



OFFICE OF RESEARCH

ONE SHIELDS AVENUE  
DAVIS, CALIFORNIA 95616-8671

March 4, 2015

**MR ELI HARLAND**

California Energy Commission

**RE: EPIC Implementation Workshop Feedback**

Dear Mr Harland,

On behalf of the Office of Research at University of California, Davis, I am pleased to provide this letter by way of further feedback to CEC regarding EPIC Program Implementation following the recent workshop. Specifically, I would like to provide some thoughts on why CEC should invest EPIC funds in research centers and consortia.

I have worked at the interface between government, industry and academia for over 20 years, having spent time in all three 'jurisdictions'. I truly believe that research centers have a crucial and unique role to play as part of a broader portfolio of funding mechanisms. In my current role as Associate Vice Chancellor for Interdisciplinary Research at Davis I oversee 40 research centers, clusters, core facilities and programs and get to work with researchers across a broad array of research fields, disciplines and sectors. In my opinion Research Centers can play a pivotal role in advancing knowledge, enabling partnerships and training our future leaders.

UC Davis has benefited tremendously from CEC funding over the last decade, and we very much appreciate the scale and breadth of activities supported under PIER, and welcome this opportunity to provide further input to the constituent components of the EPIC program. At UC Davis our centers focusing on energy efficiency; lighting, cooling and water combined with efforts in sustainable energy generation technologies, have been extremely impactful and continue to have relevance and great potential to advance the CEC's vision for California's energy sector.

In the remainder of this letter I will focus on my thoughts relating to the question below;

*Is there a need to invest EPIC funds in research centers or consortiums that implement multi-year programs? If so, describe why research centers or consortiums are needed and identify which topic areas they are needed in.*

**Scale of effort influences timescale and scope of delivery**

Research Centers provide a cohesive, critical mass of expertise that can solve complex problems in a timely manner that is not possible through isolated projects being performed by individual investigator based research methods. Research centers can deploy resources more nimbly to particularly urgent problems that require immediate attention, rather than relying solely on individual investigator focused RFA's.

**Complex problems benefit from an interdisciplinary approach - greater impact and disruptive technology breakthroughs are best enabled by Research Center scale funding**

Research Center scale funding will enable CEC access the brightest minds from across a range of disciplines to work on the far-reaching, intractable problems that face California's energy future. It is quite obvious across many fields of activity that the most complex problems are not solvable by mono-dimensional, smaller scale research teams but rather require a multi-talented team-based approach. UC Davis has a proud history of interdisciplinary research and education across a very diverse range of disciplines; a Research Centers based mechanism would enable the support of team-based research that draws together expertise with diverse skills and knowledge.

### **Continuity and Consistency of Research Mission**

Multi-annual Research Center funding enables a consistent, far-reaching approach to research that is difficult to achieve by funding individual investigator-led teams. As previously referenced, CEC has invested heavily in some wonderful, impactful centers that continue to this day to deliver important breakthroughs. Allowing productive centers to dissolve through lack of funding seems wasteful and will surely slow progress on some of the key challenges facing California.

### **Research Centers are key enablers of public-private partnerships**

Across many domains of research it is now well understood that industry partners typically find it easier to interact with larger entities within universities such as centers, compared to working with multiple individual investigators. Research Centers can represent a single interface or point of contact for a company or other organization, and can help organize researchers into more strategic, coherent groups compared to the alternative of working with multiple isolated teams. The scale and 'mission coherence' best enabled by Research Centers can produce a fertile environment for interaction and knowledge/technology transfer between industry, government and academia.

### **Talent Pipeline: Research Centers can help produce a multi-skilled professional workforce**

By creating Research Centers we enable people with different skillsets, knowledge, experience and viewpoints to come together. UC, CSU and other universities and colleges play an important role in training the next generation workforce for California's energy sector. Research Centers can provide a far richer and more diverse range of experiences for educating and training our future leaders to become the next generation of scientists, engineers, policy makers or other important components of California's future energy ecosystem.

### **Flexibility to enable response to unpredictable opportunities**

Funding research through RFA-type calls or solicitations is clearly one method of advancing knowledge and technological know-how, but tends to produce fluctuations in research outputs as individual funding programs start and stop at different times. In my view this approach needs to be balanced with longer term investments in key areas that will outlive the 1-4 year duration typically seen in individual research group scale projects. By providing ongoing funding for Research Centers in strategically important areas CEC can very effectively achieve a redirection and 'rapid-response' mechanism through seed funding mechanisms that can enable more rapid investigation of emerging technologies at far lower risk than running full-blown competitions.

I greatly appreciate the opportunity to submit this input and would be delighted to further discuss any aspect of the points raised if that would be helpful.

Sincerely,

A handwritten signature in blue ink that reads "Paul Dodd". The signature is written in a cursive style and is positioned above a horizontal line.

Paul Dodd, PhD  
Associate Vice Chancellor, Office of Research