

**Before the  
UNITED STATES DEPARTMENT OF ENERGY  
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY  
Washington, DC 20585-0121**

In the Matter of

Energy Conservation Program for	)	
Consumer Products and Commercial	)	10 C.F.R. Part 430
and Industrial Equipment	)	

**COMMENTS OF THE  
CONSUMER ELECTRONICS ASSOCIATION  
AND THE  
ELECTRONIC INDUSTRIES ALLIANCE**

The Consumer Electronics Association (CEA) represents more than 600 U.S. companies involved in the design, development, manufacturing and distribution of audio, video, mobile electronics, communications, information technology, multimedia and accessory products as well as related services that are sold through consumer channels. Combined, CEA's members account for more than \$70 billion in annual sales.

The Electronic Industries Alliance (EIA) is a partnership of electronic and high tech associations and companies whose mission is promoting the market development and competitiveness of the U.S. high tech industry through domestic and international policy efforts. EIA, headquartered in Arlington, Virginia, is comprised of more than 2,300 member companies whose products and services range from the smallest electronic components to the most complex systems used by defense, space and industry, including the full range of consumer electronics products. The industry provides more than two million jobs for American workers.

**I. INTRODUCTION**

The Consumer Electronics Association (henceforth inclusive of EIA) is pleased to submit these comments and enclosed materials regarding the Department of Energy's (DOE's) Energy Conservation Program for Consumer Products and Commercial and Industrial Equipment. The focus of these comments is on the question of whether the program's scope should be expanded to include, for the first time, the following products: computers, monitors, set top boxes and televisions.

At a public meeting held on November 6, 2001, DOE identified several consumer products, including computers, monitors, set top boxes, and televisions, as potential new products for the Department's Energy Conservation Program. The Department proposed a "one quad cutoff" for new product consideration and submitted a list of products for which the cumulative energy savings was reported to exceed one quad.<sup>1</sup> In conjunction with the proposed expansion of the Energy Conservation Program, DOE has produced "data sheets" for each product or product category under consideration.

CEA strongly opposes mandatory energy conservation standards for computers, monitors, set top boxes and televisions. We maintain that expansion of the Energy Conservation Program to these products is not necessary and, in fact, would be counterproductive for two reasons: (1) energy would *not* be saved; and (2) consumers *and* the electronics industry would be adversely affected. These two assertions are explained in more depth below.

In deciding whether to expand the scope of the Energy Conservation Program to electronics, the Department should give careful consideration to the following factors:

- Energy consumption is not necessarily synonymous with energy efficiency;
- Energy conservation standards for computers, monitors, set top boxes and TVs could increase overall energy consumption;
- Electronics are inherently energy-efficient products;
- Energy conservation standards would have adverse impacts on technology development and innovation;
- Energy conservation standards would lower quality, features, and consumer satisfaction;
- Energy conservation standards would have adverse impacts on competition;
- Energy conservation standards would harm small businesses;
- Energy conservation standards would impair the rollout of broadband and internet-based services; and
- A new voluntary program for computers, monitors, set top boxes and TVs is unnecessary since the federal Energy Star program currently covers these product categories.

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<sup>1</sup> One "quad" equals one quadrillion (10<sup>15</sup>) British Thermal Units (BTUs), and 3,413 BTUs equal one kilowatt.

**A. DOE's Data Sheets are based on erroneous or incomplete data and, therefore, do not accurately predict potential energy savings**

At the November 6th public meeting, DOE committed to providing interested parties with access to the studies used to compile the data sheets. However, these studies have not been made available. Therefore, CEA's comments on the data sheets are limited, however, vital.

DOE's data sheets for the four electronic products meeting the "one-quadrant" energy savings cutoff represent an incomplete picture of the energy savings potential of these electronic products because lowering energy consumption will not always yield energy savings, particularly in the case of electronics. The product that can achieve the "best available" energy efficiency may be a "de-featured" product, meaning a product that possesses the fewest, possible features. Such products are likely to have very limited market appeal and a very low sales volume.

