Ascent Solar Technologies, Inc.
Form 10KSB
March 30, 2007

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-KSB

(Mark One)

x ANNUAL REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2006

or

o TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Transition Period from to

Commission File No. 001-32919

Ascent Solar Technologies, Inc.

(Name of small business issuer in its charter)

Delaware	**20-3672603**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
8120 Shaffer Parkway **Littleton, CO** (Address of principal executive offices)	**80127** (Zip Code)

Issuer s telephone number including area code: 303-285-9885

Securities registered under Section 12(b) of the Act:

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, $0.0001 par value per share	NASDAQ Capital Market
Class A Warrants	Boston Stock Exchange
Class B Warrants	

Securities registered under Section 12(g) of the Act:

Check whether the issuer is not required to file reports pursuant to Section 13 or 15(d) of the Exchange Act. Yes x No o

Check whether the issuer (1) filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the past 12 months (or for such shorter period that the registrant was required to file such report(s), and (2) has been subject to such filing requirements for the past 90 days. Yes x No o

Check if there is no disclosure of delinquent filers in response to Item 405 of Regulation S-B contained in this form and no disclosure will be contained, to the best of registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-KSB or any amendment to this Form 10-KSB. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No x

The issuer s revenues for the fiscal year ended December 31, 2006 were $0.

As of March 15, 2007, the aggregate market value of the issuer s common stock held by non-affiliates was $44,506,996, based upon the last reported sale price of the issuer s common stock on that date as reported by NASDAQ.

At March 15, 2007, 6,963,760 shares of the registrant s Common Stock, par value $0.0001 per share, were outstanding.

Transitional Small Business Disclosure Format: Yes o No x

Document Incorporated By Reference

Part III of this Form 10-KSB is incorporated by reference to the issuer s proxy statement for its 2007 annual meeting of shareholders to be filed with the Securities and Exchange Commission within 120 days of December 31, 2006.

ASCENT SOLAR TECHNOLOGIES, INC.
Form 10-KSB Annual Report

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FORWARD-LOOKING STATEMENTS

Certain statements made in this Annual Report on Form 10-KSB are forward-looking statements within the meaning of Section 21E of the Securities and Exchange Act of 1934 (the Exchange Act) regarding the plans and objectives of management for future operations and market trends and expectations. Such statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Some significant risks and uncertainties are as follows:

- Failure to build, implement or operate our 1.5MW production line successfully would aversely impact our business and financial condition.

- Failure to build, implement, or operate our planned 25MW production plant successfully would aversely impact our ability to sell into the terrestrial market and would affect our business and financial condition.

- Many of the applications for which we intend to compete will require further technological development, which we cannot guarantee.

- Our reliance on small business innovative (SBIR) contracts with the government to partially fund our research and development programs could impair our ability to develop and incorporate new technologies into our products and could decrease our revenue.

- We have no contracts for PV products and have recorded no sales of such products; we expect that significant PV product sales will not occur for some time.

- Our products may not gain market acceptance, in which case we would be able to sell our products or achieve profitability.

The forward-looking statements included herein are based on current expectations that involve numerous risks and uncertainties. Our plans and objectives are based, in part, on assumptions involving the continued expansion of our business. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions and future business decisions, all of which are difficult or impossible to predict accurately and many of which are beyond our control. Although we believe that our assumptions underlying the forward-looking statements are reasonable, any of the assumptions could prove inaccurate. In light of the significant uncertainties inherent in the forward-looking statements included herein, particularly in view of our early stage operations, the inclusion of such information should not be regarded as a representation by us or any other person that our objectives and plans will be achieved. The terms we, our, us, Ascent Solar, or any derivative thereof, as used herein shall mean Ascent Solar Technologies, Inc., a Delaware corporation.

PART I

Item 1. Description of Business

General

Our Company

Ascent Solar is a development stage company that was formed in October 2005 to commercialize certain photovoltaic (PV) technology developed by ITN Energy Systems, Inc. (ITN) for extraterrestrial, terrestrial, and near-space applications. Ascent Solar intends to be the first company to manufacture large, roll format, PV modules in commercial quantities that use a highly efficient thin-film Copper-Indium-Gallium-diSelenide (CIGS) absorbing layer on a flexible high-temperature plastic substrate. We have produced and tested small-scale demonstration samples of our CIGS PV products at the laboratory level, but we have not yet produced any products in commercial quantities, nor have we yet received any revenues from the proposed products that we intend to commercialize as our principal business activity. We are presently applying the majority of the $14 million in net proceeds received from our initial public offering in July 2006 to establish a 500kW/yr per shift (1.5MW) pilot-scale production line. The production line is currently in development and on schedule to begin operations in the first quarter of 2008. Successful performance of the pilot production line should prove out the manufacturing processes, products, and market acceptance to enable us to transition into large full-scale, commercial manufacturing of our CIGS PV products.

When used on space satellites and near-space aircraft, PV devices convert sunlight into the electricity needed to reliably power instruments, communications systems and the like. Currently, most PV devices used for space and near-space applications are rigid, bulky and relatively heavy, posing significant challenges to scientists and designers wishing to minimize volume and weight in order to maximize payload and reduce deployment costs. In addition to these shortcomings, PV devices traditionally used for such applications are expensive to manufacture and require the time-consuming and labor-intensive task of connecting individual solar cells together to create a complete PV module. For terrestrial applications such as residential or commercial buildings, the primary driving market factor is cost. Historically, the market has been, and continues to be, dominated by crystalline silicon technology. Emerging thin film technologies on rigid glass substrates and flexible substrates offer significant cost advantages over silicon and, as a result, these newer technologies are beginning to capture a greater share of the market. Whether thin film or silicon based, rigid photovoltaic modules are very restrictive when it comes to deployment and integration into buildings and systems.

The Ascent Solar thin film technology platform addresses many of the current silicon and thin film limitations by offering a flexible, lightweight PV product suitable for terrestrial, space and near-space applications. By employing a proprietary monolithic integration fabrication process, we intend to manufacture our PV devices on the module level, rather than the cell level, thereby avoiding the time-consuming and cost-additive cell-to-cell interconnect procedures utilized by silicon and other thin film PV device manufacturers. We believe that our choice of substrate materials and proprietary monolithic integration fabrication processes should permit us to achieve cost, volume and weight performance advantages over competitors including terrestrial. As a result, we believe that we will be well-positioned to capture opportunities in markets that require or desire low cost, highly efficient, lightweight and flexible PV power sources. In addition, our thin film, monolithically integrated modules will enable direct integration into building and construction materials and electronics packaging that should enable us to offer greater value and new product formats at the building integrated and electronics integrated system level.

Corporate History

ITN, a private company incorporated in 1994, is an incubator dedicated to the development of cutting-edge thin-film, PV, battery and fuel cell technologies. Through its work on research and development contracts for private and government entities, ITN developed proprietary processing and manufacturing know-how applicable to PV products generally, and to CIGS PV products in particular. ITN formed Ascent Solar to commercialize this investment in CIGS PV technologies. In January 2006, ITN assigned to us key CIGS PV technologies and trade secrets and granted to us an exclusive, worldwide license to use certain of ITN s proprietary process, control and design technologies in the production of CIGS PV solar modules for our target markets. Upon receipt of the necessary government approvals in January 2007, ITN subsequently assigned approximately $3.5 million in government funded research and development contracts to Ascent Solar and the key personnel assigned to the contracts also transferred to Ascent Solar. Today, ITN still provides to us, at cost, a variety of administrative services such as facilities management, equipment maintenance, human resources, procurement, information technology services and accounting.

