



## Should You Replace Your T8 Fluorescent Lamps with T8 LED Tubes?

For years, lighting indoor commercial spaces was a no-brainer. Most folks simply went with linear fluorescent lights (LFLs) — and for good reason. They have quality light output, are one of the most efficient light sources available, and have decent lifespans. This is especially true of the T8 lamps, which use about 40% less energy than the older, now phased-out T12 lamps. That being said, now there is a new player in the commercial lighting arena that promises even better efficiency: the linear LED replacement (T8 LED).



Does the T8 LED really have what it takes to make it worth swapping out your tried-and-true LFLs? To help you decide, take a look at some of the benefits of T8 LEDs:

**Mercury Free** – Unlike fluorescents, LEDs contain no mercury. This makes them safe for the environment and results in no recycling fees.

**Dimmable** – Many LEDs have full dimming capabilities, whereas fluorescents are expensive to dim and do so poorly.

**Directional Lighting** – LEDs offer directional light (illumination exactly where you need it). On the other hand, fluorescents have multi-directional light, which means some light is lost in the fixture and other unnecessary places.





**Work Well with Controls** – Fluorescent lights tend to burn out faster when integrated with occupancy sensors and other controls. In contrast, LEDs work perfectly with control systems, since their life is not affected by turning them on/off.

**Better Efficiency** – The newest T8 LEDs are around 30% more efficient than T8 LFLs.

**Quality Light** - Today’s LEDs produce light in a variety of color temperatures similar to fluorescent, but don’t have any flickering issues that can happen with fluorescent.

**Lifespan** – The average life of a T8 LED is 50,000 hours, versus only 30,000 hours for an average T8 LFL. One thing to keep in mind though is that there are now linear fluorescent T8 lamps that last up to 84,000 hours.

While some may complain that LEDs have a lower lumen per watt ratio than fluorescents, judging the two in this category is really like comparing apples and oranges. There simply is no direct comparison. This is because LEDs can get by with less lumens because their directional nature ensures you get a greater concentration of light exactly where you need it. And, as mentioned, fluorescents waste light within the fixture and illuminate unnecessary places. The bottom line is: don’t get too hung up on lumens, if you’re going to do a comparison, consider the delivered lumens of both the lamp and luminaire together.

The only major downside with T8 LEDs is their cost, which can be five times greater than the price of LFLs. Even so, with rebates, tax incentives, and energy savings, you might see a ROI faster than you’d expect. It’s important to crunch the numbers for your particular situation to see if the initial expense makes sense for your business. Premier Lighting can help you with a cost/benefit analysis and ensure you consider all factors when deciding between LFL and LED.

If you find that you’re leaning towards retrofitting your linear fluorescents with T8 LEDs, you have several different options...

## LED Linear Tube Options

Currently there are three types of LED T8s on the market suitable for retrofits. Primarily they are differentiated by how they interact with existing ballasts. The reason this issue of the ballasts exists at all is because fluorescent tubes need ballasts to operate and LEDs do not. Fluorescent lights require a high voltage burst to get started and then something to regulate the power that comes to the tube — the ballast takes care of all of this. On the other hand, LEDs use a driver which comes in a variety of sizes making several options available.





In an effort to make LED T8s fit into existing linear fluorescent fixtures (for retrofit purposes), manufacturers have come up with a couple different ways of dealing with the unnecessary ballasts. These solutions include bypassing the existing ballast, removing it, or working with it.

To determine what kind of LED T8 might work for your application, consider the pros and cons of each type available today:

## **Type A: LED tube has an Integrated Driver that Operates on Existing Ballast**

### **How it Works**

Type A LED tubes have an internal driver that makes it possible for the lights to use existing ballasts and fixtures. They plug directly into the most common linear fluorescent setups, such as T12, T8, and T5.

### **Pros**

**Super-easy installation** – Just switch out the old fluorescent tubes for LEDs, and you're done. No other modifications are required.

### **Cons**

**Shorter lifespans** – The life of Type A LEDs is dependent on the longevity of the ballast. This can result in more maintenance costs as compared to other LEDs, since you may need to replace the ballast before you've reached the lifetime of the LED.

**Not compatible with all linear fluorescents** – Compatibility varies, so check that the make and model of your current fluorescent fixtures are acceptable.

**Requires a T8 Electronic Ballast to function** - You need a working T8 electronic fluorescent ballast for these LED tubes to work; most LED tubes work with T8 fluorescent instant start ballasts and some work with T8 fluorescent program start ballasts.

**Not as efficient** – Some power is lost from integration with the ballast. Also, dimming and other types of energy-saving functionalities are limited.





## **Type B: LED tube has an Internal Driver and is Wired to Main Voltage**

### **How it Works**

With Type B LED Tubes, the ballasts are removed from the fixture and the power is wired direct to the sockets.

### **Pros**

**No power loss** – Unlike Type A bulbs, these LEDs are more efficient, since no power is wasted in the ballast.

**Less long term maintenance costs** – By eliminating the ballast you have one less part to maintain in the future.

**Options** – Type B has the most options in terms of bulb length (2' to 6') and assortment of wattage/lumen packages, specifically for the 4' options.

### **Cons**

**Electrical modifications are required** – Modifications include, removing the ballasts, replacing the sockets (possibly), and connecting fixture input wires to the sockets. Strict safety measures are necessary as installers could be exposed to main voltage while connecting sockets to power wires.

**Limited dimming** – Even without the ballast, these lights have few dimming options.

**Higher installation costs** – The rewiring, removal, and added safety steps result in longer installation times (i.e. more expensive).

## **Type C: LED tube has Remote Driver**

### **How it Works**

Unlike Type B tubes that have an internal driver, Type C lights use a remote driver to power the LED. The ballasts are removed, which means electrical modifications are still required. However, the operation is much safer, since the low-voltage driver is hooked to the sockets and not the line voltage. One driver can power multiple LED tubes. This system is similar to how LFLs operate now (ballast and lamps).





## Pros

**Most efficient** – Type C’s are more efficient than any other T8 LED tube.

**Highly compatible** – Virtually any fluorescent fixture can be modified to work with these lights.

**Increased functionality** – They are dimmable and work wonderfully with lighting control systems.

## Cons

**Higher installation costs** – Similar to Type B tubes, these lights require more extensive installation. However, you can recoup some of this cost through the tubes’ efficiency and by using energy-saving control systems.

## Other Considerations

No matter what type of LED T8 tube you choose, there are some other important things to keep in mind before making a purchase:

**Warranty** – Some LED T8 tubes only come with a three-year warranty. Don’t waste your time and money on those. Instead, opt for a tube with a five-year, DLC-approved warranty.

**Voltage** – Pay attention to the voltage listed on the light’s packaging. Some LED tubes are specified for 120 or 277 volts or can only handle a max of 240 volts. Cover your bases by getting a LED T8 system rated for 120-277 volts.

Ultimately, the efficiency, long life, and functionalities of T8 LEDs make them worthy of potentially replacing standard T8 fluorescent tubes. Of course, every situation is different, so analyze your setup with an expert before making a purchase. Premier Lighting has the expertise to provide you with the best recommendation for your application. We offer a variety of T8 LED lamps as well as T8 linear fluorescent lamps to choose from and will help you decide which type

