickly explains that there are just *some* difficult teachers that insist that the school district will lose money if they turn out the lights every time they leave their classroom.

Some of these difficult teachers smugly state that they happen to **know** that frequent switching of fluorescent lights will cause premature failure of the bulbs and end up costing the school district more in bulbs, labor, etc. Furthermore, they elaborate, an electrical surge occurs when fluorescent lights are switched on and this surge will consume much more energy than could ever be saved by turning out the lights.

These difficult teachers are utterly wrong, of course. But there is a small kernel of truth within the myths, which is probably how these ideas persistently hang on year in and year out. A surge of electricity does occur and extra wear that shortens the life of fluorescent bulbs is caused by switching them on and off. Nevertheless, every lighting expert will agree that turning off the lights when you will be out of your classroom for 10 minutes* or more is the smart choice - period. What's a poor teacher to do?



There is no real controversy here. We just need to get all the facts. Half truths, it seems, create energy myths. The electrical surge is extremely short and insignificant. The wear on the light bulbs is far outweighed by energy savings when the lights are out. Very simple. But I'm afraid we will have to do our homework and document these facts.

Watt Watchers recommends simply compiling documentation and providing it to the "difficult teacher" in a scientific and non-threatening manner and asking for the same from them. Since there is no evidence supporting the myths it will put them in a difficult position. Be gentle with them they are operating on the best knowledge they have. Science is squarely on your side.

Please help Watt Watchers catalog the existence of lighting myths. As you encounter them please give us feedback on what happens in your school. And send any articles you may see about energy myths.

Here is a list of references about lighting myths. Watt Watchers can supply you with hard copies of the referenced articles on request:

The Environmental Protection Agency (EPA) created a program called GreenLights to assist corporations in improving lighting efficiency. The program has evolved into the EnergyStar Buildings program and is jointly sponsored with the Department of Energy. GreenLights and EnergyStar Buildings recommend that lights be switched off in unoccupied rooms. The Fall 1997 EnergyStar Buildings and GreenLights Update includes an article on energy myths about occupancy sensors. Myths number 4 and 5 address frequent switching and electrical surges.

EPA GreenLights training covers the myths and includes a pie chart that shows energy to be 90% of the total cost of owning and operating a lighting system. The example they provide is for an efficient T-8 system where the energy costs are very low and they use 7 cents per kWh (below the national average of 8 cents). Even in this system energy accounts for 90% of total cost. Materials (replacement bulbs) are 6%.

Labor to change the bulbs is 3%. And, last but not least, EPA calculated 1% of total costs for properly recycling the old bulbs.

The Illumination Engineering Society (IES) is the standard bearer of the lighting industry. The IES Handbook is the basic reference for all lighting professionals. The handbook recommends that fluorescent lights be turned out if a space is unoccupied for 5 minutes. (IES Handbook, 8th Edition, 1993, Chapter 30, p. 856)

James C. Elledge has a Question and Answer column in *Today's Facility Manager Magazine* called Tricks of the Trade. He tackled the lighting energy myths issue. His response: the electrical surge is 1/120 of a second and energy savings and calendar life of bulbs is more important than the number of hours a bulb lasts. He also addresses the environmental benefits of turning off the lights.

The Utah Office of Energy Services homepage (www.aste.utah.usu.edu/docs/myths.htm) explodes four common energy myths including switching fluorescent lights. The recommendation: "... when you leave the room for more than two minutes, turn the lights off."

The City of Saskatoon in Canada has a homepage that addresses how long various types of light should be left on and carefully documents the source for each recommendation. The recommendation for fluorescent lighting is 5 minutes. (www.city.saskatoon.sk.ca/buildings/energy/Publctn/FactShet/Two.htm)

Manufacturers base the expected life of fluorescent bulbs on an average 3 hour "strike." That is they test them by continuously switching them off and back on every three hours until half of the bulbs fail. An average life in hours is expected in bulbs that experience 8 on-off cycles per 24 hour period. This fits nicely within almost all patterns of usage for offices and classrooms.

The occupancy sensor industry has grown to be a very large segment of the energy retrofit market. Occupancy sensors are automatic switches that turn off lights after 5 to 10 minutes of no motion in a room or hallway. The time delay is chosen based on cost effectiveness.

*Actually, the experts all say 5 minutes. Watt Watchers chose 10 minutes to eliminate any potential for nitpicking and allow for a spirit of compromise. Most school energy managers recommend turning out the lights whenever you leave the room regardless of how long you think you will be gone.



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