

Advanced Emissions Solutions, Inc.
Form 424B5
November 14, 2013
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**Filed Pursuant to Rule 424(b)(5)
Registration No. 333-171936**

The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities and we are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED NOVEMBER 14, 2013

PRELIMINARY PROSPECTUS SUPPLEMENT

(To the Prospectus dated July 18, 2013)

Shares

Common Stock

We are offering shares of our common stock.

Our common stock is listed on The NASDAQ Capital Market under the symbol ADES . On November 13, 2013, the last reported sale price of our common stock was \$49.99 per share.

Our business and an investment in our common stock involve significant risks. These risks are described under the caption Risk Factors beginning on page S-3 of this prospectus supplement and on page 2 of the accompanying prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

| | <i>Per Share</i> | <i>Total Without Overallotment Option</i> | <i>Total With Overallotment Option</i> |
|---|------------------|---|--|
| Public offering price | \$ | \$ | \$ |
| Underwriting discounts and commissions⁽¹⁾ | \$ | \$ | \$ |
| Proceeds, before expenses, to Advanced Emissions Solutions, Inc. | \$ | \$ | \$ |

(1) The underwriters will receive compensation in addition to the discount. See Underwriting for a description of compensation payable to the underwriters.

We have granted the underwriters a 30-day option to purchase up to an additional shares of common stock from us at the public offering price, less underwriting discounts and commissions, to cover over-allotments, if any.

The underwriters expect to deliver the shares against payment in New York, New York on , 2013.

Sole Book-Running Manager

Cowen and Company

Co-Managers

Needham & Company

Lake Street Capital Markets

November , 2013.

Northland Capital Markets

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ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is the prospectus supplement, which describes the specific terms of the securities we are offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part, the accompanying prospectus, provides more general information. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. This prospectus supplement and the accompanying prospectus and the documents incorporated by reference herein and therein are part of a shelf registration statement that we filed with the Securities and Exchange Commission. Under the shelf registration process, we may offer from time to time shares of our common stock and other equity securities up to an original aggregate amount of \$140,000,000. This prospectus supplement and the accompanying prospectus and the documents incorporated by reference herein and therein include important information about us, our securities being offered and other information you should know before investing. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus and any related free writing prospectus that we authorized to be delivered to you, as well as the additional information described under

Where You Can Find More Information on page 16 of the accompanying prospectus and Incorporation of Certain Information by Reference on page S-13 of this prospectus supplement before investing in our securities.

To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or in any document incorporated by reference that was filed with the SEC before the date of this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in this prospectus supplement or the accompanying prospectus the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained in this prospectus supplement, the accompanying prospectus, any related free writing prospectus that we authorized to be distributed to you and the documents incorporated by reference herein and therein. We have not, and the underwriters have not, authorized anyone to provide you with information that is different. If anyone provides you with different or inconsistent information, you should not rely on it. We are offering to sell and seeking offers to buy shares of our common stock only in jurisdictions where offers and sales are permitted. We are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information contained in this prospectus supplement, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus and any related free writing prospectus that we have authorized to be delivered to you is accurate only as of their respective dates, regardless of the time of delivery of such documents or of any sale of securities. Our business, financial condition, results of operations and prospects may have changed since those dates. You should not consider this prospectus supplement or the accompanying prospectus to be an offer or solicitation relating to the securities in any jurisdiction in which such an offer or solicitation relating to the securities is not authorized. Furthermore, you should not consider this prospectus supplement or the accompanying prospectus to be an offer or solicitation relating to the securities if the person making the offer or solicitation is not qualified to do so, or if it is unlawful for you to receive such an offer or solicitation.

Pursuant to an Agreement and Plan of Merger as further described herein, ADES replaced ADA-ES, Inc. as the publicly-held corporation effective July 1, 2013. On July 3, 2013, ADES filed a post-effective amendment to the ADA-ES Registration Statement dated January 28, 2011, as amended (the Registration Statement), in order to assume the Registration Statement as a successor issuer. The SEC declared the post-effective amendment to the Registration Statement effective on July 18, 2013. As a result, ADES is entitled to rely on the Registration Statement and distribute this prospectus supplement to you. In this prospectus supplement and the accompanying prospectus the terms ADES

the Company , we , us and our mean ADA-ES, Inc. for the periods through and including the period ended June 30, 2013, and Advanced Emissions Solutions, Inc. and its subsidiaries for the periods after June 30, 2013.

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No action is being taken in any jurisdiction outside the United States to permit a public offering of the securities or possession or distribution of this prospectus supplement or the accompanying prospectus in that jurisdiction. Persons who come into possession of this prospectus supplement or the accompanying prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus supplement or the accompanying prospectus applicable to that jurisdiction.

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SUMMARY

This summary highlights certain information about us, this offering and information appearing elsewhere in this prospectus supplement and in the accompanying prospectus and in the documents we incorporate by reference. This summary is not complete and does not contain all of the information that you should consider before investing in shares of our common stock. The following summary is qualified in its entirety by, and should be read in conjunction with, the more detailed information and financial statements and notes thereto appearing elsewhere in this prospectus supplement and the accompanying prospectus and incorporated by reference herein and therein. Before you decide to invest in shares of our common stock, to fully understand this offering and its consequences to you, you should carefully read the entire prospectus supplement and the accompanying prospectus carefully, including the risk factors beginning on page S-3 of this prospectus supplement and on page 2 of the accompanying prospectus, and the consolidated financial statements and related notes included in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein.

The Company

Pursuant to an Agreement and Plan of Merger dated as of March 25, 2013, Advanced Emissions Solutions, Inc. (ADES or the Company), a Delaware company incorporated in 2011, replaced ADA-ES, Inc. (ADA), a Colorado corporation as the publicly-held corporation effective July 1, 2013.

The Company serves as the holding entity for a family of companies that provide emissions solutions to customers in the power generation and other industries. Through its subsidiaries and joint ventures, the Company is a leader in clean coal technologies and associated specialty chemicals, primarily serving the coal-fueled power plant industry. Our proprietary environmental technologies and specialty chemicals enable power and coal-fired plants to enhance existing air pollution control equipment, minimize mercury and other emissions, maximize capacity and improve operating efficiencies to meet the challenges of existing and pending emission control regulations. ADES is the holding company for ADA, BCSI, LLC (BCSI) and Clean Coal Solutions, LLC (CCS) each of which are described in more detail below.

ADA supplies Activated Carbon Injection (ACI) systems for mercury control, Dry Sorbent Injection (DSI) systems for acid gases, and technology services and other offerings in support of our customers' emissions compliance strategies. ADA's M-Prov^{EM} technology, which reduces emissions of mercury from Powder River Basin (PRB) coal, is applied directly to coal at power plants, or offered through a licensing agreement with Arch Coal, Inc. for application at their mines. In addition, ADA is developing technologies to advance cleaner energy, including CO₂ emissions control technologies through projects funded by the U.S. Department of Energy (DOE) and industry participants.

BCSI is a custom designer and fabricator of engineered emissions control technologies, bulk material handling equipment, bulk storage systems, water/waste water treatment equipment, and custom components. BCSI's technical solutions serve a wide range of industrial clients including coal fired utilities, water treatment, wastewater, cement kilns, food processing and industrial boilers. BCSI employs engineers and trade professionals at a 190,000+square foot fabrication and office facility located in McKeesport, Pennsylvania.

CCS is a 42.5% owned joint venture by ADA that provides ADA's patented Refined Coal (RC) CyClean technology to enhance combustion of and reduce emissions of NO_x and mercury from coals in cyclone boilers and ADA's patent pending M-45 and M-45-PC technologies for Circulating Fluidized Boilers and Pulverized Coal (PC) Boilers respectively. This business also qualifies for certain tax credits. ADES consolidates the results of CCS in its financial statements.

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The address of our principal executive office is 9135 South Ridgeline Boulevard, Suite 200, Highlands Ranch, Colorado 80129, and our telephone number is (303) 734-1727. Our website is www.advancedemissionssolutions.com. Information contained on our website is not a part of this or any other prospectus supplement or the accompanying prospectus.

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THE OFFERING

Common stock offered by us shares

Common stock outstanding immediately following this offering shares

Over-allotment option shares

Use of proceeds We intend to use the net proceeds from this offering for general working capital and corporate purposes, and to partially execute against the Company's increasing emissions equipment backlog (which was \$56.6 million on September 30, 2013). See "Use of Proceeds" on page S-6 of this prospectus supplement.

NASDAQ Capital Market symbol ADES

Risk factors Investing in our securities involves risks. See "Risk Factors" beginning on page S-3 of this prospectus supplement and on page 2 of the accompanying prospectus for a discussion of factors you should consider carefully when making a decision to invest in our common stock.

