ENERGY STAR® Specifications: A Decade of Development and a Future of Growth

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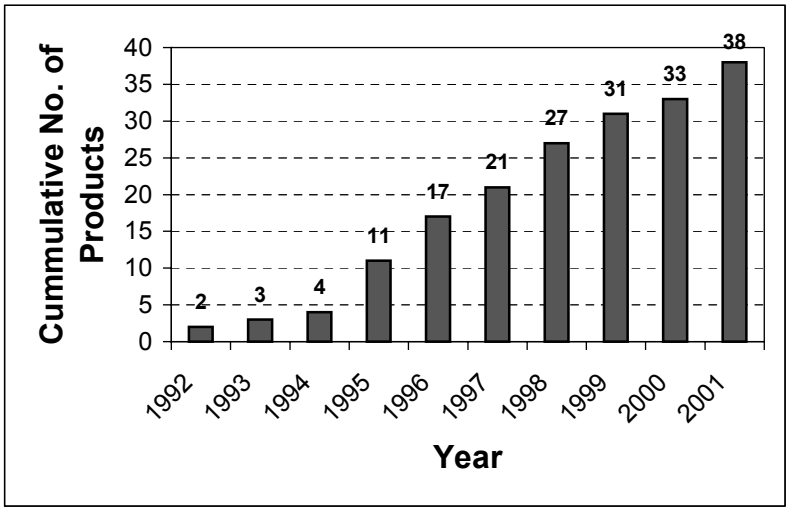
ABSTRACT

2002 marks a major milestone for ENERGY STAR labeled products, as it is a decade since the introduction of the label and the first energy-efficiency criteria for computers in 1992. The authors will discuss the challenges and opportunities ENERGY STAR now faces as it continues to transform markets. Insights on how the ENERGY STAR product development team will approach the next ten years in terms of energy-efficiency criteria will be presented.

The First 10 Years – Success and Results to Date

Ten years ago, ENERGY STAR entered the U.S. marketplace initially as an energy-efficiency label for computers and monitors. Within five years, the program had expanded to include a suite of specifications for office equipment. Today, at its ten year anniversary, the ENERGY STAR label can be found on more than 38 types of products, including televisions, residential HVAC equipment, ceiling fans, major appliances, lighting, and many others. These categories now represent over 60% of the typical energy use of an average American household (CPPD 2000 Annual Report).

Figure 1. ENERGY STAR Family: Ten Years of Growth



Energy-efficiency specifications are successful to the extent that they are incorporated into manufacturers' product design criteria. Some of the key accomplishments below indicate that industry has embraced ENERGY STAR.

- More than 11,000 individual product models that are ENERGY STAR qualified;
- More than 600 million ENERGY STAR labeled products purchased throughout the past decade;
- $5 billion being saved annually by consumers and businesses;
- Pollution savings equivalent to taking 10 million cars off the road (CPPD 2000 Annual Report); and
- For some product categories, such as VCRs, the only choice is an ENERGY STAR model.

The program has not focused exclusively on the product supply side, but also on increasing the demand for ENERGY STAR labeled products. The evolution of ENERGY STAR over the years has resulted in successfully capturing the attention of more than 40% of U.S. consumers (CEE 2001, 5). This growing awareness has in turn provided EPA leverage to recruit not only new product manufacturers, but also other allies, such as utilities, state energy offices and retailers, likely to support the ENERGY STAR message.

Beyond U.S. borders, ENERGY STAR also has experienced success. From the inception of the program, EPA has been active coordinating the program internationally with other governments. Japan was the first to sign an agreement with EPA, followed by New Zealand, Australia, Taiwan, the European Union (EU), and Canada. Of note, the EU agreement allows the EU to have significant input on any new or revised specifications for office equipment.

After ten years, ENERGY STAR has established itself as a symbol for energy efficiency. With success however, come new challenges. This paper addresses several key challenges, notably, how product specifications have been devised and the implications for the future to ensure the label's relevance.

The Role of Product Specifications in the ENERGY STAR Program

The energy savings generated by the ENERGY STAR program can be traced to the individual product criteria that EPA devised in consultation with other interested parties. These criteria describe in detail how a product must perform to qualify as ENERGY STAR. Generally, these criteria refer to a product's energy consumption characteristics as it relates to its performance and design (e.g., CFM/watts, L/kWh, SEER).

