Statement of (b) (7)(C), (b) (6), (b) (7)
Abound Solar, Inc.
Regarding the U. S. Department of Energy 1705 Loan Program
Before the Subcommittee on Regulatory Affairs,
Stimulus Oversight and Government Spending
House of Representatives Committee on Oversight and Government Reform
May 16, 2012

Mr. Chairman and Members of the Subcommittee

My name is (b) (7)(C), (b) (6). Since November 2011, I have been the (b) (6), (b) (7) of Abound Solar, an emerging U.S. technology company that manufactures solar panels in Longmont, Colorado for customers in America and throughout the world. We have built research and development along with advanced manufacturing facilities in Colorado. Indiana is a planned expansion location for our second USA manufacturing facility. Abound only manufactures thin film solar modules. Abound is not a developer of solar generation projects.

Abound's solar modules are based on advanced photovoltaic research that began in the 1980s at Colorado State University (CSU) under the direction of (b) (7)(C), (b) (6). Support for the research came from two Department of Energy (DOE) programs, the *Inventions and Innovation Program* and the National Renewable Energy Laboratory's (NREL) *Thin Film Partnership Program*. In 2007, Abound was formed as a start-up company to commercialize and deploy the technology and products resulting from the innovative research.

The type of solar module which Abound produces is a subset of 'thin film' modules known as Cadmium Telluride, CdTe, or 'Cad-Tel.' This technology uses a single-junction monolithic thin-film structure with cadmium telluride as the absorption layer and cadmium sulfide as the window layer. CdTe has absorption properties that are highly matched to the solar spectrum, which is key in determining the efficiency of the product—the percent of sunlight that is absorbed for conversion to electricity. Abound uses a proprietary advanced manufacturing process and equipment, known as closed space sublimation. This technology, unique to Abound, allows fabrication of all of the critical photovoltaic (PV) semiconductor layers in one continuous piece of equipment. This equipment uses a hardware design developed by Abound, called a heated pocket deposition source, to generate thermal sublimation which deposits the PV thin films onto

the glass substrate. The company believes our innovative technology improves PV film quality, increases product yield, and lowers the manufacturing costs of PV solar modules.

From 2007 until 2010, Abound developed this innovative technology from a laboratory proof of concept stage into a larger scale application designed for broader global deployment. This involved taking what worked on a 10 millimeter square cell in controlled laboratory environment and making it work consistently in a full size two foot by four foot solar module exposed to severe weather conditions. As Abound pursued these challenges it continued to improve the manufacturing and process technology in order to efficiently produce lower cost modules for commercial applications. Abound's proximity to the solar expertise and testing facilities at NREL in Colorado has been essential to its continued technological progress and we believe helped NREL advance its own knowledge of CdTe technology. Abound constructed two manufacturing lines in its Longmont, Colorado facility to begin the advanced manufacturing of CdTe thin film PV modules.

There is significant technical and business evidence that CdTe can offer a superior solution for low-cost, utility scale PV solar power applications versus traditional crystalline-silicon modules which are produced by many Chinese suppliers today. Abound is one of only three companies in the world with significant CdTe manufacturing experience. First Solar, one of the largest global solar module manufacturers, is the second. General Electric, which could have chosen any technology for its own start-up solar module plant, publicly announced in October 2011 that CdTe is its technology of choice and is currently building up operations for future large scale manufacturing in Colorado.

'First generation' crystalline-silicon solar technology was invented in America, but today Chinese companies dominate the market. With good evidence that CdTe can be a long term winner in the next generation of solar module technology, it is notable that all three companies in the world with significant CdTe thin film PV module investments are American companies. While China has moved aggressively to dominate the production of first generation solar module technology, industry thought leaders, including experts at NREL, believe there is a significant opportunity for America to win in the long run with continued development of next generation

thin film technologies such as the CdTe produced by Abound. In fact, within recent weeks, Abound, along with First Solar and GE, has been solicited to collaborate with the U.S. Photovoltaic Manufacturing Consortium (PVMC) and NREL to help accelerate the United States' advancement of CdTe solar module technology to achieve even higher efficiencies and lower costs. This is not unlike the SEMATECH initiatives beginning in 1987 which helped recapture the U.S. lead in semiconductor manufacturing. Abound looks forward to working with PVMC leadership and its members.

DOE Loan Guarantee

In 2009, after making strong progress in developing the design and advanced manufacturing process for its first-generation CdTe product, Abound began commercial sales to U.S. and foreign customers. Although Abound was selling the first generation product to customers, the company still needed to upgrade its current production line and construct additional lines in order to keep pace with its continually improving solar module technology. Abound's business strategy, innovative technology edge, and proprietary advanced manufacturing process have attracted more than $300 million in private investment. Notwithstanding the significant private investment, Abound is a start-up company whose manufacturing technology requires significant capital investment. Existing sales could not fund expansion, nor was additional private investment available in sufficient quantities. Accordingly, with the release of a solicitation for proposals to the DOE 1703 loan guarantee program, Abound applied for DOE assistance in February 2009 in order to continue to raise the capital required to construct additional manufacturing capacity. Later in 2009, when the DOE released its 1705 program solicitation, Abound requested that its 1703 application be transferred and considered under the 1705 program.

The DOE reviewed Abound's request to participate in the loan guarantee program with a diligence process that lasted nearly two years. In addition to the technical and financial consultants retained by Abound to assist in completing the proposal, the DOE process required Abound to also pay for the expenses of certain external DOE consultants and lawyers who were assigned to review the Abound proposal. Provisional loan guarantee approval was granted in

July 2010 and, after further submissions and updates of information by Abound, the loan was closed in December 2010.

