

TopTen USA: Leading Consumers to the Best

*Norman L. Dean and Seth Bauer, TopTen USA
Susan Coakley, Northeast Energy Efficiency Partnerships*

ABSTRACT

TopTen USA, a new consumer resource, is part of a growing international effort to speed the market introduction of super efficient consumer products. In publishing a web-based listing of the 10 most efficient products in specific product categories, TopTen USA complements the well-known Energy Star label while challenging that program to more rapidly identify the leading edge of high efficiency products.

Energy Star has made a major contribution to increasing product efficiency but its design has limited its ability to label new technologies such as heat pump clothes dryers. As good as Energy Star is, it also does not enable consumers to distinguish between the efficient and most efficient products available in the market. This is particularly important, as there are cases where there can be a factor of two or greater difference in the energy use of two Energy Star rated products.

TopTen USA seeks to address these limitations and complement Energy Star by (1) identifying only the top ten super efficient products, (2) working with efficiency program administrators to push for the introduction of new technologies, (3) reevaluating products specifications on a much more frequent basis; in some cases as short as 3 to 4 months, and (4) publishing results on the web in a consumer friendly format.

Introduction

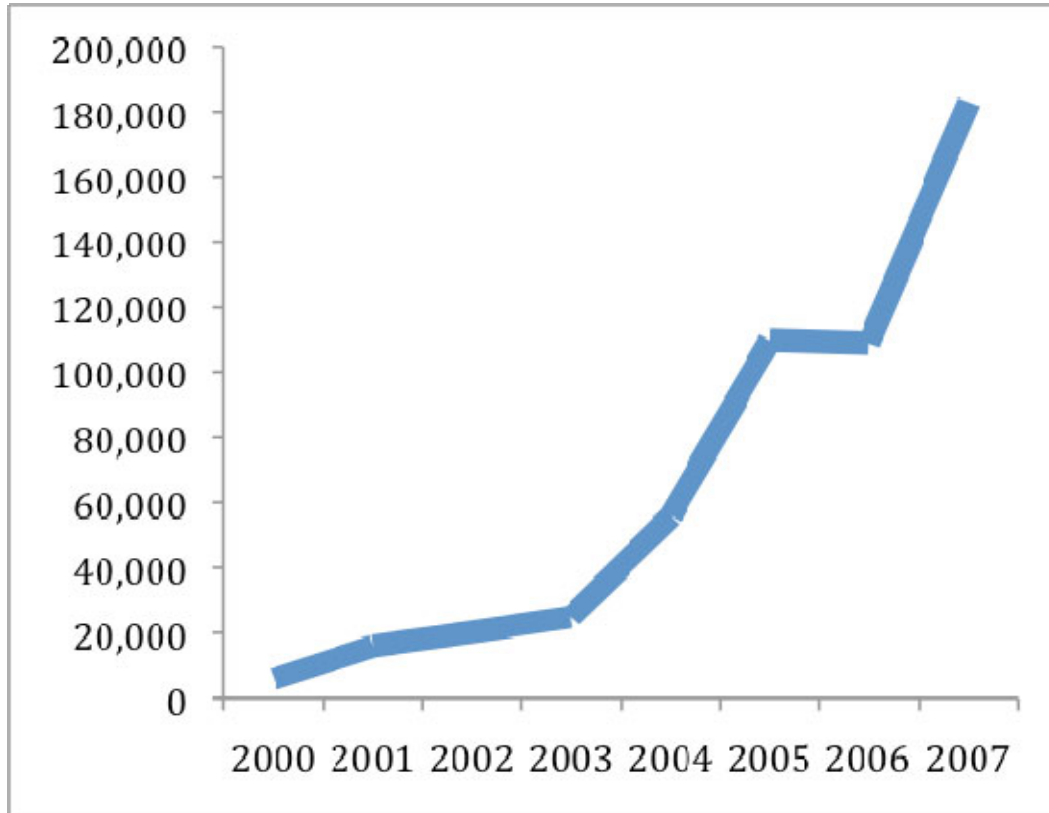
Convincing consumers to purchase the most energy-efficient appliances, fixtures, and electronics could have a large, measureable affect on U.S. energy consumption and its associated climate impact. Doing so, however, will take two significant steps: 1. Consumers will have to make energy consumption one of the primary factors in any given product decision, and 2. Manufacturers will have to step to the fore with ever-more efficient options marketed with energy use as a major selling point. TopTen USA is being introduced to address those steps. By identifying and widely publicizing the ten most efficient products in a wide variety of energy consuming categories, TopTen USA will spur development of more efficient products as manufacturers vie to get on the list, and spur sales by making it easy for consumers to find the products and understand the resulting energy and money savings.

