

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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2024

OR

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

For the transition period from _____ to _____

Commission file number 001-35521

CLEARSIGN TECHNOLOGIES CORPORATION

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

26-2056298
(I.R.S. Employer
Identification No.)

8023 East 63rd Place, Suite 101
Tulsa, Oklahoma 74133
(Address of principal executive offices)
(Zip Code)

(918) 236-6461
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	CLIR	The Nasdaq Stock Market LLC

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 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 every Interactive Data File required to be submitted 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 such files). Yes No .

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

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

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

State the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter.

As of June 30, 2024, the aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, computed by reference to the last sale price of the common equity was \$33,474,132.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date.

As of March 26, 2025, the registrant has 52,418,782 shares of common stock, par value \$0.0001, issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

None.



Technologies Corporation

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND OTHER INFORMATION CONTAINED IN THIS REPORT

This Annual Report on Form 10-K, or this “report,” contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and the provisions of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Forward-looking statements give our current expectations or forecasts of future events. You can identify these statements by the fact that they do not relate strictly to historical or current facts. You can find many, but not all, of these statements by looking for words such as “approximates,” “believes,” “hopes,” “expects,” “anticipates,” “estimates,” “projects,” “intends,” “plans,” “would,” “should,” “could,” “may,” “will” or other similar expressions in this report. In particular, these include statements relating to future actions; prospective products, applications, customers and technologies; future performance or results of any products; anticipated expenses; and future financial results. These forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from our historical experience and our present expectations or projections. Factors that could cause actual results to differ materially from those discussed in the forward-looking statements include, but are not limited to:

- our history of losses and expectation that we will continue to experience operating losses and negative cash flows in the near future;
- our ability to successfully develop and implement our technologies and achieve profitability;
- our limited operating history;
- changes in government regulations that could substantially reduce, or even eliminate, the need for our technology;
- emerging competition and rapidly advancing technology in our industry that may outpace our technology;
- customer demand for the products and services we develop;
- the impact of competitive or alternative products, technologies and pricing;
- our ability to manufacture any products we design;
- general economic conditions and events and the impact they may have on us and our potential customers;
- the impact of a cybersecurity incident or other technology disruption;
- our ability to protect our intellectual property;
- our ability to obtain adequate financing in the future;
- our ability to retain and hire personnel with the experience and talent to develop our products and business;
- our success at managing the risks involved in the foregoing items; and
- other factors discussed in this report.

Forward-looking statements may appear throughout this report, including without limitation, the following sections: Item 1 “Business,” Item 1A “Risk Factors,” and Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” The forward-looking statements are based upon management’s beliefs and assumptions and are made as of the date of this report. We undertake no obligation to publicly update or revise any forward-looking statements included in this report. You should not place undue reliance on these forward-looking statements.

Unless otherwise stated or the context otherwise requires, the terms “ClearSign,” “we,” “us,” “our” and the “Company” refer to ClearSign Technologies Corporation and, where appropriate, its subsidiary, ClearSign Asia Limited.

PART I

ITEM 1. BUSINESS

Introduction

We design and develop technologies for the purpose of decarbonization and improving key performance characteristics of industrial and commercial combustion systems, including emission and operational performance, energy efficiency, and overall cost-effectiveness. We believe that our patented ClearSign Core™ technology can enhance the performance of combustion systems in a broad range of markets, including the energy (upstream oil production, midstream gas processing and transportation, and down-stream refining), institutional, commercial and industrial boiler, chemical, and petrochemical industries. Our ClearSign Core™ technology, which is our primary technology, uses either a porous ceramic structure or metal flame holder device held at a distance from the injection planes of a burner to significantly reduce flame length and achieve low emissions without the need for external flue gas recirculation, selective catalytic reduction, or high excess air systems. To date, our operations have been funded primarily through sales of our equity securities.

Our combustion technology has been successfully deployed in commercial projects such as down-stream refining and upstream oil production. These applications include our process burner, flaring and boiler burner technologies. Both our process burner and boiler burner technology can operate in high-intensity industrial burner applications at sites that are required to meet low air pollutant emissions.

We believe that combustion equipment utilizing ClearSign Core™ technology is more effective and cost-efficient than current industry-standard air pollution control technologies and can reduce nitrogen oxide (“NOx”) emissions down to the levels required by new stringent emission regulations. NOx is a regulated greenhouse gas pollutant comprised of nitrogen oxide and nitrogen dioxide. These current industry-standard air pollution control technologies include selective catalytic reduction devices (“SCRs”), low- and ultra-low NOx burners, external flue gas recirculation systems and other similar technologies. Such air pollution control systems are widely used in places within our current target markets such as petroleum refining and petrochemical process heaters, large-scale once through steam generators (“OTSGs”), enclosed flares, institutional commercial and industrial boilers and other similar equipment. We believe that our ClearSign Core™ technology can provide value to our customers not only by helping them meet current and possible future legislative mandates to reduce pollutant emissions, but also by improving operating efficiency and increasing overall return on investment.

Based on the operating data we have obtained from our installed products, burners utilizing ClearSign Core™ technology can provide increased heat transfer efficiency as compared to other emission reducing technologies. This is consistent with the physics of heat transfer and the mechanisms by which the technology functions. The reported increased heat transfer efficiency may potentially result in cost savings in the low to mid-single digit percentage range for burners employing our technology. We believe that these potential costs savings could produce a significantly attractive pay-back period for an investment in ClearSign Core™ technology-based burners. In addition, because the flame volumes in heaters utilizing ClearSign Core™ technology are typically small, heaters using our technology are expected to operate at a lower cost, have increased productivity, and require less maintenance and downtime compared to heaters that operate with enlarged flames produced by traditional low NOx burners. The flames in a ClearSign Core™ system are established from a predominantly premixed stream of fuel, combustion air and flue gasses stabilized on a downstream structure that promotes turbulence and ignition with minimal “bulking up.” In comparison, flames resulting from the traditional legacy process of slow mixing of the fuel and air, and dilutive inert flue gasses have a much larger size. With a lower volume flame in a ClearSign Core™ system, surfaces in the heater or boiler experience less touching by the flame and it is anticipated that our systems can virtually eliminate flame impingement. Our technology also enables burners to function better in tightly spaced heaters compared to the flames of traditional low NOx burners. Most importantly, using our technology has the potential to decrease process downtime required during installation compared to retrofits utilizing the legacy technology of SCRs or flue gas recirculation systems.

We are also designing and commercializing a range of sensing products called the ClearSign Eye for two potential markets. The primary addressable market is similar to that of our ClearSign Core™ technology, although not

limited to regions requiring emissions reduction. The flame sensing products are applicable to all installed burners that use a pilot for ignition, including in markets and regions beyond those where reducing emissions is a high priority. Like our burner technology, our burner sensing technology is being developed to provide convenient replacement and retrofit solutions for existing equipment as well as for inclusion in newly built equipment.

