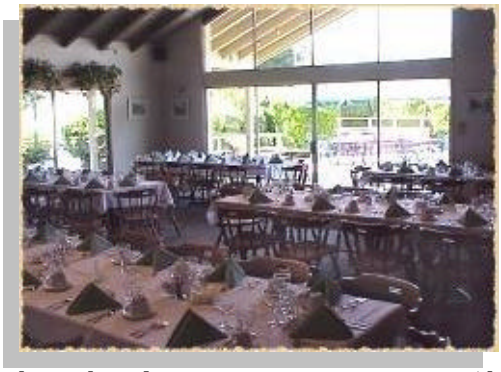
CHAPTER 9
FOOD AND BEVERAGE SERVICES



Food and beverage services[1] are among the most visible locations at ski areas, and a ski area's environmental commitment is often judged by the environmental practices within these establishments. Pollution prevention (P2) opportunities for restaurants address a broad range of operations, including solid waste management, grounds and facility maintenance, and restaurant supply purchasing.

A restaurant's pre-tax profit is typically only 3 to 9 percent of its total revenue; therefore, money saved through reductions in operating costs (that is, through reduced energy consumption and water use) can significantly increase the profit margin.[2]

While some restaurants have already taken advantage of the many P2 opportunities available to them, a survey by the National Restaurant Association shows that for some of the most common P2 techniques and best practices, there is still room for improvement across the industry. Table 9.1 provides a brief overview of the survey results.

TABLE 9.1 RESULTS OF NATIONAL RESTAURANT ASSOCIATION TABLE SERVICE RESTAURANT SURVEY

Conservation Practices at Table Service Restaurants[3,4]	Percent of Restaurants Using the Conservation Practice According to Average Check Size			
	Less than $8.00	$8.00 to $14.99	$15.00 to $24.99	$25.00 or more
Installed low-water warewashers and/or toilet fixtures	63%	52%	57%	50%
Modified lighting fixtures	63%	52%	54%	45%
Sponsored community conservation activities	27%	27%	27%	34%
Installed heat recovery equipment on refrigeration units and air conditioners	20%	25%	26%	26%

[1] Food and beverage services at ski areas range from fine dining establishments to bars and cafeterias. In this chapter, all such facilities are referred to as restaurants.

[2] The Environmental Protection Agency's (EPA) Energy Star® Restaurant Services web site: www.epa.gov/smallbiz/restaurants.html .

[3] National Restaurant Association, 2000 Table Service Operator Survey: .restaurant.org/pressroom/pressrelease_print.cfm?ID=280.

[4] These actions were surveyed by the National Restaurant Association; however, many other P2 and conservation opportunities are available to restaurants.

Numerous programs exist for the food and beverage service industry that help restaurants and their customers minimize environmental impacts. These programs have established systematic approaches to help restaurants reduce their environmental impacts, including those listed in Table 9.1. This chapter uses the Green Restaurant Association's approach (see Section 9.1) as an outline to present the environmental practices a restaurant should consider. Some relevant topics, such as managing office wastes, purchasing environmentally preferable cleaning supplies, using energy-efficient lighting, and environmentally responsible landscape management, are discussed in other chapters. Section 9.14 lists resource information for restaurants.

For More Information…

Topic	Chapter
Office Wastes, Office Equipment and Cleaning Supplies	6: Purchasing
Lighting	10: Buildings
Cleaning Supplies	12: Lodging
Landscaping	13: Grounds

9.1 GREEN RESTAURANT ASSOCIATION

Involvement in environmental programs is a good way for a restaurant to learn more about environmental best practice opportunities. An environmental resource for the food service industry is the Green Restaurant Association (GRA), which helps member restaurants reduce environmental impacts with twelve "eco-steps". The GRA's primary operational components are research, environmental consulting, education, public relations and marketing, and community organizing and consumer activism. See Section 9.14 for contact information.

To become a member of the GRA, a restaurant must sign a statement of its commitment to making environmental improvements based on the 12 "eco-steps" listed below. After a member restaurant has made positive environmental changes, the GRA will include the restaurant in the "Green Restaurant Guide," which serves as a directory for environmentally conscious restaurants. The GRA also offers fee-based consulting services to member restaurants and initiates public relations and marketing initiatives, such as having restaurants featured on CNN, to increase restaurant exposure and consumer awareness.

GRA's 12 eco-steps are outlined below and discussed further in Sections 9.2 through 9.13.

