

Energy and Environment/Education Working Group

Moderator: Mitchell G. Tyson, CEO, Advanced Electron Beams

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Case Study:

Meeting a Global Challenge: Increasing Energy Access and Affordability Through a Multiple-Bottom Line Business Philosophy and University-Linked Entrepreneurship

The search for affordable, clean, and renewable energy sources is a critical global challenge, and many PBLN members are deeply attuned to, or are closely monitoring, energy and environmental issues. Howard Berke, executive chairman and co-founder of Konarka Technologies (Konarka), and a senior advisor with Good Energies, Inc., is a business leader delivering socially and environmentally responsible economic growth, and impacting public policy through a *3P* (people-planet-profit) operating and investment philosophy. In addition, Konarka itself is an excellent example of a firm with a positive social impact that was incubated through connections to, and the commercialization and licensing of, research from public universities.

In addition to his work with Konarka and Good Energies, Berke is a leader in energy policy as a director of the American Council On Renewable Energy (ACORE), through which he led the fundraising initiative for the Washington International Renewable Energy Conference (WIREC 2008) in Washington D.C. He also helped found and organize the Massachusetts Clean Energy Council, which was merged into the New England Clean Energy Council.

Konarka's vision is to make practical sources of renewable power affordable and universally available. The company develops and produces light-activated *power plastic*, a photovoltaic polymer that provides an inexpensive and versatile material for devices, systems, and structures

to have their own low-cost embedded sources of renewable power. Applications of this technology include handheld electronics, sensor networks, and roofing materials. In other words, the flexible material produced by Konarka allows energy sources to be embedded throughout a product rather than being constrained by the form factor of traditional solar cells. In addition, Konarka's material and manufacturing processes are less expensive than those of traditional solar cells.

Profile Executive Bio: Howard Berke

Howard Berke is executive chairman and co-founder of Konarka Technologies and a senior advisor with Good Energies. He has nearly 30 years of hands-on management experience launching, building, and leading both public and private technology companies. Berke has founded or co-founded 13 start-up companies and has initiated and completed numerous corporate acquisitions, mergers, and R&D joint ventures in the United States, Europe, and Asia. Berke serves as Konarka's delegate to the World Economic Forum's Technology Pioneers. He sits on the board of directors for the American Council on Renewable Energy (ACORE), and has guest lectured on entrepreneurship at Yale, Harvard, MIT, and elsewhere throughout the world. Berke received his M.B.A. from the University of Chicago and his B.A. from Yale University.

Konarka Technologies, Inc.

Konarka, a leading developer of polymer photovoltaic technology that provides a source of renewable power in a variety of form factors for commercial, industrial, government, and consumer applications, builds products that convert light to energy. The company's Power Plastic® technology is focused on delivering lightweight, flexible, scalable, and manufacturable products. Konarka Technologies is headquartered in Lowell, Mass., U.S.A., with European headquarters in Nuremberg, Germany, business development offices in Asia, and a research and development facility in Austria.

Founding Konarka

As he sought to apply a solution from the field of materials science to the global energy problem, Berke sought out Sukant Tripathy, an accomplished scientist, engineer, and professor

from the University of Massachusetts Lowell (UMass-Lowell) who dreamed of bringing electricity to impoverished regions, such as his homeland of Bihar, India.

Although Tripathy was never able to personally realize his dream due to a fatal drowning accident prior to Konarka's official founding, Berke applied Tripathy's pioneering work to form Konarka in 2001, and recruited fellow co-founder, Dr. Alan Heeger, director and chief scientist of the University of California, and winner of the 2000 Nobel Chemistry Prize for pioneering research in the area of semi-conducting and metallic polymers. Konarka licensed the technology that was developed by Tripathy at UMass-Lowell, and Konarka was thus spun-off from UMass-Lowell in July 2001, with the university retaining a small equity stake in the company.

As the building blocks of its comprehensive patent portfolio, Konarka licenses intellectual property from both the University of Massachusetts and the University of California. Since 2001, Konarka has secured more than \$105 million in financing to support technology development and commercialization, including the licensing of technology from UMass and from the Ecole Polytechnique Federale de Lausanne and DuPont, as well as the acquisition of Quantum Solar Energy Linz in 2003 and Siemens' organic PV group in 2004. Konarka has continued to develop collaborations with leading research agencies and universities around the world.

Good Energies: A Unique Global Investor

In his role as executive chairman of the board at Konarka, Berke is able to use his industry experience to ensure that renewable energy interests are identified and supported throughout the state of Massachusetts, nationally, and internationally.

To this end, in June 2007, Berke joined the executive leadership team at Good Energies, Inc., a unique global investor specializing in the renewable energy industry. Good Energies is defined and differentiated by its 3P (people-planet-profit) investment philosophy, since it invests with a social return and practices corporate social responsibility. According to Good Energies' Web site, investments adhere to this philosophy by, among other ways, providing for poverty alleviation through access to affordable renewable energy (people), accelerating transition to clean energy resources (planet), and providing outstanding business opportunities with superior returns (profit).

One of Good Energies' principal assertions is that *the wealth of advanced economies and the prosperity of future generations depend on global access to affordable energy* – a challenge that Konarka is addressing as well.

Good Energies, Inc.

Good Energies is a leading global investor in the renewable energy and energy efficiency industry, focusing on investments in solar, wind, project finance, and development, as well as energy efficiency and green building. The company also makes investments in the developing world and in other breakthrough renewable energy technologies. Good Energies is a member of COFRA Group, a privately owned group of companies. Guided by the 3P principle, Good Energies looks for meaningful long-term investments with outstanding growth potential. Being an investment firm, it seeks to help drive the transition to a low carbon, clean energy economy, including bringing affordable renewable energy to the developing world. Good Energies operates globally with offices in London, New York, Toronto, Washington D.C., and Zug. The annual investment budget is 350 million Euros (550 million U.S. dollars). The current market capitalization of its portfolio amounts to more than four billion Euros (6.4 billion U.S. dollars).

Good Energies has devoted an entire investment cluster, including the necessary personnel and financial means, to making investments in the developing world. Good Energies believes that in developing countries, only an efficient market economy can create a healthy environment in which a country can develop its prosperity. In these regions, Good Energies engages in commercial investments in the renewable energy and energy efficiency sectors that are profitable

and have a high social impact. An example of this type of investment would be an off-grid solar electrification project in rural areas of developing countries (solar home systems).

Additionally, through its corporate giving program – purely philanthropic support – Good Energies supports projects that help underprivileged individuals in countries in which market mechanisms do not yet work properly. Any project is designed to help people help themselves and to enable them to grow their businesses. Some of the initiatives Good Energies has supported include solar-powered health posts to provide vaccines in Ethiopia, solar-powered water pumps to replace manual water transportation, and school electrification to facilitate learning.

Howard Berke's leadership philosophy is to bring the best people together and then inspire them to excel. According to Berke, technology is fundamentally a people business because at the heart of it is intellectual property, which is the product of the human mind. Berke emphasizes that the 3P principle is a holistic view of how to do business, and if the business focuses on pure financial returns and ignores environmental and social needs, it will not be sustainable in the long run. In Berke's view, people are the key element of the 3P philosophy, and by bringing people and ideas together to solve major world problems, Howard Berke has made it his life's work to impact the global community. Igniting technology development that empowers the widespread adoption of a clean, secure source of energy would be his ultimate legacy.

Sean Gallagher and Tracy Wemett