

Ascent Solar Technologies, Inc.
Form S-8
May 09, 2007

As filed with the Securities and Exchange Commission on May 9, 2007

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ASCENT SOLAR TECHNOLOGIES, INC.
(Exact Name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction
of Incorporation or Organization)

20-3672603
(I.R.S. Employer Identification No.)

8120 Shaffer Parkway
Littleton, Colorado 80127
(303) 285-9885
(Address of Principal Executive Offices)

Amended and Restated 2005 Stock Option Plan
(Full Title of Plan)

Matthew Foster
8120 Shaffer Parkway
Littleton, Colorado 80127
(303) 285-9885
(Name and Address of Agent For Service)

Copies to:
Mark A. von Bergen, Esq.
Holland & Knight LLP
2300 U.S. Bancorp Tower
111 S.W. Fifth Avenue
Portland, Oregon 97204
(503) 243-2300

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price per Share (2)	Proposed Maximum Aggregate Offering Price (3)	Amount of Registration Fee
Common stock, \$0.0001 par value	1,000,000	(1) \$ 8.695	\$ 8,695,000	\$ 266.94

(1) Represents shares of common stock reserved for issuance upon exercise of options granted under the 2005 Stock Option Plan, as amended. This registration statement is deemed to register an indeterminate amount of such additional number of shares of the Registrant's common stock as may be issuable pursuant to stock split, stock dividend or the like.

(2) Pursuant to Rules 457(c) and 457 (h), the offering price and registration fee are computed on the basis of the average of the high and low prices of the Registrant's common stock on the Nasdaq Capital Market on May 8, 2007.

(3) Estimated solely for the purpose of calculating the registration fee.

EXPLANATORY NOTE

The purpose of this registration statement is to register 1,000,000 shares of the common stock of Ascent Solar Technologies, Inc. (the Company or Registrant) issuable under the Company's 2005 Stock Option Plan, as amended, for offer and sale. This Registration Statement includes a reoffer prospectus prepared in accordance General Instruction C of Form S-8 and in accordance with the requirements of Part I of Form S-3. The reoffer prospectus may be used for reoffers of shares of common stock acquired through the exercise of stock options defined as control securities and restricted securities under General Instruction C to Form S-8 pursuant to grants made under the Company's 2005 Stock Option Plan, as amended.

PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

All references to the Company, Registrant, us, we or our refer to Ascent Solar Technologies, Inc., unless the context otherwise indicates.

Item 1. Plan Information.

Information required by Item 1 to be contained in the Section 10(a) prospectus is omitted from this registration statement in accordance with Rule 428 under the Securities Act and the Note to Part I of Form S-8.

Item 2. Registrant Information and Employee Plan Annual Information.

The Company will furnish without charge to each person to whom the prospectus is delivered, upon written or oral request, a copy of any and all of the documents incorporated by reference in Item 3 of Part II of this Registration Statement, other than exhibits to such documents (unless such exhibits are specifically incorporated by reference to the information that is incorporated). Requests should be directed to: Ascent Solar Technologies, Inc., Attn: Corporate Secretary, 8120 Shaffer Parkway, Littleton, Colorado 80127, telephone (303) 285-9885.

[Note: The reoffer prospectus referred to in the Explanatory Note follows this page.]

PROSPECTUS

ASCENT SOLAR TECHNOLOGIES, INC.

735,000 shares of common stock

This prospectus relates to the reoffer and resale of up to 735,000 shares of common stock, \$0.0001 par value (the Shares), of Ascent Solar Technologies, Inc. by officers, directors and employees who hold control securities or restricted securities (as those terms are defined in Instruction C to Form S-8). These officers and directors (Selling Shareholders) acquired or may acquire the Shares by exercising options granted under the Company s 2005 Stock Option Plan, as amended (the Plan).

The Selling Shareholders will determine when they will sell their Shares, and in all cases they will sell their Shares at the then-prevailing market price or at prices negotiated at the time of sale. We will not receive any proceeds from these sales. The brokers and dealers that the Selling Shareholders may utilize in selling their Shares may receive compensation in the form of underwriting discounts, concessions or commissions from the sellers or purchasers of the Shares.

Our common stock is traded on the Nasdaq Capital Market and the Boston Stock Exchange under the symbols ASTI and AKC, respectively. On May 8, 2007, the last reported sale price of our common stock on the Nasdaq Capital Market was \$8.77 per share.

Our principal executive officers are located at 8120 Shaffer Parkway, Littleton, Colorado 80127.

Investing in the Shares involves risks. See Risk Factors beginning on page 3.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus May 9, 2007.

