



Guide to Greening Meadowlands Restaurants

Written by The Green Restaurant Association
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Introduction:

Environmental sustainability is an essential component of financial viability for small and large businesses alike. In addition to promoting the health and welfare of your community, sustainability measures help to cut operating costs, minimize future risk and liability, and to increase marketability through social responsibility.

For the restaurant industry, environmental sustainability requires comprehensive, long-term thinking in multiple areas, including energy and water consumption, waste generation, and chemical and natural resource use. While the extensive scope of a restaurant's environmental impact may seem daunting at first, the Green Restaurant Association (GRA) has an extensive database of technologies, materials, and services available throughout the country to reduce this impact. In fact, it is currently possible, and cost effective, for new restaurants to employ technologies that are 75% more efficient than their traditional counterparts; integrate more sustainable food; and achieve near-zero waste. By proactively selecting the most efficient and sustainable technologies and materials for your food service facility, you will avoid unnecessary expenditures on energy, water, and waste.

The GRA's Guide to Greening Meadowlands Restaurants contains solutions for environmental sustainability in nearly every aspect of a restaurant's operations. The solutions have been grouped into 7 areas:

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Best management practices (**BMP**) and education are provided within the text of this report, along with specific action steps (**Standard**) that are more quantifiable and can also be found in the GR4.0 Certification Standards, <http://www.dinegreen.com/restaurants/standards.asp>. It is the hope of the GRA that you will adopt as many of these recommendations as possible in order to minimize your facility's impact on the environment, cut costs substantially, and occupy a unique niche in the food service industry for leadership in environmental sustainability.

Section I: Energy Efficiency

In the United States, the restaurant industry is the number one consumer of electricity in the retail sector, accounting for 33% of total retail electricity use. The industry's intensive energy use results in significant air pollution and greenhouse gas emissions, since approximately 82% of the electricity consumed in the US is generated from fossil fuels such as coal, oil, and gas.

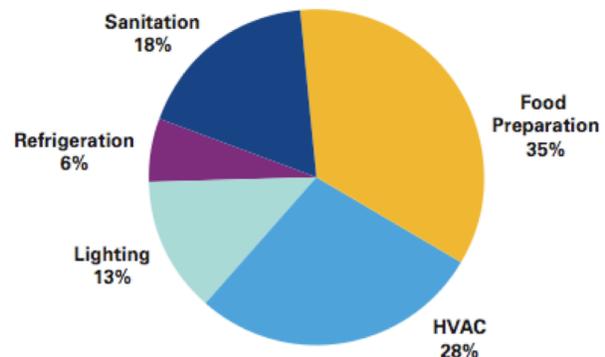
About one third of the energy used by a restaurant powers the heating, ventilation, and air conditioning (HVAC) system, while another third is used for food preparation (See Diagram 1). However, approximately 80% of the \$10 billion annual energy bill of the national commercial food service industry could be eliminated with more efficient equipment.

Since a restaurant's profit margin is typically only 3% to 9% of total revenue, saving even a little money on energy and water operating costs through efficiency investments can increase a restaurant's profit margin tremendously.

The following section explains how food service facilities could be designed and outfitted to maximize energy efficiency according to six major energy use areas:

1. Heating and cooling
2. Exhaust
3. Kitchen appliances
4. Office equipment
5. Lighting
6. Water heating.

Example of the Average Energy Consumption in a Full-Service Restaurant
(British Thermal Units [Btu])



Source: Energy Star Guide for Restaurants

Top 5 Steps a Food Service Facility Can Take to Increase Energy Efficiency

1. Replace conventional light bulbs with LED's light bulbs throughout the facility
2. Install strip curtains on all walk-ins
3. When replacing equipment, purchase new equipment that meets Energy Star or Consortium for Energy Efficiency standards for commercial food service equipment. This may require an additional up-front cost but you will start to see the savings in a matter of months to years.
4. Install motion sensors in the restrooms, storage areas, walk-in coolers and office space. This can reduce lighting needs in these areas by over 50%. Be sure to choose the right type of sensor for each space (i.e. low temperature sensors for your walk-ins).
5. Schedule annual, preventive maintenance for your HVAC system, refrigeration and cooking equipment. As a result, your equipment will operate more efficiently and last longer.

1. Heating and cooling

HVAC systems account for approximately 28% of energy consumption in an average restaurant, so increasing the efficiency of your heating or cooling system will have a significant impact on your utility costs. In general, the key to efficiency in this area is to minimize heat transfer. In this section the GRA recommends simple ways to keep a restaurant cooler in the summer and warmer in the winter.

A. Entry

Many businesses keep their front doors wide open to create an inviting entrance for potential customers. Unfortunately, this wastes a large amount of energy and causes the heating or air conditioning system to work extra hard.

Standard: Install a wind trap at the main entrance of the restaurant to reduce the amount of cold air that enters the restaurant. Examples of a wind trap are:

- a. Velvet curtain directly inside the entrance;
- b. Simple structure built outside the entranceway.

BMP: Instruct employees to close store doors when outside temperatures are uncomfortably hot or cold, thereby improving the efficiency of the HVAC system.

B. Windows: Window Film & Window Shades

Standard: Improving the insulating properties of pre-existing windows can be achieved through low emissivity (low-E) reflective window film, which has a special coating on the surface to reduce radiant heat transfer. When installed in windows facing south or west that receive direct sunlight, low-e film helps block heat from entering the restaurant in the summer, and helps retain heat in the winter. Low-e film also blocks 92% of glare and eliminates 99% of harmful ultraviolet radiation to protect fabrics and finishes.

Awnings and shrubbery can also be employed to block incoming solar radiation in the summer in windows facing south and west.

When purchasing new windows choose Energy Star windows with a U-factor as close to 0.3 as possible, and a solar heat gain coefficient as close to 0.27 as possible. The window U-factor measures the rate of heat loss from a building. The lower the U-value, the greater a window's resistance to heat flow and the better its insulating value. The solar heat gain coefficient indicates how well a product blocks heat from the sun. A low SHGC means the window transmits less solar heat.

C. Roof

The sunlight absorbed through a building's roof can be a major source of heat gain during the intense summer months.

Standard: Reflective coatings prevent solar heat from penetrating the building and protect your roof from UV and water damage.

Beyond reducing heat load, it is important to consider the financial feasibility of incorporating photovoltaic solar roof tiles or shingles, or solar panels that can generate electricity for your location. Another possibility is solar thermal panels that transfer the sun's energy to your water heater, avoiding the use of electricity or gas to heat your water.

D. Weather-stripping & Insulation

Most commercial spaces are anything but airtight. Leaks around electrical plates, under doors, or around windows can add up to large holes.

Standard: Sealing these spaces with weather-stripping is a very inexpensive way to ensure that outside air remains outside, and does not add to the heating and cooling load of your HVAC system. Re-insulating walls and attics also help to prevent heat loss in the winter and heat intrusion during the summer.

E. Programmable thermostat

Standard: Install a programmable thermostat to control the heating and cooling systems in the building. It should have a battery to provide back-up power in the event of a power outage and a different program for each day of the week so you can match the run times to your operating hours. Set your thermostat to 70°F during the heating season and 78°F during the cooling season for additional savings, since every degree of extra heating or cooling increases energy costs by 4-5%.²

F. Energy Management System (EMS)

Standard: For even greater energy savings, integrate your thermostat into an Energy Management System (EMS). An EMS controls heating, cooling, lighting, and all energy-related aspects of a building. It can be programmed to include a night setback mode to cut down heating and cooling, and turn-off equipment and lights when the building is unoccupied.

BMP: Track energy usage using a tool such as Energy Star's Portfolio Manager. This will allow you to see how usage changes as you implement energy efficiency measures.

http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

During slower periods, group customers so that heating/cooling can be turned off in unoccupied areas.

G. Ceiling fans

Standard: When temperatures do get warmer, ceiling fans can keep your patrons feeling comfortable while cutting energy use by 80% over an air conditioner. In the winter, the fan direction can be reversed to gently circulate warm air from the ceiling back down to customer level.

H. High-efficiency HVAC

Standard: When choosing HVAC equipment, select models that meet the Consortium for Energy Efficiency's (CEE) standards for efficiency, available at:

http://library.cee1.org/sites/default/files/library/7559/CEE_CommHVAC_UnitarySpec2012.pdf

I. Fresh air heat exchanger

Commercial buildings must provide a minimal amount of ventilation by law. This results in energy losses as conditioned air is discharged outside.

Standard: To minimize the reduction in efficiency, consider the purchase of a fresh air heat exchanger. In addition to providing a consistent supply of fresh air, a heat exchanger can help significantly lower heating costs during the winter by transferring heat from the exhaust air to the fresh air stream. In the summer, it also reduces the load on the air conditioner by lowering the temperature of the fresh outdoor air. The heat exchanger dries humid, incoming air more efficiently than an air conditioner and reduces the energy needed by the latter.

BMP: Check your HVAC system each year for coolant and air leaks, clogs, obstructions of air intake and vents, or misaligned ducts, and repair as needed.

Clean dust and debris from heat-transfer coils, condenser coils and evaporator coils in your HVAC system and refrigerators.

2. Exhaust

Most kitchens operate at less than 25% capacity during the day, while the exhaust hood continues to run at 100% capacity.

Standard: By installing variable volume controls to reduce fan capacity, ensuring the proper placement of an exhaust hood, and selecting hoods with additional efficiency features, a restaurant can achieve tremendous energy savings.

A. Variable volume

Make sure the hood has controls to reduce the speed of the exhaust fans and the rate of the make-up air unit according to fluctuating usage. *Using the following variable volume features can result in 10% to 50% energy savings compared to standard exhaust hood installations:*

Standard: “Smart” controls:

Using a temperature or optical sensor these controls sense when the exhaust hood needs to be on, based on the exhaust hood air temperature or smoke volume.

BMP: Two-speed blowers:

When the entire grill/fryer is not being used, you can lower the ventilation rate over the appliance and reduce both make-up air and the energy needed to condition it.

B. Wall mounted

Standard: Wall-mounted, rather than free standing, exhaust canopies require lower air velocities to do the same job. Lower air velocities mean smaller fan motors and less make-up air to heat or cool. If the hood can't be wall mounted install the side and/or back panels on canopy hoods to increase effectiveness and reduce heat gain.