Ascent Solar PV Technology

In the last decade, ITN has performed approximately 35 contracts for private and government entities in advanced PV technologies. Government sponsors of these contracts include the U.S. Air Force Research Laboratory, the National Science Foundation, the National Renewable Energy Laboratory (NREL), the Defense Advanced Research Projects Agency, the Missile Defense Agency and NASA. Through its work on these contracts, ITN has developed useful and proprietary processing and manufacturing know-how applicable to PV products generally and CIGS PV products in particular, including the creation and adoption of key intelligent, sensor based control processing technologies and the development of a monolithic integration fabrication process.

We believe that our use of CIGS on a flexible high-temperature plastic substrate will offer the best combination of efficiency and product versatility among competing technologies in our target markets. Furthermore, we believe that our proprietary fabrication process which, among other things, incorporates monolithic, cell-to-cell integration techniques will allow us to manufacture our planned products with significant cost savings compared with our competitors.

Marketing

As with any new product, the market s acceptance of our planned products is at this time uncertain. Although system developers are in search of efficient, lightweight, flexible and less-expensive PV products, we will be attempting to introduce a new technology quickly into a field dominated by large, established companies that may be reluctant to quickly adopt our newer technologies over traditional silicon based products.

One significant factor working to our advantage is the anticipated continued growth of the PV industry. The industry has grown at approximately 40% annually since 1999, and a number of industry forecasts have projected continued growth of 43% to 50% per year through 2010. As a result, there is a large undersupply of product in the market to meet current demand. Large silicon producers are experiencing shortages in silicon supply, and there are 2 3 year backlogs in orders. We believe the market is primed to accept new thin film technologies. First Solar, Inc. produces a thin film rigid module on glass and is a prime example of this new trend by offering a slightly less efficient product into the market than silicon, but at significantly lower cost points. First Solar, Inc. has reported costs of $1.42/watt as compared with the reported industry average of $2.50 - $2.75 per watt. Ultimately, we believe costs of $1.00/watt are achievable with the various thin film technology platforms entering the market.

Although we believe our projected lower cost structure will provide an advantage in the commodity-based module market, we also believe our flexible substrate will open up new and potentially higher value

markets in Building Integrated PV (BIPV) and Electronics Integrated PV (EIPV) where the majority of our current competitors are unable to compete. The flexibility of our product, both in terms of its physical nature, as well as its freedom from rigid design constraints, allows for photovoltaics to be directly incorporated into products for these industries. In particular, these industries utilize large-volume commodity components, such as roofing shingles, panels, and membranes, for BIPV, and batteries, hard drives, microprocessors for EIPV, and by incorporating our components into these markets will thereby provide us rapid, large volume acceptance compared to our rigid, constrained competitors.

Because we are currently developing our initial production plant and therefore without product, we are focusing our marketing efforts on developing select BIPV and EIPV strategic relationships with customers. We currently have the ability to produce product samples and prototypes in limited quantities to evaluate form, fit, and functional parameters for eventual product applications. Our objective throughout 2007 will be to develop several product platforms through these relationships that will support the production volumes we anticipate in 2008 once our initial production line is operational.

We expect the space satellite market and the near-space market to evolve more gradually than the terrestrial market principally due to the higher degree of product qualifications and flight testing that will be required. Although we believe that our planned products will offer cost and performance advantages over others available on the market, we will first be challenged to find customers willing to use our planned products on their platforms, each of which is likely to have different product requirements. Although we intend to manufacture and package our planned products in such a way that they can easily be integrated in a variety of diverse platforms, we believe the space market is more uncertain than the near-space market in terms of gaining customer confidence and acceptance principally because the near-space high altitude airship platforms do not presently have an alternative. In addition to these challenges, we also need to adopt and undertake quality control processes, procedures and tests to qualify and validate our planned products for use in the harsh environmental conditions of space and near-space. We currently envision that our pathway to market will be through development of small mini-modules for experimental space qualification tests and then actual flight experiments with government customers, followed by full scale flight arrays on operational systems once the technology and arrays have been fully space qualified.

Ascent Solar Business Strategy

Manufacturing

Our overall manufacturing strategy is to incrementally build and expand production capacity by demonstrating manufacturing processes initially in a smaller scale pilot plant and then grow capacity to larger scale once the manufacturing processes and tools prove capable of meeting desired performance metrics. Our current focus is the development and construction of a modest production plant with a planned capacity of 1.5MW per year of annual PV module production. The plant is scheduled for completion in 2007 with operations to commence in the 1st quarter of 2008.

The 1.5MW plant will be used initially to prove our manufacturing processes and should help us to develop the products, customers, and markets that will support our growth plans to 100MW production levels and beyond. As our production capacity grows through the development of new plants, we envision that the 1.5MW plant will continue to serve as a rapid product prototyping plant.

We currently envision developing and completing the build-out of a 100MW plant by the end of 2009. The exact timing will depend upon a number of factors including our level of confidence based upon the performance demonstrated in our 1.5MW pilot plant, product development, market development and our ability to access capital. Although we ultimately envision a 100MW facility of approximately 250,000 ft², we plan to keep with our incremental approach and expect to install only the first 25MW line initially into the 100MW plant. The entire 250,000 sq. ft. plant would accommodate four 25MW production lines. At this scale, our current cost estimates project that it will require approximately $1.00 of capital for the requisite

plant and equipment in order to achieve 1 watt of installed production capacity. We believe that our incremental approach to expansion will allow us to build product confidence with our customers and achieve the financial performance that will enable us to meet our capital needs.

In scaling from the 1.5MW pilot plant to 25MW, we plan to migrate from a twelve inch (⅓ meter) substrate to a wider substrate. Our goal is to ultimately achieve a substrate width of approximately 1 meter , but it may be necessary to initially increase substrate width in incremental steps beyond twelve inches that are not currently defined. The wider polyimide substrate material is readily available from our current suppliers in these wider widths today. In parallel with the development of the 1.5MW pilot plant, we are investigating the wider CIGS deposition sources, process controls, and equipment challenges that will need to be addressed to accommodate the wider substrates.

Products and Markets

Our overall product and market strategy is focused on leveraging the competitive advantages of our unique thin film and flexible format as much as possible. Generally, the terrestrial market is a commodity market of cell manufacturers and module manufacturers who sell to customers one level up the value chain. Although we believe we can compete effectively in the commodity market with a lower cost alternative than silicon, our preferred approach is to move up the value chain through strategic relationships using our unique product characteristics. We envision relationships involving BIPV or EIPV products or System Integration solutions that directly affect the economics and versatility of PV systems and products deployed in the market. Our goal is to integrate our PV modules within the building materials and products themselves rather than adding the modules to the building or product as an afterthought as typically is the case with silicon and other rigid modules in the market today.

Ascent Solar is currently developing product concepts and is evaluating BIPV and EIPV opportunities. Our objective is to develop several strategic relationships during 2007 in anticipation of product production in 2008.

In addressing the space and near-space markets, we envision that our product offerings will evolve initially out of direct government-funded R&D projects or joint programs that we will work directly with prime space system developers or near-space system developers. Our current government-funded R&D programs and our proposed relationship with Lockheed Martin on the High Altitude Airship (HAA) project are typical examples. It is through these types of projects and relationships that our products can be developed, tested, and deployed.

We are aware of delays associated with the Lockheed Martin s HAA project. We have not been advised as to whether we will receive funding pursuant to this project. Initial indications are that the Missile Defense Agency, the Department of Defense agency currently in charge of the HAA project, has not included funding for the project in the Fiscal Year 2008 budget; we have not, however, been told as to whether the project will be shifted to another agency or that our original proposal has been removed from consideration. As a result of the delays, we are currently not planning on receiving funding in 2007 under the Lockheed Martin project. We are, however, continuing to develop the technology platform for HAA and spacecraft applications through several R&D programs funded by the Air Force Research Laboratory and the Missile Defense Agency, including the recent $607,365 increase in funding by the Air Force to our high temperature substrate contract.