The secondary potential market for our sensing technology is outside of the typical combustion industry and includes transportation industries. We are collaborating with Narion Corporation to further develop our technology for this industry, which allows us to incur minimal costs while pursuing this market opportunity. While use of this fundamental technology in applications intended for transportation markets is proven, the development and refinement of specific products, obtaining the certifications required for commercial deployment and establishing an efficient manufacturing source and channels to market will take some time, and we cannot assure that these goals will be achieved. We believe that the opportunities for application of our sensing technology in the transportation market are global and of great value, but it will also take longer to commercialize products targeted for this market for the reasons stated above.

Overall, our sensing technologies could provide future diversification as well as the opportunity for continued business expansion and growth beyond the maturation of our combustion-related businesses.

Our Industry

The combustion and emissions control systems markets are significant, both with respect to the wide array of industries in which the systems are used and the amount of capital spent installing and upgrading the systems. Combustion systems are used to provide heat for many different industrial and commercial processes, including boilers, petrochemical process heaters, and waste disposal systems. In order to maximize energy efficiency while keeping pace with regulatory guidelines for air pollution emissions, operators of combustion systems are continually installing, maintaining, and upgrading a variety of costly process control, air pollution control and monitoring systems. Although we believe that there are many potential markets for our ClearSign Core™ technology, to date we have limited the introduction of this technology to petroleum refining process heaters, energy infrastructure process heaters, boilers for steam and hot water generation, boilers for building heating systems, and enclosed flares. We have initially targeted these markets for various reasons, such as, but not limited to: (i) environmental regulations imposed on these markets, (ii) total available market size, (iii) this technology being the most readily adapted to the needs of these industries and (iv) management experience and expertise.

Our initial target markets center on the energy sector, including downstream oil refineries through the use of process heaters and boilers as well as upstream crude oil production through the use of OTSGs and wellhead enclosed flares. We believe operators in our domestic target markets are under pressure to meet current and proposed federal, state and local pollution emissions standards. The standards applicable to our target markets have been developed over the past 50 years with broad political input. Due to the localized effects of poor air quality, we expect these standards to continue to become more stringent regardless of political leadership. As an illustration, air pollution emission standards are most stringent in the states of California and Texas, which historically have had leadership from different political parties. We believe this to be the case in the U.S. and worldwide in most major developed and developing countries. As a result, these standards are a significant driver for our development and sales efforts. We believe that our ClearSign Core™ technology can provide a unique, cost-effective pollution control solution for operators in comparison to known competing products.

In the U.S., emissions standards largely emanate from the Clean Air Act of 1963 (as amended, the “Clean Air Act”), which is administered by the Environmental Protection Agency (“EPA”) and regulates six common criteria air pollutants, including ground-level ozone. These regulations are enforced by state and local air quality districts as part of their compliance plans. As a precursor to ground-level ozone, NOx is a pollutant that is regulated by local air quality districts in order to achieve the EPA limits. The 8-hour ground-level ozone regulations have been reduced from 80 parts per billion (“ppb”) in 1997, to 75 ppb in 2008, and 70 ppb in 2015, with the requirement of realizing these levels approximately 20 years following the year of legislation.

We have noted that local air quality districts designated by the EPA as “severe non-attainment zones” in California and Texas have undertaken a review of their air pollutant emissions regulations. These reviews are ongoing, in most regions, but two important regions have recently amended their local regulations to improve air quality. In December of 2020, the San Joaquin Valley region of California revised its regulations to require significant reductions in target NOx emissions from boilers, steam generators and process heaters. And, in November of 2021, the greater Los Angeles area also revised its regulations. These revised regulations substantially reduced target emissions for process heaters, boilers and other similar equipment pursuant to a new and comprehensive Best Available Retrofit Control Technology (“BARCT”) analysis, which we believe will result in an increased demand for our services and products.

On February 2, 2024, the South Coast Air Quality Management District of California (“SCAQMD”) as part of its periodic public participation process to enhance existing Best Available Control Technologies (“BACT”) determinations, assessed the process burner performance of our ClearSign Core™ burner technology in certain currently operating customer installations. As a result of this assessment, SCAQMD approved new BACT performance guidelines for both single and multi-burner configurations. BACT guidelines are periodically updated by SCAQMD to reflect advancements in technology and to ensure affected equipment utilize the most efficient technologies. While the establishment of a new BACT benchmark does not specifically endorse ClearSign or our products, it does establish a limit in the industry that favors our products. According to SCAQMD, BACT is the most stringent emission limitation or control technique for a class and category of equipment that is “Achieved in Practice,” or “Contained in a State Implementation Plan” (“SIP”), or “Technologically Feasible.”

In addition, new regulations are starting to be adopted with respect to the NOx emissions of enclosed ground flares, which historically have not been viewed as a source of NOx emissions or subject to the same level of regulation. We believe that our ClearSign Core™ technology is well-suited to address the challenges faced by oil producers and other industries in complying with current and predicted future local air emission standards. There are multiple ClearSign Core™ flare applications now operational in California with NOx emissions below the levels required by new regulations.

In addition, we believe that current emissions standards in Europe, the Middle East, parts of Asia and Canada will continue to become stricter as these jurisdictions seek to achieve cleaner air. Existing and new emissions standards in such jurisdictions may create additional market opportunities for us. To date, we have one installation operating in the refinery of a major global oil refiner in Europe.

The current environmental impetus to reduce carbon dioxide emissions has created an interest in burner technology that can use hydrogen as a fuel source. Because hydrogen burns at a higher temperature than most other fuel gasses, it tends to create more NOx emissions. ClearSign Core™ burners have demonstrated the ability to burn fuels with up to 80% hydrogen while still controlling NOx emissions to meet required regulatory levels. We believe that we can extend the capability of our ClearSign Core™ technology to burn “pure” hydrogen fuel.

Our Proprietary Technology

ClearSign Core™ Burner Technology

The name “ClearSign Core” was adopted to describe the inclusion of ClearSign’s burner technology in the products of original equipment manufacturers (“OEM”). Including our technology in OEM burner products enables us to leverage our technology by providing OEMs with the ability to offer a new product range with our technologies’ unique capabilities and differentiated product performance.

Our ClearSign Core™ burner technology consists of an industrial burner body and a downstream flame stabilizing structure made of either porous ceramic or metal. When the unreacted mixture of gaseous fuel and air is directed at the flame stabilizing structure, the mixture ignites and the flame forms either within or immediately downstream from the structure itself. Because the fuel and air have more time to become a homogeneous mixture, NOx-forming hot spots and chemistry typically produced by such hot spots is reduced. In addition, the mixing and combustion propagating from the flame-stabilizing structure results in a dramatically shorter flame. The ability to modify the flame stabilizing structure enables a high level of control over the flame shape for optimization in a wide range of different applications. For example, we believe our ClearSign Core™ products, without any external fans or associated power, can significantly reduce the harmful emission of NOx to levels of 5 ppm or below, depending on the application. The shorter flame in a ClearSign Core product can also potentially allow a furnace to operate at a higher capacity. We believe that heaters using the ClearSign Core™ will be able to remain in operation for an extended time before the need for maintenance as its flame structure and heat transfer profile minimize the possibility of flame impingement, reduce the likelihood of carbon deposits forming on the inside surfaces of the process tubes (coking) and reduce the likelihood of process tube failure all while operating with enhanced thermal efficiency.

