

The Role of Household Consumption



CHAPTER OBJECTIVES

- A.** Identify Influences of Households on Energy Consumption
- B.** Understand the Consumer Decision-making Process
- C.** Identify Sustainable Marketing Action Designed to Influence Prepurchase Decisions
- D.** Identify Sustainable Marketing Action Designed to Influence Purchases
- E.** Identify Sustainable Marketing Action Designed to Influence Consumption
- F.** Identify Sustainable Marketing Action Designed to Influence Postpurchase Decisions

A. Identify Influences of Households on Energy Consumption

A January 2008 fashion show in New York City featured styles from several well-known designers including Calvin Klein, Narciso Rodriguez, and Versace. When the lights went down, models strutted across the runway wearing fabrics quite different from the designers' standard fare. Traditional fabrics such as silk and cashmere were replaced with sustainable materials that included hemp, peace silk (a process that enables silkworms to live out their life cycle), and sasawashi (a Japanese fabric made from herbs and paper).¹



FIG. 11-1 *ecoStyle* Fashion Show in Kuala Lumpur, Malaysia 2007

Source: © Rob Loud/Getty Images

This *FutureFashion* show and other similar events in Kuala Lumpur, Malaysia, and Seattle, Washington, were sponsored by Earth Pledge, a nongovernment organization (NGO) established in 1991 to foster development that meets the needs of the present without compromising the ability of future generations to meet their own needs.² The *FutureFashion* program is one of the NGO's six sustainability initiatives. Fashion was selected because it uses more water than any other industry except agriculture. Furthermore, more than 8,000 chemicals are used to turn raw materials into textiles, and 25% of the world's pesticides are used to grow nonorganic cotton. Chemical use yields irreversible damage to people and the environment, yet two thirds of a garment's carbon footprint occurs after it is purchased.³

Since 2005, Earth Pledge has worked with environmentally conscious mills and textile manufacturers to identify, promote, and collect renewable, reusable, and nonpolluting materials and production methods. The runway shows illustrate the possibilities for sustainable fabrics in the industry and connect the world's fashion designers with leading materials producers.⁴ Barneys, a specialty retailer in New York, participated in 2008 by commissioning environmentally friendly lines from Theory, 3.1 Phillip Lim, and Stella McCartney. It also dedicated its Christmas windows and catalog to green fashion. Not surprisingly, more recognizable brands such as Banana Republic, Guess, and Target followed this trend and rolled out green lines designed to promote sustainability to larger audiences.⁵

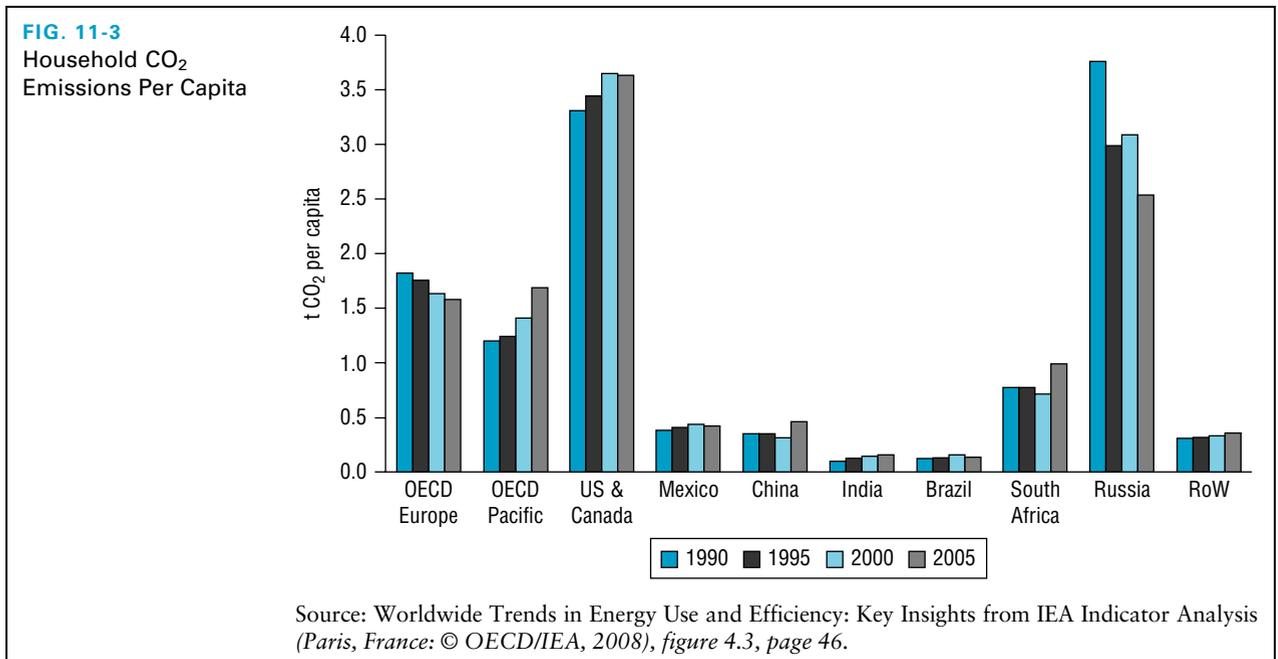
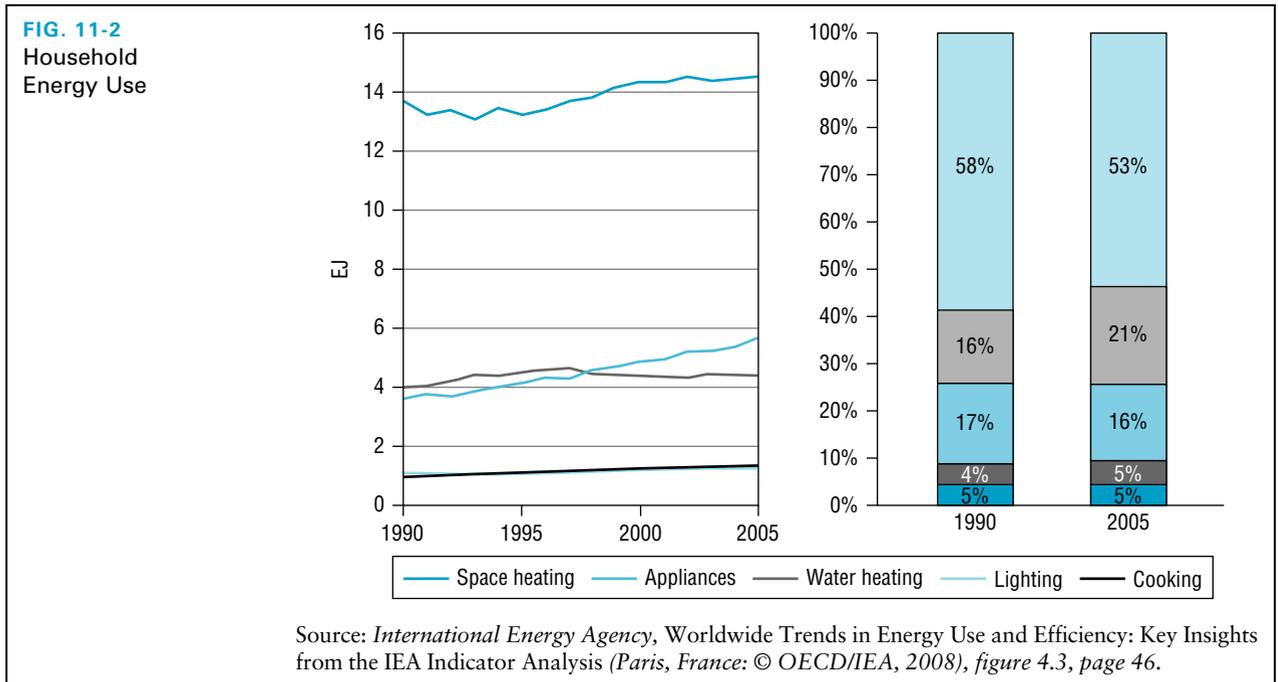
The fashion industry illustrates how consumer purchases influence climate change and sustainability. In this chapter, we look closely at the relationship between household consumption and sustainability. We begin by describing household consumption patterns and their influences on energy consumption. We then present a framework for consumer decision making and describe processes designed to influence prepurchase decisions and purchasing. We close the chapter by examining consumption and postconsumption decisions.