Competition

Ascent s Technical Advantages Over Competitors

Most PV companies employing thin-film techniques in commercial production currently use amorphous silicon (a-Si) or cadmium telluride (CdTe) as an absorbing layer. Instead we have chosen CIGS because it offers inherent performance and physical advantages over the a-Si and CdTe technologies.

CIGS displays the highest efficiency of the three thin-film technologies, with a demonstrated cell efficiency of 19.5% by NREL in a terrestrial laboratory environment (compared with 12.9% demonstrated cell efficiency for a-Si under similar conditions). Although we have achieved small area efficiencies over 15% in the laboratory, we anticipate that the non-uniformities associated with large area, high volume manufacturing will initially limit module efficiencies to between 8% and 11%. Unlike CIGS, a-Si exhibits inherent inefficiencies and measurable degradation when exposed to ultraviolet light, including ultraviolet light present in natural sunlight. To mitigate these effects, manufacturers using a-Si are forced to employ steps that add cost and complexity to the manufacturing process. By using CIGS, we avoid these issues. While CdTe has demonstrated efficiencies approaching that of CIGS, CdTe currently requires use of a rigid, transparent substrate, which virtually disqualifies it as a candidate for a multitude of applications in BIPV and EIPV. We believe that our choice of CIGS on flexible substrates therefore will provide us a significant technical advantage over competitors who use the alternative technologies of a-Si and CdTe.

We also believe that we will hold a technical and cost advantage over our competitors through our choice of high-temperature plastic as a substrate material. This flexible plastic is among the lightest materials currently available for PV modules and enables the monolithic integration of cells directly into the material. Stainless steel or other metal substrates are unable to employ monolithic integration techniques and must resort to manufacturing discrete cells that must then be mechanically connected to form a module , which adds significant cost in the process.

Our planned use of a roll-to-roll manufacturing process (which enables us to fabricate our flexible PV modules in large roll formats or continuous operations), together with our use of proprietary monolithic, cell-to-cell integration techniques (which allows us to avoid the time-consuming, weight-additive and labor-intensive step of manually connecting individual solar cells), also should afford us technical and cost advantages over our competitors. Since 1994, ITN has developed proprietary sensor-based controls and intelligent process controls for use in the roll-to-roll production of thin-film CIGS PV modules, and we are now a beneficiary of that expertise.

In sum, the technical and cost advantages that we believe will distinguish us from our competitors include:

- Our use of CIGS, which we believe will offer the highest efficiencies of the three candidate thin-film technologies and which can be deposited on variety of flexible substrates;

- Our use of high-temperature plastic as a substrate material, which not only is flexible, lightweight and versatile for BIPV and EIPV, but also provides us the ability to achieve the challenging specific power and power density requirements for space and near-space programs;

- Our experience with, and ITN s demonstrated ability to implement, roll-to-roll manufacturing in the context of thin-film CIGS PV modules; and

- Our use of proprietary monolithic integration techniques, which eliminates an entire back-end cell-to-cell processing step in the assembly of a PV module, and that should save us time, labor and cost relative to our competitors while also potentially offering measurable performance and weight advantages.

Although we believe that we will hold technical advantages over our competitors in the aspects described above, we still face a number of technical challenges if we are to meet our planned 2008 production deadline with products that satisfy the technical specifications demanded by prospective customers. These challenges are detailed in Management s Discussion and Analysis of Financial Condition and Results of Operations.

Key Competitors

Today approximately 90% of the terrestrial market is served by large silicon cell and silicon module manufacturers. The largest manufacturers include Sharp (Japan), Q-cells (Germany), Kyocera (Japan), BP Solar (USA), and RWE Schott (Germany). In all there are over 20 manufacturers with annual production capacities in excess of 25MW. We anticipate that these market leaders will continue to dominate the market with the silicon-based technology for the next three to five years at which time we envision that thin film manufacturers will begin to capture an increasing market share.

The thin film component of the industry is largely made up of a broad mix of technology platforms at various stages of development and involving approximately 20 companies. The a-Si technology is the dominant platform in the thin film sector due to its long history dating back to the late 1970 s. Production capacities across this sector range from 0.5MW up to 75MW. The largest producer of rigid thin film modules is First Solar, Inc. (USA), and, the largest producer of modules is United Solar Ovonic LLC (USA). The thin film sector is growing at an even faster rate than silicon principally driven by First Solar for rigid modules and United Solar Ovonic for flexible modules. The cost and manufacturing advantages over silicon that have been demonstrated by First Solar in 2006 have brought significantly more awareness to the prospects of thin film technology platforms. As a result, we believe that there will be a number of new start-ups and growing competition within the thin film sector.

First Solar manufactures PV modules by depositing thin films onto rigid glass plates and uses monolithic integration techniques similar to ours to form the cells within the thin film layers to create modules. Similar to silicon modules, thin film glass modules are heavy and rigid and comparable to silicon modules in form and function. First Solar primarily serves the commodity markets for PV modules that include large scale, grid connected solar power projects. In 2006, First Solar reported shipments of 50MW.

United Solar Ovonic manufactures thin film flexible cells on metal foil and then individually assembles the cells together into modules. The module integration technique is similar to the way silicon cells are individually assembled together in series and parallel to form an integrated module. Flexible modules have the added benefit of being integrated into building and other materials, something that is not possible with rigid thin film glass modules or silicon modules. In 2006, United Solar reported less than expected shipments that we estimate between 25MW and 50MW.

Competition in the near-space market currently is limited to other flexible thin-film PV device manufacturers, while competition in the space market also includes rigid PV device manufacturers. We believe that our primary competitors in the near-space markets include United Solar Ovonic, a subsidiary of Energy Conversion Devices, Inc. (Uni-Solar), Global Solar Energy, Inc., (GSE), and DayStar Technologies, Inc. (DayStar). Uni-Solar, which employs a-Si technology, is an established participant in terrestrial market for solar power. Despite Uni-Solar s commercial success in the terrestrial market, we believe that our flexible CIGS on high-temperature plastic PV modules will prove technically superior in weight and conversion efficiency to Uni-Solar s devices when used on operational vehicles in space and near-space applications. First Solar, and other thin film PV manufacturers on rigid glass substrates, are not appropriate for space in that they are too heavy (weight is extremely critical) and far too bulky (excessive stowage volume), both of which can add significant launch costs to the mission.

GSE was established in 1996 as a venture between ITN and Tucson Electric Power Company, which was later acquired by UniSource Energy Corporation. GSE and DayStar are, to our knowledge, the only other companies actively exploring the production of a CIGS-based product on a flexible substrate for the space and near-space markets. Both DayStar and GSE s baseline products use a metal foil substrate for space and HAA applications. Given comparable efficiencies, our CIGS on high-temperature plastic substrate cells will have a higher specific power than a CIGS product on metallic foil due to our choice of lightweight material. Furthermore, CIGS on a metallic foil must be interconnected, either by hand or by

automation equipment, resulting in added weight and complexity. Our use of a high-temperature plastic substrate and monolithically interconnected devices avoids these issues.

Intellectual Property

Intellectual Property

In January 2006, ITN assigned to us its key CIGS PV technologies, including a pending U.S. patent application titled Apparatus and Method of Production of Thin Film Photovoltaic Cell, filed on July 19, 2002 (Serial No. 10/197,813), certain unpublished invention disclosures relating to the design and fabrication of CIGS PV solar cells, and trade secrets relating to proprietary manufacture, process and control steps in the CIGS PV field. ITN also granted to us a perpetual, exclusive, worldwide license to use certain of ITN s proprietary process, control and design technologies that, although non-specific to CIGS PV, we believe will be useful in our production of solar modules for our target markets.