Changing Consumer Priorities: Many U.S. Consumers Are Ready for the Opportunity

While a small number of U.S. consumers have made energy efficiency a priority since the 1970s, there is evidence that in the past decade the idea has “crossed the chasm” to the mainstream. Without government mandates to do so, Toyota introduced the hybrid Prius to the U.S. market in the year 2000. The Prius was in effect a radical new technology, in many cases nearly twice as efficient as otherwise comparable cars. Consumers who bought the Prius reduced

their requirements for factors such as price, styling, luxury, handling, and acceleration in favor of efficiency and lower operating costs (along with making a public statement). Yet sales growth, depicted in figure 1, has been dramatic.

Figure 1, Toyota Prius Sales, North America, 2000-2007



Source: <http://www2.toyota.co.jp/en/news/08/0515.html>

Over the same period, market share for high-efficiency, front-loading clothes washers has gone from less than 10 percent of the market to more than 40 percent¹. Until 2007, when high-efficiency washers were designated as the U.S. DOE's baseline standards and prices began to align, consumers buying high-efficiency clothes washers paid a considerable premium for their appliances. (With a typical lifespan of ten or more years, however, that investment is easily returned.) (figure 2) The success of high-efficiency washing machine sales in the U.S. market despite a premium price indicates that efficiency is becoming a priority in the consumer's decisionmaking process. Despite consumers' increased interest in efficiency, it will take nothing short of a major market transformation to motivate large numbers of consumers to action. That is where TopTen USA enters the picture.

¹ U.S. Department of Energy, Energy Star® Qualified Clothes Washers Partner Resource Guide (note this conflicts with 2008finalsalesdata2009_09_16.xls from http://apps1.eere.energy.gov/states/appliance_rebate.cfm#data)

Figure 2: Cost to Run Clothes Washers from 1970's until 2009



Source: http://www.energystar.gov/index.cfm?c=manuf_res.pt_appliances

What Is TopTen USA?

TopTen USA is part of a growing international effort to speed the market introduction of super efficient products. The organization is a non-profit Corporation that operates a transparent system to continuously identify the 10 “best” products available in selected product categories with energy efficiency as the key criterion. TopTen makes the results freely accessible via an Internet interface in a highly consumer-friendly form.²

The organization is run by a public board of directors including members employed by utilities, national environmental organizations, and regional and national energy efficiency groups. It is affiliated with TopTen organizations in 16 other countries, including new programs under development in Hong Kong and China. A detailed description of the startup and expansion of the TopTen program in Europe can be found at Dr. Eric Bush, Sophie Attali, Conrad U. Brunner, and Dr. Anne Arquit Niederberger, “Topten –Best of Europe. How do best products perform and why aren’t they sold across Europe?,” *presented at ACEEE Summer Study (2007)*. There is also now a TopTen web site that identifies the “best of Europe.” See www.topten.info.

There are a number of ongoing efforts to transform the marketplace, including ENERGY STAR, the Consortium for Energy Efficiency (CEE), and the relatively new Super-efficient

² TopTen USA’s web site is www.toptenusa.org. It can also be reached via www.toptenusa.net and www.toptenusa.com.

Equipment and Appliance Deployment Program (SEAD).³ All of these efforts are necessary and important given the pressing need to increase energy efficiency. Together, they exert force at both ends of the issue: industry standards push manufacturers toward efficiency from the bottom, while identifying the best of the best pulls from the top. The more that demand is demonstrated at the top, the easier it will be to raise the standards bar.

