

TECOGEN INC
Form 10-K
March 27, 2013

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2012

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission file number 333-178697

TECOGEN INC.

(Exact name of Registrant as specified in its charter)

Delaware

04-3536131

(State or Other Jurisdiction of Incorporation or Organization)

(IRS Employer Identification No.)

45 First Avenue

Waltham, Massachusetts

02451

(Address of Principal Executive Offices)

(Zip Code)

Registrant's Telephone Number, Including Area Code: (781) 622-1120

Securities registered pursuant to Section 12(b) of the Act: None

Securities registered pursuant to Section 12(g) of the Act:

Title of each class

Name of each exchange on which registered

Common Stock, \$0.001 par value

N/A

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Securities Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months, (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every

Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post

such files).

Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or an amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer”, “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

The aggregate market value of the voting shares of the registrant held by non-affiliates is not applicable because our common stock was not yet trading as of June 29, 2012.

As of March 27, 2013, the registrant’s shares of common stock outstanding were: 54,447,854.

WARNING CONCERNING FORWARD-LOOKING STATEMENTS

THIS ANNUAL REPORT ON FORM 10-K CONTAINS FORWARD-LOOKING STATEMENTS WITHIN THE MEANING OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995 AND OTHER FEDERAL SECURITIES LAWS. THESE FORWARD-LOOKING STATEMENTS ARE BASED ON OUR PRESENT INTENT, BELIEFS OR EXPECTATIONS, AND ARE NOT GUARANTEED TO OCCUR AND MAY NOT OCCUR. ACTUAL RESULTS MAY DIFFER MATERIALLY FROM THOSE CONTAINED IN OR IMPLIED BY OUR FORWARD-LOOKING STATEMENTS AS A RESULT OF VARIOUS FACTORS.

WE GENERALLY IDENTIFY FORWARD-LOOKING STATEMENTS BY TERMINOLOGY SUCH AS “MAY,” “WILL,” “SHOULD,” “EXPECTS,” “PLANS,” “ANTICIPATES,” “COULD,” “INTENDS,” “TARGET,” “PROJECTS,” “CONTEMPLATES,” “BELIEVES,” “ESTIMATES,” “PREDICTS,” “POTENTIAL” OR “CONTINUE” OR THE NEGATIVE OF THESE TERMS OR OTHER SIMILAR WORDS. THESE STATEMENTS ARE ONLY PREDICTIONS. THE OUTCOME OF THE EVENTS DESCRIBED IN THESE FORWARD-LOOKING STATEMENTS IS SUBJECT TO KNOWN AND UNKNOWN RISKS, UNCERTAINTIES AND OTHER FACTORS THAT MAY CAUSE OUR, OUR CUSTOMERS’ OR OUR INDUSTRY’S ACTUAL RESULTS, LEVELS OF ACTIVITY, PERFORMANCE OR ACHIEVEMENTS EXPRESSED OR IMPLIED BY THESE FORWARD-LOOKING STATEMENTS, TO DIFFER.

THIS REPORT ALSO CONTAINS MARKET DATA RELATED TO OUR BUSINESS AND INDUSTRY. THESE MARKET DATA INCLUDE PROJECTIONS THAT ARE BASED ON A NUMBER OF ASSUMPTIONS. IF THESE ASSUMPTIONS TURN OUT TO BE INCORRECT, ACTUAL RESULTS MAY DIFFER FROM THE PROJECTIONS BASED ON THESE ASSUMPTIONS. AS A RESULT, OUR MARKETS MAY NOT GROW AT THE RATES PROJECTED BY THESE DATA, OR AT ALL. THE FAILURE OF THESE MARKETS TO GROW AT THESE PROJECTED RATES MAY HAVE A MATERIAL ADVERSE EFFECT ON OUR BUSINESS, RESULTS OF OPERATIONS, FINANCIAL CONDITION AND THE MARKET PRICE OF OUR COMMON STOCK.

SEE “ITEM 1A. RISK FACTORS,” “MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS” AND “BUSINESS,” AS WELL AS OTHER SECTIONS IN THIS REPORT, THAT DISCUSS SOME OF THE FACTORS THAT COULD CONTRIBUTE TO THESE DIFFERENCES. THE FORWARD-LOOKING STATEMENTS MADE IN THIS ANNUAL REPORT ON FORM 10-K RELATE ONLY TO EVENTS AS OF THE DATE OF WHICH THE STATEMENTS ARE MADE. EXCEPT AS REQUIRED BY LAW, WE UNDERTAKE NO OBLIGATION TO UPDATE OR RELEASE ANY FORWARD-LOOKING STATEMENTS AS A RESULT OF NEW INFORMATION, FUTURE EVENTS OR OTHERWISE.

TECOGEN INC.

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 FOR THE FISCAL YEAR ENDED DECEMBER 31, 2012
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TECOGEN INC.

Item 1. Business

Overview

Tecogen designs, manufactures, and sells systems that produce electricity, hot water, and air conditioning for commercial and industrial buildings. These systems, powered by natural gas engines, are efficient because they drive electric generators or compressors – which reduce the amount of electricity purchased from the utility – plus they use the engine’s waste heat for water heating, space heating, and/or air conditioning at the customer’s building. We call this cogeneration technology CHP for combined heat and power.

Tecogen manufactures three types of CHP products:

- Cogeneration units that supply electricity and hot water;
- Chillers that provide air-conditioning and hot water; and
- High-efficiency water heaters.

All of these are standardized, modular, small-scale CHP products, with a limited number of designs that can serve many different types of customers. The market for these products is driven by their ability to reduce energy costs, carbon emissions, and customers’ dependence on the electric grid. Other factors behind the demand for natural gas-fueled CHP systems include America’s growing natural gas reserves and its domestic energy policies, as well as customers’ desire to become more socially responsible. Traditional customers for our cogeneration and chiller systems include hospitals and nursing homes, colleges and universities, health clubs and spas, hotels and motels, office and retail buildings, food and beverage processors, multi-unit residential buildings, laundries, ice rinks, swimming pools, factories, municipal buildings, and military installations.

Our CHP technology uses low-cost, mass-produced engines manufactured by GM and Ford, which we modify to run on natural gas. In the case of our mainstay cogeneration and chiller products, the engines have proved to be cost-effective and reliable. In 2009, our research team developed a low-cost process for removing air pollutants from the engine exhaust. This low-emissions technology gives our natural gas engines exceptionally low levels of “criteria” air pollutants (those that are regulated by the EPA because they can harm human health and the environment).

After a successful field test of more than a year, in 2012 we introduced the technology commercially as an option for all of our products under the trade name Ultra (patent pending). The Ultra low-emissions technology repositions our engine-driven products in the marketplace, making them comparable environmentally with emerging technologies such as fuel cells, but at a much lower cost and greater efficiency.

Our CHP products are sold directly to customers by our in-house marketing team and by established sales agents and representatives, including American DG Energy and EuroSite Power which are affiliated companies. We have an installed base of more than 2,100 units. Many have been operating for almost 25 years. Our principal engine supplier is GM, and principal generator supplier is Marathon Electric. To produce air conditioning, our engines drive a compressor purchased from J&E Hall International.

In 2009, we created a subsidiary, Ilios, to develop and distribute a line of high-efficiency heating products, starting with a water heater. These products are much more efficient than conventional boilers in commercial buildings and industrial processes (see “Our Products” below). As of the date of this report, we own a 65.0% interest in Ilios.

Tecogen was formed in the early 1960s as the Research and Development New Business Center of Thermo Electron Corporation, which is now Thermo Fisher Scientific Inc. For the next 20 years, this group performed fundamental and

applied research in many energy-related fields to develop new technologies. During the late 1970s, new federal legislation enabled electricity customers to sell power back to their utility. Thermo Electron saw a fit between the technology and know-how it possessed and the market for cogeneration systems.

In 1982, the Research and Development group released its first major product, a 60-kilowatt (kW) cogenerator. In the late 1980s and early 1990s, they introduced air-conditioning and refrigeration products using the same gas engine-driven technology, beginning with a 150-ton chiller (tons are a measure of air-conditioning capacity). In 1987, Tecogen was spun out as a separate entity by Thermo Electron and in 1992 Tecogen became a division of the newly formed Thermo Power Corporation.

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In 2000, Thermo Power Corporation was dissolved, and Tecogen was sold to private investors including Thermo Electron's original founders, Dr. George N. Hatsopoulos and John N. Hatsopoulos. Tecogen Inc. was incorporated in the State of Delaware on November 15, 2000. Our business and registered office is located at 45 First Avenue, Waltham, Massachusetts, 02451. Our telephone number is 781-466-6400.

Industry Background

During the 20th century, fossil-fuel power plants worldwide evolved toward large, complex central stations using high-temperature steam turbines. This technology, though steadily refined, reached a maximum efficiency of about 40% that persists to this day. According to the EPA website, the average efficiency of fossil-fuel power plants in the United States is 33% and has remained virtually unchanged for four decades.

The efficiency limitation reached in steam power plant design is universal in devices that convert the chemical energy from a burned fuel to electric power. This upper boundary is due not only to practical design limitations, but also to the fundamental thermodynamic barriers inherent in energy conversion. The limit can be exceeded only incrementally and at significant cost.

The best efficiency obtainable today is about 50%, from either a combined-cycle steam turbine or a fuel cell, as stated by the Northwest Power Planning Council report of August 2002, titled "Natural Gas Combined-cycle Gas Turbine Power Plants." A combined-cycle system incorporates a second turbine powered by exhaust gases from the first turbine. Large-scale replacement of existing power plants with combined-cycle technology would take decades, be very expensive, and yield marginal benefits. Fuel cells remain very expensive, and they are mostly confined to highly subsidized projects aimed at proving that the technology works.

CHP – which harnesses waste energy from the power generation process and puts it to work on-site – can boost the efficiency of energy conversion to nearly 90%, a better than two-fold improvement over central steam plants. Power generation alone, without capturing and using waste heat, cannot exceed an ideal, theoretical efficiency of about 70%, according to the basic thermodynamic laws governing energy conversion from fossil fuel combustion.

The implications of the CHP approach are significant. If CHP were applied on a large scale, global fuel usage might be curtailed dramatically. Small on-site power systems, in sizes like boilers and furnaces, would serve customers ranging from homeowners to large industrial plants. This is described as "distributed" energy, in contrast to central power.

CHP became recognized in the late 1970s as a technology essential to reduce fossil fuel consumption, pollution, and grid congestion. Since then, CHP has been applied increasingly around the world, mainly to reduce consumers' energy costs but also for its societal benefits. According to a report by the International Energy Agency, or IEA, titled "Sustainable energy technologies for today...and tomorrow (2009)," the value of CHP technology to customers and policy makers stems from the fact that CHP systems are "inherently energy efficient and produce energy where it is needed."

According to the IEA report, the benefits of CHP include:

- Dramatically increased fuel efficiency;
- Reduced emissions of carbon dioxide (CO₂) and other pollutants;
- Cost savings for the energy consumer;
- Reduced need for transmission and distribution networks; and

Beneficial use of local energy resources, providing a transition to a low-carbon future.

CHP generates about 10% of the world's electricity. With CHP-friendly policies in place, most countries could double or triple their existing CHP power output by 2030 (Figure 1). According to the IEA report, CHP could supply up to 24% of global generation, while meeting 40% of Europe's target reductions in carbon emissions.

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Figure 1 - Major Economies' CHP Potential

Source: IEA report, Cogeneration and District Energy:

Sustainable energy technologies for today...and tomorrow (2009)

(Data from 2008)

For the United States, this IEA report indicates the potential for CHP could increase from approximately 8% share of electricity generation in 2005 to approximately 18% by 2030. Given U.S. electric demand of about 500,000 megawatts in 2012, CHP could account for up to 35,000 megawatts of new capacity through 2030 in a broad spectrum of sizes and market sectors. Moreover, an Executive Order to accelerate investments in industrial energy efficiency, including CHP released by the White House on August 30, 2012, has set a new national goal of 40 gigawatts, or GW, of new CHP in the United States, thus accelerating this IEA timetable by 10 years.

On-site CHP not only eliminates the loss of electric power during transmission, but also offsets the capital expense of upgrading or expanding the utility infrastructure. The national electric grid is already challenged to keep up with existing power demand. The grid consists of power generation plants as well as the transmission and distribution network consisting of substations and wires.

Power plants are aging, and plans for new power plants are on the decline (Figure 2). According to the U.S. Energy Information Administration's "Form EIA-860 Annual Electric Generator Report (2010)," the average age of a U.S. coal-fired power plant is 44 years. Coal plants account for about 30% of the nation's generation capacity.

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Figure 2 – Proposed U.S. New Capacity: Coal, Natural Gas, Wind, and Nuclear

Source: National Energy Technology Laboratory, Tracking New Coal Fired Power Plants (2012).

In addition, the transmission and distribution network is operating at capacity in urban areas. Decentralizing power generation by installing equipment at customer sites not only relieves the capacity burden on existing power plants, but also unburdens transmission and distribution lines. This ultimately improves the grid's reliability and reduces the need for costly upgrades. Consolidated Edison, Inc., the electric utility of New York City and surrounding areas, intends to integrate energy efficiency, distributed generation, and demand response as a way to defer new infrastructure investments, according to the utility's 2010 long-range plan.

We believe that increasingly favorable economic conditions could improve our business prospects domestically and abroad. Specifically, we believe that natural gas prices might increase from their current depressed values, but only modestly, while electric rates could go up over the long-term as utilities pay for better emission controls, efficiency improvements, and the integration of renewable power sources. The net result of relative gas and electric prices could be greater cost savings and annual rates of return to CHP customers.

Moreover, we believe that natural gas could win favor politically as a domestic fuel with low carbon emissions. Government policy, both here and abroad, might promote CHP as a way to conserve natural resources and reduce carbon and toxic emissions. Renewable wind and solar sources could encounter practical limitations, while nuclear power is likely to be affected by its safety setbacks.

Tecogen's Strategy for Growth

Target markets and new customers

The traditional markets for CHP systems are buildings with long hours of operation and with coincident demand for electricity and heat. Traditional customers for our cogeneration systems include hospitals and nursing homes, colleges and universities, health clubs and spas, hotels and motels, office and retail buildings, food and beverage processors, multi-unit residential buildings, laundries, ice rinks, swimming pools, factories, municipal buildings and military installations.

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Traditional customers for our chillers overlap with those for our cogeneration systems. Chiller applications include schools, hospitals and nursing homes, office and apartment buildings, hotels, retailers, ice rinks and industrial facilities. Engine-driven chillers are ideal replacements for aging electric chillers, since they both take up about the same amount of floor space.

The Company believes that the largest number of potential new customers in the U.S. require less than 1,000 kW of electric power and less than 1,200 tons of cooling capacity. We are targeting customers in states with high electricity rates in the commercial sector, such as California, Connecticut, Massachusetts, New Hampshire, New Jersey and New York.

As stated earlier, the total US Market Potential in 2030 is projected to be 35,000 MW. In order to estimate the share of that market in our size range, we reference a study done by ICF International on the California market that breaks down projected market penetration by kW output range. According to Combined Heat and Power Market Assessment of the California Energy Commission (April 2010), in 2029, new CHP in the size range that fits our products (50 kW to 500 kW), is projected to be 476 MW in the base case, or 684 MW if incentives such as carbon credits and power export credits are considered. This size range constitutes 17.4% of the total California market potential in the base case, or 11% in the case with incentives. If we assume California's apportionment of small size CHP is applicable to the country, we can estimate the US market addressable by our products as 17.4% of 35,000 MW in the base case (11% with incentives) which amounts to 6,100 MW (3,864 MW with incentives). If we assume we can capture 30% of this market, the potential over the next twenty years is 11,600 – 18,300 InVerde (100 kW) units, or approximately \$1.3 – 2.1 billion in revenue (@ \$112,500 per unit).

An Executive Order to accelerate investments in industrial energy efficiency, was promulgated in August 2012. In response, the Department of Energy, or DOE, and the EPA released a new report titled "Combined Heat and Power: A Clean Energy Solution" that projects \$40-\$80 billion of new capital investment in CHP in the next decade based upon the goal of a 40 GW expansion of CHP of all sizes. Our potential market share of that market is difficult to predict.

The largest market sectors identified by ICF that are suitable for our products closely match our sales data from January 2007 through June 2012 (Figure 3).

Figure 3 - Tecogen Customer Distribution (CHP and Engine-Driven Chiller Systems)
From January 2007 through June 2012
Source: Tecogen Inc.

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The ICF report reveals CHP's relatively low existing market penetration in the smaller system sizes. Given that multi-megawatt CHP is already well-established (Table 1), the market opportunity increases as size decreases. Small systems (less than 1 megawatt) may grow almost six-fold. The missed opportunity is evident and likely even more disproportionate nationally. Most areas of the country, except the Northeast, are essentially without measurable CHP systems.

Table 1 – CHP Market Penetration by Size in California and Potential Through 2029

Source: ICF International, Combined Heat and Power Market Assessment (2010)

System Size (MW)	<1	1-4.9	5-19.9	>20	
2009 Inventory (MW)	200	350	750	7,900	
New Potential Through 2029 (MW)	1,138	1,279	764	3,015	
Relative Growth Potential (%)	569	% 365	% 102	% 38	%

The DOE/EPA report confirms that CHP is a “largely untapped resource” and states that there is significant technical market potential for CHP at commercial and institutional facilities at just over 65 GW. This report also indicates that there was a significant decline in CHP in the early 2000s due to deregulation of the power markets that resulted in market uncertainty and delayed energy investments. However, a significant rebound and expansion of the CHP market may occur because of the following emerging drivers:

1. Changing outlook for natural gas supply and pricing as a result of shale exploration
2. Growing State policymaking and support
3. Changing market conditions for the power and industrial sectors such as ageing power plants and boilers, as well as more strict air regulations.

We intend to seek customers, both domestic and international, in areas where utility pricing and government policy align with our advantages. These areas would include regions that have strict emissions regulations, such as California, or those that reward CHP systems that are especially non-polluting, such as New Jersey. There are currently 23 states that recognize CHP as part of their Renewable Portfolio Standards or Energy Efficiency Resource Standards and several of them, including New York, California, Massachusetts, New Jersey and North Carolina, have initiated specific incentive programs for CHP (DOE/EPA report).

Our new microgrid capability, where multiple InVerde units can be seamlessly isolated from the main utility grid in the event of an outage and re-connected to it afterward, will likewise be exploited wherever utilities have resisted conventional generator interconnection but have conceded to UL-certified inverters (such as Consolidated Edison in New York and Pacific Gas and Electric Company in California). Because our InVerde systems operate independently from the grid, we also plan to exploit the need for outage security in certain market segments. These segments include military bases, hospitals, nursing homes, and hotels.

As noted above in “Industry Background”, the IEA report estimates that world power from CHP, currently at 10%, could increase to 24% under a best-case scenario. We hope to participate in a robust international market, which we believe will be as large as or larger than the domestic market.

Alliances

We continue to forge alliances with utilities, government agencies, universities, research facilities, and manufacturers. We have already succeeded in developing new technologies and products with several entities, including:

-

General Motors Company – supplier of raw materials pursuant to a supplier agreement since the development of our cogeneration product in the early 1960s.

California Energy Commission – research and development contracts since 2004.

Sacramento Municipal Utility District – has provided test sites for the Company since 2010.