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You should rely only on the information contained in this prospectus. We have not authorized any other person to provide you with different information. Information contained on our website does not constitute a part of this prospectus. The information in this prospectus may only be accurate as of the date appearing on the cover page of this prospectus, regardless of the time this prospectus is delivered or common stock is sold.

We currently own the trademark FASTTRACKS. All other brand names or trademarks appearing in this prospectus are the property of their respective owners.

PROSPECTUS SUMMARY

This is only a summary and does not contain all the information that may be important to you. You should read the more detailed information contained in this prospectus, including but not limited to, the risk factors beginning on page 3. All references in this prospectus to the Company, us, we or our refer to Ascent Solar Technologies, Inc., unless the context otherwise indicates.

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.

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.

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Our principal business office is located at 8120 Shaffer Parkway, Littleton, Colorado, and our telephone number is (303) 285-9885. Our website address is www.ascentsolar.com. Information contained in our website or any other website does not constitute part of this prospectus.

This Offering

Shares of common stock offered by
Selling Shareholders 735,000

Offering price The Selling Shareholders and any of their pledgees, assignees and successors-in-interest may sell any or all of their Shares on any stock exchange, market or trading facility on which the securities are traded or in private transactions. The sales may be at fixed or negotiated prices.

Nasdaq Capital Market Symbol ASTI

Boston Stock Exchange Symbol AKC

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RISK FACTORS

An investment in our securities involves a high degree of risk and many uncertainties. You should carefully consider the specific factors listed below, together with the cautionary statement that follows this section and the other information included in this prospectus, before purchasing our units. If one or more of the possibilities described as risks below actually occurs, our operating results and financial condition would likely suffer and the trading price of our securities could fall, causing you to lose some or all of your investment in the securities we are offering. The following is a description of what we consider to be our key challenges and all material risks to our business and securities.

Risks Relating to Our Business

We have no history of operations and are therefore subject to various startup company risks.

We were formed in October 2005 and our business to date has consisted of initial setting up of operations to pursue our business plan. In order to pursue our plan, we will have to continue to establish internal infrastructure, hire additional personnel, adopt company plans and procedures, set up a sales organization, oversee the design and construction of our initial production line and otherwise establish the functional capabilities of an operating company. Accomplishing this task may take longer or cost more than expected, and it is likely that problems that we cannot now anticipate will require solution. We cannot assure you that we will be successful in establishing ourselves as an operating company.

We intend to address an unproven market that may not justify our commitment to it.

We intend to develop and offer flexible, lightweight, high efficiency PV products for use in terrestrial, space and near-space applications. There is no established market for our flexible thin-film CIGS technology. Our business plan assumes that such a market will develop as a result of the technological improvements that we have made and expect to continue to make. We cannot assure you that such a market will develop or, if it does develop, that it will meet our expectations.

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

Discussions with some potential purchasers of our PV products have been based on the assumption that we will continue to improve the cost, performance/weight and performance/volume characteristics of our planned products. While we believe that the assumptions on which these discussions have been based are reasonable, we cannot assure you that we will be able to achieve these improvements. If we are not able to achieve these improvements, the use of our PV products may be unfeasible or economically unattractive to our potential customers, in which case the sales assumptions underlying our business plan would be incorrect.

Failure of the HAA market to develop as quickly as we envision or our failure to enter that market successfully would adversely affect our projected sales, growth and revenues.

The HAA market is in its infancy, and should the market opportunity not materialize, opportunities for growth in this market may be limited. In particular, there is not yet long-term government funding for HAA projects, and to date we have not been selected to supply PV products for any HAA projects. Also, because HAA projects will be subject to the size and priorities of government budgets, the funding for HAA projects always may be at risk. If government funding or commitment to the HAA concept wanes, then demand for our products and, hence, our financial condition and business, may suffer. Furthermore, although we believe that our PV modules outperform the products of our competitors in the space and near-space markets, our products may still require improvements or modifications to meet the technical or market requirements of one or more HAA projects. There is no guarantee that such improvements or modifications can or will be made, and loss of our bids to supply PV modules to HAA contractors or projects would adversely affect our results of operation and growth.

Failure of the terrestrial market for thin-film PV products to develop as quickly as we envision or our failure to enter that market successfully would adversely affect our projected sales, growth and revenues.

We intend to sell thin-film PV modules for use in terrestrial applications, such as building integrated photovoltaic (BIPV) and electronics integrated photovoltaic (EIPV) products. These products comprise large-volume commodity components, such as roofing shingles, panels, membranes, batteries and hard drives. Our strategy is to partner or form

strategic relationships with BIPV or EIPV suppliers to gain a foothold in these terrestrial markets. If we are unable to successfully establish working relationships with such suppliers, or if due to cost, technical or other factors, our product proves unsuitable for use in such terrestrial applications, our projected sales, growth and revenues would be adversely affected.