1. **Elimination of Polystyrene Foam (commonly known as styrofoam)**. Replace all polystyrene foam products with environmentally friendly alternatives: paper, bamboo or sugarcane paper, recyclable plastic, biodegradable plastic, and so on. *This is the minimum environmental standard for becoming a member of the GRA.*
2. **Comprehensive Recycling.** Initiate or improve recycling programs for glass, plastic, bi-metal, cardboard, and mixed paper.
3. **Waste Reduction and Reuse.** Increase bulk purchasing and reduce excessive packaging for food, condiments, and so on. Replace disposable products with reusable alternatives: eating ware, aprons, tea strainers, cups, and so on.
4. **Biodegradable Plastic.** Transition to corn-based "plastic" products that are biodegradable and petroleum-free: cups, utensils, garbage bags, and straws.

5. **Recycled Products.** Transition to recycled products with the highest postconsumer content available and non-tree-fiber paper products: napkins, paper towels, toilet paper, office paper, take-out containers, coffee jackets, plates, and bowls.

6. **Non-Chlorine-Bleached Paper Products.** Transition to non-bleached or non-chlorine-bleached paper products: cups, wax paper, plates, take-out containers, bags, pastry bags and grabbers, napkins, paper towels, coffee filters, and office paper.

7. **Nontoxic Cleaners, Landscaping and Pest Management.** Replace hazardous chemical products with biodegradable and nontoxic alternatives; dish detergent, germicides, disinfectants, toilet bowl cleaners, drain cleaner, floor wash, floor polish, glass cleaners, degreasers, and laundry detergent. For landscaping, switch to nontoxic, nonsynthetic, and organic fertilizers, pesticides, or herbicides. For pest control, use nontoxic products or services.

8. **Energy Efficiency.** Improve the energy efficiency of lighting, refrigeration, air conditioning, gas appliances, and so on. Obtain assistance with using government and private rebate programs. Make connections with energy consultants to learn about more extensive programs.

9. **Water Efficiency.** Improve the water efficiency of toilets, faucets, laundry, sprinkler systems, and so on.

10. **Composting.** Divert food waste from landfills and create nutrient-rich soil for gardening and landscaping.

11. **"Green" Electricity.** Change to an energy provider that uses solar, wind, small-scale hydroelectric, geothermal, or methane-based power that is renewable and less polluting to ecosystems.

12. **Employee Education Program.** Train all employees, managers, and owners. Topics covered should include

- An environmental profile of the restaurant industry
- A history of environmental issues relevant to food service: landfills, water pollution, air pollution, clear-cutting, and global warming
- Data describing the restaurant impacts (positive and negative) on the environment

9.2 ELIMINATION OF POLYSTYRENE FOAM

Polystyrene foam (Styrofoam) is widely used in restaurants in insulated cups for hot beverages and take-out containers. Production of polystyrene involves use of known (benzene) and suspected (styrene and 1,3-butadiene) human carcinogenic substances (styrene and 1,3-butadiene). Styrene is also known to be toxic to the reproductive system. Polystyrene can be recycled; however, its recycling rates are low. Styrofoam is light in weight, but bulky in size, so hauling Styrofoam to the nearest available recycling facility is often not economically feasible.[5] The value of a load of Styrofoam may not even cover the cost of shipping. To reduce environmental impacts, restaurants should consider switching from Styrofoam to non-bleached paper wraps, cardboard containers, or other sustainable food packaging.

[5] Polystyrene Packaging Council. "Economic Realities of Recycling", www.polystyrene.org/environment/econ.html .

According to a report published by the Environmental Defense Waste Reduction Task Force, McDonalds has completed the switch from polystyrene foam "clamshells" to paper-based wraps for packaging its sandwich items. The wraps provide a 70 to 90 percent reduction in packaging volume, resulting in significantly less space being consumed in landfills. Compared to the polystyrene foam boxes they replaced, the new sandwich wraps also offer a substantial savings in energy used and substantial reductions in pollutant releases measured over the full life-cycle of the packaging.[6] McDonalds is also testing EarthShell[7] packaging products in 300 of its restaurants throughout the U.S.. These sustainable containers are made from potato starch, natural limestone, 100 percent postconsumer recycled fiber, biodegradable polymer and wax coatings, and water.[8]

9.3 COMPREHENSIVE RECYCLING

The "Recycling Guidebook for the Hospitality and Restaurant Industry" provides a general overview of developing and implementing a comprehensive recycling program.[9] The first step mentioned in this resource is to conduct a waste audit in order to evaluate the waste stream, enabling a restaurant to better target the commodities that should be included in a recycling program. Materials that are commonly recycled in restaurants include

- ***Paper***, including cardboard, computer paper, register tape, and telephone books
- ***Metals***, including aluminum, tin, and steel cans
- ***Green, brown, and clear glass***
- ***#1 Polyethylene*** (PET) and ***#2 high-density polyethylene (HDPE)*** plastics
- ***Printer cartridges***

Rubbermaid "Slim Jim" containers with commodity-specific lids (see www.recyclingproducts.com)

Convenience is the key to a successful recycling program. An EPA Waste Wise tip sheet notes that a convenient collection system will encourage both customers and employees to carefully sort recyclables by material type and to eliminate contaminants.[10] Collecting uncontaminated recyclables (commodities that are properly sorted and free of excess food and beverage waste) will save time otherwise spent in sorting out contaminants. Further, uncontaminated recyclables have higher value if they are sold. Presented below are other restaurant recycling tips listed in the "Recycling Guidebook for the Hospitality and Restaurant Industry."