C. Back-mounted extractor

BMP: Placing the exhaust hood extractor at the front of the hood rather than the back is more efficient because it takes advantage of the natural convective flow of the exhaust.

D. Appliance grouping

BMP: Group appliances according to effluent production and associated ventilation requirements. Specify different ventilation rates for hoods or hood sections over the different duty classification of appliances. (In other words, think about the placement of your appliances with the hood in mind – place high smoking appliances in the center of the hood, rather than the end, and place the highest capacity hoods around the highest smoking appliances).

E. Adjustable baffles or engineered proximity hoods

Adjustable baffles allow you to control height of the exhaust hood for different appliances,

Standard: Engineered proximity hoods exhibit low capture and containment flow rates because they are installed close to the appliances. In some cases, a proximity hood performs the same job as a wall-mounted canopy hood at *one-third the exhaust rate*. (Capture and containment is the ability of the hood to capture and contain grease-laden cooking vapors, convective heat and other products of cooking processes.)

3. Kitchen Appliances

As previously mentioned, nearly 80% of restaurant utility costs are a result of equipment inefficiency. When selecting new appliances it is well worth an additional upfront investment to select only the *most efficient* models on the market, which are often *more than 50% more efficient than conventional models*. A large part of efficiency, however, includes smart operational use of these appliances, appropriate sizing based on your kitchen's needs and proper installation.

BMP: Develop a regular maintenance schedule for all equipment, especially walk-ins, grills, HVAC, and refrigeration.

Regularly inspect equipment and perform temperature checks to be sure you're using only as much water, gas, or electricity as you need.

Implement a start up and shut down schedule for equipment and lights so that they are turned off when not in use.

To reduce electricity demand during peak periods, identify energy intensive tasks that can be shifted to off-peak hours. For example, set your ice machine to produce most of the ice at night.

Don't blast pilot lights and exhaust fans. Only use as much heat as you need. For example, once a pot of water has reached a boil, find the minimum settings required to maintain the boil.

Cut idle time:

- Establish and periodically review start-up and shutdown schedules for all major kitchen equipment.
- Leave equipment off until it is needed Follow manufacturers' suggestions for operating all kitchen equipment - you can reduce energy use by scheduling pre-heating times.

Cook efficiently:

- Ovens tend to be more efficient than rotisseries; griddles tend to be more efficient than broilers. Examine your cooking methods and menu and find ways to rely on your more efficient appliances.

- Cover pots and pans to retain heat and decrease cooking times.
- Do not allow fans to blow directly onto any cooking surfaces and equipment.
- Use sinks full of water rather than running water for washing pots and cleaning vegetables.

Maintain and repair:

- Schedule regular maintenance checks for leaky gaskets, clogged burner, or loose door hinges.

Recalibrate:

- Thermostats and control systems can fail or fall out of calibration, so recalibrate as necessary to ensure that you're cooking at the right temperature.
- Repair or replace broken control panels on ovens, steamers, and other appliances that feature control systems, and don't forget to replace missing knobs on manually controlled appliances like ranges, griddles and broilers.

A. Refrigeration: Reach-In & Under-counter

Standard: The most efficient refrigerators with high efficiency motors, hot gas anti-sweat heaters, or high-efficiency compressors, which allow them to meet Energy Star standards. Energy Star qualified refrigerators are 35% more efficient than their conventional counterparts.

BMP: Refrigerators work most efficiently when they are located away from any heat-generating appliances and heating ducts. Don't keep your refrigerator in a tight space, where heat will build up and the unit will have to work harder.

Ensure doors fit and close properly - check the condition of gaskets, seals and condenser coils regularly to ensure that the former are not cracked and the latter are free of dust and dirt that might reduce their efficacy.

Turn off the door heater on your reach-in refrigerator or freezer (unless you notice frost around the door or dripping water on the floor, then turn it back on).

Refrigerators operate most efficiently when set at 37° F.

Freezers operate most efficiently when set between 0° and 5° F.

Allow hot food to cool before storing it in refrigerators and freezers.

Do not overfill refrigerator shelves - proper cooling occurs when air can circulate throughout.

Schedule regular checks for fans, condensers and compressors. Clean these items regularly since dirt buildup reduces efficiency.

Ensure refrigerator compressor belts maintain proper tension.

Defrost freezers frequently since frost buildups reduce efficiency.

Ensure freezer curtains remain in a vertical position to retain cool air and keep out warm air.

Oil stains near compressors may indicate leaks that should be serviced promptly.

B. Refrigeration: Walk-In

Since walk-in coolers are custom built, there are no energy ratings available. Be sure to ask for these energy efficient features when you order your walk-in:

1. Electronically Commutated Motor (ECM)
2. Evaporative Condenser with Variable Speed Drive (in dry climates)
3. Evaporator Fan Controller
4. Automatic Defrost Timer
5. Suction Line Insulation
6. Fluorescent Interior Lighting
7. Self-Closing Mechanism or Strip Curtains
8. High Quality Door Gaskets
9. Heat Recovery System (uses heat from walk-in to preheat water for dish machine)

C. Ice Machine: Air Cooled

Standard: Most ice machines meet the Consortium for Energy Efficiency's Tier 2 standards for efficiency, which include standards for both energy and water efficiency. This set of standards covers both air cooled and water cooled ice machines, while Energy Star's standards only apply to air cooled machine.

D. Ovens & Other Gas Burning Appliances

Convection ovens are more efficient than regular ovens because they circulate hot air to ensure even cooking and rapid penetration of heat. Microwave ovens are the most efficient, because they heat food internally instead of heating the air around it.

BMP: Keep the door/lid closed on your steamers, braising pans, and food wells.

Check your older gas-burning appliances to make sure you're using only as much gas as you need. Adjust the flames so that they are bullet shaped and mostly blue, rather than a tall yellow flame.

Use a timer to ensure that the steamer runs at full heat only when needed.

Do not preheat any longer than manufacturers' recommendations.

Shut it off - don't waste energy by heating empty space—implement a shutdown schedule for all equipment

Heat only as many sections as required by the cooking load.

Turn char-broilers to medium as soon as briquettes are hot, and turn broiler flames to low between broiling operations. Shut them off during slow periods.

Cleaning and maintenance:

- Inspect and clean burner openings on gas broilers
- Have a service contractor check gas burners at least once every six months.
- Clean interior oven walls and elements to improve heat transfer.
- Adjust door hinges, gaskets and moldings to maintain proper fits.

Rearrange ceramic material in under-fired broilers once a month to ensure even heat, and check ceramic and metal surfaces for deterioration. Replace when blackened or cracked.

Maintain a baking and roasting schedule so that oven capacity is always fully utilized and operating hours reduced.

Load and unload ovens quickly, and do not open doors unnecessarily. Food cooks faster and loses less moisture when oven doors are kept closed. Temperatures drop approximately 10°F for every second that doors are open.

Align broilers with exhaust hoods. When appliances get pulled out for cleaning and don't make it all the way back under the exhaust hood it adds extra heat and smoke to the kitchen. Make sure that your broiler is fully under the hood and pushed as far back to the rear wall as possible.

Make sure pot sizes match element sizes and use lids to boost efficiency and shorten cook times.

When gas elements are set on high, flame tips should just touch the bottom of pots, pans and kettles.

Check gas burners periodically. If flames are yellow or uneven, clean (don't drill) the burner with a wire brush and make sure holes are unobstructed and adjust the air shutter by loosening and retightening it with a screw.

Regularly inspect safety controls and automatic lighters.

Check thermostats for accuracy and recalibrate, if necessary.

Use open ranges rather than full hot plate ranges.

Turn fryers off – or cover and reduce them to idling temperatures during slow periods - cutting out four hours of idle time each day could save around \$250 annually for a gas fryer and about \$350 annually for an electric fryer.

Check and recalibrate thermostats, and turn them only as high as necessary to reach frying temperatures. If temperatures are too high, oil will break down and there is a potential for grease fire. Regularly check the temperature of cooking oil with a reliable commercial thermometer to ensure heating elements and thermostat controls - including the temperature-limiting device - work properly.

During slow periods, turn off as many griddle burners as possible, and turn down other sections.

Have your service contractor periodically check gas-griddle fuel mixtures and adjust pilot lights to their lowest possible flames.

Consider griddles that feature both grooved and flat cooking surfaces—especially if you do a lot of broiling since griddles tend to be more efficient than broilers, and grooved griddles can achieve broiler-like char marks on food.

Cut standby time and use the timer so that the steamer runs at full heat only when needed.

Flush boilers at least once each week, following manufacturers' instructions.

Remove all deposits – such as rust, lime, film and scale – from water jackets and the outsides of containers.

Repair all steam leaks, no matter how small.

Invest in connectionless technology. Connectionless steamers require less maintenance than boiler-based steamers and consume far less energy and water.

Pasta Cookers:

- Cut idle time - If you can't shut it off consider turning it down.
- Turn the thermostat down to just below boiling when you won't be cooking for an hour. The water will return to a full boil in seconds once you're ready to start the next load.
- Find the minimum settings required to maintain a boil—your food will cook just as fast.

If you're in the market for a braising pan, look for one with insulated walls.

E. Dish Machine

Please see water efficiency, below.

F. Miscellaneous Appliances

There are no energy efficiency standards for small food preparation equipment and most are not wasteful in their use of electricity unless they are left in standby mode.

Standard: This can best be done with timers installed at the socket, since this cuts power to the entire machine

BMP: All equipment should be turned off when not in use. Insulated coffee, tea, and cocoa carafes are currently being used to minimize the energy needed to keep these liquids warm. This is critical since these appliances are kept on all day. After the last shift, all electronics should be powered down to save energy overnight.

4. Office Equipment

Standard: In selecting office equipment for your restaurant, it is important to look for Energy Star certification.

BMP: While security systems must be on all day, consider turning off the monitor at night to save energy even as the cameras continue to record. Point-of-sale equipment should be turned off at night to save energy.

Turn off televisions in empty rooms and areas of the restaurant.

Combining the DSL modem and wireless router into one box saves resources, space, and energy. Since no significant differences exist between brands, select a modem/WLAN router combo based on price or other performance characteristics.

Set computers to standby or sleep after a certain period of inactivity. In addition, shut down computers and other office equipment, like faxes and printers, at night.