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.

We have recorded no sales of PV products and have no contracts for such sales. Because of the nature of the projects in which such products may be used, we expect that the sales cycle will be quite long and, therefore, that it will be at least 18 months before we record significant PV product sales, although we expect to record revenue from performance of research and development contracts in the interim. As a result, we expect that it will be some time before we can determine whether our expectations relating to our products and their target markets are justified. Also, as a result, we will be required to invest substantial resources in pursuing these markets in advance of any significant revenue stream that may result from such investments. An unanticipated or longer than expected delay revenue ramp-up could put a strain on our capital resources and require us to seek additional capital. Such additional capital, if available, could substantially dilute the interest of the existing investors.

We intend to sell portions of our PV modules to contractors of government-funded projects, which will be subject to political, scheduling and funding risks.

We intend to sell our PV modules to contractors of government-funded projects such as the HAA program. We would be a subcontractor or supplier on these projects. The government agencies overseeing the projects are subject to economic and political pressures that dictate the manner in which they spend money. As a result, even if a contractor or government agency wants to purchase our PV modules, it may be unable to do so due to budgetary or political constraints. Orders may even be canceled or substantially delayed due to budgetary, political or other scheduling delays that frequently occur in connection with government-funded projects. Any such cancellations or delays would likely adversely affect our financial results.

Our reliance on government contracts 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.

Government contracts may enable us to develop new technologies more rapidly than we would have been able to do otherwise. A reduction or discontinuance of these programs, or a reduction or discontinuance of our participation in these programs, might increase our expenses, which could affect our profitability and impair our ability to develop our technologies. In addition, contracts involving government agencies may be terminated or modified at the convenience of the agency. Also, we may become ineligible to participate in certain government-funded programs due to government restrictions on foreign ownership. Other risks include potential disclosure of our confidential information to third parties and the exercise of march-in rights by the government. March-in rights refer to the right of the United States government or government agency to require us to grant a license to the technology to a responsible applicant or, if we refuse, the government may grant the license itself. The government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the technology or because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations or to give the United States industry preference. Our government-sponsored research contracts are subject to audit and require that we provide regular written technical updates, as well as a final report on the results of our technical research. Because these reports are generally available to the public, third parties may obtain some aspects of our sensitive confidential information. Moreover, the failure to provide these reports or to provide inaccurate or incomplete reports may provide the government with rights to any intellectual property arising from the related research. Funding from government contracts also may limit when and how we can deploy technology developed under those contracts.

We initially will be substantially dependent on the administrative and engineering resources of our parent company ITN Energy Systems, Inc.

We will be dependent on ITN, at least initially, to provide administrative services such as facilities management, equipment maintenance, human resources and accounting. Also, ITN will also be responsible for developing a critical component of our initial production line. If our relationship with ITN falters or if ITN fails to carry out its services or contracts in a satisfactory manner, our business may suffer.

Failure to build, implement or operate our production line successfully would adversely impact our business and financial condition.

We plan to produce our thin-film PV modules using a custom-built 500 kW per shift (1.5MW) annual capacity production line beginning in early 2008. This production line, which has not yet been built, will require a substantial investment of capital, including a large portion of the net proceeds from this offering. We believe that, when our PV modules are manufactured in large quantities, we will be able to demonstrate manufacturing yields, equipment capability, product performance and product quality that will enable us to produce PV modules at costs lower than those of competitors. However, the successful completion and operation of the production line will require substantial engineering resources and is subject to significant risks, including risks of cost overruns and delays or the possibility that the production line may never be completed or operational. Furthermore, we may never be able to operate our production processes in high volume, make planned process and equipment improvements, attain projected manufacturing yields or desired annual capacity, and obtain timely delivery of equipment to build the production line or hire and train the additional employees and management needed to operate the production line. Failure to meet these objectives could materially and adversely affect our business, results of operations and financial condition.

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

Our growth plan calls for scale-up of our 1.5MW production line to a 25MW production line in order to achieve the product cost and manufacturing capacities necessary to compete in the terrestrial market. We believe that, when our PV modules are manufactured in large quantities, we will be able to demonstrate manufacturing yields, equipment capability, product performance and product quality that will enable us to produce PV modules at costs lower than those of competitors. However, the successful completion and operation of the production line at the 25MW scale will require substantial engineering resources and is subject to significant risks, including risks of cost overruns and delays or the possibility that the production line may never be completed or operational. Furthermore, we may never be able to operate our production processes in high volume, make planned process and equipment improvements, attain projected manufacturing yields or desired annual capacity, and obtain timely delivery of equipment to build the production line or hire and train the additional employees and management needed to operate the production line. Failure to meet these objectives could materially and adversely affect our business, results of operations and financial condition.

