NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

August 1, 2006

Milton Brown
Office of the Chief Counsel
National Telecommunications and Information Administration
1401 Constitution Avenue
Room 4713
Washington, DC 20230

Dear Mr. Brown:

On behalf of the Natural Resources Defense Council (NRDC) and its more than 1.2 million members and e-activists, we respectfully submit comments to NTIA's rulemaking for digital-to-analog (DTA) converter boxes as described in the July 25, 2006 Federal Register. NRDC is a leading environmental non-profit organization and we have been active participants in international and U.S. forums related to improving the energy efficiency of consumer electronics products such as televisions and all forms of set top boxes, including DTAs.

NRDC's comments address NTIA's solicitation for comments on the topic of whether to include energy efficiency as an eligibility requirement for the $40 per DTA consumer rebate. Below we provide some background on this topic and our recommendations on how NTIA can add energy efficiency requirements to its rebate program that will deliver substantial economic and environmental benefits.

1. Background

A. Power Modes

A DTA's annual energy consumption is based upon the following three factors:

- On mode power (Watts) – power consumed by the box when it is on. Also referred to as "active" mode.

- Standby mode power (Watts) – power consumed when the DTA has been turned off. Some stakeholders also refer to this mode as sleep mode or more precisely as "passive standby" mode. (Note some low level of power will be needed to support various activities such as keeping the DTA ready to respond to a signal from the DTA remote control. For the purpose of these comments we will not

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address the power consumed during non-routine standby events such as a program guide updates.)

- Duty cycle – the DTA usage pattern will vary depending on the number of hours the user watches broadcast TV and if they turn their DTA off at night. For example, the typical TV owner will view approximately 4 -6 hours of broadcast TV each day. The DTA will be in on mode during this period. Depending on the user's behavior the DTA will remain in on mode or go into standby mode if the user physically turns off the DTA by pushing the off button on the DTA or the DTA remote. Due to the big spread in power use between on and standby modes, a user's annual energy use for DTAs will be highly dependent on how they use their DTA box.

Anecdotal evidence based on cable and satellite set top box viewing habits suggests that the majority of DTAs may stay in on mode and never enter the much lower power consuming standby mode.[1] This is because many users typically do not turn off set top boxes when they are finished viewing TV.

B. Current Market for DTAs

At the July 21, 2006 ENERGY STAR stakeholder meeting it was noted that DTAs are not readily available in the U.S. market and that demand for these devices will not significantly increase until the date when the U.S. shifts to digital only broadcasts approaches. At that time, those owners of analog TV who do not subscribe to cable or satellite TV and choose not to buy a new digital TV will be forced to purchase a DTA to continue watching broadcast TV. While no firm estimate of the actual number of DTAs to be deployed can be given, there appears to be general consensus that approximately 20 to 30 million plus DTAs will be purchased in the U.S.

The DTA models that are currently available in international markets are essentially modified set top boxes that were previously designed for cable and satellite markets. DTAs based on these older designs are relatively inefficient. Power levels in excess of 15W on mode and 7W standby have been commonly reported in recent studies performed by the Australian Greenhouse Office (AGO). Several speakers at the ENERGY STAR meeting pointed out that DTAs designed specifically for the purpose of receiving free-to-air (i.e. broadcast) digital TV signals and converting them to usable analog signals will use considerably lower levels of power than those DTAs that use modified pay TV set top box designs.

[1] We understand that some studies on user behavior have been performed in other countries and we will forward this information on to NTIA when we receive it.

C. Auto Power Down Concept

As described above, many DTAs will unnecessarily stay in the "on mode" for large portions of the day and as a result consume much greater power levels than necessary. One way to address this problem is to include an "auto power down" feature – similar to power management features employed in today's computers – that would automatically place the DTA in standby mode after an extended period of user inactivity. For example, a timer in the DTA could send a message to the TV screen after a period of extended user inactivity (i.e., no input received from the remote control in more than 4 hours). The message would state something to the effect, "If you are still watching TV press any key, otherwise the DTA will go into a low power mode." If no input is received in the next 10 minutes, then the DTA would automatically go into standby.