Standard: Finally, plug all of your devices into a “smart” power strip, rather than a traditional power strip to save energy on idle currents from all of your peripheral devices. The Smart Home USA *Smart Strip* contains a small electronic device that monitors the current on a single outlet, where your computer is plugged in. When the computer is finished shutting down, the current draw from the computer drops to its idle current -- and the *Smart Strip* senses the current change, automatically shutting off all of the computer peripherals. This device is available with fax and modem sensors.

5. Lighting

Lighting draws a great deal of unnecessary electricity in a restaurant because it is on from morning until night, every single day of the year. In addition, most establishments also use higher wattages than necessary, and place bulbs in areas of overlapping coverage. Therefore, it is critical to examine current light levels and bulb placement to generate immediate savings.

There are rebates available through the New Jersey SmartStart Buildings Program and for PSE&G customers. For more information, visit:

<http://www.njcleanenergy.com/misc/commercial-industrial/project-categories>
http://www.pseg.com/business/small_large_business/save_energy/business_save.jsp

For lighting that is deemed essential, choosing the right technology can lead to further reductions in energy use. Conventional incandescent bulbs are being banned in the US. Look for environmentally sustainable alternatives, such as LEDs, CFLs or T8 Lamps. LEDs can help you cut your lighting bills by 83%, and there are many rebate programs.

Traditional lighting uses 3-4 times the energy of the latest energy-efficient fluorescent, LED, fiberoptic, and infrared halogen bulbs. Furthermore, 90% of that energy is given off as heat, increasing the load on the air conditioning system during the warmer summer months. Thanks to their long life, energy-efficient bulbs also save money by cutting replacement and labor costs. This is because fluorescent and LED bulbs last anywhere from 10-50 times longer than incandescent bulbs. A new LED bulb won't need to be changed for 5 years! When you do go to change it, state rebates reduce replacement costs even more. A typical restaurant could save 75% or more on lighting energy costs by replacing traditional bulbs with the most energy-efficient alternatives available.

Standard: Food service facilities with substantial natural light should consider daylighting sensors, which automatically turn the lights on when the room hits a specified level of darkness.

Rooms that are frequently unoccupied should be fitted with occupancy sensors to automatically turn off lights once people leave (bathrooms are the classic example). Outdoor lights should be controlled by photocells that turn them on when it gets dark. LED Lighting is the most efficient choice for your lighting needs.

BMP: Turn off lights when not in the room.

Keep lighting fixtures and lamps clean and free of dust so they produce the maximum amount of light.

During slower periods, group customers so that lights can be turned off in unoccupied areas.

Delamping, or removing excess lighting, is the quickest way to reduce energy bills with almost no initial costs and an immediate payback.

Use skylights and windows to achieve 2% daylight factor in all rooms. The more natural light that enters the restaurant, the less you'll have to rely on electricity.

Install and use dimmer switches.

6. Water Heating

When selecting a water heater, it's important to consider size, fuel type, overall cost, and the first hour rating. Beyond these issues you should focus on the water heater's thermal efficiency to determine energy efficiency. The EF indicates a water heater's overall energy efficiency based on the amount of hot water produced per unit of fuel consumed over a typical day. It takes into account recovery efficiency, standby losses, and cycling losses.

Standard: The two most environmentally preferable types of water heaters that are commercially available are demand gas water heaters and electric heat pump water heaters. Demand (tankless or instantaneous) gas water heaters provide hot water as it is needed. Since they do not have a storage area they do not experience standby energy losses associated with storage water heaters. When a hot water tap is turned on, cold-water travels through a pipe into the unit, where a gas burner or an electric element heats the water. This type of water heater is a much more common in food service facilities, though they may require an additional heat booster for your dish machine.

Electric heat pump water heaters use electricity to move heat from one place to another, so that they do not need to generate heat directly. They pull heat from the surrounding air and deposit it in a tank to heat water. Electric heat pump water heaters can be two to three times more energy efficient than conventional electric resistance water heaters.

When selecting a natural gas, propane, or oil water heater, choose one that has a thermal efficiency of at least 0.90. This is about 15% more efficient than the current federal standard.

To locate the most efficient boilers for your specific needs please see:

<http://www.aceee.org/consumerguide/topwater.htm>.

Standard: Another way to save energy is the purchase of a Heat Exchanger or Heat Recovery System, which captures heat from wastewater going down the drain and transfers it to incoming cold water headed for the water heater. Ideally placed downstream of the dish machine, which generates extremely hot water, a heat exchanger has the potential to save 30% or more in water heating costs.

BMP: When installing a new heating system, it is critical to tightly seal and insulate your ducts to avoid heat loss to unheated spaces like the attic or walls. Set water heater temperature only as high as your local Board of Health requires. Typically, hot water should be around 140°F for dishwashing and 110°F for hand washing.

Insulating all hot water boilers and pipes provides further energy savings.

Section II: Water Efficiency

Less than 3% of the water on Earth is available for human consumption, and many parts of the U.S. already experience seasonal water shortages that endanger human welfare. The average food service facility uses 300,000 gallons of water per year, and the water usage of a single restaurant appliance can be greater than all of the appliances in a residential home combined. Pumping and treating water also requires significant amounts of energy, therefore saving water doesn't just benefit our water supply; it also helps reduce greenhouse gas emissions. The following water efficiency discussion focuses on six pieces of equipment: spray valves, faucet aerators/flow-restrictors, faucets, toilets, urinals, and dish machines. Another great resource is the *EPA's WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities*, available online at http://www.epa.gov/watersense/commercial/docs/factsheets/restaurants_fact_sheet_508.pdf

Top 5 Steps a Food Service Facility Can Take to Increase Water Conservation

1. Replace prerinse spray valves with models that use less than 1 gallon of water per minute (gpm). This can save enough water each year to fill 5 backyard swimming pools
2. Install low flow faucet aerators. For prep sinks, we recommend aerators that restrict flow to 1.5 gpm and that can go down as far as 0.5gpm for hand sinks (including restrooms). Do *not* install low flow aerators on any fill sinks (i.e. mop sinks)
3. When replacing equipment that uses water – such as ice machines, dish machines, steamers, and combination ovens – look for products that meet Energy Star or Consortium for Energy Efficiency standards. They may cost more than conventional equipment, but you will experience a payback in as little as one year.
4. For full service restaurants, serve water upon request only. Use your menu or table tents to explain this policy to your guests so they understand that you have made this decision.
5. Retrofit existing toilets with dual-flush handles, which give the option of using a lower flush rate for liquid waste than solid waste. It's important to include signage so customers understand how to use these handles correctly.

1. Low-Flow Spray Valve

Standard: Low flow pre-rinse spray valves can make your sinks' flow rate more efficient than conventional pre-rinse units, so be sure to request these low flow models whenever you have your pre-rinse units replaced.

Replacing your conventional spray valve, which uses anywhere between 2 and 6 gallons of water per minute, with a valve that uses between 0.65 and 1.28 gallons of water per minute can save up to 50,000 gallons of water a year – the equivalent of 5 backyard swimming pools! Saving hot water will also help you save energy on water heating. In total you can save more than \$1,000 a year in water and energy bills, versus conventional spray valves.

2. Low-Flow Aerators or Flow Restrictors

Standard: GRA-recommended low-flow faucet aerators or faucet flow-restrictors use only 0.5 gallons per minute for hand-washing sinks and 1.5 gallon per minute in kitchen prep sinks, without sacrificing

pressure and comfort. These controls are approximately 75% more efficient than conventional faucets flows. By reducing warm water flows they also reduce energy consumption for water heating.

BMP: Turn off faucets when not in use. Instead use foot triggers or simply be mindful of running water when you step away from the faucet. Use incentives to encourage employees to turn off running water when not in use.

Do not use running water to defrost frozen items. Defrost them in the fridge.

3. Solar or Hydro-Powered Sensor Faucets

Standard: Touchless sensor faucets cut water use by preventing patrons from accidentally leaving the water running and by shutting off the water flow while customers are soaping their hands. Solar faucets are powered by light from the lamps in the bathroom and hydro faucets are powered by the flow of water through the system. These faucets are also 75% more efficient than conventional faucets at 0.5 gallons per minute, and do not require aerators or flow restrictors. Since they are powered by the lights in your bathroom or kitchen, solar faucets do not require additional electricity.

4. Low-flow Toilets

Standard: Pressure-assisted toilets use less than 1 gallon of water per flush (gpf) for both solid and liquid wastes. This is nearly 38% more efficient than the current federal standard of 1.6 gpf for new toilets. By switching from an older (pre-1994) toilet to one with pressure-assisted technology, you can save between \$500 and \$1200 in water costs per toilet over 10 years. Pressure-assisted toilets can be purchased in a wide variety of toilet models from Kohler, Capezzi, American Standard, Gerber, and Mansfield.

5. Waterless Urinals

Standard: Waterless urinals use a slick surface and a layer of alcohol to trap odorous liquids, eliminating the need to flush them down the drain with water. Waterless urinals can reduce a restaurant's water consumption by 40,000 gallons annually, and will pay for themselves in less than two years.

6. Dish Machine

Standard: Select under-counter dish machines that meet Energy Star's standards. Most of these models are available in heat-sanitizing and chemical sanitizing (low-temp) options.

BMP: Run dishwashers only when full.

Heat-sanitizing dishwashers are considered more environmentally friendly since they require substantially less detergent and rinse aid and because the wash water is reused from load to load. Heat-sanitizing machines also do a better job of cleaning and the dishes dry faster since the hotter water evaporates more quickly.

If your dishwasher has an internal tank heater, turn it off at night.

If you have a conveyor-style dishwasher, make sure you're using it in auto mode, which runs the conveyor motor only when needed.

The dishwasher is one of the biggest energy users in the kitchen so fill each rack to capacity with each

load.

Do not over-dry dishes. Adjust power dryers to deliver heated air just long enough to dry dishes.

Schedule regular rinse-water checks to ensure that boosters generate the minimum required temperature.

Regularly remove hard-water lime deposits from spray nozzles, tanks and heater coils.

Most high-temp dishwashers have built-in burners or elements to keep the water in the tank hot so turn your dishwasher off at night.

7. Water Upon Request

Standard: Serving water only upon request provides a great method for conserving water, working to reduce the 410 billion gallons of ground and surface water withdrawn by the U.S. every day. In the U.S., an estimated 70 million meals are served in restaurants each day. If one-quarter of the customers declined water service, 26 million gallons of fresh water would be saved every day.