For televisions, monitors, and desktop personal computers (laptop displays utilize Liquid Crystal Display or "LCD"), much of the predicted energy savings is predicated on a transition to LCD technology. While LCD technology does offer significant energy-saving potential during product use versus traditional Cathode Ray Tube ("CRT") technology, there are other factors that DOE must take into account. A recent study by the U.S. Environmental Protection Agency's (EPA's) Design for the Environment program compared the lifecycle environmental impacts of CRT and LCD displays. It found that while LCDs use less energy while in use, LCDs require significantly more energy to manufacture than CRTs. Furthermore, LCDs offer energy-efficiency benefits due to their use of mercury-containing lamps. Many states, particularly in New England, have proposed legislation to reduce or even ban products that utilize mercury-containing lamps, including electronics. These facts underscore the need for DOE to take a more holistic approach to examining the potential energy savings of electronics, as well as other potential life cycle environmental impacts.

The data for the Energy Savings Potential of set-top box units is based on a "best available" efficiency of one watt in standby mode. However, nowhere in the background material does DOE indicate that a one-watt standby set-top box is available. Indeed, DOE points out under the "Issues" section that "one watt standby feasibility [is] unclear." CEA is concerned that a one-watt standby rating is used to calculate potential energy savings when its feasibility is unclear. It is crucial that DOE use real-world feasibility when calculating a product category's energy savings potential.

For desktop computers, the basic DOE premise that "a low-power or power-aware desktop computer is not commercially available" is inaccurate and does not reflect the voluntary efforts of industry. Numerous manufacturers of desktop computers, software, microprocessors and other integrated circuits, as well as other system components, have developed products that enable power-aware desktops. It is unclear why these efforts were not recognized.

In addition, DOE's correlation of a computer's power consumption with a microprocessor dangerously over-simplifies the analysis for this product. Other system components such as power supplies, AC/DC voltage converters, chipsets, and peripherals (graphics cards, hard drives, network cards, etc.), consume power in both the sleep and working states.

**B. Energy consumption is not necessarily synonymous with energy efficiency**

The Department's stated rationale for including selected consumer electronics products in the Energy Conservation Program mistakenly equates lower energy consumption with greater energy efficiency. These two concepts are not necessarily related. For example, variations in the amount of energy consumed by television receivers are primarily attributable to differences in the performance and features of the products, not to disparities in energy efficiency. A television with better picture quality and more features will generally consume more energy. A product that consumes less energy should therefore not be assumed to be more energy efficient; it may simply be operating at a lower performance level.

Additionally, by focusing on a product's energy consumption, DOE risks overlooking the positive effects a device may have on energy efficiency for the nation as a whole. The expansion of the Internet over the past ten years has helped enable many efficiency improvements that were impossible twenty years ago. For example, while consumer electronics consume energy, they also enable teleworking and e-commerce, which reduce transportation-related energy usage. In one study, the Center for Energy and Climate Solutions found that the ratio of a building's energy usage per book sold in a traditional bookstore versus an online bookstore is 16 to 1. That is, electronics enable online commerce that, in the case of book selling, may save fixed energy costs that are 16 times as great in a traditional retail setting. In this way, electronic products demonstrably enable efficiencies in many sectors of the economy through the functions they perform.

It is also important to note that electronics help reduce energy by allowing people to monitor and control the energy usage of a home or an office. For example, the small operating power consumed by a programmable thermostat can translate to big savings in overall household energy consumption. Such capabilities depend on technology incorporated into the device. Energy consumption standards could limit the ability of electronic products to incorporate energy saving features or interfaces that control or regulate the energy consumption of outside products or systems. These features or interfaces may or may not correlate with the product's own energy consumption. By creating rigid energy consumption standards that inhibit new features and interfaces, the Department may inadvertently hinder the goal of greater overall energy efficiency.

## **II. ENERGY CONSERVATION STANDARDS FOR COMPUTERS, MONITORS, SET TOP BOXES AND TVS COULD INCREASE OVERALL ENERGY CONSUMPTION**

Mandatory energy consumption standards for computers, monitors, set top boxes and televisions will not promote the goal of decreased energy consumption. Establishing such standards will inevitably force manufacturers to reduce product performance or remove energy-consuming features that enhance the functionality, utility and convenience of the product for the consumer. Ultimately, these “outmigrated” features will be delivered to consumers by separate or ancillary devices. The net effect may be an overall increase in energy consumption.