Refinery and Petrochemical Heater Technology



Boiler Technology



ClearSign Core™ Process Burner Technology

Our ClearSign Core™ burners provide a simplified, pre-engineered and standardized direct burner replacement for traditional refinery process heaters. We believe that this product minimizes the customized engineering associated with retrofits and lends itself to mass production. The product was designed to enable quick and easy installation in single burner or multi-burner heaters or furnaces. We believe that the simplicity of the actions required to retrofit refinery process heaters with the ClearSign Core™ technology, and the potential ability to install these burners will potentially contribute to demand for our ClearSign Core™ process burners.

ClearSign Core™ Boiler Burner Technology

Our ClearSign Core™ technology for boiler burners is essentially the same as our technology for process burners, but with different component details. Boiler burners have a different orientation and internal chamber dimensions, operate with a relatively high combustion air pressure, and, in the case of small fire tube boiler burners, have a lower fuel gas pressure. Our go to market strategy of incorporating the ClearSign Core™ technology into a typical OEM process burner is the same as for our boiler burners.

ClearSign Core™ Flaring Burners

Our ClearSign Core™ flaring technology incorporates the same mechanisms as our burner technology, namely directing the fuel gas (typically waste gas), into an air stream with that air and gas mixture forming a flame stabilized downstream on a flame stabilizing structure. This technology has been configured into standard modular designs that can be used individually, or in combination, to provide a flare product with extremely low NOx emissions. We have designed standardized flare configurations with standard firing capacities that can be combined in varying quantities to produce flares with different firing rates.

ClearSign Eye Flame Sensor

The ClearSign Eye flame sensor is an electrical flame sensor for industrial applications. Unlike the traditional technology, called “flame rods,” the ClearSign Eye sensing electrodes do not need to make contact with the flame. We are continuing to pursue “first adopter” installation opportunities for this patented sensing technology. We have multiple options open to us as channels to market, one of which includes manufacturing the sensors ourselves as an OEM and selling them to customers either directly or indirectly through intermediaries, and another being licensing. We believe our sensing technology is valuable because it potentially provides a very reliable alternative or replacement technology for critical industrial burner safety equipment. The currently available flame sensors are unreliable and require frequent maintenance. Our flame sensors can potentially be used with other combustion equipment such as flares, thermal oxidizer burners and boiler burners.

Our sensing technology can detect the capacitance of a flame while being physically outside of the flame envelope. As a result, our sensors can be easily retrofitted into existing burner technology. In addition, because the entire sensor probe can be positioned in a cool region, the ClearSign Eye can be manufactured with electrodes that have an optimized shape to provide the most robust signal and using processes and materials that provide an extremely long functional life.

Development of Our Technology

To date, we have deployed our ClearSign Core™ technology through retrofits and replacements of existing burners and complete replacement units in the case of our process burner and boiler burner products. Retrofits often involve engineering around an existing burner architecture that can complicate the ClearSign Core™ burner installation, whereas replacements are more straightforward and more amenable to being sold and installed by third parties, enabling more expansive channels to market. Because of this, we have focused the development of our technology to provide designs that can be included into our prospective customers’ equipment as self-contained modules or assemblies rather than projects involving the re-engineering of existing burner systems. In this form, we believe that the ClearSign Core™ burner technology is ideally suited for installation into new heaters and burner replacements, including heater and furnaces requiring large quantities of burners. In addition, this strategy also provides for simple new burner installations, or burner replacements to reduce emissions in boilers ranging from small fire tube boilers to large water tube boilers. We have also developed the ClearSign Core™ flare technology into similar repeatable forms to aid its inclusion in standard industry installations on a commercial scale with multiple installations now operational in California.

For simplification and marketing, we have adopted the term “ClearSign Core” to refer to the inclusion of our standardized proprietary combustion technology into a variety of combustion equipment types including, but not limited to, process heater burners, boiler burners, burners for thermal oxidizers and flares. Earlier ClearSign technology-based heater retrofits, in which a continuous ceramic “wall” was suspended above the existing burners, also continue to

operate, and are referred to as “Duplex” technology. Although the combustion controlling principles of both the “ClearSign Core” and “Duplex” technologies are the same, ClearSign Core™ products have standardized technology and we believe they are easier to use and have a different channel to market.

ClearSign Core™ burners currently operate in multiple boilers, heaters and flares and meet new compliance standards enacted by California air authority. We also have products in commercial use in Europe. As noted above, our principal technologies have been developed into standardized designs. Our business development activities are now focused on developing customer acceptance and adoption within what we believe are the most efficient channels to market. The industries using our technology take a conservative approach to adopting new technology and place significant reliance on references from existing customers when selecting new equipment. A major focus of our current business development activities is to make early sales and build our reference list in both the process burner and boiler burner industries. We also seek to provide comprehensive technical support to our sales efforts as well as demonstrate our technology and products in operation. We are currently able to demonstrate our products while operating in rental boilers, industrial scale process burner test furnaces, and at customer locations when permissible.

ClearSign Core Technology Product Applications

To date, we have deployed our ClearSign Core™ technology through the retrofit or replacement of existing burners. As noted above, retrofits often involve engineering around an existing burner architecture that can complicate the installation. By developing our ClearSign Core™ technology into a replacement product, we have been able to standardize our designs and simplify supply-chain demands. In addition, we have enabled collaboration with other commercial equipment suppliers with the intent to incorporate our ClearSign Core™ technology into their standard product lines. We believe that this further development of our products has greatly increased our ability to collaborate with partners to extend our potential market reach and the resources we make available to our prospective customers.

Process Heaters in the Oil Refining, Petrochemical and Gas Processing Industries

To date, we have retrofitted six process heaters with our new ClearSign Core™ process burners for refineries and fuel distributors, some of which are owned by global supermajor companies and Fortune 500 companies. Sites include four locations in California and one in Europe. The ClearSign Core™ design provides a more simplified, pre-engineered and standardized direct burner replacement for traditional refinery process heaters that we believe can be mass produced and reduce the need for the customized engineering associated with typical retrofits. The ClearSign Core™ design (including the boiler burner version) is our most developed burner product. It operates essentially in the same way as a standard burner, including fitting into a heater and integrating with existing control systems. We believe that this product is suitable for licensing as well as potential manufacturing arrangements with OEMs that have established manufacturing and distribution capabilities. At this time, we have a collaboration agreement in place with Zeeco Inc., one of the world’s largest combustion equipment manufacturers (“Zeeco”). The selling and marketing of our process burners pursuant to this agreement, however, is contingent upon terms still under negotiation.

In 2021, we received our first international purchase order for a ClearSign Core refining process heater from a global supermajor refining company. This marked the second order we received from a global supermajor company. This international order was installed in 2021 and successfully placed it into full operation by the customer in January 2022. In addition, we fulfilled a multi-burner order for a Fortune 500 infrastructure company that continues to consistently meet all performance requirements including compliance with the California site’s air quality permit. The process burner installed at this site was used by SCAQMD to set new BACT guidelines (see discussion above under the “Our Industry” section). We also received a purchase order in 2022 from a California refinery for our ClearSign Core™ process burners, amounting to twenty burners. Due to project delays, which were outside of our control, the process burners for this order were shipped to the jobsite during the third quarter of 2024 but the installation into the customer’s heater is now expected to occur during the third quarter of 2025. On May 18, 2023, we received an order for thirteen process burners from an existing California refinery customer. The order covered retrofitting two heaters, both of which have been installed and are currently operating. The process burners installed in both heaters have passed the customer’s NOx emissions permit level, which were validated by third-party inspectors.