If we are to influence energy consumption in the home, then it is necessary to examine the amount and manner of this consumption. Home energy consumption represents 29% of total energy consumption. Figure 11-2 provides an overview of how households consume this energy and how their consumption of energy has changed over time. Households consume energy through space heating, appliances, water heating, lighting, and cooking. In addition, households are involved in indirect energy use associated with food purchases.

Figure 11-3 contrasts per capita energy consumption across the globe. Per capita consumption in the United States and Canada is twice the rate of all other OECD (Organization for Economic Co-operation and Development) countries. Moreover, the rate of consumption in these two countries is more than seven times the rate of consumption for most other markets. Individuals in these two markets and in other parts of the world are making efforts to enhance fuel efficiency, and consumers in North America have the greatest opportunity to have an influence on energy conservation in the household. Consider first energy consumption associated with space heating.

Space Heating

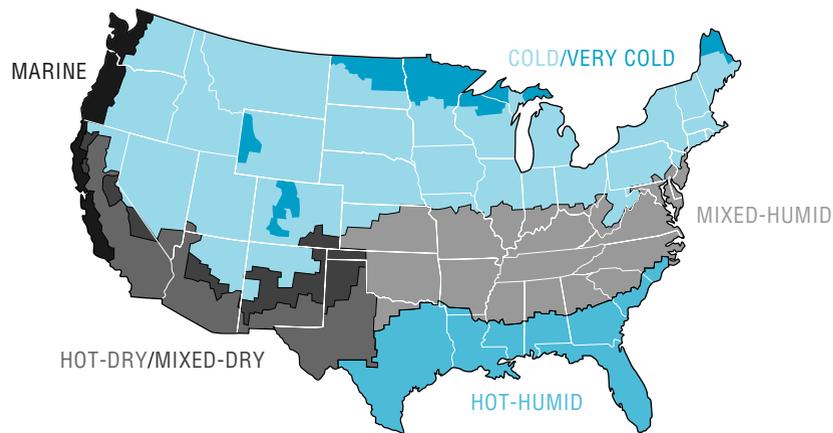
At 53%, space heating represents the largest portion of energy consumption in the household. Since the oil crisis of the 1970s, many OECD countries have established mandatory energy efficiency codes that focus on improving energy consumption



related to heating equipment, building design, and insulation.⁶ Importantly, analysis of space heating must examine the productivity of the entire system rather than a single facet of space heating. The **whole-building concept** encompasses consideration of the location, infrastructure, utilities, and ancillary devices within the home.⁷ Ancillary devices include appliances and lighting addressed in a subsequent section.

Consumers that seek to limit their space heating costs should consider all facets of the whole-building concept. The first consideration is the location. Location

FIG. 11-4 Five Climatic Regions of the United States



Source: U.S. Department of Energy

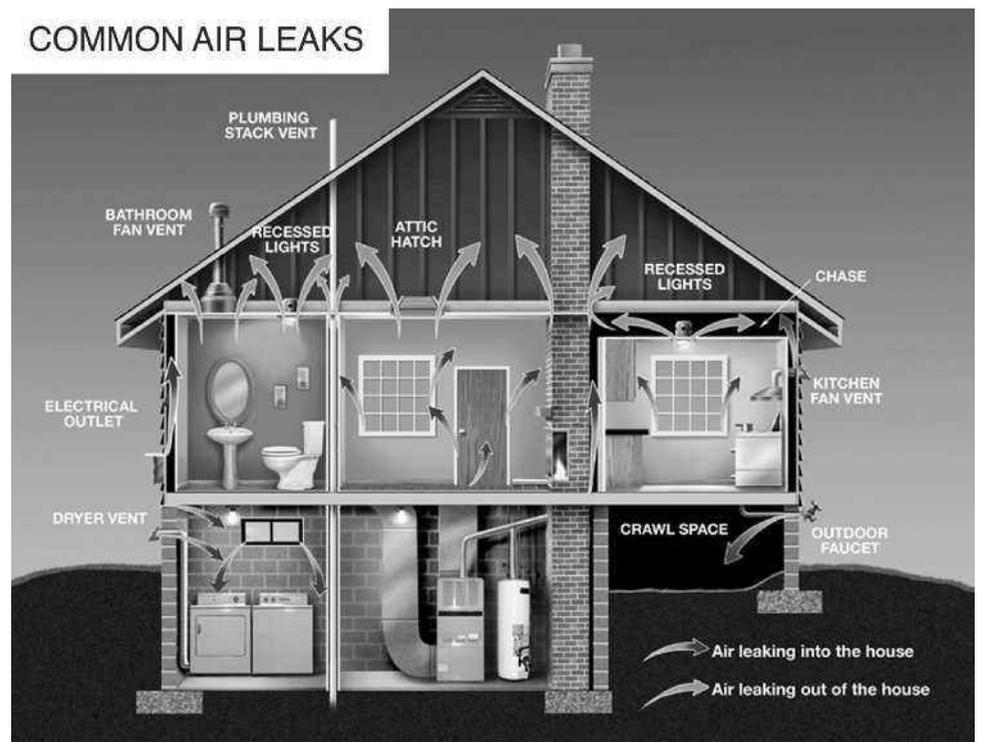
consideration includes the climate and the specific housing location. The U.S. Department of Energy, for example, classifies the climates in the contiguous 48 states into five climatic regions as outlined in Figure 11-4. Climate dictates the need for heating and cooling as well as the efficiency of alternative forms of these home utilities and components of the infrastructure of the house. For example, windows that offer optimal insulation in cold climates are less than effective in southern regions because they tend to localize overheating and sun glare.

Another important location consideration is the actual site of the home. Management of energy and light from the sun should be considered in location decisions. Proper orientation of a house can result in substantial savings of heating and cooling costs, and the orientation is dependent on specific site conditions and house designs. For most designs, homes that favor exposure to the north or south generally encounter less sunlight and are therefore preferred to homes with pronounced exposure to the east and west.⁸ Planting of shade trees limits a home's exposure to sun, whereas site grading and landscaping assist in maintaining the integrity of the building.⁹

The second aspect of the home-related heating cost is the infrastructure. The infrastructure includes the walls, roof, foundation, windows and doors, natural lighting, and duct system in the home. The energy efficiency of most components of the infrastructure varies based on environmental factors, design needs, and climate zone. Windows and doors that use multiple panes of glass and incorporate argon or krypton gases offer substantial energy savings that result in needing smaller heating and ventilation systems.¹⁰ Nevertheless, the value to the consumer of these doors and windows varies by climatic zone. *U-factor* is the measure that indicates how well a product prevents heat from escaping a home or building, and the solar heat gain coefficient (SHGC) measures how well a product blocks heat from the sun. While northern climates prefer products that prevent heat loss, southern climates prefer products that provide shade.¹¹

Examination of the infrastructure must also consider areas where air is transferred between the inside and outside of the home. Figure 11-5 illustrates potential sources of heat and energy transfer in a single-family dwelling. The U.S. Environmental Protection Agency (EPA) estimates that a homeowner can save 10% of a home's total energy costs (equivalent to 20% of heating and cooling costs) by air