The program's national energy savings are calculated by comparing the difference in energy consumed by the ENERGY STAR compliant product population, versus the business as usual baseline. For EPA to grow these savings and to meet long-term program savings goals, it must continue to convince industry to design, manufacture and sell increasing numbers of ENERGY STAR labeled products to replace less energy-efficient models.

Compared to mandatory minimum performance standards, common to HVAC and major appliances, ENERGY STAR specifications or energy performance criteria, are voluntary in nature, meaning manufacturers are not required via command and control standards/regulations to build any products meeting ENERGY STAR specifications. Rather, product manufacturers are free to use the ENERGY STAR designation voluntarily, given two conditions are met. First, the product must logically fit into an EPA-designated product category; second, the product's measured performance must meet or exceed all of the requirements found in the appropriate ENERGY STAR product specification. Therefore, the

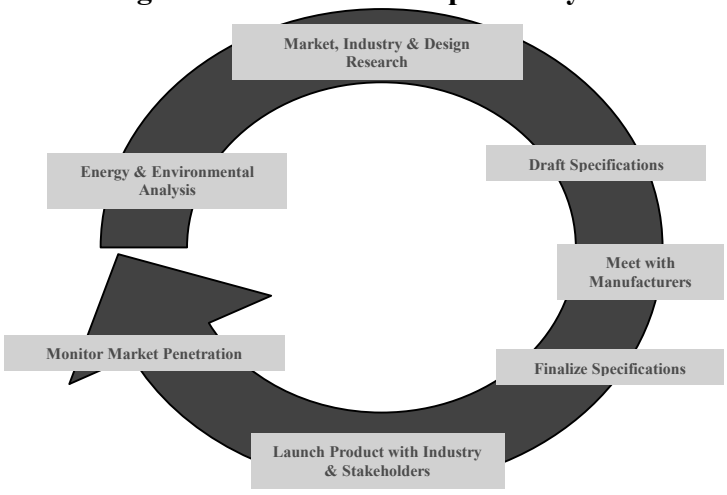
product specifications act as a blueprint to guide manufacturers' product design and manufacturing processes to ensure tangible energy savings verifiable through testing.

The strategy EPA has employed to devise product specifications over the last ten years reflects a consistent application of its ENERGY STAR philosophy. The tenants of the philosophy constitute a framework the ENERGY STAR product development team has used to develop specifications that are rational yet challenging. The framework has helped EPA to usher the specification development process along in a timely fashion, by limiting the scope of products that could be recognized with the label and, product features or technology that will be allowed to impact the specification setting process. Moreover, the framework ensures stakeholders understand EPA's expectations, limitations and need to deliver tangible energy savings through the product specifications. EPA uses the following "Product Selection Criteria" as the basis for its philosophy when developing a product specification:

- Significant energy savings potential (on per unit and national basis);
- Efficiency is cost-effective;
- Product performance is maintained or enhanced;
- Efficiency can be achieved with non-proprietary technology;
- Product differentiation and testing are feasible; and
- Labeling would be effective in the market.

Well before EPA settles on a new product specification, the product development team gathers key market information to determine if a specification is warranted and viable, within the context of its philosophy. The process of setting a specification, illustrated by Figure 2, begins with energy, market, and engineering analysis and includes significant input from regional partners such as CEE, ACEEE, and WECC to name a few; incorporates manufacturer feedback; results in a final specification and product launch; and then begins again with the revision of specifications that no longer represent the best energy performers.

Figure 2. Product Development Cycle



During the product development cycle, EPA has often been confronted by challenges when setting a specification that adheres to its philosophy. Three particular challenges are highlighted in this paper:

- How to use energy consumption data to set a specification that recognizes the top 25% of a market in terms of energy efficiency;
- How to segment product categories while considering product convergence and functionality; and
- How to deliver energy efficiency without sacrificing product performance.

Importance of Energy Consumption Data to Set a Top 25% Threshold

EPA has used energy consumption data as an important tool to formulate product specifications. When determining those specifications, EPA's goal has been to initially recognize approximately 25% of the available models in the current marketplace according to their performance.[1] Since 1999, EPA has set five of its specifications at 25% given current available data, nine specifications at slightly below 25%, and one specification (water coolers) at 0% (i.e., none of the products on the market qualified as ENERGY STAR). Finding the data to construct and justify the 25% threshold deeply impacts the quality and reliability of the specification.