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

The development of demand for our proposed products and our ability to sell them may be adversely affected by a number of factors, many of which are beyond our control, including:

- our failure to produce PV modules that compete favorably against competing products on the basis of cost, quality, weight, efficiency and performance;
- our failure to develop or maintain successful relationships with customers, systems integrators and strategic partners; and
- the failure of our products to achieve qualification or certification by customers for use in our target market applications.

If our products fail to gain market acceptance, we would be unable to sell our products or achieve profitability.

Our future success depends on retaining our existing management and hiring and assimilating new key employees and our inability to attract or retain key personnel would materially harm our business and results of operations.

Our success depends on the continuing efforts and abilities of our executive officers, including Matthew Foster, our President and Chief Executive Officer, Dr. Joseph Armstrong, our Chief Technology Officer, and Dr. Prem Nath, our Vice President of Manufacturing. Our future success also will depend, in part, on our ability to attract and retain highly skilled employees, including management, technical and sales personnel. The loss of services of any of our key personnel, the inability to attract, retain or assimilate key personnel in the future, or delays in hiring required personnel could materially harm our business and results of operations.

We may be unable to adequately protect or enforce our proprietary information, which may result in its unauthorized use or reduced sales or otherwise reduce our ability to compete.

Our business and competitive position depend upon our ability to protect our proprietary technology, including any solar power products that we develop. Despite our efforts to protect this information, unauthorized parties may attempt to obtain and use information that we regard as proprietary. Any patents issued in connection with our efforts to develop new technology for solar power products may not be broad enough to protect all of the potential uses of the technology.

In addition, when others are responsible for the control the prosecution, maintenance and enforcement of certain important intellectual property, such as technology licensed to us, the protection of the intellectual property rights may be outside of our control. If the entity that controls the intellectual property rights does not adequately protect those rights, our rights may be impaired, which may impact our ability to develop, market and commercialize our products.

Our means of protecting our proprietary rights may not be adequate, and our competitors may:

- independently develop substantially equivalent proprietary information, products and techniques;
- otherwise gain access to our proprietary information; or
- design around our patents or other intellectual property.

We have our employees, consultants and advisors execute proprietary information and invention agreements when they begin working for us. However, these agreements may not provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure. Failure to maintain trade secret and patent protection may adversely affect our prospects.

Successful infringement claims by third parties could result in substantial damages, lost product sales and the loss of important proprietary rights.

There has been substantial litigation regarding patent and other intellectual property in various high technology industries. In the future, we may be notified of allegations that we may be infringing on intellectual property rights possessed by others. Should litigation be brought against us, such litigation could be extremely expensive and time consuming and could materially and adversely affect our business, financial condition and results of operations, regardless of the outcome of the litigation. Such litigation could also result in loss of certain proprietary rights, significant monetary liability and barriers to product manufacturing. Any of these outcomes could materially harm our business and have a material negative impact on the value of your investment.

Risks Related to Investment in Our Securities

You may not be able to exercise the Class A or Class B warrants unless you are resident of certain states.

In order for you to be able to exercise the Class A or Class B warrants, the shares of our common stock to be issued to you upon exercise of the Class A or Class B warrants must be covered by an effective and current registration statement and qualify or be exempt under the securities laws of the state or other jurisdiction in which you live. We believe that exemptions exist, or qualifications have been obtained, for issuance of the underlying shares in the following states: Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Louisiana, Massachusetts, Mississippi, Montana, Nevada, New Hampshire, New York, Oregon, Rhode Island, Texas, Utah, Vermont, West Virginia, Wisconsin and the District of Columbia. Furthermore, qualifications have been obtained in Arizona, California and New Jersey subject to suitability standards. Unless you reside in one of the aforementioned states, you will be unable to exercise the Class A or Class B warrants unless and until a suitable exemption is found or we subsequently qualify to issue the underlying shares in the state in which you live.

If we do not maintain an effective and current registration statement or comply with applicable state securities laws, you may not be able to exercise the Class A or Class B warrants.

In order for you to be able to exercise the Class A or Class B warrants, the shares of our common stock to be issued to you upon exercise of the Class A or Class B warrants must be covered by an effective and current registration statement and qualify or be exempt under the securities laws of the state or other jurisdiction in which you live. We cannot assure you that we will continue to maintain a current registration statement relating to the shares of our common stock underlying the Class A or Class B warrants, nor can we assure you that an exemption from state registration or qualification

will be available throughout their term. This may temporarily or permanently prevent you from exercising the Class A or Class B warrants, or may have an adverse effect on demand for the Class A or Class B warrants and the prices that can be obtained from reselling them.