8. Landscaping

Standard: Using native and drought tolerant plants in your landscaping plans will keep outdoor watering needs to an absolute minimum. If you do need to water regularly, consider installing a rain barrel or other system to catch rainwater, then use that water for plants and grasses on your property.

BMP's: If you have landscaping, water efficiently. For example,

- a. Water early in the morning
- b. Keep grass at least 1" high
- c. Turn sprinklers off when it rains
- d. Use a weather-based irrigation system
- e. Use native plants

Regularly check and maintain leaky faucets and toilets. A leaky faucet can waste 10 gallons of water per day and a leaky toilet can waste up to 200 gallons of water per day.

Track water usage using a tool such as Energy Star's Portfolio Manager. This will allow you to see how usage changes as you implement water efficiency measures.

http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

Use dry cleaning methods for surfaces, especially outdoors, instead of hosing them down.

Drain and flush hot water tanks every 6 months to prevent build-up that can keep the tanks from operating at full capacity.

Section III: Waste Reduction

The average restaurant produces 100,000 pounds of waste each year, a majority of which buried in landfills. If every restaurant in the country recycled, millions of tons of waste would be diverted from landfills. Even your waste grease can be converted to fuel, such as biodiesel.

Waste disposal is a significant burden on the environment. As existing landfills are quickly filled to capacity, opening and operating new landfills becomes increasingly more difficult and expensive. As disposal costs grow, disposal fees are passed on to businesses and residences. In addition, as petroleum products, metals, and electronic wastes decompose in our landfills they leach chemicals into the groundwater.

According to the USDA, Americans typically throw away a quarter of the food they buy, collectively discarding over 25 million tons of food products each year. When food waste sits in landfills, harmful gases are produced, including methane, which is up to 86 times more damaging to the environment than CO₂. During the composting process, organic waste is diverted from landfills and put back into our food system, enriching our soil and minimizing pollution. Dozens of cities across America offer commercial composting services. In Northern New Jersey, Waste Management can provide this service for restaurants.

The Green Restaurant Association's 23 years of work show that waste prevention, recycling, and composting can reduce a restaurant's waste stream by more than 90%. These processes not only help conserve landfill space, but also conserve energy and natural resources and reduce air and water pollution.

Top 5 Steps a Food Service Facility Can Take to Decrease Waste

1. Become a Near Zero Waste facility, by recycling all paper, cardboard, glass, plastic, aluminum and food waste
2. Recycle used vegetable oil into biodiesel only
3. Replace all single use disposable items with reusables.
4. Eliminate bottled water from your food service facility. There are many turnkey water filtration systems on the market that produce still or sparkling water in glass bottles – and you can still charge to create revenue.
5. Offer smaller portions, at least 25% smaller, for 50% of entrees at a reduced price

A great way for a restaurant to set goals in its waste reduction is to become a Food Recovery Challenge Participant at www.epa.gov/foodrecoverychallenge

1. Waste Prevention

A. Bulk Purchasing

Because the average American generates 1,460 pounds of trash every year, purchasing condiments and other foods in bulk can greatly reduce the waste associated with a restaurant's operations, conserving scarce landfill space.

Standard: In addition, condiments such as sugar, sweeteners, salt, and pepper should be served in reusable containers at the condiment bar, to avoid individual packaging. Cleaners should also be purchased in concentrated form and diluted with water.

BMP's: Disposables, paper products, non-perishable condiments, and cleaners should be purchased in the greatest size and concentration possible so that packaging waste is minimized. This behavior will also save you money on shipping.

B. Material Re-use

Standard: Use reusable cups, plates, and utensils for in store dining whenever possible. In fact, one of the biggest sources of customer waste is the never-ending stream of single-use paper and plastic cups. One way to reduce cup waste is to promote the use of reusable mugs and containers by offering a financial incentive, such as a small discount, to customers who bring their reusable mugs. You can also offer employees additional discounts on any meals they purchase from the store if they bring their own to-go containers.

Another way to reduce waste is to develop a system for reusing packaging materials, such as Styrofoam peanuts and cardboard boxes, if you have sufficient storage space. Request that the companies shipping to use cornstarch peanuts rather than Styrofoam.

C. High Efficiency Hand Dryers

Standard: Look for hand dryers that use less than 1500 Watts of energy and use dry hands in 10-15 seconds (75% faster than conventional dryers). This type of hand dryer costs less, and requires less energy and resources than paper towels. In order to maximize the environmental benefits and economic savings associated with high efficiency hand dryers, be sure to remove paper towels from your restrooms. If you are concerned about customers' reactions to this change, post signage explaining why you made the change.

2. Maximize Recycling Efficacy

Basic recycling is mandatory for every Certified Green Restaurant[®], but the efficacy of your recycling program can be increased through staff and consumer education, proper storage and signage, and by recycling additional materials.

A. Education

BMP's: Make sure managers know what materials they can and cannot recycle, how to properly sort and collect recyclable materials, and how to help customers do the same. Convey this to all existing and new employees through staff training sessions or monthly meetings.

Most recycling programs allow:

- Metal: Aluminum & Tin Cans
- Glass: Bottles & Jars (*all colors*)
- Plastic: Items with the #1-7 printed on the bottom
- Paper: Mixed paper, Magazines, Newspapers & Cardboard

Contact your hauler if you do not know the specifics of your service contract.

Post educational signs about the importance of recycling and what can be recycled for your staff. Don't forget about those plastic bottles you use for cleaners and the plastic packaging that accompanies your deliveries. In many locations these are acceptable if they are labeled as #1-7.

B. Proper Storage

BMP: Recycling must be incorporated into everyday store practice. This means creating areas where materials can be efficiently collected and stored. The front of the house should have visible, easily accessible customer bins, while the back-of-house should contain employee bins and an area for collecting and breaking down cardboard.

C. Proper Signage

BMP: All bins should have appropriately shaped openings and clear signage to eliminate the possibility that customers might confuse it with the regular trash. Signs should be both on front and on the top of the bins to eliminate confusion. Signs should be laminated to ensure longevity and monitored to determine their effectiveness.

3. Recycle Additional Materials

A. Food Waste and Compostable Disposables

Standard: According to the EPA, approximately 74% of the waste generated by restaurants is organic waste and most of that waste is compostable. By composting this material instead of sending it to the landfill, you can save money on your waste bills while helping to create a material that will enrich the soil of local farms. Some types of tea bags, napkins, kitchen scraps, and coffee grounds, are all compostable. Coffee grounds are nitrogen rich making them a particularly excellent material for composting.

B. Used Fryer Oil

Standard: Recycling used kitchen oil and grease diverts waste from landfills and incinerators. Waste grease has been recycled into products like animal feed and cosmetics for years. Over the last few years, there are increasingly more opportunities to recycle used fryer oil into biodiesel fuel and electricity. Biodiesel serves as an environmentally friendly alternative to petroleum-based diesel fuel, with approximately 50% less carbon monoxide emissions and 78% less carbon dioxide emissions than petroleum diesel on a life cycle basis. In some areas, including northern New Jersey, there are organizations and haulers that will pick up your used vegetable oil for free to be used for biofuel exclusively. Some local grease to Biodiesel companies are:

- Brooklyn Biodiesel / Arose: (888) 552-4637
- Grease Lightning: (973) 589-3600
- Tri-State Biodiesel: (718) 860-6600 tristatebiodiesel.com

BMP: Train staff to properly dispose of all waste grease. Be sure all potential grease drainage points are connected to your grease traps. Clean your grease traps regularly.

C. Printer Cartridges

Standard: Ink jet cartridges can be easily recycled by mailing them back to the manufacturer. Most office supply stores, such as Staples, will take back used spent ink cartridges and you may even get a coupon toward your next purchase. You can also find local companies that will refill old cartridges and sell them as remanufactured products.

To recycle cartridges you should begin by saving the recycling envelopes that are included in the packaging when you purchase new cartridges. You should then establish a collection box for used ink cartridges. Finally, once every 3 months, ship used cartridges back to the manufacturer using you're saved envelopes, or drop off used cartridges at a local Staples, Office Depot, or other cartridge recycling facility. To find an ink cartridge recycling facility if there are no Staples or Office Depots near you, visit

<http://earth911.com/recycling/inkjet-cartridges/> (click on “ink-jet cartridge” or “toner cartridge” under “electronics” and choose your location).

D. Fluorescent Bulbs

Standard: All fluorescent bulbs and some halogen lamps contain mercury. In most modern lamps these concentrations are not enough to endanger human health unless a lamp breaks and the mercury is directly inhaled. However, when these lamps end up in landfills and waste incinerators, the mercury is released into the air and water, and eventually ends up in aquatic systems, where it enters the food chain. When children eat fish containing mercury they can develop neurological problems, including learning disabilities and autism. Pregnant women, especially, can pass this mercury on to their unborn children. When adults consume mercury in large enough quantities they can get acute poisoning.

To implement a bulb recycling program establish a collection box for used fluorescent bulbs. Then, once every 6 months (or yearly, depending on how often these bulbs are recycled), properly dispose your bulbs by dropping them off at a lamp recycling facility. To find a lamp recycling facility, contact your local government, or visit either of these sites:

- <http://www.lamprecycle.org/Recyclers.php>
- http://search.earth911.com/?utm_source=earth911-headerfooter&utm_medium=secondary-nav&utm_campaign=advanced-search

E. Batteries

Batteries contain a slew of toxic metals, including mercury, cadmium, and lead. If batteries are not disposed of in a recycling program they end up in landfills, where these chemicals can leach into local groundwater.

Standard: To implement a battery-recycling program, establish a collection box for used batteries. Once every 3 months, drop off your used batteries at a battery recycling facility. To find a battery recycling facility, contact your local government, or visit this site:

- <http://earth911.com/recycling/single-use-batteries/> (click on “single-use batteries” under “batteries” and choose your location)

F. E-waste

Standard: “E-waste” is electronic waste/ electronic products nearing the end of their "useful life," for example: computers, televisions, telephones, stereos, printers, copiers, and fax machines. Most electronic devices contain a variety of materials, including metals that can be recovered for recycling, conserving resources that would otherwise have to be mined from the earth to create new products. In addition, some electronic products contain high levels of lead, and other hazardous materials that will contaminate local groundwater if they end up in landfills. For information on where to recycle your e-waste contact your local government, or visit <http://www.epa.gov/epawaste/conservation/materials/recycling/live.htm>.