Lessons Learned in the First Ten Years

EPA has relied on the energy consumption data of products as a starting place to determine a specification. EPA has found this approach beneficial given that data, if gathered properly using a correct test methodology, provides an objective platform to begin a conversation with manufacturers about the energy performance of their products. Ultimately, the data is the most significant determinant to decide the appropriate "cut off" level between compliant verses non-compliant products. This cutoff also seems to strike a reasonable balance to ensure sufficient product availability, while encouraging differentiation and simultaneously, providing a reasonable energy performance target for the 75% of non-compliant products.

The process of gathering the correct data and interpreting it properly has been critical when EPA sets product specifications. The conclusions EPA and industry draw from the data form the basis of where that performance specification has to be drawn. Not surprisingly, drawing the proverbial line has been contentious, since some popular products sometimes do not qualify for the ENERGY STAR moniker. However, without an eye towards EPA's philosophy, the specification, which constitutes the 25% threshold, will not have downstream marketability for retailers, utilities, consumers and other interested communities.

To determine the right specification, it has always been EPA's policy to choose an energy metric (e.g., cfm/watt, watts, solar reflectance, and liters per hour) in consultation with stakeholders to get buy-in before a decision is made. The wrong metric is a powerful disincentive for industry to participate, and could result in a specification with little relevance in the marketplace. However, EPA has found that any metric it has chosen is only as good as the test procedure used for the measurement of the data. Absent a viable test procedure, repeatable results cannot be generated and objective comparisons between products are impossible.

[1] Since sales data is often not publicly accessible, available models is used to represent the marketplace.

A well-defined test procedure also is less likely to have ambiguities that could allow a non-compliant product to qualify through a loophole (e.g., product settings, ambient temperature, or other conditions that impact energy use should be specified in the test procedure). To help ensure the acceptance and usefulness of a chosen metric, EPA has utilized existing industry accepted test procedures (e.g., ARI test procedures for light commercial HVAC) to measure product energy performance rather than create new ones. The use of existing test methods has significantly reduced the time needed to set a specification while also lowering testing and compliance costs for product manufacturers.

The energy consumption data available to EPA to recognize the top 25% of the market has historically come from a variety of sources with varying degrees of quality. In a few cases, such as with dehumidifiers, good data existed and was provided to EPA upon request, although it was not previously used or published by industry to any significant degree. However, in many product areas such as air cleaners/purifiers and ceiling fans, energy consumption data was not abundant or was not captured in a consistent fashion with a reliable test procedure. EPA typically found several reasons for this state of affairs. Often it was the case that historically, energy performance was low on the list of priorities for consumers. Therefore, the product was not typically designed to optimize energy performance, nor was that data routinely captured in any fashion. In other cases, it was not unusual for a product manufacturer to test and record the energy performance of the product, particularly for safety reasons. However, without the existence of a single common test procedure, a comparison of data between products was not plausible, nor could the data be used to justify a 25% threshold.

Implications for the Next Ten Years

The lack of reliable, consistent energy consumption data is one of the most significant obstacles to set an accurate specification that meets the 25% guideline. However, this void represents a huge untapped opportunity for EPA to cultivate a deeper interest among manufacturers to collect data in a standardized way for future use. Today, for existing ENERGY STAR product areas, EPA is beginning to *require* energy consumption and unit shipment data from its manufacturing partners and creating a database to track such data, which will prove valuable to assess historical consumption patterns, better estimate the savings potential of different products, and adjust policy options as necessary. With an ongoing investment in such a system, EPA will find it increasingly possible to set specifications of quality and relevance.

Outside sources of data. To combat the absence of data, EPA has cultivated as many credible sources as possible. These sources range from product manufacturers, trade associations, non-government groups, market research firms, and in the future will include EPA's government partners such as Japan and Australia. As an example, EPA worked with the Home Ventilation Institute (HVI) to utilize its product database to set a specification to meet EPA's 25% threshold levels for residential ventilation fans. HVI was the logical source for the requisite energy consumption data given that all ventilation fan companies test their products in a certified HVI laboratory using an accepted industry test method. EPA also adopted HVI's fan category classes to segment the fans into performance and application classes rather than create their own. Another important element of HVI's tests and data was

the HVI "challenge process." This process allows fan manufacturers to challenge the performance of each other's fans. This check on the system helped to ensure the quality of the data that EPA used to set its specification and made it less likely that poor performing products would slip into the program.