The Class A warrants may be redeemed on short notice. This may have an adverse effect on their price.

The Company may redeem the Class A warrants for \$0.25 per warrant on 30 days' notice at any time after the last reported sale price per share of our common stock as reported by the principal exchange or trading facility on which our common stock trades equals or exceeds \$9.35 for five consecutive trading days. If we give notice of redemption, holders of our Class A warrants will be forced to sell or exercise the Class A warrants they hold or accept the redemption price. The notice of redemption could come at a time when, under specific circumstances or generally, it is not advisable or possible for holders of our Class A warrants to sell or exercise them.

While the Class A and Class B warrants are outstanding, it may be more difficult to raise additional equity capital.

During the term that the Class A warrants and Class B warrants are outstanding, the holders of those warrants are given the opportunity to profit from a rise in the market price of our common stock. In addition, the Class B warrants are not redeemable by us. We may find it more difficult to raise additional equity capital while these warrants are outstanding. At any time during which these warrants are likely to be exercised, we may be able to obtain additional equity capital on more favorable terms from other sources.

Future sales or the potential for future sales of our securities may cause the trading price of our common stock and Class A and Class B warrants to decline and could impair our ability to raise capital through subsequent equity offerings.

Sales of a substantial number of shares of our common stock or other securities in the public markets, or the perception that these sales may occur, could cause the market price of our common stock or other securities to decline and could materially impair our ability to raise capital through the sale of additional securities. A substantial number of our outstanding shares of common stock are subject to lock-up agreements with us and with Paulson Investment Company, Inc., the representative of the underwriter of our initial public offering. As these shares are released from the lock-up agreements, the sale of such shares could cause the market price of our common stock to decline. Furthermore, a large number of our outstanding shares are not registered under the Securities Act. If and when these shares are registered and become eligible for sale on the public markets, the market price of our common stock could decline.

As a public company we are subject to complex legal and accounting requirements that will require us to incur substantial expense and will expose us to risk of non-compliance.

As a public company, we are subject to numerous legal and accounting requirements that do not apply to private companies. The cost of compliance with many of these requirements is substantial, not only in absolute terms but, more importantly, in relation to the overall scope of the operations of a small company. Our relative inexperience with these requirements may increase the cost of compliance and may also increase the risk that we will fail to comply. Failure to comply with these requirements can have numerous adverse consequences including, but not limited to, our inability to file required periodic reports on a timely basis, loss of market confidence, delisting of our securities and/or governmental or private actions against us. We cannot assure you that we will be able to comply with all of these requirements or that the cost of such compliance will not prove to be a substantial competitive disadvantage vis-à-vis our privately held and larger public competitors.

FORWARD-LOOKING INFORMATION

Some of the statements made in this prospectus discuss future events and developments, including our future business strategy and our ability to generate revenue, income and cash flow. In some cases, you can identify forward-looking statements by words or phrases such as may, should, expects, plans, anticipates, believes, estimates, predicts, potential, continue, our future success depends, seek to continue, or to words or phrases, or comparable words or phrases. These statements are only predictions that are based, in part, on assumptions involving judgments about 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. Actual events or results may differ materially. In evaluating these statements, you should specifically consider various facts, including the risks outlined in the Risk Factors section. Although we believe that the expectations reflected in the forward-looking statements are

reasonable, we cannot guarantee future results, levels of activity, performance or achievements. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date on which they are made. We do not undertake to update any of the forward-looking statements after the date of this prospectus to conform these statements to actual results.

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SELLING SHAREHOLDERS

This prospectus relates to Shares that are being registered for reoffers and resale by the Selling Shareholders. The Selling Shareholders are either holders of restricted securities acquired under the Plan or directors, officers or others who may be deemed to be affiliates who acquired or may acquire Shares under the Plan. The Selling Shareholders may resell any or all of the Shares at any time while this prospectus is current.

Executive officers, directors or others who are considered to be affiliates of the Company who acquire common stock under the Plan may be added to the list of Selling Shareholders and the Shares to be sold may be increased or decreased by the use of a prospectus supplement filed with the Securities and Exchange Commission (the SEC). Furthermore, certain unnamed non-affiliates, each of whom holds less than the lesser of 1,000 shares or one percent of the Shares issuable under the Plan, may use this prospectus for reoffers and resales of Shares up to that amount.

The inclusion of Shares in the table below does not constitute a commitment to sell any of the Shares.