For example, a mandatory energy standard may make it impossible for manufacturers to incorporate DVD players into set top boxes. Instead, the consumer would be forced to purchase two separate products, which would create the potential for greater overall energy consumption.

In 1994, the Department considered in depth the question of whether an energy consumption standard is appropriate for televisions.<sup>2</sup> DOE concluded that a standard for televisions is not needed and cited “acceptance of arguments reflected in the comments that the uncertainty created by the rulemaking and any resulting standards could adversely affect the development of innovative television technologies critical to the Nation's future economy and international competitive position.”<sup>3</sup>

Many of the same arguments can be made with regard to computers, monitors and set top boxes which the Department is also considering for inclusion in the Energy Conservation Program.

## **III. ELECTRONICS ARE INHERENTLY ENERGY-EFFICIENT PRODUCTS**

Consumer electronics manufacturers already operate under intense competitive pressures to reduce energy consumption, because lower energy consumption reduces operating temperatures and thereby increases a product’s reliability. Improvements are adopted as soon as they are technologically and economically feasible.

Improvements in the energy efficiency of consumer electronics products are due in large measure to advances in technology. The transition from analog to digital electronics has facilitated the design of components that are smaller and consume less energy. Along with this digital technology transition is a trend toward product “convergence,” or the combination of two or more previously separate devices or features. While the transition to digital technologies facilitates energy efficiency, it is important to recognize that

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<sup>2</sup> Energy Conservation Program for Consumer Products (Energy Conservation Standards for Eight Types of Consumer Products); 59 Fed. Reg. 10464 (March 4, 1994); Docket No. EE-RM-90-201.

<sup>3</sup> 60 Fed. Reg. 32627 (June 23, 1995).

product convergence could also reduce net energy consumption for a given product category. Specifically, product convergence could deliver a digital product that might consume more energy than its analog predecessor, but less energy than the sum total of the products that were “converged” into the one device.

#### **IV. ENERGY CONSERVATION STANDARDS WOULD HAVE ADVERSE IMPACTS ON TECHNOLOGY DEVELOPMENT AND INNOVATION**

Including computers, monitors, set top boxes and televisions in the Energy Conservation Program that was originally developed for home appliances would impose severe energy consumption constraints on these electronic products, prohibit desired product features and cause adverse economic impact on consumers and manufacturers.

Computers, monitors, set top boxes and televisions are rapidly evolving to meet the changing needs and demands of consumers. New features, like the inclusion of the “V-Chip” and closed captioning in television sets, are added on a regular basis. The addition of each new feature may marginally increase energy consumption. Including products such as televisions, set top boxes, monitors and computers in the Energy Conservation Program would needlessly constrain manufacturers’ ability to design and market products that are capable of processing and delivering video, audio and data in innovative ways that meet consumer demand. In addition, establishing energy standards for such products would skew marketplace competition between and among the various kinds of electronic products that deliver such content to consumers because every manufacturer would be encouraged to design solely to energy consumption instead of the more essential design criteria – product functionality.

Often the first version of a product is designed to test acceptance in the marketplace. If it succeeds, operating improvements, including greater energy efficiency, are then sought to improve its competitiveness. These changes often require inventing whole new approaches and new technology. Energy consumption standards would preclude many such new product introductions.

Because of the rapid pace of technological development in the electronics industry, it is likely that any DOE energy consumption standard for computers, monitors, set top boxes or TVs would not keep pace with product development and innovation. A rulemaking process would not be able to foresee the new product developments and could have an adverse impact on product availability and consumer choice. For example, had the proposed energy consumption standards for televisions been established in 1994, manufacturers would have been prevented from introducing digital televisions and televisions with plasma displays. Since the standard would have set an energy consumption level that may never be raised by rulemaking, consumers would have been prevented from choosing these products.

