NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

July 29, 2013

California Energy Commission
1516 Ninth Street, Mail Station 4
Sacramento, CA 95814-5512

RE: Consumer Electronics Efficiency Rulemaking – **Docket #12-AAER-2A**

On behalf of the Natural Resources Defense Council (NRDC) and our more than 250,000 members and online activists in California, we respectfully submit this response to the Commission's Invitation to Submit Proposals dated June 13, 2013.

Enclosed are NRDC's proposals under Docket #12-AAER-2A for the following Consumer Electronics:

- Displays
- Set-top Boxes
- Small Network Equipment

We appreciate the opportunity to present our proposals. Please let me know if you have any questions.

Respectfully submitted,

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Proposal for Standards – Displays

Docket #12-AAER-2A

Appliance Efficiency Standards and Measures

for California Energy Commission's Invitation to Submit Proposals

Submitted By:

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July 29, 2013

On behalf of the Natural Resources Defense Council (NRDC) and our more than 250,000 members and online activists in California, we respectfully submit this response to the Commission's Invitation to Submit Proposals dated June 13, 2013.

NRDC has reviewed the Investor Owned Utilities (IOUs) standards proposal for displays and is in agreement with their analysis, savings estimates and proposal. Rather than repeat much of their content, NRDC highlights below key considerations regarding the IOUs' proposal.

Display Energy Consumption - Computer monitors are pervasive in California households and businesses, with nearly one monitor per capita on average (including residential and commercial monitors). The market for signage displays is growing strongly with many of them being installed in stores, airports and other public spaces. Together, computer monitors and signage displays are currently responsible for roughly 3,200 GWh of electricity consumption annually in California. This is equivalent to the electricity use of all the households in the city of San Diego, and costs Californians over $400 million in annual electricity bills.

The IOU-proposed standards levels for computer monitors are different and more stringent than ENERGY STAR 6.0. ENERGY STAR selects its levels largely based on 25 percent market penetration, whereas IOU-proposed levels are based on maximizing the cost-effective energy savings to California bill payers. For signage displays, the IOU propose extending the current TV standards that many of them already meet. In addition they propose a Test and List requirement for digital picture frames and a List requirement for electronic billboards because little data is available for these products.

Technological feasibility - The IOUs have demonstrated that the proposed computer monitor standards are technologically feasible using a broad range of technologies commercially available on the market today, including LED efficiency improvements, reflective polarizing film, power supply efficiency improvements, auto-brightness control, backlight dimming to video content, and default screen brightness. Other emerging technologies, such as quantum dots, higher LCD panel transmissivity, and organic LEDs, have not been accounted for but are expected to provide additional options to further improve display efficiency at a lower cost in the future.

The same technologies also apply to signage displays, and many of them already comply to proposed standards.

Performance-based standards - The proposed standards are performance-based: they do not prescribe the use of any single technology. Manufacturers have the flexibility to choose the most cost-effective technology options to meet standard levels, including new innovative technologies that may not have been identified in the IOU analysis.

Cost-effectiveness – For every dollar in incremental upfront cost to purchase the more efficient computer monitors, users will save $2 in avoided electricity costs over the lifetimes of the products, making them very cost-effective for California consumers and businesses. We expect the benefits to be even higher and the costs lower for digital signage given that their higher compliance rate today and higher duty cycle.

The standards would save consumers and businesses an average of $9 in net energy cost savings over the lifetime of the products for each computer monitor, and $86 for each signage display.

CEC's adoption of the proposed standard would represent savings of 1,900 GWh/yr by 2022 after entire stock turnover. NRDC estimates that this would save Californians $250 million annually, and reduce California's CO_2 emissions by over 700,000 metric tons annually, the equivalent of removing 170,000 passenger cars from the road continuously.

NRDC therefore strongly encourages the Commission to adopt energy efficiency standards for displays as soon as possible.

Proposal for Standards – Set-Top Boxes (STBs) Docket # 12-AAER-2A

Appliance Efficiency Standards and Measures

for California Energy Commission's Invitation to Submit Proposals

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July 29, 2013

1 Executive summary

A 2010 Natural Resources Defense Council (NRDC) study estimated that the set top boxes (STBs) installed by cable, satellite and telco service providers consumed roughly $3 billion and nine power plants worth of electricity each year. The majority of that energy use was consumed when the user was neither watching nor recording a show. While the industry has made considerable progress since the study, significant incremental energy savings are possible as today's boxes do not take full advantage of power management technologies which eliminate or greatly reduce power use when a feature is not in use.

NRDC recommends the CEC base its standard around ENERGY STAR Version 4.1 which is expected to be finalized in August. The CEC standard would go into effect two years after the ENERGY STAR specification effective date, or roughly April 2016. It is expected to provide incremental savings of approximately 25% or more beyond ENERGY STAR 3.0 compliant boxes, which the vast majority of STBs sold today achieve.