FIG. 11-5 Potential Sources of Air Transfer



Source: © AP Images/PRNewsFoto/US GreenFiber LLC

sealing the home and providing proper insulation materials in the attic, over the crawlspace, and in the basement.¹²

The utilities in the home are the heating and air-conditioning systems. Since the oil crisis of the mid 1970s, governments have been establishing standards for these home utilities. As technology has advanced, the productivity of these systems has increased along with increases in efficiency standards. For example, gas steam boilers sold in the United States that were required to have a minimum of 75 % efficiency in 1987 must now be at least 84% efficient.¹³

Although space heating capabilities and insulation have improved, these gains have been offset by a higher number of dwellings occupied by fewer people. Although fewer people may live in a dwelling, the heating costs may not be reduced.¹⁴ In some markets, the space heating needs are further increased by increases in home size. For example, in the United States, houses built in the 1990s heat 33% more floor space than homes built before 1950.¹⁵

The Energy Star branding discussed in Chapter 4 has also been expanded to include the housing sector. Through the EPA Web site¹⁶, consumers can gain access to builders of on-site and modular homes that offer Energy Star homes. In addition, consumers can also gain access to lenders that offer special rates for energy-efficient housing.

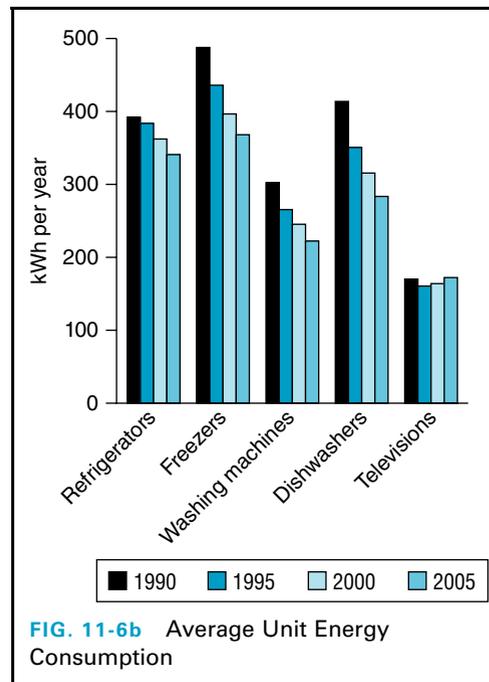
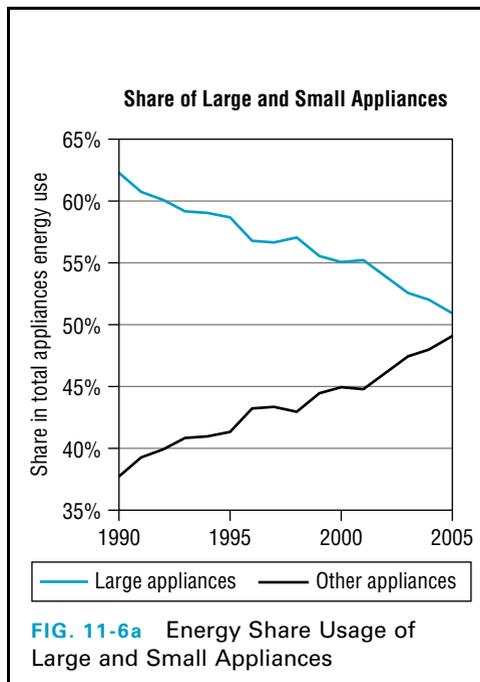
Appliances Energy consumption analysis for appliances distinguishes between large and other appliances. Large appliances include refrigerators, freezers, washing machines, dishwashers, and televisions. Figure 11-7 illustrates how the usage of energy among these products has changed over time. Although large appliances once

represented more than 60% of fuel consumption (Figure 11-6a), all large appliances except televisions have reduced their average energy consumption with time (Figure 11-6b). Television technology is more energy efficient than it was 20 years ago, but the average screen is substantially larger than the previous era.

The proliferation of small appliances represents an increasingly important part of household energy consumption. These devices include mobile phones, personal computers, personal audio equipment, and other home electronics. Many of these products continue to draw energy even though their batteries are recharged and the products are not currently in use. Consequently, product developers have strived to achieve minimal levels of energy absorption during inactive modes. Another aspect of productivity for these devices is the level of efficiency during operational mode. There are nearly 2.5 billion devices in use that rely on power supplies in the United States alone.¹⁷ These supplies may be located inside or outside of devices such as cordless phones, answering machines, video games, computer speakers, and cordless tools. Research indicates that enhanced efficiency of power supplies could yield savings equivalent to 1% of the total United States electricity use. This energy savings of 32 billion kilowatts per year is equivalent to the power output of seven large nuclear or coal-fired power plants.¹⁸

Water Heating

The third largest percentage of home energy consumption is water heating. Multiple means for heating water are employed in various countries, but in many cases data outlining the extent to which sustainable sources of energy are used are unavailable.¹⁹ In the United States, most traditional storage units are either gas or electric. Of the 9.8 million water heater shipments in 2006, 4.8 million were conventional



Source: International Energy Agency, *Worldwide Trends in Energy Use and Efficiency: Key Insights from the IEA Indicator Analysis* (Paris, France: © OECD/IEA, 2008).

electric resistance and 4.7 million were conventional gas storage.²⁰ Advanced water heating technologies constitute a small portion of the market. Of the advanced technologies, gas tankless water heaters represent 2.6% of the market (254,600 units in 2006). Tankless water heaters do not contain a storage tank and operate when there is a demand for hot water. The elimination of standby losses from the tank reduces energy consumption by 10 to 15%. Solar water heater shipments were estimated at 2,430 units in the same year.

The use of solar energy for heating water varies markedly by country. The current volume of solar energy usage for water heating amounts to an annual avoidance of 34.1 million tons of carbon dioxide emissions and the equivalent to 12.1 billion liters of oil.²¹ At the end of 2005, worldwide operation of solar thermal energy was 111.0 gigawatts (GW). Of those, 86.3 GW were associated with flat-plate and evacuated-tube collectors primarily used for home water heating, and the remaining 23.9 GW were associated with unglazed plastic collectors used for heating swimming pools. China, the largest market for the flat-plate technology, represents 48% of the world market. Turkey, Japan, Germany, Israel, and Greece are also leading countries in terms of the total demand for flat-plate and evacuated-tube technology. The United States is the primary market for the unglazed plastic collectors technology.

Lighting and Cooking

Lighting and cooking together represent about 10% of energy consumption in the home. In many regions of the world, marketers of lighting and cooking appliances have developed mandatory efficiency standards. Standards such as Energy Star have been effective in eliminating the most inefficient models from the market. In addition, countries have implemented labeling that identifies the energy consumption of products and endorsement labels (e.g., Energy Star) that promote the most energy-efficient products.²² The Efficient Lighting Initiative (ELI) is an international branding system for high-quality, energy-efficient lighting products. In 2005, the China Standard Certification Center (CSC) was commissioned to develop the ELI certification and branding system globally. The expanded ELI program is operated by the ELI Quality Certification Institute. This institute is led by CSC with assistance from a team of international experts from Asia, North America, and Latin America. The ELI Quality Certification Institute is currently promoting voluntary technical specifications for energy-efficient fluorescent lighting. It is focusing on the developing countries of Asia/Asia Pacific, Latin America, and Africa and seeks to harmonize its test methods and performance specifications with other voluntary labeling programs internationally.²³

Food

The energy use associated with food consumption includes the direct energy consumption associated with shopping trips as well as the storing and cooking of food. The indirect costs are those associated with agricultural production, food processing, and distribution. The indirect costs are substantially greater than the direct costs.²⁴ In addition to fossil fuel usage, food production is also a source of methane and nitrous oxide. Methane is associated with animal production, and nitrous oxide is derived from fertilizer. Although these gases are powerful greenhouse gases, they do not represent the primary sources of energy use in food consumption.

