

**Testimony to Senate Special Session Committee on Energy Policies**

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**North Office Building**

**Harrisburg, PA**

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Thank you, Chairman White and members of the Senate Special Session Committee on Energy Policies for the opportunity to present and discuss my views regarding funding opportunities for innovative, low cost solar technologies. I have submitted a written copy of my testimony for the record and will summarize it for you today. First of all, I commend the Committee for their leadership in having this hearing. This dialogue is essential for the Commonwealth and I thank your Committee for addressing the importance of innovation related to our current energy challenges.

My name is Troy Hammond and I am the Vice President of Products for Plextronics, Inc., located in Harmar, just outside of Pittsburgh. Plextronics was founded in 2002 as a spin-out of Carnegie Mellon University. Our company is the leading developer of new class of solar cells called organic solar cells, based on a unique type of plastic called conductive polymers. In fact, we were informed this summer by NREL, the National Renewable Energy Laboratory, in Colorado, that our cells now hold the world record in efficiency for this type of solar cell.

There is good reason to support new, innovative solar technology. Solar cells directly convert sunlight to electric power in a clean, renewable manner with no direct

emissions into the atmosphere. However, today's solar technology cannot yet deliver cost competitive power in most situations. In fact, the cost per kilowatt-hour can be two to five times as expensive depending on the customer, the technology and the geographical location. Our goal is to enable an installed solar energy cost that is fully cost-competitive by 2015.

Clearly, achievement of this target will be game-changing. We believe that new thin film technologies like ours can unlock the sun's potential. The novel version of plastics used by our solar cells strongly absorb the sun's light and behave like a semiconductor, very analogous to silicon, in the generation of electricity. But rather than requiring expensive silicon manufacturing equipment and processes, these plastics are made in the form of inks that can literally be printed much like a newspaper is printed. The total manufacturing cost can be as much as ten times less costly for each square foot of solar module.

Key discoveries in this technology were made right here in Pennsylvania by our co-founder Prof. McCullough and these materials are now manufactured by Plextronics. Yet additional performance improvement and scale-up is required. The focus of our technical development activity is the continued improvement of organic solar cell performance and, critically, the scale up to large volume manufacturing.

The rapid progress we have made would not have been possible without Pennsylvania-supported funding at key junctures of our company's development. Innovation Works, our Pittsburgh-based Ben Franklin Technology Partner, was a key investor in Plextronics in the early days, before we closed our first round of venture capital funding. A grant two years ago from the Pennsylvania Energy Development

Authority allowed us to expand the focus of our research on these unique plastics from certain electronics applications that focused on short term revenue into the much bigger, longer term opportunities in solar cell applications. These solar cell focused efforts were further supported by investments and loans from the Sustainable Energy Funds of Pennsylvania. We have now grown to 50 employees, including 20 Ph.D.'s, many of whom have been recruited to Pittsburgh from outside the region. At the end of 2008, we will employ between 65-75 people and have the manufacturing plan in place to produce 3 MW of solar cells at our pilot facility in Pittsburgh.

Continued support at this juncture is critical. We recommend that the Senate Bill No. 1 include language that will support the manufacturing scale-up of this technology right here in Pennsylvania. Specifically, I urge this committee to consider funding activities that enable the manufacturing scale-up of Low-Cost Solar Photovoltaic Technologies that occur in Commonwealth of Pennsylvania. Companies or entities receiving funding in this area must demonstrate a clear pathway to help Pennsylvania meets its obligations under the AEPS by 2020.

For projects that receive funding in this area, entities should have a clear pathway to grid-parity cost of electricity. Grants and loans for working capital, equipment acquisition, construction and site preparation for the proposed solar cell manufacturing facilities are crucial incentives which will accelerate the Commonwealth's ability to grow and expand its jobs base. These projects must demonstrate significant economic impact within the Commonwealth.

In the short term the Commonwealth of Pennsylvania is in a position to reap huge economic benefits by funding technology advancements in the alternative and renewable

energy sector. These short term investments will ultimately reduce or eliminate the need for further government subsidies to meet and exceed AEPS 2020 because we will have built the solar technology that fulfills our needs and is cost competitive.

I want to thank this Committee again for extending an invitation to Plextronics to present our vision for a new technology that will enable cost competitive solar by the 2015. I also want to extend thanks to Governor Rendell for his leadership and efforts to bring the issue of Energy Independence to the forefront of today's political agenda. Clearly, we are at a cross roads in addressing energy policy in the Commonwealth. I urge this Committee to consider funding programs that will enable Pennsylvania to maintain its leadership position in this increasingly competitive market. Providing grants and loans to help companies accelerate their competitive position is critical. Thank you.