Southern California Gas Company and San Diego Gas & Electric Company, each a Sempra Energy subsidiary – have granted us research and development contracts since 2004.

Lawrence Berkeley National Laboratory – research and development contracts since 2005.

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• Consortium for Electric Reliability Technology Solutions – research and development contracts and provided a test site to the Company since 2005.

• The AVL California Technology Center – support role in performance of research and development contracts as well as internal research and development on our emission control system from August 2009 to November 2011.

We also have an exclusive licensing agreement from the Wisconsin Alumni Research Foundation (WARF) for its proprietary control software that enables our microgrid system. The software allows our products to be integrated as a microgrid, where multiple InVerde units can be seamlessly isolated from the main utility grid in the event of an outage and re-connected to it afterward. The licensed software allows us to implement such a microgrid with minimal control devices and associated complexity and cost. Tecogen pays WARF a royalty for each cogeneration module sold using the licensed technology. Such royalty payments have been in the range of \$5,000 to \$20,000 on an annual basis through the year ended December 31, 2012. In addition, WARF reserved the right to grant non-profit research institutions and governmental agencies non-exclusive licenses to practice and use the inventions of the Licensed Patents for Non-Commercial Research Purposes.

Our efforts to forge partnerships continue to focus on utilities, particularly to promote the InVerde, our most utility-friendly product. The nature of these alliances vary by utility, but could include simplified interconnection, joint marketing, ownership options, peak demand mitigation agreements, and customer services. We are currently installing a microgrid with the Sacramento Municipal Utility District at its headquarters in Sacramento, California, where the central plant will incorporate three InVerde systems equipped with our Ultra low-emissions technology. Some expenses for this project are being reimbursed to the utility through a grant from the California Energy Commission.

Certain components of our InVerde product were developed through a grant from the California Energy Commission. This grant includes a requirement that Tecogen pay royalties on all sales of all products related to the grant. As of December 31, 2012, such royalties accrued in accordance with this grant agreement were less than \$10,000 on an annual basis.

We also continue to leverage our resources with government and industry funding, which has yielded a number of successful developments. These include the Ultra low-emissions technology, sponsored by the California Energy Commission and Southern California Gas Company, and new 35-kW engine technology we developed with the California Energy Commission's support.

For the years ended December 31, 2012 and 2011, we spent \$103,102 and \$223,745, respectively, in research and development activities, all of which was reimbursed through grants from the California Energy Commission and the Consortium for Electric Reliability Technology Solutions.

Tecogen's Solution

Our CHP products address the inherent efficiency limitation of central power plants by siting generation close to the loads being served. This allows customers with energy-intensive buildings or processes to reduce energy costs and operate with a lower carbon footprint. Furthermore, with technology we have introduced within the last two years, our products can now contribute to better air quality at the local level.

According to our estimates and public sources, our cogeneration systems convert up to 90% of the natural gas fuel to useful energy in the form of electricity and hot water or space heat. This compares to less than 40% for central power. Other on-site upgrades such as insulation or lighting can help cut energy use as well, but they do not displace nearly as much low-efficiency electricity. Our engine-driven chillers, when the waste heat is effectively used, offer similar

efficiency benefits compared with running an electric chiller plus a furnace or boiler.

Cogeneration and chiller products can often reduce the customer's operating costs (for the portion of the facility loads to which they are applied) by approximately 30% to 50% based on Company estimates, which provides an excellent rate of return on the equipment's capital cost in many areas of the country with high electric rates. Our chillers are especially suited to regions where utilities impose extra charges during times of peak usage, commonly called "demand" charges. In these cases, the gas-fueled chiller reduces the use of electricity during the summer, the most costly time of year.

Our water heater product, recently introduced by Ilios, operates like an electric heat pump but uses a natural gas engine instead of an electric motor to power the system, see "Our Products" for an explanation of the heat pump. The gas engine's waste heat is recovered and used in the process, unlike its electric counterpart, which runs on power that has already lost its waste heat. As of the date of this report, we have sold one Ilios water heater and have five in production to fulfill current orders.

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The net effect is that our heat pump’s efficiency far surpasses that of conventional boilers for water heating. Similarly, if used for space heating, the engine-powered heat pump would be more efficient than an electric heat pump, again because heat is recovered and used. The product’s higher efficiency translates directly to lower fuel consumption and, for heavy use customers, significantly lower operating costs.

Our products also address the global objective of reducing greenhouse gas emissions. When burned to generate power, natural gas produces lower carbon emissions per unit of energy than any fossil fuel (Table 2), according to the EPA combined heat and power emissions calculator.

Table 2. Fossil Fuel Carbon Emissions

Source: EPA Emissions Calculator

Fuel	CO2 emissions, lb/million Btu
Natural Gas	116.7
Distillate Oil	160.9
Coal	206.7

Our products, in addition to using the lowest amount of carbon fuel, further reduce CO2 emissions (greenhouse gases) because of CHP’s higher efficiency. Figure 4 compares the CO2 output of our products to that of the national electric grid and other generation technologies. Our products are far superior to the grid and even outperform the CHP technologies of fuel cells and microturbines.

Figure 4 – Comparison of Carbon Emissions (GHG) for Various Sources

Including Tecogen’s CHP and Chiller Products

Source: Tecogen Inc.

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Furthermore, according to the EPA website's calculator, one Tecogen 100-kW CHP unit will reduce carbon emissions by 390 tons per year (based on 8,000 run-hours), the equivalent of 64 cars on the road. A microturbine of the same size would reduce carbon emissions by only 245 tons per year, the equivalent of 41 cars – less than two-thirds the emissions reduction of our CHP product. Our Ilios water heater also reduces CO₂ emissions in proportion to its fuel savings.

In addition to reducing greenhouse gases, our products with Ultra low-emission controls can improve local air quality from other pollutants, such as NO_x and CO (Figure 5). As shown below, the Ultra CHP system's emissions (D) are significantly less than the combination of the power plant and boiler (A + B) for the same energy output.

Figure 5 also compares the Ultra low-emissions CHP to the “best available control technology” (BACT) as defined by the EPA for natural gas engines. This reveals how dramatically Ultra reduces an engine's emissions and helps explain the negative perception that engines have historically had with respect to air quality. A central power plant is usually far away, so it doesn't affect local pollutant levels, and the boiler alone (B) produces far less air pollution than even the best engine (C).

Microturbines and fuel cells have been the low-emission alternatives to engines, but they produce more NO_x than an Ultra low-emissions CHP unit (Figure 6). The Ultra low-emissions technology could transform the engine's reputation in the energy marketplace – it can now be considered a source of clean power.

Figure 5 – Emissions Levels of Criteria Pollutants from Various Sources

Compared to Tecogen's Ultra Low-Emissions Technology

Source: Tecogen Inc.

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Figure 6 — Comparison of Tecogen Ultra Low-Emissions Technology to Other Technologies

Source: Tecogen Inc.

Our Products

We manufacture natural gas engine-driven cogeneration systems and chillers, all of which are CHP products that deliver more than one form of energy. We have simplified CHP technology for inexperienced customers. Our cogeneration products are all standard, modular units that come pre-packaged from the factory. They include everything the customer needs to minimize the cost and complexity of installing the equipment at their site. The package incorporates the engine, generator, heat-recovery equipment, system controls, electrical switchgear, emission controls, and modem for remote monitoring and data logging.

All of our cogeneration systems and most of our chillers use the same engine, the TecoDrive 7400 model supplied by GM and modified by us to use natural gas fuel. The small 25-ton chiller uses a similar GM engine, the 3000 model. We worked closely with GM and the gas industry (including the Gas Research Institute) in the 1980s and 1990s to modify the engine and validate its durability. For the Ilios water heater, we introduced a more modern Ford engine that is enhanced for industrial applications. As of the date of this report, we have sold one Ilios water heater and have five in production to fulfill current orders

Our commercial product line includes:

- The InVerde® and TECOGEN® cogeneration units,
- TECOCHILL® chillers,
- Ilios high-efficiency water heaters, and

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Ultra low-emissions technology.

InVerde Cogeneration Units

Our premier cogeneration product is the InVerde, a 100-kW CHP system that not only provides electricity and hot water, but also satisfies the growing customer demand for operation during a utility outage, commonly referred to as “black-start” capability. The InVerde incorporates an inverter, which converts direct current, or DC, electricity to alternating current, or AC. With an inverter, the engine and generator can run at variable speeds, which maximize efficiency at varying loads. The inverter then converts the generator’s variable output to the constant-frequency power required by customers (50 or 60 Hertz), as shown in Figure 7.

This inverter technology was developed originally for solar and wind power generation. The InVerde is the first commercial engine-based CHP system to use an inverter. Electric utilities accept inverter technology as “safe” by virtue of its certification to the Underwriters Laboratory interconnection standard (1741) – a status which the InVerde has acquired. This qualifies our product for a much simpler permitting process nationwide and is mandatory in some areas such as New York City and California. The inverter also improves the CHP system’s efficiency at partial load, when less heat and power are needed by the customer.

The InVerde’s black-start feature addresses a crucial demand from commercial and institutional customers who are increasingly concerned about utility grid blackouts and brownouts, natural disasters, security threats, and antiquated utility infrastructure. Multiple InVerde units can operate collectively as a standalone microgrid – a group of interconnected loads served by one or more power sources. The InVerde is equipped with software that allows a cluster of units to seamlessly share the microgrid load without complex controls.

The InVerde CHP system was developed in 2007, and we began shipping it in 2008. Our largest InVerde fleet is twelve units, which supply 1.2 megawatts of on-site power and about 8.5 million Btu/hr of heat (700,000 Btu/hr per unit).

Figure 7 - Diagram of InVerde CHP System

Source: Tecogen Inc.

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TECOGEN Cogeneration Units

The TECOGEN cogeneration system is the original model introduced in the 1980s, which is available in sizes of 60 kW and 75 kW, producing up to 500,000 Btu/hr of hot water. This technology is based on a conventional single-speed generator. It is meant only for grid-connected operation and is not universally accepted by utilities for interconnection, in contrast to the InVerde. Although this cogeneration product has the longest legacy and largest population, much of its production volume has been supplanted by the InVerde.

TECOCHILL Chillers

Our TECOCHILL natural gas engine-driven chillers are available in capacities ranging from 25 to 400 tons, with the smaller units air-cooled and the larger ones water-cooled. This technology was developed in 1987. The engine drives a compressor that makes chilled water; while the engine's free waste heat can be recovered to satisfy the building's needs for hot water or heat. This process is sometimes referred to as "mechanical" cogeneration, as it generates no electrical power, and the equipment doesn't have to be connected to the utility grid.

A gas-fueled chiller provides enough air conditioning to avoid most of the utility's seasonal peak charges for electric usage and capacity. In summer when electric rates are at their highest, natural gas is "off-peak" and quite affordable. Gas-fueled chillers also free up the building's existing electrical capacity to use for other loads.

Ilios High-Efficiency Water Heaters

Our newest product, the Ilios high-efficiency water heater uses a heat pump, which captures warmth from outdoor air even if it is moderately cool outside. Heat pumps work somewhat like a refrigerator, but in reverse. Refrigerators extract heat from inside the refrigerator and move it to your kitchen. Heat pumps extract heat from outside and move it indoors. In both cases, fluids move the heat around by flowing through heat exchangers. At various points the fluids are compressed or expanded, which absorbs or releases heat.

In the Ilios water heater, the heat pump moves heat from outdoors to the water being heated in the customer's building. The heat pump water heater serves as a boiler, producing hot water for drinking and washing or for space heating, swimming pools, or other building loads. Energy cost savings to the customer depend on the climate. Heat pumps in general (whether gas or electric) perform best in moderate weather conditions.

In a conventional electric heat pump, the compressor is driven by an electric motor. In the Ilios design, a natural gas-fueled engine drives the compressor. This means that the heat being captured from outdoors is supplemented by the engine's waste heat, which increases the efficiency of the process. According to scientific studies, gas engine heat pumps can deliver efficiencies of up to 146%. As of the date of this report, we have sold one Ilios water heater and have five in production to fulfill current orders.

Ultra Low-Emissions Technology

All of our CHP products are available with the Ultra low-emissions technology. This breakthrough technology was developed in 2009 and 2010 as part of a research effort funded by the California Energy Commission and Southern California Gas Company. The objective was to bring our emission control systems into compliance with California's standards, which are the most stringent in the United States.

We were able to meet or exceed the standards with an emission control system that is cost-effective, robust, and reliable. The Ultra low-emissions technology keeps our CHP systems compliant with air quality regulations over the

long term. Given the proprietary nature of this work, we filed patents that are pending in the U.S. and Europe. We shipped the first commercial CHP units equipped with Ultra low-emissions technology to a California utility in 2011.

We conducted three validation programs for this technology:

Third-party laboratory verification. The AVL California Technology Center, a long-standing research and technology partner with the international automotive industry, confirmed our results in their state-of-the-art dynamometer test cell, which was outfitted with sophisticated emissions measurement equipment.

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Verifying longevity and reliability in the field. We did so by equipping one of our TECOGEN 75-kW units, already operating at a customer location in Southern California, with the Ultra low-emissions technology and a device to monitor emissions continuously. To date, the Ultra low-emissions system has operated successfully for more than 13,000 hours (1½ years) and has consistently complied with California’s emission standards. This field test is ongoing.

Additional independent tests. During the field test, two companies licensed in California to test emissions each verified our results at different times. The results from one of these tests (obtained in August 2011) enabled us to qualify for New Jersey’s fast-track permitting. Virtually every state nationwide requires some kind of permit related to local air quality, but New Jersey allows an exemption for systems such as ours that demonstrate superior emissions performance. This certification was granted in November 2011, and since then we have sold Ultra low-emissions systems to several customers.

Contribution to Revenue

The following table summarizes net revenue by product line and services for the years ended December 31, 2012 and 2011:

	December 31, 2012	December 31, 2011
Products:		
Cogeneration	\$5,791,412	\$2,737,161
Chiller	1,661,810	1,831,952
Total Product Revenue	7,453,222	4,569,113
Services	7,800,750	6,496,097
Total Revenue	\$15,253,972	\$11,065,210

Product Reliability

Our product lines have a long history of reliable operation. Since 1995, we have had a remote monitoring system in place that connects to hundreds of units daily and reports their “availability,” which is the amount of time a unit is running or is ready to run (% of hours). Figure 8 shows cumulative data for a fleet of 365 units. More than 80% of them operate above 90% availability, with the average being 93.5%. By comparison, the average availability for all U.S. fossil-fueled power plants was 87.5% during 2006-2010, according to a report by the North American Electric Reliability Corporation.

Figure 8 - Tecogen Product Reliability

Source: Tecogen Inc.

Product Service

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We provide long-term maintenance contracts, parts sales, and turnkey installation through a network of eight well-established field service centers in California, the Midwest, and the Northeast. These centers are staffed by full-time Tecogen technicians, working from local leased facilities. The facilities provide offices and warehouse space for inventory.

Our service managers, supervisors, and technicians work exclusively on our products. Because we manufacture our own equipment, our service technicians bring hands-on experience and competence to their jobs. They are trained at our manufacturing facility in Waltham, Massachusetts.

R&D Capabilities

Our research and development tradition and ongoing programs have allowed us to cultivate deep engineering expertise and maintain continuity over several decades. We have strong core technical knowledge that is critical to product support and enhancements. Our TecoDrive engine, cogeneration and chiller products, InVerde, and most recently the InVerde Ultra and Ilios heat pump water heater were all created and optimized with both public and private funding support.

At this time, we have two funded research contracts. The first is a \$1 million program with the California Energy Commission, awarded in 2009, to develop a small CHP engine (about 35 kW) that uses advanced automotive technology. The engine achieves a nearly 20% fuel efficiency gain over our current TecoDrive technology. Since the endurance test was completed in 2012, we will transition to the latest model year advanced engine and introduce it in our products sometime in 2014.

Once an endurance test is completed in 2012, we expect to introduce this engine into the Ilios heat pump water heater and possibly into a small InVerde unit. The second contract, awarded in 2012, is with the U.S. Department of Energy's Lawrence Berkeley National Laboratory for microgrid development work related to the InVerde.

Distribution Methods

Our products are sold directly to end-users by our sales team and by established sales agents and representatives. Various agreements are in place with distributors and outside sales representatives, who are compensated by commissions, including American DG Energy and EuroSite Power which are affiliated companies, for certain territories and product lines. For example, we have sales representatives for the chiller market in the New York City/New Jersey territory, but we do not have a sales representative for our cogeneration products in this territory. Sales through our in-house team or sales that are not covered by a representative's territory carry no commission or only a fractional one.

In New England, our affiliate, American DG Energy, has exclusive sales representation rights to our cogeneration products only (not including chillers). In other words, when Tecogen sells its cogeneration products in New England, Tecogen pays a commission to American DG Energy. American DG Energy also has exclusive rights to our Ultra low-emissions technology if it is applied to engines from other CHP manufacturers in projects developed by American DG Energy. This means that American DG Energy could purchase CHP products from suppliers other than us and license that supplier to incorporate our Ultra low-emissions technology as long as the CHP system is owned and operated American DG Energy.

Summary of our Products' Advantages

Our CHP products provide an efficient on-site solution to power generation as the market seeks cost savings and clean alternatives to centralized grid power.

Our CHP products are all standard, modular units that come pre-packaged from the factory to simplify installation and grid connection. The systems are supported in the field by a nationwide network of experienced professional staff. Standardized CHP units, as opposed to custom-designed systems, achieve lower cost, better quality control, higher reliability, and easier service. Emission controls are integrated, and complete system warranty and maintenance are available.

Our Ultra low-emissions technology eliminates the air quality concerns associated with engines. Our units comply with the most rigorous air quality regulations, including California's.

Our cogeneration systems and chillers use standard, well-proven equipment made by reputable, well-established manufacturers. These components include rugged automotive engines, certified inverters, commercial generators, and conventional compressors. Certain key components are proprietary and have patent protection. Most notably, all control software is either proprietary (and copyright protected) or under an exclusive license agreement. Suppliers of the InVerde's inverter and generator hold certain related patent protection.

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All of our CHP products can be designed for installation of multiple units at a single site, depending on the customer's particular needs. This enhances the ability of our products to meet the building's varying demand for electricity, heat, and/or air conditioning throughout the day and from season to season. Also, multiple units operate more efficiently throughout the range of a customer's high and low energy requirements.

Our InVerde products are opening new market opportunities and expanding our reach to customers beyond our traditional market segments. The InVerde's black-start feature addresses a crucial demand from customers concerned about utility blackouts and brownouts, natural disasters, security threats, and antiquated grid infrastructure. The InVerde also provides premium-quality power, which is required by operators of computer server farms and precision instrumentation, for example.

The InVerde overcomes barriers related to grid interconnection, since the product is UL-certified as utility-safe. In microgrids, InVerde units can help prevent brownouts by maximizing their power output when utilities approach peak capacity. Unlike standby diesel generators, the InVerde can operate without hourly limits because its emissions are so low, and it can serve as a stable anchor in hybrid microgrids that incorporate solar power.

Our extensive use of standardized components lets us manufacture CHP products at competitive prices, even at relatively low production volumes. Proven, well-understood hardware increases the reliability and durability of the equipment and reduces the cost of servicing in the field. We are also able to minimize spare parts inventories and simplify training requirements.