The key to industry acceptance of this concept is to spell out the specific requirements (what needs to happen) and leave industry with the flexibility on "how to" implement it in their own product designs. At the recent ENERGY STAR stakeholder meeting, one such solution was offered by PACE Electronics, a UK based set top box manufacturer. For more information on this non-proprietary and easy to implement option go to: http://www.energystar.gov/index.cfm?c=new_specs.digital_tv_adapters

Successful implementation of auto power down can produce dramatic energy savings on a per-DTA and national basis. To illustrate the impact this could have, we present two different hypothetical situations. The first example uses average power levels for DTAs reported by the American Council for an Energy Efficient Economy (ACEEE). The later assumes a moderately efficient DTA using power levels contained in the California standards and being considered in other jurisdictions.

	Base Case 17W/8W	**Moderate Efficiency 8W/1W**
ALWAYS ON :		
Annual Energy Use (kWh/yr)	149	70
Annual Elect Bill ($)	$15	$7
5 Year Elect Bill ($)	$75	$35
AUTO POWER DOWN: (8 Hours on/ 16 Hours Standby):		
Annual Energy Use (kWh/yr)	96.4	29.2
Annual Elect. Bill ($)	$10	$3
5 Year Elect Bill ($)	$48	$15

For both scenarios (base case and moderately efficient), one can cut the user's annual energy use and electric bill by more than one third simply by adopting an auto power down feature.

2. Review of Current DTA Policy Options

Per EPA estimates,[2] over 3 billion kWh/yr would be used to power DTAs if DTA designs remain unchanged (17W on/8W standby). EPA also estimates that moving to more efficient designs and instituting auto power down could cut DTA annual energy use by over 66%. This example included a move to powering down after 4 hours, and on and standby mode power levels of 8 and 1W, respectively. These power levels are consistent with those being considered by various policy makers for mandatory DTA standards.

To put this opportunity into perspective, more efficient DTA designs coupled with deployment of auto power down could yield the following benefits:

- Save consumers $30 over 5 years of DTA use.[3]
- Cut our nation's electric bill by almost a billion dollars over a 5 year period.
- Prevent annual power plant carbon emissions equal to those produced by more than 300,000 cars.

The above savings are quite compelling and as such we urge NTIA to incorporate energy efficiency requirements into its criteria for determining eligibility for the $40 per DTA rebate program it is administering. Below we provide a range of options for your agency to consider.

A. Adopt ENERGY STAR

ENERGY STAR is in the process of developing a specification for energy efficient DTAs. NRDC views the ENERGY STAR process for this unique product category as one that will create an incentive for bringing amore efficient DTAs to the market. The details are expected to be finalized by year end, including the exact maximum allowable on and standby mode power levels as well as a power down requirement. ENERGY STAR specifications are typically more stringent than mandatory standards

An additional benefit of the ENERGY STAR specification is that it provides a very well known label and robust qualification and marketing requirements, contributing to much

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[2] Based on7/21/06 presentation made by ENERGY STAR's Katharine Osdoba which can be viewed at http://www.energystar.gov/index.cfm?c=new_specs.digital_tv_adapters .

[3] EPA's savings estimates are slightly different than those introduced by NRDC in our example due to a different assumed duty cycle for operating the DTA. Each of these examples is consistent, on an order of magnitude basis, as they yield similar estimates of the potential savings that can be achieved.

needed consumer education for these boxes. NTIA could simply require models to meet ENERGY STAR in order to qualify for its rebate.

If this option is not selected, the ENERGY STAR label would still serve as a valuable tool to help retailers and consumers identify the most efficient models. In addition, it's conceivable that selected utilities may elect to offer additional rebates to encourage the purchase of models that meet ENERGY STAR.

B. Adopt Existing Policies from the U.S. or Other Jurisdictions

The State of California has existing mandatory performance standards for DTAs set at 8W on and 1W standby. China's equivalent of ENERGY STAR recently issued a specification of 9W on and 1W standby and also requires auto power down. Australia's high efficiency specification (akin to ENERGY STAR) also includes auto power down language.