Name	Position	Number of Shares Beneficially Owned Prior to the Offering(1)	Number of Shares Eligible to be Offered by the Selling Shareholders(2)	Number of Shares Beneficially Owned After Completion of the Offering(3)	Percentage of the Class Owned After Completion of the Offering(3)
Matthew Foster	President and Chief Executive Officer	148,302	130,000	95,445	1.2 %
Joseph H. Armstrong	Vice President and Chief Technology Officer	68,714	50,000	50,000	*
Janet Casteel	Chief Accounting Officer and Treasurer	32,714	45,000	15,000	*
Joseph McCabe	Vice President of Business Development	2,000	30,000	2,000	*
R. Scott Burrows	Secretary	20,000	15,000	15,000	*
Prem Nath	Sr. Vice President of Manufacturing	33,333	100,000		*
Mohan S. Misra	Chairman of the Board and Chief Strategy Officer	1,458,000	80,000	1,428,000	17.7 %
Stanley Gallery	Director	41,000	32,000	25,000	*
Ashutosh Misra	Director and Sr. Vice President of Operations and Corporate Affairs	64,000	20,000	54,000	*
T. W. Fraser Russell	Director	16,000	32,000		*
Richard J. Swanson	Director	0	16,000		*
Yvonne Reopelle	Employee	0	5,000		*
Venu Basava	Employee	0	15,000		*
Deb Koll	Employee	0	5,000		*
Jeffrey Schaefer	Employee	0	3,000		*
Jeff Summers	Consultant	0	15,000		*
Pat Swanson	Consultant	1,666	5,000		*
Peter Shevchuk	Consultant	1,666	5,000		*
Bruce Lanning	Consultant	15,000	15,000	10,000	*
Nicholas Gomez	Consultant	13,000	10,000	7,000	*
Garth Jensen	Consultant	18,333	10,000	15,000	*
Lawrence Woods	Consultant	18,333	10,000	15,000	*
Brad Crume	Consultant	1,666	5,000		*
Wendi Batchelor	Consultant	1,000	3,000		*
Rosine Ribelin	Consultant	2,333	7,000		*
Jeffrey Schaefer	Consultant	2,333	7,000		*

Name	Position	Number of Shares Beneficially Owned Prior to the Offering(1)	Number of Shares Eligible to be Offered by the Selling Shareholders(2)	Number of Shares Beneficially Owned After Completion of the Offering(3)	Percentage of the Class Owned After Completion of the Offering(3)
Danny Fisher	Consultant	1,666	5,000		*
Ajay K. Kalla	Consultant	6,666	5,000	5,000	*

* Represents less than 1%.

(1) Includes shares of common stock beneficially owned or that may be acquired upon exercise of options or warrants exercisable within sixty (60) days of the date of this prospectus.

(2) Represents the number of Shares underlying options granted under the Plan, whether currently vested or unvested.

(3) Assumes the exercise and resale of all Shares acquired by the Selling Shareholder pursuant to the Plan and that a total of 8,050,988 shares of common stock will be issued and outstanding after the Offering.

USE OF PROCEEDS

The Selling Shareholders will receive all of the proceeds from the sale of the Shares offered by this prospectus. We will not receive any of the proceeds from the sale of the Shares, but we have agreed to pay the expenses of preparing this prospectus and the related registration statement.

PLAN OF DISTRIBUTION

The Selling Shareholders and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their Shares on any stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or negotiated prices. It is possible that the increase in securities available on the market will have a negative effect on the resale price of our securities and may make it difficult for purchasers to resell the securities at a profit or at all.

The Selling Shareholders also may sell Shares under Rule 144 of the Securities Act of 1933, as amended (the Securities Act) if available, rather than under this prospectus. The Selling Shareholders may engage in short sales against the box, puts and calls and other transactions in our securities or derivatives of our securities, and may sell or deliver shares or warrants in connection with these trades. The Selling Shareholders may pledge their Shares to their brokers under the margin provisions of customer agreements. If a Selling Stockholder defaults on a margin loan, the broker may, from time to time, offer and sell the pledged shares or warrants.

Broker-dealers engaged by the Selling Shareholders may arrange for other broker-dealers to participate in sales. Broker-dealers may receive commissions or discounts from either the Selling Shareholders or, if any broker-dealer acts as agent for the purchaser, from the purchaser, in amounts to be negotiated. It is not expected that these commissions and discounts would exceed what is customary in the types of transactions involved.

The Selling Shareholders and any broker-dealers or agents that are involved in selling the Shares may be deemed to be underwriters within the meaning of the Securities Act in connection with those sales. In that event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act.

We have elected, to pay all fees and expenses incident to the registration of the Shares being registered herein. We are not required to pay commissions and other selling expenses.

