



American Council for an Energy-Efficient Economy

WASHINGTON, DC

September 25, 2006

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

Dear Mr. Brown,

I am writing on behalf of the American Council for an Energy-Efficient Economy (ACEEE), a non-profit research organization that has been working on energy efficiency issues since 1980 (see www.aceee.org for further information). We work on many technology, program and policy issues involving energy efficiency and have participated in digital-to-analog (DTA) converter box discussions including those involving California standards, an Energy Star specification, program options for states and utilities, and Congressional legislation. It is with this background that we provide these comments to NTIA.

Federal legislation providing rebates of \$40 for DTA purchases are intended to ease the financial burdens of the digital conversion on those least able to afford DTAs. However, the initial purchase cost is only part of the issue. A conventional DTA costs more than two times more to operate over its estimated five year life than its estimated \$40-50 purchase cost (i.e., five year operating costs are \$125/box at today's electricity prices). In fact, we estimate that a household with two conventional DTAs will consume more than half the electricity each year as they would use for an average new refrigerator. The attached table provides additional data on these estimates.

In order to keep the purchase *and* operating costs of DTAs manageable, we recommend that NTIA establish basic energy efficiency criteria for these boxes. Two items are essential for such a specification. First, standby power use (power used when the devices are nominally off) should be capped at no more than 2 Watts. This is the high end of the 1-2 Watt range that has been used in a variety of specifications. Second, the device should be programmed to automatically switch to standby mode after prolonged user inactivity (specifically, we recommend power down after four hours have elapsed since the last user interaction, with an on-screen warning prior to power down). Available evidence from cable and satellite boxes is that most users never switch their set-top boxes off, even when the TV is off. A DTA typically uses about 18 Watts of power in this mode, wasting many kWh of electricity each year. An auto power down requirement would dramatically reduce this waste. We estimate that these two features (2 Watts standby plus auto power down) would reduce energy use for the average DTA by 93 kWh per box/year, reducing operating costs by \$9 annually and \$45 over the five year life of the box (see the attached chart for additional details).

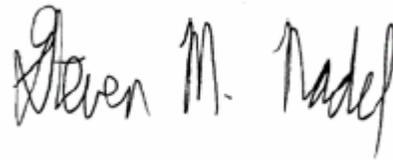
Based on research by the California Energy Commission and discussions with industry experts in the U.S. and overseas, we estimate that these features will add no more than \$5 to the cost of a DTA. Thus, the value of the energy savings (\$9/year) will payback the extra cost in less than a

year, and over the life of the box, save \$40 net (\$45 energy savings minus \$5 incremental cost). These savings approach the entire purchase cost of a basic DTA.

Without NTIA intervention, it is unlikely manufacturers will incorporate these energy saving features in most DTAs. Given these large savings, and the purpose of the program to assist those least able to afford expenses associated with the digital conversion, we strongly urge you to adopt these minimal energy efficiency requirements as part of your specification.

Please feel free to contact us if you have any questions about our proposal or data.

Sincerely,

A handwritten signature in black ink that reads "Steven M. Nadel". The signature is written in a cursive style with a large initial 'S' and 'M'.

Steven M. Nadel
Executive Director

Energy Consumption of Household Products

Product	Avg Energy Use per Unit (kWh/yr)	Avg Energy Use per Household (kWh/yr)	Avg Energy Cost per Household (\$/yr)
Refrigerator	490	490	\$44
Dishwasher	360	360	\$32
Microwave	120	120	\$11
Television	185	269	\$24
DVD	34	34	\$3
Stereo (component system)	150	150	\$14
Cordless telephone	19	19	\$2
Lighting	110	950	\$86
DTA (unregulated)	144	273	\$25
DTA (ACEEE proposal)	57	86	\$8

Sources and Assumptions:

Refrigerator: AHAM -- 2002 SWA energy use 520 kWh/yr; rounded down to account for increases in market share at new Energy Star level

Dishwasher: Energy Star market share approx. 90%; Energy Star qualification at 387 kWh or less
Assume 360 kWh as average for popular full-size models and brands

Microwave: DOE 1998 estimates average unit energy consumption 120 kWh/yr

Television: EPA reports 2004 Energy Star market share 22%; rounded up to 25%
EPA cites 75W active/5.9W standby for typical new TV and 70.1W/1W for E Star
ACEEE assumes 25% of new TVs qualified for Tier I Energy Star levels but do not meet current Tier II requirements (e.g., have average standby power of 2.5W)
Assume 6 hour/day usage primary TV; 2 hours/day second TV
Household consumption assumes 2 TVs per household

DVD: EPA reports 2004 Energy Star market share 62%; rounded up to 65%
EPA cites 17.7W play/16.2W on/4.5W standby for typical new DVD and 14.1W/12.6W/0.9W for E Star
Assume 1 hour/day play; 2 hour/day on; 21 hour/day standby

Stereo: LBNL 1999 calculates average unit energy consumption 150 kWh/yr
EPA reports 2004 Energy Star market share 55%

Cordless telephone: LBNL 2001 cites 3.1W active/3.4W charging/2.3W standby for typical new phone
Energy Star requires 1.0W standby (including when battery fully charged)
Assume 1 hour/day active; 2 hour/day charging; 22 hour/day standby

Lighting: Per unit assumes one 75W incandescent bulb operated for 4 hours/day
Average annual household lighting use (indoor and outdoor) per RECS 2001
Per unit energy consumption based on DTA used with primary TV

DTA: Assume 6 hour/day usage primary TV; 2 hours/day second TV
Assume 25% of users turn DTA off when TV not in use
Unregulated data assumes 18W active/7.5W standby passive
ACEEE proposal assumes 12W active/2W standby passive with automatic power down after prolonged inactivity
Household consumption assumes 2 DTAs per household