

## Premier Issue

This is the premier issue of *NYC WasteLe\$\$*, your information source on reducing costs through improved efficiency. You can rely on this waste reduction and energy conservation quarterly to keep you informed of important developments and cost saving opportunities for the restaurant industry.

*NYC WasteLe\$\$* is a non-regulatory waste prevention program initiated by the New York City Department of Sanitation (DOS) with support from the New York State Energy Research and Development Authority (NYSERDA) and the U.S. Environmental Protection Agency (EPA) Region II. *NYC WasteLe\$\$* supports City waste prevention efforts to help local businesses maintain and enhance their competitiveness.

The *NYC WasteLe\$\$* program has targeted nine business and institutional sectors, including restaurants; retail food establishments; manufacturers; wholesalers; retailers; schools; airlines/airports; stadiums, arenas and convention centers; and hospitals.

Results of the program are showcased in these newsletters. In addition, the *NYC WasteLe\$\$* web page will be on-line soon. ■

# Selecting the Right Light



When selecting a lighting system for your restaurant, you want one that is appropriate to your setting, comfortable for your patrons and employees, energy efficient and cost effective. This article will help to “shed light” on some of your lighting options.

Quantity and quality of light, as well as energy efficiency, must be considered before selecting a lighting system. According to the U.S. EPA Green Lights program, businesses tend to overlight. Spaces often are designed for as much as 200 footcandles of light when 50 footcandles may not only be adequate, but may actually be superior in terms of comfort and productivity. Overlighting will not only cost more, but may wash out displays and create an uncomfortable atmosphere.

In addition to quantity, consider the quality of the light. Conversations with restaurateurs participating in the *NYC WasteLe\$\$* program initially indicated a reluctance to install compact fluorescent lamps because of a perception that the quality of fluorescent light is inappropriate for restaurant dining room settings. Manufacturers have addressed these concerns about light quality by developing a variety of lamps with different color temperatures.

In general, warmer sources should be used in dining rooms and cooler sources should be used in areas where higher illumination is required, such as kitchens. The ability of the light source to render true colors also is important to consider. For example, customer comfort might be enhanced by a light source that softens colors, rather than offering true color rendering.

Energy efficiency is another important consideration when choosing lighting. The four basic categories of lighting from which you can select — incandescent, halogen, high intensity discharge, and fluorescent (standard and compact) — offer different levels of efficiency for different purposes. Incandescent bulbs are most commonly used in households, but are still found in many commercial applications, even though they are the most inefficient, with almost 90 percent of the energy used

## New Development Cuts Cost of Lighting Exit Signs

Exit signs — they are everywhere and they are a necessary part of every business. Depending on the size of your facility, you may have a handful or you may have hundreds.

No matter the number, exit signs must be illuminated 24 hours a day, 365 days a year, providing necessary direction during emergencies, and always using electricity.

LEDs, or light-emitting diodes, are the lights that illuminate your digital clock radio and stereo. They are the wave of the future, lighting up

everything from exit signs to traffic lights, while using only a small amount of electricity for the amount of light they emit.



Overall, LED exit signs are more cost effective, more energy efficient, and often more visually appealing than incandescent or compact fluorescent alternatives, and they last longer. The following table presents a comparison of incandescent, fluorescent, and LED systems.

Extronix Models 600 and 700 are available in both 6" and 8" letters. ■ continued on page 4

continued on page 2



**DISCLAIMER:**  
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**Spotlight On: Energy Efficiency**

Next Issue Spotlight On:  
**Recycling**

Thoughtful placement of appliances contributes to enhanced energy efficiency and yields cost savings.



## Make Your Kitchen Appliances Work For You

**T**he kitchen is one of the most energy intensive parts of your operation. Take a quick tour, paying special attention to appliance locations. Are the stoves, ovens and coolers next to each other or across from each other? Placing a refrigerator against or across from an oven or stove decreases the efficiency of both appliances by allowing hot air to be sucked into the cool refrigerator. Moving your appliances to ensure that they do not interfere with each other may dramatically increase their efficiency and reduce your energy costs.

Normal kitchen operations also may be wasting energy. How many burners are lit on the stoves? How many items are being cooked? Are heat lamps on? Is there anything under them? Are oven doors open while the oven is turned on? How hot are your fryers, broilers, and ovens? Are the cooler doors closed completely? Are the lights on in the coolers or storage areas?

