



CMP's Lighting Connection

Bright ideas to improve your bottom line

Central Maine Power Company, 83 Edison Drive, Augusta, Maine 04330

Good lighting management plans make cent\$ at Norway Savings Bank



Thomas Morgan
Custodial/Maintenance Manager
Norway Savings Bank

Custodial/Maintenance Manager, Thomas Morgan knows that managing the lighting systems for all of Norway Savings Bank's branches is a big job. Under the pressure of steady growth, and increased demand on the bank's existing systems and resources, preventive maintenance had given way to reactive maintenance. "It seemed as though a lamp was burned out some place every day," says Tom.

When a lighting issue came up in the South Paris branch, Tom called *CMP's Lighting Connection* people to see if they could offer some help. CMP visited their site and quickly saw a need for a lighting management plan to maximize the system's performance and manage maintenance costs.

How many people does it take to change a light bulb...

With most businesses of this size, it takes about three or four people to "screw in" a light bulb. Why so many? Someone reports the lamp out. Another person completes and submits a work order. The next person, usually in a facilities department, processes the order — they must determine where the lamp is located, what kind it is, if there is one in stock or not, organize all needed equipment to do the work, return the lamp to the shop and determine if it failed because of a defect and, if so, apply for credit, or at end of life, move it to storage (lamps are now considered hazardous waste), and file the work order paperwork, process credit if applicable, and record the waste disposal.

...and how much does it cost to change one?

Using assumptions (noted on page 2), the cost of this one lamp replacement is \$29.17. Repeat this 200 times in a year and labor alone is over \$5,800. It could easily be twice that if workers run into problems with anything along the way. And this scenario is only for replacing a burnt out lamp — it doesn't consider the already-accrued costs of wasted energy and lost efficiency of the fixture from not delivering sufficient lumens. When lumen output drops below task-optimum level, a business loses all the way around: employees find it hard to see, which means more mistakes; color from the lamp shifts and affects how things look; the same amount of electric energy gets used, but yields only a third to a half less light. Total up the business costs of all this and it gets pretty steep.

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Proactive lighting management plan can really add up in savings

Some of the benefits to your business in implementing a lighting management plan will be:

- Light levels/color within the designed requirements
- Lower labor costs than spot relamping and generally better quantity prices
- Customers can see better, feel more comfortable and secure = better business, higher sales
- Employees can see better, have less eyestrain and less apt to make errors = higher productivity
- Employees will feel better and have fewer sick days under properly-maintained light

A lighting management plan can ensure that you are getting all the light you are paying for. Don't hesitate to contact CMP's staff of experts for advice. We're happy to assist you in creating an effective plan that can improve your process — and bottom-line.

With CMP's help, Tom created a lighting management plan to maintain optimum lighting levels while decreasing maintenance costs. This plan gives Tom a quick reference as to what's in place, where it's located, and other pertinent information. This plan template can be modified to fit any business specific needs. Once a plan is in place, knowing your burn life and approximate replacement time will allow you to budget for group relamping annually.



CMP's Energy Experts:
Chris Begin
Dick Bacon
Deborah White

Sample lighting management plan

Lamp Type	4ft. T8 41K	8ft. T12 41K	R 40 150 W Flood	70 W HPS
Number in Use	88	12	20	4
Ballast	XYZ # 1234	XYZ # 5678	None	XYZ # 9101
Location	Main Floor	Basement	Lobby & Hall	Outside
Date Changed	03/99	07/01	04/01	06/98
Lamp Life Hours	20,000	12,000	2,000	24,000
80% Burn Life*	16,000	9,600	2,000	19,200
Avg. Burn Hours	3,120	2,496	3,120	4,260
Replace Date	03/04	03/04	03/02	11/02
Cost of Each**	\$3.75	\$7.85	\$6.25	\$35.00
Disposal Cost**	\$.75	\$1.50	\$.25	\$.75
Labor Time/Fixture	1/4 hr.	1/4 hr.	1/6 hr.	1/3 hr.

* Minimal lumen degradation ** Fictional lamp

**Assumptions: Average labor rate of \$25.00 an hour wage & benefits; 10 minutes to report a lamp out and fill out a report form; 15 minutes to locate the proper stock and need-eed equipment to change the lamp; 10 to 60 minutes to change out the lamp, depending on its location and what is required to open up the fixture (we used 30 minutes for this scenario); 15 minutes to return all equipment to storage and to dispose of the old lamp properly. Assuming everything went smoothly, it took 70 minutes to do this simple task. At \$25.00 per hour that's \$29.17 just for labor - not including parts.*

Your Luminary Dictionary

- Operational Life: The length of time a fixture or lamp will operate regardless of how well it is producing light.
- Useful Life: The length of time a lamp or fixture operates at a level that produces quality light.
- Lumens: The measure of light produced by the lamp.
- Lumen Depreciation: A reduction of light output over time, compared to the lamp's start condition when new.
- Dirt Depreciation: A lessening of both the light output and the fixture's ability to reflect light caused by thin layers of dirt collecting on the lamp and fixture.
- Lens Degradation: The loss of transparency of the plastic lens over a fixture which then blocks light from coming through it.
- Rated Average Life: The median value of life expectancy of a large group of lamps operating under controlled conditions. It's the total time that 50% of these lamps is expected to be still burning.