In October 2006, we filed two provisional patent applications with regard to our very large module concepts for BIPV applications that fully exploit the advantages of a monolithically-integrated thin-film PV product by a roll-to-roll process.

In April 2006, we entered into a non-exclusive patent license agreement with Midwest Research Institute (MRI). MRI manages and serves as operating contractor for NREL under a prime contract with the U.S. Department of Energy (DOE). Pursuant to the prime contract, MRI acquired the rights to license certain inventions developed at NREL. We have acquired a world-wide, non-exclusive commercial license to the following U.S. patents and their foreign counterparts: U.S. Patent Nos. 5,356,839, 5,441,897 and 5,436,204; European Patent No. EP0694209 and European patent application Serial No. 95929367.1 (for the EU, Belgium, France, United Kingdom, Germany and Netherlands); and Japanese Patent Nos. 3130943 and 3258667 and Japanese patent application serial no. 8-508088. The license is effective so long as any claim of the licensed inventions is enforceable. In November 2006, we entered into a non-exclusive license with UD Technology Corporation (UD). UD is a non-profit corporation which holds intellectual property created at the University of Delaware s Institute of Energy Conversion (IEC). We have acquired a world-wide, non-exclusive commercial license to the following patents: U.S. Patent Nos. 6,310,281, 6,372,538, 6,537,845 and 6,562,405, as well as U.S. patent application Serial No. 60/620,352. These patents and patent applications relate to the fabrication of CIGS on flexible plastic substrates, the use of laser patterning and thin-film deposition during the fabrication of flexible monolithically-integrated CIGS PV devices and certain process steps that we intend to use during the manufacturing process.

Employees

Employees

As of March 15, 2007, we had 18 full-time employees and one part-time employee, including five executive officers, nine scientists and engineers, two process technicians, and two marketing and accounting personnel. The number of employees should grow significantly as we install manufacturing capacity. Once the production line has been installed, we intend to hire technicians, product technical engineers and quality control engineers to staff the facility.

ITN provides us with general and administrative support services, at cost, such as human resources, facility management, information technology support and payroll processing. This should permit us to avoid the cost of hiring individual employees and related infrastructure expenses in the near-term.

Research and Development

During the fiscal years ended December 31, 2006 and 2005, we expended approximately $319,085 and $0 in research and development activities, respectively. During the fiscal years ended December 31, 2005

and 2004, ITN incurred approximately $3,100,000 and $3,300,000, respectively, related to PV research and development activities.

Item 2. Description of Property

Our facilities are located in Littleton, Colorado. As of January 1, 2007, we increased our sublease to include approximately 14,200 square feet of office and manufacturing space at cost from ITN, which occupies space adjacent to ours. The sublease expires in June 2010. In 2007, we will pay $17,211 per month of rent through June 30, 2007 and $18,991 per month thereafter, plus pass-through expenses such as taxes, insurance, water and utilities.

Item 3. Legal Proceedings

None.

Item 4. Submission of Matters to a Vote of Security Holders

None.

PART II

Item 5. Market for Common Equity, Related Stockholder Matters and Small Business Issuer Purchases of Equity Securities

Market Information

Our Common Stock is traded on the NASDAQ Capital Market under the symbol ASTI and on the Boston Stock Exchange under the symbol AKC. The following table sets forth the high and low sales price information per share for our Common Stock since its initial public offering in July 2006.

Common Stock ASTI

	Trade Price	
Quarters Ended:	**High**	**Low**
September 30, 2006	$ 3.50	$ 2.01
December 31, 2006	$ 3.95	$ 2.09

Holders

As of March 15, 2007, the number of record holders of Common Stock was 62, and there were no holders of Preferred Stock. The vast majority of our publicly-traded shares are held in street name, and we believe that the number of beneficial owners of our stock is approximately 1,300 as of March 15, 2007.

Dividends

The holders of Common Stock are entitled to receive such dividends as may be declared by our Board of Directors. During the years ended 2006 and 2005, we did not pay any dividends, and the Company does not expect to declare or pay any dividends in the foreseeable future. Payment of future dividends will be within the discretion of our Board of Directors and will depend on, among other factors, retained earnings, capital requirements, and the operating and financial condition of Ascent Solar.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table summarizes as of December 31, 2006 (i) the options granted under our 2005 stock option plan and (ii) all other securities subject to contracts, options, warrants and rights or authorized for future issuance outside the plan.

	Equity Compensation Plan Table		
	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	**Weighted-average exercise price of outstanding options, warrants and rights (b)**	**Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)**
Equity Compensation Plans Approved By Security Holders (the 2005 Stock Option Plan)	637,800	$ 1.83	81,000
Equity Compensation Plans Not Approved By Security Holders		$	
Total	637,800	$ 1.83	81,000

Recent Sales of Unregistered Securities

In the fiscal year ended December 31, 2006, we issued 31,200 shares of Common Stock upon exercise of stock options by its employees, directors, consultants and other service providers. The options were granted pursuant to our 2005 Stock Option Plan pursuant to exemptions available under Rule 701. The exercise price of the options exercised was $0.10 per share.

Use of Proceeds

Our initial public offering of units, each unit consisting of one share of common stock, $0.0001 par value, one Class A redeemable public warrant and two Class B non-redeemable public warrants, was effected through a Registration Statement on Form SB-2 (File No. 333-131216) that was declared effective by the Securities and Exchange Commission on July 10, 2006. The Registration Statement covered the offer and sale of 3,000,000 units for an aggregate offering price of $16,500,000. Our initial public offering resulted in aggregate net proceeds to us of approximately $14 million, net of underwriting discounts, commissions and offering expenses. As of December 31, 2006, we had applied the net proceeds from the initial public offering as follows:

	Amount
Design, building and testing of production line and other non-recurring engineering costs	$ 902,000
Repayment of bridge loans	1,681,000
Business development and product qualifications	582,000
Research and technology development	196,000
General corporate purposes, net of interest income	344,000
Total	$ 3,705,000

The balance of the proceeds was invested in insured, interest-bearing accounts or short-term investment-grade securities as of December 31, 2006.

Purchases of Equity Securities by the Small Business Issuer and Affiliated Purchasers

None.

Item 6. Management s Discussion and Analysis or Plan of Operation

The following discussion of our financial condition and results of operations should be read in conjunction with our audited consolidated financial statements and the notes to those financial statements appearing elsewhere in this Form 10-KSB. This discussion and analysis contains statements of a forward-looking nature relating to future events or our future financial performance. As a result of many factors, such as those set forth under Forward Looking Statements and elsewhere in this Form 10-KSB, our actual results may differ materially from those anticipated in these forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements.

Introduction

Ascent Solar is a development stage company that was formed in October 2005 to commercialize certain photovoltaic PV technology developed by ITN for extraterrestrial, terrestrial, and near-space applications. Ascent Solar intends to be the first company to manufacture large, monolithically integrated roll format PV modules in commercial quantities that use a highly efficient thin-film Copper-Indium-Gallium-diSelenide CIGS absorbing layer on a flexible high-temperature plastic substrate. We have produced and tested small-scale demonstration samples of our CIGS PV products at the laboratory level, but we have not yet produced any products in commercial quantities nor have we yet received any revenues from the proposed products that we intend to commercialize as our principal business activity. We are presently applying the majority of the $14 million in net proceeds received from an IPO in July 2006 to establish a 500kW/yr per shift (1.5MW) pilot-scale production line. The production line is currently in development and on schedule to begin operations in the first quarter of 2008. Performance on the pilot production line will prove out the manufacturing processes, products, and market acceptance to enable us to transition into large full-scale, commercial manufacturing of our CIGS PV products.