The primary food energy use occurs during the processing and distribution of food. In the United States, approximately 10% of the total primary energy supply is associated with food production. Only 20% of this energy is attributed to farm production. Thirty-four percent of farm production energy use is for farm vehicles, 28% is in fertilizer use, and the remainder is used for irrigation, crop drying, pesticides, and other farm operations. By contrast, the remaining 80% of energy is used for food processing, storage, packaging, and retail distribution. Processed foods make up three fourths of total world food sales, and the costs to process food are substantial. For instance, processing breakfast cereals requires more than five times as much energy as is contained in the cereal itself. These processed foods are often individually wrapped, bagged, and boxed. This packaging requires large amounts of energy and raw materials to produce, yet most of it ends up in landfills.²⁵

The recognition that food processing is a central issue in food energy costs has prompted speculation about reduction measures. The use of organic food has been touted as a way to eliminate fertilizer and pesticide costs while enhancing food quality. Because organic farms have lower yields per acre, however, more fuel is required for clearing land, cultivating, and harvesting.²⁶ A second consideration is the degree to which the consumer diet relies on meat products versus grains, vegetables, and fruits. Meat tends to require more energy for production than vegetables, and reductions in this area should influence carbon emissions. Nevertheless, a recent Swedish study suggested that transitioning to a nutritionally and environmentally sustainable diet would result in a negligible change in energy use and greenhouse gas emission.²⁷ These findings suggest that there is a need to develop a keener understanding of consumption and its ramifications for energy use and other essential areas, including nutrition.

B. Understand the Consumer Decision-making Process

The **consumer decision-making process** is the series of steps that buyers take before, during, and after consumption. Marketers have the opportunity to influence consumption at each stage of the buying process. Figure 11-7 provides an overview of the various stages of the process from prepurchase evaluation to postpurchase product disposal. The process that a consumer goes through when deciding to trade in a currently owned car for a new automobile provides the opportunity to examine all phases of this decision-making process.

The first stage of the decision-making process is the **prepurchase stage**. The first phase of this stage is **need recognition**, or the point at which a consumer senses a difference between an ideal state of affairs and the current state.²⁸ For example, the driver of a 1996 Camry may realize that the cost of recurring repairs for this car puts her in a less-than-desirable situation.

Once consumers realize a gap between current and ideal conditions, they begin to **search** for alternatives. Thus, *search* refers to efforts to acquire information and solutions that satisfy unmet needs. Consumers engage in search behavior to bridge the gap between current conditions and an ideal state of affairs. For example, the owner of the Camry may search for new cars that have warranties that suggest consumers will not have to invest time or money in auto repairs.

The third phase in the prepurchase stage is the **prepurchase evaluation** of alternatives. In this phase, consumers evaluate options identified during the search

FIG. 11-7 Consumer Decision-making Process

Stage of the Process	Phase of the Decision-making Process	Example
Prepurchase	<i>Need recognition:</i> point at which a consumer senses a difference between an ideal state of affairs and the current state	The driver of a 1996 Camry realizes that the cost of recurring car repairs puts her in a less-than-desirable situation.
	<i>Search:</i> efforts to acquire information and solutions that satisfy unmet needs. Consumers engage in search behavior to bridge the gap between current conditions and an ideal state of affairs.	The Camry owner searches for new cars that have warranties that suggest consumers will not have to invest time or money in auto repairs.
	<i>Prepurchase evaluation:</i> Consumers evaluate options identified during the search process.	The Camry owner evaluates current Toyota and General Motors cars based on price, fuel efficiency, and other attributes
Purchase Stage	<i>Purchase decision:</i> Consumer decides whether and the conditions under which to buy the product.	The Camry owner buys a new Prius at the local Toyota dealership.
Consumption	<i>Product usage:</i> the manner in which the consumer uses the product	The owner of a new Prius may decide to use the automobile in a variety of ways that have repercussions for the environment if the tires on the car are not properly inflated.
Postconsumption	<i>Postconsumption evaluation:</i> evaluation of a product after consumption has occurred	The former Camry owner is no longer satisfied with the car. The Camry's value is exceeded by that of the Prius.
	<i>Divestment:</i> disposal of products after they no longer offer utility to the consumer	The Camry is traded in to the dealer in purchase of the Prius.

process. Thus, the owner of the Camry may evaluate current Toyota and General Motors cars based on price, fuel efficiency, and other attributes.

Once consumers have engaged in the prepurchase evaluations, they enter the second stage. The **purchase stage** refers to the point at which the consumer decides whether and the conditions under which to buy the product. The owner of the Camry may elect to go to the local Toyota dealer to purchase a new Prius automobile.

The third stage of the consumer decision-making process refers to the **consumption** of a product offering. This stage refers to the manner in which the product is used by the consumer. The owner of a new Prius, for example, may decide to use the automobile in a variety of ways that have repercussions for the environment. For example, if the tires on the car are not properly inflated, the fuel efficiency of the car will suffer dramatically.

The fourth and final stage of the consumer decision-making process is the **postconsumption stage**. After consumption begins, the consumer makes periodic evaluations of product performance in light of expectations before the purchase. **Postconsumption evaluation** refers to the evaluation of a product after consumption has occurred. At some point, the consumer recognizes that the value of a currently

owned product is not substantially lower than alternatives. The former Camry owner has evaluated that the car's value is exceeded by the Prius. **Divestment** refers to the disposal of products after they no longer offer utility to the consumer.

If green marketers are to have an influence on the entire consumption process, it is essential that they understand the nature of decision making throughout the consumer decision-making process. Therefore, we dedicate the remainder of this chapter to understanding and influencing consumer decision making. Consider first the prepurchase stage.

C. Identify Sustainable Marketing Action Designed to Influence Prepurchase Decisions

Consumers may pass through three phases before they are ready to make a purchase, and green marketing initiatives can play an important role throughout the prepurchase stage. The first phase, need recognition, occurs when the consumer recognizes a discrepancy between current and desired conditions. Several inherent conditions can influence consumer perceptions of the current state of affairs. For example, someone buying groceries for a home knows that the passage of time influences food quality. Although the consumer may realize a discrepancy between current conditions and desired states, the marketer can have a strong influence on both facets of need recognition. Marketers often stimulate demand by altering consumer perceptions of currently owned products. For example, the GE Silicone III ad depicted in Figure 11-8a informs consumers that up to 40% of the energy used to heat and cool a home may be lost due to leakage associated with tiny cracks and holes in the home's exterior. The current state, the porous exterior, is less desirable than the desired state, the silicone-sealed home exterior.

The second way in which to influence need recognition is to increase the perceived value of alternative products. For example, the ad depicted in Figure 11-8b informs consumers that Osram fluorescent bulbs last several years at normal usage.

When a firm elects to stimulate need recognition, it has two essential means by which to do so. First, the organization may employ a **generic need recognition strategy** to stimulate demand by drawing attention to the entire product class.²⁹ The two ads depicted in Figure 11-8 exemplify promotions designed to stimulate demand for compact fluorescent bulbs rather than for the offerings of a single manufacturer such as Osram/Sylvania. Since many environmentally based product offerings are in their infancy, it is not uncommon for advertisers to promote the product class rather than a specific product. Advertisers promoting green marketing and sustainability projects may be sellers of the product, but they may also represent some other interest group. These groups may include industry-wide advocacy groups, nongovernment organizations, governmental agencies, utilities, industry foundations, or other parties. For example, utility companies and NGO's (nongovernment organizations) may share the cost of campaigns that promote the use of compact fluorescent light bulbs. Each of these groups has motivations to limit the amount of energy consumed, and fluorescent lighting helps them achieve this objective.