INDEMNIFICATION

Our certificate of incorporation, as amended (Certificate of Incorporation), contains provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to us or our shareholders for monetary damages for any breach of fiduciary duties as directors, except liability for the following:

- Any breach of their duty of loyalty to our company or our stockholders.
- Acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law.
- Unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law.
- Any transaction from which the director derived an improper personal benefit.

Our bylaws, as amended (Bylaws), provide that we are required to indemnify our directors and officers and may indemnify our employees and other agents to the fullest extent permitted by Delaware law. Our Bylaws also provide that we shall advance expenses incurred by a director or officer before the final disposition of any action or proceeding upon receipt of an undertaking from or on behalf of that director or officer to repay the advance if it is ultimately determined that he or she is not entitled to be indemnified. We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by the Board of Directors. These agreements provide for indemnification for related expenses including attorneys fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We believe that these provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain directors and officers liability insurance.

The limitation of liability and indemnification provisions in our Certificate of Incorporation and Bylaws may discourage shareholders from bringing a lawsuit against our directors for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and other stockholders. Furthermore, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and officers as required by these indemnification provisions. At present, there is no pending litigation or proceeding involving any of our directors, officers or employees regarding which indemnification is sought, and we are not aware of any threatened litigation that may result in claims for indemnification.

Insofar as we may permit indemnification for liabilities arising under the Securities Act to directors, officers, and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the SEC such indemnification is against public policy, as expressed in the Securities Act and is, therefore, unenforceable.

INCORPORATION OF DOCUMENTS BY REFERENCE

This prospectus is part of a registration statement on Form S-8. The prospectus is prepared in accordance with the requirements of Part I of Form S-3 and General Instruction C of the instructions to Form S-8. The SEC allows this filing to incorporate by reference information that the Company previously has filed with the SEC. This means the Company can disclose important information to you by referring you to other documents that it has filed with the SEC. The information that is incorporated by reference is considered part of this prospectus, and information that the Company files later will automatically update and may supersede this information. For further information about the Company and the securities being offered, you should refer to the registration statement and the following documents that are incorporated by reference:

- Our annual report on Form 10-KSB filed on March 30, 2007, which contains audited financial statements for the fiscal year ended December 31, 2006;
- All other reports filed by us pursuant to Section 13(a) or 15(d) of the Securities and Exchange Act of 1934 (the Exchange Act) since the end of the fiscal year covered by the annual report referred to above; and
- The description of our common stock contained in Forms 8-A filed on June 19, 2006 and August 8, 2006 and any amendments or reports filed for the purpose of updating such description.

All documents filed by the Company subsequent to those listed above with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, prior to the termination of the offering, shall be deemed to be incorporated by reference into this prospectus and to be a part hereof from the date of filing of such documents. Any statement contained in a document incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

You may request a copy of all documents that are incorporated by reference in this prospectus by writing or telephoning us at the following address and number: Ascent Solar Technologies, Inc., Attention: Corporate Secretary, 8120 Shaffer Parkway, Littleton, Colorado 80127, telephone (303) 285-9885. We will provide copies of all documents requested (not including exhibits to those documents, unless the exhibits are specifically incorporated by reference into those documents or this prospectus) without charge.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement (which term includes all amendments, exhibits, and schedules thereto) on Form S-8 under the Securities Act with respect to the Shares offered by this prospectus. This prospectus does not contain all the information set forth in the registration statements because certain information has been incorporated into the registration statements by reference in accordance with the rules and regulations of the SEC. Please review the documents incorporated by reference for a more complete description of the matters to which such documents relate.

We are subject to the informational reporting requirements of the Exchange Act. In accordance with the Exchange Act, we file reports, proxy statements, and other information with the SEC. You can inspect and copy these reports, proxy statements, and other information at the Public Reference Room of the SEC, 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference rooms. Our SEC filings are also available on the SEC's web site. The address of this site is <http://www.sec.gov>.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference

The following documents filed by us with the SEC are incorporated herein by reference as of their respective dates of filing and shall be deemed to be a part hereof:

- The Registrant's annual report on Form 10-KSB filed on March 30, 2007, which contains audited financial statements for the fiscal year ended December 31, 2006;
- All other reports filed by us pursuant to Section 13(a) or 15(d) of the Exchange Act of 1934 (the Exchange Act) since the end of the fiscal year covered by the annual report referred to above; and
- The description of the Registrant's common stock contained in Forms 8-A filed on June 19, 2006 and August 8, 2006 and any amendments or reports filed for the purpose of updating such description.

All other documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act prior to the filing of a post-effective amendment to this registration statement, which indicates that all securities offered have been sold or which deregisters all such securities then remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be a part hereof from the date of filing of such documents. The Company specifically excludes from incorporation any information that has been furnished and not filed pursuant to Item 2.02 or Item 7.01 of the Company's Current Reports on Form 8-K. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this registration statement to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such earlier statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this registration statement.