While stakeholders in the efficiency community strongly support standards at these and potentially even lower "on mode" levels – once new more efficient components enter the market – we recognize that certain segments of the industry oppose any restrictions on DTA "on mode" power levels and are unlikely to support their inclusion as a rebate eligibility requirement.

C. Focus on Standby Power and Auto Power Down

Another option would be to establish a maximum allowable power level in standby, and to require the DTA to be shipped with a factory enabled auto power down feature. This option is appealing as a large % of the potential energy savings can be achieved simply by ensuring that:

- The DTA automatically shifts to standby power mode when the viewer is not watching TV, and
- When in standby the DTA does not use a lot of power.

Adding auto power down is a critical complementary, alternative strategy for achieving real energy savings in DTAs. For the large proportion of customers expected to always leave their DTA in the on mode, it allows one the potential to reduce power draw by as much as or more than may be reduced through lower "on" mode power draw requirements, only.

In other forums, policy makers have placed a lot of emphasis on reducing the amount of standby power used by consumer electronics products. Voluntary and mandatory programs in the U.S. and around the world have gravitated towards a standby power level of 1W, with some additional allowances provided when higher levels are justified.

One should also note that the Consumer Electronics Association (CEA), whose members include many of the likely makers/marketers of DTAs, has recently set a standby mode power limit of 2W in its recent standard, CEA 2013. This standard has been approved by the CEA technical working group and is expected to be formally passed later this year. (Note CEA refers to standby mode as sleep mode in its document.).

3. NRDC Recommendations and Conclusions

We think it would be ill advised for the government to spend more than a billion dollars in tax payer money to offer a DTA consumer rebate program that does not include minimum energy efficiency requirements. Without the inclusion of energy efficiency requirements, there will be little incentive for the electronics industry to produce and market more efficient models. Failure to require more efficient DTAs will likely cause consumers to pay up to two to three times more than they should to operate their DTAs. This is particularly relevant as many of those who buy DTAs will come from lower income groups who are least able to absorb higher electric bills. In addition, less efficient DTAs will result in the unnecessary emissions of millions of tons of additional global warming pollution.

Simply stated, we urge NTIA to tie eligibility for the DTA incentive to minimum energy efficiency requirements. To that end, we encourage NTIA to seriously consider each of the three above previously described options as a potential eligibility requirement for the consumer DTA incentive. Given NTIA's desire to eliminate any potential delays or barriers to a seamless transition to digital broadcasts and the need to finalize the details of the incentive program in a very fast time frame, we anticipate that Option C (low standby power level and factory enabled auto power down) will draw the greatest support from within NTIA. This option should also be easily supportable by the DTA industry as compliance: a) would not require significant product redesigns; b) does not set on mode power level limits; and c) should result in little to no incremental production costs.

It should be noted that NRDC strongly supports the need to also reduce the on mode power use and that we will continue to advocate for this in other specification setting processes including state standards and ENERGY STAR. We chose to focus on standby power as a means for producing an option that provides significant savings and the greatest chance of obtaining support from all stakeholders involved.

We offer the following strawman proposal for Option C below for your consideration:

1. **DTAs shall not consume more than X Watts of power in standby mode.**

   We recommend NTIA establish a standby power limit of between 1 - 2 Watts. One Watt would be consistent with many other regulatory policies while 2W is

unlikely to bring industry opposition as it was developed specifically by the consumer electronics industry and its trade association.

2. **DTAs must contain an "auto power down" feature that would automatically place the DTA into standby mode after four hours of user inactivity and with a pre-power down warning. The DTA must be shipped from the factory with this feature enabled.**

Based on industry feedback we have received, the details of how the auto power down feature is implemented should be left to the manufacturer to decide. In order to address the needs of those consumers who program their VCRs to record a show, the manufacturer may choose to add an auto power down ***override*** *feature to disable this function that the user could select thru a pull down menu.*

In closing, we look forward to working with NTIA and other stakeholders to develop a mutually acceptable set of energy requirements to add to the NTIA incentive eligibility criteria. NRDC is available to participate in any future discussions on this topic and is committed to work with other stakeholders to quickly develop the final language that will be needed for defining the operating modes, test method, auto power down function, etc.

Respectfully submitted by:

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