The number of shares of our common stock to be outstanding immediately after this offering assumes that all of the shares offered hereby are sold and is based on 10,116,150 shares outstanding as of September 30, 2013, and excludes:

177,788 shares of our common stock issuable upon the exercise of options outstanding at September 30, 2013 under our equity plans; and

895,033 shares of our common stock available as of September 30, 2013, for future issuance under our equity plans, including Company matches under our 401(k) plan.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise by the underwriters of their over-allotment option.

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RISK FACTORS

*In addition to other information contained and incorporated by reference in this prospectus supplement and the accompanying prospectus, you should carefully consider the risks described below and incorporated by reference to our Annual Report on Form 10-K for the year ended December 31, 2012, as updated by our subsequent filings under the Securities Exchange Act of 1934, as amended (Exchange Act) that are incorporated by reference herein in evaluating our Company, our properties and our business before making a decision to invest in the common stock. These risks are not the only ones faced by us. Additional risks not presently known to us or that we currently deem immaterial could also materially and adversely affect our financial condition, results of operations, business and prospects. The trading price of our common stock could decline due to any of these risks, and you may lose all or part of your investment. This prospectus supplement and the accompanying prospectus, and the documents incorporated herein and therein by reference, also contain forward-looking statements that involve risks and uncertainties. Actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks faced by us described below and elsewhere in this prospectus supplement and the accompanying prospectus, and the documents incorporated herein and therein by reference. Please refer to the section entitled *Special Note Regarding Forward-Looking Statements* in this prospectus supplement.*

Risks Related to this Offering

Management will have broad discretion as to the use of the proceeds of this offering.

We have not designated the amount of net proceeds we will receive from this offering for any particular purpose. Accordingly, our management will have broad discretion as to the application of these net proceeds and could use them for purposes other than those contemplated at the time of this offering. Our stockholders may not agree with the manner in which our management chooses to allocate and spend the net proceeds.

Investors in this offering will pay a much higher price than the book value of our common stock.

You will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering because the price per share of our common stock being offered hereby is substantially higher than the book value per share of our common stock. Based on a public offering price of \$ per share in this offering, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of \$ per share in the net tangible book value of the common stock. See *Dilution* on page S-7 of this prospectus supplement for a more detailed discussion of the dilution you will incur in this offering.

Future sales of substantial amounts of our common stock could adversely affect the market price of our common stock.

Future sales of substantial amounts of our common stock, or securities convertible or exchangeable into shares of our common stock, into the public market, including shares of our common stock issued upon exercise of options and warrants, or perceptions that those sales could occur, could adversely affect the prevailing market price of our common stock and our ability to raise capital in the future.

Our stock price has historically been volatile.

Stock prices and trading volumes for many similar companies fluctuate widely for a number of reasons, including factors which may be unrelated to their businesses or results of operations such as media coverage, legislative and regulatory measures and the activities of various interest groups or organizations. This market volatility, as well as

general domestic or international economic, market and political conditions, could materially and adversely affect the market price of our common stock and the return on your investment.

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Historically, our stock price has been volatile. For example, in the last twelve months, our stock has traded as high as \$50.11 per share and as low as \$13.88 per share. The significant market price fluctuations of our common stock are due to a variety of factors, including:

the demand in the market for our common stock;

the nature of our products and product candidates;

fluctuations in our operating results;

market conditions relating to the clean-tech and emerging energy industries;

announcements concerning regulatory developments, developments with respect to proprietary rights and our collaborations;

comments by securities analysts;

general market conditions;

political developments in the United States; and

the issuance of common stock to partners, vendors or to investors to raise additional capital.

In addition, the stock market is subject to other factors outside our control that can cause extreme price and volume fluctuations. Securities class action litigation has often been brought against companies that experience volatility in the market price of their securities. Litigation brought against us could result in substantial costs and a diversion of management's attention and resources, which could adversely affect our business.

We have not paid cash dividends to our stockholders and have no current plans to pay future cash dividends.

We plan to retain earnings to finance future growth and have no current plans to pay cash dividends to stockholders. Because we have not paid cash dividends, holders of our securities will experience a gain on their investment in our securities only in the case of an appreciation of value of our securities. You should not expect to receive dividend income from investing in our securities or an appreciation in value.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus, and the documents incorporated by reference herein and therein contain forward-looking statements regarding our future performance. All forward-looking information is inherently uncertain and actual results may differ materially from assumptions, estimates or expectations reflected or contained in the forward-looking statements as a result of various factors, including those set forth under Risk Factors in this prospectus supplement and elsewhere in this prospectus supplement, the accompanying prospectus, and the documents incorporated by reference herein and therein. In addition, such Risk Factors may be updated from time to time by our filings under the Securities Exchange Act of 1934. Forward-looking statements convey our current expectations or forecasts of future events. All statements contained in this prospectus supplement and the accompanying prospectus other than statements of historical fact are forward looking statements. Forward-looking statements include statements regarding our future financial position, business strategy, budgets, projected costs, plans and objectives of management for future operations. The words may, continue, estimate, intend, plan, will, project, expect, anticipate and similar expressions may identify forward-looking statements, but the absence of these words does not necessarily mean that a statement is not forward-looking. With respect to the forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

These forward-looking statements speak only as of the date each such statement is made. Unless required by law, we undertake no obligation to publicly update or revise any forward-looking statements to reflect new information or future events or otherwise, and we do not intend to provide such updates.

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USE OF PROCEEDS

We estimate that the net proceeds to us from the sale of _____ shares of our common stock in this offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, will be approximately \$ _____ million (or approximately \$ _____ million if the underwriters' over-allotment option is exercised in full), based upon a public offering price of \$ _____ per share in this offering.

We currently intend to use the net proceeds of this offering for general working capital and corporate purposes, and to partially execute against the Company's increasing emissions equipment backlog (which was \$56.6 million on September 30, 2013). General corporate purposes may include capital expenditures, acquisitions and any other purposes. While we have estimated the particular uses for the net proceeds of this offering, we have not determined the amounts we plan to spend or the timing of these expenditures. As a result, our management will have broad discretion to allocate the net proceeds from this offering for any purpose, and investors will be relying on the judgment of our management with regard to the use of these net proceeds. See "Risk Factors - Risks Related to this Offering - Management will have broad discretion as to the use of the proceeds of this offering."

Pending use of the net proceeds as described above, we intend to invest the net proceeds in money-market funds or U.S. treasuries until we use them for their stated purpose.

Table of Contents**DILUTION**

If you purchase any of the shares of common stock offered by this prospectus supplement, you will experience dilution to the extent of the difference between the offering price per share of common stock you pay in this offering and the net tangible book value per share of our common stock immediately after this offering. Our unaudited net tangible book value as of September 30, 2013 was approximately \$(21.9) million, or \$(2.17) per share of common stock. Net tangible book value per share is equal to our total tangible assets minus total liabilities and non-controlling interests, all divided by the number of shares of common stock outstanding.

After giving effect to the sale of _____ shares of common stock in this offering a public offering price of \$ _____ per share, and after deducting the underwriting commissions and our estimated offering expenses, our as adjusted net tangible book value as of September 30, 2013, would have been approximately \$ _____, or approximately \$ _____ per share of common stock. This represents an immediate increase in net tangible book value of approximately \$ _____ per share to existing stockholders and an immediate dilution of approximately \$ _____ per share to new investors. The following table illustrates this calculation on a per share basis:

| | |
|--|----------|
| Public Offering price per share | |
| Net tangible book value per share as of September 30, 2013 | \$(2.17) |
| Increase per share attributable to this offering | \$ _____ |
| As adjusted net tangible book value per share after this offering | |
| Dilution per share to new investors participating in this offering | \$ _____ |

If the underwriters exercise in full their option to purchase additional shares of common stock at the public offering price, the as adjusted net tangible book value after this offering would have been \$ _____ per share, representing an increase in net tangible book value of \$ _____ per share to existing stockholders and immediate dilution in net tangible book value of \$ _____ per share to new investors purchasing our common stock in this offering at the public offering price.

The number of shares of common stock outstanding used for existing stockholders in both the table and calculations above is based on 10,116,150 shares outstanding as of September 30, 2013. This number of shares does not include _____ shares of common stock subject to the underwriters' over-allotment option and also excludes:

177,788 shares of our common stock issuable upon the exercise of options outstanding at September 30, 2013 under our equity plans; and

895,033 shares of our common stock available as of September 30, 2013, for future issuance under our equity plans, including Company matches under our 401(k) plan.