Item 4. Description of Securities

Not applicable.

Item 5. Interests of Named Experts and Counsel

Not applicable.

Item 6. Indemnification of Directors and Officers

Our Certificate of Incorporation contains provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to us or our shareholders for monetary damages for any breach of fiduciary duties as directors, except liability for the following:

- Any breach of their duty of loyalty to our company or our stockholders.
- Acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law.
- Unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law.
- Any transaction from which the director derived an improper personal benefit.

Our Bylaws provide that we are required to indemnify our directors and officers and may indemnify our employees and other agents to the fullest extent permitted by Delaware law. Our Bylaws also provide that we shall advance expenses incurred by a director or officer before the

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final disposition of any action or proceeding upon receipt of an undertaking from or on behalf of that director or officer to repay the advance if it is ultimately determined that he or she is not entitled to be indemnified. We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by the Board of Directors. These agreements provide for indemnification for related expenses including attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We also maintain directors' and officers' liability insurance.

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The limitation of liability and indemnification provisions in our Certificate of Incorporation and Bylaws may discourage shareholders from bringing a lawsuit against our directors for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and other stockholders. Furthermore, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and officers as required by these indemnification provisions.

Item 7. Exemption from Registration Claimed

The Company issued the stock options to directors, officers, employees and/or consultants in reliance on the exemption under Rule 701 promulgated under the Securities Act, as transactions by an issuer not involving a public offering and under a written compensatory benefit plan.

Item 8. Exhibits

The exhibits listed in the accompanying Exhibit Index are filed or incorporated by reference as part of this registration statement.

Item 9. Undertakings

The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of this registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement.

provided, however, that paragraphs (1)(i) and (1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed by the Registrant pursuant to the Exchange Act that are incorporated by reference in this registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) For determining liability of the Registrant under the Securities Act to any purchaser in the initial distribution of the securities, in a primary offering of securities of the Registrant pursuant to this Registration Statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, to be a seller to the purchaser and to be considered to offer or sell such securities to such purchaser: (a) any preliminary prospectus or prospectus of the Registrant relating to the offering required to be filed pursuant to Rule 424; (b) any free writing prospectus relating to the offering prepared by or on behalf of the Registrant or used or referred to by the Registrant; (c) the portion of any other free writing prospectus relating to the offering containing material information about the Registrant or its securities provided by or on its behalf; and (d) any other communication that is an offer in the offering made by the Registrant to the purchaser.

SIGNATURES

Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in Littleton, Colorado on May 7, 2007.

Ascent Solar Technologies, Inc.

By: /s/ Matthew Foster
Matthew Foster, President and Chief Executive Officer

POWER OF ATTORNEY

We, the undersigned directors and officers of Ascent Solar Technologies, Inc., do hereby constitute and appoint Matthew Foster and Janet L. Casteel or either of them, our true and lawful attorneys and agents, to do any and all acts and things in our name and behalf in our capacities as directors and officers and to execute any and all instruments for us and in our names in the capacities indicated below, which said attorneys and agents, or either of them, may deem necessary or advisable to enable said corporation to comply with the Securities Act, and any rules, regulations, and requirements of the SEC, in connection with this registration statement, including specifically, but without limitation, power and authority to sign for us or any of us in our names and in the capacities indicated below, any and all amendments (including post-effective amendments) to this registration statement, or any related registration statement that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act; and we do hereby ratify and confirm all that the said attorneys and agents, or either of them, shall do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this registration statement has been signed below by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Matthew Foster Matthew Foster	President and Chief Executive Officer (Principal Executive Officer)	May 7, 2007
/s/ Janet Casteel Janet Casteel	Chief Accounting Officer and Treasurer (Principal Accounting and Financial Officer)	May 7, 2007
/s/ Mohan S. Misra Mohan S. Misra	Chairman of the Board	May 7, 2007
/s/ Stanley Gallery Stanley Gallery	Director	May 7, 2007
/s/ Ashutosh Misra Ashutosh Misra	Director	May 7, 2007
/s/ T.W. Fraser Russell T.W. Fraser Russell	Director	May 7, 2007
/s/ Richard J. Swanson Richard J. Swanson	Director	May 7, 2007

EXHIBIT INDEX

Exhibit No.	Description
4.1	Amended and Restated 2005 Stock Option Plan
5.1	Opinion of Holland & Knight LLP as to the legality of the securities being registered, dated May 8, 2007
23.1	Consent of Hein & Associates LLP, an independent registered public accounting firm, dated May 7, 2007
23.2	Consent of Holland & Knight LLP (included in Exhibit 5.1)

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