The Ilios heat pump water heater roughly doubles the efficiency of conventional heat pump systems. The Ilios heat pump targets a large international market that is characterized by heavy, year-round use. This will increase fuel savings and maximize return on investment for the customer. Also, such applications are mostly central heating and cooling systems, rather than units distributed throughout the building, so it is easier to integrate new equipment. The heat pump water heater product competes only against other gas-fueled water heaters, which could expand our market beyond areas with high electric rates, and regulatory issues should be minimal. As of the date of this report, we have sold one Ilios water heater and have five in production to fulfill current orders.

Competitive Position and Business Conditions

Our products fall into the broad market category of distributed generation – systems that produce electric power on-site to mitigate the drawbacks of traditional central power and the low efficiency of conventional heating processes.

Renewable power sources, such as wind and solar do not improve heating inefficiencies as CHP systems do, so they do not compete with our products. That is, CHP utilization is based on the redirection of fuel from an onsite boiler to an engine (or other device) for the production of electricity; the waste heat from the engine meets the heating load of the site with only a small incremental fuel consumption increase, but with the benefit of a significant amount of electricity production. As the boiler output cannot be displaced by renewable electricity production – the output of which is far more valuable displacing utility electric power, than used for water heating – the CHP opportunity remains available even in sites fully exploited relative to their renewable potential.

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Cogeneration Systems

The ICF report breaks down the CHP market by technology as provided in Figure 9 below. We believe the California data applies to the domestic and international CHP market as a whole.

Figure 9 — Technology Size and Market Position

Source: ICF International, Combined Heat and Power Market Assessment (2010)

(Data from 2004)

Our CHP products use automotive reciprocating engines originally designed for gasoline fuel and modified to run on natural gas. Diesel-fueled reciprocating engines will remain prominent in the CHP market, but only in larger, custom-designed systems (a megawatt or more), so these products do not compete with ours.

In smaller CHP sizes, competitors have duplicated our older design, coupling an automotive engine to a single-speed generator and adding controls and heat recovery. To be competitive with our designs, however, they would have to acquire comparable experience in the equipment and technology, installation contracting, maintenance and operation, economic evaluation of candidate sites, project financing, and energy sales, as well as the ability to cover broad regions. They would also have to meet the price of our products, which is low because we use standardized components.

We believe that no other company has developed a product that competes with our inverter-based InVerde, which offers UL-certified grid connection, outage capability, and variable-speed operation. We anticipate that an inverter-based product with at least some of these features will be introduced by others, but we believe that they will face serious challenges in duplicating the InVerde. Product development time and costs would be significant, and we expect that our patents and license for microgrid software will keep others from offering certain important functions.

If our patent application relating to the Ultra low-emissions technology is approved, it will make the development of alternative technologies difficult. If this is the case, we could retain a strong competitive advantage for all our products in markets where severe emissions limits are imposed or where very clean power is favored, such as New Jersey, California, and Massachusetts.

Newer technologies such as fuel cells and microturbines pose limited competition to our CHP products. Reciprocating engines enjoy an economic advantage, and our Ultra low-emissions products are a lower cost, more efficient CHP alternative, with approximately equal emissions.

Besides their expense, fuel cells cannot recover enough heat to serve building loads effectively, and microturbines also recover less heat than our products. Microturbines also have to pressurize their own gas fuel, reducing their electrical output. Most manufacturers of microturbines have refocused on other markets. We believe that Capstone Turbine Corporation is the only microturbine manufacturer with a commercial presence in CHP.

In the growing microgrid segment, neither fuel cells nor microturbines can respond to changing energy loads when the system is disconnected from the utility grid. Table 3 summarizes the technologies competing in the small CHP market, and Figure 10 reveals the modest impact of microturbines and fuel cells in California's CHP space.

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Table 3- Comparison of CHP Technologies to Tecogen's InVerde 100

Source: ICF International, Combined Heat and Power Market Assessment (2010) and Tecogen Inc.

	Microturbine*	Fuel Cell*	Generic Engine*	Tecogen INV-100**
	50-500 kW	50-500 kW	100 kW	100 kW
Installed Costs, \$/kW	2,739	6,310	2,210	N/A
Heat Rate, Btu/kWh	13,542	9,475	12,000	12,630
Electric Efficiency, %	25.2	% 36.0	% 28.4	% 27.0
Thermal Output, Btu/kWh	6,277	2,923	6,100	6,700
Overall Efficiency, %	72	% 67	% 79	% 80.0
O&M Costs, \$/kWh	0.022	0.038	0.020	N/A
NOx [ppm @ 15% O2]	3.41	1.15	3.39	0.62
NOx Emissions, lbs/MWh	0.17	0.04	0.15	0.03
NOx Emissions, lbs/MWh w/CHP Credit	0.06	N/A	0.05	0.01

*ICF International Combined Heat and Power Market Assessment (2010).

**Tecogen emissions obtained from actual source test data by a third-party air quality testing company in California.

Figure 10 – Share of Installed CHP by Prime Mover in California

Source: ICF International Combined Heat and Power Market Assessment (2010) - (Data from 2008)

Engine Driven Chillers (TECOCHILL)

According to the Energy Solutions Center (a non-profit consortium), three companies make gas-engine-driven chillers that compete with our products: Trane, a division of Ingersoll-Rand plc, York, a division of Johnson Controls, Inc. and Alturdyne. However, these competitors have been largely inactive in this market in recent years. Natural gas can also fuel absorption chillers, which use fluids to transfer heat without an engine drive. Absorption chillers are manufactured by eight companies, but these competitors also have been largely inactive in this market.

Today's low natural gas prices in the U.S. improve the economics of gas-fueled chillers, so more competition could emerge. However, engine chillers will continue to have an efficiency advantage over absorption machines. Chiller performance is measured in terms of cooling energy output per unit of fuel input. This industry standard is called the coefficient of performance, or COP. Absorption chillers achieve COPs of about 1.2 (see, for example, The Chartered Institution of Building Services Engineers' Datasheet 07, Absorption Cooling, February 2012). Our TECOCHILL products reach efficiencies well above that level (COPs ranging from 1.6 to 2.6).

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Ilios Engine-Driven Heat Pump

Although a few companies manufacture gas-engine heat pumps, their products are not directly comparable to the Ilios. The Ilios water heater and other heat pump products compete in both the high-efficiency water heating market and the CHP market. In a typical building, the Ilios heat pump would be added on to an existing heating/water heating system, but would be operated as many hours as possible. The conventional boiler would be left in place, but would serve mainly as a backup when the heat pump's engine is down for maintenance or when the heat pump cannot meet the building's peak heating load.

The best customers for the Ilios heat pump water heater would be very similar to those for traditional CHP – heavy consumers of hot water and process heat. In areas where low electric rates make CHP not economical, the Ilios heat pump could be a financially attractive alternative, because its economics depend only on natural gas rates. In some areas with high electric rates, the Ilios option could have advantages over CHP — for example, where it is hard to connect to the utility grid or where the building's need for electricity is too low for CHP to work economically. As of the date of this report, we have sold one Ilios water heater and have five in production to fulfill current orders.

Intellectual Property

We currently hold several patents for our technologies. In addition, our control software is protected by under an exclusive license agreement. We consider our patents and license to be important in the present operation of our business. The expiration, termination or invalidity of one or more of these patents may have a material adverse effect on our business. Our earliest patent was issued in 2006 and expires on 2022. Most of our patents expire between 2022 and 2025.

We believe that no other company has developed a product that competes with our inverter-based InVerde. We anticipate that an inverter-based product with at least some of these features will be introduced by others, but we believe that they will face serious challenges in duplicating the InVerde. Product development time and costs would be significant, and we expect that our patents and license for microgrid software will keep others from offering certain important functions.

We have recently filed for patents in the U.S. and Europe for our Ultra low-emissions technology to keep its use exclusive to us. The outcome of the patent office application review is important because this technology will apply to all of our gas engine-driven products and may have licensing application to other natural gas engines. There is no assurance, however, that the Ultra low-emissions patent applications will be approved.

Government Regulation and Its Effect on Our Business

Several kinds of government regulations affect our current and future business, such as:

- Product safety certifications and interconnection requirements;
- Air pollution regulations, which govern the emissions allowed in engine exhaust;
- State and federal incentives for CHP technology; and
- Electric utility pricing and related regulations.

Regulations that control air quality and greenhouse gases might increasingly favor our low-emission products. Regulations related to utility rates and interconnection, which are burdensome today, could evolve to embrace CHP because of its efficiency benefits.

Product Safety Certifications and Interconnection Requirements

Our products must comply with various local building codes and must undergo inspection by local authorities. Our products are also certified by a third party to conform to specific standards. These certifications require continuous verification by a company that monitors our processes and design every three months. Our InVerde product is also certified to Europe's standard CE mark (European Conformity), which is mandatory for products imported into the European Union for commercial sale.

Our cogeneration CHP products are also certified to a particular group of standards specific to the distributed power industry, which are used in the utility interconnection permitting process. These unique certifications were developed by various manufacturers, utilities, and government regulators to standardize the process of getting the utility's permission to jointly power a facility.

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In essence, manufacturers of standard products are allowed to submit a sample unit to be “type-tested” by a Nationally Recognized Testing Laboratory. This test proves that the product adheres to safety requirements and that its design is fail-safe. The product then becomes eligible for a fast-track interconnection, after passing simple site-specific screens. Under state-mandated regulations, such as California Rule 21 and Massachusetts Interconnection Tariff 09-03, most utilities must accept the fast-track process, which includes the certification.

Simplified utility interconnection is important to CHP projects, so our interconnect certification, Underwriters Laboratory Standard 1741, or UL Certification, is a significant competitive advantage. Obtaining the UL Certification was a major reason for us to develop the inverter-based CHP product. As with our other product certifications, we plan to maintain the certification through routine processes when modest design changes occur. When complete recertification is required, such as when a new revision to the standard is applicable or when the design undergoes a major upgrade, the company will follow the normal procedures for first-time certification (third party design review and test verification). The company does not anticipate any changes to the standard that would be preclude recertification, as the underlying content is carefully administered by balanced committees (representing utilities, inverter suppliers, and academia). In addition, the standard and its utilization as the criteria for systems to qualify for simplified interconnection programs, is important for the solar PV industry. The company believes that this importance to the solar industry will help assure the long-term relevance in interconnection of distributed generation devices.

Air Pollution Regulations

Stationary natural gas engines are subject to strict emissions regulations that are part of a complex hierarchy of regional, state, and federal regulations. The EPA establishes technology-specific standards that are based on cost-benefit analysis for emission control strategies. These standards, termed BACT (best available control technology), are imposed in regions that fail to meet federal clean air standards. Local regulators can and do restrict engine emissions to lower levels.

In some instances, regional standards in our key markets have become sufficiently strict, presenting a challenge in controlling pollution from natural gas engines. However, our development of the Ultra low-emissions technology has addressed this issue, allowing us to permit our equipment in the strictest region of Southern California. In January 2013, a state-certified source test at a new customer's site verified that our emissions levels were well below the new permitting requirements. Since we have now successfully removed this barrier, we are not only competitive in the California market, but have an advantage as a cleaner CHP technology. Likewise, in the Northeast where emissions regulations are trending towards California levels, we have already established our Ultra CHP as a certified technology in New Jersey, exempt from the air permitting process and subsequent testing, a unique status that separates us from the competition.

On the East Coast, important CHP territories are also moving toward limits below federal BACT levels. Effective in 2012, Massachusetts, Rhode Island, and Connecticut require 3.6 ppm NOx and about 56 ppm CO, which is on par with California’s BACT standard. New Jersey also emulates California’s BACT, but allows the project to side-step the air permit process if the CHP device is “emissions certified” through third-party testing to 10 ppm NOx and 10 ppm CO. Our Ultra low-emissions technology has qualified for New Jersey’s “clean” certification, as noted earlier. In New York, clean power is encouraged through state grants that exclude products, or reduce the grant amount, unless low emissions are demonstrated.

Air emissions regulations also affect our air conditioning and Ilios heat pump products, though the effects are muted. TECOCHILL rebates are not common, and none has been tied to a specific emissions level. The heat pump’s small

size often exempts it from regulations, and the market for heat pump products could lie in lightly regulated regions (those with low electric rates). Nevertheless, the Ultra low-emissions technology can be applied to these products if required to meet regulatory standards.

State and Federal Incentives

On August 30, 2012, the White House released an Executive Order to accelerate investments in industrial energy efficiency, including CHP. The goal of the Executive Order is to supply 40 gigawatts of energy by 2020 from greater efficiency such as CHP systems. The DOE, Commerce, and Agriculture, and the Environmental Protection Agency, in coordination with the National Economic Council, the Domestic Policy Council, the Council on Environmental Quality, and the Office of Science and Technology Policy, shall coordinate policies to encourage investment in industrial efficiency in order to reduce costs for industrial users, improve U.S. competitiveness, create jobs, and reduce harmful air pollution. With this Executive Order, it is expected that barriers to CHP development will be removed with effective programs, policies, and financing opportunities resulting in \$40 - \$80 billion in new capital investment in CHP. This initiative by the U.S. government may boost CHP awareness and stimulate market activity.

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In addition, some states offer incentives to CHP systems. As mentioned above, California rebates a significant portion of the CHP project cost, while incentives of similar value exist in New Jersey, New York, Connecticut, Maine, and Massachusetts, albeit with different structures and terms. Massachusetts has an additional CHP incentive in the form of an annual rebate proportional to the carbon savings versus conventional technology.

Our products are also eligible for the bonus depreciation included in the 2009 American Recovery and Reinvestment Act. Also, the 2008 Troubled Asset Relief bill provides a 10% investment tax credit for CHP in our size range, which applies to the total project cost. Our TECOCHILL and heat pump products also qualify for the credit when heat recovery achieves a minimum 60% efficiency.

Electric Utility Pricing and Related Regulations

Electricity prices, rate structures, and tariffs are another form of government incentive or disincentive. Utility pricing is administered through state agencies, typically public utility commissions, through formal proceedings involving the public, utilities, and various affected parties. Often, direct legislative mandates apply to specific issues. How these rules are structured and interpreted has a significant impact on the economic viability of CHP. These rules have hurt the CHP industry in the past, but we have designed our products to undermine their impact.

Demand Charges. Many electric utilities structure their commercial rates such that part of the customer's bill is fixed charges such as meter fees, and part is peak demand charges, which are a much larger line-item based on the building's maximum short-term usage (typically 15 minutes). Fixed charges, usually small, are not addressed by CHP technology. Avoidance of peak demand charges requires a CHP system to always operate at extremely high efficiency, which is difficult to achieve in practice.

Our CHP products, being small and modular, are often installed as multiple units. This protects the customer to some degree from incurring peak demand charges at the full system rating. A single large generator has a good chance of going down briefly at some point during the monthly billing period. The customer would then have to buy more electricity to make up for it, possibly incurring a large demand charge. With a modular, multi-unit CHP system, all the units would have to fail simultaneously to incur an equivalent charge.

Our TECOCHILLS are highly effective in eliminating not only summertime electricity usage, but also peak demand charges. The chiller's operation is confined to the cooling season, allowing maintenance to be scheduled for other times. Outages during the cooling season can be managed to minimize their impact.

Avoided-Cost Penalties. In some regions, utilities have argued that CHP customers, by reducing their electric usage, have avoided paying their fair share of the costs associated with grid infrastructure. To correct this perceived inequity, some utilities have successfully petitioned their state commissions to impose a "departing load charge." Utilities have also been allowed to add a "standby" surcharge to compensate for the cost of utility power being available when the CHP system is down.

These types of charges are not prevalent in East Coast states, but both standby and departing load charges are well-established in California. Although our CHP products are affected, our chillers and heat pumps are not.

Technology-Specific Net Metering. Interconnection issues are safety-related and should be product-neutral, but technology bias is common. In many states, CHP is excluded from net metering while other technologies are eligible. Under net metering, utilities must pay on-site generators for excess electricity that's fed into the grid. Net metering makes it easier to manage the operation of a CHP system or other generator.

Other Utility-Related Regulations. Another category of utility regulation that might affect our business is Renewable Portfolio Standards, or RPS. Under this type of regulation, utilities must gradually increase the share of their power generation that comes from renewable sources. Among states with RPS mandates, 14 include CHP as an eligible technology. Together, these states account for more than half of the electricity sales in the United States. RPS-type mechanisms have been adopted in several other countries, including Britain, Italy, Poland, Sweden, Belgium, and Chile.

Overall, RPS appears to be a positive policy for Tecogen and CHP. Program structures, if fair and balanced, encourage less fossil fuel use by offering financial incentives to improve efficiency. Electric power generated from renewable sources would tend to increase overall electric rates and improve CHP investment returns. Since these programs are in their early stages, their impact is yet to be determined.

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A national carbon “cap and trade” program is not anticipated in the foreseeable future. Cap and trade programs seek to reduce carbon emissions by putting a price on them. Of possible impact to Tecogen is the cap and trade bill moving forward in the California legislature. The program’s details are still being reviewed and negotiated by various government and advocacy groups.

Employees

As of December 31, 2012 , the Company employed 61 full-time and 4 part-time employees. We believe that our relationship with our employees is satisfactory. None of our employees are represented by a collective bargaining agreement; however, a few of our New Jersey and New York City service employees have been in contact with a labor union, and we are currently negotiating with this labor union.

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Item 1A. Risk Factors

The securities offered herein are highly speculative and should be purchased only by persons who can afford to lose their entire investment in us. You should carefully consider the following risk factors and other information in this Annual Report on Form 10K before deciding to become a holder of our Common Stock. If any of the following risks actually occur, our business and financial results could be negatively affected to a significant extent.

Risks Relating to Our Business

Our business faces many risks. If any of the events or circumstances described in the following risks occurs, our business, financial condition, or results of operations could suffer and the trading price of our Common Stock (if and when it becomes publicly traded) could decline. Investors and prospective investors should consider the following risks and the information contained under the heading “Warning Concerning Forward-Looking Statements” before deciding whether to invest in our Common Stock.

Our operating history is characterized by net losses. We anticipate further losses, and we may never become profitable.

For each of our last five fiscal years and prior thereto, we have incurred annual operating losses. We expect this trend to continue until such time that we can sell a sufficient number of systems and achieve a cost structure to become profitable. We may not have adequate cash resources to reach the point of profitability, and we may never become profitable. Even if we do achieve profitability, we may be unable to increase our sales and sustain or increase our profitability in the future.

We experience significant fluctuations in revenues from quarter to quarter due to a preponderance of one-time sales.

We have low volume, high dollar sales for projects that are generally non-recurring, and therefore our sales have fluctuated significantly from period to period. For example, when compared to the previous quarter, our revenues in 2010 decreased during the first, second and fourth quarters and increased during the third quarter. In 2011, our revenue decreased during the first and fourth quarters and increased during the second and third quarters. In 2012, our revenues increased during the first, second and fourth quarters and decreased during the third quarter. Fluctuations cannot be predicted because they are affected by the purchasing decisions and timing requirements of our customers, which are unpredictable.

We may be unable to fund our future operating requirements, which could force us to curtail our operations.

To the extent that our funds are insufficient to fund our future operating requirements, we would need to raise additional funds through further public or private equity or debt financings depending upon prevailing market conditions. These financings may not be available to us, or if available, may be on terms that are not favorable to us and could result in significant dilution to our stockholders and reduction of the trading price of our stock (if then publicly traded). The state of worldwide capital markets could also impede our ability to raise additional capital on favorable terms or at all. If adequate capital were not available to us, we likely would be required to significantly curtail our operations or possibly even cease our operations.