Recent Developments

Since our IPO in July 2006, management has principally focused on the following two main areas that are critical to our success:

1. Successful development of our initial 1.5MW production facility; and

2. Management of capital expenditures and infusion of new capital.

The majority of the net proceeds from the IPO, or approximately $10 million, are expected to be expended on the capital equipment that will make up the 1.5MW production facility. Managing this capital investment and maintaining the 2007 schedule for completing the production facility represent the company s most significant financial and operational risks. In order to manage our financial exposure, the company has entered into strategic relationships with established equipment manufacturers, and the company has placed firm-fixed-price purchase orders for delivery, installation, and check-out of all the major processing equipment. The modifications to the building to accommodate the new equipment are scheduled for completion in June 2007, and the processing equipment is scheduled for delivery beginning in August 2007 with the final delivery scheduled for November 2007. A critical piece of equipment will be the CIGS deposition and source box that is internal to the CIGS deposition system and is used to deliver the CIGS materials in the proper quantities and at the desired rates onto the moving web substrate. Ascent Solar and ITN are jointly developing this element, and by doing so, the company is able to retain its intellectual property and trade secrets regarding CIGS deposition and intelligent processing. However, as an in-house development, we are unable to fix the costs as we have with our external equipment suppliers and currently estimate that the cost of this element will be approximately $1.5 million.

In order to effect a quick transition from development to manufacturing once the production facility is completed, the company initiated a rapid prototyping capability in 2007 to emulate the eventual manufacturing processes, material flow, and statistical process controls. The prototyping efforts are utilizing our existing six-inch wide roll-to-roll development equipment in the laboratory to optimize our manufacturing processes in advance of commencing full scale production on the 1.5MW line. We anticipate that this effort should help to identify potential problems areas early in order to accelerate the ramp-up of production once the 1.5MW equipment is in place. The preliminary results of the prototyping activities which were only begun in February 2007 are encouraging, although there is clearly optimization that is needed to achieve the desired consistency of the thin-film properties, manufacturing processes and performance. We are initially prototyping small, monolithically integrated mini-modules, and we are currently concentrating on repeatability issues and optimization of all processes including the molybdenum processes, CIGS compositions, transparent conducting oxide, and laser patterning methods in order to consistently produce 8% to 9% efficient mini-modules and baseline the end-to-end manufacturing processes with full documentation by the 4th quarter of 2007.

Although product development will not begin in earnest until we can produce ample amounts of material on the 1.5MW line, we have begun some initial product prototyping for evaluation and test in order to develop a select customer base in 2007 with the intent of beginning product manufacturing in 2008. Although the performance is not yet optimized, the prototyping activities have produced monolithically integrated mini-module product samples for both terrestrial and extraterrestrial customer applications.

In January 2007, the company transferred approximately $3.5 million in government-funded research and development contracts from ITN to Ascent Solar including the transfer of key personnel. The contracts represent a current backlog of approximately $1.6 million, and we anticipate that we will be able to sustain on average between $1 million and $3 million of externally funded research and development.

In the last quarter of 2006, our quarterly operational burn rate was approximately $900,000 with an additional $370,000 expended in capital for our manufacturing line. As of December 31, 2006, our cash position was approximately $10.7 million on hand; however, most of this cash is committed toward progress payments to our equipment suppliers and to maintain the development schedule and ensure delivery of our production tools in the third and fourth quarters of 2007. In order to more effectively manage our projected needs in 2007 and 2008, we completed a private placement of securities with Norsk Hydro Produksjon AS (Norsk Hydro) in March 2007. Norsk Hydro is a subsidiary of Norsk Hydro ASA, one of the world s leading suppliers of energy and aluminum, with approximately 33,000 employees in nearly 40 countries. Norsk Hydro purchased 1,600,000 shares of our common stock for an aggregate purchase price of $9,236,000. We expect that this infusion of capital, together with our other resources, will be sufficient to sustain our operations through 2007 and 2008. In connection with the private placement, Norsk Hydro was granted options to purchase additional shares and warrants, which it may exercise if and after shareholder approval is obtained. Norsk Hyrdo is a leading supplier of BIPV products, and its investment in the company sets the stage for a strategic relationship to develop integrated building solutions.

In March 2007, we received approximately $1.2 million as a result of the exercise of approximately 184,000 Class A warrants at $6.60 per warrant. If our stock continues to trade above $6.60 per share, we anticipate additional Class A warrants will be exercised.

Critical Accounting Policies and Estimates

The preparation of our financial statements will require us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and the related disclosures. A summary of accounting policies that have been applied to the financial statements presented can be found

in the notes thereto. We consider certain of these accounting policies to be critical as they are both important to the portrayal of our financial condition and results of operations and require judgments on the part of management about matters that are uncertain. We have identified the following accounting policies that are important to the presentation of the financial information:

Basis of Presentation: The Company s activities to date have substantially consisted of raising capital and research and development. Accordingly, the company is considered to be in the development stage, as defined in Statement of Financial Accounting Standards No. 7 (SFAS No. 7), Accounting and Reporting by Development Stage Enterprises.

Short-Term Investments: The Company s short-term investments, which are classified as available-for-sale securities, are invested in high-grade variable rate demand notes, which have a final maturity date of up to 30 years but whose interest rate is reset at varying intervals typically between 1 and 7 days. Variable rate demand notes can be readily liquidated at any interest rate reset date, either by putting them back to the original issuer or by putting them to a third-party remarketer as generally provided in the original prospectus. To date, the Company has always been able to redeem its holdings of these securities in accordance with their terms, and the Company believes that the risk of non-redemption is minimal. Consequently, these securities are available for use to support the current cash needs of our operations, and in accordance with Accounting Research Bulletin 43, they are classified as short-term investments.

Cash Equivalents: The Company considers all highly liquid debt securities purchased with an original maturity of three months or less to be cash equivalents.

Revenue Recognition: Revenue from cost-type contracts is recognized as costs are incurred on the basis of direct costs plus allowable indirect costs and an allocable portion of the fixed fee. Revenue from fixed price-type contracts is recognized under the percentage-of-completion method of accounting, with costs and estimated profits included in contract revenue as work is performed. If actual and estimated costs to complete a contract indicate a loss, provision is made currently for the loss anticipated on the contract. Revenue from time and materials contracts is recognized as costs are incurred at amounts represented by the agreed-upon billing amounts.

Patents: To the extent the Company obtains or is awarded patents, patent costs will be amortized on a straight line basis over the legal life, or, over their estimated useful lives, whichever is shorter.

Deferred Financing Costs: Costs incurred in connection with obtaining debt are capitalized as deferred financing costs and are amortized to interest expense over the life of the related debt.

Deferred Offering Costs: The Company capitalizes costs associated with the issuance of stock as they are incurred. Upon issuance of the stock, such issue costs are treated as a reduction of the offering proceeds and accordingly charged to additional paid in capital.

Property and Equipment: Property and equipment are recorded at the original cost to the Company. Assets are being depreciated over estimated useful lives of one to seven years using the straight-line method.

Income Taxes: Current income tax expense is the amount of income taxes expected to be payable for the current year. Deferred income taxes are recognized for the tax consequences in future years of differences between the tax bases of assets and liabilities and their financial reporting amounts at each year end based on enacted tax laws and statutory tax rates applicable to the periods in which the differences are expected to affect taxable earnings. Valuation allowances are established when necessary to reduce deferred tax assets to the amount more likely than not to be related.