4. Contractual Issues

Property managers are responsible for waste disposal on their premises. As a result, most stores do not have control over their own waste disposal operations. In order to make the establishment of a recycling system as easy as possible, it is advisable to request these services as part of the contract, prior to moving into a new location.

BMP's:

- Make double-sided printing the default setting for all printers and copies. Better yet, purchase a printer that automatically prints double-sided, so you don't have to feed the pages back into the printer.
- Reuse scrap paper, including office paper, specials menus, and old wine lists.
- Encourage employees to only print only when necessary.
- Track waste on a monthly basis, either by weight, number of bins filled, etc. The EPA website has free waste logs which are downloadable, to help organizations conduct a waste audit. Guidance and environmental benefits analysis are available through the voluntary, no-cost Food Recovery Challenge. Also available for free on the EPA website is the Food Waste Management Cost Calculator <http://www.epa.gov/wastes/consERVE/foodwaste/tools/> You can also use programs like Lean Path and Trim Trax to see how making small changes can affect the amount of waste leaving your facility.
- Don't serve drinks in single-use containers (i.e. bottles and cans). Instead use soda guns and taps.
- Purchase reusable coasters instead of beverage napkins.
- Use a chalkboard or message board to list specials, instead of printing individual menus each day.
- Use a bulletin board for staff memos instead of printing a copy for each employee.

Use your influence with vendors to encourage them to:

- a. Take back and reuse empty containers;
- b. Stop using Styrofoam packaging and waxy cardboard;
- c. Send all invoices, bills, and other documents electronically.

If you're going to use straws and napkins at a self-service area, try a dispenser system instead of piling them on the counter. Dispenser systems can significantly reduce the amount of unnecessary items customers grab.

If your dining establishment allows smoking outside, have an ashtray or other receptacle strategically placed where people congregate and smoke.

Donate as much as you can to local shelters and non-profits, from old Styrofoam containers to office supplies and linens.

Look for local material exchange programs and FreeCycle groups, <http://www.freecycle.org/>.

Donate electronic equipment such as old computers, phones, and pagers to local schools and community groups. Or better yet, lease, rather than purchase, computers and printers.

Reuse envelopes by covering old addresses and postage with new labels and stamps.

Eliminate duplicates in your mailing lists. No need to send Mr. and Mrs. Smith separate invitations to your next event!

Use reusable hats for kitchen staff.

Reuse old tablecloths and napkins as rags.

Avoid placing leftover beverages and wet food in the dumpster, as this will just add extra weight to your trash and run up your trash bills. Look for local farms, food banks or waste haulers who will collect your wet waste.

Keep excess paints for touch-ups and give the remainder to hazardous waste collection programs, or back to the contractor or manufacturer.

Post signage explaining that storm drains drain to waterways and bays, whereas water draining to sewer drains will be treated.

Develop an employee use policy for leftovers. For example, identify leftover items that can be sent home with employees and create a schedule for when employees can take the items.

Store and rotate perishable supplies to minimize spoilage and damage.

Standard: Over 3,000 tons of plastic containers are thrown away each year. Reduce waste by eliminating bottled water from your menu. There are many turnkey water filtration systems on the market that produce still or sparkling water in glass bottles – and you can still charge to create revenue.

It takes 12 trees to produce one ton of paper. Save trees, energy, and water by going paperless! Direct deposit is regularly a payroll option these days. However, some payroll companies will still send paper paystubs, so be sure to talk to your payroll companies to ensure they're truly paperless.

Section IV: Lower-impact Disposables

As part of the effort to eliminate the use of virgin fiber, harmful chemicals and waste, it is critical to select disposable products that are either made from recycled materials, or are biobased, avoiding the use of petroleum based plastics, wherever possible.

Post-consumer content recycled products reduce the demand for extracting natural resources from the environment. For example, every ton of 100% post-consumer recycled paper saves: 12 trees, 1,087 pounds of solid waste, 1,560 kilowatts of energy, 1,196 gallons of water, 1,976 pounds of greenhouse gases, 3 cubic yards of landfill space, and 390 gallons of oil. Products made from recycled content build a market for recycling paper and plastic, conserve natural resources and landfill space, and prevent pollution. Ask your distributors about the recycled and post-consumer content of their napkins, to-go containers, cutlery, pizza boxes, trash liners and more.

Bleaching virgin wood pulp and recycled paper with chlorine releases highly toxic substances into the environment. The most dangerous of these includes a family of 75 different chemicals known as dioxins, and thousands of other chemicals called organochlorines. The U.S. EPA Dioxin Reassessment has found that dioxins are carcinogens 300,000 times more potent than DDT (the use of which was banned in the U.S. in 1972). Research has conclusively linked dioxins to cancer and reproductive disorders and suspects these chemicals as being linked to nine other human health hazards.

Most plastic is made from petroleum, which is a non-renewable resource, whose use contributes to global warming. Petroleum products also take a very long time to degrade, and release harmful pollutants as they decompose. Biobased and compostable products, on the other hand, decompose in under 90 days under commercial composting conditions, and do not release harmful pollutants into the environment as they decompose. Look for biobased compostable products that are made from corn, sugarcane, bulrush, bamboo and other natural materials. Be sure to read labels carefully because green-washing is still prevalent with some so-called “biodegradable” plastics. Especially when it comes to straws and bags, we see many products labeled as “biodegradable” when they are actually just plastic products with an additive. When in doubt, check the Biodegradable Products Institute (<http://www.bpiworld.org/>) or the USDA’s Biopreferred Program (<http://www.biopreferred.gov/>).

Top 5 Steps a Food Service Facility Can Take to Increase Use of Low Impact Disposables

1. Use reusable tableware and napkins for dine-in customers.
2. Replace paper towels with reusable hand towels in the restrooms.
3. Purchase disposables made from recycled and non-bleached materials. The higher the post consumer recycled content, the better
4. If products made from recycled materials are not an option, look for products that are certified compostable and 100% biobased.
5. Revise your menu specs so they are in line with 100% recycled paper colors, sizes and weights. This typically means that your menus will need to be white or natural in color and no heavier than cardstock.

1. Napkins

Napkins should be 100% recycled and be processed chlorine-free. There are quite a few paper napkins with as much as 90% post-consumer content readily available.

2. Towels

Towels should be 100% recycled and be processed chlorine-free. You can find paper towels, especially roll towels, with as much as 90% post-consumer content.

3. Toilet Paper

Toilet paper should be 100% recycled and be processed chlorine-free. You can find options with 80% post consumer recycled content or more.

4. Office Paper

Office paper should be 100% post-consumer recycled content, and processed chlorine-free.

5. Menu Paper

Ideally, menu paper should be 100% post-consumer recycled content, and processed chlorine-free, but for some sizes and colors are only available with 30% post-consumer recycled content.

6. Receipt Paper

One-ply receipt paper should be 100% recycled with a minimum of 40% post-consumer content. Two-ply receipt paper should be 60% recycled with a minimum of 30% post-consumer content.

7. Bags

Paper bags should be unbleached with 100% recycled with a minimum of 40% post consumer material.

Plastic bags should contain 10% post-consumer petroleum based plastic material or made from 100% compostable corn resin. Refer to the Biodegradable Products Institute (<http://www.bpiworld.org/>) for a complete list of certified compostable products

8. Hot Cups

Look for paper hot cups that contain post-consumer recycled content. There are a few product lines with 10-25% recycled content. It may be easier to find biobased hot cups, which are made from virgin paper, but are lined with PLA (corn-based resin) in place of petroleum, making it fully compostable.

9. Cup Carriers & Cup Sleeves

Most brown, unbleached cup carriers and sleeves contain some level of recycled content and some are made from up to 100% post-consumer recycled content.

10. To-go Containers

The major options for low-impact to-go containers are recycled paper, recycled plastic, PLA (corn) and molded fibers such as Bagasse (sugar cane) and bulrush.

At this time, containers made from recycled paper and plastic are preferred over compostable containers because the vast majority of consumers across the country don't have access to commercial compost facilities.

PLA products are made primarily from corn and they require 50% less fossil fuel based energy to produce than traditional plastics. They are compostable and look like plastic. They should not be used for hot foods.

Bagasse products are made from sugar cane fiber waste that is left over after juice extraction. Since sugar cane waste is normally burned, its use in biodegradable disposables reduces local air pollution in sugar cane producing countries. They are compostable, suitable for hot and cold foods, and have an opaque appearance.

11. Cold Cups

The best option is a cold cup made from recycled plastic but there are only a few product lines within this category. The next best option is PLA cold cups or paper cold cups with a PLA lining. It's worth mentioning that Coca-Cola and Pepsi both offer these biobased, compostable products to food service facilities. You just need to ask.

12. Cutlery

There are three primary options for cutlery: recycled plastic, PLA or CPLA, and plant starch materials (PSM). The recycled plastic and CPLA options have the highest heat tolerance. PSM cutlery is made from a blend of plant starch materials and plastic, and therefore not compostable.

Section V: Sustainable Food

Sustainable food is food that is grown organically and locally, on small community sustained farms rather than industrially, on factory farms. Sustainable food is grown without the use of pesticides, hormones, or antibiotics. Farm conditions are humane, and over time, the land is enhanced rather than degraded.

Top 5 Steps a Food Service Facility Can Take to Increase the Sustainability of Their Food:

1. Purchase food that is low on the food chain. Create vegetarian menus or start a “meatless Mondays” campaign to create demand for vegetarian offerings. If you don’t have much experience with vegetarian dishes, reach out to organizations like the Green Restaurant Association to connect with other chefs who have had success in this area.
2. Look for certified organic food and beverage items.
3. If certified organic isn’t an option for your meat and dairy, then ask for products that have been certified by a third party for having met animal welfare standards. Don’t rely on the claims you see on a website.
4. Source as many whole food products (produce, meat, cheese) from within 300 miles of your food service facility as possible.
5. Familiarize yourself with the principles of sustainable seafood and refer to the Blue Ocean Institute and Monterey Bay Aquarium’s Seafood Watch guides when purchasing seafood.

1. Vegetarian and Vegan Options

Vegetarian and vegan ingredients put less strain on the environment. Food that is not meat-centric requires less of the environment’s resources and therefore can further feed more people. For example, it takes the same amount of land to produce a single pound of beef as it does to produce 120 pounds of potatoes!