NRDC has collaborated with the Investor Owned Utilities (IOUs) and their consultants during the preparation of their proposal and we strongly support the data they presented, and their analysis and savings estimates. Given the timing involved, the IOU proposal is based on an earlier draft of ENERGY STAR, called draft 1, and their savings estimates and test methods, etc. may vary slightly from the final version of ENERGY STAR and will need to be updated.

As we expect some new features and developments to occur during the rulemaking and once the standard goes into effect, the CEC standard must be well designed to account for such changes in the market. In general, testing can be done without the new features in use and the resultant incremental energy of that feature will not be counted. This approach also encourages industry to innovate and ensure new features do not require additional energy when not in use.

One area that NRDC has not been aligned with ENERGY STAR on is how they treat deep sleep. Draft 2 of the specification allows STBs to receive the equivalent of a 20% annual energy use incentive by merely having a low power "deep sleep" button on the remote control. As today's boxes would take an unacceptably long period of time to wake and provide full functionality (e.g. ability to select channel, view program guide, access recorded shows, etc.) we believe few consumers would utilize the deep sleep feature. As such the ENERGY STAR specification would not deliver the savings it projects. NRDC has submitted comments to EPA that would require STB manufacturers to include a selectable scheduler which would allow users to have the STB go into deep sleep during known periods of extended inactivity, such as 1 to 5 AM, when they would not be accessing the TV and long recovery times would not be an issue during that time period.

12 Federal Preemption or Other Regulatory or Legislative Considerations

While STBs are subject to various regulatory requirements set by the Federal Communications Commission (FCC), none of these requirements address energy use or trigger pre-emption from state level energy efficiency regulations.

Proposal for Standards – Small Network Equipment (SNE)

Docket #12-AAER-2A

Appliance Efficiency Standards and Measures

for California Energy Commission's Invitation to Submit Proposals

Submitted By:

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Natural Resources Defense Council

July 29, 2013

1 Executive summary

The Natural Resources Defense Council (NRDC) has reviewed the Investor Owned Utilities (IOUs) standards proposal for Small Network Equipment (SNE) and is in full agreement with their analysis, savings estimates and proposal. Rather than repeat much of their content, NRDC highlights below key considerations regarding the IOU- proposed SNE standards.

Per a recent study by NRDC and its consultant Ecova on the amount of energy consumed by small network equipment such as modems and routers:

- Nationally small SNE consumes approximately $1 billion and three medium-size 500MW power plants worth of electricity per year.
- Household annual energy use for SNE is just under 100 kWh/yr., which is greater than the annual energy use of a new 32 inch TV, and more than twice as much as many ENERGY STAR rated 14-inch laptop computers.
- There is a wide range of energy use for similar devices that deliver equivalent performance.
- Most small network equipment today draw the same amount of power when sitting idle as they do when transmitting large amounts of data at high rates.
- A shift to more efficient designs would cut national energy use by $330 million and 2.8 billion-kilowatt hours of electricity per year.
- ENERGY STAR has finalized a specification for these products and beginning in early 2014 products that meet their requirements will be eligible for the ENERGY STAR label. These models will save between 25% and 35% in average energy consumption compared to today's SNE models.

The IOU-proposed standards are based on the ENERGY STAR framework with levels that are different and generally more stringent than ENERGY STAR. ENERGY STAR selects its levels largely based on 25 percent market penetration, whereas proposed levels are based on maximizing the cost-effective energy savings to California bill payers.

The proposed levels enable approximately 17 percent of the products tested meet the proposed standard levels. They can be met with current, market-available technology, such as energy efficient Ethernet, and products with the newest features can comply.

The standards have a near zero incremental cost and are very cost-effective for users, saving between $7 and $37 per unit over the lifetime of the product, at no or marginal additional cost.

In addition, adopting the recommended test and list requirement for small enterprise network equipment and fixed wireless broadband access devices would enable California to gather data and monitor the energy use of small network equipment not covered by the mandatory standards.

CEC's adoption of the proposed standard would represent savings of nearly 100 GWh/yr for first year sales and over 400 GWh/yr savings after entire stock turnover. NRDC estimates that this would save Californians $50 million annually, and reduce California's CO_2 emissions by over 150,000 metric tons annually, the equivalent of removing 35,000 passenger cars from the road continuously.

Given the observed spread in energy use, the magnitude of the potential savings, and the forecasted increased availability of more efficient products, NRDC strongly recommends CEC adopt the IOU-proposed minimum efficiency standards and test and list requirements for this category of products as soon as possible to ensure that all SNE sold in California meet minimum energy efficiency levels.

14 Bibliography and Other Research

NRDC Issue Brief on Small Network Equipment Energy Use – June, 2013
http://www.nrdc.org/energy/files/residential-network-IB.pdf

NRDC Issue Paper on Small Network Equipment Energy Use – June 2013
http://www.nrdc.org/energy/files/residential-network-IP.pdf