TopTen USA complements and distinguishes itself from these other programs in the following ways:

- It identifies only the top ten products in a given category or subcategory.
- It accommodates rapidly changing technology by publishing revised product specifications on a schedule of one year or less.
- It is “design and technology neutral” and for product categories where consumers are moving toward buying excessively large products (such as televisions), TopTen places a ceiling on the total energy use for a product to be eligible for listing.
- It is consumer-, rather than industry-, oriented, presenting its results in a consumer friendly web site which not only lists the top ten products but also provides educational material on buying using and disposing of products; product prices; product availability; and expert and consumer reviews of product performance and quality.

For Consumers, Simply Identifying the Most Efficient Choices is a Challenge

The U.S. Environmental Protection Agency’s Energy Star program has been tremendously successful at creating and promoting base level standards for appliance efficiency. For consumers, there is no confusion about the meaning of the blue label: those products that have earned the label are more efficient than those that haven’t.

Among the efficient choices, however, the decision-making process gets murky. In some product categories, a large percentage of all the products on the market carry the Energy Star label. Does that mean they’re all roughly equivalent? No. In some cases, the most efficient choices may be twice as efficient as those that have barely cleared the Energy Star standards. For consumers to make the most informed and energy-smart choice they have to know that gulf exists, and then they need to understand how much energy they might save and how quickly the corresponding money savings will accrue. Presenting that information in a simple, widespread, impactful way is an unmet consumer need.

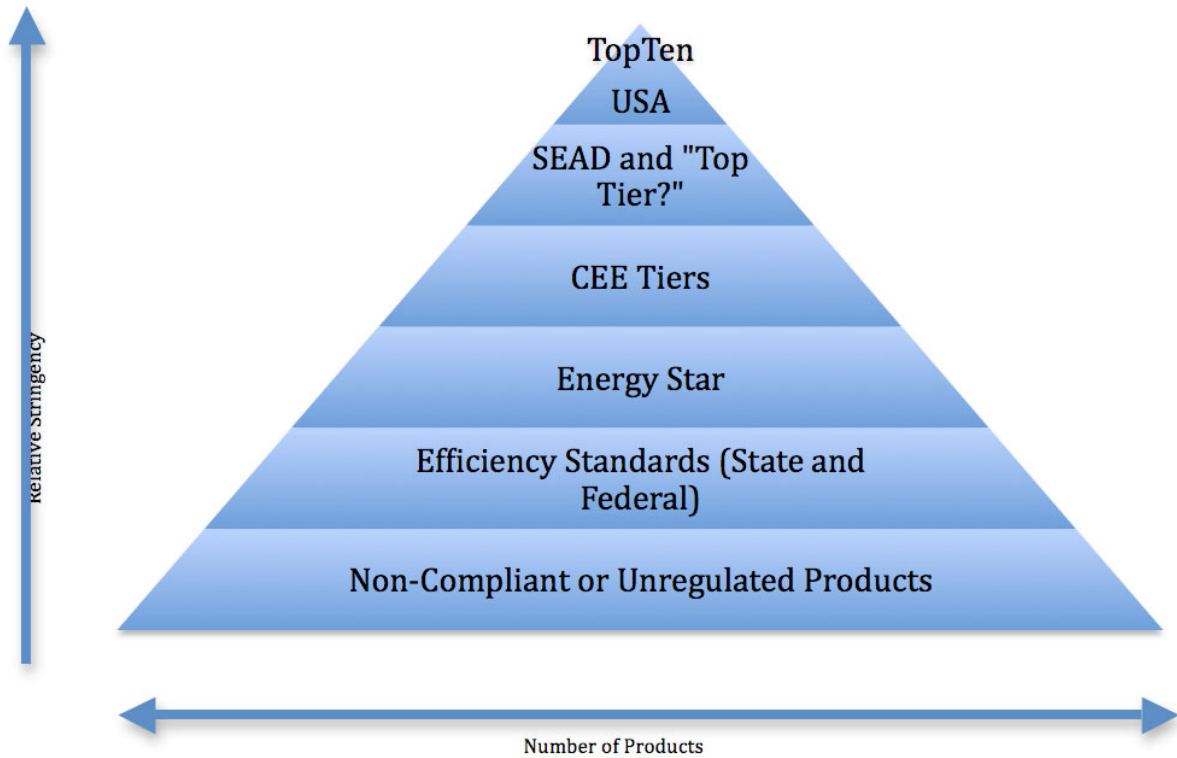
So is bringing to the fore products that have not yet been rated by Energy Star. In some cases the most efficient technologies are ahead of the rating program, or do not fit neatly into an existing category. TopTen USA will be able to react to market developments quickly, revising its lists in real time. And the organization will list products, such as automobiles, not covered by Energy Star at all.