- Recycling and trash bins should look different from each other and be clearly marked. Both types of bins should be conveniently located in the kitchen and bar areas so that employees will use them.

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[6] For more information on Environmental Defense and McDonald's partnership, see www.environmentaldefense.org/pubs/NewsReleases/1999/Dec/k_mcdonalds.html and www.environmentaldefense.org/pubs/Reports/McDfinreport.html

[7] EarthShell corporate website: www.earthshell.com/

[8] Green Initiative of South Africa. "One Big Plastic Hassle", March 2001. www.gisa.co.za/pages/library_archive/hastle.htm.

[9] Metropolitan Washington Council of Governments, Department of Environmental Programs. "Recycling Guidebook for the Hospitality and Restaurant Industry." April 2000. www.p2pays.org/ref/05/04032.pdf.

[10] EPA. "Recycling Collection", Waste Wise tip sheet. January 1994. www.p2pays.org/ref/02/01874.pdf.

- Self-serve establishments should post signs to inform customers about the recycling program and provide specific instructions. Either strategically places bins for collection of recyclable commodities, or have customers leave such commodities on a designated counter for collection by staff.
- If lack of space is a problem, specially designed equipment such as can, glass, and plastic crushers are available to reduce the volume of recyclable materials.
- Recyclable collection bins in public areas should be well-marked. Choose bins with specialized openings, such as a hole for cans or a slot for newspapers, for these areas.
- Set up a logbook or a receipt system to record the volume of recyclables leaving the premises in order to facilitate tracking and compensation.

9.4 WASTE REDUCTION AND REUSE

Waste reduction and material reuse should be the first step in minimizing the waste that a restaurant produces because it is more efficient to reduce waste at the source or reuse material than it is to recycle. As mentioned in Section 9.3, conducting a waste audit is an effective way to evaluate a restaurant's waste streams. Doing so enables staff to identify wastes that are nonessential to operations, such as excess packaging material. This process can also identify disposable products that can be replaced with durable, reusable ones. For example, disposable plastic tableware and silverware should be replaced with washable or compostable utensils.

VAIL RESORTS'
TOP 10 RECYCLING TIPS FOR SKI AREAS

Vail Resorts operates a successful solid waste recycling program. In 2000, it recycled over 2,500 tons of metal, glass, plastics, and cardboard. The following "Top 10" tips are hallmarks of a good recycling program.

1. Find a committed leader to establish and grow the program; the program leader must have management support and strong organizational skills.
2. Set up central collection centers - every operation (restaurant, hotel or condo service area, office area, etc) needs a place to manage recyclables. Start with high volume locations. Work with waste haulers to place containers and offset higher recycling costs by decreasing trash service. Finding space can be difficult; therefore, include space for recycling equipment in future development planning.
3. Plan ahead for program growth and maximize efficiency of space by using compactors and large collection containers in base areas.
4. Place collection centers in close proximity to garbage dumpster areas.
5. Standardize the look of each recycling center so that regardless of where an employee is working, the recycling program is consistent. Post professional signs and use standardized containers to increase flexibility - these can be interchanged between locations and auto-lifted by service trucks. Toters cost around $65 each; for example, see www.SSI-Schaefer.com
6. Use existing transportation (gondola and haul-cats) to get recyclables off the mountain. Have a backup plan for breakdowns.
7. Know where it goes - follow recyclables to assure that all you collect gets recycled.
8. Measure results and communicate progress and issues.
9. Keep recycling areas clean by maintaining signage and containers maintained.
10. Continuously train staff to participate - recycling does not come naturally to many people and requires a change in behavior.

EPA's Waste Wise program is a free, 3-year, goal-oriented program that assists businesses in assessing and reducing their waste streams.[11] EPA designed Waste Wise to be a flexible program, in which the participant determines how much time and money to invest.