Often, equipment stays on all of the time, although preheating most ovens, fryers and ranges takes only 10 to 20 minutes. Turning on only the

equipment needed minimizes energy costs.

Keeping equipment at the proper temperature also is important. According to "How to Reduce Your Energy Costs," by the Center for Information Sharing, high-speed, modern fryers work best at around 330°F, a temperature that will prevent the fat from breaking down. Broiling and roasting at lower temperatures reduces food shrinkage while retaining juices, flavor and tenderness. The energy saved using lower temperatures more than offsets the energy used in longer cooking times.

Coolers and refrigerators are in constant use. Employees may prop doors open or forget to push the doors closed. Sometimes, sliding cooler doors become stiff or fall off their tracks. Seals wear out around the doors, or a glass door may crack.

Repairing the doors and ensuring that they are properly closed may reduce energy use and spoilage and, as an extra bonus, will reduce condensation. ■

### Thinking of Remodeling?

Here are a few additional tips to consider if you plan major renovations or are designing a new kitchen:

- Walk-in freezers and coolers can be made more efficient by putting the freezer inside your cooler and putting vinyl strips on the doors.
- Gas stoves and ovens are more energy- and cost-efficient than electric, especially if they use electric ignition instead of a pilot light, according to the Cornell Hotel and Restaurant Administration Quarterly.
- Improve lighting efficiency by designing kitchens so that light can flow through them, installing compact fluorescent bulbs where possible and installing timers or motions sensors in all walk-in storage areas.
- Consult an energy efficiency expert and consider options to recover and reuse heat from food preparation and storage operations.

## The Big Cr

**"I**t's not the heat; it's the humidity." — a common sentiment in New York City during the summer months. Besides making us all uncomfortable, high humidity levels may affect the efficiency of air conditioning and refrigeration systems and contribute to poor indoor air quality. Fortunately, technologies are available to help restaurants combat humidity, save energy, and save money.

Advances in mechanical refrigeration offer real opportunities for efficiency improvements. Air conditioning systems are typically designed to maintain temperature at a desired level. Moisture is removed from the air as it flows across the cooling coils as long as the coil temperatures are below the dew point temperature of the air. Designers also seek to control room humidity in certain applications. The traditional approach to controlling humidity is to overcool the air to extract more moisture, then to reheat it to a comfortable temperature before delivering it to the conditioned space. This approach is no longer the most energy efficient.

Over the past decade, manufacturers have introduced packaged desiccant dehumidification systems

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being released as heat rather than light. Although manufacturers are working to improve efficiency and bulb life, incandescents still offer the shortest lifespan, approximately 750 hours, and many long-life incandescent bulbs are actually less efficient than standard incandescents.

Halogen lamps are filled with halogen gas, which allows them to produce a brighter, whiter light than standard incandescents. Halogen lamps use between 15 and 70 percent less energy to produce the same amount of light generated by standard incandescents, according to The Creative Home Owner Press Energy Efficient Lighting Guide. The halogen gas allows the tungsten filament to evaporate at a slower rate than in standard bulbs so halogen lamps can last up to 2,250 hours. Halogen lamps can be used to light public areas or they can be installed in spotlights and floodlights. Some types of halogen lamps require special fixtures. Halogen Infrared (HIR) lamps are even more efficient than tungsten halogen lamps. The Lighting Guide indicates that HIR lamps offer a 40 percent or more efficiency gain over standard halogens, while providing the same amount of light output, beam control and compactness as the standard halogen lamp.

High intensity discharge (HID) lamps, including metal halide and high-pressure sodium, are excellent for lighting large areas such as parking lots or building exteriors. Some models also can be used to light offices and building interiors. Metal halide and sodium lamps are the most efficient types of HID lamps, as they are capable of producing over 60 percent more lumens than a mercury vapor lamp of the same wattage, according to the U.S. EPA Green Lights Program Lighting Upgrade Manual.

Among the most energy efficient lighting systems are fluorescent tubes combined with reflectors for overhead lighting, and compact fluorescent lamps for down lighting, spotlighting, and desk lamps. Fluorescent tubes have long been the standard in commercial overhead lighting, but recent advances in technology provide for more efficient options. In new buildings, the standard

# Big Chill: Tackling Humidity

designed for commercial applications. Desiccant systems, combined with conventional vapor-compression air conditioning, eliminate the need to overcool and reheat air. Therefore, they offer a cost-effective solution to humidity control problems in restaurants.