In 2023, we received a purchase order from a heater manufacturer to install a modified ClearSign Core™ boiler burner into a horizontally fired process heater. The end customer was a chemical company located in Texas. This project was a significant achievement for us, since it gave us the ability to demonstrate a new product offering. Since that first order in 2023, we have received three more orders for this same type of application. We believe these orders are representative of an underserved and growing market opportunity in low emissions burners for horizontally fired process heaters. Two of these orders are in the state of Texas, and are believed to be a response to anticipated changes to Texas air emissions regulations, which we expect will ultimately lead to additional demand for our technology.

As we seek to expand the markets into which we can sell our products, we plan to continue extending the range of ClearSign Core™ process burners to enable the replacement of other burner shapes and configurations, as well as for use in alternate process applications.

Hydrogen Process Burners

We are currently in the research and development phase to design a one-hundred percent hydrogen capable ClearSign Core™ process burner. The goal of this project is to develop an ultra-low NOx hydrogen burner, which we believe will enable the adoption of hydrogen fuel for industrial heating, leading to reductions in the industrial emissions of both carbon dioxide and nitrogen oxides. Current burners and previous efforts to decarbonize industrial combustion processes through the utilization of hydrogen fuel are inhibited by the lack of industrial hydrogen burners capable of burning pure hydrogen while controlling emissions of NOx emissions to the most stringent levels required in the industry.

We have received two grants from the Department of Energy (“DOE”) to fund the development of this technology. In total, the DOE awards approximate \$1.9 million in the aggregate, with a target end date occurring in 2025. See “Note 12 – Government Assistance” for further details about these monies.

Industrial Commercial Boilers

Boilers are used in many industrial applications, and smaller scale commercial and residential applications, to generate steam and hot water. Several boiler manufacturers produce many styles of boiler equipment for these different applications. In our target markets, boilers exist in two different industry-standard forms: water tube, which tend to be larger and in which the water or steam flows through a series of tubes that surround the space in which the flame forms; or fire tube in which the flame is formed inside a large tube that passes through the outer vessel holding the water.

Our “Core” boiler burner technology has been developed to enable it to be used in a series of consistently designed firetube boilers. For fire tube products, we have developed our own patent protected burner replacement product that is similar in concept to our ClearSign Core™ burners for process heaters. These boiler burners have achieved performance levels meeting the most stringent new California NOx regulations, in a typical commercial fire tube boiler produced by one of the industry’s largest suppliers in the U.S. For instance, through our collaboration agreement in place with California Boiler to sell, deliver, install and service fire tube boiler burners in the U.S., we were able access larger sizes of fire tube boilers in order to verify the function of a range of fire tube boiler burners.

In 2023, we received two purchase orders for our ClearSign Core boiler burner technology. Both boiler burner purchase orders were sold as a package with our collaborative partner, California Boiler, and its subsidiary, Rogue Combustion, into the San Joaquin Valley Air Pollution Control District of California. The NOx emission permits for these boilers vary, with one boiler noted at 5ppm and the other at 2.5ppm. Third-party source testing has validated the 5ppm and 2.5ppm emission orders. In 2024, we received three additional orders from Rogue Combustion with one of these three orders accompanied by a letter of intent for three follow-on orders.

Wellhead Enclosed Flares

Based upon discussions with local regulators and the examination of regulatory reports, we believe that certain regions are targeting enclosed flare emissions for increased future regulation. California, for example, has already added new low NOx emissions regulations for flares. We have adapted ClearSign Core™ technology to suit this application.

Our collaboration agreement with the field engineering and servicing company California Boiler includes flare sales and installation. To date, we have four flare units installed and operating in California resulting from this California Boiler collaboration agreement.

OTSGs for the Enhanced Oil Recovery Industry

We have successfully installed our Duplex technology in three OTSG projects in the enhanced oil recovery industry in California. Field data reported by our customers indicates significant efficiency improvements resulting from the installation of the ClearSign technology. We believe our new standardized boiler burner range of products is also well suited to this application.

Sensing Products

We are currently engaged with a prominent refining customer as a first adopter to install our flame sensors on burners in one of their heaters facilitating our first field demonstration. Although we have not yet completed the product launch of our sensing products and subsequent commercialization thereof, we have obtained clear and consistent customer feedback guiding its first application. The target market for this technology is potentially every burner with a pilot on which flame sensors are deployed, providing a global and very high-volume opportunity. This market is not limited by emissions mandates or the type or manufacturer of the burners. The product has value for retrofit applications, where it is applied to existing burners, and for new burners, where it can be installed in burners by OEMs.

We are assessing the possibility of manufacturing the sensing products ourselves as well as partnering with one or more established OEM suppliers. Demonstration units have been manufactured and we currently have the ability to manufacture the sensor ourselves for the foreseeable future. We are also exploring alternative paths to monetize the technology, including opportunities to license our technology.

The fundamental technology for the sensors envisioned for transport applications is the same as for the flame sensors, but the application and form of the final product will be very different. We have received notable interest in this product from a major global customer giving us the confidence that there is a potential market for this technology, which is therefore worthy of future investment. This sensor product is in the very early stages of development and would be deployed in a highly regulated environment requiring a thorough product development process. The interest we have received to date, however, suggests that this could potentially be a significant future business opportunity for ClearSign.

Our Target Markets

Our ClearSign Core™ products compete in the combustion and emissions control markets. These industries are highly competitive and currently dominated by companies that have comparatively more established products and substantially greater infrastructure, customer support networks, and financial resources. Based on testing and completed field installations to date, however, we believe that our ClearSign Core™ technology provides several unique and powerful business solutions for our customers, including, but not limited to: (i) overall cost-effective installation, (ii) energy efficiency, (iii) operational performance and (iv) significantly reduced emissions. Further, we believe that our technology is well-suited to create substantial synergistic value by incorporating it into mainstream commercial offerings with the market incumbents, thus leveraging the “ClearSign Core” technology along with the established breadth and capabilities of collaborating companies, such as Zeeco and California Boiler.

We are targeting the following segments of the combustion market for adoption of our ClearSign Core™ technology:

- institutional, commercial and industrial boilers;
- refining, energy infrastructure and petrochemical process heaters;
- enclosed flares and thermal oxidizers; and
- enhanced oil recovery steam generators

In each of these segments, we are marketing solutions that include our ClearSign Core™ technology which we believe could simultaneously improve productivity, operational efficiency and pollution control.

Our target markets are greatly affected by air emission regulations and economic conditions. Accordingly, we prioritize our activities in target market segments geographically based on the needs of the local industries and the current and anticipated future requirements imposed by local environmental regulations. Details regarding the localized effect of environmental regulations in the United States are described in the section of this report titled “Our Industry.” In general, our immediate regional opportunities are in the West and Gulf Coasts of the United States.