To the extent that outstanding options are exercised, you will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

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We and the underwriters for the offering named below have entered into an underwriting agreement with respect to the common stock being offered. Subject to the terms and conditions of the underwriting agreement, each underwriter has severally agreed to purchase from the number of shares of our common stock set forth opposite its name below. Cowen and Company, LLC is the representative of the underwriters.

| Underwriter | Number of Shares |
|----------------------------------|-----------------------------|
| Cowen and Company, LLC | |
| Needham & Company, LLC | |
| Lake Street Capital Markets, LLC | |
| Northland Capital Markets | |
| Total | |

Northland Capital Markets is the trade name for certain capital markets and investment banking services of Northland Securities, Inc., Member FINRA/SIPC.

The underwriting agreement provides that the obligations of the underwriters are subject to certain conditions precedent and that the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased, other than those shares covered by the overallotment option described below. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased or the underwriting agreement may be terminated.

We have agreed to indemnify the underwriters against specified liabilities, including liabilities under the Securities Act of 1933, and to contribute to payments the underwriters may be required to make in respect thereof.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel and other conditions specified in the underwriting agreement. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Overallotment option to purchase additional shares. We have granted to the underwriters an option to purchase up to additional shares of common stock at the public offering price, less the underwriting discount. This option is exercisable for a period of 30 days. The underwriters may exercise this option solely for the purpose of covering overallotments, if any, made in connection with the sale of common stock offered hereby. To the extent that the underwriters exercise this option, the underwriters will purchase additional shares from us in approximately the same proportion as shown in the table above.

Discounts and commissions. The following table shows the public offering price, underwriting discount and proceeds, before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

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We estimate that the total expenses of the offering, excluding underwriting discount, will be approximately \$ and are payable by us. We have also agreed to pay the reasonable out-of-pocket costs of the underwriters, including but not limited to the underwriters' outside legal fees and expenses up to \$125,000.

| | Per Share | Total Without Over- Allotment | With Over Allotment |
|--|------------------|--|--------------------------------|
| Public offering price | | | |
| Underwriting discount | | | |
| Proceeds, before expenses, to Advanced Emissions Solutions, Inc. | | | |

The underwriters propose to offer the shares of common stock to the public at the public offering price set forth on the cover of this prospectus. The underwriters may offer the shares of common stock to securities dealers at the public offering price less a concession not in excess of \$ per share. If all of the shares are not sold at the public offering price, the underwriters may change the offering price and other selling terms.

Discretionary accounts. The underwriters do not intend to confirm sales of the shares to any accounts over which they have discretionary authority.

Stabilization. In connection with this offering, the underwriters may engage in stabilizing transactions, overallotment transactions, syndicate covering transactions, penalty bids and purchases to cover positions created by short sales.

Stabilizing transactions permit bids to purchase shares of common stock so long as the stabilizing bids do not exceed a specified maximum, and are engaged in for the purpose of preventing or retarding a decline in the market price of the common stock while the offering is in progress.

Overallotment transactions involve sales by the underwriters of shares of common stock in excess of the number of shares the underwriters are obligated to purchase. This creates a syndicate short position which may be either a covered short position or a naked short position. In a covered short position, the number of shares over-allotted by the underwriters is not greater than the number of shares that they may purchase in the overallotment option. In a naked short position, the number of shares involved is greater than the number of shares in the overallotment option. The underwriters may close out any short position by exercising their overallotment option and/or purchasing shares in the open market.

Syndicate covering transactions involve purchases of common stock in the open market after the distribution has been completed in order to cover syndicate short positions. In determining the source of shares to close out the short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared with the price at which they may purchase shares through exercise of the overallotment option. If the underwriters sell more shares than could be covered by exercise of the overallotment option and, therefore, have a naked short position, the position can be closed out only by buying shares in the open market. A naked short position is more likely to be created if the underwriters are concerned

that after pricing there could be downward pressure on the price of the shares in the open market that could adversely affect investors who purchase in the offering.

Penalty bids permit the representative to reclaim a selling concession from a syndicate member when the common stock originally sold by that syndicate member is purchased in stabilizing or syndicate covering transactions to cover syndicate short positions.

These stabilizing transactions, syndicate covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock in the open market may be higher than it would otherwise be in the absence of these transactions. Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may be effected on the Nasdaq Stock Market, in the over-the-counter market or otherwise and, if commenced, may be discontinued at any time.

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Passive market making. In connection with this offering, underwriters and selling group members may engage in passive market making transactions in our common stock on the Nasdaq Stock Market in accordance with Rule 103 of Regulation M under the Securities Exchange Act of 1934, as amended, during a period before the commencement of offers or sales of common stock and extending through the completion of the distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

Lock-up agreements. Pursuant to certain lock-up agreements, we and our executive officers and directors have agreed, subject to certain exceptions, not to offer, sell, assign, transfer, pledge, contract to sell, or otherwise dispose of or announce the intention to otherwise dispose of, or enter into any swap, hedge or similar agreement or arrangement that transfers, in whole or in part, the economic consequence of ownership of, directly or indirectly, or make any demand or request or exercise any right with respect to the registration of, or file with the SEC a registration statement under the Securities Act relating to, any common stock or securities convertible into or exchangeable or exercisable for any common stock without the prior written consent of Cowen and Company, LLC, for a period of 90 days after the date of the pricing of the offering. The 90-day restricted period will be automatically extended if (i) during the last 17 days of the 90-day restricted period we issue an earnings release or material news or a material event relating to us occurs or (ii) prior to the expiration of the 90-day restricted period, we announce that we will release earnings results or become aware that material news or a material event will occur during the 16-day period beginning on the last day of the 90-day restricted period, in either of which case the restrictions described above will continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

This lock-up provision applies to common stock and to securities convertible into or exchangeable or exercisable for common stock. It also applies to common stock owned now or acquired later by the person executing the agreement or for which the person executing the agreement later acquires the power of disposition. The exceptions permit us, among other things and subject to restrictions, to: (a) issue common stock or options pursuant to employee benefit plans, (b) issue common stock upon exercise of outstanding options, warrants or rights or (c) file registration statements on Form S-8. The exceptions permit parties to the lock-up agreements, among other things and subject to restrictions, to: (a) make certain gifts and (b) make transfers pursuant to 10b5-1 plans. In addition, the lock-up provision will not restrict broker-dealers from engaging in market making and similar activities conducted in the ordinary course of their business.

United Kingdom. Each of the underwriters has represented and agreed that:

it has not made or will not make an offer of the securities to the public in the United Kingdom within the meaning of section 102B of the Financial Services and Markets Act 2000 (as amended) (FSMA) except to legal entities which are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities or otherwise in circumstances which do not require the publication by us of a prospectus pursuant to the Prospectus Rules of the Financial Services Authority (FSA);

it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of section 21 of FSMA) to persons who have professional experience in matters relating to investments falling within Article

19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 or in circumstances in which section 21 of FSMA does not apply to us; and

it has complied with and will comply with all applicable provisions of FSMA with respect to anything done by it in relation to the securities in, from or otherwise involving the United Kingdom.

Switzerland. The securities will not be offered, directly or indirectly, to the public in Switzerland and this prospectus does not constitute a public offering prospectus as that term is understood pursuant to article 652a or 1156 of the Swiss Federal Code of Obligations.

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European economic area. In relation to each Member State of the European Economic Area (Iceland, Norway and Lichtenstein in addition to the member states of the European Union) that has implemented the Prospectus Directive (each, a Relevant Member State), each underwriter has represented and agreed that with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State (the Relevant Implementation Date) it has not made and will not make an offer of the securities to the public in that Relevant Member State prior to the publication of a prospectus in relation to the securities that has been approved by the competent authority in that Relevant Member State or, where appropriate, approved in another Relevant Member State and notified to the competent authority in that Relevant Member State, all in accordance with the Prospectus Directive, except that it may, with effect from and including the Relevant Implementation Date, make an offer of the securities to the public in that Relevant Member State at any time:

to legal entities which are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;

to any legal entity which has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than 43,000,000 and (3) an annual net turnover of more than 50,000,000, as shown in its last annual or consolidated accounts;

in any other circumstances which do not require the publication by the issuer of a prospectus pursuant to Article 3 of the Prospectus Directive.

Each person in a Relevant Member State who receives any communication in respect of, or who acquires any securities under, the offer contemplated in this prospectus will be deemed to have represented, warranted and agreed to and with us and each underwriter that:

it is a qualified investor within the meaning of the law in that Relevant Member State implementing Article 2(1)(e) of the Prospectus Directive; and

in the case of any securities acquired by it as a financial intermediary, as that term is used in Article 3(2) of the Prospectus Directive, (1) the securities acquired by it in the offer have not been acquired on behalf of, nor have they been acquired with a view to their offer or resale to, persons in any Relevant Member State other than qualified investors, as that term is defined in the Prospectus Directive, or in circumstances in which the prior consent of the representative[s] of the underwriters has been given to the offer or resale; or (2) where securities have been acquired by it on behalf of persons in any Relevant Member State other than qualified investors, the offer of those securities to it is not treated under the Prospectus Directive as having been made to such persons.

