



# The Best Exit Sign Light Bulb for the Environment and your Wallet

By the Lightbulb Wizards of MAGE



# Questions

What is the most environmentally friendly light bulb to use in exit signs?

What would the financial and environmental savings be in switching to the most environmentally friendly type of bulb?

What requirements do different towns and cities in Illinois have for their exit sign bulbs?

What would it take to change their ordinances/rules to requires all exit signs to use the most environmentally friendly bulb?

# Procedure

1. We researched different types of bulbs: how much they cost and how long they last.
2. We calculated their price, how environmentally friendly they were, how much their light fixture cost, and how much they cost over time to operate.
3. We called different Illinois cities to try to learn if they have an exit sign code, what the code was, and the procedure to change the code so it specified that LED bulbs should be used.

# Research

## We researched...

1. The prices of bulbs
2. The price of light fixtures
3. The lifespan of bulbs
4. The contact numbers for different Illinois cities.
5. The environmental impact of each type of bulb

# Results

1. We determined that LED lights were the most environmentally friendly and over time saved the most money compared to the other bulbs.
2. Compact fluorescent bulbs have mercury in them which is bad for the environment and require special disposal.
3. None of the towns/cities we were able to contact had a policy regarding using a specific type of bulb in exit signs.
4. If all exit signs were changed to LED bulbs it would be safer for the environment.
5. Most cities we talked to said we could petition the city to try to get the requirements changed. Every city seemed to have slightly different requirements for how that would be done, but they were all along the same lines.

# Life Cycle Cost Factors of Exit Signs

Lamp Type	Fixture Cost	Wattage	Lamp Life
Incandescent	\$20 - \$100	30 - 50 watts	3,000 - 19,000 hours
Compact Fluorescent	\$125 - \$200	10 - 16 watts	13,000 hours
LED	\$30 - \$250	1 - 3 watts	10 years

Source: Purchasing for Pollution Prevention Program Fact Sheet ©INFORM, Inc. November 2003

# Cost Comparison of Exit Signs over 10 Years

## Electricity Cost Per Exit Sign

	Incandescent	CFL	LED
Wattage	30-50 watts	10-16 watts	1-3 watts
Annual Energy Use (kWh)	263-438	88-140	9-26
Annual Energy Cost	\$21 - \$35	\$7 - \$11	\$0.70 - \$2.00
10 - Year Energy Cost	\$210 - \$350	\$70 - \$110	\$7 - \$20

Source: Purchasing for Pollution Prevention Program Fact Sheet ©INFORM, Inc. November 2003

# Cost Comparison of Exit Signs over 10 Years

## Lamp Replacement Cost Per Exit Sign

	Incandescent	CFL	LED
No. of Replacement Lamps used in 10 Years	4-29	6	0
Cost of Lamp Replacement	\$40 - \$280	\$60	-

## Total Maintenance and Electricity Cost Over 10 Years

	Incandescent	CFL	LED
Per Exit Sign	\$390-\$490	\$130-\$172	\$7 - \$21

Source: Purchasing for Pollution Prevention Program Fact Sheet ©INFORM, Inc. November 2003



# Challenges encountered

1. People didn't answer their phones or return voice messages.
2. We had hoped to create a template to help others change their city's ordinances, but the Covid-19 pandemic limited our time to work together.
3. It is harder to concentrate when everything is online.

# About Us

Midwest Academy for Gifted Education (MAGE) is a school for gifted students. It educates kids who are above grade level. It focuses on experiential learning and includes a lot of field trips. A few of the classes that are offered include: science, Odyssey of the Mind, writing, music, 4-H, math including math team, outdoor math, and math circles, Lego Robotics, and comics. We have awesome teachers who listen to the children who are in their classes.

The students who worked on this project; Aria, Liron, Lucille, Marion, and Ori; range in age from 7 to 16-years-old.