Competition and Barriers to Entry

The industry in which we operate is global in scope and populated by large, established suppliers of burners and post-combustion air pollution control systems. These suppliers possess resources that are substantially greater than ours. Worldwide, suppliers of burners and air pollution control equipment include but are not limited to companies such as Callidus, Eclipse and Maxon (all three are subsidiaries of Honeywell), John Zink Hamworthy Combustion (a subsidiary of Koch Industries and including Coen), General Electric, Haldor Topsøe, Hitachi, Linde, Zeeco, Fives Group, Cleaver Brooks, Power Flame (a subsidiary of Aztec Inc.), and others.

These companies provide systems that include low and ultra-low NOx burners, selective and non-selective catalytic reduction systems, and other pollution control technologies. They are well-established and their combustion and emissions control systems are based mostly on mature, well-understood and proven technologies. As a result of the relatively slow pace of developing and adopting innovation, we believe the technology and products currently being offered by our large competitors have become commoditized with differentiation between suppliers most often based on price. These industry characteristics provide both an opportunity and a barrier to more nimble, disruptive companies.

From a customer’s perspective, installation of legacy air pollution control technologies is viewed as a method of avoiding fines, as a cost of doing business, and as a means to operate within current and anticipated future regulatory requirements.

Unlike most other kinds of capital equipment that provide an economic return through enhanced productivity or efficiency, we believe customers of traditional emissions control equipment do not expect any positive return on emissions control investments other than the ability to continue to operate or avoid fines. We believe the ClearSign Core™ suite of products are further differentiated from its competitors because they give prospective customers the opportunity to greatly reduce capital investment and, in certain cases, realize a return on investment through increased efficiency and/or increased productivity.

As indicated above, we are seeking to develop our business in the combustion and emissions control market and to establish ourselves in a highly competitive industry among companies that have substantial financial resources, a well-developed infrastructure and established products. Our business development strategy seeks to obtain recognition of our technology’s value while minimizing the challenges inherent in this market including the strengths of the other market participants.

Major barriers faced by a new equipment manufacturer seeking to enter this market include:

1. *Developing engineering, order fulfillment and customer service staff:* Especially in the refining and petrochemical industries, customers require specialist support throughout the life cycle of the combustion equipment including with order execution when purchasing. Recruiting and developing sufficient staff with the special skills necessary to provide the level of service required by customers in this market would take time and result in a significant ongoing overhead cost.
2. *Developing operational infrastructure:* Especially in the refining and petrochemical industries, customers require thorough quality assurance procedures, including demonstration of an item from their order, to prove that it meets performance guarantees. This requires, among other things, having access to a test furnace. Developing such an operation would require significant investment and ongoing costs.

3. *Conservative customers:* Our customers are very careful and methodical about adopting a new technology or product because of the complexity of their infrastructures, the cost of downtime in any part of a processing plant and the potential safety hazards of their operations.
4. *Profit opportunity:* There is very little differentiation between the products offered by the established burner equipment providers, which results in thin profit margins for the sale of new or replacement burners. A significant portion of a company's profit results from the sales of replacement parts and equipment upgrades. Any new entrant without a differentiating technology will not have this established source of significant and immediate profit.

Go to Market Strategy

We developed our “go to market” strategy for the ClearSign Core™ combustion business considering our strengths and weaknesses. The most important weaknesses are related to the barriers to entry identified above. We are a small company with limited financial resources and do not have the infrastructure to meet the requirements of our sophisticated target global customers without significant investment and increase in operational costs. Although we have highly skilled and experienced employees, we do not have the manpower to provide comprehensive service and customer support ourselves. We believe that it is in the best interests of the Company and our stockholders to develop our business utilizing an “asset light” model. Accordingly, we seek to collaborate with strategic partners to the extent possible to sell our products and maximize the profitability of those sales.

We believe that our technology is our main strength, which has been developed to provide a standard set of “core” components that can be incorporated into any generic OEM burner body. These components enable unique performance that minimizes emissions and controls flame size. We believe that our strengths also include the market opportunity potentially created by new and anticipated environmental emissions control regulations. These regulations will potentially require combustion performance that either exceeds the technology available from the incumbent equipment manufacturers or requires retrofitting existing equipment with a post-combustion clean up apparatus. Installing clean-up apparatus is very expensive especially for small to mid-sized heaters. We believe that the incumbent burner OEM product development approaches are, and will continue to be, incremental in nature, and are unlikely to pose a significant threat to the value provided by ClearSign Core technology in the foreseeable future.

Manufacturing Footprint and Product Quality Strategy

Our business has been, and continues to be, developed with the goal of combining our technology with the infrastructure and resources of major OEM equipment manufacturers. Through such collaborative arrangements, OEM burner manufacturers can reap the benefits of adding truly differentiated and unique product lines to their offerings and ClearSign can overcome the barrier to market of needing to build capital and operating expense-intensive infrastructure and hiring a large specialist staff. We also believe that having orders fulfilled by a well-known and trusted supplier will reduce the risk, as perceived by prospective customers, of dealing with a small company. We expect that developing strategically chosen collaborative partnerships will result in supplying ClearSign Core™ technology to major global customers in large quantities together with the attendant engineering, quality control, customer support and project management services required by these sophisticated customers. We also believe that our collaborative partnerships will enable our OEM partners to offer a unique product in the marketplace and provide both parties with a potentially significant commercial opportunity. Forming such alliances is expected to dramatically accelerate the global sales and market adoption of our technology.

As announced in June 2019, we already have an agreement in place with Zeeco, who is one of the world's largest burner manufacturers, to globally manufacture ClearSign Core™ process burners. In December 2024, Zeeco and ClearSign announced the launch of a co-branded ClearSign Core process burner product line. We believe that this announcement marked the next stage of evolution in our relationship with Zeeco, where we will work together to market and sell ClearSign Core™ technology. We are continuing to negotiate this next phase of our relationship, but we view this announcement as a commitment to solidify our shared marketing and sales efforts of ClearSign Core™ technology going forward.

In addition, we have a collaborative agreement with California Boiler to sell and produce both fire tube boiler burner and flare products. California Boiler created a wholly owned subsidiary Rogue Combustion for the purpose of marketing boiler burner systems solution using our ClearSign Core™ technology, which are branded as Near Zero NOx (“NZN”) and Sub 5ppm NOx (“S5”) and Sub 9ppm NOx (“S9”) solutions. Typically, boiler burner customers rely on integrated service providers to design, install and service boiler burner systems. Our collaborative relationship with California Boiler and Rogue Combustion aligns with our “asset light” philosophy by providing us with a low-cost path to market, by limiting human capital investment in maintenance and installation technicians.

Sales Channel and Marketing Strategy

In addition to targeting OEM manufacturers and service providers to augment our manufacturing footprint and on-time service capabilities, we target sales and marketing efforts at OEM heater companies and engineering companies supporting our refining, petrochemical and energy infrastructure customers. By focusing on this sales channel, we believe we can quickly gain repeat sales given these customers act as a conduit to multiple end users, which also allows us to maximize the reach of our limited selling and marketing resources. In 2024, as a result of adopting such go-to-market strategy, we received multiple orders originating from a single heater OEM.