Risks and uncertainties: The Company s operations are subject to certain risks and uncertainties, including those associated with: the ability to meet obligations; continuing losses; fluctuation in operating results; funding expansions;

strategic alliances; financing arrangement terms that may restrict operations;

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regulatory issues; and competition. Additionally, U.S. government contracts may be terminated prior to completion of full funding by the U.S. government.

Use of estimates: The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Net loss per common share: Statement of Financial Accounting Standards No. 128, Earnings Per Share, provides for the calculation of Basic and Diluted earnings per share. A Basic earnings per share includes no dilution and is computed by dividing income available to common stockholders by the weighted-average number of shares outstanding during the period. Diluted earnings per share reflect the potential of securities that could share in the earnings of the Company, similar to fully diluted earnings per share.

Research and development costs: Research and development costs are expensed as incurred.

Recent accounting pronouncements: In February 2006, the Financial Accounting Standard Board (FASB) issued SFAS No. 155, *Accounting for Certain Hybrid Financial Instruments* (SFAS 155), which amends SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities,* and SFAS No. 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*. SFAS 155 simplifies the accounting for certain derivatives embedded in other financial instruments by allowing them to be accounted for as a whole if the holder elects to account for the whole instrument on a fair value basis. The statement also clarifies and amends certain other provisions of SFAS No. 133 and SFAS No. 140. SFAS 155 is effective for all financial instruments acquired, issued, or subject to a remeasurement event occurring in fiscal years beginning after September 15, 2006. We do not expect the adoption of SFAS 155 to have an impact on our results of operations or financial condition.

In March 2006, the FASB issued SFAS No. 156, *Accounting for Servicing of Financial Assets an amendment to FASB Statement No. 140* (SFAS 156). SFAS 156 requires that all separately recognized servicing rights be initially measured at fair value, if practicable. In addition, this statement permits an entity to choose between two measurement methods (amortization method or fair value measurement method) for each class of separately recognized servicing assets and liabilities. This new accounting standard is effective January 1, 2007. We do not expect the adoption of SFAS 156 to have an impact on our results of operations or financial condition.

In June 2006, the FASB ratified the consensus reached by the Emerging Issues Task Force (EITF) on EITF Issue No. 05-01, *Accounting for the Conversion of an Instrument That Becomes Convertible Upon the Issuer s Exercise of a Call Option* (EITF 05-01). The EITF consensus applies to the issuance of equity securities to settle a debt instrument that was not otherwise currently convertible but became convertible upon the issuer s exercise of call option when the issuance of equity securities is pursuant to the instrument s original conversion terms. The adoption of EITF 05-01 is not expected to have an impact on our results of operations or financial condition.

In July 2006, the FASB issued FASB Interpretation (FIN) No. 48, *Accounting for Uncertainty in Income Taxes*. FIN 48 clarifies the accounting for uncertainty in income taxes recognized in an enterprise s financial statements in accordance with FASB Statement No. 109, *Accounting for Income Taxes.* FIN 48 also prescribes a recognition and threshold and measurement standard for the financial statement recognition and measurement of an income tax position taken or expected to be taken in a tax return. In addition, FIN 48 provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure and transition. The Company presently recognizes income tax positions based on management s estimate of whether it is reasonably possible that a liability has been incurred for unrecognized income tax benefits by applying FASB Statement No. 5, *Accounting for Contingencies.* The

provisions of FIN 48 will be effective for the Company on January 1, 2007 and are to be applied to all tax positions upon initial application of this standard. Only tax positions that meet the more-likely-than-not recognition threshold at the effective date may be recognized or continue to be recognized upon adoption. The cumulative effect of applying the provisions of FIN 48 will be reported as an adjustment to the opening balance of retained earnings for the fiscal year of adoption. The Company believes that the opening balance of retained earnings will not be affected due to the adoption of FIN 48.

In September 2006, the FASB issued FASB Statement No. 157, Fair Value Measurements (SFAS No. 157). SFAS No. 157 provides enhanced guidance for using fair value to measure assets and liabilities. SFAS No. 157 clarifies the principle that fair value should be based on the assumptions market participants would use when pricing the assets or liabilities and establishes a hierarchy that prioritizes the information used to develop those assumptions. SFAS No. 157 applies whenever other standards require (or permit) assets or liabilities to be measured at fair value. SFAS No. 157 is effective for financial statements issued for fiscal years beginning after November 15, 2007. We are currently evaluating the impact of SFAS 157 on our results of operations and financial condition.

In September 2006, the FASB issued FASB Statement No. 158, *Employers Accounting for Defined Benefit Pension and Other Postretirement Plans* (SFAS No. 158). SFAS No. 158 requires an employer to recognize the overfunded or underfunded status of a defined benefit pension plan and other postretirement plans as an asset or liability on its balance sheet and recognize changes in its funded status in the year in which the change occurs through accumulated other nonnowner changes in equity. We do not expect the adoption of SFAS 158 to have an impact on our results of operations or financial condition.

In February 2007, the FASB issued FASB Statement 159, The Fair Value Option for Financial Assets and Financial Liabilities (SFAS 159). SFAS 159 allows the company to choose to measure many financial assets and financial liabilities at fair value. Unrealized gains and losses on items for which the fair value option has been elected are reported in earnings. SFAS 159 is effective for fiscal years beginning after November 15, 2007. Therefore, the Company is required to adopt SFAS 159 by the first quarter of 2008. The Company is currently evaluating the requirements of SFAS 159 and the potential impact on the Company s financial statements.

We have reviewed all other recently issued, but not yet effective, accounting pronouncements and do not believe any such pronouncements will have a material impact on our financial statements.

Results of Operations

The Company s activities to date have substantially consisted of raising capital, research and manufacturing development. The Company s total general & administrative expenses can be summarized as follows:

	For the Year Ended December 31, 2006	For the Period of Inception (October 18, 2005) through December 31, 2005
Business development & product qualification	$ 859,164	$ 54,291
Manufacturing development	676,616	
General corporate purposes	1,520,439	1,150,203
General & administrative expenses	$ 3,056,219	$ 1,204,494

Business development and product qualification costs for the year ended December 31, 2006 and for the period from inception (October 18, 2005) through December 31, 2005 are associated with efforts related to identifying and bidding on government contracts, identifying and developing commercial customers and strategic partnerships and investor relations activity. If the government contracts or

commercial customer partnerships are successful, these activities will be utilized to help further define our product for space and near space applications and the terrestrial market. Manufacturing development costs for the year ended December 31, 2006 consist of coordinating with equipment manufacturers and equipment component suppliers in order to provide the manufacturing equipment required for our plant. Additional manufacturing development costs consist of coordinating design requirements and prototype activity for the manufacturing equipment. General corporate purpose expenses relate to facility costs and administrative support costs along with other normal operating expenses. Included in general corporate purpose costs is a non-cash transaction for stock-based compensation related to the issuance of the Company s stock and stock options at fair value. Stock-based compensation for the year ended December 31, 2006 and for the period from inception (October 18, 2005) through December 31, 2005 was $348,944 and $959,124, respectively.

Research and technology development costs for the year ended December 31, 2006 and for the period from inception (October 18, 2005) through December 31, 2005 consist of activities related to process and product development of our thin film PV technology.