Key aspects of successful Waste Wise programs include

- Waste assessments
- Employee education
- Measurement and reporting
- Program maintenance

The above aspects are fundamental in assessing, developing, implementing, and maintaining a viable waste reduction and reuse program. Waste assessments provide a full understanding of waste streams and provide a basis for targeting specific waste reduction goals. However, these goals will only be reached with the full support of the restaurant – from managers and servers to cooks and food preparation staff. Therefore, employee education is critical to the success of the program. It is also important that program efforts be measured regularly. Tracking and documenting the costs, savings, and effects of a waste reduction and reuse program are the only ways to determine the environmental and economic impacts of implementing the program. Program data can also provide insight into the effectiveness of employee education programs. Lastly, program maintenance is imperative to realize long-term benefits from a waste reduction and reuse program. A successful program is not a result of one-time changes but a cumulative result of permanent procedural and behavioral changes.

Several other guidance documents provide specific waste reduction and reuse ideas for the restaurant industry. Presented below are some examples of common waste reduction techniques that are discussed in "Food for Thought: Restaurant Guide to Waste Reduction and Recycling."[12]

- Purchase and serve beverages in bulk rather than in bottles, cans, or individual packets.
- Buy bar mixes, juices, and coffee in bulk.
- Use health department-approved, refillable condiment containers.
- Purchase cleaning supplies in concentrated form.
- Use cloth towels and reusable table linens and tableware.
- Use vendors that take back packaging material and pallets.

Another way that restaurants can minimize their waste and overall environmental impact is purchasing products through local food supply vendors and grocers. Local sourcing is of particular benefit to the tourism sector, where visitors appreciate locally distinctive food, drink, and other products. For example, several Aspen Skiing Company-owned restaurants purchase natural, chemical-free beef and hamburger from local ranchers to support the ranching community and thus preserve open space, as well as to provide guests with healthy food. The pilot program began in winter 1998 and expanded significantly in 2000.[13] The beef costs twice as much per pound, however Aspen Skiing Company absorbs the additional cost. By purchasing local produce and supplies,

[11] EPA Waste Wise: www.epa.gov/wastewise/

[12] For more details and other waste reduction ideas, see "Food for Thought: A Restaurant Guide to Waste Reduction and Recycling". California Integrated Waste Management Board. 1992. www.ciwmb.ca.gov/Publications/BizWaste/44198016.pdf.

[13] "Aspen Skiing Company – Committed to Environmental Activism." September 2001. www.aspensnowmass.com/MediaKit/Environment.cfm.

restaurants minimize the affects of excessive transportation and shipping. Such efforts should be accounted for when evaluating the environmental impact and overall performance of a restaurant.

For additional information sources regarding waste reduction and reuse in restaurants, see Section 9.14.

9.5 BIODEGRADABLE PLASTIC

As long as customers wish to take their food "to go," restaurants will need to stock disposable goods such as food containers and silverware. According to Biocorp, a manufacturer of biodegradable plastic tableware and silverware, nearly 113 billion disposable cups, 39 billion disposable eating utensils, and 29 billion disposable plates are used in the U.S. every year, and half these items are made of plastic. Because restaurants cannot control what happens to these items once they are in customers' hands, the most effective way to minimize their environmental impacts is to purchase biodegradable products.

This cornstarch-based silverware manufactured by Biocorp is readily biodegradable.

Biodegradable products are typically made of corn, starch, or paper with an easily biodegradable coating. The EarthShell (see the case study in Section 9.2) is one example of a biodegradable food service product. Biocorp also manufactures biodegradable composting bags, silverware, plates, and beverage containers.[14] "Scientists Perfecting Planet-Friendly Plastics," an article published by the Environmental News Network, explains that the starch used to create these biodegradable plastics – typically wheat gluten – costs about 15 cents per pound, whereas the least costly commercial plastics cost about $1 per pound. Thus, when this starch-based plastic becomes widely available to manufacturers, it could be the cheapest plastic available. Currently, however, most manufactured environment-friendly plastics cost about $2.50 per pound, although recent projects have brought their costs down to approximately $1.50 per pound. Because biodegradable plastics are more expensive than regular plastic, the biodegradable plastic industry has a challenge in breaking into a very competitive market.[15]

9.6 RECYCLED PRODUCTS

Restaurants use several types of products that can be replaced with items made from recycled materials. Most of the products with recycled content that can easily be purchased are paper products such as napkins, toilet paper, tissues, paper towels, paper tablecloths, take-out containers, register tape, and office paper (see Chapter 6 for a more complete discussion of purchasing recycled-content paper products). Since 1998, EPA has required federal facilities to purchase products with recycled-content material. The resulting increased demand for recycled content paper has driven down its cost to the point that recycled-content products are the same price or less expensive than virgin material products.

EPA's "Comprehensive Procurement Guidelines" set recommended recovered-material content ranges for paper products (for more information visit www.epa.gov/cpg). Restaurants should purchase paper products that fall within EPA's recommended ranges, which are shown in Table 9.2.

