May 27, 2011

Honorable Dianne Feinstein
Chairman
Senate Appropriations Subcommittee on
Energy and Water Development
United States Senate
Washington, DC 20510

Honorable Lamar Alexander
Ranking Member
Senate Appropriations Subcommittee on
Energy and Water Development
United States Senate
Washington, DC 20510

Dear Chairman Feinstein and Ranking Member Alexander:

As Senators with a strong interest in securing our nation’s energy future, we thank the Subcommittee for continuing to fund several key research and innovation programs in the Department of Energy (DOE). We are specifically writing to support three complementary approaches to marshal the nation’s brightest talents to tackle the clean energy and energy security problems before us. These programs – the Advanced Research Projects Agency-Energy (ARPA-E), Energy Innovation Hubs, and the Energy Frontier Research Centers (EFRCs) – each serve a unique purpose, and are important building blocks to achieve this goal. We recognize that budgets are very constrained and will continue to be in the coming years. As the Committee develops the Fiscal Year (FY) 2012 Energy and Water Appropriations Bill, we urge you to assign a high priority to these programs and continue to fund them at a robust and sustained level.

As you know, DOE plays an important role in the development and incubation of clean energy and innovation that will benefit our nation. We need a national energy policy that continues to advance us along the path of greater energy security, economic growth, and environmental sustainability. If we are to remain competitive, create jobs and wealth, and bring security to this nation, we must maintain a national energy policy that supports programs to direct research and development (R&D) resources towards fully developing and utilizing domestic energy sources. DOE programs, such as those being overseen by ARPA-E, in combination with the Energy Innovation Hubs and EFRCs, support scientific research and technological advances, all at different stages of the innovation process and with differing levels of risk involved. These programs represent a robust portfolio of unique energy R&D modalities, each of which complements the other to maximize the Nation’s ability to achieve energy breakthroughs as quickly as possible. These programs, outlined in more detail below, deserve your highest level of support in the FY 2012 budget.

Advanced Research Projects Agency-Energy (ARPA-E)

Over the years, the Defense Advanced Research Projects Agency (DARPA) has been responsible for some of the most innovative technological breakthroughs of our time. Global Positioning Systems, the Internet, and even stealth technology came from research funded by DARPA. ARPA-E was created to work in the same way. It challenges researchers at universities and in the private sector to develop game-changing technologies to meet our clean energy needs. This is exactly the kind of early stage financing for “high-risk, high-reward” research in which the private sector will not invest sufficiently. It is a small bet, with reasonable odds, and a huge payoff potential. Moreover, supporting ARPA-E is a bet on Americans’ ability to turn game-changing ideas into market-creating, job-growing businesses. To date, over 120 projects have been funded, and we know that at least six of these have leveraged a $23.6 million federal investment into more than $100 million in outside private capital investment. There is tremendous interest in investing in many more innovative ideas.
Energy Innovation Hubs (Hubs)
The Hubs are major multidisciplinary, multi-investigator, multi-institutional integrated research centers. These centers bring together top researchers from academia, industry, and government laboratories with expertise that spans multiple scientific and engineering disciplines to focus on specific research challenges that have exceptional potential to reduce our dependence on imported oil and reduce greenhouse gas emissions. When we think about the Hubs, we imagine a centralized mission-oriented research approach such as that employed by the Manhattan Project and which has effectively been employed elsewhere at places such as MIT’s Lincoln Lab, which developed radar, and AT&T’s Bell Laboratories, which developed the transistor. The Hubs differ from the Department’s other core energy R&D programs in their very large scale, higher degree of integration of scientific research with engineering development, and singular focus on driving energy technology solutions to their fundamental limits. To date, DOE has established and the Congress has supported three hubs focusing on: Production of Fuels from Sunlight; Energy Efficient Building Systems Design; and Modeling and Simulation of Advanced Nuclear Reactors. We encourage your continued support for the existing Hubs, as well as three new hubs proposed by DOE in the FY 2012 budget which would focus on: Batteries and Energy Storage; Critical Materials; and Smart Grid Technology and Systems.

Energy Frontier Research Centers (EFRCs)
EFRCs can be described as a small group of researchers focused on advancing fundamental science relevant to real-world energy systems. These university- and/or DOE laboratory-led centers are much, much smaller than the Hubs. Unlike the Hubs and ARPA-E, these centers specifically focus on long-term basic scientific research needed to overcome roadblocks to revolutionary new energy technologies in specific energy areas. EFRCs are centered on several “grand challenges” and user-inspired “basic research needs” identified in major strategic planning efforts by the scientific community. EFRCs are currently addressing multiple energy challenges that are linked by common scientific themes, such as interfacial chemistry for solar energy conversion and electrical energy storage and rational design of materials for multiple potential energy applications. In addition to the important basic energy research that is being conducted by EFRCs, these centers are playing an important role in helping to train graduate students in scientific disciplines central to overcoming current scientific and technological energy related grand challenges. To date, there are 46 ERFCs located all across the country.

America’s innovation history is built upon a foundation of federal investment in fundamental scientific research and knowledge creation that the private sector will not support because, despite its societal benefits, it is unlikely to result in significant financial returns directly to the investor. Understanding this, the public sector has a deep history of working hand-in-hand with businesses to bring fruits of this research to market, address market failures, and provide needed expertise or raise the capital for risky projects to bring them to completion. Without such partnerships, the stories of the transcontinental railroad, the American aviation sector, the Internet, and biotechnology industries would be dramatically different. Similar to these areas in the past, the government has a critical role to play in helping to support and foster the new ideas that will serve as the foundation for the nation’s future energy economy. We need to support these critical DOE innovation programs in order to find that next new idea.

Thank you for your attention to the need to sustain and foster these important DOE programs.

Sincerely,

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