To date, Abound has drawn about $70 million, less than 18 percent of the total potential $400 million DOE loan, in the period from December 2010 through August 2011. Abound has not drawn any additional funds under the DOE loan program since August 2011. The DOE funds have been targeted at three types of costs:

(1) upgrading and completing the first production line in our Colorado facility,
(2) constructing the second production line in the Colorado facility, and
(3) production start-up costs.

The initial DOE funds have made possible the significant and continuing improvement of Abound's CdTe solar module. Abound scientists and engineers have been able to nearly double demonstrated efficiency of our commercial solar modules from 45 watts in 2009 to 85 watts in 2012. These performance levels have been verified by NREL. While Abound is still a small company, we believe that this continued significant progress towards a more cost-effective, efficient, and reliable solar panel demonstrates that Abound can be a winner in next-generation, commercial-scale solar modules.

Abound's business plan also contemplated constructing a third production line in the Longmont, Colorado facility as well as eight production lines in our future planned Indiana manufacturing facility. Because of severe market pricing conditions as well as the opportunity stemming from our recent demonstration of new higher efficiency module, Abound has delayed moving forward with construction of the third line in the Longmont Colorado facility, and any lines in the Tipton Indiana facility. As a result, Abound has not drawn any additional funds under the DOE loan program since August 2011.

Solar Panel Market Pricing

Abound's production process, engineering capabilities, and manufacturing technology continue to develop along with our improved CdTe thin film modules. Until approximately the third quarter of 2011, our worldwide sales efforts made strong progress as well. Unfortunately, in the

second half of 2011, average selling prices plummeted in the solar module market as a result of unprecedented discounting by Chinese solar panel companies. Abound believes that our CdTe modules can compete in the long term with any other module manufacturer on cost and efficiency provided that all parties are playing on an even playing field.

It is widely known that China has significant capacity to manufacture solar modules. However, until recently, few industry experts predicted that China would leverage this capacity so aggressively by deeply discounting and subsidizing the cost of their products for such a long continuous period of time.

Extreme price actions by Chinese companies believed to be selling solar panels below cost (or 'dumping') has had a harmful effect on many American solar manufacturing companies, including Abound. Instead of matching Chinese price levels and selling panels at a loss, Abound, in February 2012, made the difficult decision to shut down our current generation module production, to accelerate development of our next generation 85 watt thin film module. This 85 watt module is expected to achieve a lower cost per watt and can command a higher price per watt due to competitive gains in efficiency.

While this difficult action resulted in the elimination of 180 full time and 100 temporary jobs, we believe that accelerating development of our next generation CdTe module can provide the opportunity for Abound to create even more jobs in the future. While we continue to develop our next generation 85 watt module, Abound is seeking private financing and has no current plans to draw down further funds from the DOE 1705 loan guarantee program.

Conclusion

Abound is one of three companies, each a U.S. firm, which has significant knowledge and experience in CdTe thin film solar module manufacturing. $300 million of private investment and $70 million from the DOE loan guarantee program have made this possible.

In traditional crystalline-silicon solar modules, we have witnessed U.S. inventions become the basis for a thriving Chinese industry. But, while China does currently dominate the global solar

module market (aided greatly by significant investments by the Chinese government) using our U.S.-invented crystalline-silicon technology, there is solid technical and business evidence that the U.S. can win in the long run with superior next generation technologies such as Abound's CdTe thin film manufacturing processes.

At scale, we believe that Abound's thin film solar modules can be built by American workers with good paying jobs, at lower cost per watt than competing crystalline-silicon solar modules made with low-cost labor in China. Technology start-up companies come with significant risks, and the recent aggressive price actions from Chinese companies have made the solar market very difficult for all module suppliers. But while China fights aggressively with low cost labor and enormous government backing to control the future of this industry, we believe that the U.S. can and should win by using our superior innovation and technology capabilities.

Abound continues to responsibly and transparently work to accelerate availability of our next-generation CdTe thin film technology and to create the best possible outcome given current challenging market conditions. Those best possible outcomes and return to production with our higher efficiency thin film solar module rely on recurring, in-depth communications with the DOE and our current and prospective investors. The Abound team remains committed to our role in helping U.S. energy independence, growing American manufacturing jobs, and cost-effectively meeting the needs of our customers.

This technology of advanced second generation solar modules which Abound is able to produce today has been developed and manufacturing made feasible by private investors and DOE. Significant technology advances have been made through Abound's participation in DOE programs. As we work to launch our next generation thin film solar module with use of private financing, we are determined to advance this critical U.S. technology so that we and others can turn American inventions into American industry.

(b) (6), (b) (7)(C) [redacted]

PROFESSIONAL SUMMARY: Technology-oriented, global business leader with significant commercial, product development, and operations experience.

(b) (6), (b) (7)(C) [redacted]

Committee on Oversight and Government Reform
Witness Disclosure Requirement – "Truth in Testimony"
Required by House Rule XI, Clause 2(g)(5)

Name: (b) (7)(C), (b) (6)

1. Please list any federal grants or contracts (including subgrants or subcontracts) you have received since October 1, 2009. Include the source and amount of each grant or contract.

December 2010 Department of Energy commitment of up to $400 million loan guarantee to expand solar module manufacturing.

2. Please list any entity you are testifying on behalf of and briefly describe your relationship with these entities.

Abound Solar Manufacturing
(b) (6), (b) (7)(C) and (b) (6)

3. Please list any federal grants or contracts (including subgrants or subcontracts) received since October 1, 2008, by the entity(ies) you listed above. Include the source and amount of each grant or contract.

None

I certify that the above information is true and correct.
Signature: /s/(b) (7)(C), (b) (6) Date: May 14, 2012