

Do It Yourself Lighting Audit

Courtesy of www.need.org

Doing an audit of the existing lighting fixtures in your facility is the first step in assessing how much energy and money can be saved from upgrading to more efficient lighting. Read further to get a basic understanding of lighting and follow the steps to complete your lighting audit. Once you have the information, enter your numbers in our savings calculator to get an estimate of energy and cost savings or send your lighting audit data sheet to us to review.

1) Some basic equipment you'll find in commercial lighting:

LAMPS AND FIXTURES: In the lighting world, what is commonly called a bulb is called a lamp. Lamp refers to the piece that is plugged into the fixture. The fixture is a permanent installation and can refer to a ceiling fixture or table/desk lamp. **See pages 2 and 3 for actual shapes and styles of lamps.**

BALLASTS: Note: (These are not visible because they're inside the fixture itself). The ballast controls the amount of electricity that a fluorescent lamp uses. It requires a few watts to operate. With CFLs the ballast is part of the lamp (the large base that screws into the fixture). For fluorescent tubes, the ballast is a part of the fixture. Old T12 lamps usually use a **magnetic ballast**, which is less efficient and causes a flicker and a hum. New T8s use an **electronic ballast**, which is much more efficient, does not flicker and does not hum or buzz. If you are unsure whether or not your lighting has electronic ballasts, use the flicker checker. When you spin the flicker checker on a flat surface underneath the light and away from any windows, you'll see either smooth, grey, concentric circles or checkered patterns with hints of color. Smooth grey circles indicate an electronic ballast and T-8 lamps are in place. GOOD. A broken up or checkered circle indicate a magnetic ballast and T-12 lamps – NOT GOOD.

Below are average watts per fixture when T-12 lamps and magnetic ballasts are in place:

T-12 Fluorescent Lighting Fixture	Average Watts per Fixture
1 lamp 4 foot 34 W* T-12 Magnetic Ballast	42
2 lamp 4 foot 34 W T-12 Magnetic Ballast	83
3 lamp 4 foot 34 W T-12 Magnetic Ballast	126
4 lamp 4 foot 34 W T-12 Magnetic Ballast	168
2 lamp 8 foot 95 W T-12 High Output Magnetic Ballast	219

*34 W describes the wattage of the lamp, this number is often stamped on to the glass towards one end of the lamp. It is helpful to record the wattage of lamps in each fixture you record in your audit.

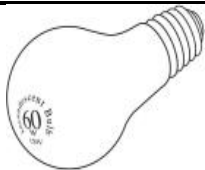





2) Doing the audit:









Directions: Complete a lighting data sheet for your facility. Be as specific as possible about describing each room and how many lights there are and how long they burn each day or night.

1. Write room type (hallway, men's restroom, stairwell, elevator, lobby, etc)
2. Write type of fixture (e.g., exit sign; ceiling light; wall light; is it a cylindrical fixture?; does it hang from the ceiling?; is it embedded in the ceiling or does it jut out as a fixture)
3. For fluorescent tube lighting, write the length of the fixture. Is it 8 ft., 4 ft., 2 ft.?
4. Use the Flicker Checker if you're not sure what type of fluorescent lighting you have.
5. Watch the top of the Flicker Checker for a discernable checkered or chopped pattern. If there is a pattern, the ballast in the fixture is magnetic. If there are only smooth circles, the ballast is electronic.
6. Count & record the number of these fixtures
7. Count & record the number of lamps ("light bulbs") there are in the fixture

8. Record the type of lamp that is inside the fixture
9. Write down whether the lighting fixture has a spectral reflector (shiny stuff to direct the light waves in a concentrated direction)
10. Record how much daylight is available
 - a. Choose from: none, low, medium, high
11. Write any additional comments. (e.g., is the lamp is flickering or dead? Did the light switch have a sticker reminding users to turn off the lights when not in use?)
12. Go to the next room and repeat the process until your building is completed.

TYPICAL LIGHTING TECHNOLOGIES

Type	Watts (Bulb only)	Lumens	Where Used	How to Recognize
Incandescent: Standard 45 W 60 W 75 W 100 W	45 60 75 100	495 860 1,220 1,750	Overall room lighting; display & accent lighting Very inefficient, replace with CFLs	 <p>filament burns very hot, also come in long shape</p>
Incandescent: Fiesta (F-Shape) 25 W	25	190	Small table lamps	
Incandescent: Halogen "PAR"(Parabolic aluminized reflectors) 75 W 100 W 150 W	75 100 150	1,200 1,750 2,580	Highly effective reflective flood light used for recessed indoor lighting & outside lighting	 <p>have very thick glass</p>
Incandescent: Halogen "R" (Reflector) 75 W 100 W 150 W	75 100 150	1,200 1,750 2,580	Reflective flood light used for recessed lighting; indoor only	 <p>have very thin glass</p>
Fluorescent: CFL (compact fluorescent lamp) 5 W 28 W	5 28	250 1,800	R/PAR for overall room lighting; small CFLs desk/table lamps	 <ul style="list-style-type: none"> • Desk/table types: • R/PAR types: resemble incandescent R & PAR, but have a ballast located before the screw threads
Fluorescent U-tube Standard "Supersaver"	40 34		Overall room lighting	

Type	Watts (bulb only)	Lumens	Where Used	How to Recognize
Fluorescent: Tubular 4ft T12 Standard T12"Supersaver"	40 34	3,050 2,850	Overall room lighting	 1/12" diam.,4 ft. long tubes found in rectangular housing; may have 1 - 4 lamps; will cast a shadow or can actually be seen, depending on housing;
Fluorescent Tubular 8 ft T12 Standard	75	6,000	Overall room lighting	1 1/2 " diam., 8 ft. long tubes in long rectangular housing
Fluorescent Tubular 4 ft T8 Standard	32	2,900	Overall room lighting	1"diam.; 4 ft. long tubes in rectangular housing; see above to count number of tubes 
HID (high intensity discharge): Mercury Vapor 175 W 400 W	175 400	7,300 21,000	Outside safety lighting; sometimes in gyms	 Have a clear "arc" tube inside the lamp; poor CRI - 40; light appears blue
HID: Metal Hallide 400 W 1000 W	400 1000	32,000 _____	Used in gyms & other spaces with high ceilings; mostly for outdoor lighting	 Resemble HID mercury vapor lamps; Look for white caps on one or both arc tube ends; Good CRI - 60-75; very bright light
HID: High pressure sodium 70 W 100 W 400 W	70 100 400	6,300 9,500 50,000	Mostly used for safety and roadway lighting	 Resemble mercury vapor lights; very slender, ceramic arc tube; older models have poor CRI - 22 with yellow-orange light; newer models have much better CRI
Incandescent Exit Sign	30-40		Uses incandescent bulbs to illuminate the sign. Bulbs often need replacing every 3 months	
Light Emitting Diode (LED) Exit Sign	2-3		Pinpoint lights, street lights, Exit signs	  Very energy efficient and very long lasting