Brand-specific need recognition refers to efforts to stimulate demand for a specific branded product rather than for the industry or technology. For example, the Burt's Bees ad in Figure 11-9 emphasizes purchases of the brand rather than the



FIG. 11-8a Stimulate Need Recognition by Altering Consumer Perceptions of Currently Owned Products

Source: © AP Images/PRNewsFoto/GE Sealants and Adhesive

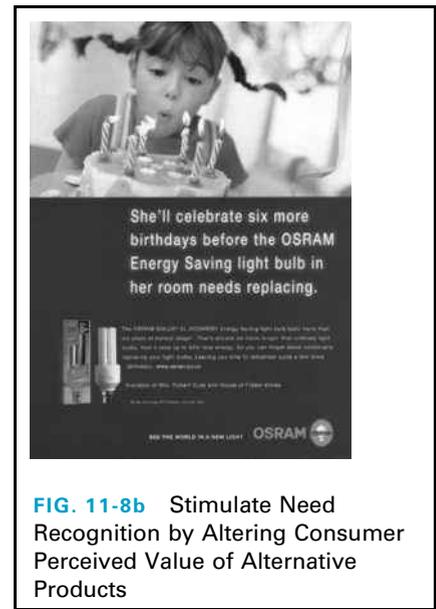


FIG. 11-8b Stimulate Need Recognition by Altering Consumer Perceived Value of Alternative Products

Source: © Image courtesy of The Advertising Archives

product class. In some industries, the need to draw awareness of a product category is essential prior to marketing the merits of a single purveyor. For example, Figure 11-9 draws attention to the merits of beeswax while at the same time calling attention to the Burt's Bees brand.

Once consumers identify unmet needs, they begin to engage in search activities to satisfy the need. The search activities can be internal or external to the consumer. **Internal search** refers to retrieving knowledge from memory, whereas **external search** refers to collecting information from outside sources.³⁰ In many cases, consumers rely solely upon previous experiences in their search efforts. Consumer psychology indicates that reliance on prior experiences is dependent on the degree of confidence in the decision making, satisfaction with prior decisions, and the ability to retrieve knowledge.³¹

The strategic implication of the internal search lies in recognizing the extent to which a consumer relies on personal experiences to frame judgments. Consumers that express high levels of confidence in brands that offer high levels of satisfaction will be reluctant to consider new information in their purchasing decisions. If the marketer has the luxury of this consumer as a client, then the marketing effort should emphasize how new product offerings retain attributes that yield high satisfaction yet provide new environmental benefits that exceed prior product offerings. When this consumer is not currently a firm's client, the task of promotion is much more challenging because it may be necessary to persuade the consumer to seek additional information.

External search efforts draw information from the environment so that evaluations can be made about product offerings. Family, friends, the media, and opinion leaders are sources of information not controlled by marketers of a product. This information may come via word of mouth or, increasingly, by *word of mouse* computer-based interaction. Word-of-mouth communication has been shown to be the most important source of influence in the purchase of household goods.³²

FIG. 11-9 Brand-specific Need Recognition



HOW DO YOU GET ALL THE MOISTURE WITHOUT THE MUCK?

BEESWAX	VS.	PETROLATUM
Naturally replenishing moisturizer made by bees.		Non renewable hydrocarbon made from crude oil.
Hydrating barrier that keeps lips moisturized.		Greasy film that could contain contaminants.
With pomegranate oil, keeps lips smooth & supple.		Sometimes used to stop corrosion on car batteries.

HAVE YOU READ YOUR LIP BALM LABEL LATELY?

beeswax · pomegranate oil · sunflower seed oil · coconut oil

BURT'S BEES REPLENISHING LIP BALM

Your well-being is important to us. It's our commitment to The Greater Good.

visit burt-bees.com

Source: © AP Images/PRNewsFoto/Burt's Bees

In addition, research indicates that advice from other consumers about a service exerts more influence than all marketer-generated information combined.³³ Word-of-mouth communication using Facebook, Twitter and other services enables consumers to nurture relationships, refine evaluations of brands, develop an understanding of marketer efforts to influence decisions, and reflect upon the consumption experience.³⁴

External search efforts provide an opportunity for nonmarketing entities to influence consumer decision-making processes. Nongovernment organizations can be

informative to consumers engaged in search activities. Greenpeace, for example, annually publishes a *Guide to Greener Electronics* that evaluates electronics companies based on chemical usage, e-waste, and energy consumption. Similarly, *Consumer Reports* has published evaluations of the degree to which companies have achieved product claims such as being environmentally friendly, biodegradable, and gentle on the earth.³⁵

Marketers must make several considerations based on these external sources of information. First, they must examine the degree to which the consumer is involved in the purchase because involved consumers are inclined to spend more time evaluating alternatives and collecting information.³⁶ Consumers are more likely to collect more information about an auto purchase, for example, than the purchase of paper towel. Second, the marketer should consider the degree to which the consumer is likely to rely on the information provided by the third party. Given the amount of information available today, there are likely to be many credible sources of information that are not incorporated into search activities. Underwriters Laboratories and the United Nations, for example, publish substantial amounts of product information, but it is questionable whether consumers use this information during their external search efforts. While it would be reckless for the marketer to ignore these sources of information, the sources are not frequently incorporated into decision making.

The third consideration for green marketing strategy concerns the nature of the evaluations by the external source. When positive evaluations are provided by third parties, they can become effective parts of a marketing campaign. For example, the Honda Motor Company uses data from the U.S. Environmental Protection Agency to support its claim of being the most fuel-efficient car company in North America. When evaluations of company products are not favorable, the firm should investigate the evaluation process. To the extent that the evaluation is flawed, marketers should be explicit in expressing concerns for the basis for evaluation. Furthermore, evaluations that indicate limitations in current product offerings provide impetus for new product designs. For example, the Chevrolet announcement of the Volt electric car was motivated in part by the less-than-favorable evaluations of older models of General Motors cars.³⁷

After consumers engage in search activities, they make their initial prepurchase evaluations.³⁸ Consumers often use evaluative criteria that are standards and specifications used in the comparison of different brands and products. Consumer psychology distinguishes between *salient product attributes* that are important to the decision and *determinant product attributes* that influence which brand or product will be chosen.

Although the merits of green marketing initiatives may be known to the consumer, these product benefits are rarely the primary motivation for purchase decisions. The green marketer must necessarily assess the value of a product offering in its entirety rather than solely on the environmental value. In their book examining sustainability strategies, Daniel Esty and Andrew S. Winston emphasize that green benefits of a product are typically at least the third benefit offered by a product.³⁹ Thus, hybrid automobiles provide a family of benefits beyond fuel efficiency that must be considered by marketing strategy. Japanese researchers, for instance, report that drivers understand the deleterious influences of greenhouse gases, but recognition of the problem does not lead to purchases of fuel-efficient cars.⁴⁰ In the Japanese market, researchers discovered that price constraints made purchases of some hybrid or fuel-efficient cars infeasible. The marketer that wants to influence

green consumption must have a product offering with comparable value to the consumer that also provides environmental benefits. When consumers realize the total value offered by products developed through sustainability efforts, the likelihood of purchase should also increase.