For the purposes of the provisions in the two immediately preceding paragraphs, the expression an offer of the securities to the public in relation to the securities in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe for the securities, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State, and the expression Prospectus Directive means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State.

Electronic offer, sale and distribution of shares. A prospectus in electronic format may be made available on the websites maintained by one or more of the underwriters or selling group members, if any, participating in this offering and one or more of the underwriters participating in this offering may distribute prospectuses electronically. The representatives may agree to allocate a number of shares to underwriters and selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriters and selling group members that will make internet distributions on the same basis as other allocations. Other than the prospectus in electronic format, the information on these websites is not part of this prospectus or the registration statement of which this prospectus forms a part, has not been approved or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

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Other relationships. Certain of the underwriters and their affiliates have provided, and may in the future provide, various investment banking, commercial banking and other financial services for us and our affiliates for which they have received, and may in the future receive, customary fees.

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LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Fortis Law Partners LLC, Denver, Colorado. Certain matters will be passed upon for the underwriters by Reed Smith LLP, New York, New York.

EXPERTS

The consolidated financial statements of Advanced Emissions Solutions, Inc. as of and for the years ended December 31, 2012, 2011, and 2010 appearing in our Annual Reports on Form 10-K for such years have been audited by EKS&H, LLLP (formerly Ehrhardt Keefe Steiner & Hottman PC), an independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

Change in Our Public Accounting Firm

Effective as of March 19, 2013, the Audit Committee of the Board of Directors of ADA-ES, Inc. approved the dismissal of EKS&H LLLP as independent registered public accountant, effective as of the date of completion of the audit services for the fiscal year ended December 31, 2012 and the filing of the our Annual Report on Form 10-K on March 18, 2013. Effective as of March 19, 2013, the Audit Committee approved the appointment of KPMG LLP as independent registered public accounting firm to perform independent audit services beginning with the fiscal year ending December 31, 2013.

The reports of EKS&H LLLP on our financial statements for the years ended December 31, 2012, 2011, and 2010 contained no adverse opinion or disclaimer of opinion and were not qualified or modified as to uncertainty, audit scope or accounting principle. In connection with its audits for the years ended December 31, 2012, 2011, and 2010, there have been no disagreements with EKS&H LLLP on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements, if not resolved to the satisfaction of EKS&H LLLP, would have caused them to make reference thereto in their reports on the financial statements for such years.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

As stated above, pursuant to an Agreement and Plan of Merger, ADES replaced ADA-ES as the publicly-held corporation effective July 1, 2013. As a result, as used below the term we, us and our means ADA for the periods through and including the period ended June 30, 2013, and ADES for the periods after June 30, 2013. The SEC allows us to incorporate by reference information that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus supplement. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference into this registration statement and prospectus the documents listed below, and any future filings we will make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934:

Our Annual Report on Form 10-K for the fiscal year ended December 31, 2012, filed with the SEC on March 18, 2013;

The information specifically incorporated by reference into the Annual Report from our Definitive Proxy Statement on Schedule 14A, filed with the SEC on March 25, 2013;

Our Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2013, June 30, 2013 and September 30, 2013 filed with the SEC on May 10, 2013, August 9, 2013 and November 12, 2013 respectively;

Our Current Reports on Form 8-K dated (i) February 5, 2013 (filed with the SEC on February 11, 2013); (ii) February 28, 2013 (filed with the SEC on March 13, 2013); (iii) March 19, 2013 (filed with the SEC on March 22, 2013); (iv) March 20, 2013 (filed with the SEC on March 25, 2013); (v) March 25, 2013

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(filed with the SEC March 25, 2013); (vi) June 13, 2013 (filed with the SEC June 14, 2013); (vii) August 21, 2013 (filed with the SEC on August 27, 2013); (viii) September 10, 2013 (filed with the SEC on September 11, 2013); (ix) September 11, 2013 (filed with the SEC on September 12, 2013); (x) September 19, 2013 (filed with the SEC on October 3, 2013); (xi) and October 22, 2013 (filed with the SEC on November 4, 2013); and

The section entitled "Description of ADES Capital Stock" contained in ADES' Registration Statement on Form S-4, filed with the SEC on March 25, 2013 (as amended on April 15, 2013).

Notwithstanding the foregoing, unless specifically stated otherwise, none of the information that we disclose under Items 2.02 and 7.01 of any Current Report on Form 8-K that may be listed above or that we furnish from time to time to the SEC will be incorporated by reference into, or otherwise included in, this prospectus.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. You should direct any requests for documents to:

Mark McKinnies

Secretary of Advanced Emissions Solutions, Inc.

9135 South Ridgeline Boulevard, Suite 200,

Highlands Ranch, Colorado 80129

(303) 734-1727

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to our securities offered hereby. This prospectus supplement, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. We have omitted certain parts of the registration statement as permitted by the rules and regulations of the SEC. For further information about us and our securities offered hereby, reference is made to the registration statement and the exhibits and schedules filed therewith. Statements contained in this prospectus supplement regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement.

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PROSPECTUS

ADVANCED EMISSIONS SOLUTIONS, INC.

\$140,000,000

COMMON STOCK

PREFERRED STOCK

WARRANTS

UNITS

We may offer and sell the securities listed above from time to time in one or more offerings. We will provide specific terms of any offering in supplements to this prospectus. The preferred stock, warrants and units may be convertible into or exercisable or exchangeable for our common stock or our preferred stock. The securities may be offered separately or together in any combination and as separate series. You should carefully read this prospectus and any accompanying prospectus supplement, together with the documents we incorporate by reference, before you invest in any of our securities.

We will specify in any accompanying prospectus supplement the terms of any offering. The prospectus supplement may also update or change the information set forth in this prospectus. The applicable prospectus supplement will contain information, where applicable, as to other listings, if any, on the NASDAQ Capital Market or any securities exchange of the securities covered by the prospectus supplement.

Our common stock is traded on the NASDAQ Capital Market under the trading symbol ADES. On July 1, 2013, the last reported sales price for ADA common stock was \$41.00 per share. As of July 1, 2013, the aggregate market value of ADA outstanding common stock held by non-affiliates, or the public float, was approximately \$373,145,428, which was calculated based on 9,101,108 shares of outstanding common stock held by non-affiliates and a last sale closing price per share of \$41.00 on that date.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE THE SECTION ENTITLED RISK FACTORS BEGINNING ON PAGE 4 OF THIS PROSPECTUS. THIS PROSPECTUS MAY NOT BE USED TO OFFER OR SELL ANY SECURITIES UNLESS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

We may sell the securities directly to investors, through agents designated from time to time or to or through underwriters or dealers or through a combination of these methods. For additional information on the methods of sale, you should refer to the section entitled Plan of Distribution. If any underwriters are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such underwriters and any applicable commissions or discounts will be set forth in a prospectus supplement. The net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this Prospectus is July 18, 2013

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ABOUT THIS PROSPECTUS

This prospectus is part of a shelf registration statement that we have filed with the Securities and Exchange Commission (the SEC). By using a shelf registration statement, we may sell, at any time and from time to time, in one or more offerings, any combination of the securities described in this prospectus. The exhibits to our registration statement contain the full text of certain contracts and other important documents we have summarized in this prospectus. Since these summaries may not contain all the information that you may find important in deciding whether to purchase the securities we offer, you should review the full text of these documents. The registration statement and the exhibits can be obtained from the SEC as indicated under the heading Where You Can Find More Information.

This prospectus only provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that contains specific information about the terms of those securities. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with the additional information described below under the heading Where You Can Find More Information.

You should rely only on the information contained or incorporated by reference in this prospectus. We have not authorized anyone to provide you with different information. No person has been authorized to give any information or make any representations other than the information and those representations contained or incorporated by reference in this prospectus. You should not assume that the information provided by this prospectus or the documents incorporated by reference herein is accurate as of any date other than the date of this prospectus or the incorporated documents, regardless of the date you receive them.

We are not making an offer of these securities in any jurisdiction where the offer is not permitted. You should not assume that the information in this prospectus or a prospectus supplement is accurate as of any date other than the date on the front of the document.

Unless the context otherwise requires, references in this prospectus to ADES, we, us and our refer to Advanced Emissions Solutions, Inc. and our consolidated subsidiaries.