Desiccant dehumidification systems dry air with liquid or solid moisture-absorbing (desiccant) materials. In a typical desiccant dehumidification cycle, moist process air passes across a slowly rotating desiccant wheel that adsorbs large quantities of water vapor. The moisture-laden portion of the desiccant wheel rotates into a hot regeneration air stream that drives off the water vapor. The dried desiccant continues to rotate back into the process air stream where the cycle is repeated. In a restaurant, the process air stream may be outside or return air.

Gas-fired boilers are often used to provide both process air heating and desiccant regeneration. Generally, any source of low-grade heat, including waste heat from kitchens, can be used to regenerate the desiccant. Utilities and research organizations have successfully demonstrated desiccant systems in fast food

restaurants. The technology is proven and reliable, and is specified for new construction or as an add-on to existing air conditioning systems.

In addition to economic benefits, desiccant systems may improve occupant comfort and indoor air quality by eliminating excessive moisture that can support the growth of mold, mildew and bacteria. These contaminants can produce objectionable odors and possibly lead to health problems.

At a Burger King restaurant, an Engelhard/ICC desiccant system was installed as a pilot in 1994. The system, in conjunction with the existing rooftop air conditioning unit, has been very successful at combating the hot and muggy summer weather combined with the hot kitchens in the restaurant — a challenge that the air conditioning unit alone could not meet. The two-wheel desiccant system produced instant results noticed by both employees and customers and has operated reliably since its installation, according to the American Gas Cooling Center.

Additional information on desiccant dehumidification can be obtained by contacting your local

utility, equipment manufacturers, or an energy efficiency consultant. ■



FOR MORE INFORMATION:

#### Utilities:

- Brooklyn Union  
One Metrotech Center  
Brooklyn, NY 11201  
(718) 403-2000
- Consolidated Edison  
4 Irving Place  
New York, NY 10003  
(800) 343-4646

#### Partial Listing of Manufacturers:

- Engelhard/ICC  
441 North Fifth Street  
Philadelphia, PA 19123  
(215) 625-0700
- Munters DryCool  
16900 Jordan Street  
Selma, TX 78154  
(210) 651-5018
- Fresh Air Solutions  
330 Warminster Road  
Hatboro, PA 19040  
(215) 682-6600
- Semco, Inc.  
1800 East Pointe Dr.  
Columbia, MO 65201  
(573) 443-1481
- Munters Cargocaire  
79 Monroe Street  
Amesbury MA 01913  
(978) 241-1100

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includes electronic ballasts and highly efficient T-8 tubes, rather than traditional T-12 tubes. T-8 tubes significantly reduce overall system wattage while producing more lumens per watt. Even lower wattage T-5 lamps are available for indirect lighting and combination direct/indirect lighting design systems.

Compact fluorescent lamps (CFLs) are by far the most energy-efficient option for lighting. A 20-watt CFL produces the light of a 75-watt incandescent. Typical costs range from about \$12 up to \$25, yet the CFL will last from 7,500 to 10,000 hours, compared to about 750 hours for an incandescent bulb. These longer lasting lamps reduce labor costs, as well, since they are replaced less often. ■

McDonald's restaurant, in Fair Haven, Vermont, like many quick-service and family restaurants, has large windows surrounding its dining area, allowing plenty of natural light in during the day. The restaurant decided to take advantage of this light by dimming the fluorescent lamps. The fixtures in the dining area were divided into four zones, each controlled by a photosensor. During the day, the lights would automatically dim to their lowest level — about 40 percent of their full power. The store also upgraded to T-8 fluorescent fixtures and electronic ballasts, replaced incandescent bulbs with compact fluorescent lamps, and installed LED exit signs. Combining all of these upgrades gave the entire project a payback period of less than one year. The daylight dimming portion would have paid for itself in about two and a half years. It saved 29 percent of energy costs and only cost \$424 to install.

Source: U.S. EPA Green Lights Program Application Profile

## Cut Your Losses With Vinyl Strips

The cold rush as you open the door of the walk-in cooler is welcome on a hot day until you find out that regularly opening and closing a walk-in cooler door over the course of one year can cost up to \$1,688 in refrigerated air loss, according to experts at Economax Manufacturing, a manufacturer of a wide range of strip doors. Installing vinyl strips is one way to combat energy losses. Vinyl strips are transparent plastic strips that fit snugly together and hang in a doorway to form a barrier against cold, heat, dust, insects, and noise.