	For the Year Ended December 31, 2006	For the Period of Inception (October 18, 2005) through December 31, 2005
Research and technology development	$ 319,085	$ 0

Other income (expense) for the year ended December 31, 2006 and for the period from inception (October 18, 2005) through December 31, 2005 consists of interest expense on financing activities and interest income of $275,083 from investment of our IPO proceeds. The Company s interest expense is comprised of the following:

	For the Year Ended December 31, 2006	For the Period of Inception (October 18, 2005) through December 31, 2005
Interest Expense-Note	$ 1,445	$ 2,740
Interest Expense-Bridge Loan	80,681	
Interest Expense-Bridge Loan Rights	800,000	
Interest Expense-Financing Costs	198,565	
Other Income/Expense (Interest-Expense)	$ 1,080,691	$ 2,740

Interest Expense-Note for the year ended December 31, 2006 and for the period from inception (October 18, 2005) through December 31, 2005 consists of interest expense on the $200,000 short term note from Paulson Investment Company, Inc. This note was paid in full on February 1, 2006. Interest Expense-Bridge Loan is the 10% interest computed on the $1,600,000 Bridge Loan completed on January 18, 2006. The Bridge Loan principal and interest was paid in full in July 2006 upon the closing of our IPO. Interest Expense-Bridge Loan Rights of $800,000 represents the value of the bridge rights issued to Bridge Loan lenders. Interest Expense-Financing Costs represents direct costs associated with obtaining the Bridge Loan financing, including $160,000 in commissions to Paulson. The Bridge Loan repayment and issuance of the Bridge Rights were made to the investors in July 2006 after the closing of the IPO.

Liquidity and Capital Resources

Since inception, we have funded our operations from Bridge Loan proceeds of $1,600,000 and the initial capital contribution of approximately $39,000 from our founders. On July 10, 2006, the SEC declared effective the Company s Registration Statement on Form SB-2 (Reg. No. 333-131216), and we

completed our IPO of 3,000,000 units on July 14, 2006. Each unit consisted of one share of common stock, one redeemable Class A public warrant and two non-redeemable Class B public warrants. The managing underwriter of our IPO was Paulson Investment Company, Inc. The IPO price was $5.50 per unit. The gross proceeds of the offering were $16,500,000. Our net proceeds from the offering, after deducting the underwriter s discount of $1,097,250 and other fees and expenses, aggregated approximately $14,000,000.

We are currently incurring approximately $350,000 a month in operational expenses for pre-manufacturing activities, research and technology development, business development and general corporate expenses. The $350,000 monthly operational expense is net of projected research and development revenues from our government contracts of approximately $100,000 and interest income of approximately $40,000 a month. These monthly operational costs are higher than previously anticipated due to the acceleration of our plans to scale up manufacturing for the broader terrestrial market opportunities and include: (i) the development and production of product prototypes utilizing existing research and development process tools which should allow us to solidify process techniques and qualify product performance in advance of the build out of the manufacturing production line; and (ii) the incurring of additional costs for investor relations, business development and marketing communications support to strengthen our investor relations, support for our anticipated government program activities, and support for implementing our terrestrial market strategies. We anticipate that this level of operational expenditures will continue through the remainder of 2007.

We currently do not have manufacturing capabilities or other means to generate revenues or cash. The net proceeds from the IPO and the Norsk Hydro private placement of March 2007 are being used to build our operational infrastructure and to develop the manufacturing capacity necessary to produce PV products for sale into our target markets. We expect to acquire the remainder of our required capital equipment in 2007 (a calendar of our projected capital outlays appears below). With our 2007 expected capital expenditure requirement of approximately $9.6 million and an additional $350,000 in monthly operational costs, we anticipate that the IPO funds, the $9.3 million in proceeds recently received from the Norsk Hydro private placement, and proceeds from the conversion of Class A warrants (which through March 27, totaled $1.2 million), will be sufficient to cover our operational expenditures through 2008. Even after we begin production, it is unlikely that our initial sales revenue will be sufficient to immediately support all of our operations and cash requirements.

Our principal business will be to manufacture and sell CIGS PV modules into the terrestrial, extraterrestrial space and near-space markets. We plan to begin with initial development of higher value building integrated and electronics integrated terrestrial market opportunities while continuing our development of space and near-space applications. To realize this objective, we intend to use the majority of the net proceeds from the offering to construct a 500 kW per shift (1.5MW) annual capacity production line to fabricate rolls and sheets of thin-film PV modules suitable for these markets and applications. The cost for this production line consists of the design, building, and testing of our production line, including related non-recurring engineering costs, according to the following development calendar.

The capital outlays shown in this calendar represent estimated and actual costs in connection with our production line.

Stage of Development	Completion Milestone	Estimated Future Capital Outlay	Actual Capital Outlay
Completion of engineering specifications	3rd QTR 2006		$ 220,000
Facility and equipment construction:			
Progress payments	4th QTR 2006		$ 370,000
Progress payments	1st QTR 2007	$ 2,600,000	
Progress payments	2nd QTR 2007	$ 2,400,000	
Progress payments	3rd QTR 2007	$ 3,400,000	
Final payments	4th QTR 2007	$ 1,000,000	
Plant commissioning	4th QTR 2007		
Production readiness, qualification	1st QTR 2008	$ 200,000	
Commencement of production	2nd QTR 2008		
Total		$ 9,600,000	$ 590,000

Item 7. Financial Statements

Please refer to our Financial Statements below, beginning on page F-1, which are incorporated herein by reference.

Item 8. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

There has been no change of accountants nor any disagreement with accountants on any matter of accounting principles or practices or financial statement disclosure or auditing scope or procedure required to be reported under this Item.

Item 8A. Controls and Procedures

Under the supervision and with the participation of the Company s President and Chief Accounting Officer, the Company s management has evaluated the effectiveness of the Company s disclosure controls and procedures as of the end of the period covered by this report as defined in Rule 13a-15(b) or Rule 15d-15(e) under the Securities Exchange Act of 1934 (the Exchange Act). Based on that evaluation, the President and Chief Accounting Officer have concluded that, as of the end of the period covered by this report, the Company s disclosure controls and procedures are effective and ensure that information required to be disclosed in the Company s Exchange Act reports is (1) recorded, processed, summarized and reported in a timely manner, and (2) accumulated and communicated to management, including the President and our Chief Accounting Officer, as appropriate, to allow timely decisions regarding required disclosure.

There were no changes in the Company s internal control over financial reporting, as of the end of the period covered by this report, that materially affected, or are reasonably likely to materially affect the Company s internal control over financial reporting.

Item 8B. Other Information

None

PART III

Item 9. Directors, Executive Officers, Promoters, Control Persons and Corporate Governance; Compliance with Section 16(a) of the Exchange Act

The information required by this Item is incorporated by reference to the definitive proxy statement for our 2007 annual meeting of stockholders to be filed with the Securities and Exchange Commission within 120 days after the end of our 2006 fiscal year. This proxy statement is referred to in this report as the 2007 Proxy Statement.

Item 10. Executive Compensation

The information required by this Item is incorporated by reference to the 2007 Proxy Statement.

Item 11. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item is incorporated by reference to the 2007 Proxy Statement.

Item 12. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item is incorporated by reference to the 2007 Proxy Statement.