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OVERVIEW

Advanced Emissions Solutions, Inc., a Delaware corporation incorporated in 2011, is the publicly held holding company for the operating companies ADA-ES, Inc. (ADA) and BCSI, LLC (BCSI). Incorporated in Colorado in 1997, ADA is a leader in clean coal technology and the associated specialty chemicals, serving the U.S. and Canadian coal-fueled power plant industry. ADA's proprietary environmental technologies and specialty chemicals enable power plants to enhance existing air pollution control equipment, minimize mercury, CO₂ and other emissions, maximize capacity, and improve operating efficiencies, to meet the challenges of existing and pending emission control regulations. ADA-ES became a stand-alone public company through a spin-off from its previous parent company, Earth Sciences, Inc. in September 2003 and became a wholly owned subsidiary of ADES by virtue of a reorganization on July 1, 2013. ADA's approach to technology development, implementation and commercialization involves taking technology to full-scale as quickly as we can, and testing and improving the technology under actual power plant operating conditions. The most significant benefit of this method is that we begin working early and closely with power companies to optimize the technology to meet their specific needs. For example, while some other companies develop mercury control technologies in the isolation of a laboratory without feedback from users, we work on full-scale mercury control systems that are installed on plants operated by several of the largest power companies in the United States and Canada. We assist electric utility companies to remain competitive while meeting environmental regulations.

Our major activities include:

the development and marketing of our patented refined coal technology, CyClean, for control of NO_x and mercury, which also qualifies for certain tax credits, through Clean Coal Solutions, LLC (Clean Coal), ADA's joint venture with NexGen Refined Coal, LLC, an affiliate of NexGen Resources Corporation, and GSFS Investments I Corp., an affiliate of The Goldman Sachs Group, Inc.

the development and marketing of ADA's patent pending M-45 and M-45-PC technologies for Circulating Fluidized Boilers and Pulverized Coal boilers, respectively, which also qualifies for certain tax credits, and which complements and expands ADA's market for RC beyond the CyClean technology, which is limited to cyclone boilers,

the sale of equipment, field testing and services related to emission control (EC) including mercury for coal-fired boilers used in electric generation,

under an exclusive development and licensing agreement with Arch Coal, Inc. (Arch Coal), development and commercialization of an enhanced Powder River Basin (PRB) coal with reduced emissions of mercury and other metals,

the research and development of carbon dioxide (CO₂) capture technology through contracts supported by the Department of Energy (DOE) and industry participants, and

the sale of flue gas conditioning equipment and chemicals, and other chemicals and technologies for coal-fired boilers.

BCSI is a custom designer and fabricator of engineered emissions control technologies, bulk material handling equipment, bulk storage systems, water/waste water treatment equipment, and custom components. BCSI's technical solutions serve a wide range of industrial clients including; coal fired utilities, water treatment, waste water, cement kilns, food processing and industrial boilers.

General Information

The address of our principal executive office is 9135 South Ridgeline Boulevard, Suite 200, Highlands Ranch, Colorado 80129, and our telephone number is (303) 734-1727.

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RISK FACTORS

You should carefully consider the specific risks set forth under the caption "Risk Factors" in the applicable prospectus supplement and in ADA's Annual Report on Form 10-K for the year ended December 31, 2012, and Part II Item 1A of ADA's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013, filed with the SEC by ADA (File No. 000-50216), as well as any amendments thereto reflected in subsequent filings with the SEC, and in any of our other filings with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") that are incorporated by reference herein, before making an investment decision. For more information, see "Information Incorporated by Reference" below.

FORWARD-LOOKING INFORMATION

This prospectus includes and incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements, other than statements of historical facts, included or incorporated in this prospectus regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. The words "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "projects," "will," and "would," the negative expressions of such statements, and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements included or incorporated in this prospectus include, without limitation, statements regarding the following:

- (a) the scope and impact of mercury and other regulations or pollution control requirements, including the impact of the final Mercury and Air Toxics Standards ("MATS");
- (b) expected growth in and potential size of our target markets;
- (c) expected supply and demand for our products and services;
- (d) the effectiveness of our technologies and the benefits they provide;
- (e) the timing of awards of, and work under, our contracts and agreements and their value and their availability;
- (f) expected production levels at our refined coal ("RC") facilities, when those RC facilities will be placed into continuous operation, the expected use of the tax credits under Section 45 of the Internal Revenue Code ("Section 45 tax credits") generated by the RC facilities and the expected future value of Section 45 tax credits;
- (g) our ability to profitably sell, lease and/or recognize the tax benefits from operating additional RC facilities;
- (h) timing and amounts of or changes in future revenues, funding for our business and projects, margins, expenses, earnings, tax rate, cash flow, working capital, liquidity and other financial and accounting measures;
- (i) the materiality of any future adjustments to previously recorded revenue as a result of Department of Energy ("DOE") audits and the amount of contributions from the DOE and others towards project demonstrations;

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(j) the ability of third parties to which we lease or sell RC facilities to obtain any requested Private Letter Rulings (PLRs) from the Internal Revenue Service (IRS); and

(k) whether any legal challenges or Environmental Protection Agency (EPA) actions will have a material impact on the implementation of the MATS or other regulations.

We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-

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looking statements we make. We have included important factors in the cautionary statements included or incorporated in this prospectus, particularly under the heading "Risk Factors" in ADA's Annual Report on Form 10-K for the fiscal year ended December 31, 2012, as well as under the heading "Quantitative and Qualitative Disclosures About Market Risk" in such Form 10-K, under the heading "Risk Factors" in Part II Item 1A of ADA's Form 10-Q for the quarter ended March 31, 2013, and in other reports we file with the SEC which are incorporated by reference herein that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. Any such forward-looking statements represent management's views as of the date of the document in which such forward-looking statement is contained. While we may elect to update such forward-looking statements at some point in the future, we disclaim any obligation to do so, even if subsequent events cause our views to change, unless otherwise required by law.

THE SECURITIES WE MAY OFFER

We may offer shares of our common stock and preferred stock and warrants to purchase any of such securities as well as units consisting of one or more of these securities, with a total value of up to \$140,000,000 from time to time under this prospectus at prices and on terms to be determined by market conditions at the time of offering, and subject to any requirements or restrictions imposed on us under our listing agreement with the NASDAQ Capital Market or any other exchange on which our securities may be listed at the time. This prospectus provides you with a general description of the securities we may offer. Each time we offer a type or series of securities, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities, including, to the extent applicable:

designation or classification;

aggregate principal amount or aggregate offering price;

maturity, if applicable;

rates and times of payment of dividends, if any;

redemption or conversion terms, if any;

voting or other rights, if any;

conversion prices, if any; and

important federal income tax considerations.

The prospectus supplement also may add, update or change information contained in this prospectus or in documents we have incorporated by reference. However, no prospectus supplement will offer a security that is not registered and described in this prospectus at the time of its effectiveness.

We may sell the securities directly to or through agents, underwriters or dealers. We, and our agents or underwriters, reserve the right to accept or reject all or part of any proposed purchase of securities. If we do offer securities through agents or underwriters, we will include in the applicable prospectus supplement:

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the names of those agents or underwriters;

applicable fees, discounts and commissions to be paid to them; and

the net proceeds to us.

Common Stock. We may issue shares of our common stock from time to time. Holders of common stock are entitled to one vote per share on all matters submitted to a vote of stockholders. Subject to any preferences of outstanding shares of preferred stock, holders of common stock are entitled to dividends when and if declared by our board of directors.

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Preferred Stock. We may issue shares of our preferred stock from time to time, in one or more series. Our board of directors will determine the rights, preferences, privileges and restrictions of the preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of any series. Convertible preferred stock will be convertible into our common stock or exchangeable for our other securities. Conversion may be mandatory or at your option and would be at prescribed conversion rates.

Warrants. We may issue warrants for the purchase of common stock and preferred stock in one or more series. We may issue warrants independently or together with common stock and preferred stock, and the warrants may be attached to or separate from these securities. The warrants will be evidenced by warrant certificates issued under one or more warrant agreements, which are contracts between us and an agent for the holders of the warrants. In this prospectus, we have summarized certain general features of the warrants. We will incorporate by reference into the registration statement of which this prospectus is a part the form of warrant agreement, including a form of warrant certificate, that describes the terms of the series of warrants we are offering before the issuance of the related series of warrants. We urge you to read the prospectus supplements related to the series of warrants being offered, as well as the complete warrant agreements and warrant certificates that contain the terms of the applicable series of warrants.