According to Verilon® Products Company, installation of vinyl strips can decrease the running time of a refrigerator's compressor by reducing the refrigeration load up to 44 percent. Economax experts also indicate that vinyl strips can reduce energy losses by up to 75 percent, making them extremely effective in improving the energy efficiency of your refrigerator or freezer.

NYC WasteLeSS partners Blue Ridge Farms, Inc., The Jacob K. Javits Convention Center and many of the produce wholesalers at the Hunts Point Terminal Market have installed vinyl strips on doors leading to loading docks and refrigerated units. ■



With more than 60 produce wholesalers, each operating several refrigerated storage units, vinyl strips are an integral part of overall energy savings at the Hunts Point Terminal Market.

#### Features of Vinyl Strips:

- Reduce costs to maintain temperature.
- Operational between -20° and 170°F.
  - Special low temperature strips are available for temperatures down to -60°F.
  - Additional welding strips may be added to block 99% of UV radiation and reduce noise.
- Optional motion detectors and pull cords can raise doors automatically.
- Flame resistant, transparent, and noise deadening.
- Reduce filter maintenance by reducing dust.
- Easy to maintain and replace.
- Relatively inexpensive when compared to other door systems.

Source: Verilon® Products Company and Economax Manufacturing



FOR MORE INFORMATION:

#### Vinyl strips distributors include:

- EconoMax Manufacturing  
621 Southeast 202  
Portland, OR 97233  
(800) 777-1507  
[www.economax.com](http://www.economax.com)
- Material Handling Sales, Inc.  
9 Lund Road  
Saco, ME 04072  
(800) 458-6870  
[www.mathand.com](http://www.mathand.com)
- Frommelt Safety Products  
P.O. Box 12000  
Dubuque, IA 52004-1200  
(800) 553-5560  
<http://frommeltsafety.com>
- Verilon Products Company  
452 Diens Drive  
Wheeling, IL 60090  
(800) 323-1056  
[www.epark.com/html/verilon.html](http://www.epark.com/html/verilon.html)
- Just-Rite Equipment Inc.  
528 West 1st Avenue  
Roselle, NJ 07203  
(908) 245-1166

## Cut Costs of Exit Signs continued from page 1

### EXIT SIGN LIGHTING

Type of Lighting	Electricity Cost to Operate One Sign for One Year	Average Unit Lifespan	Annual Maintenance Cost
Incandescent <sup>1</sup>	\$35.04	6 mos. - 1 yr.	\$24.33
Compact Fluorescent <sup>2</sup>	\$10.51	3 - 5 years	\$8.33
LED <sup>3</sup>	\$2.45	10+ years	\$1.04

<sup>1</sup>Two 20 W bulbs. <sup>2</sup>One 9 W bulb with 3 W adapter. <sup>3</sup>One 2.8 W lamp.  
 Note: This comparison assumes an energy cost of 10 cents per kWh. Maintenance costs are based on 25 minutes to replace bulbs at \$25/hour. This analysis does not take into consideration the cost of initial installation or replacement bulbs or lamps. Based on information by AstralLife, Inc.

When converting to LED signs, you can either replace your exit signs with new LED signs or you can retrofit your existing signs with LED retrofit kits. A typical retrofit kit costs \$25 to \$35, while the cost of a new LED sign ranges from \$30 to \$115 for a single-face sign, or \$50 to \$130 for a standard double-side commercial grade product.

***A facility in New York City with 100 exit signs can save more than \$5,500 annually in electricity and labor costs by investing in LED exit signs.***

Source: Energy Star® Exit Sign Calculator

In the future, and especially in New York City, the retrofit kit may not be a practical option. Underwriters Laboratory may require that the entire sign be UL listed, virtually eliminating retrofit kits. In

The estimated 100 million exit signs in the U.S. consume up to 35 billion kWh of energy annually (the power generated by five large nuclear power plants). Illuminating these signs costs businesses and organizations about \$1 billion annually.

Source: U.S. EPA ENERGY STAR® Exit Sign Program

addition, New York City's exit sign requirements state that signs must have 8-inch letters, while elsewhere in the U.S. laws and codes specify only 6-inch letters. Virtually no retrofit kits are made with 8-inch letters.

Experts warn that although LEDs offer tremendous savings opportunities, there are some factors to consider when purchasing LED exit signs or retrofit kits. For example, some LEDs, particularly commodity-grade LEDs, as opposed to premium LEDs, have been known to fade over time.

