

Office of Energy and Renewable Energy  
U.S. Department of Energy

Energy Conservation Program for Consumer )  
Products and Certain Commercial and )  
Industrial Equipment: Determination ) Docket No. EERE-2010-BT-DET-0040  
of Set-Top Boxes and Network Equipment as )  
a Covered Consumer Product ) RIN 1904-AC52

Comments of the Consumer Federation of America

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The Consumer Federation of America (CFA) is pleased to provide the following comments in response to the above-referenced docket. CFA is a non-profit association of some 300 organizations representing the consumer interest through research, education and advocacy. We have a long history of providing data and analyses and advocating at the federal and state levels on energy efficiency issues from the consumer perspective.

DOE is particularly interested in receiving comments from interested parties on the following issues related to the proposed determination for set-top boxes and network equipment:

- Definition(s) of set-top boxes and network equipment;
- Whether classifying set-top boxes and network equipment as a covered product is necessary or appropriate to carry out the purposes of EPCA;
- Calculations and values for household and national energy consumption;
- Availability or lack of availability of technologies for improving energy efficiency of set-top boxes and network equipment.

**Definition of Set-Top Boxes and Network Equipment**

The definition proposed by the DOE is appropriately broad.

“A device whose principle function(s) are to receive television signals (including but not limited to over-the-air, cable distribution, and satellite signals) and deliver them to another consumer devices, or to pass Internet Protocol traffic among various network interfaces.”

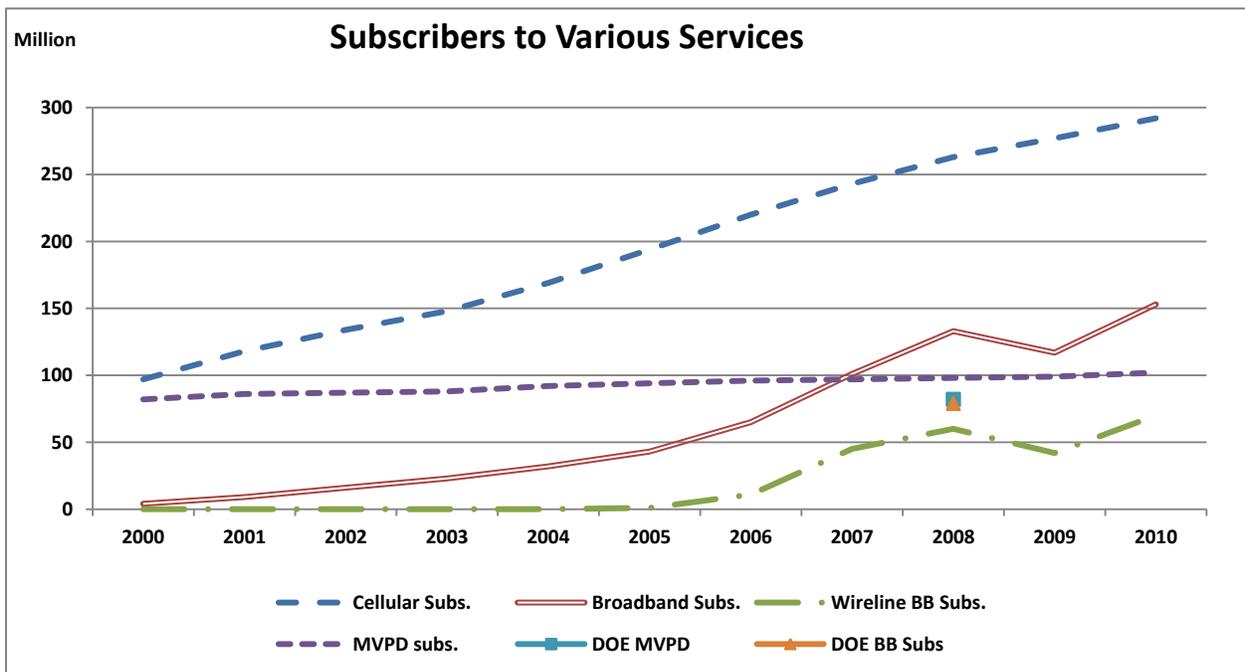
We would encourage the DOE to make it clear that the intention is to cover all devices that provide connectivity between the Internet and consumer devices regardless of the technology used. In the context of the dynamic digital product space, there are a number of approaches to transmitting high speed data to the consumer, and as we have experienced, technologies can change rapidly. High speed data can be delivered to the residence over different networks using a number of transmission media (fiber, hybrid fiber coaxial cable, copper, wireless, satellite). It can be distributed within the home with both wireline and wireless media. The manner in which the data reaches the consumer devices does not affect the level of electricity consumption.