We believe that our existing resources, including cash and cash equivalents and future cash flows from operations, are sufficient to meet the working capital requirements of our existing business through 2013. After that our cash requirements may increase.

If we experience a period of significant growth or expansion, it could place a substantial strain on our resources.

If our cogeneration and chiller products penetrate the market rapidly, we would be required to deliver even larger volumes of technically complex products or components to our customers on a timely basis and at a reasonable costs to us. We have never ramped up our manufacturing capabilities to meet large-scale production requirements. If we were to commit to deliver large volumes of products, we may not be able to satisfy these commitments on a timely and cost-effective basis.

If our existing resources, including cash and cash equivalents and future cash flows from operations are not sufficient to meet the working capital requirements of our existing business through 2013, our CEO has committed to provide any shortfall in the form of a demand note.

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The execution of our growth strategy is dependent upon the continued availability of third-party financing arrangements for our customers and is affected by general economic conditions.

The recent recession, current unstable economic conditions and limited availability of credit and liquidity could materially and adversely affect our business and results of operations because purchasers of our systems often require third party financing. Purchasers may be unable or unwilling to finance the cost to purchase our products or may be forced to cancel previously submitted orders or delay taking shipment until suitable credit is again available. Collecting payment from customers facing liquidity challenges is also difficult.

We are dependent on a limited number of third-party suppliers for the supply of key components for our products.

We use third-party suppliers for components in many of our products. Our engine supplier is GM. Our generator supplier for our cogeneration products, other than the InVerde is Marathon Electric. To produce air conditioning, our engines drive a compressor purchased from J&E Hall International. The loss of one of our suppliers could materially and adversely affect our business, if we are unable to replace them. While alternate suppliers for the manufacture of our engine, generator and compressor have been identified, should the need arise, there can be no assurance that alternate suppliers will be available and able to manufacture our engine, generator or compressor on acceptable terms.

From time to time, shipments can be delayed because of industry-wide or other shortages of necessary materials and components from third-party suppliers. A supplier's failure to supply components in a timely manner, or to supply components that meet our quality, quantity, or cost requirements, or our inability to obtain substitute sources of these components on a timely basis or on terms acceptable to us, could impair our ability to deliver our products in accordance with contractual obligations.

We expect significant competition for our products and services.

Competition for our products is currently limited (see “Competitive Position and Business Conditions” in the “Business” section of this prospectus). Many of our competitors and potential competitors are well established and have substantially greater financial, research and development, technical, manufacturing and marketing resources than we do. If these larger competitors decide to focus on the development of distributed power or cogeneration, they have the manufacturing, marketing and sales capabilities to complete research, development and commercialization of these products more quickly and effectively than we can. There can also be no assurance that current and future competitors will not develop new or enhanced technologies or more cost-effective systems, and therefore, there can be no assurance that we will be successful in this competitive environment.

The Executive Order to accelerate investments in industrial energy efficiency may lead to increased competition .

An Executive Order to accelerate investments in industrial energy efficiency, including CHP, was promulgated in August 2012. The goal of the Executive Order is to supply 40 gigawatts of energy by 2020 from greater efficiency such as CHP systems. With this Executive Order, it is expected that a number of barriers to CHP development will be removed with effective programs, policies, and financing opportunities resulting in significant new capital investment in CHP. This initiative by the U.S. government may lead to increased competition in the CHP market.

If we are unable to maintain our technological expertise in design and manufacturing processes, we will not be able to successfully compete.

We believe that our future success will depend upon our ability to continue to develop and provide innovative products and product enhancements that meet the increasingly sophisticated needs of our customers.

However, this requires that we successfully anticipate and respond to technological changes in design and manufacturing processes in a cost-effective and timely manner. The development of new, technologically advanced products and enhancements is a complex and uncertain process requiring high levels of innovation, as well as the accurate anticipation of technological and market trends. There can be no assurance that we will successfully identify new product opportunities, develop and bring new or enhanced products to market in a timely manner, successfully lower costs, and achieve market acceptance of our products, or that products and technologies developed by others will not render our products or technologies obsolete or noncompetitive.

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The introduction of products embodying new technologies, and the shifting of customer demands or changing industry standards, could render our existing products obsolete and unmarketable. We may experience delays in releasing new products and product enhancements in the future. Material delays in introducing new products or product enhancements may cause customers to forego purchases of our products and purchase those of our competitors.

Our intellectual property may not be adequately protected.

We seek to protect our intellectual property rights through patents, trademarks, copyrights, trade secret laws, confidentiality agreements and licensing arrangements, but we cannot ensure that we will be able to adequately protect our technology from misappropriation or infringement. We cannot ensure that our existing intellectual property rights will not be invalidated, circumvented, challenged or rendered unenforceable.

We have applied for and obtained patents on certain key components used in our products. Our competitors may successfully challenge the validity of our patents, may design non-infringing products, or deliberately infringe our patents. There can be no assurance that other companies are not investigating or developing other similar technologies. In addition, our intellectual property rights may not provide a competitive advantage to us or that our products and technology will be adequately covered by our patents and other intellectual property. Any of these factors or the expiration, termination or invalidity of one or more of our patents may have a material adverse effect on our business.

We have filed for patents in the U.S. and Europe for our Ultra low-emissions technology. The outcome of the patent office application review is important because this technology will apply to all of our gas engine-driven products and may have licensing application to other natural gas engines. There is no assurance, however, that the Ultra low-emissions patent applications will be approved.

Our control software is protected by copyright laws or under an exclusive license agreement. Further, we rely on treatment of our technology as trade secrets through confidentiality agreements, which our employees and vendors are required to sign. We also rely on non-disclosure agreements with others that have or may have access to confidential information to protect our trade secrets and proprietary knowledge. These agreements may be breached, and we may not have adequate remedies for any breach. Our trade secrets may also be or become known without breach of these agreements or may be independently developed by competitors. Failure to maintain the proprietary nature of our technology and information could harm our results of operations and financial condition.

Others may assert that our technology infringes their intellectual property rights.

We may be subject to infringement claims in the future. The defense of any claims of infringement made against us by third parties could involve significant legal costs and require our management to divert time from our business operations. If we are unsuccessful in defending any claims of infringement, we may be forced to obtain licenses or to pay additional royalties to continue to use our technology. We may not be able to obtain any necessary licenses on commercially reasonable terms or at all. If we fail to obtain necessary licenses or other rights, or if these licenses are costly, our operating results would suffer either from reductions in revenues through our inability to serve customers or from increases in costs to license third-party technologies.

Our success is dependent upon attracting and retaining highly qualified personnel and the loss of key personnel could significantly hurt our business.

To achieve success, we must attract and retain highly qualified technical, operational and executive employees. The loss of the services of key employees or an inability to attract, train and retain qualified and skilled employees, specifically engineering, operations, and business development personnel, could result in the loss of business or could otherwise negatively impact our ability to operate and grow our business successfully.

Our business is subject to product liability and warranty claims.

Our business exposes us to potential product liability claims, which are inherent in the manufacturing, marketing and sale of our products, and we may face substantial liability for damages resulting from the faulty design or manufacture of products or improper use of products by end users. We currently maintain a moderate level of product liability insurance, but there can be no assurance that this insurance will provide sufficient coverage in the event of a claim. Also, we cannot predict whether we will be able to maintain such coverage on acceptable terms, if at all, or that a product liability claim would not

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harm our business or financial condition. In addition, negative publicity in connection with the faulty design or manufacture of our products would adversely affect our ability to market and sell our products.

We sell our products with warranties. There can be no assurance that the provision in our financial statements for estimated product warranty expense will be sufficient. We cannot ensure that our efforts to reduce our risk through warranty disclaimers will effectively limit our liability. Any significant occurrence of warranty expense in excess of estimates could have a material adverse effect on our operating results, financial condition and cash flow. Further, we have at times undertaken programs to enhance the performance of units previously sold. These enhancements have at times been provided at no cost or below our cost. If we choose to offer such programs again in the future, such actions could result in significant costs.

Certain businesses and consumers might not consider cogeneration solutions as a means for obtaining their electricity and power needs.

Generating electricity and heat at the customers' building (on-site CHP) is an established technology, but it is more complex than buying electricity from the utility and using a furnace for heat. Customers have been slow to accept it in part because of this complexity. In addition, the development of a larger market for our products will be impacted by many factors that are out of our control, including cost competitiveness, regulatory requirements, and the emergence of newer and potentially better technologies and products. If a larger market for cogeneration technology in general and our products in particular fails to grow substantially, we may be unable to continue our business.

We operate in a highly regulated business environment, and changes in regulation could impose significant costs on us or could make our products less economical, thereby affecting demand for our products.

Several kinds of government regulations – at federal, state, and local levels and in other countries – affect our current and future business (see “Government Regulation and Its Effect on Our Business” in the “Business” section of this prospectus). Our products must comply with various local building codes and must undergo inspection by local authorities. Our products are also certified by a third party to conform to specific standards. These certifications require continuous verification by a company that monitors our processes and design every three months. Our InVerde product is also certified to Europe's standard CE mark (European Conformity), which is mandatory for products imported into the European Union for commercial sale. If our products ceased to meet the criteria necessary for the applicable certifications, we may lose the ability to sell our products in certain jurisdictions, which may materially and adversely affect our business.

Regulatory agencies may further impose special requirements for the implementation and operation of our products that could significantly affect or even eliminate some of our target markets. We also may incur material costs or liabilities in complying with future government regulations. Furthermore, our potential utility customers must themselves comply with numerous laws and regulations, which may be complicated by further deregulation of the utility industry. Furthermore, our potential utility customers must themselves comply with numerous laws and regulations, which may be complicated by further deregulation of the utility industry. We cannot determine how such deregulation may ultimately affect the market for our products. Changes in regulatory standards or policies could reduce the level of investment in the research and development of alternative power sources, including our products. Any reduction or termination of such programs could increase the cost to our potential customers, making our systems less desirable and thereby adversely affect our business and financial condition.

Utilities or governmental entities could hinder our entry into and growth in the marketplace, and we may not be able to effectively sell our products.

Utilities or governmental entities on occasion have placed barriers to the installation of our products or their interconnection with the electric grid, and they may continue to do so. Utilities may charge additional fees to customers who install on-site CHP and rely on the grid for back-up power. These types of restrictions, fees, or charges could make it harder for customers to install our products or use them effectively, as well as increasing the cost to our potential customers. This could make our systems less desirable, thereby adversely affecting our revenue and other operating results.

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We may not achieve production cost reductions necessary to competitively price our products, which would adversely affect our sales.

We believe that we will need to reduce the unit production cost of our products over time to maintain our ability to offer competitively priced products. Our ability to achieve cost reductions will depend on our ability to develop low-cost design enhancements, to obtain necessary tooling and favorable supplier contracts, and to increase sales volumes so we can achieve economies of scale. We cannot assure you that we will be able to achieve any such production cost reductions. Our failure to do so could have a material adverse effect on our business and results of operations.

We have granted sales representation rights to an affiliated company which restricts our distribution.

Our affiliates American DG Energy and EuroSite Power Inc. have certain exclusive sales representation rights to our cogeneration products only (not including chillers) and exclusive rights to our Ultra low-emissions technology if it is applied to engines from other CHP manufacturers in projects developed by American DG Energy (see “The Company and Its Affiliates” in the “Business” section of this prospectus). As a result of these agreements, we have limited control over our distribution of certain products in New England, and this could have a material adverse effect on our business and results of operations.

Commodity market factors impact our costs and availability of materials.

Our products contain a number of commodity materials, from metals, which include steel, special high temperature alloys, copper, nickel and molybdenum, to computer components. The availability of these commodities could impact our ability to acquire the materials necessary to meet our requirements. The cost of metals has historically fluctuated. The pricing could impact the costs to manufacture our products. If we are not able to acquire commodity materials at prices and on terms satisfactory to us or at all, our operating results may be materially adversely affected.

Our products involve a lengthy sales cycle and we may not anticipate sales levels appropriately, which could impair our results of operations.

The sale of our products typically involves a significant commitment of capital by customers, with the attendant delays frequently associated with large capital expenditures. For these and other reasons, the sales cycle associated with our products is typically lengthy and subject to a number of significant risks over which we have little or no control. We expect to plan our production and inventory levels based on internal forecasts of customer demand, which is highly unpredictable and can fluctuate substantially. If sales in any period fall significantly below anticipated levels, our financial condition, results of operations and cash flow would suffer. If demand in any period increases well above anticipated levels, we may have difficulties in responding, incur greater costs to respond, or be unable to fulfill the demand in sufficient time to retain the order, which would negatively impact our operations. In addition, our operating expenses are based on anticipated sales levels, and a high percentage of our expenses are generally fixed in the short term. As a result of these factors, a small fluctuation in timing of sales can cause operating results to vary materially from period to period.

The economic viability of our projects depends on the price spread between fuel and electricity, and the variability of these prices creates a risk that our projects will not be economically viable and that potential customers will avoid such energy price risks.

The economic viability of our CHP products depends on the spread between natural gas fuel and electricity prices. Volatility in one component of the spread, the cost of natural gas and other fuels (e.g., propane or distillate oil), can be managed to some extent by means of futures contracts. However, the regional rates charged for both base load and peak electricity may decline periodically due to excess generating capacity or general economic recessions.

Our products could become less competitive if electric rates were to fall substantially in the future. Also, potential customers may perceive the unpredictable swings in natural gas and electricity prices as an increased risk of investing in on-site CHP, and may decide not to purchase CHP products.

We are exposed to credit risks with respect to some of our customers.

To the extent our customers do not advance us sufficient funds to finance our costs during the execution phase of our contracts, we are exposed to the risk that they will be unable to accept delivery or that they will be unable to make payment at the time of delivery.

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We may make acquisitions that could harm our financial performance.

To expedite development of our corporate infrastructure, particularly with regard to equipment installation and service functions, we anticipate the future acquisition of complementary businesses. Risks associated with such acquisitions include the disruption of our existing operations, loss of key personnel in the acquired companies, dilution through the issuance of additional securities, assumptions of existing liabilities, and commitment to further operating expenses. If any or all of these problems actually occur, acquisitions could negatively impact our financial performance and future stock value.

Our ability to access capital for the repayment of debts and for future growth is limited because the financial markets are currently in a period of disruption and recession, and the Company does not expect these conditions to improve in the near future.

Our ability to continue to access capital could be impacted by various factors including general market conditions and the continuing slowdown in the economy, interest rates, the perception of our potential future earnings and cash distributions, any unwillingness on the part of lenders to make loans to us, and any deterioration in the financial position of lenders that might make them unable to meet their obligations to us.

Our business is affected by general economic conditions and related uncertainties affecting the markets in which we operate. The current unstable economic conditions including the global recession could adversely impact our business in 2013 and beyond.

The current unstable economic conditions could adversely impact our business in 2013 and beyond, resulting in reduced demand for our products, increased rate of order cancellations or delays, increased risk of supplier bankruptcy, increased rate of supply order cancellation or delays, increased risk of excess and obsolete inventories, increased pressure on the prices for our products and services; and greater difficulty in collecting accounts receivable.

Risks Related to Ownership of our Common Stock

We could issue additional Common Stock, which might dilute the book value of our Common Stock.

Our board of directors has the authority, without action or vote of our stockholders, to issue all or a part of any authorized but unissued shares. Such stock issuances may be made at a price that reflects a discount from the then-current trading price of our Common Stock. We may issue securities that are convertible into or exercisable for a significant amount of our Common Stock. These issuances would dilute your percentage ownership interest, which would have the effect of reducing your influence on matters on which our stockholders vote, and might dilute the book value of our Common Stock. You may incur additional dilution of net tangible book value if holders of stock options, whether currently outstanding or subsequently granted, exercise their options or if warrant holders exercise their warrants to purchase shares of our Common Stock. There can be no assurance that any future offering will be consummated or, if consummated, will be at a share price equal or superior to the price paid by our investors even if we meet our technological and marketing goals.

Our quarterly operating results are subject to fluctuations, and if we fail to meet the expectations of securities analysts or investors, our share price may decrease significantly.

Our annual and quarterly results may vary significantly depending on various factors, many of which are beyond our control. If our earnings do not meet the expectations of securities analysts or investors, the price of our stock could decline. Also, because our sales are primarily made on a purchase order basis, customers may generally cancel, reduce

or postpone orders, resulting in reductions to our net sales and profitability.

Investment in our Common Stock is subject to price fluctuations and market volatility.

Historically, valuations of many small companies have been highly volatile. The securities of many small companies have experienced significant price and trading volume fluctuations, unrelated to the operating performance or the prospects of such companies.

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Future sales of Common Stock by our existing stockholders may cause our stock price to fall.

The market price of our Common Stock could decline as a result of sales by our existing stockholders of shares of Common Stock in the market or the perception that these sales could occur. These sales might also make it more difficult for us to sell equity securities at a time and price that we deem appropriate and thus inhibit our ability to raise additional capital when it is needed.

Because we do not intend to pay cash dividends, our stockholders will receive no current income from holding our stock.

We have paid no cash dividends on our capital stock to date and we currently intend to retain all of our future earnings, if any, to fund the development and growth of our business. In addition, the terms of any future debt or credit facility may preclude us from paying these dividends. As a result, capital appreciation, if any, of our Common Stock will be your sole source of gain for the foreseeable future.

We are controlled by a small group of majority stockholders, and our minority stockholders will be unable to effect changes in our governance structure or implement actions that require stockholder approval, such as a sale of the Company.

George N. Hatsopoulos and John N. Hatsopoulos, who are brothers, beneficially own approximately 53.3% of our outstanding shares of Common Stock. These stockholders have the ability to control various corporate decisions, including our direction and policies, the election of directors, the content of our charter and bylaws and the outcome of any other matter requiring stockholder approval, including a merger, consolidation and sale of substantially all of our assets or other change of control transaction. The concurrence of our minority stockholders will not be required for any of these decisions.

We are controlled by our two founding shareholders, George N. Hatsopoulos and John N. Hatsopoulos. These shareholders have registered all of their holdings for resale therefore are able to sell all of their Common Stock.

John N. Hatsopoulos (78) and George N. Hatsopoulos (86) are registering all of their holdings for resale primarily for estate planning purposes. For that reason, the timing and the amount of any future sales by them is difficult to predict. George Hatsopoulos is a director but not an officer of the Company. John Hatsopoulos is the Chief Executive Officer and a key employee of the Company. If John Hatsopoulos or George Hatsopoulos were to sell a substantial portion of their shares in the Company, they would no longer have a substantial continuing interest in the Company. If that were to occur, it may have a material adverse effect on their performance as director or Chief Executive Officer, as applicable, and on the business of the Company. Further, substantial sales of their common stock may result in a decline in the market price of our Common Stock.

There has been a material weakness in our disclosure controls and procedures and our internal control over financial reporting, which could harm our operating results or cause us to fail to meet our reporting obligations.