Lighting management to brighten your bottom line

Are you using your lighting system to its fullest potential? A large percentage of the commercial buildings in use today were built prior to the mid-1980's. Since then there's been a wave of lighting technology advances. So buildings from even a couple of decades ago have lighting systems that are behind the times.

In addition, many facilities see a change in how the space is being used. For example, a warehouse might be converted to office space, which would require a very different lighting system. Or maybe the space hasn't changed, but there's a change in the type of tasks done in an area. This would also call for a revision in the lighting system to optimize the work at hand. And finally, there are facilities where the lighting system is adequate, but lack of maintenance has diminished light quantity and quality.

Start by analyzing your lighting system

Did you know that the 'light bulb' cost, or lamp as we call it, only represents about 3% of your lighting expense? The choices you make about the other 97% are going to have a huge impact on your lighting, image, productivity, and bottom line.

So where do you begin? Start with an analysis of your lighting system — as it exists, or in its design phase. The primary resource options for doing this are 'do-it-yourself', or hire a lighting professional. Either way, CMP lighting experts can help simplify your lighting management plan — FREE of charge!

You can then move on to the plan that looks at what you have and what you need. You may find that you need to upgrade your lighting system. Or you may decide that small changes here and there will get it up to speed for you. You'll want to establish a lighting management plan that will maximize your lighting system's performance.

Your lighting management plan

Effective lighting management includes regular lamp replacement and system maintenance. By doing your analysis and putting a plan in place, you can schedule to fit your needs and resources. You can plan lighting system work for non-peak times to ensure the least disruption. And regular scheduling can reduce unplanned interruptions.

Scheduled group relamping

Replacing lamps one-by-one can cost up to 10 times more to perform. Your schedule will be based on calculations of the average rated life and average output of the lamps.

- ❑ It lets you purchase lamps in quantity, so you can take advantage of discounts
- ❑ It supports efficient labor management and helps decrease payroll or hired contractor costs
- ❑ While relamping you can uncover, and address, problems in fixtures or wiring
- ❑ You can identify defective parts/lamps in time to increase chances to take advantage of the manufacturer's warranty

On-going preventive maintenance

- ❑ If you ignore a lighting system you can lose up to 40% of the light: 20% light loss through dirt depreciation, 20% light loss through lumen depreciation
- ❑ Schedule regular fixture cleaning to ensure optimal fixture performance output — this can be worked into the relamping schedule

Lighting management is not just for the larger companies. It's a strategy that pays off for businesses large and small. Optimizing your lighting system doesn't have to equal more work for you. A little planning now can mean a lot less work — and expense — down the line!



ASK the LIGHTING EXPERT



I've got a lighting vendor telling me to change out perfectly good, working office ceiling lights. What's going on?

All lamps and fixtures have an operational life and a useful life. My guess is the lighting vendor feels either the lamps or fixtures have reached the end of their useful life. (See page 2 for definitions that will help explain these terms).

You didn't say if the suggestion was to replace the lamps or an entire fixture, so we'll look at both for a typical office light fixture.

A typical recessed ceiling fixture has four components to it. The fixture body, the lens, the lamp(s), and the ballast. If any part fails or does not perform at its rated level, the light system as a whole is not operating at maximum benefit.

A fluorescent lamp has a rated average life of between 20,000 and 24,000 hours for 4-foot lamps, based on 3 burning hours per start. As the lamp's operational time increases, the lamp's output decreases. It reaches a point — after about 15,000 hours —

where it's down to 65% to 75% of rated lumens. This means reduced light coming from the lamp.

If your fixtures are relatively new and/or your work environment is clean, the operational and useful life may be 20 years or longer. If the environment around the fixtures is dirty, greasy, or smoky and the fixture is dirty, the operational life stays the same, but the useful life could drop to 4-6 years. In other words, the fixture is still consuming the same energy, but you may be getting less than half the intended light because the lumens can't get out.

Lack of care and maintenance on the fixture, lens, and/or lamp can cause substantial decrease of that light coverage. That can lead to a waste of energy, money, visibility, and productivity in your business. A decrease in any of its operating characteristics may be good cause for replacement. Even though a lamp is still burning in your fixture, it may not be doing its job.

In addition to recommending lighting changes, I can assist you and your lighting vendors in establishing a maintenance plan to help minimize early light system failure (see page 3 on 'Lighting Management').

Give me a call today!

Come visit our booth!

Join us on October 11th at the Maine Business Expo at the Cumberland County Civic Center, Portland

Dick Bacon, CMP's Lighting Expert, has over 25 years of experience in the lighting business working for major electrical wholesalers and Central Maine Power Company. Dick is a member of the Illuminating Engineering Society of North America (IESNA). Contact our Lighting Expert: E-mail: lighting.expert@cmpco.com, or call toll-free: 1-800-649-1169.

CMP's Lighting Connection is provided by CMP as a resource to keep its business customers informed on lighting-related issues. The information provided may include references to particular products, services, and vendors. Such references should in no way be construed as endorsement by CMP of any particular product, service, or vendor that is mentioned in *CMP's Lighting Connection*.

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