We also suggest that the definition refer to video signals. Television is frequently used to refer to the long-form, professional video signals delivered by traditional over-the-air broadcasters or multiple channel video programming distributors (MVPD). A great deal of video content and viewing these days is not long- form, professional. The definition will be more inclusive and clear if the word ‘video’ is used.

### **It is Appropriate for Set Top Boxes and Network Equipment to be Covered Products**

The DOE’s conclusion that set-top boxes and network equipment meet the threshold requirements for categorization as a covered device is correct and well-supported by the evidence cited. In fact, the data and assumptions used to reach the conclusion are quite conservative. The DOE concluded that household consumption of electricity for these devices was over 300 kWh per year and that total consumption was over 24 billion kWh

per year. These levels are several times larger than the statutory threshold for designation as a covered device. These estimates appears to be based on data that is several years old, which we believe underestimates both the consumption per household and the number of households that use these devices because the digital communications space exhibits rapid penetration of devices and expansion of usage. The following Exhibit shows the penetration of services that drive demand for and use of the devices being considered.

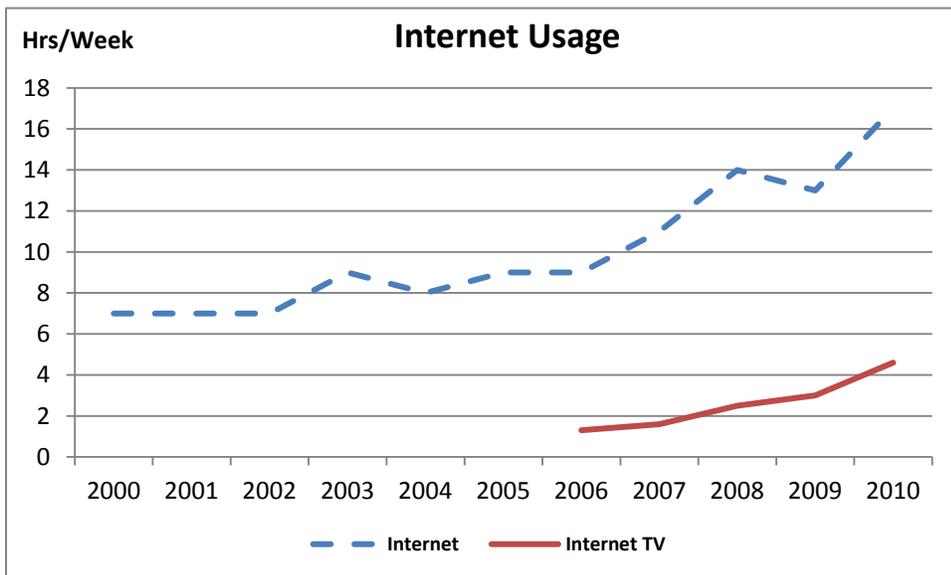


**Federal Communications Commission, *Local Competition and High Speed Internet Access*, various Issues, *Internet Access Services*, various issues; CTIA, *Semi-Annual Wireless Survey*, 2011; Nielsen**

The DOE used figures for penetration that appear to be low. The number of subscribers to multichannel Video Programming Distribution (MVPD) services is higher today than the DOE used in its analysis. The number of set-top boxes will be higher as well because of the digital TV transition. In order to receive the full complement of digital channels (in the basic and expanded basic tiers), each individual TV set requires a set-top box.