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[14] Vendor contact information is provided in Section 9.14.

[15] For more information, see "Scientists Perfecting Planet-Friendly Plastics." Environmental News Network. March 1999. www.co.scott.mn.us/EH/PublicEd/biodegradableplastic.htm.

TABLE 9.2 EPA-RECOMMENDED RECOVERED FIBER CONTENT LEVELS FOR COMMERCIAL/INDUSTRIAL SANITARY TISSUE PRODUCTS[16]

Paper Product	Postconsumer Fiber Percentage[17]	Preconsumer Fiber Percentage[7,18]
Bathroom tissue	20 to 60	20 to 100
Paper towels	40 to 60	40 to 100
Paper napkins	30 to 60	30 to 100
Facial tissue	10 to 15	10 to 100

Paper product suppliers have information about the recycled content of the products they carry. Recycled-content paper vendors are listed in Section 9.14. More information is also provided in Chapter 6, "Purchasing."

9.7 NON-CHLORINE-BLEACHED PAPER PRODUCTS

Eco-products supplies 100% chlorine-free office paper

Restaurants should avoid purchasing bleached paper products. Seventh Generation, a vendor of environmentally friendly, nontoxic consumer products, explains that chlorine is used by the paper industry for two purposes: to dissolve lignin, a natural material that holds a tree's cellulous fibers together, and to whiten the final paper product.[19] However, chlorine reacts with the virgin natural substances of trees and recycled paper material to form both dioxins and organochlorines. As these substances are discharged and accumulate in the environment, they can have profound long- and short-term health effects on exposed humans and wildlife. One concern regarding dioxins is that they are known carcinogens, or cancer-causing substances. Short-term reactions to overexposure to chlorine may also occur, including airway inflammation and bronchial hyperresponsiveness. Organochlorines are of concern because they are suspected to be endocrine modifiers, which act as hormones in the body and can disrupt the human immune system.

For more information on environmentally preferable purchasing, see Chapter 6, Purchasing, or visit EPA's "Environmentally Preferable Purchasing" home page at www.epa.gov/opptintr/epp/.

9.8 NONTOXIC CLEANERS, LANDSCAPING, AND PEST MANAGEMENT

Restaurant personnel use a wide variety of chemicals to clean kitchen, dishwashing, and restroom facilities. Some cleaning products used include toilet and tile cleaner, glass cleaner, carpet cleaner, spot remover, disinfectant, and oven cleaner. Many of these products contain chemicals that are harmful to human health and the environment, which is a concern for both restaurant staff and customers. Vendors offer environmentally preferable cleaning supplies with equal or better cleaning

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[16] See www.epa.gov/cpg/products/tissue.htm.

[17] Postconsumer fiber or postconsumer content refers to a material or product that has served its intended use and has been discarded for disposal or recovery.

[18] Preconsumer fiber is a material that has been recycled but that did not serve its intended use (for example, scraps at a paper mill).

[19] For more information, see Seventh Generation's "Facts About Chlorine" at www.seventhgen.com/html/facts_about_chlorine___dioxin.htm, or see Reach of Unbleached's "Health Effects of Pulp Mill Pollution" at www.rfu.org/Health.htm.

performance at equal or less cost. See Chapter 6, Section 6.2, and Chapter 10, Section 10.2 for discussions of purchasing and implementing environmentally preferable cleaning supplies and relevant case studies for ski areas.

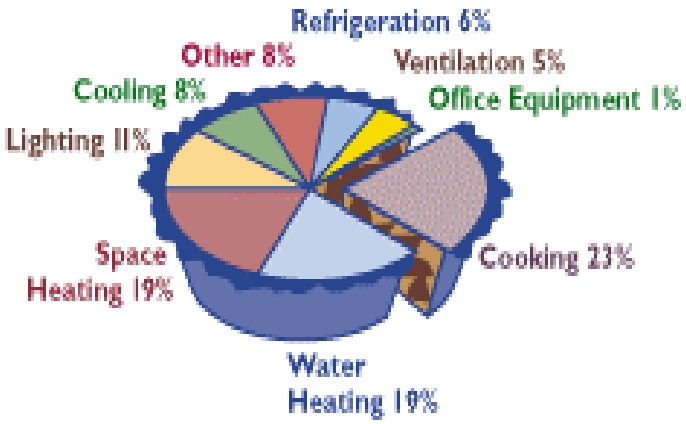
Many restaurants have outdoor areas with landscaping. There are several relatively simple steps that a restaurant manager can take to minimize the environmental impact of maintaining these areas, including water conservation and selection of climate-appropriate indigenous plants. Some "green" practices for landscape management include

- Watering vegetation using "deficit" irrigation, or frequent light watering
- Selecting plants based on watering needs (Typically, indigenous plants are most efficient in using water.)
- Watering grounds during the coolest hours of the day (typically at night)

Finally, pest management can also be an issue for restaurants. For more information about pest management and grounds maintenance, see Chapter 13.