Critical reviews of ENERGY STAR product listings. To support the development of a new computer monitor specification, EPA recently analyzed its qualified product database. The original intent had been to use the database to paint a realistic picture of the energy consumption of monitors in a variety of operational modes. The product information was to be one of the inputs used to identify the top quarter of monitor products on the market. However, after a careful review, EPA learned that manufacturers had typically reported worst-case scenario power consumption, particularly for active mode. This was done by configuring the settings (e.g., contrast, color, brightness, sound), to maximize power consumption to ensure models would be compliant under the most extreme conditions if ever tested. Thus, the data was considered artificially high. In addition, the lack of a consistent method to measure the "active" mode was problematic if the new specification was to address active mode (which it had not previously). For these reasons, EPA has now taken up the task of developing a new monitor test method that better suits EPA's needs to gather accurate data, and ultimately set a relevant new specification.[2] To help with the development of a credible test method, and to bolster its knowledge of testing issues, EPA is seeking input from the testing community including Underwriters Laboratory (UL). Looking forward, however, EPA plans to put in place more detailed instructions about the data submittal process as well as additional checks and balances to ensure accurate data is collected and available for future specification revisions.

Creative data gathering. In the case of televisions and VCRs, EPA used an unconventional means to find data to initially set the specification. In this case, Lawrence Berkeley National Laboratories (LBNL) utilized TV/VCR repair shops to test and gather standby power data, which is the basis for the specification (Rosen & Meier 1999). The procedure was simple to administer, and the process proved very effective for getting data on a wide variety of models that passed through the shop. This gave EPA confidence in the construction of its energy consumption baseline, which in the past has had to rely on a limited number of measurements taken at retail outlets. While repair shops are not an option for every product, these types of creative solutions to gather energy consumption data will be increasingly pursued.

Incorporating buyers into the specification development process. Residential ceiling fans presented a challenge to EPA to develop a specification given that no uniform test procedure and no independent test facilities existed that were suitable to measure the energy performance of fans. At the time of EPA's initial interest, only The Hunter Fan Company had a facility that was able to test fans in a rigorous and repeatable fashion. While EPA suspected that there was sufficient variance in fan performance to warrant a specification, there was no data to support it. To encourage discussion of the matter, EPA consulted

[2] Where possible, EPA strives to use industry accepted test procedures to measure products' energy performance. If not available, EPA will consider developing a test procedure in collaboration with industry, assuming the energy savings potential is significant and several manufacturers have offered their support and assistance.

several of the large retail chains responsible for a significant portion of fan sales. These retailers expressed a strong interest in the creation of an ENERGY STAR specification to identify the most energy-efficient fans they sold. The retailer's interest sparked more discussions between EPA and industry to find a test method that would generate data so an estimate could be made of potential savings and ultimately a specification developed.

While EPA has always understood the important role of the customer in a market-based program, it has not traditionally solicited their input in the specification development process. However, the ceiling fan experience has shown that customers can be real drivers and should be encouraged to participate in industry meetings and submit comments and suggestions on draft specifications, as appropriate. Accordingly, for all specifications under development, EPA is coordinating with interested buyers as early as possible to gain their input.

As more companies have joined the ENERGY STAR program and have committed more resources to develop compliant products, it becomes even more critical to work with industry to ensure that energy consumption data is gathered on an on-going basis using agreed upon test procedures. This will become an EPA priority for the following reasons:

- The quality of specifications are enhanced due to testing rigor and quantity of products tested;
- It provides a more effective means to quantify market penetration to signal opportunities to review and/or change specifications;
- The sharing of masked data allows for a more open and transparent process with industry;
- It supports program evaluation efforts;
- On-going data acquisition reduces costs to EPA and industry; and
- It allows for easy tracking and sharing of data with outside parties who want to coordinate ENERGY STAR internationally.