Moreover, the dramatic increase in mobile subscribership will drive the demand for network equipment as households distribute signals within the home. Subscription to mobile communications vastly exceeds subscription to wireline communications because mobility is highly valued, and it provides personal (rather than household) communications. As usage of mobile devices increases, individuals within the household will want full broadband connectivity. The most efficient way to deliver full mobile connectivity within the home is to deliver the signal to the home on a wireline network and then distribute it within the home wirelessly. This will increase demand for network equipment. We expect demand for network equipment to penetrate more deeply than multichannel video.

Not only are there more devices deployed today and likely to be deployed in the future, but those devices are likely to be used for longer periods of time. Increased usage of network devices will increase the amount of electricity consumed. The amount of time households spend online has increased steadily over the past decade, and Nielsen data suggests a significant bump up in usage recently, as shown in the following Exhibit.



**Source: Nielsen, *Three Screen Report*, various issues; 2006 is set at half of 2007, based on the number of households reporting Internet video viewing in the Pew Internet and American Life Project.**

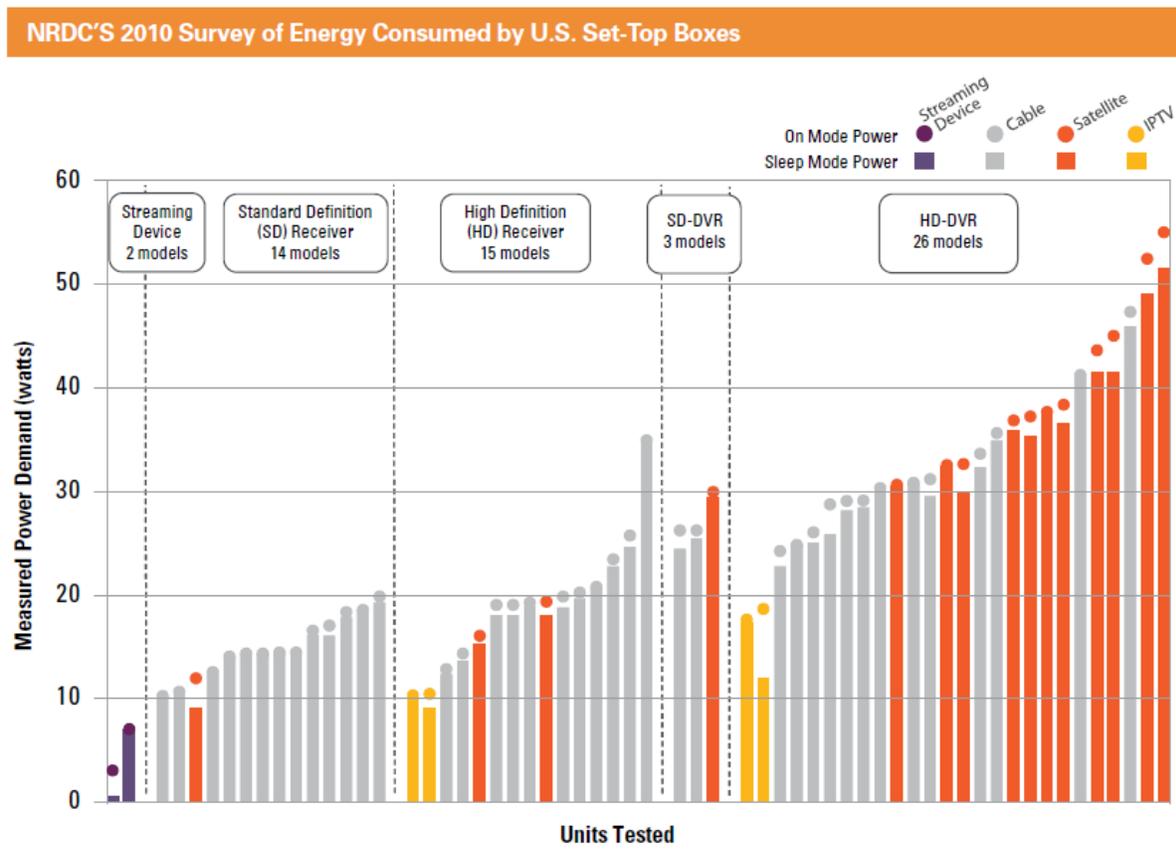
The increase in Internet time may be driven by a near doubling of Internet video viewing in the period between 2008 and 2010. Traditional video viewing increased slightly over this period (2%) so the growth in Internet video viewing is new demand. This usage will increase the amount of electricity consumed. Thus there is no doubt that consumption of electricity by the devices being considered is sufficient to justify their categorization as covered devices. By the time any efficiency standard is adopted, we believe the amount of energy consumed by these devices will be much larger on a household and aggregate basis, providing even stronger justification for the rule.