We value and nurture our relationships with end users, and we view this sales channel as a critical path to overall market acceptance, since end users ultimately own and operate our equipment. Further, by maintaining and growing such relationships, we were able to successfully enter the market and generate the first adopters of our technology. We further believe that fostering these relationships will help us drive demand for our products downstream to OEM heater manufacturers and engineering service companies. We expect that these end users, as first adopters of our technology, will also play a vital role in future sales efforts by providing references to prospective customers, as, based on our experience, prospective customers frequently request a reference from an existing customer.

Another aspect of our marketing strategy relies on obtaining reputable third-party validation of our technology by demonstrating that our burners can meet or exceed the operational characteristics we set out to achieve. As noted above in the “Our Industry” section, the SCAQMD approved new BACT performance guidelines for both single and multi-burner configurations using our burners as part of an assessment review. While BACT guidelines do not specifically endorse our technology, we believe these new guidelines reinforce the viability of our burners’ operational capabilities to any industry skeptic. In addition, we participated in a study executed by the California Gas Emerging Technologies (“GET”) program to test and quantify the emissions improvements and efficiency gains of our ultra-low NOx boiler burner as compared to a conventional (or baseline) ultra-low-NOx burner. ICF a global advisory and technology service company, released its independent report on October 2, 2024, detailing the results of this study. In summary, our technology reported fuel savings at 3.3% when operating at sub-2.5 ppm NOx and 4.7% at sub-9 ppm NOx; electricity savings reported 7% at sub-2.5 ppm NOx and 25% at sub-9 ppm NOx. We believe these third-party reviews of our technology play a critical role in proving the efficacy of our technologies and dispelling industry skepticism.

Pricing Strategy

We believe that the unique capabilities of our technology improve combustion equipment performance and provide significant economic value to our customers compared to the next best alternative solutions available. As a result, we expect that products containing ClearSign Core™ technology will sell at prices based on the value they offer rather than pursuant to standard competitive pricing that our competitors are forced to use in these mature markets.

Our Business Segment and Major Customers

We conduct our business activities and report financial results as one business segment. Our business segment engages in the design, development and sale of combustion technologies that improve the performance and cost-effectiveness of industrial combustion systems. The presentation of financial results as one reportable segment is consistent with the way that we operate our business and the manner in which our chief operating decision maker, currently our Chief Executive Officer, manages our operations for purposes of allocating resources and assessing financial results.

Our operating activities are substantially all located within the United States, and our customers located in the United States accounted for 100% of revenues in the fiscal years ended December 31, 2024 and 2023. Our two California refinery customers accounted for 86% and 87% of our annual revenue for the years ended December 31, 2024 and 2023, respectively. No other customer represented greater than ten percent of annual revenues for the years ended December 31, 2024, and 2023.

	For the Year Ended December 31,	
	2024	2023
Customer A	59 %	28 %
Customer B	27	59
	<u>86 %</u>	<u>87 %</u>

Suppliers and Subcontractors

Due to our “asset light” model, we use subcontractors to source, warehouse and manufacture our products. This model allows us to maximize the value of our limited resources while minimizing capital investment. Our subcontractor, for the process burner product line, is intentionally single sourced through a collaborative agreement with a well-known and established industry leader, Zeeco. Our boiler burner product line is not dependent upon a single-sourced subcontractor. While we continuously assess, for any improvements in productivity and supply chain efficiency, there can be no assurance that our subcontractors will not experience supply interruptions, production capacity constraints or working capital limitations, which could adversely affect our business.

Raw steel and fabricated steel parts are a major component of our product cost, purchases of which are subject to the needs and specifications of our customers or subcontractors. Periodic changes in the price of steel may affect our final product pricing to customers. In addition, increases in the costs of raw steel or other supplies may also increase our working capital requirements, warranty obligations and product profitability.

Supply interruptions, tariffs or price increases may slow production, delay shipments to our customers or increase production costs in the future, any of which could adversely affect our financial results; however, we intend to pass along production cost increases to customers to the extent we deem appropriate. We expect that delays, interruptions or non-optimal scheduling of production related to interruptions in raw materials supplies would result in an increase to our production costs. We can give no assurance that global supply-chain constraints or geopolitical conflicts will not adversely affect our ability or our subcontractors’ ability to procure raw materials and components necessary to build our products.

Research and Development Program

The experience and industry contacts of our management team and consultants, along with potential customers in the petroleum, petrochemical, and industrial steam applications industries inform our research and development program. Field evaluation agreements, research agreements, and memoranda of understanding with potential development partners, customers and research institutions support this process. Our research and development activities make use of employees and consultants who are experts in the areas of industrial combustion, statistical experimental design, fluid mechanics, computer modeling techniques and heat transfer.

With the maturation of our ClearSign Core™ technology, our development process has transitioned from research to commercialization. This has included optimizing the technology to perform in a manner readily adoptable by our prospective customers and easy to incorporate into the burner structures of our collaborative alliance partners. This later phase of development is influenced by customer feedback, product and component standardization, design for manufacture and inventory management simplification, both with respect to the manufacture of and lifetime support for our products.

We will continue to assess research and development opportunities to develop new product offerings where appropriate based on customer feedback and market trends. We are currently continuing to develop our flame sensing

and hydrogen burner technology, which is discussed in detail under the “ClearSign Core™ Technology Product Applications” section above in addition to the expansion of our burner technologies, and potentially other technologies aligned with our expertise and business focus, into adjacent customer applications and market verticals.

Intellectual Property Protection

We have generated inventions that we believe to be patentable subject matter and for which we have been seeking protection through patent application filings. As of December 31, 2024, we have 74 active patent grants and another 23 patents pending with Patent Offices in the United States, China, and various European countries. We maintain an active review process to monitor for new inventions across the globe that threaten our intellectual property protection.

We cannot predict when our patent applications may result in issued patents, if at all. Further, we may modify a patent application in the future as we develop additional information. As a result, we may create additional patent applications from an existing application, consolidate existing patent applications, abandon applications, or otherwise modify applications based upon our judgment in order to protect our intellectual property in a reasonably cost-efficient manner.

Government Regulation

Government regulation, particularly with respect to the environment, is likely to play an important role in shaping our product mix and offerings. In addition, field implementation of our technologies requires permits from various local, state and federal agencies that regulate mechanical and electrical infrastructure and fire and air pollution control.

We believe that we offer major advances in emissions reductions and efficiency improvements. We also believe that emissions regulations could require a reduction in pollutants such as NO_x thereby potentially enhancing market demand for our technology upon implementation of any such regulations. Possible legislation related to greenhouse gases, boiler Maximum Available Control Technology (“MACT”) rules, or other general reductions in required pollutant levels globally, especially in the U.S. could bolster our ability to meet our business objectives. Although the timing of any such regulations is uncertain, the general trend over the last decades continues to be government-mandated reduction for all criteria pollutants. Ultimately, it may be possible for our technology to achieve BARCT and/or MACT designation. We believe that the availability of our technology alone may accelerate the government’s willingness to adopt more stringent environmental regulations. Further, we believe efficiency improvements, combined with the elimination of flame impingement, could generate market demand regardless of the existing regulatory framework because the potential efficiency, productivity and savings gains from our products could result in the adoption of our technology.

