

April 20, 2018

UC IRVINE OFFICE OF SUSTAINABILITY

To Whom It May Concern:

I am writing to affirm the innovative nature of the PlugLoad Advanced Controls (PAC) program at CalPlug and the “Coffee Buddy” project which was developed as part of this program. In this program, CalPlug has developed a number of devices that use sensors and self-learning control logical control to prevent wasteful usage and save energy.

Energy used from plug loads is a growing concern in both businesses and residences as up to 30% of home energy can be traced to plug loads and up to 50% for offices. Management of consumer electronics (the majority of plug loads) is difficult as it requires a careful management to avoid substantially impacting user experience negatively. Positive impact is always strived for when achievable. An example of this is efficiency causing devices to run longer under battery, run cooler, or have extended lifetimes.

The “CoffeeBuddy” is part of CalPlug’s PAC program focus into investigating point-of-use water heaters and coolers as potential targets for energy savings. This particular solution is focused toward a commercial market and can provide up to 50% energy savings for commercial coffee makers.

CalPlug has a dual-focused mission with one aspect focused on improving efficiency via translational research, the other focused on developing the engineering and technical policy leaders of tomorrow. CalPlug’s staff deeply involves students in research to develop and demonstrate solutions under structured staff supervision in a creative team atmosphere. CalPlug currently hosts more than 50 undergraduate and graduate students who assist with research.

This project was developed by a mixed graduate/undergraduate student team at CalPlug under direct oversight from the office of the center technical director. The development of the underlying functional algorithms have been published and presented by CalPlug staff. A student team worked hand-in hand with staff to develop a practical demonstration for the application of the developed control algorithm. A subset of this team (Siddhant Kasat, Omair Farooqui, Cameron Haddad, Nicholas Vong, and Arya Kalantar) developed a business plan surrounding the development of this technology and presented it at the Beall New Venture and Beall and Butterworth competitions where their student team placed in the semi-finals.

CalPlug is currently continuing to develop the core energy management control system design which is in use for the “Coffee Buddy” project as both a retrofit for stock already in place in the market and an OEM solution for manufacturers to implement at construction. CalPlug is currently in discussions with both utilities and manufacturers for continued development of this solution.

The following resources are two 2017 conference papers related to the development of energy saving solutions under CalPlug’s PAC program.

<https://scholar.google.com/scholar?oi=bibs&cluster=12815406260123200892&btnI=1&hl=en>

<https://scholar.google.com/scholar?oi=bibs&cluster=10429760773041632328&btnI=1&hl=en>

Sincerely,



Michael J. Klopfer, PhD  
Technical Director  
California Plug Load Research Center (CalPlug)