Product Category Selection

The first stage in the product development process is to develop an initial list of potential ENERGY STAR labeled products. The product development team utilizes four information channels to identify future product areas: the Federal Energy Management Program (FEMP), input from industry and other stakeholders, ENERGY STAR program evaluations, and industry/literature research. Once the initial product list is developed, the team proceeds to prioritize the product categories. The product development team's initial prioritization tool is the carbon savings model, which was developed by LBNL for each proposed product identified prior to summer 1999. In addition to projected savings, industry feedback has the ability to assign high-priority status to a product or in some cases demote a product to the low-priority category. Once priorities are established, the team begins its rigorous assessment of each product's technical potential in order to ensure brand consistency and reconcile any product issues that conflict with other EPA programs.

Lessons Learned in the First Ten Years

Beginning with the first computer specifications in 1992, ENERGY STAR has traditionally provided specific specifications for specific product categories. Each product is carefully defined so it is either eligible for the label or not. For example, while the term "multifunctional device" can cover a lot of varying products, in ENERGY STAR, the specifications only refer to copier-based multifunctional devices within specified speed bands. This initial approach to drafting specifications was based on the understanding that within one general product category, there are different types of products with different energy use patterns.

In the early stages of ENERGY STAR, this approach served the program well. All of the products that EPA wanted to label were relatively simplistic and easily identified as either one product or another (e.g., a computer monitor or a television). However, with the evolution of technology and product convergence, this approach will likely not prove fruitful in the future. Some of the shortcomings include:

- Quick obsolescence of specifications as technology changes every 9-12 months in some industries;
- Very lengthy and detailed specifications that attempt to provide efficiency levels for a wide variety of products (e.g., the current version of the printer specification has 10 tables for different categories of products);
- Long specification development processes with industry as EPA and manufacturers try to consider all product variations and new products on the horizon; and
- Specifications that are very difficult, if not impossible, to convey or explain (due to their complexity) to corporate purchasers, consumers, and other stakeholders.

Implications for the Next Ten Years

The movement of product technology from analog to digital has enabled the development of new product categories, new features, and new interactivity between products. For example, it is becoming increasing difficult to distinguish between computer monitors, television sets, and other types of freestanding displays. In a recent article titled "Clear Signals," the author explains, "While Sharp has yet to make the jump to hi-def with its personalized LCD TVs, Zenith already offers that capability in its 15-inch ZLD15A1 model ($1299), which can also serve as a computer monitor" (Johnson 2001, 30).

"Product convergence," or the combination of two or more previously separate devices or features, is an important and growing trend in the office equipment and consumers electronics industry as well as other industries (EIA 2001). Not surprisingly, product convergence offers some real benefits in terms of energy efficiency. One combination product with multiple features may consume more power than one stand-alone product, but in most cases, it will consume significantly less than two or three stand-alone products. For this reason, ENERGY STAR has consistently made efforts to include combination products in its energy-efficiency specifications. However, product convergence also ushers in some new challenges for ENERGY STAR. For example, it is becoming increasing difficult to determine how to categorize or classify products, to keep pace with the ever-changing array of products available, and to predict their usage patterns.

More general, but comprehensive specifications. In response, ENERGY STAR is beginning to develop general specifications, where applicable, that cover a wide range of products. This approach was first introduced with set-top boxes in 2001. The set-top box specification covers a wide variety of product types (more than 10) that include both mature (e.g., analog cable TV boxes) and emerging (e.g., personal video recorders) technologies. However, the specification itself is straightforward; all set-top boxes are divided into three categories with a maximum standby energy consumption of 3, 15 or 20 watts.

A similar approach will be taken later in 2002 with imaging equipment. As it has become more difficult to delineate between a printer, fax machine, or copier and the internal components have evolved to be more similar, ENERGY STAR intends to work with industry on a new comprehensive specification, likely with different levels based on size, capacity, or other factors, for all of these products. EPA is hopeful this approach will offer many of the following benefits:

- Will allow specifications to have a longer shelf life;
- Will ensure consistency in terms of product and partner requirements across imaging equipment;
- Will streamline the product development process for manufacturers, as they tend to be involved in multiple imaging products; and
- May allow specifications to be more easily harmonized with other domestic and international organizations.

While perhaps obvious, it is worth noting that a "one size fits all" approach will not be feasible across all products. The collapsing of products under one specification will have to be analyzed carefully for each industry and will only be implemented where practicable.

Energy Efficiency with No Sacrifice in Performance

One of the tenets of the ENERGY STAR philosophy is to maintain customer satisfaction by increasing energy efficiency without sacrificing performance. When faced with a tradeoff between energy efficiency and high-performance features, most consumers not surprisingly choose the product with the features they desire. To maintain the integrity of the ENERGY STAR label and energy-efficient products in general, EPA works closely with industry and other stakeholders to ensure that ENERGY STAR labeled products provide the same or better performance, features, and reliability as conventional models.