³ The Environmental Protection Agency (EPA) has announced a “Top Tier” program. However, as of May 2010, no details have been provided concerned when and how this program may begin to operate. An announcement of what the program will entail is now expected in November 2010.

TopTen USA Identifies the “Best of the Best”

TopTen USA’s key distinguishing factor is that, in contrast to other programs that identify energy efficient products, TopTen lists only the ten best in a given product category or subcategory. In short it identifies the best of the best. Figure 3 depicts TopTen USA’s unique position in the market.

Figure 3: Position of Product Initiatives in the Markets



Source: TopTen USA

In most product areas, the TopTen list contains 1 to 5% of the number of products listed by other programs. Table 1 compares the number of products currently listed by TopTen USA, Energy Star and CEE in three major product categories where the percentage varies from 2 to 8%..

Table 1: Comparison of Number of Products Listed by TopTen USA, Energy Star and CEE, May 27, 2010

	TopTen USA	Energy Star	CEE (All Tiers)
Dishwashers	20 (Large and Small)	598	238
Refrigerators/Freezers	40 (large, medium and small frigs, freezers)	1819	1209 (not including freezers)
Clothes Washers	10	472	553

Sources: TopTen USA, http://www.energystar.gov/index.cfm?fuseaction=clotheswash.search_clotheswashers; <http://www.cee1.org/resid/seha/rwsh/rwsh-main.php3>; http://www.energystar.gov/index.cfm?fuseaction=refrig.search_refrigerators; <http://www.cee1.org/resid/seha/refrig/refrig-main.php3>; http://www.energystar.gov/index.cfm?fuseaction=dishwash.search_dishwashers; <http://www.cee1.org/resid/seha/dishw/dishw-main.php3>. It is unclear why the number of CEE listed Clothes washers is larger than the number listed by Energy Star.

The concept behind such relative exclusivity is that it will offer an additional incentive for manufacturers to improve products in order to make the TopTen list and for retailers to offer these “prestigious” products for sale.

It also avoids the problem faced in some Energy Star categories where there can be a factor of two or greater difference in the energy use of two Energy Star rated products. For example, a 3.53 cu ft. GE clothes washer (WPGT9150H***) that uses 350 kWh per year qualifies, as does a 3.31 cu ft. Bosch model (WFVC8440UC) that uses 130 kWh per year. EPA’s modified energy factor for the two models is 1.83 and 2.55 respectively. (Source: Energy Star list of qualifying clothes washers, February 19, 2010.) While the modified energy factors do not differ by a factor of two, the difference is nonetheless significant.

By identifying the best of the best, TopTen will provide benchmarks for new ENERGY STAR specifications as they are developed and provide purchasing guidelines for institutional buyers and rebate guidelines for energy efficiency program administrators. TopTen USA lists can also be used by energy efficiency program administrators in rebate and other incentive programs.

TopTen USA Will Frequently Revise its Product Lists

Another distinguishing aspect of the TopTen USA program is the speed with which it refreshes its product lists. Existing programs frequently take two years or more to revise a specification and provide lists of new qualifying products. Even consumer publications frequently recommend “older” products that are no longer available. In contrast, TopTen USA intends to update its product lists as new products are released. New specifications will be released on a schedule, depending on product category, which ranges from three months to one year. This will enable TopTen to keep up with new technology and to make certain that recommended products are available to the consumer.