As of our fiscal year end, December 31, 2012, our principal executive officer and principal accounting officer performed an evaluation of controls and procedures and concluded that our controls were not effective to provide reasonable assurance that information required to be disclosed by our Company in reports that we file under the Exchange Act, is recorded, processed, summarized and reported as when required. Management conducted an evaluation of our internal control over financial reporting and based on this evaluation, management concluded that the company's internal control over financial reporting was not effective as of December 31, 2012. The Company currently does not have personnel with a sufficient level of accounting knowledge, experience and training in the

selection, application and implementation of generally acceptable accounting principles as it relates to complex transactions and financial reporting requirements. The Company also has a small number of employees dealing with general controls over information technology security and user access. This constitutes a material weakness in financial reporting. Any failure to implement effective internal controls could harm our operating results or cause us to fail to meet our reporting obligations. Inadequate internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our common stock, and may require us to incur additional costs to improve our internal control system.

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Trading of our Common Stock may be restricted by the SEC's "penny stock" regulations which may limit a stockholder's ability to buy and sell our stock.

The SEC has adopted regulations which generally define "penny stock" to be any equity security that has a market price less than \$5.00 per share or an exercise price of less than \$5.00 per share, subject to certain exceptions. Our securities may be covered by the penny stock rules, which impose additional sales practice requirements on broker-dealers who sell to persons other than established customers and accredited investors. The penny stock rules require a broker-dealer, prior to a transaction in a penny stock not otherwise exempt from the rules, to deliver a standardized risk disclosure document in a form prepared by the SEC that provides information about penny stocks and the nature and level of risks in the penny stock market. The broker-dealer also must provide the customer with current bid and other quotations for the penny stock, the compensation of the broker-dealer and its salesperson in the transaction and monthly account statement showing the market value of each penny stock held in the customer's account. The bid and offer quotations, and the broker-dealer and salesperson compensation information, must be given to the customer orally or in writing prior to effecting the transaction and must be given to the customer in writing before or with the customer's confirmation. In addition, the penny stock rules require that prior to a transaction in a penny stock not otherwise exempt from these rules, the broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's written agreement to the transaction. These disclosure and suitability requirements may have the effect of reducing the level of trading activity in the secondary market for a stock that is subject to these penny stock rules. Consequently, these penny stock rules may affect the ability of broker-dealers to trade our securities. We believe that the penny stock rules may discourage investor interest in and limit the marketability of our capital stock. Trading of our capital stock may be restricted by the SEC's "penny stock" regulations which may limit a stockholder's ability to buy and sell our stock.

The recently enacted JOBS Act will allow us to postpone the date by which we must comply with certain laws and regulations and will reduce the amount of information provided by us in reports filed with the SEC. We cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our common stock less attractive to investors.

We are and we will remain an "emerging growth company", as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, until the earliest to occur of (i) the last day of the fiscal year during which our total annual gross revenues equal or exceed \$1 billion (subject to adjustment for inflation), (ii) the last day of the fiscal year following the fifth anniversary of our initial public offering, (iii) the date on which we have, during the previous three-year period, issued more than \$1 billion in non-convertible debt, or (iv) the date on which we are deemed a large accelerated filer under the Exchange Act.

For so long as we remain an emerging growth company as we will not be required to:

- have an auditor report on our internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act;
- comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements (i.e., an auditor discussion and analysis);
- submit certain executive compensation matters to shareholder non-binding advisory votes;
- submit for shareholder approval golden parachute payments not previously approved; and
- disclose certain executive compensation related items such as the correlation between executive compensation and financial performance and comparisons of the Chief Executive Officer's compensation to median employee compensation, when such disclosure requirements are adopted.

In addition, Section 107 of the JOBS Act also provides that an emerging growth company can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. An emerging growth company can therefore delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. However, we are choosing to “opt out” of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

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We cannot predict if investors will find our common stock less attractive because we may rely on some of these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile. If we avail ourselves of certain exemptions from various reporting requirements, our reduced disclosure may make it more difficult for investors and securities analysts to evaluate us and may result in less investor confidence.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our headquarters is located in Waltham, Massachusetts and consists of approximately 27,000 square feet of manufacturing, storage and office space that is shared with Ilios, American DG Energy and other tenants. Our lease, with an original expiration of on March 31, 2014 was renewed for an additional ten years and will expire March 31, 2024. We believe that our facilities are appropriate and adequate for our current needs.

Item 3. Legal Proceedings.

We are not currently a party to any material litigation, and we are not aware of any pending or threatened litigation against us that could have a material adverse affect on our business, operating results or financial condition.

Item 4. Mine Safety Disclosures.

Not applicable.

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PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Market

Our common stock is not currently traded on any stock exchange or electronic quotation system.

Holdings

As of March 27, 2013 there were 110 holders of record of our Common Stock including 9 beneficial holders.

Dividends

To date, we have not declared or paid any dividends on our outstanding shares. We currently do not anticipate paying any cash dividends in the foreseeable future on our Common Stock. Although we intend to retain our earnings to finance our operations and future growth, our Board of Directors will have discretion to declare and pay dividends in the future. Payment of dividends in the future will depend upon our earnings, capital requirements and other factors, which our Board of Directors may deem relevant.

Equity Compensation Plans

For disclosure of securities authorized for issuance under equity compensation plans please see "Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters".

Recent Sales of Unregistered Securities

Set forth below is information regarding Common Stock issued, warrants issued and stock options granted by the Company during 2012. Also included is the consideration, if any, we received and information relating to the section of the Securities Act, or rule of the SEC, under which exemption from registration was claimed.

Common Stock and Warrants

On May 24, 2012, the Company raised \$480,000 in a private placement of 600,000 shares of Common Stock at a price of \$0.80 per share. Included in those shares are 250,000 shares to Bruno Meier, 100,000 shares to Hans Schopper and 250,000 shares to Pictet Bank & Trust. Such transactions were exempt from registration under Section 4(a)(2) of the Securities Act and/or under Rule 506 of Regulation D.

On September 30, 2012, certain holders of the debentures converted the principal amount of \$100,000 and accrued interest in the amount of \$6,100 into 340,960 shares of the Company's Common Stock. Included in those shares are 170,480 shares to Paris & Aliko Nikolaidis, Trustees for the John N. Hatsopoulos Family Trust for the benefit of Nia Marie Hatsopoulos and 170,480 shares to Paris & Aliko Nikolaidis, Trustees for the John N. Hatsopoulos Family Trust for the benefit of Alexander John Hatsopoulos. Such transaction was exempt from registration under Section 3(a)(9) of the Securities Act and/or under Rule 506 of Regulation D.

On December 3, 2012, the Company raised \$200,000 in a private placement of 250,000 shares of Common Stock at a price of \$0.80 per share. The private placement was done by Bruno Meier, an accredited investor. Such transaction

was exempt from registration under Section 4(a)(2) of the Securities Act and/or under Rule 506 of Regulation D.

Stock Options

On August 29, 2012, the Company granted nonqualified options to purchase 50,000 shares of Common Stock to one consultant at \$0.80 per share. The grant of such options was exempt from registration under Rule 701 under the Securities Act.

On December 31, 2012, the Company granted nonqualified options to purchase 20,000 shares of Common Stock to one employee at \$0.80 per share. The grant of such options was exempt from registration under Rule 701 under the Securities Act.

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No underwriters were involved in the foregoing sales of securities. All purchasers represented to us in connection with their purchase that they were accredited investors and made other customary investment representations. All of the foregoing securities were deemed restricted securities when granted for purposes of the Securities Act.

Item 6. Selected Financial Data.

Not applicable.

Item 7. Management's Discussion and Analysis of Financial Condition

You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and related notes appearing elsewhere in this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report on Form 10-K, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. You should review "Item 1A. Risk Factors" of this Annual Report on Form 10-K for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

During the last two fiscal years there has been a slowdown in the economy, a decline in the availability of financing from the capital markets, and a widening of credit spreads which has, or may in the future, adversely affect us to varying degrees. Such conditions may impact our ability to meet obligations to our suppliers and other third parties. These market conditions could also adversely affect the amount of revenue we report, require us to increase our allowances for losses, result in impairment charges and valuation allowances that decrease our equity, increase our loss and reduce our cash flows from operations. In addition, these conditions or events could impair our credit rating and our ability to raise additional capital.

Overview

Tecogen designs, manufactures and sells industrial and commercial cogeneration systems that produce combinations of electricity, hot water, and air conditioning using automotive engines that have been specially adapted to run on natural gas. Cogeneration systems are efficient because in addition to supplying mechanical energy to power electric generators or compressors – displacing utility supplied electricity – they provide opportunity for the facility to incorporate the engine's waste heat into onsite processes such as space and potable water heating. We produce standardized, modular, small-scale products, with a limited number of product configurations that are adaptable to multiple applications. We refer to these combined heat and power products as CHP (electricity plus heat) and MCHP (mechanical power plus heat).

Our products are sold directly to end-users by our in-house marketing team and by established sales agents and representatives. Various agreements are in place with distributors and sales representatives, including American DG Energy and EuroSite Power which are affiliated companies. Our existing customers include hospitals and nursing homes, colleges and universities, health clubs and spas, hotels and motels, office and retail buildings, food and beverage processors, multi-unit residential buildings, laundries, ice rinks, swimming pools, factories, municipal buildings, and military installations. We have an installed base of more than 2,100 units. Many of these have been operating for almost 25 years.

In 2009 we created a majority-owned subsidiary Ilios to develop and distribute a line of ultra-high-efficiency heating products, including a high efficiency water heater. These products provide twice the efficiency of conventional commercial and industrial boilers (based upon management estimates) utilizing advanced thermodynamic principles. As of the date of this report, we own a 65.0% interest in Ilios.

For each of our last five fiscal years and prior thereto, we have incurred annual operating losses. We expect this trend to continue until such time that we can sell a sufficient number of systems and achieve a cost structure to become profitable. We may not have adequate cash resources to reach the point of profitability, and we may never become profitable. Even if we do achieve profitability, we may be unable to increase our sales and sustain or increase our profitability in the future.

Although we may, from time to time, have one or a few customers who may represent more than 10% of our product revenue for a given year, we are not dependent on the recurrence of such revenue from those customers. Our product revenue is such that customers may make a large purchase once and may not ever make such a purchase again. Our equipment is built to last 20 or more years, therefore, we do not build our product revenue model depending on recurring transactions from the same customer. Our service revenue may lend itself to recurring revenue from a single customer; however, we currently do not have any service revenue customers who make up more than 10% of our total revenues on an annual basis. American DG Energy has

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been considered a major customer in certain years, as disclosed in the accompanying financial statements; however, we do not consider our business as “dependent” upon its recurrence.

For the last two fiscal years, more than half of our revenue was generated from long-term maintenance contracts, or service contracts, which provide us with a somewhat predictable revenue stream, especially during the summer months. We have a slight surge of activity from May through September as our “chiller season” is in full swing. Our service revenue has grown from year to year since 2005, with our New York City/New Jersey, New England and to some extent California territories experiencing the majority of the growth. This growth is consistent with the sale of new units into those territories. Our service margins are generally predictable as we service hundreds of long-term contracts with relatively low dollar, high volume sales. Fluctuations at the job level are to be expected however, due to the number of jobs, gross margin generally evens out on the aggregate.

Our product revenue is derived from the sale of the various cogeneration modules, such as the InVerde 100, the CM-75 and the CM-60, and the three chiller models, such as the smaller ST, the larger DT and the RT (roof-top) units. The sales cycle for each module varies widely, whereby it can be as short as a month to as long as a year or more. The length of the sales cycle is generally dependent upon on the number of decision makers in our customer’s facility as well as the size of the project. Furthermore, since our products and their installation are costly they are considered a major capital improvement and customers may be slow in making their buy decision. Our products sales are high dollar value, low volume transactions. Therefore our product revenue can be difficult to predict and the expected margin, which is based on the various models we offer, also varies therefore it is difficult to forecast revenues with accuracy and significant fluctuations are to be expected.

Our cogeneration and chiller modules are built to order and revenue is recognized upon shipment. The lead time to build and deliver a unit depends on its customized configuration and is approximately 12 to 16 weeks from time of purchase order. As revenue is recognized upon shipment, our work-in-process is an important factor in understanding our financial condition in any given quarter.

Recent Accounting Pronouncements

For recent accounting pronouncements see “Note 2 – Summary of significant accounting policies” to our consolidated financial statements.

Critical Accounting Policies

For critical accounting policies see “Note 2 – Summary of significant accounting policies” to our consolidated financial statements.

Results of Operations

Year Ended December 31, 2012 Compared to Year Ended December 31, 2011

Revenues

Revenues in 2012 were \$15,253,972 compared to \$11,065,210 in 2011, an increase of \$4,188,762 or 37.9%. This increase is largely due to an increase in the volume of product sales during the year together with an increase in service revenue. Product revenues in 2012 were \$7,453,222 compared to \$4,569,113 in 2011, an increase of \$2,884,109 or 63.1%. This increase from the year ended December 31, 2011 to 2012 was the aggregate of an increase in cogeneration sales of \$3,054,251 and a decrease in chiller sales of \$170,142. Our product mix, as well as product

revenue, can vary significantly from period to period as our products are high dollar, low volume sales. As a result, such fluctuation is expected.

Service revenues in 2012 were \$7,800,750 compared to \$6,496,097 for the same period in 2011, an increase of \$1,304,653 or 20.1%. Our service operation grows along with sales of cogeneration and chiller systems since the majority of our product sales are accompanied by a service contract or time and materials agreement. As a result our “fleet” of units being serviced by our service department naturally grows with product sales.

Cost of Sales

Cost of sales in 2012 was \$9,388,898 compared to \$6,179,098 in 2011 an increase of \$3,209,800 , or 51.9%. Our gross profit margin was 38.4% in 2012 compared to 44.2% in 2011, a decrease of 5.8%. The decrease in overall gross margin is attributable to the sale of lower margin cogeneration units sold to an affiliated company.

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Contract Research and Development

Contract research and development income, which is classified as an offset to applicable expenses, for the years ended December 31, 2012 and 2011 was \$126,500 and \$239,000, respectively, a decrease of \$112,500. The majority of this decrease is due to the conclusion and wrap up of a research and development contract which ended on June 30, 2011.

Operating Expenses

Operating expenses increased in 2012 to \$7,868,700 compared to \$6,769,014 in 2011, an increase of \$1,099,686 or 16.2%. This increase was due to a combination of increases in expenses such as salaries, outside labor and other payroll related expenses of approximately \$570,000 due to the addition of several exempt and non-exempt employees, audit and other professional fees of \$115,000, internal research and development of \$135,000 and attendance at trade shows and the related travel expenses of approximately \$200,000 and various other expenses.

Selling expenses within this category increased in 2012 to \$1,225,580 compared to \$782,252 for the same period in 2011 due to the Company's efforts in creating a stronger sales and marketing team which began in 2011. This effort included hiring new personnel for both sales and marketing and hiring a public relations firm. In addition to the above, during the year ended December 31, 2012 the Company invested approximately \$200,000 in trade shows and a traveling "road show" where three of the Company's products were showcased on an enclosed trailer which traveled up and down the west coast. During the same period in 2011 the Company incurred approximately \$50,000 in trade show expenses.

Loss from Operations

Loss from operations for the year ended December 31, 2012 was \$2,003,626 compared to \$1,882,902 for the same period in 2011. The increase in the loss of \$120,724 was due to the increase in operating expenses discussed above.

Other Income (Expense), net

Other expense, net for the year ended December 31, 2012 was \$22,811 compared to \$1,892 for the same period in 2011. Other income (expense) includes interest income and other income of \$48,397, net of interest expense on notes payable of \$71,208 in 2012. For the same period in 2011, interest and other income was \$38,402 and interest expense was \$40,294. The increase in interest income of \$9,995 is the result of short-term investments held for the majority of 2012 that did not exist for most of 2011. The increase in interest expense of \$30,914 was mainly due to \$750,000 of demand notes payable issued during the third quarter of 2011.

Provision for Income Taxes

The Company did not record any benefit or provision for income taxes for the years ended December 31, 2012 and 2011, respectively. As of December 31, 2012 and 2011, the income tax benefits generated from the Company's net losses have been fully reserved.

Noncontrolling Interest

The noncontrolling interest share in the losses of Ilios was \$389,480 for the year ended December 31, 2012 compared to \$310,293 for the same period in 2011, an increase of \$79,187 or 25.5%. The increase was due to additional payroll costs that Ilios incurred in 2012, associated with the hiring of its Chief Operating Officer in June of 2011. Additional

expenses included increased stock compensation expense and trade shows and travel related expenses associated with bringing the product to market. Noncontrolling interest ownership percentage as of December 31, 2012 and 2011 was 35.0% and 32.6%, respectively.

Liquidity and Capital Resources

Consolidated working capital at December 31, 2012 was \$4,078,704, compared to \$4,935,145 at December 31, 2011, a decrease of \$856,441 or 17.4%. Included in working capital were cash and cash equivalents of \$1,572,785 and short-term investments of \$181,859 at December 31, 2012, compared to \$3,018,566 in cash and cash equivalents and \$683,428 in short-term investments at December 31, 2011.

Cash used in operating activities for the years ended December 31, 2012 and 2011 was \$3,152,782 and \$2,409,620. Our accounts receivable balance increased to \$2,700,243 at December 31, 2012 compared to \$1,399,232 at December 31, 2011,

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using \$1,358,611 of cash due to timing of billing, shipments and collections. Our inventory increased to \$3,356,622 as of December 31, 2012 compared to \$2,568,986 as of December 31, 2011, using \$760,836 of cash to purchase inventory to build modules in backlog. Prepaid assets as of December 31, 2012 increased to \$402,846 compared to \$112,716, using \$290,130 of cash.

Accounts payable increased to \$1,151,010 as of December 31, 2012 from \$812,214 at December 31, 2011, providing \$338,796 in cash to purchase inventory. Deferred revenue increased to \$677,919 as of December 31, 2012 from \$509,283 as of December 31, 2011 providing \$127,523.

During 2012 our investing activities provided \$122,338 of cash and included sales of short-term investments of \$506,345, purchases of property and equipment of \$219,711 and expenditures related to intangible assets of \$164,296. Our consolidated financing activities provided \$1,584,663 of cash during 2012 from the sale of the Company's common stock and the sale of Ilios common stock to accredited investors as well as payments received on notes receivable from a stockholder.

At December 31, 2012 our commitments included various leases for office and warehouse facilities of \$5,887,425 to be paid over several years through 2024. The source of funds to fulfill these commitments will be provided either from cash and short-term investment balances, operations or through debt or equity financing.

On March 14, 2013 the Company received a prepayment for future 2013 purchases of modules, parts and service from a related party in the amount of \$827,747. The Company will provide a discount on these prepaid purchases equal to 6% per annum on deposit balances.

On March 25, 2013 the Company secured a working capital line of credit with John Hatsopoulos in the amount of \$1,000,000.

Based on our current operating plan, we believe existing resources, including cash and cash flows from operations, will be sufficient to meet our working capital requirements for the next twelve months. As we continue to grow our business, our cash requirements may increase. As a result, we may need to raise additional capital through a debt financing or an equity offering to meet our operating and capital needs for future growth.

Our ability to continue to access capital could be impacted by various factors including general market conditions and the continuing slowdown in the economy, interest rates, the perception of our potential future earnings and cash distributions, any unwillingness on the part of lenders to make loans to us and any deterioration in the financial position of lenders that might make them unable to meet their obligations to us. If these conditions continue and we cannot raise funds through a public or private debt financing, or an equity offering, our ability to grow our business may be negatively affected and we may need to suspend and significantly reduce our operating costs until market conditions improve.