Units. We may issue units consisting of common stock, preferred stock and warrants for the purchase of common stock and preferred stock in one or more series. In this prospectus, we have summarized certain general features of the units. We urge you, however, to read the prospectus supplements related to the series of units being offered, as well as the unit agreements that contain the terms of the units. We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from a Current Report on Form 8-K that we file with the Securities and Exchange Commission, the form of unit agreement and any supplemental agreements that describe the terms of the series of units we are offering before the issuance of the related series of units.

We will evidence each series of units by unit certificates that we will issue under a separate agreement. We will enter into the unit agreements with a unit agent. Each unit agent will be a bank or trust company that we select. We will indicate the name and address of the unit agent in the applicable prospectus supplement relating to a particular series of units.

USE OF PROCEEDS

Except as described in any prospectus supplement, we currently intend to use the net proceeds from the sale of the securities offered hereby to finance our growth plans including:

expanding to meet the demands resulting from the expected MACT regulations; and

for general working capital purposes.

Pending these uses, we will likely invest the net proceeds in investment-grade, interest-bearing securities.

DESCRIPTION OF CAPITAL STOCK

ADES is incorporated in the State of Delaware. The rights of stockholders of ADES will generally be governed by Delaware law and ADES's Second Amended and Restated Certificate of Incorporation (the "ADES Certificate") and bylaws. The following description of our capital stock and certain provisions of the ADES Certificate is a summary and is qualified in its entirety by the provisions of the ADES Certificate.

The authorized capital of ADES is 150,000,000 shares, consisting of 100,000,000 shares of common stock, par value \$0.001 per share, and 50,000,000 shares of preferred stock, par value \$0.001 per share. As of July 1,

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2013, there were 10,097,272 shares of common stock outstanding and no shares of preferred stock outstanding. All shares of ADES issued and outstanding are, and all shares of ADES to be issued under this prospectus will be, fully paid and nonassessable.

Common Stock

Dividends and Distributions. Subject to preferences applicable to any shares of ADES preferred stock issued in the future, the holders of outstanding shares of ADES common stock are entitled to receive dividends and other distributions out of assets legally available at times and in amounts as the board of directors of ADES may determine from time to time. All shares of ADES common stock are entitled to participate ratably with respect to dividends or other distributions.

Liquidation Rights. If ADES is voluntarily or involuntarily liquidated, dissolved or wound up holders of ADES common stock are entitled to share ratably in all assets of ADES available for distribution to the ADES stockholders after the payment in full of any preferential amounts to which holders of any ADES preferred stock issued in the future may be entitled.

Voting Rights. Holders of ADES common stock are entitled to one vote per share on all matters to be voted upon by stockholders. There are no cumulative voting rights. Stockholders may vote by proxy.

Other. There are no preemption, redemption, sinking fund or conversion rights applicable to ADES common stock.

Preferred Stock

The Board of Directors of ADES may, without further stockholder approval, issue up to 50,000,000 shares of preferred stock in one or more series and fix the number of shares constituting the designation, voting powers (if any), preferences and other rights, as well as the qualifications, limitations and restrictions, of the series. The powers, preferences and rights, and the qualifications, limitations or restrictions, if any, of each series of preferred stock may be different from those of any and all other series. The issuance of ADES preferred stock may have the effect of delaying, deferring or preventing a change of control of ADES without further action by the stockholders, may discourage bids for ADES common stock at a premium over the market price of ADES common stock and may adversely affect the market price of, and the voting and other rights of the holders of, ADES common stock.

We will fix the rights, preferences, privileges and restrictions of the preferred stock of each series in the certificate of designation relating to that series. We will incorporate by reference as an exhibit to the registration statement that includes this prospectus or as an exhibit to a Current Report on Form 8-K, the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of the related series of preferred stock. This description will include:

the title and stated value;

the number of shares we are offering;

the liquidation preference per share;

the purchase price;

the dividend rate, period and payment date and method of calculation for dividends;

whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;

the procedures for any auction and remarketing, if any;

the provisions for a sinking fund, if any;

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the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;

any listing of the preferred stock on any securities exchange or market;

whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price, or how it will be calculated, and the conversion period;

voting rights, if any, of the preferred stock;

preemption rights, if any;

restrictions on transfer, sale or other assignment, if any;

a discussion of any material or special United States federal income tax considerations applicable to the preferred stock;

the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;

any limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and

any other specific terms, preferences, rights or limitations of, or restrictions on, the preferred stock.

If we issue shares of preferred stock under this prospectus, the shares will not have, or be subject to, any preemptive or similar rights.

Transfer Agent and Registrar

Computershare Investor Services has been appointed as the transfer agent and registrar for our common stock. It is located at 350 Indiana Street, Suite 750, Golden, Colorado 80401, telephone (303) 262-0600.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we so indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. However, no prospectus supplement shall fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement that includes this prospectus or as an exhibit to a Current Report on Form 8-K.

General

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

the offering price and aggregate number of warrants offered;

the currency for which the warrants may be purchased;

if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;

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if applicable, the date on and after which the warrants and the related securities will be separately transferable;

in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreements and the warrants;

the terms of any rights to redeem or call the warrants;

any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;

the dates on which the right to exercise the warrants will commence and expire;

the manner in which the warrant agreements and warrants may be modified;

federal income tax consequences of holding or exercising the warrants;

the terms of the securities issuable upon exercise of the warrants; and

any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Holders of warrants will not have any of the rights of holders of the securities purchasable upon exercise of their warrants prior to such exercise, including in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5:00 p.m. Eastern Time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Enforceability of Rights by Holders of Warrants

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Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility

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in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

DESCRIPTION OF UNITS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the units that we may offer under this prospectus. While the terms we have summarized below will apply generally to any units that we may offer under this prospectus, we will describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from a Current Report on Form 8-K that we file with the SEC, the form of unit agreement that describes the terms of the series of units we are offering and any supplemental agreements, before the issuance of the related series of units. The following summaries of material terms and provisions of the units are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement and any supplemental agreements applicable to a particular series of units. We urge you to read the applicable prospectus supplements related to the particular series of units that we sell under this prospectus as well as the complete unit agreement and any supplemental agreements that contain the terms of the units.

General

We may issue units comprised of shares of common stock, shares of preferred stock and warrants in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the series of units, including:

the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;

any provisions of the governing unit agreement that differ from those described below; and

any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those described under **Description of Capital Stock** and **Description of Warrants** will apply to each unit and to any common stock, preferred stock or warrant included in each unit, respectively.

Issuance in Series

We may issue units in such amounts and in such numerous distinct series as we determine.

Enforceability of Rights by Holders of Units

Each unit agent will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any

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default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

Title

We, the unit agents and any of their agents may treat the registered holder of any unit certificate as an absolute owner of the units evidenced by that certificate for any purpose and as the person entitled to exercise the rights attaching to the units so requested, despite any notice to the contrary. See **Legal Ownership of Securities** below.

LEGAL OWNERSHIP OF SECURITIES

We may issue securities in registered form or in the form of one or more global securities. We describe global securities in greater detail below. We refer to those persons who have securities registered in their own names on the books that we or any applicable trustee, depositary or warrant agent maintain for this purpose as the **holders** of those securities. These persons are the legal holders of the securities. We refer to those persons who, indirectly through others, own beneficial interests in securities that are not registered in their own names, as **indirect holders** of those securities. As we discuss below, indirect holders are not legal holders, and investors in securities issued in book-entry form or in street name will be indirect holders.

Book-Entry Holders

We may issue securities in book-entry form only, as we will specify in the applicable prospectus supplement. This means securities may be represented by one or more global securities registered in the name of a financial institution that holds them as depositary on behalf of other financial institutions that participate in the depositary's book-entry system. These participating institutions, which are referred to as participants, in turn, hold beneficial interests in the securities on behalf of themselves or their customers.

Only the person in whose name a security is registered is recognized as the holder of that security. Securities issued in global form will be registered in the name of the depositary or its participants. Consequently, for securities issued in global form, we will recognize only the depositary as the holder of the securities, and we will make all payments on the securities to the depositary. The depositary passes along the payments it receives to its participants, which in turn pass the payments along to their customers who are the beneficial owners. The depositary and its participants do so under agreements they have made with one another or with their customers; they are not obligated to do so under the terms of the securities.

As a result, investors in a book-entry security will not own securities directly. Instead, they will own beneficial interests in a global security, through a bank, broker or other financial institution that participates in the depositary's book-entry system or holds an interest through a participant. As long as the securities are issued in global form, investors will be indirect holders, and not holders, of the securities.

Street Name Holders

We may terminate a global security or issue securities in non-global form. In these cases, investors may choose to hold their securities in their own names or in street name. Securities held by an investor in street name would be registered in the name of a bank, broker or other financial institution that the investor chooses, and the investor would hold only a beneficial interest in those securities through an account he or she maintains at that institution.

