

# 17 Costly Lighting Retrofit Mistakes & How to Avoid Them

Energy efficient lighting retrofits offer an unprecedented opportunity - cut operating costs and improve lighting quality at the same time. These benefits include dramatic savings (up to 75%); quick pay back (typically 6 to 24 months); outstanding return on investment; enhanced lighting quality (through improved color lamps); higher visual comfort (from glare reduction); reduced maintenance (longer life design); fewer replacements; lower cooling costs (less heat); rebates (often available from your local utility), and investment tax incentives (Federal & State).

By following the guidelines outlined here, you'll more than likely avoid the most common lighting retrofit mistakes.

## 1. Choosing the Wrong Team

Efficient lighting retrofits involve more than the pursuit of energy savings. Retrofits must focus on the quality of light as well. A gain in electrical savings can easily be offset by a loss in productivity. The smartest way to avoid that problem is by choosing the right players from the start.

A good lighting company is as much a consultant to you as they are a supplier of products and services. Quality vendors bring valuable experience and expertise to your company. An outside vendor allows for quick start-up and implementation, capturing savings that might otherwise go unrealized.

Ask about a company's financial credentials. Can they stand behind their warranty? Do they have experience in your particular field? Are they professional and knowledgeable about all lighting technologies? Can they provide training? Is there a list of references with individual names and phone numbers? Verify them. Some companies give away "free" tests simply to list those organizations on a reference sheet. If you choose a quality vendor, you'll get plenty of help in avoiding the other 16 possibly fatal mistakes you might make.

## 2. Conflicting Chain of Command

Retrofits involve decisions with multiple objectives, and typically affect various departments in a company. Objectives include maximizing total dollars saved (finance), minimizing initial costs (purchasing), improving quality (employees, management), maximizing efficiency (engineering) lowering maintenance costs (operations) and maximizing energy saved (utility).

Successful retrofit projects are put together from the intelligent exchange of information among all members of a project team—from operations to the finance department. It's a job for a well-coordinated, fast-acting team— because delays cost money. If you want to capitalize on the opportunities as quickly as possible, you need to be ready and able to make decisions and commitments.

## 3. Neglecting Your Front-line People

Sure, savings are important. But it's your associates and customers who must live with your new lighting system each and every day. If they don't like it, someone's going to hear about it. No one wants one hundred new lighting experts lined up outside their door.

The easiest way to avoid complaints is to involve your associates from the start. Explain the purpose of your retrofit project and the benefits to be realized. Solicit ideas. Get advice from lighting experts on what works best. A good rule of thumb: you can always improve color rendition, but you can't change color temperature, without creating a stir. If you've got cool white lamps now, upgrade to 4100 K in a triphosphor lamp. We've done enough jobs where the customer insisted on switching based on the advice of an interior designer, only to go back and make changes because of employee complaints.

Your maintenance personnel are an important consideration. Think about fixture maintenance down the road. With some retrofits it's exceedingly difficult to get access to the ballast, or to change a lamp. What you save in time today you'll pay for twice over in maintenance costs down the road. Easy maintenance should always be part of your specifications.

By including your front-line people, plus lighting experts in your retrofit planning, you'll be assured of a better result. And remember enhanced lighting can translate to a more attractive work place, increased sales and improved productivity.

#### **4. Calling In the Experts Too Late**

Before committing yourself to a project, call in the experts. You'll benefit from their experience. Some companies provide consultation at no cost. Look at your lighting company as a partner, not just as a supplier, and you'll have a better chance of avoiding mistakes.

A qualified lighting contractor is able to stand behind every statement and warranty. They can support product claims through independent research, not just their own tests and performance numbers. To be certain of product claims, always ask for an independent laboratory's test and performance numbers. In addition, we also recommend that you test products in your facility to confirm results before buying anything.

#### **5. Understanding the Importance of a Lighting Audit**

Unlike construction projects, a retrofit does not have a clean set of blue prints to start from. It is the lighting audit which establishes the foundation for all work to be performed. This audit information is used in everything from evaluating a project's financial worth to manufacturing and ordering parts. One must also evaluate potential problems in manufacturing, shipping, delivery schedules, and installation.

Light level readings and component identification are an integral part of the measurement process. Fixtures must be opened and inspected. The audit should be broken down by building, floor, room and suite. Special codes spell out everything from restricted access, time limitations, special working conditions, and other pertinent information, in a form that is used by all project personnel. This becomes our blueprint for manufacturing, installation, verification of billing.