#### **Availability of Technologies for Improving Energy Efficiency**

The second criteria for a covered device is the potential for energy savings. Here, too, the evidence overwhelmingly supports the conclusions that the devices qualify to be covered. Two types of evidence are available – studies of actual consumption by different devices and studies of potential energy savings.

As shown in the following Exhibit, the devices available in the market exhibit a wide range of levels of energy consumption. This suggests that the devices that consume more energy could perform better. Of course, the DOE will have to analyze the features of the devices and the costs of reducing energy consumption, but the wide ranges of observed levels of consumption suggest that improvement is technically feasible.

Direct studies of technologies that would reduce the energy consumption of these devices are also available, and they support the same conclusion. Energy can be saved while the performance of the devices is maintained.<sup>1</sup>



Source: NRDC, *Better Viewing, Lower Energy Bills, and Less Pollution: Improving the Efficiency of Television Set-Top Boxes*.

### Designating Set-Top Boxes/Network Equipment as Covered Products is Necessary

The evidence overwhelmingly supports the conclusion that the devices meet the basic criteria for covered devices and therefore *can* be covered. They consume a

<sup>1</sup> C.D. Barley, et. al., *Building America System Research Plan for Reduction of Miscellaneous Electrical Loads in Zero Energy Homes*, NREL, November 2008.

significant amount of energy, and their efficiency can be improved. Ultimately, the question that DOE must address is whether they **should** be covered. The Notice provides evidence that supports the conclusion that DOE should classify set-top boxes and network equipment as covered devices in order to fulfill its mandate to “conserve energy supplies” and “provide for improved energy efficiency.”

As described in the Notice, these devices exist in a product space that is not likely to lead to efficient decisions about their energy consumption. On the one hand, many of the devices are purchased by network operators, who do not pay the energy bills that their usage entails. This is a classic agency problem. On the other hand, the devices are complex products, valued primarily for the functionality they deliver, and energy consumption is not a prominent feature of what the product does. Consequently, consumers are not focused on the energy efficiency of the devices. Under these circumstances, the opportunity to deliver cost effective energy efficiency without affecting the performance of the products is not likely to be fully exploited.

While these two characteristics of the appliance market can easily justify the need for the DOE to adopt standards for set-top boxes and network equipment, there are other barriers to the adoption of energy efficient technologies in appliance markets that provide further reasons for the adoption of standards. As described in the following Table we identified over a dozen such barrier that can be addressed by standards.

**CAUSES OF THE FAILURE OF THE TO INVEST ADEQUATELY IN EFFICIENCY ADDRESSED BY STANDARDS**

**ENDEMIC FLAWS**

Agency  
Asymmetric Information  
Moral Hazard

**TRANSACTION COSTS**

Sunk Costs, Risk  
Risk & Uncertainty  
Imperfect Information

**STRUCTURAL PROBLEMS**

Scale  
Bundling  
Cost Structure  
Product Cycle  
Availability

**SOCIETAL FAILURES**

Externalities  
Information

**BEHAVIORAL FACTORS**

Motivation  
Calculation/Discounting

**Source: Re: Docket Number EE-2008-BT-STD-0012, Equipment Price Forecasting for Refrigerators, Refrigerator-freezers and Freezers, March 24, 2011, Appendix B: Market Imperfections and the Energy Efficiency Gap, Why Standards are the Right Approach**

For the foregoing reasons, we encourage the Department to move ahead in this product area in an effort to provide consumers greater energy savings. Declaring them covered products is the first step, which should be followed quickly by a rulemaking.