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For securities held in street name, we will recognize only the intermediary banks, brokers and other financial institutions in whose names the securities are registered as the holders of those securities, and we will make all payments on those securities to them. These institutions pass along the payments they receive to their customers who are the beneficial owners, but only because they agree to do so in their customer agreements or because they are legally required to do so. Investors who hold securities in street name will be indirect holders, not holders, of those securities.

Legal Holders

Our obligations, as well as the obligations of any applicable trustee and of any third parties employed by us or a trustee, run only to the legal holders of the securities. We do not have obligations to investors who hold beneficial interests in global securities, in street name or by any other indirect means. This will be the case whether an investor chooses to be an indirect holder of a security or has no choice because we are issuing the securities only in global form.

For example, once we make a payment or give a notice to the holder, we have no further responsibility for the payment or notice even if that holder is required, under agreements with depository participants or customers or by law, to pass it along to the indirect holders but does not do so. Similarly, we may want to obtain the approval of the holders to amend an indenture, to relieve us of the consequences of a default or of our obligation to comply with a particular provision of the indenture or for other purposes. In such an event, we would seek approval only from the holders, and not the indirect holders, of the securities. Whether and how the holders contact the indirect holders is up to the holders.

Special Considerations for Indirect Holders

If you hold securities through a bank, broker or other financial institution, either in book-entry form or in street name, you should check with your own institution to find out:

how it handles securities payments and notices;

whether it imposes fees or charges;

how it would handle a request for the holders' consent, if ever required;

whether and how you can instruct it to send you securities registered in your own name so you can be a holder, if that is permitted in the future;

how it would exercise rights under the securities if there were a default or other event triggering the need for holders to act to protect their interests; and

if the securities are in book-entry form, how the depository's rules and procedures will affect these matters.

Global Securities

A global security is a security that represents one or any other number of individual securities held by a depository. Generally, all securities represented by the same global securities will have the same terms.

Each security issued in book-entry form will be represented by a global security that we deposit with and register in the name of a financial institution or its nominee that we select. The financial institution that we select for this purpose is called the depository. Unless we specify otherwise in the applicable prospectus supplement, The Depository Trust Company, New York, New York, known as DTC, will be the depository for all securities issued in book-entry form.

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A global security may not be transferred to or registered in the name of anyone other than the depository, its nominee or a successor depository, unless special termination situations arise. We describe those situations below under **Special Situations When a Global Security Will Be Terminated**. As a result of these arrangements, the depository, or its nominee, will be the sole registered owner and holder of all securities represented by a global security, and investors will be permitted to own only beneficial interests in a global security. Beneficial interests must be held by means of an account with a broker, bank or other financial institution that in turn has an account with the depository or with another institution that does. Thus, an investor whose security is represented by a global security will not be a holder of the security, but only an indirect holder of a beneficial interest in the global security.

If the prospectus supplement for a particular security indicates that the security will be issued in global form only, then the security will be represented by a global security at all times unless and until the global security is terminated. If termination occurs, we may issue the securities through another book-entry clearing system or decide that the securities may no longer be held through any book-entry clearing system.

Special Considerations for Global Securities

As an indirect holder, an investor's rights relating to a global security will be governed by the account rules of the investor's financial institution and of the depository, as well as general laws relating to securities transfers. We do not recognize an indirect holder as a holder of securities and instead deal only with the depository that holds the global security.

If securities are issued only in the form of a global security, an investor should be aware of the following:

An investor cannot cause the securities to be registered in his or her name and cannot obtain non-global certificates for his or her interest in the securities, except in the special situations we describe below;

An investor will be an indirect holder and must look to his or her own bank or broker for payments on the securities and protection of his or her legal rights relating to the securities, as we describe above;

An investor may not be able to sell interests in the securities to some insurance companies and to other institutions that are required by law to own their securities in non-book-entry form;

An investor may not be able to pledge his or her interest in a global security in circumstances where certificates representing the securities must be delivered to the lender or other beneficiary of the pledge in order for the pledge to be effective;

The depository's policies, which may change from time to time, will govern payments, transfers, exchanges and other matters relating to an investor's interest in a global security. We and any applicable trustee have no responsibility for any aspect of the depository's actions or for its records of ownership interests in a global security. We and the trustee also do not supervise the depository in any way;

The depository may, and we understand that DTC will, require that those who purchase and sell interests in a global security within its book-entry system use immediately available funds, and your broker or bank may require you to do so as well; and

Financial institutions that participate in the depository's book-entry system, and through which an investor holds its interest in a global security, may also have their own policies affecting payments, notices and other matters relating to the securities.

There may be more than one financial intermediary in the chain of ownership for an investor. We do not monitor and are not responsible for the actions of any of those intermediaries.

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Special Situations When a Global Security Will Be Terminated

In a few special situations described below, the global security will terminate and interests in it will be exchanged for physical certificates representing those interests. After that exchange, the choice of whether to hold securities directly or in street name will be up to the investor. Investors must consult their own banks or brokers to find out how to have their interests in securities transferred to their own name, so that they will be direct holders. We have described the rights of holders and street name investors above.

The global security will terminate if one of the following special situations occurs:

if the depository notifies us that it is unwilling, unable or no longer qualified to continue as depository for that global security and we do not appoint another institution to act as depository within 90 days;

if we notify any applicable trustee that we wish to terminate that global security; or

if an event of default has occurred with regard to securities represented by that global security and has not been cured or waived. The prospectus supplement may also list additional situations for terminating a global security that would apply only to the particular series of securities covered by the prospectus supplement. When a global security terminates, the depository, and not we or any applicable trustee, is responsible for deciding the names of the institutions that will be the initial direct holders.

PLAN OF DISTRIBUTION

We may sell the securities offered by this prospectus in one or more of the following ways from time to time:

to or through underwriters or dealers; or

directly to purchasers, including our affiliates, or to a single purchaser.

one or more agents;

a block trade in which the broker or dealer engaged to handle the block will attempt to sell the securities as agent, but may position and resell a portion of the block as principal to facilitate the transaction; or

through a combination of any of these methods of sale.

In addition, we may issue the securities being offered by this prospectus as a dividend or distribution.

We may effect the distribution of the securities from time to time in one or more transactions at a fixed price or prices, which may be changed from time to time, at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices.

We will set forth in a prospectus supplement the terms of the offering of our securities, including:

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the type and amount of securities we are offering;

the purchase price of our securities being offered and the net proceeds we will receive from the sale;

the method of distribution of the securities we are offering;

the name or names of any agents, underwriters or dealers;

any over-allotment options under which underwriters may purchase additional securities from us;

any underwriting discounts and commissions or agency fees and commissions and other items constituting underwriters' or agents' compensation;

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any discounts or concessions allowed or reallocated or paid to dealers; and

any securities exchanges on which such securities may be listed.

Sale Through Underwriters or Dealers

If we use an underwriter or underwriters in the sale of securities offered by this prospectus, the underwriters will acquire the securities for their own account, including through underwriting, purchase, security lending or repurchase agreements with us. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions. Underwriters may sell the securities in order to facilitate transactions in any of our other securities (described in this prospectus or otherwise), including other public or private transactions and short sales. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless otherwise indicated in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any public offering price and any discounts or concessions allowed or reallocated or paid to dealers.

If we use an underwriter or underwriters in the sale of securities, we will execute an underwriting agreement with the underwriter or underwriters at the time we reach an agreement for sale. We will set forth in the applicable prospectus supplement the names of the specific managing underwriter or underwriters, as well as any other underwriters, and the terms of the transactions, including compensation of the underwriters and dealers. This compensation may be in the form of discounts, concessions or commissions.

In compliance with the guidelines of the Financial Industry Regulatory Authority, or FINRA, the aggregate maximum discount, commission, agency fees, or other items constituting underwriting compensation to be received by any FINRA member or independent broker-dealer will not exceed 8% of any offering pursuant to this prospectus and any applicable prospectus supplement; however, we anticipate that the maximum commission or discount to be received in any particular offering of securities will be significantly less than this amount.

No FINRA member may participate in any offering of securities made under this prospectus if such member has a conflict of interest under FINRA Rule 2720, including if 5% or more of the net proceeds, not including underwriting compensation, of any offering of securities made under this prospectus will be received by a FINRA member participating in the offering or affiliates or associated persons of such FINRA members, unless a qualified independent underwriter has participated in the offering or the offering otherwise complies with FINRA Rule 2720.

We may grant to the underwriters options to purchase additional securities to cover over-allotments, if any, at the public offering price with additional underwriting discounts or commissions. If we grant any over-allotment option, the terms of any over-allotment option will be set forth in the prospectus supplement relating to those securities.