Setting energy consumption standards for electronic products that would allow for technological development would be administratively difficult, if not impossible. As

demonstrated above, energy consumption depends on the particular features of a product, not necessarily its “efficiency.” With the hundreds of features available for many electronics currently under consideration, the standard-setting process would require an enormous amount of resources in order to be conducted in a meaningful manner. Within the Energy Star program for set-top boxes, for example, there are currently numerous subcategories, including: analog cable TV set-top boxes, advanced analog cable TV set-top boxes, digital TV converter set-top boxes, Internet access devices, video game consoles, videophone set-top boxes, set-top boxes with cable modems, digital cable TV set-top boxes, satellite TV set-top boxes, wireless TV set-top boxes (e.g., MMDS and LMDS), personal video recorders (e.g., TiVo and Replay TV), and multifunction devices. Because the Energy Star program sets specifications for the standby mode of set-top boxes, even this categorization would require further development if DOE chose to set energy conservation standards for active mode.

DOE’s proposal to establish energy efficiency specification for TVs, set top boxes, monitors and computers is also flawed because it assumes that these products constitute homogeneous product groups. However, there is overwhelming evidence to refute this notion. For example, unlike other “covered products,” television receivers are a sophisticated and complex array of electronic products. There are currently hundreds of different models of television receivers on the market. These include everything from black-and-white sets to large HDTVs, plasma and flat-screen models.

As discussed above, increasing product “convergence” will benefit consumers in terms of utility, cost, and possible energy conservation. Placing new energy consumption restrictions on product development will stifle innovation in the area of product convergence and the energy conservation gains that will likely accompany it.

Energy consumption standards also would adversely impact ability of manufacturers to build and sell digital and high-definition television receivers, thereby threatening manufacturers’ progress toward the Congressionally mandated 2006 goal for rollout of digital television.

## **V. ENERGY CONSERVATION STANDARDS WOULD LOWER QUALITY, FEATURES, AND CONSUMER SATISFACTION**

Expanding the Energy Conservation Program to cover computers, monitors, set top boxes and televisions would preclude manufacturers from continuing to produce high-quality products that meet consumers’ expectations and demands.

The inevitable and direct result of an energy conservation standard for these electronic devices will be a significant lessening of their utility and performance. A standard would force manufacturers to choose between: (1) providing fewer features; and/or (2) substantially reducing performance levels (i.e., reduced picture quality and sound quality, decreased data processing speed). Either option will meet with immediate consumer dissatisfaction.

For example, television manufacturers incorporate a broad range of performance attributes and features in television receivers to make the products attractive to different market sectors. This marketing strategy has made television receivers available to all Americans. While lower-priced television receivers may contain some of the same basic circuitry as higher-priced models, and the basic circuitry performs similar functions, in both cases, it is axiomatic that a set with higher performance and/or more features will consume more energy. Consumers expect continuing innovations, even though new features necessarily entail some additional energy consumption.

For computers, lower-power systems may take significantly more time to run applications. Consumers do not want to spend long periods of time waiting for their computer. Further, consumers should not associate energy conservation with slower processing speeds.

The Department also needs to understand that television receivers are expected to deliver ever-improving performance and increasingly diverse features not only by consumers, but also by Congress. For example, Congress expects (indeed, it has required) that all television receivers manufactured or imported after July 1, 1993, to have the ability to decode and display closed captions (a feature that inevitably adds 1 to 2 watts to the power required by the receiver). Some receivers have taken this feature a step further by offering the ability to receive Extended Data Service, teletext, and a second channel of captions. Newer federal requirements, such as the “V-Chip” and Section 508 accessibility requirements, also necessitate design changes that require additional energy consumption.

DOE’s proposed energy consumption standards will deprive consumers of these and other yet-to-be conceived advances in televisions, set top boxes, monitors and computers.

The consumer electronics industry is poised to deliver a wide range of products that will provide the American public with cost-effective and feature-rich devices that provide home entertainment, Internet access, and home office functions. The value of any energy savings achieved by the proposed inclusion of selected consumer electronics in the Energy Conservation Program is greatly outweighed by the fact that the standards would severely lessen the utility and performance of the covered electronic devices.