From an environmental standpoint, vegetarian and vegan foods are simply the most efficient. Not only do they require less time and energy to produce, but they also result in significantly less pollution and ecosystem degradation. Large-scale livestock production, on the other hand, decreases biodiversity by destroying or damaging critical habitats for other species, erodes and contaminates the soil, requires intensive water use, results in the emission of greenhouse gases and oxides that cause acid rain, and requires the use of synthetic fertilizers, pesticides, antibiotics, and hormones, which contaminate local waterways and may pose risk to human health through residual consumption.

2. Industrial Farms

On industrial farms many animals are given natural and synthetic hormones to make them grow faster or increase their milk production. Antibiotics are employed to counteract crowded, unsanitary conditions for the animals, but have grown less and less effective as bacteria have become increasingly resistant. Many crops have been genetically engineered to speed growth, leading to genetically modified monocultures, and reduced crop biodiversity and resilience.

Industrial farming requires a tremendous amount of energy, a majority of which comes from fossil fuels. Approximately 40% of the energy used in industrial farming goes to the production of synthetic fertilizers and pesticides. In fact, recent studies report that industrially farmed food actually takes more energy to produce than it creates - on average, three calories of energy per one calorie of edible food. The most

inefficient industrially farmed product is grain-fed beef, which requires thirty-five calories for every calorie of beef produced.

A more sustainable option is small, local, organic farming where animals are free range and fed a natural grass or vegetarian diet (depending on the animal). On these farms no fossil fuel is needed for fertilizers and pesticides - the sun produces the grass and crops, and the animals' manure fertilizes the land. Furthermore, less energy is used to transport these products to local markets, resulting in fresher and better tasting food.

89% of Americans favor organic food that is free of toxic chemicals and genetically modified ingredients, according to the 2011 NPR-Thomson Reuter Health Poll. Organic farming practices benefit both our health and the environment by keeping harmful pesticides out of our bodies and out of the ground, while further preventing soil erosion and conserving energy. Without GMO labeling required in the United States, Certified Organic Food is the best way to ensure food is grown without GMO's.

Look for meat and dairy products that have one or more of the following certifications:

- Certified Organic
- Certified Humane
- American Humane Certified
- Animal Welfare Approved
- American Grass-fed Tier 1

The average piece of food travels 1,500 miles from farm to plate, and uses a tremendous amount of energy, gas and refrigeration in the process. Sourcing food from within a 300-mile radius restaurants can reduce the time and transport required for food deliveries, while supporting and building the regional farming community. To get started, look for local farmers markets, talk to other restaurateurs who source locally and regionally, and use online resources such as Local Harvest (<http://www.localharvest.org/>).

3. **Seafood**

Many fish populations across the world have been critically overharvested, and face an imminent complete collapse. However, there are sustainable seafood options that can be fished or farmed without reducing the species' population size over the long term or damaging local ecosystems.

A sustainable fishery uses methods that minimize bycatch and environmental damage. In general, pole and line or hook and line methods are more sustainable than longlining and trawling, which can entangle and kill endangered sea turtles, birds, sharks and marine mammals, and damage corals and the sea floor. Sustainable fish species are generally species that have a large stock size, short life cycles, and grow quickly.

Farmed fish can be a great option for sustainable seafood, but must be examined on a case by case basis. In some salmon farms, for instance, the salmon are concentrated in a small area, resulting in pollution of local waterways and pen spillage that endangers wild populations. They are given feed from wild fish populations to mimic their natural diet and become highly vulnerable to disease in their close quarters, necessitating the use of antibiotics. US farmed shellfish are a great option since mollusks are filter feeders and restore, rather than degrade the local environment. However, shrimp from mangrove farms in

developing countries should be avoided since this farming often destroys the fragile mangrove ecosystems.

According to the Monterey Bay Aquarium, the most sustainable seafood options are:

<p>Abalone (Worldwide, Contained Production Systems)</p> <p>Arctic Char (U.S., Canada, Norway, Iceland, Farmed in Recirculating Systems)</p> <p>Barramundi (U.S., Farmed in Recirculating Systems)</p> <p>Branzino (Nova Scotia, Canada, Farmed in Tank Systems)</p> <p>Capelin (Iceland, Wild-caught)</p> <p>Catfish (U.S. Farmed)</p> <p>Caviar, White Sturgeon (Alberta, Canada, Farmed in Tank Systems)</p> <p>Chilean Seabass (Heard and McDonald Islands, Falkland Islands, Macquarie Island, Longline)</p> <p>Clams (Worldwide, Farmed)</p> <p>Clams, Pacific Razor (Washington, Oregon, Quinault Nation; Hand Harvested)</p> <p>Clams, Softshell/Steamers (U.S. Atlantic, Rakes and Shovels)</p> <p>Cobia (U.S. Farmed)</p> <p>Cod, Atlantic (Hook-and-line from Iceland and Northeast Arctic (by Norway, Russia))</p> <p>Cod, Pacific (U.S. Bottom Longline, Jig and Trap)</p> <p>Crab, Blue (U.S. Chesapeake Bay Trotline)</p> <p>Crab, Dungeness (California, Oregon and Washington, Trap)</p> <p>Crab, Kona (Australia, Wild-caught)</p> <p>Crab, Snow (Eastern Bering Sea, U.S., Trap, Pot)</p> <p>Crab, Snow (Southern Gulf of St. Lawrence, Canada, Pot, Trap)</p> <p>Crab, Stone (U.S. Atlantic, U.S. Gulf of Mexico, Trap)</p> <p>Crawfish/Crayfish (U.S. Farmed)</p> <p>Croaker, Atlantic (U.S. Non-trawl)</p> <p>Giant Clam/Geoduck (U.S., Canadian Pacific, Wild-caught)</p> <p>Gilthead Sea Bream (Nova Scotia, Canada, Farmed in Tank Systems)</p> <p>Haddock (U.S. Atlantic, Hook-and-line)</p> <p>Halibut, Pacific (U.S. Wild-caught)</p> <p>Lobster, California Spiny (California, Wild-caught)</p> <p>Lobster, Caribbean Spiny (Florida, Wild-caught)</p> <p>Lobster, Spiny (Wild-caught from Baja California,</p>	<p>Prawn, Spot (Canadian Pacific, Wild-caught)</p> <p>Rockfish, Black (Hook-and-line from California, Oregon and Washington)</p> <p>Sablefish/Black Cod (Alaska and Canadian Pacific, Wild-caught)</p> <p>Salmon (Drift Gillnet, Purse Seine and Troll, from Alaska)</p> <p>Salmon (Fraser River, Reefnet)</p> <p>Salmon Roe (Drift Gillnet, Purse Seine and Troll, from Alaska)</p> <p>Salmon, Coho (U.S. Farmed in Tank Systems)</p> <p>Sardines, Pacific (U.S., Canada, Purse Seine)</p> <p>Scad, Big-eye (Hawaii, Wild-caught)</p> <p>Scad, Mackerel (Hawaii, Wild-caught)</p> <p>Scallops (Farmed, Worldwide)</p> <p>Scallops, Pink (Canadian Pacific, Butterfly Trawl)</p> <p>Scallops, Sea (Diver-caught in Laguna Ojo de Liebre and Guerrero Negro, Baja California Sur, Mexico)</p> <p>Scallops, Spiny (Canadian Pacific, Butterfly Trawl)</p> <p>Scallops, Weathervane (Alaska, Dredged)</p> <p>Sea Urchin Roe (Canada, Wild-caught)</p> <p>Seatrout, Spotted (Wild-caught from Florida and Louisiana)</p> <p>Shrimp (U.S. Farmed in Fully Recirculating Systems or Inland Ponds)</p> <p>Shrimp, Black Tiger (Ca Mau Province of Southern Vietnam and other areas of Southeast Asia, Farmed Extensive Mixed Shrimp and Mangrove Forestry (Silvofishery) Using Selva Shrimp Criteria)</p> <p>Shrimp, Pink (Oregon, Wild-caught)</p> <p>Striped Bass (U.S. Atlantic, Hook-and-line)</p> <p>Striped Bass (U.S. Farmed)</p> <p>Sturgeon, White (British Columbia, Canada, Farmed in Tank Systems)</p> <p>Swordfish (Harpoon and Handline from Hawaii)</p> <p>Swordfish (Harpoon and Handline-caught from Canada, the U.S., North Atlantic and East Pacific)</p> <p>Tilapia (U.S. Farmed in Closed Recirculating Systems)</p> <p>Tilapia (Ecuador, Farmed in Ponds)</p> <p>Tilapia (Alberta, Canada, Farmed in Tank Systems)</p> <p>Trout, Rainbow/Steelhead (U.S. Farmed)</p>
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<p>Mexico) Mackerel, Atlantic (Canada or US, Purse Seine) Mackerel, King (Wild-caught from U.S. Atlantic and U.S. Gulf of Mexico) Mackerel, Spanish (Wild-caught from U.S. Atlantic and U.S. Gulf of Mexico) Mahi Mahi (U.S. Atlantic, Troll/Pole) Mullet, Striped (Wild-caught from U.S. Atlantic, U.S. Gulf of Mexico) Mussels (Worldwide, Farmed) Oysters (Worldwide, Farmed) Oysters (U.S. Gulf of Mexico Wild-caught) Perch, Yellow (Lake Erie, Wild-caught) Perch, Yellow (U.S. Farmed in Tank Systems) Pollock, Atlantic (Gillnet and Purse Seine from Norway) Prawn, Freshwater (U.S. Farmed)</p>	<p>Tuna, Albacore (Troll/Pole from the Canadian and U.S. Pacific) Tuna, Albacore ("White" Canned) (Troll/Pole from the Canadian and U.S. Pacific) Tuna, Bigeye (Troll/Pole from the U.S. Atlantic) Tuna, Skipjack (Worldwide, Troll/Pole) Tuna, Skipjack ("Light" Canned) (Worldwide, Troll/Pole) Tuna, Yellowfin (Troll/Pole from the Pacific and U.S. Atlantic) White Seabass (Hook-and-line from California) Whitefish, Lake (Wild-caught from Lake Huron and Lake Superior) Whitefish, Lake (Trap-net from Lake Michigan) Wreckfish (U.S. Atlantic, Wild-caught)</p>
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4. Labels

When a product is labeled *USDA Organic* it means that it has been certified by the United States Department of Agriculture as being produced without the use of pesticides. When a product is labeled *Natural* it doesn't actually mean it is sustainable. While *natural* products do not contain artificial colors, artificial flavors, preservatives, or other artificial ingredients and are minimally processed they are not necessarily organic, humanely raised, or free of hormones and antibiotics.

