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A New Dawn

Emergence Of A Determined Solar Energy Focus In Arizona

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For decades, business executives and research and development professionals around the world have assumed hot spots such as Arizona would be natural incubation laboratories giving rise to solar energy innovation. Growth in solar energy could then easily complement other traditional energy sources including hydroelectric, nuclear, coal, natural gas and oil, and provide a significant boost to Arizona's long-term economic competitiveness.

Surprisingly, our state's portfolio in solar and other alternative energies has been stagnant due primarily to oil and fossil fuel prices remaining relatively inexpensive and stable over the last 20 years. In 2008, we witnessed that pricing stability disappear as electricity rates and prices for oil, natural gas, and coal edged toward unprecedented highs.

Now there is an opportunity for Arizona to take the lead as a major player in securing national, sustainable energy diversification. Toward this end, Science Foundation Arizona (SFAz) is building upon the state's capacity to drive a determined and focused solar strategy through an important and significant new initiative for our state, the Arizona Solar Institute (AzSI).

SFAz's goal in establishing AzSI is to support research and collaboration within the universities and the private sector with the highest potential for advancing competitive, commercially viable solar innovation technology. The new institute will be the necessary entity to inspire a strategic and focused initiative that will enhance the state's competitiveness for years to come.

Support Underway

Capitalizing upon the existing research base in Arizona, SFAz began investing in promising alternative energy research initiatives with the highest potential to commercialize these research outcomes in 2007. For example, SFAz has been supporting cutting-edge research in developing low-cost alternative fuels derived from solar-fed bacteria, aiding in the manufacture of super efficient solar panels that employ nanotechnology, and fostering advances in silicon wafer technology that significantly decrease solar component manufacturing costs. This research alone has catalyzed the spin-off of three new companies and collaborations with British Petroleum and Arizona Public Service, among others. These early successes clearly demonstrate the crucial need for a coordinating organization like AzSI to further cultivate the state's tremendous opportunities in this abundant and renewable natural resource.

The support necessary to fund the start-up phase of the AzSI initiative will come from both the private and public sectors. SFAz intends to invest up to \$10 million in AzSI over a four-year period; the private sector must match these monies for a total of \$20 million. This partnership will be enhanced by a \$4 million investment by the Tucson-based Research Corp., a private foundation established in 1912 that has supported ground-breaking work in rocketry, laser technology and subatomic physics and sponsored the early career work of 35 Nobel Laureates.

As a first priority, AzSI will need to aggressively assist Arizona in leveraging new relationships

and assets in California, New Mexico and Colorado. This effort requires assembling first-rate management and technical teams with diverse skill sets, engaging private industry and public sector partners who can move discoveries from Arizona laboratories to the global marketplace, and actively involving national and international investors. To meet these objectives, AzSI will aid Arizona researchers in working together to cultivate synergistic research projects that drive solar innovation and commercialization opportunities. A primary goal is to accelerate scaling up existing solar technologies while developing a new generation of more efficient and cost-effective products, processes and services.

Leadership Team

Two prominent leaders have been identified to initially direct AzSI. Richard Powell, former vice president of research at the University of Arizona and former dean of its world-class College of Optics, will co-lead the institute. v Powell's extensive capabilities have enabled the College of Optics and the greater Tucson area to be dubbed "The Optics Valley."

Robert "Bud" Annan will provide leadership as a co-director. Annan oversaw the U.S. Department of Energy's solar energy program for more than 20 years. His breadth of national and international experience will help Arizona's solar innovations to be both nationally and globally competitive. In addition to Powell and Annan, Professor Roger Angel of the University of Arizona will serve as the chief scientist for AzSI and Professor Yong-Hang Zhang of Arizona State University as the chief engineer.

The potential is here, but we have an ever-shortening window of opportunity for Arizona to become a serious player in the competitive solar arena; we must act decisively and strategically. The investment payback has the potential to provide economic advantages for the state and nation as we eliminate our dependence on fossil fuels, and environmental benefits resulting from a diversified energy economy employing renewable resources.

The next 20 years will bring rapid changes to the alternative energy sector and Arizona needs to become highly competitive. We have all the necessary components for success in front of us, and what is required of us now is strong leadership to drive a cohesive and focused solar initiative. AzSI will work in partnership with government, industry and university communities to create the foundation for a sustainable and successful Arizona.

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