#### **6. Using the Wrong Approach**

The trick is to get all your lighting components to work together, easier said than done. When you wisely integrate your lighting product components...in short, when you use a systems approach...you can achieve maximum savings and improve quality.

First, establish your lighting objectives. Don't assume that the light levels you now have must stay the same. In many cases, for example, your original lighting system was designed for a time when personal computers were just an engineer's dream. Things change. In office, factory and warehouse applications, you may want to increase or even decrease light because the nature of the work being performed has changed. The Illuminating Engineering Society (IES) publishes recommended light level guidelines for almost every type of application.

## **7. Buying On Price**

Lighting retrofit projects are sometimes bought on price alone, which is usually false economy. The few pennies you save up front can cost you thousands of dollars in lost savings, increased maintenance costs, and productivity losses due to a poor-quality lighting system.

Remember, it's easy for vendors to cut the price if they know how. They can use untrained labor, substitute lower grade material or use less material, bid unreliable and/or untested technology, supply discontinued products from vendors who can't stand behind their warranty, use a commodity design in place of a custom product, rush production, avoid carrying insurance, (bait and switch), cut corners on installation, skip permits, fail to pay suppliers, and ignore U.L. requirements.

To the untrained observer, these tactics may go unnoticed. So, establish your criteria and communicate them clearly to vendors before sending out for quotations. Visit the manufacturing facilities of the companies you're considering. Meet the individuals responsible for managing your project. Look at the design capabilities. Check references. Visit previous installations.

## **8. No "What If" Planning**

A lighting retrofit program impacts everyone in some way. To plan sensibly you need to consider all the "what ifs?" They're easy enough to identify and to plan for if you take advantage of the expertise a qualified lighting company offers.

For example, what are the delivery lead times on lamps and ballasts? Can your maintenance department handle the lamp and ballast disposal? Do state regulations (or company policy) require special handling of PCB ballasts? Is the lighting system flexible enough to adapt to future needs? Make sure you have the answers before starting work.

Prepare a project book that documents your work before and after. Senior management can't help but be proud of you, the new corporate hero who saved them lots of money.

## **9. Not Testing Thoroughly**

The greatest part about a lighting retrofit proposal is that it easily lends itself to verification. Tests with light meters, watt meters, and photocells, plus your electric bills, all tell an objective story. A lighting retrofit project offers a provable advantage over other cost cutting efforts your company might be considering. Moreover, by testing, you can predict the performance of alternative lighting systems. Gathering all the information will enable you to verify the potential of a retrofit proposal every time.

## **10. Botching Up the Installation**

After a system has been evaluated, you must develop an installation plan of action. Everyone from top to bottom needs to be informed and ready to cooperate. And communication should be in writing. Otherwise, you'll find yourself arguing with an associate or with a vendor about who ordered the wrong ballast, the wrong lamp, and more. Finally, you'll argue about who's going to pay for these mistakes.

Each industry is different. Make sure your contractor has successfully worked in an environment similar to yours. Just as important, he or she should be willing to provide you with an installation checklist that spells out every step of the installation, from security access and cleanup, to special equipment needs.

## **11. Falling for "Bargain" Products**

"Bargain" products are offered by "bargain" companies. They're in business to make fast money, offering what seems to be the cheapest price. They're also easy to spot. Carrying product in hand, they've got the answer to your problem before you've ever been asked a question.

To protect yourself and your company, ask for a warranty. And then carefully read between the lines. Does the warranty really cover what it would take to replace a product in the event of failure? Be sure to get a performance warranty that covers material, design and installation.

Next, check your vendor's financial net worth. There's no value in a warranty if the company offering it has no assets.

Another example of the need for customized lighting products is in the area of occupancy sensors. To reap maximum benefit from your lighting retrofit program, your sensors, along with other lighting products, should also be tailored to your own particular needs.

Taking the time to carefully evaluate technologies and vendors will pay handsome dividends in the end—both in savings and in improved lighting quality. Regardless of the price, it's no bargain if it doesn't work

## **12. Failing to Scrutinize Proposals**

Go back and look carefully at the proposals you've received. Check the facts and figures. Then double check. Ask yourself: do the savings reflect unrealistically high electric rate increases of, say, 10% per year? Is your existing wattage overstated? Is the proposed wattage understated? Are your vendors using the correct electric rate, hours of operation, and number of fixtures? Have they taken the time to ask detailed questions before introducing a solution? Do the components used in the test match the proposal?