D. Identify Sustainable Marketing Action Designed to Influence Purchases

The second stage of the decision-making process is the point at which the consumer decides to make a purchase. This decision has many components that can be influenced by green marketing strategy. The essence of this stage is the actual purchase of the product. A central issue in the decision process is the level of involvement consumers have with the purchase. When consumers are heavily involved in the purchase, they perceive differences among brands, express interest in gathering information about the product category, and make comparisons about product attributes among brands.⁴¹ Appeals to heavily involved consumers can be designed to illustrate the long-term returns from purchases of environmentally friendly products. Marketers should identify the sources of information for these purchases and monitor evaluations of their products at the information sources. For example, the automobile owner that is heavily interested in buying a fuel-efficient and environmentally friendly auto may rely on reviews in *Car and Driver* and *Consumer Reports*. It is clearly important for strategists and public relations managers at auto companies to keep pace with news articles in these periodicals.

Most consumer decisions do not rely on heavy involvement of the consumer. Indeed, most mundane purchases are performed without much cognitive effort. Under low-involvement conditions, there is a greater likelihood that conditions surrounding the purchase influence the selection decision. Therefore, in-store promotions and point-of-sale displays can have an influence on these consumers when they make purchases.⁴²

There are a couple of notable means marketers employ in packaging and paper usage that influence the emissions associated with purchasing. In general, purchasing that limits the amount of paper yields lower emission costs. Note that this cost is substantial given that \$1 of every \$11 spent in the grocery store goes to packaging.⁴³ Simpler packaging limits waste and is therefore preferred. Paper can be virtually eliminated, for example, when the consumer downloads software rather than purchasing it in a store.

The nature of the good also influences the carbon emission associated with selling products. Marketers in multiple industries offer products that either economize on product usage or employ recyclable materials. Both economical design and recycling limit energy consumption. For example, if every United States consumer replaced one roll of 1,000 sheet virgin fiber bathroom tissues with recycled paper, 373,000 trees, 1.48 million cubic feet of landfill space, and 155 million gallons of water would be saved.⁴⁴ Substitution of recycled materials is not limited to paper; marketers of athletic apparel and bedding also offer many products with recycled components. An alternative to recycling is to offer products that can be reused. For instance, refillable razors enable the consumer to reuse the product and only discard the cutting mechanism. These efforts to recycle or reuse product should influence some consumers as they make purchase decisions.

A second consideration endemic to the purchase is the timing of the purchase. The timing of purchases influences not only the costs of delivery but also the environmental costs associated with the product. Consider, for example, that the U.S. Post Office handles more than 10 million packages per day.⁴⁵ Transportation consumes 75% of their \$2.35 billion annual budget. When the consumer elects to send a letter via traditional mail courier, the price of a 1-ounce letter is \$0.42. If the letter needs to be sent overnight, however, the cost is \$16.50. Unfortunately, postal services do not currently provide consumers with information concerning the carbon-related costs of sending the letter. Since expedited services are related to the use of faster transportation services that generate more carbon dioxide, it is likely that the expedited services come with heftier carbon costs. It seems reasonable to suspect that consumers informed about greenhouse gases will find situations in which the environmental cost of overnight delivery exceeds the returns from the service.

The decision about where to buy a product is related to the timing decision. In today's Internet economy, the consumer has a variety of ways to shop. Some firms, for example, espouse online shopping because the person buying in the home is not burning fossil fuel to get to the store. Of course, the environmental cost of two alternative locations is driven by the transportation costs for the product and the consumer. The consumer buying books online may have lower personal transport costs, but the carbon-based costs of delivering multiple books (from multiple locations) will likely be greater than the costs incurred by a local bookstore. Clearly, consideration of where to purchase needs to examine the entire carbon-related costs of purchasing. Note that services such as Apple's iTunes yield minimal product delivery costs and consumer transportation costs.

Timing of the purchase decision for hot water heaters contributes to the continuing small percentage of solar heating. In the United States, for example, two thirds of consumers replace their water heaters due to sudden failure of their existing model. Of those replacements, 60% are emergency replacements.⁴⁶ When a water heater fails suddenly, consumers typically have their water heater replaced with the cheapest, most readily available and easily installed model from their plumber or contractor. The timing of the purchase and the need for quick replacement do not encourage consumers to make the extra effort to consider advanced technologies or lifetime cost savings.⁴⁷

E. Identify Sustainable Marketing Action Designed to Influence Consumption

The consumption process continues as the consumer makes the transition from purchase to usage. The consumer that buys the product must decide the time, place, and manner by which to consume.⁴⁸ Socially responsible marketing can direct each of these facets of consumption in a manner that promotes sustainability. First, consider the timing of consumption.

Timing

The timing of consumption is related to the timing of purchasing, but these temporal concerns often occur at different times. Consumers ordinarily have some flexibility regarding the time at which they buy products. In the food sector, for

example, consumers buying produce and groceries often monitor the expiration dates when making purchases. In one study, consumer psychologists found evidence that up to 12% of products bought for the pantry are never consumed.⁴⁹ Among food products that are stored in a consumer's pantry before consumption, this same research indicates that 57% of these stockpiled purchases are thrown away. Consequently, the environmental cost to manufacture and distribute the product is realized, but there is no consumer benefit from the purchase. Purchase without consumption therefore raises the carbon footprint of the consumer without added value. One marketing implication is to market specific-use products close to the usage date for the product. For example, sale of canned pumpkin should be promoted very close to the Canadian and United States Thanksgiving holidays. In addition, marketing communications about product usage should be timely and frequent.⁵⁰ For example, the Campbell's Soup Web page and advertisements provide reminders and helpful usage ideas that decrease the likelihood that the product will be stockpiled.

Despite the merits of promotional activities that emphasize proper use of products, advertising emphasizes the immediate purchase of products rather than usage. Since consumer education regarding proper use of a product reduces the consumer's carbon footprint and enhances customer satisfaction, marketers should consider dedicating some portion of advertising to product usage. In addition, many of these food products that will never be consumed can be recycled as donations to community action groups. Public service announcements that promote this form of recycling aid the underprivileged and lower the carbon footprint of the community.

Location (Place)

The place chosen to consume products can have a marked influence on the sustainability of the product. In the restaurant industry, for example, consumers have purchased more takeout food than on-premise meals since 1988.⁵¹ Restaurants like these off-premise meals because they increase revenue without raising costs associated with dining facilities. Nevertheless, the amount and form of materials used for carry-out items typically exceed the costs for on-premises meals.

This trend toward carry-out sales has typically been associated with the quick-service portion of the business, but increasingly, casual-dining restaurants are offering takeout food in the form of home meal replacement. In 2007, 47% of casual dining restaurateurs forecasted increases in the amount of carry-out business. Meals taken away from the casual dining restaurants often are designed to be reheated in a microwave. In many cases, the restaurateur has to weigh the additional cost of sustainably developed packaging versus the lower costs of alternative packaging (e.g., Styrofoam).

Manner of Consumption

The manner of consumption refers to how and how much of a product consumers use. Consistent with the reduce–reuse–recycle perspective, this action should ensure reductions in the amount of product used. Consumption of many energy-consuming products can be enhanced via green marketing efforts. Although there is a wealth of information available regarding energy consumption, consumers in many cases are either unaware that this information exists or they do not act based on this information. Consider first how consumption of energy to heat homes could be done more efficiently.