9.9 ENERGY EFFICIENCY

Most restaurant operations, such as cooking and cleaning, are energy-intensive. EPA's EnergyStar® Program[20] estimates that reducing energy consumption by 20 percent can increase a restaurant's profit by one-third, a good economic incentive to make energy efficiency investments. Making this sort of reduction is feasible when restaurants implement strategic energy conservation measures. The EnergyStar® Program analysis of restaurant energy use shows that over 60 percent of a restaurant's energy is used for cooking, heating water, and heating the establishment. The EPA EnergyStar® Program web site provides energy saving tips for each of these categories, some of which are provided in Table 9.3. For a complete listing of the EnergyStar® program guidance on energy efficiency for restaurants, visit www.epa.gov/smallbiz/restaurants.html.



EPA EnergyStar® Program categories restaurant energy consumption
(see www.epa.gov/smallbiz/restaurants.html ***)***

[20] EPA's EnergyStar® Program restaurant sector web site: www.epa.gov/smallbiz/restaurants.html.

TABLE 9.3 EPA ENERGYSTAR PROGRAM RECOMMENDED ENERGY EFFICIENCY INVESTMENTS[21]

Current Technology	Potential Retrofit or Replacement	Annual Energy Cost Savings
Lighting the dining area with dimmable incandescent light bulbs	Replacing incandescent light bulbs with dimmable compact fluorescent light bulbs	Up to **$21** per lamp
Setting heating and cooling thermostats by hand	Installing programmable thermostats and using night setback	Up to **$500**
Using too much light in the dining area during daytime hours	Installing a daytime lighting control system	Up to **$700**
Cooling the dining area and kitchen with a standard-efficiency air conditioning system	Replacing the air conditioner with a high-efficiency electric or gas air conditioning system	Up to **$900**

The National Restaurant Association also published tips for reducing energy costs for restaurants.[21] While most of the suggestions in Table 9.3 involve replacing or retrofitting energy-consuming systems, many of the National Restaurant Association's tips target operational practices. Some of these tips are provided below.

Turn On and Off

- Preheat equipment in accordance with manufacturer specifications; post preheating times near equipment.
- Turn off appliances when not in use.
- Install occupancy sensors in walk-in refrigerators and freezers.

Cooking Efficiency – Lower It / Fill It Up

- Cook using equipment at full capacity when possible.
- Cook at lowest temperatures first.
- Turn off equipment during downtime.
- Use lids to minimize heat loss.

Watch Thermostats – Stay Cool and Save Money

- Set thermostats to manufacturer-recommended temperatures.
- Apply new-generation "clear" coatings to reduce solar gain from large, south- and west- facing windows.
- Use the "unoccupied" and "night setback" thermostat options.
- Ensure tamper-proof temperature settings by using locking covers on thermostats.

Orange County, California, restaurant water reservation card

[21] For more information, visit the National Restaurant Association web site at www.restaurant.org/business/bb/2001_01.cfm.

Keep It Clean for Energy Efficiency

- Clean condenser and evaporator coils on air conditioning and refrigeration equipment.
- Change all filters regularly.
- Preventively maintain equipment.

Dishwashing Equipment

- Heat water only to the temperature required for specific tasks.
- Install equipment of proper size.
- Fully load the machine for each cycle.

EFFICIENCY EXAMPLES

Cook Food at the Lowest Possible Temperature

It takes half as much energy to maintain a fryer at 200 ºF as at 350 ºF. It takes 2 minutes to raise the temperature from 200 ºF to 350 ºF.

Set Thermostats at Recommended Temperatures

Cooling a room to 73 ºF instead of 76 ºF, uses 12% to 15% more energy

Source: National Restaurant Association

As restaurants undergo renovation or technology upgrades, managers should evaluate the energy efficiency of new equipment. Green Seal is an independent, nonprofit organization dedicated to protecting the environment by promoting the manufacture and sale of environmentally responsible consumer products. Green Seal sets environmental standards and awards a "Green Seal of Approval" to products that cause less harm to the environment than other, similar products.[22] Commercial consumers can use Green Seal's web site to search for resource-efficient products. A similar feature is offered on EPA's EnergyStar® Program web site. For more information, visit:

- ***Green Seal:*** www.greenseal.org
- ***Energy Star®:*** www.energystar.gov/products/