At this time, we believe that the current U.S. administration does not support “green initiatives.” Nevertheless, we are not aware of any current or proposed federal, state or local environmental compliance regulations that would have a material detrimental effect on our business objectives or operations. The U.S. environmental regulation that supports the adoption of our technology originates from the Clean Air Act, which had several subsequent amendments specifically targeting NO_x emissions, including the 1990 amendments to the Clean Air Act, or the Acid Rain Program, which contained requirements to reduce NO_x emissions through the use of available combustion controls. While the current political environment may not be conducive for strengthening emissions controls at a national level, we believe global mega trends induced by social and political sentiment, and local and state regulatory requirements have laid the groundwork for continued support and adoption of our technology. In addition, we do not anticipate any major expenditures to be required in order for our technology to comply with any environmental protection statutes.

Human Capital

As of December 31, 2024, we had 18 full-time employees, and no part-time employees. Our employees are not covered by collective bargaining agreements, and we believe our relationship with our employees is good.

Corporate History

We were incorporated in the State of Washington on January 23, 2008. Effective June 14, 2023, we changed our domicile from the State of Washington to the State of Delaware by means of a plan of conversion. The address of our corporate headquarters is 8023 East 63rd Place, Suite 101, Tulsa, Oklahoma 74133 and our telephone number is (918) 236-6461. Our website can be accessed at www.clearsign.com. The information contained on our website is not a part of this report. We currently operate in the United States. We have a wholly-owned subsidiary incorporated Hong Kong, China, but we are not currently operating in Hong Kong, China, because such entity is in a dormant status, which status became effective on March 12, 2025.

ITEM 1A. RISK FACTORS

We are subject to various risks that may materially harm our business, prospects, financial condition and results of operations. An investment in our common stock is speculative and involves a high degree of risk. In evaluating an investment in shares of our common stock, you should carefully consider the risks described below, together with the other information included in this report.

The risks described below are not the only risks we face. If any of the events described in the following risk factors actually occurs, or if additional risks and uncertainties later materialize that are not presently known to us or that we currently deem immaterial, then our business, prospects, results of operations and financial condition could be materially adversely affected. In that event, the trading price of our common stock could decline, and you may lose all or part of your investment in our shares. The risks discussed below include forward-looking statements, and our actual results may differ substantially from those discussed in these forward-looking statements.

Risks Related to Our Business

We are a company with a limited operating history and our future profitability is uncertain. We anticipate future losses and negative cash flows and we may never be profitable.

We are a company with a limited operating history and limited revenues to date. We have incurred losses since our inception and expect to experience operating losses and negative cash flows for the foreseeable future. As of December 31, 2024, we had a total accumulated deficit of approximately \$99.0 million. We anticipate our losses will continue to increase from current levels because we expect to incur additional costs and expenses related to commercialization activities, product development, consulting costs, marketing and other promotional activities. In addition, we expect to continue incurring costs related to human capital development and strategic partnership development. We may never generate significant revenue and we may never be profitable.

If we do not receive additional financing when and as needed in the future, we may not be able to continue our development and commercialization efforts and our business may fail.

Our business is capital-intensive and requires capital investments in order for it to develop. Our cash on hand will likely not be sufficient to meet all of our long-term future needs because our target customers are, in general, slow to adopt new technologies, and we anticipate that we will require substantial additional funds in excess of our current financial resources for research, development and commercialization of our technology, to obtain and maintain patents and other intellectual property rights in our technology, and for working capital and other purposes, the timing and amount of which are difficult to ascertain. Until our technology generates revenues sufficient to support our operations, we plan to obtain the necessary working capital for operations through the sale of our securities, but we may not be able to obtain financing in amounts sufficient to fund our business plans. If we cannot obtain additional funding when and as needed, our business might fail.

Market acceptance of our technology and business is difficult to predict. If our technology does not achieve market acceptance, our business could fail.

If we are unable to effectively demonstrate our technology in a timely fashion, gain recognition in our market segments, and develop a critical level of successful sales and product installations, we may not be able to successfully generate sales revenue and our results of operations and financial condition would then suffer. Our ability to obtain future revenue will depend significantly upon achieving a critical mass of market awareness and sales to potential customers of our products. While we plan to achieve this awareness over time, there can be no assurance that awareness of our Company and technology will develop in a manner or pace that is necessary for us to achieve acceptance and profitability in the near term.

Further, we cannot predict the rate of adoption or acceptance of our technology by potential customers. While we have demonstrated our technology, this does not guarantee the industrial combustion market will accept it, nor can we control the rate at which such acceptance may be achieved. In certain market segments of ours, there is a well-established channel with a limited number of companies engaged in reselling to our target customers. Failure to achieve productive relations with a sufficient number of these prospective partners may impede adoption of our technology. Additionally, some potential customers in our target industries are historically risk-averse and have been slow to adopt new technologies. If our technology is not widely adopted in the industrial combustion market, we may not earn enough by selling or licensing our technology to support our operations, recover our research and development costs or become profitable and our business could fail.

Our efforts may never demonstrate the feasibility of our product.

Our research and development efforts remain subject to all of the risks associated with the development of new products based on emerging and innovative technologies, including without limitation unanticipated technical or other problems, our ability to scale our technology to large industrial applications, conditions in the field during installation and the possible insufficiency of funds for completing development of these products. Technical problems, including those specific to customer site implementation, may result in delays and cause us to incur additional expenses that would increase our losses. If we cannot complete, or if we experience significant delays in completing, research and development of our technology for use in potential commercial applications, particularly after incurring significant expenditures, our business may fail.

Changes to environmental regulations could make our technology less desirable.

The negative environmental impacts of industrial activity have given rise to significant environmental regulation in industrialized countries. These regulations are important incentives in the adoption of technologies like ours. To the extent that environmental regulations in the U.S. and in other industrialized countries are modified in the future, or even relaxed, our technology may not produce the results required, or may even be unnecessary, to comply with the modified regulations. If federal, state or local regulatory agencies relax the clean air regulations our technologies are designed to address, or do not effectively enforce them, or our customers cannot obtain air emission permits with our products, or permits to proceed with projects in general, our business and results of operations could be materially adversely affected.

Further, in January 2025, President Trump signed executive orders that, among other things, directed federal executive departments and agencies to initiate a regulatory freeze for certain rules that have not taken effect, pending review by the newly appointed agency head, and called upon the EPA to submit a report on the continuing applicability of its endangerment finding for greenhouse gas emissions under the Clean Air Act and issue guidance on the “social cost of carbon” to consider whether such metric should be eliminated. Moreover, in January 2025, President Trump signed an executive order calling to terminate all environmental justice offices and positions in the federal government, as well as any environmental justice initiatives, programs or other activities. It is unclear the impact the Trump administration or these new executive orders will have on the laws, rules and regulations applicable to us or on our business, financial condition and results of operations, and we cannot predict future developments related hereto.

We are subject to sustainability efforts risks that could adversely affect our reputation and our business and results of operations.