Table 2 lists those products for which TopTen USA provides top ten specifications and the schedule for revising those specifications.

Table 2: Frequency of Revision of TopTen USA Products Specifications

Product Category	Subcategories	How Often Specifications Revised
Refrigerators	Large, Medium, Small	1 year
Freezers		1 year
Room Air Conditioners		1 year
Televisions	Large, Medium, Small	3-4 months
Desktop Computer	Expandable, Non-expandable	3-4 months
Laptop Computers		3-4 months
Computer Monitors		1 year
Vehicles	Cars, Light Trucks	1 year
Dishwashers	Large, Small	1 Year
Clothes Washers		1 Year
Water Heaters	Gas and Electric	1 Year

Source: TopTen USA. Unexpected changes in the market may result in TopTen USA issue new specification on an expedited schedule. Additional product categories will be added to the TopTen USA Web site on a regular basis.

TopTen USA Strives to be Design and Technology Neutral

Existing programs define product categories that are sometimes design or technology based. For example, there are 18 discrete design and feature related subcategories of refrigerators in the Energy Star program. Such categorization can create unexpected outcomes. For example, side-by-side refrigerators are a discreet Energy Star category, though they tend to be less efficient than top-and-bottom models. Thus a side-by-side refrigerator using a certain amount of energy might qualify for the Energy Star rating while a top-and-bottom model offering the same volume and features and using the same amount of energy might not.

TopTen USA has divided the refrigerator category into three subcategories (small, medium and large based on volume). Given that the program is design and technology neutral, no side-by-side models make the list as of May 2010. A side-by-side unit comes with an energy penalty in the range of 50-150 kWh per year (about 20% of total refrigerator energy consumption), while providing less usable storage space, even for the very best models.

The TopTen solution to the lack of side by sides is to offer consumers alternatives. In the case of side-by-side refrigerators, if kitchen space is limited and the shorter width doors found on side-by-side models are needed, TopTen USA recommends to consumers that they consider some of the bottom freezer models with French door configurations found in the TopTen list. If a consumer is determined to buy a side-by-side, we recommend they look for a unit that uses around 500 kWh per year and refer them to the Energy Star and CEE lists.

How TopTen USA Determines Which Products Appear on its Lists

The approaches used to determine which products qualify for TopTen listing varies by product category. For example, with regard to televisions, we divided the category into small,

medium and large TVs based on screen size. For each sub category, TopTen selected those 10 products that had the lowest total energy consumption per year.

The method for refrigerators was different. There, using Energy Star data, TopTen ran a linear regression of each of our three size ranges to identify the most efficient products and set the Top Ten threshold. By moving the y-intercept of the Top Ten threshold line down until only ten models stayed below the threshold in each size category TopTen selected our Top Ten products.

For all product categories, in instances where there were several models with nearly identical specifications (they might, for example, differ in color), TopTen lists all similar products as one entry, even if they appear under different brand names.

TopTen USA Is Undertaking a Major Effort to Educate Consumers

TopTen USA has a state-of-the-art web communications strategy. The plan includes a lively, easy to use website that offers each user no more information than he or she needs to choose the most efficient appliances and devices available. Those users who simply want a shopping list to take to a physical store get that instantly. Those who want to delve into the thinking behind the ratings and the specifications of the various models have an easy-to-follow path to as much information as they desire. Those not sure whether a new appliance offers much of an advantage over the one he or she owns already (the “repair or replace” question) have help doing the analysis. Shoppers are connected to services that help them find their desired products at the best price. And all users have the opportunity to learn how to most effectively use whatever appliances or devices they choose. Like the drivers who “hypermile” to get the best gas mileage from whatever vehicle they drive, TopTen USA consumers can learn approaches to using every product as efficiently as possible.

A website, however, is only the first step in the TopTen USA web strategy. TopTen USA is seeking to reach people wherever and whenever they’re open to the information. That means being an “open source” of content, not in the technical meaning of the term, but rather conceptually—TopTen USA shares its lists with content providers of all stripes. Unlike for-profit enterprises, which often seek exclusivity, TopTen USA encourages the distribution of its findings through news enterprises, blogs, non-governmental organizations, utilities, and corporate intranets—anywhere that provides a platform for encouraging consumers to opt for efficiency and cost savings. TopTen plans to move later this year onto the newer platforms, such as Smartphone apps.