Seasonality

We expect that the majority of our heating systems sales will be in the winter and the majority of our chilling systems sales will be in the summer. Our cogeneration and chiller system sales are not generally affected by the seasons, although customer goals will be to have chillers installed and running in the spring. Our service team does experience higher demand in the warmer months when cooling is required. These units are generally shut down in the winter and started up again in the spring. This "busy season" for the service team generally runs from May through the end of September.

Off Balance Sheet Arrangements

The Company currently has no material off balance sheet arrangements and has no plans to enter into any such arrangements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Not applicable.

Item 8. Financial Statements and Supplementary Data.

The information required by this item is included in Item 15 of this Annual Report on Form 10-K.

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Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Management's Evaluation of Disclosure Controls and Procedures:

Our disclosure controls and procedures are designed to provide reasonable assurance that the control system's objectives will be met. Our management, including our Chief Executive Officer and Chief Financial Officer, after evaluating the effectiveness of our disclosure controls and procedures as of December 31, 2012, or the Evaluation Date, have concluded that as of the Evaluation Date, our disclosure controls and procedures were not effective due to material weaknesses in financial reporting relating to lack of personnel with a sufficient level of accounting knowledge and a small number of employees dealing with general controls over information technology. At the present time, our management has decided that, considering the employees involved and the control procedures in place, there are risks associated with the above, but the potential benefits of adding additional employees to mitigate these weaknesses do not justify the expenses associated with such increases. Management will continue to evaluate the above weaknesses, and as the Company grows and resources become available, the Company plans to take the necessary steps in the future to remediate the weaknesses.

For these purposes, the term disclosure controls and procedures of an issuer means controls and other procedures of an issuer that are designed to ensure that information required to be disclosed by the issuer in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by an issuer in the reports that it files or submits under the Exchange Act is accumulated and communicated to the issuer's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

Management's Annual Report on Internal Control over Financial Reporting:

The management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting in accordance with the Exchange Act. Management, including our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of our internal control over financial reporting based on the framework and criteria established in Internal Control—Integrated Framework, issued by the Committee of Sponsoring Organizations of the Treadway Commission. This evaluation included review of the documentation of controls, evaluation of the design effectiveness of controls, testing of the operating effectiveness of controls and a conclusion of this evaluation. Based on this evaluation, management concluded that the Company's internal control over financial reporting was not effective as of December 31, 2012.

At December 31, 2012, the Company employed 61 active full-time employees and 4 part-time employees. The Company currently does not have personnel with a sufficient level of accounting knowledge, experience and training in the selection, application and implementation of generally accepted accounting principles as it relates to complex transactions and financial reporting requirements. The Company also has a small number of employees dealing with general controls over information technology security and user access. This constitutes a material weakness in financial reporting. At this time, management has decided that considering the employees involved and the control procedures in place, there are risks associated with the above, but the potential benefits of adding additional employees to mitigate these weaknesses, does not justify the expenses associated with such increases. Management will continue to evaluate the above weaknesses.

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our Disclosure Controls or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within the Company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of a simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of controls effectiveness to future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

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Item 9B. Other Information.

None.

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PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Executive

The following table lists the current members of our board of directors, or Board of Directors, and our executive officers. The address for our directors and officers is c/o Tecogen Inc., 45 First Avenue, Waltham, Massachusetts 02451. The following sets forth certain information regarding our current executive officers and directors.

Name	Age	Position(s)
Angelina M. Galiteva (1)(2)	46	Chairperson of the Board and Director
John N. Hatsopoulos	78	Chief Executive Officer and Director
Robert A. Panora	58	Chief Operating Officer and President
Bonnie J. Brown	50	Chief Financial Officer, Treasurer and Secretary
George N. Hatsopoulos	86	Director
Dr. Ahmed F. Ghoniem (2)(3)	61	Director
Charles T. Maxwell (1)(3)	81	Director
Joseph E. Aoun (2)(3)	60	Director

(1) Member of Audit Committee

(2) Member of Compensation Committee

(3) Member of the Nominating and Governance Committee

Angelina M. Galiteva, age 46, has been our Chairperson of the Board since 2005. She is founder and Chair of the Board for the Renewables 100 Policy Institute, a non-profit entity dedicated to the global advancements of renewable energy solutions since 2008. Ms. Galiteva is also Chairperson at the World Council for Renewable Energy (WCRE) which focuses on the development of legislative and policy initiatives to facilitate the introduction and growth of renewable energy technologies since 2003. Ms. Galiteva is the governor's appointee to the California Independent System Operator (CA ISO), providing direction and oversight for the California ISO which operates the California electricity grid. Also, Ms. Galiteva is a principal at New Energy Options, Inc., a company focusing on advancing the integration of sustainable energy solutions since 2006. Ms. Galiteva holds a Master's degree in Environmental and Energy Law, a law degree from Pace University School of Law, and a bachelor's degree from Sofia University in Bulgaria.

Our board of directors has determined that Ms. Galiteva's prior experience in the energy field qualify her to be a member of the board of directors in light of the Company's business and structure.

John N. Hatsopoulos, age 78, has been the Chief Executive Officer of the Company since the organization of the Company in 2000. He has also been the Chief Executive Officer of American DG Energy Inc., (NYSE MKT: ADGE), a publicly traded company in the On-Site Utility business since 2000, and the Chairman of EuroSite Power Inc., a subsidiary of American DG Energy Inc. since 2009. Mr. Hatsopoulos is a co-founder of Thermo Electron Corporation, which is now Thermo Fisher Scientific (NYSE: TMO), and the retired President and Vice Chairman of the Board of Directors of that company. He is a member of the Board of Directors of Ilios Inc., GlenRose Instruments Inc., Agenesis Inc. (NASDAQ: AGEN), American CareSource Holdings, Inc. (NASDAQ: ANCI) and TEI Biosciences Inc., and is a former Member of the Corporation of Northeastern University. The Company, American DG Energy Inc., EuroSite

Power Inc., and GlenRose Instruments Inc., are affiliated companies by virtue of common ownership. Mr. Hatsopoulos graduated from Athens College in Greece, and holds a bachelor's degree in history and mathematics from Northeastern University, as well as honorary doctorates in business administration from Boston College and Northeastern University.

Mr. Hatsopoulos is the Company's Chief Executive Officer and is also the Chief Executive Officer of American DG Energy and the Chairman of GlenRose Instruments. On average, Mr. Hatsopoulos spends approximately 20% of his business time on the affairs of the Company; however such amount varies widely depending on the needs of the business and is expected to increase as the business of the Company develops.

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Our board of directors has determined that Mr. Hatsopoulos' prior experience as co-founder, president and Chief Financial Officer of Thermo Electron Corporation, where he demonstrated leadership capability and gained extensive expertise involving complex financial matters, and his extensive knowledge of complex financial and operational issues qualify him to be a member of the board of directors in light of the Company's business and structure.

Robert A. Panora, age 58, has been our Chief Operating Officer and President since the organization of the Company in 2000. He had been General Manager of Tecogen's Product Group since 1990 and Manager of Product Development, Engineering Manager, and Operations Manager of the Company since 1984. Over his 27-year tenure with Tecogen, Mr. Panora has been responsible for sales and marketing, engineering, service, and manufacturing. Mr. Panora contributed to the development of Tecogen's first product, the CM-60 cogeneration system, and was Program Manager for the cogeneration and chiller projects that followed. Mr. Panora has had considerable influence on many aspects of Tecogen's business, from building the employee team, to conceptualizing product designs and authoring many of the original business documents, sales tools, and product literature pieces. Mr. Panora has a bachelor's and master's degrees in Chemical Engineering from Tufts University.

Bonnie J. Brown, age 50, has been our Chief Financial Officer since 2007, our Secretary since 2010 and our Treasurer as of January 1, 2013. Ms. Brown joined the Company in 2005 as Controller. She has also been the Chief Financial Officer of Ilios Inc. since its inception in 2009. Prior to joining Tecogen, Ms. Brown was a partner at Sullivan Bille PC, a regional accounting firm, for 15 years where she provided financial, accounting, audit, tax, and business consulting services for mid-sized companies. Ms. Brown has also worked at Enterprise Bank and Trust (NASDAQ:EBTC) as project manager for special assignments including branch acquisitions and information systems transitions in the trust department eventually serving as Internal Audit Director, establishing an in-house audit function. She has also provided independent contractor services for a wide variety of publicly traded and closely held companies, including consulting, internal control and Sarbanes-Oxley compliance services. Ms. Brown is a CPA and holds a B.S. in Accountancy from Bentley College and an M.S. in Computer Information Systems from Boston University.

George N. Hatsopoulos, age 86, has been a member of our Board since the organization of the Company in 2000. He is the founder and Chief Executive Officer of Pharos, LLC, an organization devoted to the creation of leading edge business ventures and he is a member of the Board of Directors of American DG Energy Inc., an affiliated company by virtue of common ownership. He is the founder and chairman emeritus of Thermo Electron Corporation and served as Chairman and Chief Executive Officer since its founding in 1956 until his retirement from those positions in 1999. Dr. Hatsopoulos has served on the board of the Federal Reserve Bank of Boston, including a term as chairman. He was a member of the Securities and Exchange Commission Advisory Committee on Capital Formation and Regulatory Process, the Advisory Committee of the U.S. Export-Import Bank, and the boards of various corporations and institutions. Dr. Hatsopoulos is a fellow of the American Academy of Arts and Sciences, the American Society of Mechanical Engineers and other scientific and technical organizations. He is the recipient of numerous honors and awards in engineering, science, industry and academics, has authored over 60 articles in professional journals, and is the principal author of textbooks on thermodynamics and thermionic energy conversion. Dr. Hatsopoulos has been a faculty member and senior lecturer at Massachusetts Institute of Technology and continues his association with MIT as a Life Member of the Corporation. Dr. Hatsopoulos holds bachelors, masters and doctorate degrees from MIT, all in mechanical engineering.

Our board of directors has determined that Dr. Hatsopoulos' prior experience as founder, chairman and Chief Executive Officer of Thermo Electron Corporation, where he demonstrated leadership capability and gained extensive expertise involving complex financial matters, and his extensive knowledge of complex financial and operational issues qualify him to be a member of the board of directors in light of the Company's business and structure.

Ahmed H. Ghoniem, age 61, has been a member of our Board since 2008. He is the Ronald C. Crane Professor of Mechanical Engineering at MIT. He is also the director of the Center for 21st Century Energy, and the head of Energy Science and Engineering at MIT, where he plays a leadership role in many energy-related activities, initiatives and programs. Mr. Ghoniem joined MIT as an assistant professor in 1983. He is an associate fellow of the American Institute of Aeronautics and Astronautics, and Fellow of American Society of Mechanical Engineers. Recently, he was granted the KAUST Investigator Award. He is a member of the Board of Directors of EuroSite Power Inc., and Ilios Inc., which are affiliated companies by virtue of common ownership. Mr. Ghoniem holds a Ph.D. in Mechanical Engineering from the University of California, Berkeley, and an M.S. and B.S. in Mechanical Engineering from Cairo University.

Our Board of Directors has determined that Dr. Ghoniem's prior experience as a Professor of Mechanical Engineering at MIT and his prior experience in the energy sector qualify him to be a member of our Board of Directors in light of our business and structure.

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Charles T. Maxwell, age 81, has been a member of our Board since 2001. He is a widely recognized expert in the energy sector, with over 40 years of experience with major oil companies and investment banking firms. He is currently Senior Energy Analyst with Weeden & Co. of Greenwich, Connecticut, since 1999, where he develops strategic data and forecasts on oil, gas and power markets. Mr. Maxwell is a member of the Board of Directors of American DG Energy Inc., an affiliated company by virtue of common ownership. Since the early 1980s, he has been an active member of an Oxford-based organization comprised of present or past OPEC-county oil ministers and other oil industry executives from 30 countries who meet twice annually to analyze trends in global energy markets. He is a member of the board of directors of Chesapeake Energy Corp. (NYSE: CHK). Mr. Maxwell holds a bachelor's degree in political science from Princeton University and holds a B.A. from Oxford University as a Marshall Scholar in Middle East literature and history.

Our board of directors has determined that Mr. Maxwell's prior experience in the energy sector and his extensive experience as a director of public companies qualifies him to be a member of the board of directors in light of the Company's business and structure.

Joseph E. Aoun, age 60, has been a member of our Board since 2011. He is President of Northeastern University, a preeminent global, experiential, research university since 2006. President Aoun is recognized as a leader in higher education policy and serves on the board of directors of the American Council on Education as well as the Boston Private Industry Council, Boston World Partnerships, Jobs for Mass, and the New England Council. He is a member of the Executive Committee of the Greater Boston Chamber of Commerce, a member of the Massachusetts Business Roundtable and Massachusetts Math & Science Initiative, and serves on the Leadership Council for the Mass Life Sciences Collaborative and as co-chair of the City to City Boston initiative. President Aoun is the recipient of numerous honors and awards and is an internationally known scholar in linguistics. President Aoun holds a master's degree in Oriental Languages and Literature from Saint Joseph University, Beirut, Lebanon, Diploma of Advanced Study General and Theoretical Linguistics, University of Paris VIII, Paris, France, and a Ph.D. Linguistics and Philosophy from MIT.

Our Board of Directors has determined that Dr. Aoun's prior experience as the President of Northeastern University and his prior experience in the energy sector qualify him to be a member of our Board of Directors in light of our business and structure.

Each executive officer is elected or appointed by, and serves at the discretion of, our Board of Directors. The elected officers of the Company will hold office until their successors are duly elected and qualified, or until their earlier resignation or removal.

Family Relationships

There are no other family relationships among members of our Board of Directors and executive officers other than George N. Hatsopoulos and John N. Hatsopoulos who are brothers.

Board Composition

The number of directors of the Company is established by the Board of Directors in accordance with our bylaws. The exact number of directors is currently set at six (6) by resolution of the Board of Directors. The directors are elected to serve for one (1) year terms, with the term of directors expiring each year at the annual meeting of stockholders; provided further, that the term of each director shall continue until the election and qualification of a successor and be subject to such director's earlier death, resignation or removal.

Our certificate of incorporation and bylaws provide that the authorized number of directors may be changed only by resolution of the Board of Directors, and also provide that our directors may be removed only for cause by the affirmative vote of the holders of at least 75% of the votes that all our stockholders would be entitled to cast in an annual election of directors, and that any vacancy on our Board of Directors, including a vacancy resulting from an enlargement of our Board of Directors, may be filled only by vote of a majority of our directors then in office.

We have no formal policy regarding board diversity. Our priority in selection of board members is identification of members who will further the interests of our stockholders through his or her established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, knowledge of our business and understanding of the competitive landscape.

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Board Committees

Our Board of Directors directs the management of our business and affairs and conducts its business through meetings of the Board of Directors and our committees: the Audit Committee, the Compensation Committee and the Nominating and Governance Committee.

The members of the Audit Committee are Ms. Galiteva and Mr. Maxwell. The members of the Compensation Committee are Dr. Aoun, Ms. Galiteva and Dr. Ghoniem. The members of our Nominating and Governance Committee are Dr. Aoun, Dr. Ghoniem and Mr. Maxwell. All committee members have been determined to be independent by our Board of Directors in accordance with the NYSE MKT rules. The Board of Directors has also determined that Mr. Maxwell qualifies as an audit committee financial expert. In addition, from time to time, other committees may be established under the direction of the Board of Directors when necessary to address specific issues.

The functions of the Audit Committee include reviewing and supervising the financial controls of the Company, appointing, compensating and overseeing the work of the independent auditors, reviewing the books and accounts of the Company, meeting with the officers of the Company regarding the Company's financial controls, acting upon recommendations of the independent auditors and taking such further actions as the Audit Committee deems necessary to complete an audit of the books and accounts of the Company. The charter of the Audit Committee will be available on the Company's website at www.tecogen.com and is included as Exhibit No. 99.1 hereto.

The Compensation Committee's functions include reviewing with management cash and other compensation policies for employees, making recommendations to the Board of Directors regarding compensation matters and determining compensation for the Chief Executive Officer. Our Chief Executive Officer has been instrumental in the design and recommendation to the compensation committee of compensation plans and awards for our directors and executive officers including our President, Chief Operating Officer and Chief Financial Officer. All compensation decisions for the Chief Executive Officer and all other executive officers are reviewed and approved by the Compensation Committee, subject to ratification by the Board of Directors. The charter of the Compensation Committee will be available on the Company's website at www.tecogen.com and is included as Exhibit No. 99.2 hereto.

The Nominating and Governance Committee functions are to identify persons qualified to serve as members of the Board of Directors, to recommend to the Board of Directors persons to be nominated by the board for election as directors at the annual meeting of stockholders and persons to be elected by the board to fill any vacancies, and recommend to the Board the Directors persons to be appointed to each of its committees. In addition, the Nominating and Governance Committee is responsible for developing and recommending to the Board of Directors a set of corporate governance guidelines applicable to the Company (as well as reviewing and reassessing the adequacy of such guidelines as it deems appropriate from time to time) and overseeing the annual self-evaluation of the Board of Directors. The charter of the Nominating and Governance Committee is available on the Company's website at www.tecogen.com and is included as Exhibit No. 99.3 hereto.

Director Compensation

Each director who is not also one of our employees will receive a fee of \$500 per day for service on those days that our Board of Directors and or each of the Audit, Compensation or Nominating and Governance Committees hold meetings, or otherwise conduct business. Non-employee directors also will be eligible to receive stock or options awards under our 2011 Stock Incentive Plan, as amended, or the Stock Plan. We reimburse all of our non-employee directors for reasonable travel and other expenses incurred in attending Board of Directors and committee meetings. Any director who is also one of our employees receives no additional compensation for serving as a director. Our

non-employee directors did not receive any compensation in cash prior to or during 2010.

Board Leadership Structure

We separate the roles of Chief Executive Officer and Chairman in recognition of the differences between the two roles. Our Chief Executive Officer is responsible for setting the strategic direction for the Company and the overall leadership and performance of the Company. Our Chairman provides guidance to the Chief Executive Officer, sets the agenda for Board of Director meetings, presides over meetings of the full Board of Directors and leads all executive meetings of the independent directors. We are a small company with a small management team, and we feel the separation of these roles enhances high-level attention to our business.

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Our Board of Directors Role in Risk Oversight

Our Board of Directors oversees our risk management processes directly and through its committees. Our management is responsible for risk management on a day-to-day basis. The Audit Committee assists the Board of Directors in fulfilling its oversight responsibilities with respect to risk management in the areas of financial reporting, internal controls and compliance with legal and regulatory requirements, and discusses policies with respect to risk assessment and risk management, including guidelines and policies to govern the process by which the Company's exposure to risk is handled. The Compensation Committee assists the Board of Directors in fulfilling its oversight responsibilities with respect to the management of risks arising from our compensation policies and programs. The Nominating and Governance Committee assists the Board of Directors in fulfilling its oversight responsibilities with respect to the management of risks associated with board organization, membership and structure, succession planning for our directors, and corporate governance.

Code of Business Conduct and Ethics

The Company has adopted a code of business conduct and ethics that applies to the Company's directors, officers and employees. The Company's code of business conduct and ethics is intended to promote honest and ethical conduct, including the ethical handling of actual or apparent conflicts of interest between personal and professional relationships; full, fair, accurate, timely and understandable disclosure in reports and documents that the Company files with, or submits to, the SEC and in other public communications made by the Company; compliance with applicable governmental laws, rules and regulations; prompt internal reporting of violations of the code of business conduct and ethics to an appropriate person or persons identified in the code of business conduct and ethics; and accountability for adherence to the code of business conduct and ethics. The Company's code of business conduct and ethics is available on the Company's website at www.tecogen.com and is included as Exhibit No. 14.1 hereto.