"Make sure that the LED you purchase is a high-quality bulb and check to make sure that it carries a minimum warranty of five years, with a guarantee that light levels will meet code requirements for the full five years," says Jennifer Dolin, director of U.S. EPA's ENERGY STAR® Exit Sign program. Also, surge protection should be an integral part of the sign, according to energy consultant Doug Sheppard of Advanced Energy and Lighting, Inc.

Unisys Corporation, the information management company, retrofitted or completely replaced 400 exit signs with LED exit signs and saved nearly \$21,000 in energy, purchasing, and labor costs during 1996. Approximately \$10,000 of savings was from reduced electricity costs, while \$6,000 was from reduced labor costs. The remaining savings were realized by reducing a large inventory of incandescent lamps. The payback period was just over nine months.

Source: AstralLife, Inc.

Several companies offer LED exit sign products, including new signs, custom signs, and retrofit kits. LED exit signs are available in matrix, edge-lit, and stencil designs. U.S. EPA has established an ENERGY STAR® Exit Sign program. Exit sign manufacturers who meet the ENERGY STAR® guidelines for new exit signs (the program does not include retrofit kits) can use the ENERGY STAR® label to identify products that are energy efficient and meet visibility and luminance criteria.

Currently, 33 manufacturers have signed up for the program. Access the ENERGY STAR® Exit Sign program at [www.epa.gov/exitsigns.html](http://www.epa.gov/exitsigns.html) or call 1-888-STAR-YES to receive information about ENERGY STAR® partners. All of the exit signs listed on the Web site meet the ENERGY STAR® guidelines, and some of the manufacturers also produce retrofit kits.

The ENERGY STAR® Web site also offers a useful savings calculation sheet and tips for buying ENERGY STAR® compliant exit signs. Check your local phone book or contact manufacturers to identify LED exit sign vendors in the New York City area. ■

## Energy Efficiency Technical Assistance Programs

Technical assistance programs for improving your energy efficiency are available from a variety of sources. Most programs are easy to access and offer free information. You may not have time to develop an energy audit plan for your business or perform hours of research to identify the brightest energy efficient lighting and equipment. However, if you want to make simple changes that will save you money and improve the efficiency of your business, consider relying on one or more of the following available resources.

### Publications:

- ENERGY STAR® Buildings Upgrade Manual, U.S. EPA, publication number #EPA 430-B-97-024B, July 1997. Call (800) 490-9198 to request a copy.
- Lighting Research Center, Publications, Rensselaer Polytechnic Institute, 110 8th Street, Troy, NY, 12180. For more information: (518) 276-8716.

### Hands-On Assistance:

- New York State Energy Research and Development Authority, FlexTech Program. Contact Mark Watson at (518) 862-1090 x3314.
- Energy Cost Savings Program, NYC Department of Business Services, (212) 513-6345/6415.
- Community Environmental Center 43-10 11th Street, Long Island City, NY 11101. Contact Lynn Grace, Director of Administrative Services, at (718) 784-1444.
- Advanced Energy & Lighting, Inc. 23 East 10th Street, Suite 615, New York, NY 10003. Contact Doug Sheppard at (212) 475-5774.

### Internet Resources:

- Green Lights Program: [www.epa.gov/greenlights](http://www.epa.gov/greenlights)
- ENERGY STAR® Program: [www.epa.gov/energystar](http://www.epa.gov/energystar)
- ENERGY STAR® Buildings: [www.epa.gov/buildings](http://www.epa.gov/buildings)
- ENERGY STAR® Buildings Upgrade Manual: [www.epa.gov/appdstar/buildings/manual](http://www.epa.gov/appdstar/buildings/manual)
- Energy User News: [www.energyusernews.com](http://www.energyusernews.com)
- National Lighting Bureau: [www.nlb.org](http://www.nlb.org)
- Business Energy Checkup: [www.solstice.crest.org](http://www.solstice.crest.org)
- UCLA School of Arts & Architecture: [www.aud.ucla.edu/energy-design-tools](http://www.aud.ucla.edu/energy-design-tools)
- Today's Facility Manager: [www.tfmgr.com](http://www.tfmgr.com)
- NYSERDA Systems Benefit Charge programs: [www.nyserda.org/sbc.html](http://www.nyserda.org/sbc.html)

NYC WasteLe\$\$ Program  
 P.O. Box 156  
 Bowling Green Station  
 New York, NY 10274-0156

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