## **VI. ENERGY CONSERVATION STANDARDS WOULD HAVE ADVERSE IMPACTS ON COMPETITION**

In 1994, the Antitrust Division of the U.S. Department of Justice (DOJ) evaluated the impact of DOE-proposed television energy efficiency standards on competition and concluded that “significant anticompetitive effects are likely to occur.”<sup>4</sup> DOJ stated: “The weight of available evidence is that adoption of the proposed standard for television sets could force all or many manufacturers to revise their products to lessen the number

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<sup>4</sup> Letter of Anne K. Bingaman, Assistant Attorney General to Christine A. Ervin, Assistant Secretary of Energy Efficiency and Renewable Energy (September 16, 1994).

and quality of their features.”<sup>5</sup> Among other things, DOJ recognized that standards for televisions could impede technological development, increase costs, and limit consumer choice. These same anticompetitive effects are at issue today. In fact, these anticompetitive effects are likely to be greater in the case of computers, monitors and set top boxes since these products are relatively less mature than television receivers.

## **VII. ENERGY CONSERVATION STANDARDS WOULD HARM SMALL BUSINESSES**

For small businesses that supply components for use in televisions, set top boxes, computers and monitors, energy conservation standards could have a devastating ripple effect on their ability to compete in the marketplace. These suppliers would be forced to re-design their components if they enable or depend on energy-consuming features. Some small companies may be forced out of business if the components they supply are deemed too “energy intensive.”

On the demand side, small businesses, like consumers, will be forced to bear the brunt of increased costs and loss of desired features associated with the development of energy consumption standards for these products.

## **VIII. ENERGY CONSERVATION STANDARDS WOULD IMPAIR THE ROLLOUT OF BROADBAND AND INTERNET-BASED SERVICES**

A computer, set top box, television or any device that offers consumers an “always-on” connection to the Internet will require a certain amount of energy to maintain that connection. An increasing amount of Internet and software-based applications for consumers and businesses depend on this type of Internet access. Indeed, this is a major selling point for broadband and interactive services. Experts agree that the full potential of the Internet and its benefits cannot be realized until broadband connections are a reality for Internet users. At a minimum, high-bandwidth connections offer faster downloads, quick access to sites and information, high-quality and lag-free streaming media, smooth online game-play, and unbroken audio broadcasts. However, the larger benefits of high speed Internet stretch beyond current usage into unknown areas of possibility –possibilities that economists estimate could be \$400 billion in growth each year.<sup>6</sup>

Energy consumption standards that limit the functionality of broadband access and Internet-based services will adversely impact consumers and businesses. From a policy perspective, establishing such standards that limit the functionality of Internet access devices and services directly conflicts with Congress’ stated goal of expanding broadband deployment.

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<sup>5</sup> Id.

<sup>6</sup> *100 Mbps and Beyond: Bringing Consumers High-Speed Access*, Consumer Electronics Association, August 2001

Also, as described above, energy management solutions depend on electronics. New energy-conserving services are emerging that combine electronics with Internet access and remote control to provide enhanced home networking, home automation and appliance power management functions. Energy consumption standards for electronic products would threaten such innovations.

**IX. A NEW VOLUNTARY PROGRAM FOR COMPUTERS, MONITORS, SET TOP BOXES AND TVS IS UNNECESSARY SINCE THE FEDERAL ENERGY STAR PROGRAM CURRENTLY COVERS THESE PRODUCT CATEGORIES**

Electronics products and technologies are part of the answer to the energy debate – not part of the problem. The electronics industry can play a crucial role in promoting energy efficiency by continuing to innovate and provide products that possess valuable functions and features. Most high technology companies are already partners in the voluntary Energy Star program, which continues to be jointly administered by DOE and the EPA. The electronics industry has successfully worked with Energy Star to develop energy-efficiency guidelines for numerous product areas, including TVs, VCRs, DVD players and various audio products.

During the past decade, the voluntary Energy Star program has raised consumer awareness and improved the marketing of energy efficient products to American consumers. The success the Energy Star program depends on industry participation and support. By voluntarily supporting the Energy Star program, the consumer electronics industry has increased consumers' awareness and use of energy efficient products. Such industry involvement has been vital to the past success of Energy Star and will be important to the evolution of the program. Overall, the program has been a successful partnership between industry and government.