Shade-grown Smithsonian certification ensures that a product was grown without disrupting local bird populations, while *Rainforest Alliance Certification* ensures more generally that a product is grown on farms where forests are protected, and rivers, soils and wildlife conserved; workers are treated with respect, paid decent wages, properly equipped, and given access to education and medical care.

Section VI: Chemical & Pollution Reduction

Many chemical cleaners, detergents, and soaps used by restaurants contain caustic, toxic, volatile, and petroleum based ingredients that can provoke skin, eye, and respiratory reactions; cause headaches, depression, ear infections, and diarrhea. These ingredients also contaminate the environment during production and disposal. Luckily there are alternatives available that are readily biodegradable, renewable, non-toxic, ph neutral, and petroleum-free. These products are also available in concentrated forms, and packaged in returnable or recyclable packaging to further reduce the pollution associated with shipping these chemicals. These recommendations do not contain carcinogens, mutagens, teratogens, neurotoxins, ozone depleters, phosphates, or volatile organic compounds.

Top 5 Steps a Food Service Facility Can Take to Decrease Chemical Use & Pollution:

1. Purchase less toxic general cleaning products and hand soaps that have been reviewed by a third party, such as the Green Restaurant Association, Green Seal or the EPA's Design for Environment program
2. Find a pest management company with a Green Shield or Green Pro certified integrated pest management (IPM) program.
3. Install alternative fuel refueling stations, such as electric car charging stations.
4. Work with your distributors to purchase unbleached pan liner, deli sheets and pastry / bread bags.
5. For lighting applications that require fluorescent lighting, either linear tube bulbs or CFL's, purchase low mercury bulbs.

1. General Cleaning Products

Most conventional cleaning products are made from petroleum or petroleum distillates, and contain alkylphenol ethoxylates, which are suspected hormone disruptors, and may contain carcinogenic 1,4-dioxane. Traditionally these cleaners do not readily biodegrade, and threaten aquatic ecosystems and wildlife after disposal. The fragrances in some products can contain phthalates, which have been linked to cancer and reproductive-system harm in animal lab tests. Some cleaners may also contain phosphates, which contaminate aquatic environments and are highly caustic and potentially fatal if swallowed.

For this reason the GRA recommends cleaners that are non-toxic; readily biodegradable (do not form micro-toxins or require water treatment); and safe for grey-water reuse systems and septic tanks. They also do not contain any known or suspected carcinogens petroleum distillates, butyl ether, ammonia, chlorine, phosphates, benzene, pine oil or strong acids, and are sold in bulk and concentrated form. Remember, "green" cleaning products may act differently than their conventional counterparts – for example, they may create fewer suds – so it's important to train your staff and explain why you are making the switch.

Standard: Look for general cleaning products that have been certified by a third party, such as the EPA's Design for Environment program, Green Seal, or GRA's Endorsement Standard.

2. Dish Machine Products

It is difficult for most restaurants to source truly environmentally benign commercial dish machine products at this time. The GRA recommends solid products that are non-caustic, and use less energy, 98% less packaging, and produce fewer harmful chemicals upon disposal than conventional commercial

detergents.

3. Disinfectants & Sanitizers

Many disinfectants and sanitizers contain chlorine bleach, which is highly caustic. Upon disposal, chlorine can lead to the production of organochlorines, which are suspected carcinogens as well as reproductive, neurological, and immune-system toxins. If chlorine bleaches are accidentally mixed with any product containing ammonia or quaternary compounds they can produce a highly toxic chlorine gas. In general, the most environmentally benign disinfectant is 100% botanical and does not contain any chlorine or ammonia compounds. Other options are electrolyzed water or peracetic acid disinfectant, which is approved by the Organic Materials Review Institute. It's important to note that you may need to apply for a waiver from the local Board of Health should you decide to use one of these alternatives.

4. Hand Soap

Antibacterial soap should be eliminated from your food service operations because it promotes chemical resistance in bacteria and is unnecessarily harsh. Look for hand soaps that meet one of the following standards: EPA's Design for Environment, Green Seal, or GRA's Endorsement Standard.

5. Chafing Fuel

Most chafing fuels are petroleum fuel based, and contain hazardous ingredients that require special storage and cause land and water pollution upon disposal. Instead of using chafing fuels that burn petroleum, choose non-toxic alternatives made from less harmful chemicals, such as ethanol, to reduce pollution. The ethanol-based fuel burns cleaner, hotter, and more efficiently than petroleum-based fuel and is a renewable resource. Ethanol chafing fuel produces 50% less carbon dioxide emissions than petroleum based chafing fuel.

6. Pest Management

The best way to avoid unwanted pests, such as insects and rodents, is the use of non-chemical methods, such as direct heat and Integrated Pest Management (IPM). IPM methods focus on eliminating pests by removing their sources of food and water through proper cleanliness, sealing, and screening. If necessary, less toxic chemicals can be used as a last resort.

STANDARD:

Keep in mind that the solution may be as simple as cleaning out your garbage bins or sealing any cracks in the floors or walls. When using a pest control company, choose businesses that have been certified green by third parties, such as GreenShield, GreenPro or EcoWise.

7. Candles

Did you know that indoor air can be up to five times more polluted than outdoor air? One way to reduce indoor air pollution is to choose environmentally sustainable candles that are made from soy or beeswax instead of harmful paraffin, and do not contain lead in the wicks.

8. Textiles

Choose environmentally sustainable uniforms, chef's coats, merchandise, linens and napkins that are made from organic cotton, rapidly renewable materials (such as hemp) or recycled textiles. Look for TRSA Clean Green linen services.

Provide staff with non-white uniforms, as they require less hot water and fewer chemicals to clean.

Additional Items:

Regular vehicle maintenance will reduce the amount of air pollution emitted from the vehicle and allow it to use gas more efficiently.

Use live plants throughout the restaurant to improve indoor air quality.

Make steps to reduce the amount of transportation and greenhouse gas emissions associated with your restaurant. For example:

- a. Hire local staff
- b. Purchase wood products harvested less than 500 miles away
- c. Patronize local vendors
- d. Plan delivery / pick-up routes to minimize driving
- e. Arrange for a single vendor who makes deliveries for several items
- f. Encourage staff to car-pool to work

Regularly check and maintain storm drains located on your property to keep litter, debris, and soil away from storm drains.

Use shut-off valves at storm drains, or secondary containment in order to capture spills.

Section VII: Green Building

Buildings have an enormous direct and indirect impact on the environment. In the United States, buildings account for 39% of total energy use, 12% of total water consumption, 68% of total electricity consumption, and 38% of carbon dioxide emissions. Buildings not only use resources such as energy and raw materials, they also generate waste and air pollution. Over the past few years the market for “green” building materials has greatly expanded. Buildings can now be constructed with recycled materials, and designed or retrofitted with materials and equipment that maximize energy and water efficiency and safeguard indoor air quality.

Top 5 Steps a Food Service Facility Can Take to Increase Energy Efficiency

1. Wherever possible, reuse furnishings and building materials throughout the space
2. Look for products made from post consumer recycled materials, such as carpet tiles made from recycled carpet backings or recycled glass countertops.
3. If you cannot find products made from post consumer waste that meet your needs, the next best option is a product made from pre consumer recycled content (also called post industrial content).
4. Purchase products made from rapidly renewable materials, such as bamboo.
5. If you can not find reclaimed wood or products made from recycled wood scraps, ask your vendors for FSC Certified wood products. These products are made from virgin wood that has been responsibly and legally produced.

1. Flooring

There are many environmentally friendly flooring options that meet or exceed the performance characteristics of conventional materials:

A. Concrete:

Concrete is durable, waterproof, and cheap, and largely composed of recycled, local materials.

B. Natural linoleum: “Marmoleum”

Marmoleum can be made from cork, linseed oil, wood flour, or pine resin. It is available in a wide range of colors and designs, and is suitable for bathrooms and high traffic areas since it is waterproof, scratch resistant, and comfortable. Unlike vinyl, marmoleum is petroleum-free and made from renewable resources. The manufacturing of Marmoleum also generates very little waste, because nearly all factory waste is recycled back into product.

C. Bamboo

Bamboo is a fast growing, rapidly renewable grass. It can be harvested in three to five years and requires no pesticides or fertilizers. It is harder than most wood species and has a very similar appearance. Bamboo performs well and is reasonably priced.

D. Sustainable Wood

Forest Stewardship Council (FSC) Certified wood ensures that the forest from which the flooring is produced was managed sustainably: preserving old-growth tree species and respecting the property rights

on indigenous groups. Certified wood flooring products are available in a wide variety of domestic and exotic species, but domestic wood is preferable due to the environmental costs of transporting lumber over long distances.

E. Adhesives

Regardless of which flooring option is chosen, it is crucial to select low-toxicity, zero-VOC adhesives and coatings to maintain the health benefits that come from choosing natural flooring options. Conventional adhesives contain a high content of chlorinated solvents, which are harmful to human health.

The GRA recommends low-toxicity water-based or plant-based adhesives, which minimize the amount of toxic gasses and VOCs released from the adhesive.

2. Paint

Most standard paints contain petroleum-based ingredients that emit volatile organic compounds (VOC's) into the air. Even "low-VOC" paints may still contain odorous, toxic, or otherwise undesirable ingredients such as ammonia, formaldehyde, crystalline silica, acetone, fungicides, and bactericides. These compounds may not affect occupants, but can be hazardous to painters, and result in environmental degradation after disposal. Whenever possible, choose zero-VOC paints and colorants.

3. Ceilings

The major constituents of acoustical ceiling tiles are typically mineral wool, cellulose, starch, clay, fiberglass, and paint. Mining raw materials produces soil erosion, pollutant runoff, and habitat loss. However, the manufacture of recycled content acoustic ceiling tiles does not generate much waste because scrap material is recycled back into the process. Tiles made from recycled materials are available from a number of manufacturers and can contain as much as 80% recycled content.

Biobased, cellulose ceiling tiles are another option and they are suitable for dry areas and moderate acoustical requirements. Where acoustical demands are higher, specify mineral fiber tiles or cellulose tiles that are coated with low-VOC, water-based paint and do not contain vinyl facing.