Item 13. Exhibits

a. The following exhibits are filed as part of, or are incorporated by reference into, this report:

Exhibit No.	**Description**
3.1	Registrant s Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
3.2	Registrant s Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.2 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
3.3	Registrant s Bylaws (incorporated by reference to Exhibit 3.3 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No 333-131216), as amended)
4.1	Form of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
4.2	Form of Class A Warrant (incorporated by reference to Exhibit 4.2 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No.333-131216), as amended)
4.3	Form of Class B Warrant (incorporated by reference to Exhibit 4.3 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
4.4	Form of Unit Certificate (incorporated by reference to Exhibit 4.4 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
4.5	Form of Warrant Agreement Between the Registrant and Computershare Trust Company, Inc. (incorporated by reference to Exhibit 4.5 to our Registration Statement on Form SB-2 filed July 10, 2006(Reg. No. 333-131216), as amended)
4.6	Form of Representative s Purchase Warrant (incorporated by reference to Exhibit 4.6 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No 333-131216), as amended)

Exhibit No.	Description
10.1	Employment Agreement with Matthew Foster (incorporated by reference to Exhibit 10.9 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.2	Employment Agreement with Dr. Joseph Armstrong (incorporated by reference to Exhibit 10.10 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.3	Employment Agreement with Janet Casteel (incorporated by reference to Exhibit 10.14 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.4	Employment Agreement with Dr. Prem Nath*
10.5	Employment Agreement with Joseph McCabe*
10.6	Securities Purchase Agreement by and between the Registrant and ITN Energy Systems, Inc.CTR (incorporated by reference to Exhibit 10.1 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.7	Invention and Trade Secret Assignment Agreement and between the Registrant and ITN Energy Systems, Inc.CTR (incorporated by reference to Exhibit 10.2 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.8	Patent Application Assignment Agreement by and between the Registrant and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.3 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.9	License Agreement by and between the Registrant and ITN Energy Systems, Inc.CTR (incorporated by reference to Exhibit 10.4 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.10	Sublease Agreement (incorporated by reference to Exhibit 10.5 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.11	Service Center Agreement by and between the Registrant and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.6 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.12	Manufacturing Line Agreement by and between the Registrant and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.7 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.13	Amendment No. 1 to Manufacturing Line Agreement between the Registrant and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.7A to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.14	Administrative Services Agreement by and between the Registrant and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.8 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.15	Amendment No. 1 to Administrative Services Agreement between the Registrant and ITN Energy Systems, Inc. (incorporated by reference to Exhibit 10.8A to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.16	2005 Stock Option Plan and Form of Stock Option Agreement (incorporated by reference to Exhibit 10.11 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.17	Bridge Unit Purchase and Investor Subscription agreement with forms of promissory note and bridge right (incorporated by reference to Exhibit 10.12 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)

10.18	Amendment No. 1 to Bridge Unit Purchase and Investor Subscription Agreement (incorporated by reference to Exhibit 10.13 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.19	Amendment to Annex B to Bridge to Bridge Unit Purchase and Investor Subscription Agreement (incorporated by reference to Exhibit 10.13A to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.20	Non-Exclusive Patent License Agreement with Midwest Research Institute (incorporated by reference to Exhibit 10.15 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.21	Letter Agreement with the University of Delaware (incorporated by reference to Exhibit 10.16 to our Registration Statement on Form SB-2 filed July 10, 2006 (Reg. No. 333-131216), as amended)
10.22	License Agreement between UD Technology Corporation and Ascent Solar Technologies, Inc. (incorporated by reference to Exhibit 10.1 to our current report on Form 8K filed November 29, 2007)CTR
10.23	Novation Agreement with ITN Energy Systems, Inc. and the United States Government*
10.24	Amendment to Service Center Agreement with ITN Energy Systems, Inc.*
10.25	Amendment to Sublease Agreement with ITN Energy Systems, Inc.*
10.26	Securities Purchase Agreement with Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.1 to our current report on form 8K filed March 13, 2007)
10.27	Stockholders Agreement with Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.2 to our current report on form 8K filed March 13, 2007)
10.28	Registration Rights Agreement with Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.3 to our current report on form 8K filed March 13, 2007)
10.29	Voting Agreement with Norsk Hydro Produksjon AS (incorporated by reference to Exhibit 99.4 to our current report on form 8K filed March 13, 2007)
10.30	Consulting Agreement with Ashutosh Misra*
14.1	Code of Ethics*
31.1	Chief Executive Officer Certification pursuant to section 302 of the Sarbanes-Oxley Act of 2002*
31.2	Chief Accounting Officer Certification pursuant to section 302 of the Sarbanes-Oxley Act of 2002*
32.1	Chief Executive Officer Certification pursuant to section 906 of the Sarbanes-Oxley Act of 2002*
32.2	Chief Accounting Officer Certification pursuant to section 906 of the Sarbanes-Oxley Act of 2002*

Notes to Exhibits

* Filed herewith

CTR Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated by reference to the 2007 Proxy Statement.

SIGNATURES

In accordance with Section 13 or 15(a) of the Exchange Act, the Registrant has caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized on the 30th day of March, 2007.

ASCENT SOLAR TECHNOLOGIES
By: /s/ MATTHEW B. FOSTER
Matthew B. Foster
President & Chief Executive Officer

In accordance with the Exchange Act, this Report has been signed by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

Signature	Capacities	Date
/s/ MATTHEW B. FOSTER **Matthew B. Foster**	President & Chief Executive Officer	March 30, 2007
/s/ JANET CASTEEL **Janet Casteel**	Chief Accounting Officer	March 30, 2007
/s/ MOHAN S. MISRA **Mohan S. Misra**	Director	March 30, 2007
/s/ ASHUTOSH MISRA **Ashutosh Misra**	Director	March 30, 2007
/s/ FRASER RUSSELL **Fraser Russell**	Director	March 30, 2007
/s/ STAN GALLERY **Stan Gallery**	Director	March 30, 2007
/s/ RICHARD J. SWANSON **Richard J. Swanson**	Director	March 30, 2007

Index to Financial Statements

Report of Independent Registered Public Accounting Firm

Report of Independent Registered Public Accounting Firms

To the Board of Directors
Ascent Solar Technologies, Inc.
Littleton, Colorado

We have audited the accompanying balance sheet of Ascent Solar Technologies, Inc. (a Development Stage Company as defined by SFAS No. 7) as of December 31, 2006, and the related statements of operations, changes in stockholders equity and cash flows for the year ended December 31, 2005 and for the periods from inception (October 18, 2005) through December 31, 2005 and 2006. These financial statements are the responsibility of the Company s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Ascent Solar Technologies, Inc. as of December 31, 2006, and the results of their operations and their cash flows for the year ended December 31, 2006 and for the periods from inception (October 18, 2005) through December 31, 2005 and 2006, in conformity with U.S. generally accepted accounting principles.

HEIN & ASSOCIATES LLP
Denver, Colorado
March 29, 2007

ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company as Defined by SFAS No. 7)
BALANCE SHEET

	December 31, 2006
ASSETS	
Current Assets:	
Cash	$ 786,357
Short term investments	9,885,000
Related party receivable	4,440
Other current assets	115,222
Total current assets	10,791,019
Property & Equipment at Cost:	103,643
Less accumulated depreciation	(12,635)
	91,008
Other Assets	
Deposits on manufacturing equipment	370,000
Patents	37,568
	407,568
Total Assets	$ 11,289,595
LIABILITIES AND STOCKHOLDERS EQUITY	
Current Liabilities:	
Accounts payable	$ 73,043
Related party payable	183,954
Accrued expenses	121,636
Total current liabilities	378,633
Deferred Rent	9,912
Commitments and Contingencies (Note 10)	
Stockholders Equity:	
Preferred Stock, $0.0001 par value, 25,000,000 shares authorized, no shares outstanding	
Common Stock, $0.0001 par value, 75,000,000 shares Authorized; 5,322,094 shares outstanding	532
Additional Paid in Capital	16,288,664
Deficit accumulated during the development stage	(5,388,146)
Total Stockholders equity	10,901,050
Total Liabilities and Stockholders Equity	$ 11,289,595

See accompanying notes to financial statements.

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ASCENT SOLAR TECHNOLOGIES, INC.
(A Development Stage Company as Defined by SFAS No. 7)
STATEMENTS OF OPERATIONS

	For the Year Ended December 31, 2006	For the Period from inception (October 18, 2005) through December 31, 2005	For the Period from inception (October 18, 2005) through December 31, 2006
General & Administrative Expenses	$ 3,056,219	$ 1,204,494	4,260,713
Research & Development Expenses	319,085		319,085
Loss from Operations	$ (3,375,304)		