Sale Through Dealers

If we use dealers in the sale of the securities offered by this prospectus, we or an underwriter will sell the securities to them as principals. The dealers may then resell those securities to the public at varying prices to be determined by the dealers at the time of resale. The applicable prospectus supplement will set forth the names of the dealers and the terms of the transactions.

Direct Sales

We may directly solicit offers to purchase the securities offered by this prospectus. In this case, no underwriters or agents would be involved. We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any sale of those securities. The terms of any such sales will be described in the prospectus supplement.

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Sales Through Agents

Securities also may be offered and sold through agents designated from time to time. The prospectus supplement will name any agent involved in the offer or sale of the securities and will describe any commissions payable to the agent. Unless otherwise indicated in the applicable prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment. Any agent may be deemed to be an underwriter within the meaning of the Securities Act with respect to any sale of those securities.

Delayed Delivery Contracts

If the applicable prospectus supplement indicates, we may authorize agents, underwriters or dealers to solicit offers from institutions to purchase securities at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. Institutions with which contracts of this type may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions, but in all cases those institutions must be approved by us. The obligations of any purchaser under any contract of this type will be subject to the condition that the purchase of the securities shall not at the time of delivery be prohibited under the laws of the jurisdiction to which the purchaser is subject. The applicable prospectus supplement will describe the commission payable for solicitation of those contracts.

Market Making, Stabilization and Other Transactions

Our common stock is listed on the NASDAQ Capital Market. Any common stock sold pursuant to a prospectus supplement will be eligible for listing and trading on the NASDAQ Capital Market, subject to official notice of issuance. Unless the applicable prospectus supplement states otherwise, each other class or series of securities issued will be a new issue and will have no established trading market. We may elect to list any other class or series of securities on an exchange, but we are not currently obligated to do so. Any underwriters that we use in the sale of offered securities may make a market in such securities, but may discontinue such market making at any time without notice. Therefore, we cannot assure you that the securities will have a liquid trading market.

Any underwriter may also engage in stabilizing transactions, syndicate covering transactions and penalty bids in accordance with Regulation M under the Exchange Act. Stabilizing transactions involve bids to purchase the underlying security in the open market for the purpose of pegging, fixing or maintaining the price of the securities. Syndicate covering transactions involve purchases of the securities in the open market after the distribution has been completed in order to cover syndicate short positions.

Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a syndicate covering transaction to cover syndicate short positions. Stabilizing transactions, syndicate covering transactions and penalty bids may cause the price of the securities to be higher than it would be in the absence of the transactions. The underwriters may, if they commence these transactions, discontinue them at any time.

The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. Such transactions, if commenced, may be discontinued at any time. We make no representation or prediction as to the direction or magnitude of any effect that the transactions described above, if implemented, may have on the price of our securities.

Derivative Transactions and Hedging

We, the underwriters or other agents may engage in derivative transactions involving the securities. These derivatives may consist of short sale transactions and other hedging activities. The underwriters or agents may acquire a long or short position in the securities, hold or resell securities acquired and purchase options or futures

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on the securities and other derivative instruments with returns linked to or related to changes in the price of the securities. In order to facilitate these derivative transactions, we may enter into security lending or repurchase agreements with the underwriters or agents. The underwriters or agents may effect the derivative transactions through sales of the securities to the public, including short sales, or by lending the securities in order to facilitate short sale transactions by others. The underwriters or agents may also use the securities purchased or borrowed from us or others (or, in the case of derivatives, securities received from us in settlement of those derivatives) to directly or indirectly settle sales of the securities or close out any related open borrowings of the securities.

Electronic Auctions

We also may make sales through the Internet or through other electronic means. Since we may from time to time elect to offer securities directly to the public, with or without the involvement of agents, underwriters or dealers, utilizing the Internet or other forms of electronic bidding or ordering systems for the pricing and allocation of such securities, you will want to pay particular attention to the description of that system we will provide in a prospectus supplement.

Such electronic system may allow bidders to directly participate, through electronic access to an auction site, by submitting conditional offers to buy that are subject to acceptance by us, and which may directly affect the price or other terms and conditions at which such securities are sold. These bidding or ordering systems may present to each bidder, on a so-called real-time basis, relevant information to assist in making a bid, such as the clearing spread at which the offering would be sold, based on the bids submitted, and whether a bidder's individual bids would be accepted, prorated or rejected. Of course, many pricing methods can and may also be used.

Upon completion of such an electronic auction process, securities will be allocated based on prices bid, terms of bid or other factors. The final offering price at which securities would be sold and the allocation of securities among bidders would be based in whole or in part on the results of the Internet or other electronic bidding process or auction.

General Information

Agents, underwriters, and dealers may be entitled, under agreements entered into with us, to indemnification by us against specified liabilities, including liabilities under the Securities Act, or to contribution by us to payments they may be required to make in respect to such liabilities. The applicable prospectus supplement will describe the terms and conditions of indemnification or contribution. Some of our agents, underwriters, and dealers, or their affiliates, may be customers of, engage in transactions with or perform services for us, in the ordinary course of business. We will describe in the prospectus supplement the nature of any such relationship and the name of the parties involved. Any lockup arrangements will be set forth in the applicable prospectus supplement.

LEGAL MATTERS

The validity of the offered securities and other matters in connection with any offering of the securities will be passed upon for us by Fortis Law Partners LLC, Denver, Colorado. Any underwriters will also be advised about the validity of the securities and other legal matters by their own counsel, which will be named in the prospectus supplement.

EXPERTS

The consolidated financial statements of ADA as of and for the three fiscal years ended December 31, 2012 appearing in our Annual Reports on Form 10-K for such years have been audited by EKS&H LLLP, an independent registered public accounting firm, as set forth in their reports thereon, included therein, and

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incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the SEC. You may read and copy any document we file at the SEC's public reference room at 100 F Street NE, Room 1580, Washington, D.C. 20549. You should call 1-800-SEC-0330 for more information on the public reference room. Our SEC filings are also available to you on the SEC's Internet site at www.sec.gov.

This prospectus is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's website.

Our Common Stock is currently traded in the over-the-counter market and is quoted on the NASDAQ Capital Market. Reports, proxy statements and other information filed by the Company therewith can be inspected at the National Association of Securities Dealers, Inc. 1735 K Street NW, Washington, D.C. 20006.

Information about us, including our SEC filings, is also available at our Internet site at <http://www.adaes.com>. However, the information on our Internet site is not a part of this prospectus or any accompanying prospectus supplement.

INFORMATION INCORPORATED BY REFERENCE

The SEC requires us to incorporate into this prospectus information that we file with the SEC in other documents. This means that we can disclose important information to you by referring to other documents that contain that information. The information incorporated by reference is considered to be part of this prospectus. Information contained in this prospectus and information that we file with the SEC in the future and incorporate by reference in this prospectus automatically updates and supersedes previously filed information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and prior to the termination of this offering.

ADA's Annual Report on Form 10-K for the fiscal year ended December 31, 2012, filed with the SEC on March 18, 2013 (File No. 000-50216);

The information specifically incorporated by reference into ADA's Annual Report from our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 25, 2013 (File No. 000-50216);

ADA's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2013, filed with the SEC on May 10, 2013 (File No. 000-50216);

ADA's Current Reports on Form 8-K, filed with the SEC February 11, 2013, March 13, 2013, March 22, 2013, March 25, 2013, June 14, 2013 and July 1, 2013 (excluding information furnished under Items 2.02, 7.01, and 9.01) (File No. 000-50216);

any other filings we make pursuant to the Exchange Act after the date of filing this amendment to the registration statement and prior to effectiveness of the registration statement; and

The description of our common stock contained in our Registration Statement on Form S-4 filed with the SEC on March 25, 2013, as amended and declared effective by the SEC.

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Notwithstanding the foregoing, unless specifically stated otherwise, none of the information that we disclose under Items 2.02, 7.01 and 9.01 of any Current Report on Form 8-K that may be listed above or that we furnish from time to time to the SEC will be incorporated by reference into, or otherwise included in, this prospectus.

You may request a copy of these documents, which will be provided to you at no cost, by writing or telephoning us using the following contact information:

Mark McKinnies

Secretary of ADA-ES

9135 South Ridgeline Boulevard, Suite 200,

Highlands Ranch, Colorado 80129

(303) 734-1727

E-mail: mark.mckinnies@adaes.com

Exhibits to the filings will not be sent, however, unless those exhibits have specifically been incorporated by reference in this document.

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Shares

Common Stock

PROSPECTUS SUPPLEMENT

Sole Book-Running Manager

Cowen and Company

Co-Managers

Needham & Company

Lake Street Capital Markets

Northland Capital Markets

November , 2013