Section 16(a) Beneficial Ownership Reporting Compliance

Not applicable.

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Item 11. Executive Compensation.

The Compensation Committee and Board of Directors construct policies and guidelines regarding executive compensation. The major components of executive compensation will be base salary, annual incentive bonuses, equity incentive awards and customary employee benefits. Among the factors likely to be relevant are:

- the executive officer's skills and experience;
- the particular importance of the executive officer's position to us;
- the executive officer's individual performance;
- the executive officer's growth in his or her position; and
- base salaries for comparable positions within our Company and at other companies.

Our Compensation Committee performs evaluations of our executive officers' compensation at least annually and may solicit the input of a compensation consulting firm and peer group benchmarking data in making any adjustments believed to be appropriate.

The following table sets forth information with respect to the compensation of our executive officers as of December 31, 2012:

Summary Compensation Table

Name and principal position	Year	Salary (\$)	Bonus (\$)	Stock awards (\$)	Option awards (\$)(1)	All other compensation (\$)	Total (\$)
John N. Hatsopoulos Chief Executive Officer (Principal Executive Officer)	2012	1	—	—	—	—	1
	2011	1	—	—	—	—	1
Robert A. Panora (2)(3) Chief Operating Officer and President	2012	163,770	—	—	—	1,032	164,802
	2011	163,770	—	—	123,408	1,032	288,210
Bonnie J. Brown (4) Chief Financial Officer and Secretary (Principal Financial Officer)	2012	156,000	—	—	—	360	156,360
	2011	156,000	—	—	—	360	156,360
Anthony S. Loumidis (5)(6) Vice President and Treasurer	2012	25,091	—	—	—	—	25,091
	2011	12,994	10,000	—	37,022	—	60,016

The amounts in the "Stock Option Awards" column reflect the aggregate grant date fair value of the awards computed in accordance with FASB ASC Topic 718. The assumptions used by us with respect to the valuation of stock and option awards are set forth in Note 10 – Stockholders' equity to our financial statements included elsewhere in this registration statement.

(1) Includes stock option award to purchase 500,000 shares of Common Stock at a purchase price of \$0.65 per share granted on February 15, 2011, with 125,000 of the shares vesting on February 15, 2012 and then an additional 125,000 shares on each of the subsequent three anniversaries, subject to acceleration of vesting upon a change in

control.

(3) Includes group life insurance of \$1,032 for 2012 and 2011, respectively.

(4) Includes group life insurance of \$360 for 2012 and 2011.

(5) Includes stock option award to purchase 150,000 shares of Common Stock at a purchase price of \$0.65 per share granted on February 15, 2011, with 25,000 of the shares vesting on February 15, 2012 and then an additional 25,000 shares on each of the subsequent three anniversaries, subject to acceleration of vesting upon a change in control.

(6) Mr. Loumidis resigned as Vice President and Treasurer of the Company effective December 31, 2012.

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Outstanding Equity Awards at Fiscal Year-End

The following table sets forth information with respect to outstanding equity awards held by our executive officers as of December 31, 2012:

Name	Option awards				Stock awards	
	Number of securities underlying unexercised options (#)	Number of securities underlying unexercised options (#)	Option exercise price (\$)	Option expiration date	Number of shares of stock that have not vested (#)	Market value of shares of stock that have not vested (\$) ⁽¹⁾
John N. Hatsopoulos	—	—	—	—	—	—
Robert A. Panora ⁽²⁾⁽³⁾	—	500,000	0.65	2/14/2021	553,400	442,720
Bonnie J. Brown ⁽⁴⁾⁽⁵⁾	100,000	—	0.30	2/13/2015	50,000	40,000
Bonnie J. Brown ⁽⁶⁾	150,000	50,000	0.50	3/11/2019	—	—
Bonnie J. Brown ⁽⁷⁾	50,000	50,000	0.65	2/18/2020	—	—
Anthony S. Loumidis ⁽⁸⁾⁽⁹⁾	20,000	—	0.30	2/24/2014	30,000	24,000
Anthony S. Loumidis ⁽¹⁰⁾	100,000	—	0.30	9/29/2015	—	—
Anthony S. Loumidis ⁽¹¹⁾	75,000	—	0.30	2/13/2015	—	—
Anthony S. Loumidis ⁽¹²⁾	37,500	112,500	0.65	2/14/2021	—	—

⁽¹⁾ Market value of shares of stock that have not vested is computed on the last private placement price of the Company's Common Stock on November 30, 2011, which was \$0.80 per share.

⁽²⁾ Includes stock option award granted on February 15, 2011, with 25% of the shares vesting on February 15, 2012 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to Mr. Panora's continued employment and subject to acceleration of vesting upon a change in control.

⁽³⁾ Includes 553,400 shares of restricted Common Stock at a purchase price of \$.001 per share granted on December 4, 2006, with 100% of the shares vesting one year after the Company's initial public offering, subject to acceleration of vesting upon a change in control prior to a termination event.

⁽⁴⁾ Includes stock option award granted on February 13, 2008, with 25% of the shares vesting on February 13, 2009 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to Ms. Brown's continued employment and subject to acceleration of vesting upon a change in control.

⁽⁵⁾ Includes 50,000 shares of restricted Common Stock at a purchase price of \$.001 per share granted on December 13, 2006, with 100% of the shares vesting one year after the Company's initial public offering, subject to acceleration of vesting upon a change in control prior to a termination event.

⁽⁶⁾ Includes stock option award granted on March 11, 2009, with 25% of the shares vesting on March 11, 2010 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to Ms. Brown's continued employment and subject to acceleration of vesting upon a change in control.

⁽⁷⁾ Includes stock option award granted on February 28, 2010, with 25% of the shares vesting on February 28, 2011 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to Ms. Brown's continued employment and subject to acceleration of vesting upon a change in control.

⁽⁸⁾ Includes stock option award granted on February 24, 2004, with 25% of the shares vesting on February 24, 2005 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to Mr.

Loumidis continued employment and subject to acceleration of vesting upon a change in control.

⁽⁹⁾ Includes 30,000 shares of restricted Common Stock at a purchase price of \$.001 per share granted on December 13, 2006, with 100% of the shares vesting one year after the Company's initial public offering, subject to acceleration

of vesting upon a change in control prior to a termination event.

(10) Includes stock option award granted on September 29, 2005, with 25% of the shares vesting on September 29, 2006 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to continued employment of Mr. Loumidis and subject to acceleration of vesting upon a change in control.

(11) Includes stock option award granted on February 13, 2008, with 25% of the shares vesting on February 13, 2009 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to continued employment of Mr. Loumidis and subject to acceleration of vesting upon a change in control.

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- (12) Includes stock option award granted on February 15, 2011, with 25% of the shares vesting on February 15, 2012 and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, subject to continued employment of Mr. Loumidis and subject to acceleration of vesting upon a change in control.

Director Compensation

Each director who is not also one of our employees will receive a fee of \$500 per day for service on those days that our Board of Directors and or each of the Audit, Compensation or Nominating and Governance Committees hold meetings, or otherwise conduct business. Non-employee directors also will be eligible to receive stock or options awards under our equity incentive plan. We reimburse all of our non-employee directors for reasonable travel and other expenses incurred in attending Board and committee meetings. Any director who is also one of our employees receives no additional compensation for serving as a director.

The following table sets forth information with respect to the compensation of our directors as of December 31, 2012:

Director Compensation

Name	Fees earned or paid in cash (\$)	Stock awards (\$)	Option awards (\$)(1)	All other compensation (\$)	Total (\$)
Angelina M. Galiteva	1,000	—	—	—	1,000
John N. Hatsopoulos	—	—	—	—	—
George N. Hatsopoulos	—	—	—	—	—
Ahmed F. Ghoniem	1,000	—	—	—	1,000
Charles T. Maxwell	1,000	—	—	—	1,000
Joseph E. Aoun	1,000	—	—	—	1,000

Outstanding Equity Awards at Fiscal Year-End Table

The following table summarizes the outstanding equity awards held by each director as of December 31, 2012:

Name	Option awards			Stock awards		
	Number of securities underlying unexercised options (#)	Number of securities underlying unexercised options (#) exercisable/unexercisable	Option exercise price (\$)	Option expiration date	Number of shares of stock that have not vested (#)	Market value of shares of stock that have not vested (\$)(1)
Angelina M. Galiteva ⁽²⁾⁽³⁾	100,000	—	0.03	10/20/2013	100,000	80,000
Angelina M. Galiteva ⁽⁴⁾	25,000	75,000	0.65	2/14/2021	—	—
John N. Hatsopoulos	—	—	—	—	—	—
George N. Hatsopoulos	—	—	—	—	—	—
Ahmed F. Ghoniem ⁽⁵⁾⁽⁶⁾	25,000	75,000	0.65	2/14/2021	100,000	80,000
Charles T. Maxwell ⁽⁷⁾⁽⁸⁾	25,000	75,000	0.65	2/14/2021	100,000	80,000
Joseph E. Aoun	—	—	—	—	—	—

(1)

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Market value of shares of Common Stock that have not vested is computed by the Company's most recent private placement of Common Stock on November 30, 2011, which was \$0.80 per share.

- (2) Includes stock option award granted on October 20, 2003, with 100% of the shares vesting on the date of the option grant.
- (3) Includes 100,000 shares of restricted Common Stock at a purchase price of \$.001 per share granted on December 13, 2006, with 100% of the shares vesting one year after the Company's initial public offering.

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Includes stock option award granted on February 15, 2011, with 25% of the shares vesting on February 15, 2012, (4) and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, provided that Ms. Galiteva serves as a director or consultant to the Company.

Includes stock option award granted on February 15, 2011, with 25% of the shares vesting on February 15, 2012, (5) and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, provided that Mr. Ghoniem serves as a director or consultant to the Company.

Includes 100,000 shares of restricted Common Stock at a purchase price of \$.001 per share granted on October 1, (6) 2008, with 100% of the shares vesting 180 days after the Company's initial public offering.

Includes stock option award granted on February 15, 2011, with 25% of the shares vesting on February 15, 2012, (7) and then an additional 25% of the shares vesting on each of the subsequent three anniversaries, provided that Mr. Maxwell serves as a director or consultant to the Company.

Includes 100,000 shares of restricted Common Stock at a purchase price of \$.001 per share granted on October 1, (8) 2008, with 100% of the shares vesting 180 days after the Company's initial public offering.

There have been no other stock awards granted to date and none of such options have been exercised.

2011 Stock Option and Incentive Plan

The Company's Stock Plan provides for the grant of stock-based awards to employees, officers and directors of, and consultants or advisors to, the Company and its subsidiaries. The Stock Plan is included as Exhibit 10.4 hereto.

Under the Stock Plan, the Company may grant stock options, restricted stock and other stock-based awards. As of December 31, 2012, a total of 7,355,000 shares of Common Stock may be issued upon the exercise of options or other awards granted under the Stock Plan.

The Stock Plan is administered by the Board of Directors and the Compensation Committee. Subject to the provisions of the Stock Plan, the Board of Directors and the Compensation Committee each has the authority to select the persons, to whom awards are granted and determine the terms of each award, including the number of shares of Common Stock subject to the award. Payment of the exercise price of an award may be made in cash, in a "cashless exercise" through a broker, or if the applicable stock option agreement permits, shares of Common Stock or by any other method approved by the Board of Directors or Compensation Committee. Unless otherwise permitted by the Company, awards are not assignable or transferable except by will or the laws of descent and distribution.

Upon the consummation of an acquisition of the business of the Company, by merger or otherwise, the Board of Directors shall, as to outstanding awards (on the same basis or on different bases as the Board of Directors shall specify), make appropriate provision for the continuation of such awards by the Company or the assumption of such awards by the surviving or acquiring entity and by substituting on an equitable basis for the shares then subject to such awards either (a) the consideration payable with respect to the outstanding shares of Common Stock in connection with the acquisition, (b) shares of stock of the surviving or acquiring corporation or (c) such other securities or other consideration as the Board of Directors deems appropriate, the fair market value of which (as determined by the Board of Directors in its sole discretion) shall not materially differ from the fair market value of the shares of Common Stock subject to such awards immediately preceding the acquisition. In addition to or in lieu of the foregoing, with respect to outstanding stock options, the Board of Directors may, on the same basis or on different bases as the Board of Directors shall specify, upon written notice to the affected optionees, provide that one or more options then outstanding must be exercised, in whole or in part, within a specified number of days of the date of such notice, at the end of which period such options shall terminate, or provide that one or more options then outstanding, in whole or in part, shall be terminated in exchange for a cash payment equal to the excess of the fair market value (as determined by the Board of Directors in its sole discretion) for the shares subject to such Options over the exercise price thereof.

Unless otherwise determined by the Board of Directors (on the same basis or on different bases as the Board of Directors shall specify), any repurchase rights or other rights of the Company that relate to a stock option or other award shall continue to apply to consideration, including cash, that has been substituted, assumed or amended for a stock option or other award pursuant to these provisions. The Company may hold in escrow all or any portion of any such consideration in order to effectuate any continuing restrictions.

The Board of Directors may at any time provide that any stock options shall become immediately exercisable in full or in part, that any restricted stock awards shall be free of some or all restrictions, or that any other stock-based awards may become exercisable in full or in part or free of some or all restrictions or conditions, or otherwise realizable in full or in part, as the case may be.

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The Board of Directors or Compensation Committee may, in its sole discretion, amend, modify or terminate any award granted or made under the Stock Plan, so long as such amendment, modification or termination would not materially and adversely affect the participant.

Compensation Committee Interlocks and Insider Participation

None of our executive officers serves as a member of the board of directors or compensation committee, or other committee serving an equivalent function, of any other entity that has one or more of its executive officers serving as a member of our Board of Directors or its Compensation Committee. None of the current members of the Compensation Committee of our Board of Directors has ever been one of our employees.

Employment Contracts and Termination of Employment and Change-in-Control Arrangements

None of our executive officers has an employment contract or change-in-control arrangement, other than stock and option awards that contain certain change-in-control provisions such as accelerated vesting due to acquisition. In the event an acquisition that is not a private transaction occurs while the optionee maintains a business relationship with the Company and the option has not fully vested, the option will become exercisable for 100% of the then number of shares as to which it has not vested and such vesting to occur immediately prior to the closing of the acquisition.

The stock and option awards that would vest for each named executive if a change-in-control were to occur are disclosed under our Outstanding Equity Awards at Fiscal Year-End Table. Specifically, as of December 31, 2012, Robert A. Panora, our Chief Operating Officer and President, had 500,000 stock options and 533,400 shares of restricted stock that had not vested, Bonnie J. Brown, our Chief Financial Officer, had 200,000 stock options and 50,000 shares of restricted stock that had not vested and Anthony S. Loumidis, our former Vice President and Treasurer, had 168,750 stock options and 30,000 shares of restricted stock that had not vested.

Our stock and option awards contain certain change-in-control provisions. Descriptions of those provisions are set forth below:

Stock Awards Change-in-Control Definition

Change-in-Control shall mean (a) the acquisition in a transaction or series of transactions by any person (such term to include anyone deemed a person under Section 13(d)(3) of the Exchange Act), other than the Company or any of its subsidiaries, or any employee benefit plan or related trust of the Company or any of its subsidiaries, of beneficial ownership (within the meaning of Rule 13d-3 promulgated under the Exchange Act) of fifty percent (50%) or more of the combined voting power of the then outstanding voting securities of the Company entitled to vote generally in the election of directors; provided a Change-in-Control shall not occur solely as the result of an initial public offering or (b) the sale or other disposition of all or substantially all of the assets of the Company in one transaction or series of related transactions.

Option Awards Change-in-Control Definition

Accelerated vesting due to acquisition. In the event an acquisition that is not a private transaction occurs while the optionee maintains a business relationship with the Company and this option has not fully vested, this option shall become exercisable for 100% of the then number of shares as to which it has not vested, such vesting to occur immediately prior to the closing of the acquisition.

Definitions. The following definitions shall apply to certain terms used in this Section:

Acquisition means (i) the sale of the Company by merger in which the stockholders of the Company in their capacity as such no longer own a majority of the outstanding equity securities of the Company (or its successor); or (ii) any sale of all or substantially all of the assets or capital stock of the Company (other than in a spin-off or similar transaction) or (iii) any other acquisition of the business of the Company, as determined by the Board. Business relationship means service to the Company or its successor in the capacity of an employee, officer, director or consultant.

Private transaction means any acquisition where the consideration received or retained by the holders of the then outstanding capital stock of the Company does not consist of (i) cash or cash equivalent consideration, (ii) securities which are registered under the Securities Act, or any successor statute and/or (iii) securities for which the Company or any other issuer thereof has agreed, including pursuant to a demand, to file a registration statement within ninety (90) days of completion of the transaction for resale to the public pursuant to the Securities Act.

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Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The following table sets forth, as of March 27, 2013, certain information with respect to the beneficial ownership of the Company's Common Stock by (1) any person including any "group" as set forth in Section 13(d)(3) of the Exchange Act, known by us to be the beneficial owner of more than 5% of our Common Stock, (2) each director, (3) each of our executive officers and (4) all of our current directors and executive officers as a group. The percentages in the following table are based on 54,447,854 shares of Common Stock issued and outstanding as of March 27, 2013.

Name and address of beneficial owner (1)	Amount and Nature of Beneficial Ownership	Percent of Class	
5% Stockholders:			
John N. Hatsopoulos (2)	14,875,350	27.3	%
George N. Hatsopoulos (3)	14,206,077	26	%
RBC Cees Nominees Limited (4)	3,616,418	6.6	%
Joseph J. Ritchie (5)	3,586,449	6.6	%
Directors and Officers:			
John N. Hatsopoulos (2)	14,875,350	27.3	%
George N. Hatsopoulos (3)	14,206,077	26	%
Robert A. Panora (6)	778,400	1.4	%
Bonnie J. Brown (7)	350,000	0.6	%
Charles T. Maxwell (8)	325,000	0.6	%
Angelina M. Galiteva (9)	225,000	0.4	%
Ahmed F. Ghoniem (10)	125,000	0.2	%
Joseph E. Aoun	—	—	%
All executive officers and directors as a group (8 persons)	30,884,827	56.6	%

(1) The address of the directors and officers listed in the table above is: c/o Tecogen Inc., 45 First Avenue, Waltham, Massachusetts 02451.

Includes: (a) 8,540,838 shares of Common Stock held by J&P Enterprises LLC for the benefit of: (1) John N. Hatsopoulos and (2) Patricia L. Hatsopoulos. John N. Hatsopoulos is the Executive Member of J&P Enterprises LLC and has voting and investment power; (b) 2,375,077 shares of Common Stock held by John N. Hatsopoulos (2) and his wife, Patricia L. Hatsopoulos, as joint tenants with rights of survivorship, each of whom share voting and investment power; and (c) 3,959,435 shares of Common Stock held by The John N. Hatsopoulos Family Trust 2007 for the benefit of: (1) Patricia L. Hatsopoulos, (2) Alexander J. Hatsopoulos, and (3) Nia Marie Hatsopoulos, for which Dr. George N. Hatsopoulos and Ms. Patricia L. Hatsopoulos are the trustees.