Finally, TopTen USA is taking advantage of the peer to peer sharing of information on the web. Consumer decisions, especially those involving new technology are often highly influenced by social networks and opinion leaders. For example, one consumer may wonder whether a heat-pump clothes dryer is a smart choice. To get over that uncertainty barrier, the recommendation of a respected friend or family member may prove much more effective than an advertiser’s or salesperson’s pitch. The simplicity of the TopTen format and the social reward of being an efficiency leader (a la Prius owners) make TopTen USA a likely success in social media. Contests, games, and challenges seeded by TopTen USA staff and partners will help establish the TopTen USA brand and drive purchasing activity.

TopTen USA can Leverage the Marketing Muscle of Large Companies

Fortunately for TopTen USA's likelihood of success, it is not alone in its interest in promoting energy efficiency. Utility companies as a whole spend \$8 billion each year on efficiency programs, and some of their most successful consumer programs have been built around encouraging the purchase and use of Energy Star appliances and devices, often through rebates. TopTen USA can help make those programs more effective by steering consumers to the best of the best—for example the Bosch clothes washer that's 2.7 times more efficient than the GE. The potential payoff for utilities is as dramatic as the payoff from moving consumers from non-Energy Star products to the ones that meet the Energy Star standard.

TopTen USA provides a constant pipeline of new savings opportunities for energy efficiency (EE) programs. States such as California, Massachusetts, Vermont, New York, Connecticut, New Jersey, and Oregon have established aggressive energy savings goals to double or triple energy savings. Such a mandate requires a steady pipeline of new high efficiency technologies and products. TopTen will fill this need by making the latest super-efficient technologies and products visible for purchase by early adopters. To engage EE program administrators to support and use TopTen USA as a program enrichment tool, TopTen provides subscribers with information needed to satisfy regulatory requirements (e.g., product cost and estimated energy savings compared to a comparable but less efficiency product, website and market data to track the impact of TopTen USA as tool to lead to purchases of high efficiency product options). For TopTen USA subscribers, a zip code locator function can help potential purchasers connect to rebates and other special promotions offered by efficiency programs in their locale.

The incentive of the free market works in TopTen USA's favor as well. Manufacturers and retailers are always looking for a competitive edge. Making a TopTen USA list will give manufacturers a marketing advantage, but perhaps more importantly, encouraging consumers to use efficiency as a buying priority will emphasize the fundamental engineering of a product over complicated, distracting "features" which are difficult to explain and promote.

Finally, retailers will have another reason to invite consumers into their stores and a clear story for salespeople to tell about the advantage of TopTen USA-listed products.

Altogether, the interests of utilities, manufacturers, and retailers will greatly amplify TopTen USA's message.

Conclusion

Changing the place of energy efficiency in U.S. consumers' decision-making process is vital to the goal of limiting household energy consumption (see Chart 4). Though there are many voices and many factors on both sides of that goal, TopTen USA can potentially cut through the chatter with a straightforward, easily understood program that complements the most successful current efforts, such as Energy Star, CEE and SEAD, and takes advantage of powerful mutual marketing interest. The potential positive impact is measureable and dramatic. Ultimately, TopTen USA is intended to increase the stringency of state and national appliance efficiency standards.

The biggest energy savings impacts occur when the successful introduction and market adoption of super-efficient products leads to strong appliance standards that set a minimum bar for product energy performance. The successful introduction of high efficiency clothes washers

ten years ago lead to just that result in 2007 when a new national appliance standard for clothes washers went into effect. TopTen USA estimates that if currently listed TopTen USA products set the bar for future appliance standards, national energy consumption of appliances and devices could be reduced by more than half. In August 2010, TopTen USA will be evaluating its first preliminary data on the results of its targeted beta launch in June 2010. We look forward to sharing those results at the 2010 and future Summer Sessions.