4. Wall Coverings

Wall coverings should be made from rapidly renewable materials, and contain low or zero-VOC's. Wall covers should also be "breathable", thereby reducing mold and mildew on the wall.

5. Countertops

Paper composite countertops are a durable blend of 100% post consumer recycled paper and non-toxic, non-petroleum based resins. Other composites include wheat and sunflower, and 100% recycled currency and recycled plastic. All varieties composed of natural looking, stain and heat resistant material.

6. Cabinetry

Particleboard, which is composed of wood fibers bound together by resins, is commonly used in all types of building construction. Particleboard is often bound with resins containing formaldehyde, which can pollute indoor air. Particleboard may also contain virgin wood fibers rather than recycled wood particles. For this reason, MDF fiberboard and Agriboard are better alternatives to conventional particleboard. MDF fibreboard is made entirely from waste produced during wood processing and does not use additional formaldehyde (other than that which is naturally occurring in the wood).

Agriboard is made from recycled agricultural fiber (such as wheat, sunflower seed, or rice) or from Forest Stewardship Council Certified particleboard. The best options are colored with non-toxic, water based dyes, which offer a wider variety of finished looks for the surfaces. The resin in this product is free of formaldehyde.

7. Furniture

Wherever possible, use salvaged materials throughout your facility. Salvaged materials include pieces of furniture reused from a previous restaurant, as well as materials taken from old buildings or salvage warehouses.

Another option is furniture made from recycled materials, such as recycled plastic, wood, and metal furniture. Biobased and rapidly renewable materials, such as bamboo or FSC certified wood are also an option as long as they are finished without toxic stains and adhesives. Many commercial furniture suppliers carry recycled and natural products due to the recent rise in demand for green building materials.

Section VIII: Alternative Energy

With just 4.5% of the world's population, the U.S. consumes 25% of the earth's resources. These precious resources can be conserved by supporting renewable energy sources – including wind, solar and geothermal power.

Alternative Fuel Vehicles

Demonstrate your commitment to the environment by choosing alternative fuel vehicles for your restaurant and catering businesses, Alternative fuel vehicles reduce our dependence on imported oil, all while minimizing pollution.

Carbon Offsets – Renewable Energy Credits

Even if restaurants cannot access electricity directly from alternative energy sources, they can purchase and trade non-tangible RECs to support these technologies. By purchasing RECs, you can not only prevent harmful emissions that contribute to global warming, but also help to secure a future that is fueled by more sustainable energy sources.

A renewable energy credit (REC) represents the bundle of “green” attributes associated with the generation of a defined amount of electricity (usually one megawatt-hour [MWh]) at a renewable energy facility. The best RECs, in terms of positive environmental benefits, are 100% wind or 100% solar. RECs can be purchased in any amount to offset all or some of your petroleum based fuel consumption with renewable sources.

When a restaurant purchases a REC, they are adding to the demand for renewable energy that will enter the electric grid. After a restaurant purchases the REC, they “own” any claims related to that unit of renewable energy. In other words, even if another customer receives the electricity from that facility, they are the only ones that can get credit for its carbon offset characteristics because they own the REC. RECs are a great way to green the electricity grid, but conserving energy should remain the primary goal of any restaurant’s efforts to reduce their carbon footprint.

Buying RECs helps the electric grid to receive more renewable energy in place of petroleum sources, making the overall energy mix cleaner and more sustainable. As the purchase of RECs grows, more and more carbon-based, non-renewable electricity will be offset with renewable energy helping to minimize the country’s greenhouse gas emissions.

Section IX: Education

Implementation of an environmental education program will help your employees to understand important energy, waste, water, and chemical issues, and how they relate to the restaurant industry. By understanding these issues, every employee can do their part to conserve energy, water, and natural resources, and prevent pollution. This knowledge will help boost employee morale and foster job loyalty.

1. Understand Your Restaurant's Impact

a. Energy

The restaurant industry is the #1 consumer of electricity in the US retail sector, and the US is the largest consumer of electricity in the world. Over 70% of this electricity comes from fossil fuels: coal, gas, and petroleum, which contribute to global warming and endanger human health. Approximately 80% of restaurant energy bills are a result of inefficient equipment.

b. Water

The average restaurant consumes 300,000 gallons of water a year, but less than 3% of the water on Earth is available for human consumption. The water usage of a single appliance in a restaurant can be greater than that of an entire house. By installing water efficient appliances a restaurant can save over 200,000 gallons of water a year.

c. Waste Reduction

The average restaurant produces 100,000 pounds of garbage a year, 95% of which could be recycled or composted. Recycling and composting saves landfill space, energy, and natural resources; and reduces air and water pollution. For instance, it takes 95% less energy to make a tin can from recycled metal than from raw materials mined from the earth, and every ton of recycled paper saves: 12 trees, 2000 pounds of greenhouse gases, and 390 gallons of oil, and protects ancient forests (in the US, less than 5% of the ancient forests remain standing). Composting turns waste into a fertile soil conditioner, thereby reducing the need for synthetic fertilizers.

2. Educate Employees

Employees can make existing equipment more efficient by following start-up and shut down schedules for appliances and lighting, and turning off faucets when they are not needed. Employee education and participation is also the key to recycling and composting efficacy.

Establish an environmental staff manual and training program based on the above information to educate staff from the onset of their employment to promote environmentally sound behaviors. Set up monthly meetings to discuss your environmental initiatives, and make sure new hire training protocols include an environmental education component. Post stickers and signs at critical locations to remind staff to shut off the water or power down equipment, and develop incentive programs to encourage employees to look for additional ways to reduce energy use, water consumption, and waste.

Take staff on field trips to local farms and recycling facilities.

Encourage employees to attend local seminars, and workshops that address environmental sustainability and the food service industry.

3. Educate Customers

a. Bulletin Boards & Signage:

Bulletin boards can highlight the latest announcements about social and environmental initiatives, as well as displaying progress toward corporate goals, and ways to get involved. Signage in bathrooms and around the store could also draw attention to green technologies like energy-efficient lighting and low-flow fixtures.

b. Printing

Cups, napkins, and other disposables can be printed with their environmental characteristics, such as “contains 80% post consumer content and is processed chlorine-free.” Products can list environmental facts and the steps your facility has taken to reduce its environmental impact.

Use your menu to educate customers. For example, explain why you serve local produce or sustainable seafood.

Together, these efforts would dramatically increase the level of awareness of your customer base, generate new customers, and promote brand loyalty.

c. Events & Marketing

Host themed nights that highlight your “green” initiatives. For example, if you purchase produce from local farmers, develop a special menu around their products and invite them to be a part of the evening, etc.

Host food-themed EcoTours for adventurous customers.

Use online newsletters or email lists to highlight your environmental initiatives

Section X: Glossary

Post-consumer Recycled Material - a material that has served its intended use and instead of being disposed of, is reused in a different product. For example, 100% post consumer recycled office paper comes from the office paper that you might have recycled a few months ago.

Pre-consumer Recycled Material - material that is recycled before it is used by a consumer, such as paper mill scraps that are reused in the process of making paper

Recyclable - products that can be repurposed into a new product (but did not necessarily come from recycled materials). Everything is theoretically recyclable. Don't get confused by thinking this claim makes a product green. Instead look for products that actually have post consumer recycled content in them.

Composting – During the composting process, food and paper waste is broken down to the point of disintegration and re-used as enriched soil

Bio-based – material that is made from biological materials, such as renewable agricultural materials including corn or sugarcane

Biodegradable - a material that can be broken down naturally by biological activity, especially by enzymatic action, into natural elements

Water Filtration System: An appliance that purifies drinking water onsite, eliminating the need for bottled water

Multi-Use Products: Reusable products that can be used more than once

Paperless Payroll: A payroll service that is conducted entirely electronically

Volatile Organic Compounds (VOCs) - organic chemical compounds that have high enough vapor pressures under normal conditions to significantly vaporize and enter the atmosphere. These chemicals irritate the eyes, nose and throat; cause headache and nausea; damage the liver, kidneys, and central nervous system.

Integrated Pest Management (IPM): An approach to pest management that examines the source of the problem before resorting to chemicals

Alternative Fuel Vehicles: vehicles that run on resources other than petroleum, whether electric, biodiesel or hybrid options

Renewable Energy Credit: Environmental commodities that represent electricity generated from renewable resources, such as wind or solar power. Non-tangible RECs add green energy to the overall power grid, and support the development of renewable energy facilities.

Paraffin: a waxy white or colorless solid hydrocarbon mixture derived from petroleum used to make candles, wax paper, lubricants, and sealing materials

Ethanol – Clean-burning alcohol derived from fermented starch plants, such as corn, that is often used as solvents or fuel

Methanol – methyl alcohol, derived from carbon monoxide, is toxic to humans and is often used for antifreeze and fuel

Hemp – durable material made from fibers that is often produced into twine

Organic – food or materials grown without artificial fertilizers or pesticides

CEE Tiers: Up to three levels established the Consortium for Energy Efficiency (CEE) to rate the water and energy efficiency of products

Energy Star Qualification: A benchmark that designates that a product meets the energy efficiency requirements as established by the EPA

Flow Rate – The rate at which water flows from a faucet, measured in gpm

Gallons per Minute (GPM) - a measurement of the flow rate of sinks

Compact Fluorescent Lamps (CFLs) – Spiral-shaped light bulbs that don't emit heat, fit in standard sockets, and use 70% less energy than incandescent bulbs

LED Lamps – a sustainable bulb that uses light emitting diodes (LEDs), which require up to 83% less electricity than standard 60W incandescent bulbs

T5 and T8 Lamps - fluorescent, tubular lamps that last up to 15,000 hours

Rapidly Renewable – material that naturally replenishes within 10 years

Recovered Materials - waste materials and byproducts that have been recovered or diverted from solid waste landfills but do not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process

Free Resources:

- **Green Restaurant® 4.0 Environmental Standards:**
<http://dinegreen.com/restaurants/standards.asp>
- **Green Restaurant® University Education Section**
<http://dinegreen.com/customers/education.asp>
- **New Jersey's Clean Energy Program SmartStart**
866-NJSMART • www.njcleanenergy.com/biz
- **New Jersey's Clean Energy Program Direct Install**
- 866-NJSMART • www.njcleanenergy.com/DI