Includes: (a) 5,968,504 shares of Common Stock, directly held by Dr. George N. Hatsopoulos; (b) 7,934,350 shares of Common Stock; held by Dr. Hatsopoulos and his wife, Daphne Hatsopoulos, as joint tenants, each of whom share voting and investment power; and (c) 303,223 shares of Common Stock issuable upon conversion of (3) \$90,967 principal amount of 6% convertible debentures. This amount does not include 2,272,391 shares held in the 1994 Hatsopoulos Family Trust for the benefit of Dr. and Mrs. Hatsopoulos' adult children, for whom Ms. Daphne Hatsopoulos and Mr. Gordon Erlich are the trustees. Dr. Hatsopoulos disclaims beneficial ownership of the shares held by this trust.

(4)

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Includes 3,616,418 shares of Common Stock purchased in August 2010 and November 2011 held by RBC cees Nominees Ltd. The address of RBC cees Nominees Ltd. is 19-21 Broad Street, St. Hellier, Jersey JE1 3PB, Channel Islands.

(5) Includes 3,586,449 shares of Common Stock, directly held by Mr. Ritchie. The address of Mr. Ritchie is 2100 Enterprise Avenue, Geneva, IL 60134.

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- (6) Includes: (a) 653,400 shares of Common Stock, directly held by Mr. Panora, and (b) options to purchase 125,000 shares of Common Stock exercisable within 60 days of the date of March 27, 2013 .
- (7) Includes: (a) 50,000 shares of Common Stock, and (b) options to purchase 300,000 shares of Common Stock exercisable within 60 days of the date of March 27, 2013.
- (8) Includes: (a) 300,000 shares of Common Stock, directly held by Mr. Maxwell, and (b) options to purchase 25,000 shares of Common Stock exercisable within 60 days of the date of March 27, 2013.
- (9) Includes: (a) 100,000 shares of Common Stock, and (b) options to purchase 125,000 shares of Common Stock exercisable within 60 days of the date of March 27, 2013.
- (10) Includes: (a) 100,000 shares of Common Stock, and (b) options to purchase 25,000 shares of Common Stock exercisable within 60 days of the date of March 27, 2013.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information as of December 31, 2012, regarding Common Stock that may be issued under the Company's equity compensation plans.

	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in second column)
Equity compensation plans approved by security holders	4,386,000	\$0.49	540,732
Equity compensation plans not approved by security holders	—	—	—
Total	4,386,000	\$0.49	540,732

In February 2011, our management conducted an assessment of the risks associated with our compensation policies and practices. This process included a review of our compensation programs, a discussion of the types of practices that could be reasonably likely to create material risks, and an analysis of the potential effects on the Company on related risks as a whole.

Although we reviewed all of our compensation programs, we paid particular attention to programs involving incentive-based payouts and programs that involve our executive officers. During the course of our assessment, we consulted with the Compensation Committee of our Board of Directors.

We believe that our compensation programs are designed to create appropriate incentives without encouraging excessive risk taking by our employees. In this regard, our compensation structure contains various features intended to mitigate risk. For example:

None of our executive officers receives any performance-based compensation or incentive payments.

A portion of the compensation package for our sales-based employees consists of commissions for units sold and installed, which package is designed to link an appropriate portion of compensation to long-term performance, while providing a balanced compensation model overall.

The Compensation Committee oversees our compensation policies and practices and is responsible for reviewing and approving executive compensation, annual incentive compensation plans applicable to sales employees and other compensation plans.

Our Compensation Committee, in its evaluation, determined that it does not believe that the Company employs any compensation plans or practices that create incentives for employees to deliver short-term profits at the expense of generating systematic risks for the Company. Based on this and the assessment described above, we have concluded that the risks associated with our compensation policies and practices are not reasonably likely to have material adverse effect on the Company.

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Item 13. Certain Relationships and Related Transactions, and Director Independence.

The Company has five affiliated companies, namely American DG Energy, EuroSite Power, GlenRose Instruments Inc., or GlenRose Instruments, Pharos LLC, or Pharos, and Levitronix Technologies LLC, or Levitronix. These companies are affiliates because several of the major stockholders of those companies, have a significant ownership position in the Company. American DG Energy, EuroSite Power, GlenRose Instruments, Pharos or Levitronix do not own any shares of the Company, and the Company does not own any shares of American DG Energy, EuroSite Power, GlenRose Instruments, Pharos or Levitronix. The business of GlenRose Instruments, Pharos and Levitronix is not related to the business of the Company.

American DG Energy, EuroSite Power, GlenRose Instruments, Pharos and Levitronix are affiliated companies by virtue of common ownership. The common stockholders include:

John N. Hatsopoulos, the Company's Chief Executive Officer who is also: (a) the Chief Executive Officer and a director of American DG Energy and holds 10.8% of the company's common stock; (b) the Chairman of EuroSite Power; (c) a director of Ilios and holds 7% of the company's common stock; and (d) the Chairman of GlenRose Instruments and holds 15.7% of the company's common stock.

Dr. George N. Hatsopoulos, who is John N. Hatsopoulos' brother, and is also: (a) a director of American DG Energy and holds 14.3% of the company's common stock; (b) an investor in Ilios and holds 3.1% of the company's common stock; (c) an investor of GlenRose Instruments and holds 15.7% of the company's common stock; (d) an investor of Pharos and holds 24.4% of the company's common stock; and (e) an investor of Levitronix and holds 21.4% of the company's common stock.

Additionally, the following related persons had or may have a direct or indirect material interest in our transactions with our affiliated companies:

Barry J. Sanders, who is: (a) the President and Chief Operating Officer of American DG Energy, (b) the Chief Executive Officer and a director of EuroSite Power and (c) the Chairman of Ilios.

Anthony S. Loumidis, the Company's former Vice President and Treasurer who is: (a) the Chief Financial Officer Secretary and Treasurer of American DG Energy, (b) the Chief Financial Officer Secretary and Treasurer of EuroSite Power, (c) the Chief Financial Officer Secretary and Treasurer of GlenRose Instruments and (d) the Treasurer of Ilios.

American DG Energy has sales representation rights to the Company's products and services in New England. Revenue from sales of cogeneration and chiller systems, parts and service to American DG Energy during the years ended December 31, 2012 and 2011 amounted to \$3,795,666 and \$713,267, respectively.

On October 20, 2009, American DG Energy, in the ordinary course of its business, signed a Sales Representative Agreement with Ilios to promote, sell and service the Ilios high-efficiency heating products, such as the high efficiency water heater, in the marketing territory of the New England States, including Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, and Maine. The marketing territory also includes all of the nations in the European Union. The initial term of this Agreement is for five years, after which it may be renewed for successive one-year terms upon mutual written agreement. American DG Energy has not yet sold any products under this agreement and therefore, no amounts have been required to be paid.

On September 24, 2001, the Company entered into subscription agreements with investors for the sale of convertible debentures. The primary investors were George N. Hatsopoulos, who subscribed for \$200,000 of the debentures, and

the John N. Hatsopoulos 1989 Family Trust for the benefit of Mr. Hatsopoulos' adult children, who subscribed for a total amount of \$100,000 of the debentures. The debentures accrue interest at a rate of 6% per annum and were due on September 24, 2007. The debentures are convertible, at the option of George N. Hatsopoulos, and the John N. Hatsopoulos 1989 Family Trust for the benefit of Mr. Hatsopoulos' adult children, into shares of Common Stock at a conversion price of \$0.30 per share.

On September 24, 2007, George N. Hatsopoulos, and the John N. Hatsopoulos 1989 Family Trust for the benefit of Mr. Hatsopoulos' adult children agreed to extend the debenture term to September 24, 2011. On May 11, 2009, George N. Hatsopoulos converted a portion of the principal in the amount of \$109,033 of the debentures and accrued interest in the amount of \$90,967 into 400,000 shares of Common Stock in the Company's newly formed subsidiary, Ilios, at \$0.50 per share. Also, on May 11, 2009, John N. Hatsopoulos converted principal amount of \$427,432 in demand notes payable and accrued interest in the amount of \$72,567 into 1,000,000 shares of Ilios Common Stock at \$0.50 per share. The difference between the Company's purchase price of the Ilios shares and the amount of debt forgiveness was recorded as additional paid-in capital.

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TECOGEN INC.

On September 30, 2009, Joseph J. Ritchie elected to convert \$30,000 of the outstanding principal amount of the debenture, plus accrued interest of \$14,433, into 148,111 shares of Common Stock at a conversion price of \$0.30 per share. On September 24, 2011, George N. Hatsopoulos, and the John N. Hatsopoulos 1989 Family Trust for the benefit of Mr. Hatsopoulos' adult children, agreed to extend their term to September 24, 2013 and requested that accrued interest in the amount of \$72,959 be converted into the Company's Common Stock at \$0.50 per share (which was the average price of the Company's stock from September 24, 2001 to September 24, 2011).

On September 30, 2012, the debentures, including accrued interest, were converted into 170,480 shares of Common Stock held in the JNH 1989 Family Trust for the benefit of Nia Marie Hatsopoulos and 170,480 shares of Common Stock held in the JNH 1989 Family Trust for the benefit of Alexander J. Hatsopoulos for whom Mr. and Mrs. Paris Nicolaidis are the trustees. Mr. John N. Hatsopoulos disclaims beneficial ownership of the shares held by this trust.

On September 10, 2008 the Company entered into a demand note agreement with John N. Hatsopoulos, in the principal amount of \$250,000 at an annual interest rate of 5%. On September 7, 2011 the Company entered into an additional demand note agreement with John N. Hatsopoulos, in the principal amount of \$750,000 at an annual interest rate of 6%. On November 30, 2012 the Company entered into an additional demand note agreement with John N. Hatsopoulos, in the principal amount of \$300,000 at an annual interest rate of 6%. Unpaid principal and interest on the demand notes are due upon demand.

For additional disclosure on the Company's debt see Note 7 – Demand notes payable and convertible debentures – related party.

John N. Hatsopoulos' salary is \$1.00 per year. On average, Mr. Hatsopoulos spends approximately 20% of his business time on the affairs of the Company; however such amount varies widely depending on the needs of the business and is expected to increase as the business of the Company develops.

On January 1, 2006, the Company signed a Facilities and Support Services Agreement with American DG Energy for a period of one year, renewable annually, on January 1st, by mutual agreement. That agreement was amended on July 1, 2012. Under this agreement, the Company provides American DG Energy with certain office and business support services and also provides pricing based on a volume discount depending on the level of American DG Energy purchases of cogeneration and chiller products. For certain sites, American DG Energy hires the Company to service its chiller and cogeneration products. The Company also provides office space and certain utilities to American DG Energy based on a monthly rate set at the beginning of each year. Also, under this agreement, American DG Energy has sales representation rights to the Company's products and services in New England.

The Company subleases portions of its corporate offices and manufacturing facility to sub-tenants under annual sublease agreements. For the years ended December 31, 2012 and 2011, the Company received \$158,898 and \$185,596, respectively, from American DG Energy, Levitronix LLC and Alexandros Partners LLC. In addition, for the years ended December 31, 2012 and 2011 the Company received from the same companies, \$101,218 and \$224,700, respectively, to offset common operating expenses incurred in the administration and maintenance of its corporate office and warehouse facility.

The Company's headquarters is located in Waltham, Massachusetts and consists of 27,000 square feet of office and storage space that are shared with American DG Energy and other tenants. The lease expires on March 31, 2014. We believe that our facilities are appropriate and adequate for our current needs.

Revenue from sales of cogeneration and chiller systems, parts and service to American DG Energy during the years ended December 31, 2012 and 2011 amounted to \$3,795,666 and \$713,267, respectively. In addition, Tecogen pays certain operating expenses, including benefits and insurance, on behalf of American DG Energy. Tecogen was reimbursed for these costs. As of December 31, 2012 and 2011, the total amount due from American DG Energy was \$70,811 and \$299,739, respectively.

Director Independence

The Company's policy is that a majority of our Board of Directors shall be "independent" in accordance with NYSE MKT rules (even though the Company is not currently subject to those requirements) including, in the judgment of the Board of Directors, the requirement that such directors have no material relationship with the Company (either directly or as a partner, stockholder or officer of an organization that has a relationship with the Company). The Board of Directors has adopted the following standards to assist it in determining whether a director has a material relationship with the Company. Under these standards, a director will not be considered to have a material relationship with the Company if he or she is not:

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- (a) a director who is, or during the past three years was, employed by the company, other than prior employment as an interim executive officer (provided the interim employment did not last longer than one year);
- a director who accepted or has an immediate family member who accepted any compensation from the company in excess of \$120,000 during any period of twelve consecutive months within the three years preceding the determination of independence, other than the following:
 - (i) compensation for board or board committee service;
 - (ii) compensation paid to an immediate family member who is an employee (other than an executive officer) of the company;
 - (iii) compensation received for former service as an interim executive officer (provided the interim employment did not last longer than one year); or
 - (iv) benefits under a tax-qualified retirement plan, or non-discretionary compensation;
- (c) a director who is an immediate family member of an individual who is, or at any time during the past three years was, employed by the company as an executive officer;
 - a director who is, or has an immediate family member who is, a partner in, or a controlling shareholder or an executive officer of, any organization to which the company made, or from which the company received, payments (other than those arising solely from investments in the company's securities or payments under non-discretionary charitable contribution matching programs) that exceed 5% of the organization's consolidated gross revenues for that year, or \$200,000, whichever is more, in any of the most recent three fiscal years;
- (e) a director who is, or has an immediate family member who is, employed as an executive officer of another entity where at any time during the most recent three fiscal years any of the issuer's executive officers serve on the compensation committee of such other entity; or
- a director who is, or has an immediate family member who is, a current partner of the company's outside auditor, or
- (f) was a partner or employee of the company's outside auditor who worked on the company's audit at any time during any of the past three years.

Ownership of a significant amount of the Company's stock, by itself, does not constitute a material relationship. For relationships not covered by these standards, the determination of whether a material relationship exists shall be made by the other members of the Board of Directors who are independent (as defined above).

Item 14. Principal Accountant Fees and Services.

The following table summarizes fees billed to the Company by McGladrey LLP for professional services rendered for the years ended December 31, 2012 and 2011:

	December 31, 2012	December 31, 2011
Audit fees	\$ 121,000	\$ 78,500
Audit-related fees	69,500	38,870
Tax fees	—	26,000
All other fees	—	—
Total	\$ 190,500	\$ 143,370

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PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a) Index To Financial Statements and Financial Statements Schedules:

Report of Independent Registered Public Accounting Firm

Consolidated Balance Sheets as of December 31, 2012 and December 31, 2011

Consolidated Statements of Operations for the years ended December 31, 2012 and December 31, 2011

Consolidated Statements of Stockholders' Equity for the years ended December 31, 2012 and December 31, 2011

Consolidated Statements of Cash Flows for the years ended December 31, 2012 and December 31, 2011

Notes to Consolidated Financial Statements

All other schedules for which provision is made in the applicable accounting regulations of the SEC are not required under the related instructions, or are inapplicable, and therefore have been omitted.

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(b) Exhibits

Exhibit

Number Description

3.1 Certificate of Incorporation, as amended and restated February 11, 2013 (incorporated by reference to Exhibit 3.2 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

3.2 Bylaws as amended and restated February 14, 2013 (incorporated by reference to Exhibit 3.4 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

4.1 Specimen Common Stock Certificate of Tecogen Inc

4.2 Form of Restricted Stock Purchase Agreement (incorporated by reference to Exhibit 4.2 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

4.3* Form of Stock Option Agreement (incorporated by reference to Exhibit 4.3 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

4.4 Indenture and Form of 6% Convertible Debenture Due 2004, dated September 24, 2001 (incorporated by reference to Exhibit 4.4 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.1* Tecogen Inc. 2006 Stock Incentive Plan, as amended on November 10, 2011 (incorporated by reference to Exhibit 10.5 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.2 Form of Tecogen Inc. Subscription Agreement for private placement of Common Stock (incorporated by reference to Exhibit 10.5 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.3+ Facilities, Support Services and Business Agreement between American DG Energy Inc. and Tecogen Inc., dated January 1, 2006 (incorporated by reference to Exhibit 10.6 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.4+ General Motors LLC, Customer Care and Aftersales Agreement, dated November 15, 2011 (incorporated by reference to Exhibit 10.7 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.5 Lease Agreement between Atlantic-Waltham Investment II, LLC, and Tecogen Inc., dated May 14, 2008 (incorporated by reference to Exhibit 10.8 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.6* Form of Demand Note Agreement with John Hatsopoulos (incorporated by reference to Exhibit 10.9 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.7 Form of Sales Representative Agreement (incorporated by reference to Exhibit 10.10 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.8+

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Asset Purchase Agreement with Danotek (assignment for the benefit of creditors), LLC, dated January 8, 2013 (incorporated by reference to Exhibit 10.11 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.9+ Exclusive License Agreement between Tecogen Inc. and the Wisconsin Alumni Research Foundation, dated February 5, 2007 (incorporated by reference to Exhibit 10.12 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

10.13+ Grant Award Number PIR-08-022, dated July 2, 2009 (incorporated by reference to Exhibit 10.13 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

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10.14+2009 Sales Representative Agreement between American DG Energy Inc. and Ilios Dynamics, dated October 20, 2009 (incorporated by reference to Exhibit 10.14 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

14.1 Code of Business Conduct and Ethics (incorporated by reference to Exhibit 14.1 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

21.1 List of subsidiaries (incorporated by reference to Exhibit 21.1 to the Company's Form S-1, as amended, originally filed with the SEC on December 22, 2011).

31.1#Rule 13a-14(a) Certification of Chief Executive Officer.

31.2#Rule 13a-14(a) Certification of Chief Financial Officer.

32.1#Section 1350 Certifications of Chief Executive Officer and Chief Financial Officer (Furnished herewith).

101.1 The following materials from the Company's Annual Report on Form 10-K for the year ended December 31, 2012 formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations, (iii) the Consolidated Statements of Stockholders' Equity, (iv) the Consolidated Statements of Cash Flows, and (v) related notes to these financial statements, tagged as blocks of text and in detail (Furnished herewith).

#Filed herewith.

*Management contract or compensatory plan or arrangement.

Previously filed with the Securities and Exchange Commission as an Exhibit to the Company's Form S-1, as amended. Confidential Treatment has been granted for portions of this document. The confidential portions were omitted and filed separately, on a confidential basis, with the Securities and Exchange Commission.

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TECOGEN INC.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

TECOGEN INC.

(Registrant)

By: /s/ John N. Hatsopoulos

Chief Executive Officer

(Principal Executive Officer)

By: /s/ Bonnie J. Brown

Chief Financial Officer, Treasurer and Secretary

(Principal Financial and Accounting Officer)

Dated: March 27, 2013

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacity and on the dates indicated.

Signature	Title	Date
/s/ Angelina M. Galiteva Angelina M. Galiteva	Chairman of the Board	March 27, 2013
/s/ John N. Hatsopoulos John N. Hatsopoulos	Director and Chief Executive Officer (Principal Executive Officer)	March 27, 2013
/s/ Bonnie J. Brown Bonnie J. Brown	Chief Financial Officer, Treasurer and Secretary Principal Financial and Accounting Officer)	March 27, 2013
/s/ George N. Hatsopoulos George N. Hatsopoulos	Director	March 27, 2013