Lessons Learned in the First Ten Years

In the early years of ENERGY STAR, EPA made two key assumptions: 1) any performance issues with a product would be associated with the manufacturer and/or its brand name and thus not ENERGY STAR, and 2) industries would police themselves and root out the poor performers. While these assumptions have been proven valid in some product categories, they have not in others.

For example, Versions 1.0 and 2.0 of the computer and monitor specifications did not explicitly include network connectivity requirements. Many users in corporate settings found that they were logged off the network when their computers entered the power management

mode. Recognizing this as a serious worker productivity issue, Management Information Systems (MIS) directors across the country often disabled the ENERGY STAR feature on their office's computers and monitors when setting them up in individual workstations. Even with significant advances in power management technology, disabling of the ENERGY STAR feature continues today and significantly reduces the energy-saving potential of ENERGY STAR labeled computers and office equipment (DOE 2002; Nordman et al. 1998; PC Meter 1997; Piette et al. 1995). In fact, in its energy and carbon savings analyses, EPA assumes that 20% of computers and 59% of monitors have the ENERGY STAR feature enabled (CCAP 2002). In addition to demonstrating that performance requirements may be needed to complement the energy-efficiency attributes of a specification, this experience showed EPA that its ENERGY STAR brand, and not simply the manufacturer's brand name, is susceptible to poor perceptions by users.

In another example, self-certification of ENERGY STAR models proved problematic in the lighting industry as a few manufacturers failed to live up to their product claims. Consumers and regional groups promoting energy-efficient lighting were faced with products with poor lighting quality, short lifetimes, and other problems. As a result, quality concerns surrounding energy-efficient lighting abounded. In its most recent Residential Lighting Fixture Specification Version 3.1, EPA not only included performance requirements (e.g., lamp life), but also third party testing laboratory verification. This experience demonstrates that markets are often able to bear both high and low quality performers and ENERGY STAR's challenge is to ensure that its label is consistently and exclusively applied to high-performance models.

Implications for the Next Ten Years

While successful, ENERGY STAR's specifications have not always lived up to their full potential. Below are some steps ENERGY STAR is taking in 2002 and beyond to deliver on its dual promise of energy efficiency and performance.

Performance requirements in specifications. To ensure a level playing field and consumer satisfaction with energy-efficient models, ENERGY STAR plans to include performance requirements in future specifications, where deemed appropriate due to quality concerns. Some examples of performance requirements include minimum lamp life, warranties, brightness (luminance), and network compatibility. Contrary to some industry opinions, basic performance requirements are consistent with a single attribute approach to a labeling program. By ensuring that a basic level of acceptable performance is reached, ENERGY STAR is able to act as a product differentiator solely in terms of energy efficiency.

Compliance testing initiative. In order to remain a trusted and influential symbol in the marketplace and to protect the investment partners have made in the program, ENERGY STAR must consistently deliver on all of its promises. Accordingly, EPA will enhance its efforts to ensure that all products bearing the label truly meet ENERGY STAR specifications. Under the terms of the ENERGY STAR Partnership Agreement (and the Memorandum of Understanding that preceded it),[3] EPA has always been allowed to conduct tests on qualifying models, but

[3] The Partnership Agreement, and the Memorandum of Understanding before it, is the document each organization signs to become an ENERGY STAR partner in one or more areas and receive authorization to use the

has done so on a very limited basis to date. This new compliance testing initiative will not change the way specifications are written, but has many implications for the way in which they are monitored, maintained and enforced.

In mid 2002, EPA will initiate the compliance testing initiative involving a small sample of qualified products. The goal of this testing initiative is to identify potential compliance problems and set in motion a review process to ensure manufacturers take corrective measures as appropriate.

Throughout this testing process, it is EPA's intent to maintain an open dialogue with partners and other stakeholders. Prior to any testing, partners whose products have been selected will be notified in writing that testing will occur within a specified time frame. As part of the notification process, partners also will be provided with more detailed information summarizing the testing process. Below are a few important points:

- An independent laboratory will conduct product testing;
- Testing will be performed in accordance with ENERGY STAR Testing Guidelines; and
- Due to limited resources, only a sample of models from several product categories (to be announced) will be selected for testing on an annual basis.

