

# RECIPE

## For Energy Savings

*Why LEDs have all the ingredients for success.*

BY TED STOUCH

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**E**nergy-efficient lighting in restaurants throughout the nation is becoming the need of the hour. Some restaurants have been forward-thinking by leveraging existing agreements, reaching out to national and regional lighting retrofit companies. These restaurant operators are highly motivated to embrace carefully prepared product and service offerings.

A lighting system needs to meet the restaurant's energy systems requirements to reduce environmental impact, increase brand appearance, and improve the customers' atmosphere. Even though every location is different, it is essential the all components of the lighting system will economically fit all restaurant footprints.

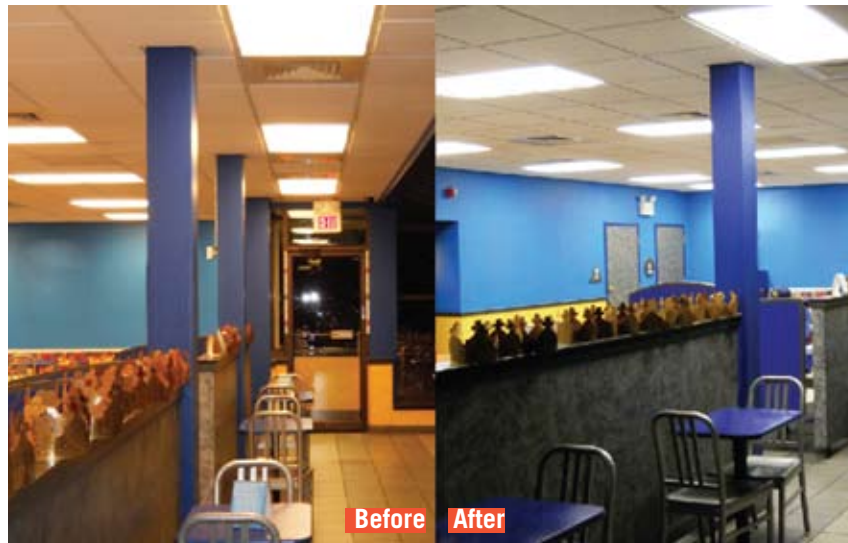
A complete retrofit program of all your restaurants locations can result in a healthy reduction in energy consumption, energy costs, maintenance costs and operating costs. It benefits the environment by reducing greenhouse gas (GHG) emissions that contribute to climate change by cutting utility bills.

For the best energy-saving results, the following should be included in a complete lighting retrofit:

- Lighting audits/analysis
- Lighting layouts
- Energy-saving lighting products
- Lighting accessories (occupancy sensors, dimmers, etc.)
- Recycling of all hazardous materials in compliance with OSHA

### INTERIOR & EXTERIOR LIGHTING INGREDIENTS

Many obstacles can get in the way of lighting retrofit projects. The misconceptions surrounding lighting retrofits are numerous and maximum energy savings



may not be obtained. Choosing one particular technology can limit potential savings. Instead of getting focused on one lighting technology solution, each application within the facility needs to be looked at for different lighting options.

Too often, retrofits with misconceptions lead to faulty decisions. For significant energy savings with a lighting retrofit program, evaluation of which technology to use needs to be well researched depending on the application. Also there are tax rebates, grants and other incentive programs to be taken advantage of.

Lighting retrofit options include:

### INCANDESCENT TO COMPACT FLUORESCENT

- Minimal labor cost • Fast re-

turn on investment • Readily available material • Reduce energy up to 75% • Increase rated life of lamp

### T12 – T8 OR T5

#### FLUORESCENT

- Energy reduction of 20-30%
- Longer rated life of lamps
- Better color rendition • Reduce CO<sub>2</sub> gases released to the atmosphere • 2- to 3-year ROI
- Maintenance cost associated with lamp and ballast replacement still exists • Depreciation of lumens after rated life of lamps • Shortened lifespan with frequent on and off cycle

### HIGH INTENSITY DISCHARGE LAMPS (METAL HALIDE – HIGH PRESSURE SODIUM – MERCURY VAPOR)

- For higher wattages energy re-

duction of 25% • Lower wattages minimal energy savings • Retrofit uses existing technology • Lumens depreciate quickly after rated life

### HID TO LED LIGHTING

- 50-80% energy reduction • Increased rated life 50,000 to 100,000 hours • Better color rendition • Reduce CO<sub>2</sub> gases released to the atmosphere • Eliminate maintenance

### HID TO INDUCTION LIGHTING

- 50% energy reduction • Increased rated life 60,000 to 100,000 hours • 30% lumen depreciation after rated life

### INTERIOR & EXTERIOR SIGNAGE LIGHTING INGREDIENTS

High-efficiency, long life LED systems deliver exceptional performance in channel letter, border lighting, architectural accent, cove lighting, POP signage and wall washing applications.

The overall goal is to produce an informative sign that portrays your message and image. There are a few lighting materials available to create illuminated signs, but to be the most cost-efficient, LED technology is the solution over neon, fluorescent and electroluminescent lighting.

