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March 28, 2014

Laurie ten Hope
Deputy Executive Director for Energy R&D
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: Docket Number 12-EPIC-01

Dear Ms. ten Hope:

Thank you for the opportunity to comment on the CEC's Proposed Second Triennial EPIC Investment Plan. Ecova's Research and Policy team has and continues to perform innovative work for the CEC on behalf of the California investor owned utilities. On their behalf, we conduct market, technical, and policy research in support of developing new energy efficiency standards and voluntary specifications for a wide variety of products. As part of the California investor owned utilities' codes and standards program, Ecova has developed Codes and Standards Enhancement Initiative reports for several Title 20 measures, including incandescent lamps, nightlights, small network equipment, set-top boxes, computers, computer monitors, televisions, and battery chargers, among others.

We are pleased that the CEC's Second Investment Plan proposes continued investment in plug load efficiency for consumer and office appliances. Relative to heating, ventilation, and air conditioning (HVAC) and lighting electricity use, less is known about the plug load electricity footprint in California today—and even less to the extent that this is changing over time. Achieving a better understanding of the scope and magnitude of plug load electricity use in California homes and offices is imperative for evaluating California's long-term energy efficiency goals, and for this reason, we propose the following investigations to fill the gaps we see in the current investment draft:

1. In *S.1.1.4* of the EPIC draft, the CEC proposes to "Address consumer behavioral patterns for equipment use and potential acceptance of new technologies and operating strategies." In order to gain a robust understanding of consumer behavioral patterns, we believe that this investigation should include a comprehensive field survey of plug load electricity consumption in homes and offices. This research will help to achieve a better understanding of how and when consumers use a subset of plug load products in buildings—particularly electronics and appliances with rechargeable batteries—and where significant energy savings opportunities might exist. Plug load field studies are a cost-effective means towards gathering an up-to-date snap shot of electricity use, as well as providing qualitative and quantitative information about plug load usage (i.e., duty cycle) behavior in various building environments.

   The findings from this study can be used to inform several, existing California initiatives, particularly California's progress towards—and analysis of—achieving zero net energy in residential and commercial buildings. In addition, data from the proposed study can help to inform potential opportunities for energy efficiency standards via Title 20, as well as

future statewide energy modeling scenarios. In 2006, Ecova (formerly Ecos)—in cooperation with RLW Analytics and Lawrence Berkeley National Laboratory—undertook one of the first comprehensive studies of electric plug load devices in U.S residences.[1] The study, completed with funding from the CEC's Public Interest Energy Research (PIER) program, included phone surveys of 300 California homes and plug load metering in 50 homes using highly accurate plug load power meters. Researchers obtained weeklong power and usage pattern measurements for nearly 700 plug load products in the selected homes. An update and expansion of this previous research would be a significant contribution to understanding California's plug load environment today and how it has changed since 2006.

Additionally, the state of California would greatly benefit from an update to a commercial office plug load field study conducted in 2007 and 2008 by Ecova, with RLW Analytics.[2] In this study, researchers visited 47 offices and compiled an inventory of all plug load devices found at each of the sites. The research team then installed plug load meters on a subset of devices in 25 of these offices. In total, the team inventoried nearly 7,000 plug load devices and collected meter data from 470 plug load devices. An updated, more exhaustive plug load field study could provide detailed insight into how these devices operate in their everyday office settings and how much energy they consume.

2. In the March 17th webinar, the CEC discussed establishing a "golden carrot" program to develop a competitive mechanism to realize savings above and beyond existing efficiencies for one or more plug load devices, likely to include set-top boxes. We believe that such a program would be an effective way to continue to achieve savings from plug loads and would recommend the CEC to consider doing the same for clothes dryers and hot tubs.

   Clothes dryers have nearly 80% residential penetration and represent 6% of residential energy consumption.[3] Despite their ubiquity, there is no voluntary ENERGY STAR labeling program, no mandatory EnergyGuide labeling, and very few utility rebates available for efficient dryers.

   In order to adopt a "golden carrot" program to achieve market adoption of more efficient dryer models, we encourage the CEC to expand efforts to create a more realistic test procedure for clothes dryers. The current test procedure developed by U.S. Department of Energy uses a thin synthetic test cloth that does not accurately reflect the thickness or weight of most loads in the field, which often include items such as jeans and towels. Developing a more realistic test procedure would allow testing of the most efficient models on the market in order to understand their energy performance in the field and could help to inform a utility rebate program that could generate large-scale savings.

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[1] Porter, S.F., L. Moorefield, & P. May-Ostendorp. 2006. Final Field Research Report. Prepared by Ecos. Prepared for the California Energy Commission Public Interest Energy Research (PIER) Program. http://www.efficientproducts.org/documents/Plug_Loads_CA_Field_Research_Report_Ecos_2006.pdf.

[2] Moorefield, L., B. Frazer, & P. Bendt. 2008. Office Plug Load Field Monitoring Report. Prepared by Ecos. Prepared for the California Energy Commission Public Interest Energy Research (PIER) Program. http://www.efficientproducts.org/reports/plugload/Ecos-Office-Plug-Load-Report_14Jul2009_DRAFT.pdf.

[3] Denkenberger, D., S. Mau, C. Calwell, & E. Wanless. 2011. Residential Clothes Dryers: A Closer Look at Energy Efficiency Test Procedures and Savings Opportunities. Prepared for the Natural Resources Defense Council.

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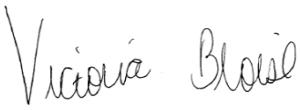
Although there is currently a Title 20 hot tub standard being developed, there are no heat pump hot tubs available in the U.S. market. This technology has the potential of saving 50% or more of the energy used. A golden carrot program would be appropriate to encourage the introduction of this technology.

Thank you for soliciting feedback on the 2015-2017 EPIC Program Second Triennial Investment Plan. We appreciate the opportunity to engage with staff at the Commission, and look forward to continued collaboration.

Sincerely,



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