The Energy Star program has been successful in promoting energy efficiency of electronics because it has focused exclusively on standby power or other low power states (e.g. "sleep mode"). By doing so, Energy Star has avoided most of the serious complications associated with reducing "active mode" energy consumption that can jeopardize technological innovation. As outlined above, setting energy consumption standards for active mode power usage in electronics will impose serious technical and economic impacts on consumers and manufacturers. Therefore, it is inappropriate to consider Energy Conservation Program standards for electronics such as computers, monitors, set top boxes and TVs.

However, even standby power (or other low power mode) consumption limits have the potential to stifle new technology and product development. As technology advances, manufacturers will continue to develop new products that are capable of performing multiple functions. As noted above, product "convergence," or the combination of two or more previously separate devices or features, is an important and growing trend in the

consumer electronics industry. Also noted earlier, a “converged” product might have several added features that allow it to take the place of two or more devices. Consequently, the converged product might require an incremental increase in power consumption; however, it would eliminate the need for two or more separate devices that, on their own, would result in an overall increase in energy usage. Lowering the standby power consumption could prevent the development of such a converged product because the product would not comply with Energy Star criteria.

For this reason, it is important that standby or other lower power state consumption specifications remain voluntary and market-driven. Because the Energy Star program is voluntary, electronics manufacturers have been able to introduce innovative products that may initially exceed the Energy Star specifications. The Energy Star program periodically revises its specifications in coordination with industry to reflect changes in product features or to incorporate new products within a category. The Energy Star program also is the appropriate venue for efforts that address Energy Star-enabling for computer-related products.

Executive Order 13221 is another market-driven approach to reducing standby power. Earlier this year, President Bush signed this Executive Order that directs federal agencies to purchase products with internal or external power supplies that consume one watt or less in standby power, where technically feasible and economically justified.

A voluntary or market-driven program for reducing standby (or other low power mode) consumption is the most effective and consumer-friendly method for addressing the energy efficiency of electronic products. The Energy Star program already addresses low-power state energy usage in electronic products in a voluntary manner. Through their participation, manufacturers have contributed to significant energy savings. Additional voluntary programs or negotiated agreements initiated by the Department are unnecessary and would be duplicative of the Energy Star program. CEA is open to discussion on expanding the Energy Star program to incorporate more electronic products, as well as on improving the process for establishing Energy Star program specifications.

## X. CONCLUSION

Consumer electronics manufacturers have a strong record of accomplishment with regard to energy efficiency and savings. The electronics industry is committed to the design, production, and marketing of energy-efficient products that provide consumers with a range of product features at competitive prices. While CEA supports sensible and consumer-friendly efforts to make consumer electronics more energy efficient, we believe that energy consumption standards for televisions, set-top boxes, computers, and monitors are unnecessary, counterproductive, and an inefficient use of limited public and private resources.

The Department previously considered energy efficiency standards for televisions, but after careful consideration of the issues, DOE correctly concluded that such standards were inappropriate.<sup>7</sup> The very same reasoning that led DOE to reject standards for televisions in 1994 still applies today to each of the four electronic products under consideration.

CEA urges the Department to instead focus on maintaining and improving the federal Energy Star program. In June 2001, President Bush highlighted Energy Star as a central part of the Administration's efforts to promote energy conservation.

The consumer electronics industry applauds President Bush and the Administration in taking the lead both on a national energy policy and in emphasizing conservation as a critical component of any comprehensive plan.

CEA firmly believes that establishing energy consumption standards for computers, monitors, set top boxes and televisions would compel manufacturers to substantially reconstruct and alter products which are already designed to consume a minimum amount of energy. Under this scenario, energy consumption standards will adversely affect the performance and features of computers, monitors, set top boxes and TVs –products upon which the American public depends for information and entertainment.

Therefore, on behalf of the consumer electronics industry and the consumers that we serve, CEA strongly opposes including computers, monitors, set top boxes and televisions in the Energy Conservation Program and urges the Department to exercise its congressionally-mandated discretion by withdrawing such products from consideration.

We look forward to continuing to work with the Department and the Administration to help develop and implement an energy policy that maximizes conservation while recognizing consumer needs, technological constraints and economic realities.

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<sup>7</sup> 60 Fed. Reg. 32627 (June 23, 1995)

Respectfully submitted,

CONSUMER ELECTRONICS ASSOCIATION  
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December 6, 2001