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California Energy Commission  
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Re: EPIC Implementation Workshop; Programmatic Funding of Key Centers

Dear Mr: Harland:

I strongly support programmatic funding for the Western Cooling Efficiency Center (WCEC), a public-private partnership that, while a fairly recent energy-center, has quickly become important to high-quality research, development, and demonstrations to drive up HVAC efficiencies and drive down building conditioning loads. The WCECs has been able to quickly become a critical component to California's energy future because of the knowledge and reputation of its leaders, their knowledge of and connections within the buildings and HVAC communities, and their unusual combination of real experience in both the academic and manufacturer arenas. This broad-based experience has led to strong RD&D partnerships, and rapid field-testing and implementation across a spectrum of HVAC and buildings needs and applications. From the day they opened their door, the WCEC nurtured existing and engendered close collaborative relationships between the HVAC industry, building industry, electric utilities, and the California Energy Commission. All have contributed both intellectually and financially in support of RDD&D efforts at the WCEC. Broad-based programmatic funding is essential to support the comprehensive charter of the WCEC, consisting of both focused and programmatic research, development, demonstration and deployment (RDD&D), as well as supporting the training and development of student-training and student-internship programs.

It is of fundamental importance that EPIC (Electric Program Investment Charge) funding be committed not only to a spectrum of focused, competitive research programs, but also to key energy centers, like the WCEC, that have a key role and fill needs that focused research programs cannot fill. A few key energy-centers, the WCEC being one, have provided large, quantifiable benefits to California ratepayers. Successful research centers supported by non-specific, stable, programmatic-funding are critical to California's energy-efficiency future because of their unique ability to find, explore and evaluate techniques and technologies that are not necessarily in existing and/or planned research program solicitations ("focused research" in this context).

I have been involved with the WCEC since its inception, both providing and receiving advice and assistance. I have worked on joint projects with the WCEC in the residential sector, and have witnessed industry partners deriving ideas and benefits from the center that will lead to improved efficiency in California buildings. The WCEC is literally the place for industry to go for innovative ideas, research experience and knowledge with extreme depth and breadth.

Below are three examples from my direct experience working with the WECE that demonstrate the value that the WCEC has brought to energy-efficiency (and the quality of life) in California as a direct result of its broad

programmatic charter, funding, and resulting activities. The identification, qualification, and development of ideas illustrated in these three examples directly resulted from programmatic funding to the WCEC.

1. Sealing of building envelopes: the WCEC, using programmatic funds from the CEC, and DOE (BIRA Building America program) initiated research on the use of aerosolized particles to seal leaks in building envelopes. The technology has been extremely successful, with over 25 successful field demonstrations that now seal over 90% of the leaks in both single and multi-family residences. This success has sparked other states and federal organizations to sponsor additional research, and the technology is now nearing market introduction.
2. Climate appropriate HVAC systems: California's hot-dry climate presents several opportunities to employ the radically more efficient air conditioning systems needed to achieve the state's energy efficiency goals. Unfortunately, the market was not moving in that direction. Again using seed monies from CEC programmatic funding, the WCEC initiated the Western Cooling Challenge to enable demonstrations of these highly efficient, climate appropriate systems. The program proved highly successful, and funding of the project was picked up (and greatly expanded) by a California IOU (investor-owned utility), and it continues to provide the demonstrations of hybrid systems needed to spur their market adoption. Since the initiation of this program, at least 4 companies have begun to produce hybrid systems that are 40% more efficient than the DOE standard.
3. HVAC-related behavior research: Engineers are capable of designing and building more efficient HVAC systems and controls, but these devices frequently fall short of their expected promise because of the differences between laboratory and field equipment use and behavior. While several programs investigate how users interact with their energy efficient systems, the WCEC recognized the need to examine behaviors across the entire supply chain to best understand user decision-making. Thus, using CEC programmatic funding, the WCEC launched the HVAC Behavioral Research Initiative to conduct these studies, which have investigated technicians, distributors, and consumers and how their actions impact the selection (or not) of energy efficient HVAC systems. This led to multiple new understandings of the interactions within the supply chain, and (again) the CEC's early, relatively small investment of programmatic funds was picked up and sustained by a California IOU.

These three examples are examples of not only some of the center's many advances in HVAC technologies and space conditioning-related research, they also exemplify key benefits of programmatic funding spent to maintain a proven, highly effective research center. Without continued programmatic funding to highly effective energy-centers, like the WCEC, efficiency gains and associated improvements in construction practices will cease. California, and specifically the EPIC program, must continue funding for both competitive-solicitations for focused research-programs, and institutional or broad "programmatic" funding of proven effective research centers, specifically the WCEC. California needs both. Focused programs are necessarily limited to a limited scope, and as such, they should and will always pass opportunities not directly related to their research scope. The continued programmatic support of centers like the WCEC, will result in the continued discovery and development of concepts outside the identified research foci of the EPIC program that can be as or more important than the identified research areas. The research centers are designed to have the latitude to follow good ideas at least to determine their potential. Unlike research centers, Focused research programs can never go the distance from Research & Development, to Demonstration, to Deployment, and finally to market adoption, as the WCEC has demonstrably done in several areas.

Another key activity and benefit of the WCEC is its integrated and harmonized activities that bring together education, research, and codes and standards activities. I strongly support and encourage this integrated approach.

The WCEC and a few other notable research centers that use a similar model present opportunities to effectively integrate all types of RDD&D activities to address long-term energy efficiency issues that cannot be addressed, resolved, implemented, or obtained through individual project and/or research-program solicitations in different activity areas and at different times. I urge the Commission to support the WCEC through the EPIC program with a budget commensurate with its proven success and importance to California's past, current and future energy, buildings, and space conditioning needs.

Sincerely,



Rob Hammon, Ph.D.  
President

Cc: Commissioner McAllister  
Commissioner Hochschild  
Rob Oglesby