9.10 WATER EFFICIENCY

Restaurants use water in almost every aspect of their operations, including food preparation and cooking, cleaning, in restroom facilities, and as a beverage for customers. For each of these aspects, there are technologies or best management practices (BMP) that conserve water. In a collaborative effort, Agricultural and Biological Engineering, EPA, and Purdue University created an environmental enrichment toolkit for the lodging industry.[23] Included in this document is a section that outlines the following water conservation tactics for restaurants:

- Wash food products in buckets, bowls, or other containers.
- Only run dishwashers with full loads.
- Regularly inspect dishwasher pumps for water leaks.
- Defrost or thaw frozen foods in the refrigerator instead of water.
- Install low-flow taps in kitchens and restrooms.
- Use low-flow toilets in restrooms.
- Immediately fix any leaking or dripping faucet.
- Install infrared-activated faucets and toilets in restrooms.
- Purchase and use water-saving kitchen equipment.
- Track water consumption by regularly monitoring utility bills.

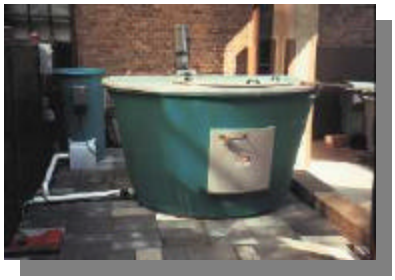
[22] Green Seal homepage www.greenseal.org.
[23] For the complete toolkit, see www.ecn.purdue.edu/~epados/hotel/water/restf.htm.

- Establish an effective employee training program on water conservation.

In addition, see Chapter 10, Section 10.6 for information about WAVE, a program designed to assist businesses in conserving water.

9.11 COMPOSTING

EPA estimates that food wastes comprise 6.7 percent by weight of the total U.S. municipal solid waste stream.[24] One option for diverting food wastes from landfills is composting. Businesses with well-established composting programs divert 50 to 100 percent of their food scraps and reduce their overall solid waste by 33 to 85 percent.[25]



Vail Mountain (Colorado) uses the Green Mountain Earth Tub for its composting operation

Composting can be done both on and off site; however, for restaurants where space is limited, the most feasible option is to collect food scraps for an off-site composting program. This option also transfers the responsibility of monitoring the chemical balance of the compost from the restaurant owner to the local composting operation. However, technologies are available that enable restaurants to manage their compost on site. For example, Vail Mountain added the Green Mountain Earth Tub, a 3.5-cubic yard, aerating composting container, to its composting operation in March 2001.[25] Table 9.4 summarizes four common composting techniques. More information about composting, including a vendor directory and product reviews, is available in "Biocycle," one of the industry's primary news magazines (www.jgpress.com/).

TABLE 9.4 EPA "DON'T THROW AWAY THAT FOOD" COMPOSTING TECHNIQUE SUMMARY[25]

Composting Technique	Description
Unaerated static pile composting	Organics are piled and mixed with bulking material; for small operations; cannot accommodate meat or grease
Aerated windrow/pile composting	Organics are arranged in long rows and manually or mechanically turned; for large operations; can accommodate meat and grease; however, requires careful temperature and moisture control
In-vessel composting	Enclosed, moisture- and temperature-controlled system; can accommodate large amount of organics, including meat and grease, in a relatively small amount of space; high capital cost at startup.
Vermicomposting	Uses worms to break down organic material; process occurs relatively quickly; cannot accommodate meat or grease

[24] See EPA's Office of Solid Waste and Emergency Response fact sheet "Don't Throw Away That Food." 1998.
[25] For more information, see the Vail Mountain news release "New Earth Tub Composting System Goes Online On Vail Mountain" at http://skipress.com/mediacenter.cfm?mode=newsreleases&action=detail&ID=511

CASE STUDY: COMPOSTING AT KEYSTONE RANCH

Keystone Ranch, a horse ranch resort in Keystone, Colorado, implemented a composting program that combines horse manure with vegetable and meat scraps from the Ranch Restaurant.[26] The ranch rents a 30-cubic yard container from a local hauler that holds almost 20 tons of material. Biodegradable cornstarch-based bags are placed at four stations to collect food waste during food preparation and uneaten food from customers. Keystone Ranch estimates that between 10 and 15 percent of the contents of the full 30-cubic yard container is food waste. The rest of the compost mixture is manure collected from the stalls of 15 to 80 horses. The hauler transports the container to the Twin Landfill Corporation in a nearby town, where the compost is further processed, screened, and then sold to landscapers and farmers. As a result of the composting program, which complements an established glass, aluminum, tin, cardboard, and paper recycling program, the Ranch Restaurant is "rapidly approaching a zero-waste status." Because the tipping fee for compostable material is 30 percent less than that for solid waste, the program sustains itself financially and has diverted 450 tons of organic waste from the local landfill.