Another important point: Choosing a company without adequate financial resources can be dangerous. Invariably there are always some adjustments to be made on a retrofit project. A lighting company must be able to absorb those costs and deliver as promised. An inability to pay suppliers, limited credit lines, or cash flow problems can lead to delays and liens. If there are major problems, the customer becomes the natural focus for legal recourse. For

most businesses, that is a risk they are unwilling to accept.

### **13. Celebrating Too Soon**

Sometimes a retrofit test can fool you. The light level readings you obtain today may not stay within an acceptable range over time.

Depending on the lamp selected, different lumen maintenance curves apply. Over time, lamps will lose their brightness, shown on the lamp lumen depreciation curve. Also, dirt and dust accumulation must be factored into the equation.

Always evaluate your proposals based on light level readings that will be maintained over time. Incorrect lamp and ballast combinations result in shorter lamp life or premature ballast failure and void your product warranties. Unfortunately, this mistake won't surface until after you've paid for your retrofit project.

Remember, a true systems approach to lighting redesign will properly match all technologies to prevent this.

### **14. Holding Back Too Long**

The pay back's attractive. The test was successful. The boss loves it. So why the delay in starting your retrofit project? There are two main reasons, we've found, why companies hold back.

One is corporate inertia. After all, the lights still work. And no one's complaining. With constant on-the job pressures, who has the time for anything but today's most urgent crisis?

The other reason for delay is to wait for a utility's rebate. And on the face of it, that can only look like a smart idea. But the truth is, the savings your company gains, a properly planned lighting retrofit, almost always outweighs all other considerations. Even rebates. Our recommendation: take advantage of utility rebates whenever available. But remember, delaying a decision in anticipation of a future rebate program only means you'll miss out on immediate savings.

### **15. Using "Average" Electric Rates to Calculate Savings**

While your average electric rates can provide a quick feel for a project's potential, only actual electric bills should be used as a basis for determining your savings. A common mistake is overlooking the rate structure that applies to your particular business: 1. A Declining Block Rate; 2. A Demand Rate; 3. A Time of Use Rate; 4. Seasonal Rate.

### **16. Falling In Love With the Hardware**

Sometimes in the excitement of evaluating new technology, we lose sight of our original objectives. For example, sophisticated control features can be appealing, but are often difficult to justify in terms of cost. Common sense tells you that you don't want to pay for features that you won't use or that are unnecessary. Your focus should be on the cost/benefit ratio.

The same holds true for evaluating test results. Common sense still applies. Some products, for instance, advertise their ability to withstand harsh conditions like abrasive cleaning or salt sprays at high temperatures. But ask yourself: are you paying extra for a product feature you'll never need? After all, if your building fills with sea water on a hot summer day, you've got other problems to worry about.

Make sure the testing methodology makes sense. Is it a hold-over from a different application? As you read the footnotes, think about what the manufacturer may have to gain by the test "conclusions". It's one thing to understand how technology works. What's more important is how it's applied.

## **17. Overlooking Opportunities**

It's a big mistake to believe a lighting retrofit project is "Not In The Budget." It's like saying you can't afford to save money. Yet, the mere act of paying your electric bill means there's cash in your business waiting to work for you.

To begin with, a properly designed program virtually guarantees that your monthly savings will exceed your monthly electric bill payments. In turn, financial programs are available that will create positive cash flow from the start.

Finally, in your rush to complete a project, don't forget the little things. Exit signs, down lights, cove lighting, HID (High Intensity Discharge) conversion kits, compact fluorescents, and occupancy sensors all deliver savings. And a group re-lamp program will save on future maintenance costs and ensure you get savings and better performance from your new lighting system for years to come.

Mistakes can happen. Always keep in mind that a lighting retrofit is more than the sum of component costs. Lighting efficiency projects, by their very nature, require an educated buyer to sort through competing claims and ensure that quality and service are part of the evaluation process.

The original article was written by Joseph F. Desmond and Brad Boyett, Parke Industries, Glendora, CA and published in July/August Skylines 1995. Content has been updated over the years by Stuart Taylor, CEM, CLEP, Waypoint Lighting, but twenty+ years later, every item on this list is still just as relevant today as it was in 1995.