Efforts to enhance space heating must address both the amount of energy consumed and the related factor of how the energy is consumed. Although there have been strides in the fuel efficiency of heaters, the average American home wastes 30 to 50% of the energy it uses. The consumer's energy bill and carbon footprint are lowest when the home is properly sealed and insulated.⁵² Duct systems should be periodically inspected for leakage because porous duct systems waste substantial amounts of energy. Similarly, ducts located in unheated parts of the home (e.g., attic) should be insulated to reduce heat loss in the system. Air filters should be changed in accordance with manufacturer requirements because the clean filters remove debris that reduces the efficiency of heating systems. Where possible, consumers should also use ceiling fans rather than air conditioners. Ceiling fans are substantially less expensive to operate than room and central air units.⁵³ The homeowner should also recognize that older heating systems are less efficient than systems of today. If the central heating unit is 15 years old, then it is likely that a new system will lower the consumer's energy cost. Consumers should also consider adjusting thermostats to relatively low temperatures in the winter and high temperatures in the summer. Home energy managers that use digital controls provide the ability to control multiple appliances, maintain the utility of the appliances, and conserve energy.⁵⁴

The manner of consumption also influences the fuel efficiency of water heaters and therefore their carbon emissions. First, consumers should recognize that every minute saved in the shower can conserve more than four gallons of water. Shorter showers use less water and require less energy to heat warm water. Similarly, low-flow plumbing devices reduce consumption of energy and water. Showers account for about 20% of total indoor water use. By replacing standard 4.5-gallon-per-minute showerheads with 2.5-gallon-per-minute heads, a family of four can save approximately 20,000 gallons of water per year. These low-flow devices cost less than \$5 each.⁵⁵ Energy use can also be curtailed by insulating the water heater and hot water pipes. Water heater insulation jackets can save 4 to 9% of water heating bills, and insulation of pipes also reduces energy costs. In addition, maintaining the water heater at lower temperatures saves energy; a 10°F reduction in water temperature generally saves 3 to 5% on water heating costs.⁵⁶

The cost and carbon emissions associated with appliances and lighting can also be enhanced by effective consumption. Many appliances use batteries that account for a disproportionate amount of the toxic heavy metals contained in municipal solid waste, yet they make up less than 1% of that waste⁵⁷. Single-use alkaline batteries contain fewer toxic chemicals than rechargeable batteries, but there are many more of them in the waste stream. Nickel-cadmium and lead-acid batteries have been targeted for elimination under an anticipated European Union directive, and they are banned from solid-waste disposal facilities in several states. A single rechargeable nickel-metal hydride or nickel-cadmium battery can replace up to 1,000 single-use alkaline batteries over its lifetime.⁵⁸ Although the toxins in rechargeable batteries warrant their recycling, all rechargeable batteries except alkalines can be recycled. Fuel consumption for appliances and lighting can also be reduced by turning off these electronic devices when they are not in use. Ten percent of the energy consumed in the home is burned by communications devices and appliances that are turned off. If U.S. citizens turned off their computers and cell phone chargers when they were not being used, the country would save more than \$100 million.⁵⁹

The manner in which food is consumed influences the environmental costs of consumption. Consumers can generate fewer emissions by efforts to reuse and reduce food-related products. Thus, consumers that reuse drinking receptacles limit

the amount of solid waste. The water bottles that are sold in stores can be used over and over again to limit solid waste. The water that comes from the tap is more highly regulated than bottled water and is less expensive. Similarly, consumers that repeatedly use ceramic coffee mugs rather than Styrofoam cups limit environmental costs for product preparation and disposal. In addition, consumers can reduce consumption by using fewer napkins in restaurants and at home.

Another area of consumption that benefits from conservation is the use of paper. Conservation efforts that use less paper mean that less energy is consumed for production and less waste is generated after consumption. A simple way to reduce costs is to use both sides of paper when writing or making copies. In addition, one can save paper costs by printing multiple pages on each side of a page. Moreover, consumers should now question whether it is necessary to use paper when they communicate. Many messages can now be delivered via e-mail without loss of content to message equality. Consumers should also consider whether they need paper copies of financial data such as pay stubs, ATM receipts, and bank statements. Every time the consumer opts exclusively for the digital version of these items, carbon emissions are lowered.

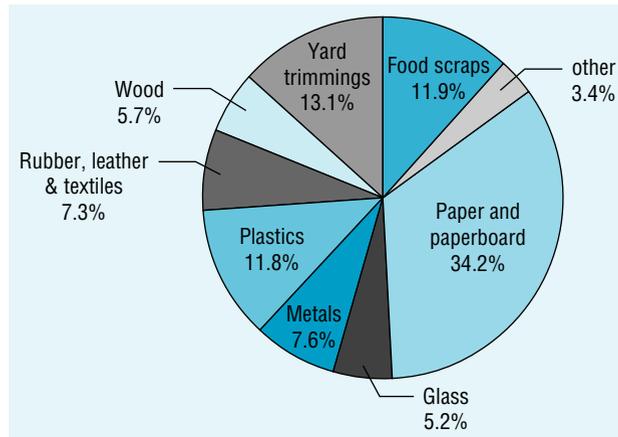
F. Identify Sustainable Marketing Action Designed to Influence Postpurchase Decisions

The final stage of the consumer decision process occurs after some consumption of the product has begun. Postconsumption evaluation refers to evaluation of a product after consumption has occurred. The buyer evaluates whether the level of satisfaction with the product meets or exceeds prepurchase performance expectations. When the performance of the product meets or exceeds expectations, the level of satisfaction reported by the consumer is greater than when the product does not perform as expected.⁶⁰ Higher levels of satisfaction increase the likelihood of repeat purchases, mollify price sensitivities, and influence word-of-mouth communication about a product.⁶¹ In addition, as the level of satisfaction decreases, the consumer is more likely to sense a difference between ideal conditions and current conditions. Low levels of satisfaction increase the likelihood of need recognition occurring that prompts the consumer to engage in the decision-making process. When this process leads to the purchase of new products, the consumer no longer has a need for the older products.

The recognition that a product no longer offers sufficient utility should prompt consideration about what to do with the product. Divestment refers to the disposal of products after consumers deem that the products no longer offer utility. The decision about how to deal with products that no longer offer utility is an important issue. Figure 11-10 and Table 11-1 indicate the amount of solid waste produced in the United States in 2005. Note that the percentage of reclamation varies markedly across products and ranges from 2.4% for food to 72% for nonferrous metals. Lead-acid batteries are recovered at a rate of 98.8%, whereas high levels of newspapers (88.9%), corrugated boxes (71.5%), major appliances (67.0%), steel packaging (63.3%), and aluminum cans (44.8 %) are also recovered.

Before disposal occurs, the consumer must evaluate whether the product offers value to the owner or some other consumer. Thus, the consumer should decide whether the product can be *reused* in some way. For example, packaging and shopping bags are often reused for storage purposes. Consumers have always engaged in

FIG. 11-10 2005
Total MSW
Generation—
246 Million Tons
(Before Recycling)



Source: U.S. Environmental Protection Agency “Municipal Solid Waste”, <http://www.epa.gov/osw/nonhaz/municipal/pubs/mswchar05.pdf> (accessed March 16, 2010).

some forms of this activity, but increasingly they recognize value in the reuse of products in novel ways. For example, yard and food waste account for about 25% of consumer waste in the United States. The disposal of these items in landfills is not the most environmentally effective means of divestment. Yard waste breaks down slowly in landfills and produces methane gas and acidic leachate as it decays.⁶² Composting of this waste has the potential to reduce municipal solid waste by almost one fourth, and it also contributes to improved soil structure, texture, aeration, and water retention. Another means for facilitating reuse is to donate products. Computers, cell phones, and other equipment may no longer have value to a user, but these products can offer utility to other consumers.

When the product is no longer useful or capable of being reused by the consumer, then one must consider whether the product offers utility to other consumers. A number of classes of products offer examples of ways to make products available to other consumers. In the auto industry, for instance, consumers often sell used cars or trade cars in when making a new purchase. One of the motivations to establish franchised channels in the auto industry was to facilitate resale of cars when they no longer offered utility to the consumer.⁶³ In conjunction with government, bottlers of soft drinks and malt beverages also work in some markets to enable reuse. In Norway, for example, more than 95% of all soft drink and beer containers are returned, reused, or recycled.⁶⁴

The most prominent means for making products available to other consumers for use is the Internet. For example, eBay facilitated more than \$60 billion in transactions in 2007, and the vast majority of these transactions involved making existing products available to other consumers.⁶⁵ eBay and other Internet merchants provide online markets for the resale of virtually every type of product.