9.12 GREEN ELECTRICITY

In addition to efforts to minimize their energy use, restaurants can minimize the environmental impacts of the energy they do use by purchasing renewable electricity. By using a renewable source of energy, a restaurant decreases its dependency on nonrenewable fossil fuels and eliminates greenhouse gas emissions associated with its electricity use. Renewable energy sources include wind, solar, geothermal, and biomass.

Green-e : A Renewable Electricity

The availability of green electricity varies from region to region, so restaurants interested in purchasing energy from a renewable source should contact their city or state government agencies or local electric utility. Non-profit green energy certification programs, such as Green-e and Cleaner and Greener, may also be able to help direct restaurant owners to local green energy providers.

9.13 EMPLOYEE EDUCATION PROGRAM

The development of an employee education program is critical to maintaining an environmentally responsible restaurant. An environmental education program should teach both the "how" and "why" of each aspect of the program. An understanding of why an employee should ensure that certain environmental procedures are followed adds meaning to the task. Because of high turnover in many restaurants, environmental education should be a regular, multimedia program, and should include both written and verbal instruction in all languages of the employees. Environmental awareness expectations should be outlined during new-hire training and reinforced throughout the period of employment.

Restaurant managers should consider acknowledging employees who demonstrate superior dedication to minimizing environmental impacts. For example, employees may be offered a percentage of the cost savings resulting from environmental projects implemented at their suggestion. Such recognition would not only reward the employees, but would send a message to customers that the restaurant is actively pursuing "greener" practices. Once the expectation of excellent environmental performance is established, maintaining the program will require less effort.

[26] For a complete case study, see Ski Area Management. March 2001.

Finally, restaurant managers should encourage employees to provide feedback regarding areas for improvement. Many employees will have ideas of how to improve the environment they work in, and with a forum to voice ideas, innovations can be made.

9.14 ADDITIONAL INFORMATION SOURCES

TABLE 9.5 RESTAURANT ENVIRONMENTAL PERFORMANCE RESOURCES

Organization	Contact Information	Description
Programs and Associations		
Green Restaurant Association	Michael Oshman (858) 452-7378 www.dinegreen.com	Helps restaurants and their customers improve their environmental impacts in convenient ways
Waste Wise	www.epa.gov/wastewise	A free, voluntary waste reduction program. With the guidance and support of EPA, participants develop a 3-year, goal-oriented waste reduction program.
Water Alliances for Voluntary Efficiency	1200 Pennsylvania Avenue N.W. Mail Stop 4204M, Washington, DC 20460 (202) 564-0623 (phone) (202) 501-2396 (fax) www.epa.gov/owm/faqw.htm	A nonregulatory water efficiency partnership created and supported by EPA. Its mission is to encourage businesses and institutions to reduce water consumption while increasing efficiency, profitability, and competitiveness.
Green Seal	www.greenseal.org	An independent, nonprofit organization dedicated to protecting the environment by promoting the manufacture and sale of environmentally responsible consumer products
Energy Star Buildings Program	www.energystar.com (888) STAR-YES	A voluntary EPA program designed to help commercial buildings retrofit for energy efficiency
Vendors		
Biodegradable Plastics		
Biocorp	www.biocorpusa.com	Biodegradable silverware, cups, and bags
EarthShell Corporation	www.earthshell.com	Biodegradable trays, food containers, and cups
Composting		
Green Mountain Technologies	(802) 368-7291 www.gmt-organic.com/minisys.html	Earth tub
Vermitech Systems	(416) 693-1027 www.vermitechsystems.com/installations.html	Vermicomposting supplies

Organization	Contact Information	Description
Lighting		
Lights of America	(800) 321-8100	Compact fluorescent light bulbs
General Electric Lighting	(216) 266-2884	
Recycling Containers		
A1 Plastics	(800) 777-0979	Recycling bins
AC Buckhorn, Canada	(800) 461-7579 www.buckhorninc.com	
Busch Systems International, Inc.	(800) 565-9931 www.buschsystems.com	
Otto Industries	(800) 227-5885 www.otto-usa.com	
Recycling Product, Inc.	(800) 875-1735 www.recyclingproducts.com	
Rehrig Pacific Company	(800) 426-9189 www.rehrigpacific.com	
Miscellaneous		
Directory of Markets for Recyclable Materials	www.p2pays.org/DMRM/dmrm.asp	Nationwide directory of markets for recyclable materials
Eco-Products	P.O. Box 7555 Breckenridge, CO 80424	Environmentally preferable products (office, industrial, food and kitchen, packaging, and lighting)
Sanitation Equipment	(800) 366-7317	Low-flow toilets
Vision	P.O. Box 20399 Albuquerque, NM (505) 294-0293 www.visionpaper.com	Tree-free and recycled-content paper