CFL's to the Rescue!

Home Energy Forum
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"The cheapest kilowatt is the one we don't use!"

How do fluorescent bulbs work?

Traditional incandescent bulbs:

- **Electricity heats a filament – 85 btu's**
- **Filament becomes white hot**
- **Filament glows inside the bulb giving off light**

Fluorescent bulbs:

- **Fluorescents contain a gas**
- **Electricity "excites" the gas creating invisible ultraviolet light (UV)**
- **UV light hits the white coating / powder of the fluorescent bulb creating a light that is visible**
- **No filament to heat – 3.4 btu's**

CFL History

Compact Fluorescent Lights (CFL's):

- Developed by GE after 1973 Oil Crisis
- Introduced globally in early 1980's
- Flickering in earlier models
- Noise in earlier models (and current cheaply manufactured CFL's)
- Slow and cold weather start up
- Steady reduction in mercury content (more on this later)

CFL Benefits

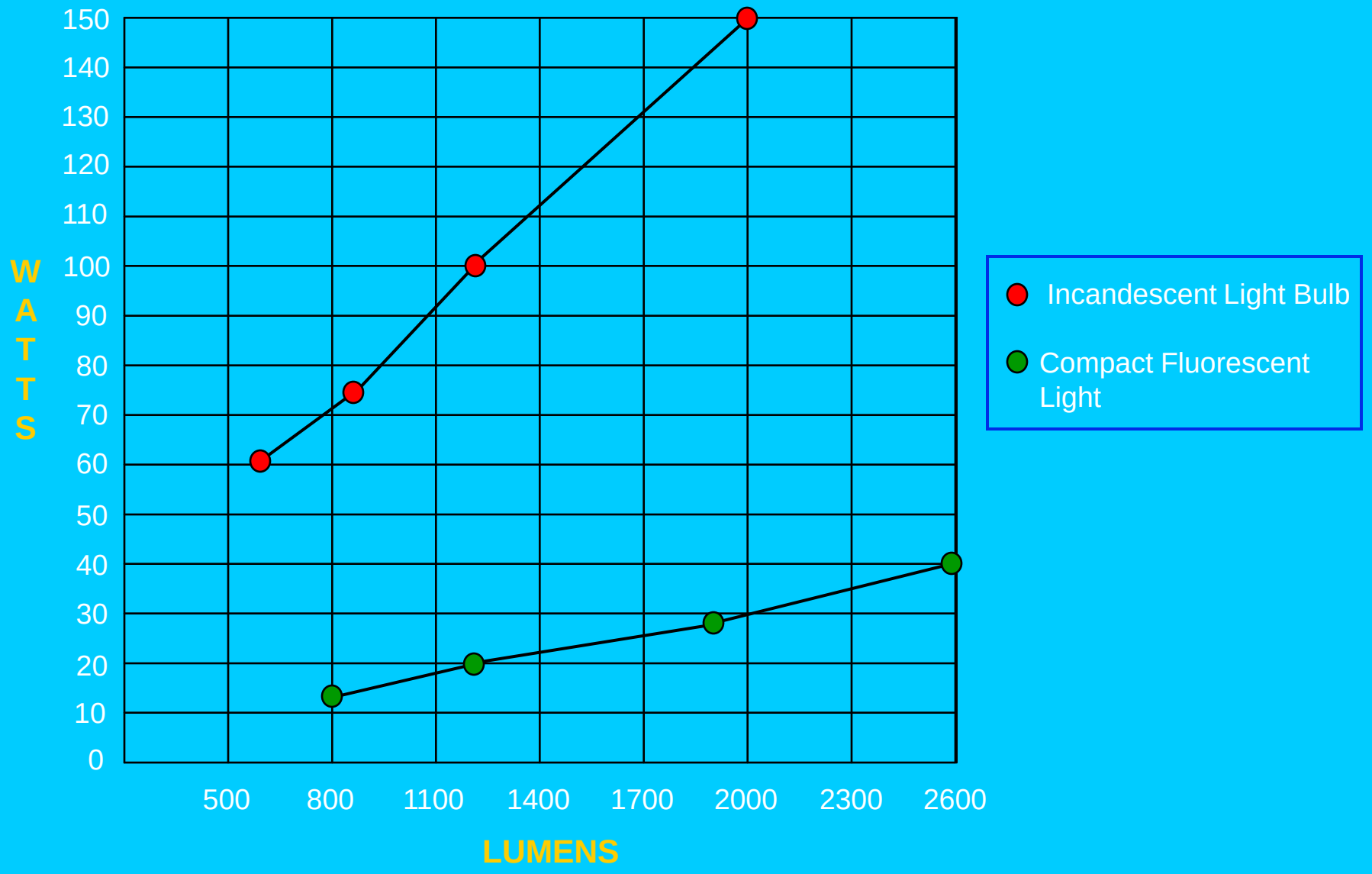
Lifespan:

- Lasts longer than a standard light bulb
  - ✓ 14 watt bulb has a projected lifespan of 10,000 hours
- Operate best when left on for extended periods
  - ✓ Frequent short “on/off” bursts will shorten the bulb’s life span

Energy Consumption:

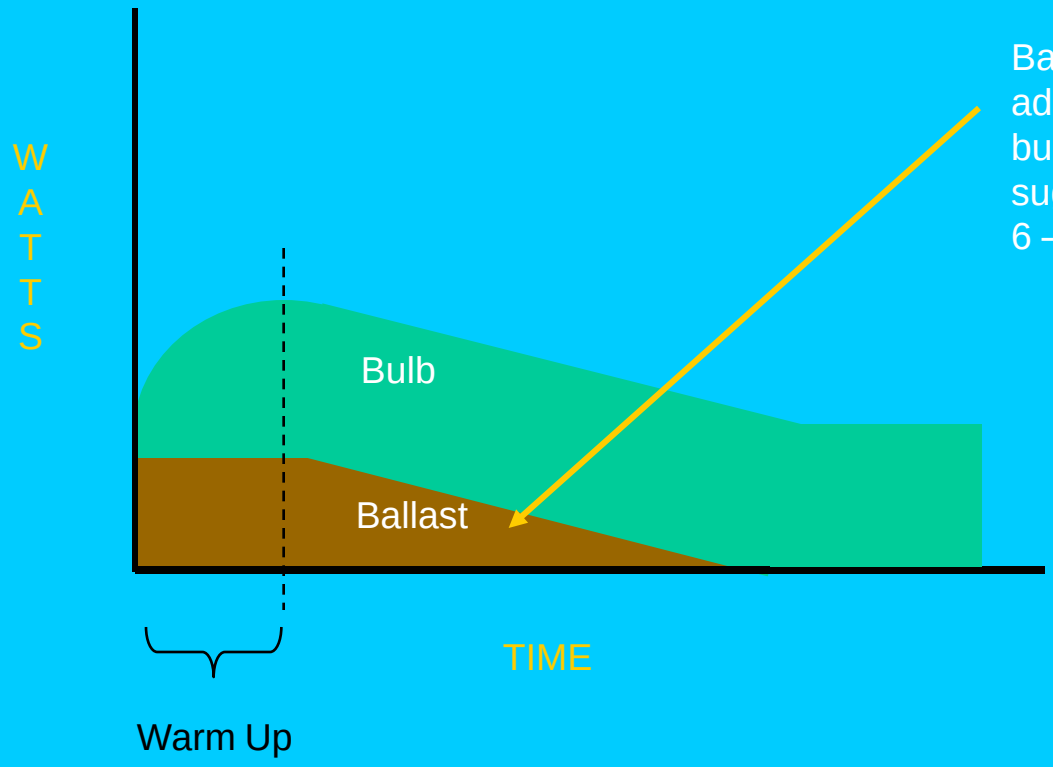
- Uses up to 75% less energy than a standard light bulb
- Equivalent or greater lumens (brightness) for substantially fewer watts
- Work most efficiently when left on for at least fifteen minutes
- Ballast energy consumption not specifically mentioned on packaging
  - ✓ 3 minute warm up to get UV gases “excited”
  - ✓ In-house tests suggest 6 – 10 watts consumed by ballast
  - ✓ Ballast energy consumption drops off after initial warm up

Lumens per Watt Comparison



Note: Results vary somewhat by type and manufacturer

CFL Ballast



Ballast draws wattage in addition to the published bulb wattage. In-house tests suggest approximately 6 – 10 watts at start up.

CFL Benefits (cont.)

Cost Effectiveness:

- **Significantly reduces lighting portion of a monthly electric bill**
- **Decreasing up-front purchase costs**
- **Quick return-on-investment**

“Doing your part”:

- **Lighting accounts for 20% of the average home’s electric bill**
- **Easy and effective way for every American to help reduce energy use**
- ***“If every home in America replaced just one incandescent light bulb with and ENERGY STAR qualified CFL, in one year it would save enough energy to light more than 3 million homes and prevent greenhouse gas emissions equivalent to those of more than 800,000 cars.”*** **USEPA**

CFL Replacement

Incandescent		CFL
60 Watt (w)	=	13w – 15w
75w	=	20w
100w	=	26w – 29w
150w	=	38w – 42w

Replacement Considerations:

- Match “par” rating on incandescent light fixture with “par” rating on CFL
- Because the wattage of a CFL bulb is much lower than that of an incandescent, you can use higher wattage CFL’s giving you the equivalent light of a higher wattage incandescent.

CFL Applications

Use with a dimmer switch:

- **Make sure the package is marked. Requires a specific bulb.**
- **Use of a normal bulb will void any warranty and significantly Significantly reduce the bulb lifespan.**

Use with a 3-way switch:

- **Make sure the package is marked. Requires a specific bulb.**
- **Use of normal bulb will work on the "middle" setting and not alter bulb performance.**

Use as a recessed light:

- **Match fixture "par" with CFL "par" rating**

CFL Mercury

Content:

- **Mercury average is 5 milligrams per bulb**
  - ✓ **About enough to cover the tip of a ballpoint pen**
  - ✓ **For comparison, older mercury thermometers contained 500 milligrams**
- **Technology improvements continue to reduce the amount of mercury in each bulb**
- **Mercury content varies by bulb manufacturer**

Disposal:

- **Lighting Center – Hall Street, Traverse City**
  - ✓ **Twenty-five cents per bulb unless make purchase with drop off**
- **For more information read the Energy Star hand out included in your lighting presentation packet.**

Thank You!

Reference Source:

http://www.energystar.gov
http://www.gelighting.com