When reuse or resale is infeasible, the consumer must find some other means to discard the product. *Recycling* of products can take many forms depending on the product class and consumer needs. Unwanted Appliances, for example, specializes in the removal of household appliances, exercise equipment, electronics, air conditioners, and water heaters. Most of the products that they buy are sold for scrap, but some products are resold to other consumers. Some industries that operate in

TABLE 11-1 GENERATION AND RECOVERY OF MATERIALS IN MUNICIPAL SOLID WASTE, 2005 (IN MILLIONS OF TONS AND PERCENT OF GENERATION OF EACH MATERIAL)

MATERIAL	WEIGHT GENERATED	WEIGHT RECOVERED	RECOVERY AS A PERCENTAGE OF GENERATION
Paper and paperboard	84.0	42.0	50.0
Glass	12.8	2.76	21.6
Metals			
Steel	13.8	4.93	35.8
Aluminum	3.21	0.69	21.5
Other nonferrous metals*	1.74	1.26	72.4
<i>Total metals</i>	18.7	6.88	36.8
Plastics	28.9	1.65	5.7
Rubber and leather	6.70	0.96	14.3
Textiles	11.1	1.70	15.3
Wood	13.9	1.31	9.4
Other materials	4.57	1.17	25.6
<i>Total Materials in Products</i>	180.7	58.4	32.3
Other wastes			
Food, other**	29.2	0.69	2.4
Yard trimmings	32.1	19.9	61.9
Miscellaneous inorganic wastes	3.69	Neg.	Neg.
<i>Total Other Wastes</i>	65.0	20.6	31.6
TOTAL MUNICIPAL SOLID WASTE	245.7	79.0	32.1

Source: U.S. Environmental Protection Agency "Municipal Solid Waste," <http://www.epa.gov/osw/nonhaz/municipal/pubs/mswchar05.pdf> (accessed March 16, 2010)

conjunction have a remarkable job of recycling used products. The EU and U.S. auto industries, for instance, recycle more than 95% of auto batteries sold.⁶⁶

In the consumer electronics industry, consumers have combined interests in recycling and in wanting to ensure that sensitive data are not compromised or accessed after recycling. Dell provides free recycling of old computers and peripherals when a new computer is purchased from the company. The company evaluates whether a product can be resold, and proceeds from this resale are returned to the customer. If the product cannot be resold, Dell recycles it in a manner consistent with local, state, and federal requirements.⁶⁷ Importantly, such services enable the consumer to recoup some part of the investment in the computer, securely dispose of the computer, and contribute positively to the environment.

Increasingly, there are community and corporate efforts that encourage the recycling of products that pose threats to persons exposed to products after consumption. Americans, for example, generate 1.6 million tons of household hazardous waste per year, and the average home can accumulate as much as 100 pounds of this waste stored in closets, basements, and garages.⁶⁸ Community action plans enable consumers to dispose of paints, cleaners, oils, batteries, and pesticides that require special care during disposal.

Although our treatment of recycling has focused on postconsumption, it is also meaningful to recognize that recycling today begins in the new-product development process. Savvy marketers are designing products in such a way that much of the product can be recouped after consumption. In the auto industry, approximately 15 million cars and trucks reach the end of their useful lives each year, and more than 75% of the materials from end-of-life vehicles are profitably recovered and recycled.⁶⁹ Planning for postconsumption enhances the value of products to consumers and limits the influence of the products on the environment.

Summary

A. Identify Influences of Households on Energy Consumption

Households consume energy through space heating, appliances, water heating, lighting, and cooking. The rate of consumption varies considerably throughout the world, with the United States and Canada markedly outstripping levels in other countries.

B. Understand the Consumer Decision-making Process

The *consumer decision-making process* is the series of steps that buyers take before, during, and after consumption. The first stage of the decision-making process is the prepurchase stage. The first phase of this stage is need recognition, or the point at which a consumer senses a difference between an ideal state of affairs and the current state. Once consumers realize a gap between current and ideal conditions, they begin to search for alternatives (the second phase). The third phase in the prepurchase stage is the prepurchase evaluation of alternatives. The purchase stage refers to the point at which the consumer decides whether and the conditions under which to buy the product. The third stage of the consumer decision process refers to the consumption of a product offering. The final stage of the consumer decision-making process is the postconsumption stage.

C. Identify Sustainable Marketing Action Designed to Influence Prepurchase Decisions

Need recognition occurs when the consumer recognizes a discrepancy between current and desired conditions. Marketers often stimulate demand by altering consumer perceptions of currently owned products. They also may influence need recognition to increase the perceived value of alternative products. When a firm elects to stimulate need recognition, it may employ a generic need recognition strategy or employ a

brand-specific need recognition designed to stimulate demand for a specific branded product.

D. Identify Sustainable Marketing Action Designed to Influence Purchases

The second stage of the decision-making process is the point at which the consumer decides to make a purchase. This decision has many components that can be influenced by green marketing strategy. A central issue in the decision process is the level of involvement consumers have with the purchase. When consumers are heavily involved in the purchase, they perceive differences among brands, express interest in gathering information about the product category, and make comparisons about product attributes among brands. Under low-involvement conditions, there is a greater likelihood that conditions surrounding the purchase will influence the selection decision. Therefore, in-store promotions and point-of-sale displays can have an influence on these consumers when they make purchases.

E. Identify Sustainable Marketing Action Designed to Influence Consumption

The consumption process continues as the consumer makes the transition from purchase to usage. The consumer that buys the product must decide the time, place, and manner by which to consume.

F. Identify Sustainable Marketing Action Designed to Influence Postpurchase Decisions

The final stage of the consumer decision-making process occurs after some consumption of the product has begun. The buyer evaluates whether the level of satisfaction with the product meets or exceeds performance expectations before the purchase. When the performance of the product meets or exceeds expectations, the level of satisfaction reported by the consumer is

greater than when the product does not perform as expected. Higher levels of satisfaction increase the likelihood of repeat purchases, mollify price sensitivities, and influence word-of-mouth communication about a product. As the level of satisfaction decreases, the consumer is more likely to sense a difference between ideal

conditions and current conditions. Low levels of satisfaction increase the likelihood of need recognition occurring that prompts the consumer to engage in the decision-making process. When this process leads to the purchase of new products, the consumer no longer has a need for the older products.

Keywords

brand-specific need recognition, 224	external search, 225	postconsumption stage, 223
consumer decision-making process, 222	generic need recognition strategy, 224	prepurchase evaluation, 222
consumption, 223	internal search, 225	prepurchase stage, 222
divestment, 224	need recognition, 222	purchase stage, 223
	postconsumption evaluation, 223	search, 222
		whole-building concept, 217

Questions

1. Why would designers such as Calvin Klein be interested in participating in a green fashion show?
2. How do companies benefit from examining the decision-making processes for sustainable products?
3. What are the trends for energy use for small and large appliances, and what ramifications do these trends have for marketing these products?
4. How can companies influence the need recognition process for consumers?
5. Why do companies adopt a generic need recognition strategy when they are trying to sell their specific brands?
6. How does the level of involvement influence consumer decision making, and how does this level influence the form of promotion used by a company marketing a sustainable product?
7. Why should a green marketer be concerned about consumption when revenue is generated when the product is sold?
8. Describe three factors that influence how a product is consumed.
9. To what extent do consumers engage in divestment, and how does this vary by product type?
10. What factors increase the likelihood that consumers will divest themselves of a product in a sustainable manner?

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