Once testing is completed, partners will be notified in writing of test results for their products. If a compliance test indicates that a product fails to meet the relevant specification, EPA will request that the partner take corrective actions or submit data to verify compliance.

Expanding specifications beyond traditional operational modes. For the next few years, much of the ENERGY STAR product development team's focus will be on revising existing specifications as opposed to launching new specifications for new product categories. Some key areas of interest include computers and monitors and imaging equipment. For all of these products, existing specifications have been focused on reducing energy consumption when the product is not actively in use. This approach was taken for several reasons:

- It was relatively easy to improve the energy performance in non-active modes with no negative impact on product performance;
- Research indicated that products spent a significant amount of time in non-active modes;
- With constantly evolving technology, it would have been very difficult to provide specifications able to keep pace with technology and not stifle/limit innovation; and
- Manufacturers generally preferred it.

While this approach has delivered significant energy savings, it has relied heavily on the user's understanding and acceptance of the sleep mode. Where either understanding is low (e.g., user thinks sleep mode is the same as off mode and doesn't turn off computer at night and on weekends) or acceptance is low (e.g., system administrator disables mode to avoid any potential network connectivity issues), ENERGY STAR's ability to achieve savings is compromised. Thus, in future specifications for these products, EPA will consider

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ENERGY STAR label. The Agreement outlines the partner's commitments and presents the energy-efficiency specification. A sample document is available on the ENERGY STAR Web site at www.energystar.gov/join.

on/active mode, off mode, or a duty cycle approach and carefully balance or analyze the increased energy savings with the potential impacts on product performance.

The first of the office equipment products to undergo specification revisions is computer monitors. At an EPA/industry meeting in late April 2002, EPA unveiled proposed specifications for on, sleep, and off modes. While still early in the development and negotiation process, it looks promising that these three modes will be successfully implemented.

Industry relationships. After ten years, ENERGY STAR has established some long-term relationships with manufacturers and other stakeholders. However, as ENERGY STAR has evolved and grown, its relationships with industry have been strained at times due to different philosophical approaches to setting specifications and implementing voluntary programs. Looking ahead, ENERGY STAR will need to find the right balance between aggressive specification enforcement and fostering trusting partnerships with industry.

While EPA and industry may not always agree on the energy-efficiency criteria, it is as important as ever that they continue to collaborate and build on their mutual trust and respect. For its part, ENERGY STAR is committed to maintaining a transparent specification development process. To improve upon past efforts, ENERGY STAR plans to issue a summary document upon completing each new or revised specification. This document will summarize the new specification, highlight significant input received from stakeholders, and briefly address anticipated energy savings, technical feasibility of specification, cost-effectiveness of energy-efficient technology, and/or other relevant factors.

As a partnership, ENERGY STAR needs to follow through on its commitments to the partners. Specifically, they include:

- Ensuring the label provides value by differentiating products in the marketplace;
- Limiting the number of regional and/or international labels by collaborating with other organizations where appropriate; and
- Maintaining the credibility of the label as the government-backed symbol for energy efficiency.

Each specification developed in 2002 and beyond will be reviewed to ensure that it fulfills these commitments.

Summary

ENERGY STAR recognizes that with success comes added scrutiny. Both domestic and international audiences have turned their attention to the ENERGY STAR program and are watching and evaluating its efforts. With no regulatory force, the credibility and integrity of the ENERGY STAR label, and the specifications that support it, are of paramount importance.

This paper has presented a number of changes that EPA has recently initiated or plans to implement in the near future to ensure that ENERGY STAR remains a recognizable and respected brand. They include:

- Finding creative ways to collect energy consumption data on an ongoing basis from multiple sources;

- Including buyers in the specification development process in order to encourage manufacturer participation;
- Developing more general specifications for product categories that are converging;
- Adding performance requirements and new operational modes to the specifications to ensure that energy savings are achieved; and
- Embarking on a new compliance testing initiative to identify and address any compliance problems.

As it enters its second decade, the ENERGY STAR product development team is weaving these changes into its framework and process for new/revised specifications. Some upcoming product specifications for refrigerated beverage vending machines, food service equipment, and computer monitors, which are due out later this year or in early 2003, will reflect these changes, where applicable.

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