LED lighting systems can be implemented into countless signage applications, indoor or out. Judged against the performance of standard neon, fluorescent lamps and electroluminescent lighting, LED technology provides significant energy cost reductions, easier installation or retrofitting, less frequent maintenance and consistent brightness over time.

Flexibility and ease of installation make LED modules ideal for onsite retrofitting of existing sign lighting systems. There is no need for sign removal or sign replacement. With a power consumption of only 0.8 watts per linear foot, LEDs are the most efficient sign lighting system available today. The combination of factors — ultra high brightness, ease of installation, a minimal power supply amount and few components needed for installation — results in LEDs being a cost-competitive alternative to all sign lighting systems available.

Sign lighting retrofit options available:

#### NEON LIGHTING RETROFIT TO LEDs

- Energy savings of 75% to 90%
- Less maintenance • Longer life
- Eliminating mercury content

#### NEON LIGHTING RETROFIT TO FLUORESCENTS

- Energy savings of 23% to 50%

#### T-12 FLUORESCENT LAMPS RETROFITTED TO EITHER T-8 OR T-5 FLUORESCENT LAMPS

- Energy savings of 12% to 27%

#### FLUORESCENT RETROFIT TO LEDs

- Energy savings of 12% to 38%
- Less maintenance • Longer life
- Eliminating mercury content

The following are case studies about restaurants that have tried to save energy with lighting:

#### CASE STUDY #1: FAST FOOD

A fast food chain wanted to improve its lighting while reducing its energy consumption and improving its carbon footprint. The company implemented a lighting retrofit program for exterior and interior lighting and signage.

A test location in suburban Philadelphia used 4-lamp, 4-foot,

T-8 fluorescent lighting fixtures with ballasts in its customer dining area. An innovative technology of highly reflective plastic substrate was installed in these fixtures. With the new reflector technology, the company was able to replace the existing four lamps with two lamps, and a single 2-lamp energy-efficient ballast. The reflector utilizes high diffuse reflectance, greater than 97% reflectance across the visible spectrum, allowing light fixtures to be designed with more efficient light output while the highly diffuse nature of reflection allows the light to be distributed evenly with a low-glare aesthetic. The lighting retrofit was designed to immensely reduce energy consumption and decrease heat output, which also reduces HVAC costs.

With the innovative reflector technology, reduction of lamps and the energy-efficient ballast, the restaurant reduced the wattage per fixture from 112 watts

to 48 watts, an energy savings of 57%, and maintained required foot candles. With the lighting retrofit, one restaurant location for just its interior is saving 15,870 kWh a year, 22,342 lbs of CO<sub>2</sub> emissions annually, and approximately 59 trees every year. The carbon dioxide offsets in regards to the environmental impact is also equivalent to 53 passenger vehicles on the road yearly and 10 carbon credits. Their annual calculated energy cost savings is \$1,746. Maintenance costs will also reduce because the quantities of lamps in each fixture are cut in half. For interior and exterior lighting along with signage lighting, the national fast food chain expects to save \$7,931 annually per location.

#### CASE STUDY #2: CHAIN RESTAURANT

A restaurant chain in Pennsylvania and southwestern New Jersey wanted to increase the quality of lighting and the level

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of illumination while significantly reducing energy consumption and service costs. The company had to pay considerable attention to the issues of light pollution and glare control, while increasing lighting levels and reducing energy.

After the restaurant's parking lot light was destroyed, it decided to investigate how to increase its lighting quality and save energy. The fixtures were 175W metal halides and used approximately 213W of energy. One metal halide lamp was replaced with two LED lamps that are 250W each (equivalent to 250W HID) but

only use 35W each of energy. In each parking lot fixture, the LED is producing 65% more light and using 67% less energy. The restaurant is anticipating a 67% drop in energy usage than the former facility's metal halide lamps — and a significant increase in lumen output.

What did the ingredients cook up? Lighting retrofits are helping many restaurants cut their energy costs. Lowered energy-efficient lighting product pricing and utility rebates allow for a "strong return on investment." Lighting retrofits are one simple approach to energy savings be-

ing taken by some prominent national chains. Both local businesses and national chains can benefit from energy efficiency.

A lighting retrofit provider must have a detailed understanding of how the restaurant business uses energy, the technologies they now have, the upgrades that would help them most, their decision-making structures, and the views and preferences of restaurant decision-makers. Restaurants need particular lighting to create "their" brand atmosphere. With this the lighting retrofit needs to have different lighting tech-

nology for adequate energy savings. With the energy savings the restaurant decision-maker can apply the savings to other areas of business to stay competitive in the restaurant industry.

A complete retrofit lighting system that meets the restaurant's energy saving requirements, increases brand appearance, and improves the customers' atmosphere is the perfect recipe for energy savings with lighting. ♦

Ted Stouch is president/CEO of Aston, Pennsylvania-based Action Services Group.

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