Views about sustainability- and environmental-related issues are diverse, dynamic, and rapidly changing. For instance, there exists anti-environmental, social and governance (“ESG”) sentiment among certain stakeholders and government institutions, which has gained momentum across the U.S. While many companies and investors continue to focus on ESG matters, there has been an increase in anti-ESG initiatives and sentiment which may serve as a concern in the future, particularly in light of recent executive orders by President Trump. The future impact of any actions by the current administration on existing ESG policies and regulations cannot be predicted at this time, particularly given that such new orders are likely to face legal challenges. However, in the interim, such anti-ESG-related policies, legislation, initiatives, litigation, legal opinions, and scrutiny could result in less demand for our products and offerings, which can affect our business and results of operations. Further, we could be exposed to reputational, financial, and legal risk as a result of anti-ESG policies and regulations that may be enacted under the current administration, and our ability to retain and attract customers and employees may be negatively impacted as a result thereof.

Our revenue has been highly concentrated among a small number of customers, and our results of operations could be harmed if we lose a key revenue source and fail to replace it.

Our annual revenue has been highly concentrated, with a few customers accounting for a significant percentage of our total revenue. For the years ended December 31, 2024 and 2023, our two largest customers represented approximately 86% and 87% of total revenue, respectively. We expect that a relatively small number of customers will continue to account for a substantial portion of our revenue for the foreseeable future.

As a result of this revenue concentration, our results of operations could be adversely affected by the decision of a single key customer to cease using our technology or products or by a decline in the number of customers that are seeking to adopt our technology.

Our revenue concentration may also pose credit risks which could negatively affect our cash flow and financial condition.

We might also face credit risks associated with the concentration of our revenue among a small number of customers. Our failure to collect receivables from any customer that represents a large percentage of receivables on a timely basis, or at all, could adversely affect our cash flow or results of operations.

We may fail to adequately protect our proprietary technology, which would allow our competitors to take advantage of our research and development efforts.

Our long-term success largely depends on our ability to market our technology. We rely on a combination of patents, trade secrets and other intellectual property laws, confidentiality and security procedures and contractual provisions to establish and protect our proprietary rights in our technology, products and processes. If we fail to obtain or maintain these protections, we may not be able to prevent third parties from using our proprietary technologies. Our pending or future patent applications may not result in issued patents. In addition, any patents issued to us, or that may be issued to us in the future, may not contain claims sufficiently broad enough to protect us against third parties with similar technologies or products or from third parties infringing such patents or misappropriating our trade secrets or provide us with any competitive advantage. In addition, effective patent and other intellectual property protection may be unenforceable or limited in foreign countries. If a third party initiates litigation regarding the validity of our patents and is successful, a court could revoke our patents or limit the scope of coverage for those patents.

We also rely upon trade secrets, proprietary know-how and continuing technological innovation to remain competitive. We protect this information with reasonable security measures, including the use of confidentiality and invention assignment agreements with our employees and consultants and confidentiality agreements with strategic customers and partners. It is possible that these agreements may not be sufficient or that these individuals or companies may breach these agreements and that any remedies for a breach will be insufficient to allow us to recover our costs and

damages. Furthermore, our trade secrets, know-how and other technology may otherwise become known or be independently discovered by our competitors.

We may incur substantial costs as a result of litigation or other proceedings relating to patent and other intellectual property rights.

A third party may sue us for infringing its intellectual property rights. Likewise, we may need to resort to litigation to enforce our patent rights or to determine the scope and validity of third-party intellectual property rights. The cost to us of any litigation or other proceeding relating to intellectual property rights, even if resolved in our favor, could be substantial, and the litigation would divert our efforts from our business activities. Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. If we do not prevail in this type of litigation, we may be required to pay monetary damages and/or expenses; stop commercial activities relating to our products; obtain one or more licenses in order to secure the rights to continue the manufacturing or marketing of our products; or attempt to compete in the market with substantially similar products. Uncertainties resulting from the initiation and continuation of any litigation could limit our ability to continue some of our operations.

A cybersecurity incident or other technology disruptions could negatively impact our business and our relationships with customers.

We use computers in substantially all aspects of our business operations. We also use mobile devices and other online activities to connect with our employees, consultants, suppliers and customers. Such uses give rise to cybersecurity risks, including security breaches, espionage, system disruption, theft, the compromise of trade secrets and inadvertent release of information. Our business involves the storage and transmission of sensitive and/or confidential information and intellectual property, including customers' and suppliers' information, private information about employees and financial and strategic information about us. If we fail to assess and identify cybersecurity risks associated with our operations, we may become increasingly vulnerable to such risks. Additionally, while we have implemented measures to prevent security breaches and cyber incidents, our preventative measures and incident response efforts may not be entirely effective. The theft, destruction, loss, misappropriation, or release of sensitive and/or confidential information or intellectual property, or interference with our information technology systems, could result in business disruption, negative publicity, brand damage, violation of privacy laws, loss of customers, potential liability and competitive disadvantage all of which could have a material adverse effect on our business, financial condition or results of operations.

We cannot guarantee that any collaborative business research and development partnership we enter into will be successful.

Collaborative arrangements involve risks that participating parties may disagree on business decisions and strategies. These disagreements could result in delays, additional costs, risks of litigation, and failure of the development of our technology within the combustion market segment. Success of any collaborative arrangements we enter into will depend, in part, on whether those with whom we collaborate fulfill their contractual obligations satisfactorily. If a party with whom we collaborate fails to perform its contractual obligations satisfactorily, we may be unable to make the additional investments or provide the added services that would be required to compensate for that failure. If we are unable to adequately address any such performance issues, our reputation may be materially adversely affected and we may be exposed to legal liability. Our inability to successfully maintain collaborative relationships, once we enter into them, or to enter into new collaborative arrangements, could have a material adverse effect on our results of operations.

If we are unable to keep up with rapid technological changes, our products may become obsolete.

The market for alternative environmental products is characterized by significant and rapid technological change and innovation. Although we intend to employ our technological capabilities to create innovative products and solutions that are practical and competitive in today's marketplace, future research and discoveries by others may make our products and solutions less attractive or even obsolete compared to other alternatives that may emerge.

There are inherent dangers involved in the combustion process that utilize our technologies and products and the occurrence of any associated accident may negatively impact our business.

There is inherent danger in dealing with the combustion process. There is additional danger in modifying this process in ways that are new and have only been implemented on a limited basis at a commercial scale. There is only limited data or experience available from the operation of our equipment in both testing and commercial applications to validate suitability for general commercial use. Although we have not yet encountered any areas of risk in the development or testing of our products beyond those already inherent in the combustion process or those particular to an industrial site, we may be exposed to liabilities should an industrial accident occur during development, testing, or operation in our laboratory or during field implementation of our technology. Any such liabilities could have an adverse effect on our results of operations and financial condition and adversely affect our projected development and production estimates.

We depend on approval from various local, state and federal agencies to implement and operate our technology. There is no assurance that these agencies will approve our technology.

Our technology includes enhancement of the combustion process to reduce certain emissions at a lower cost of operation than current air pollution control devices. Field implementation of our technology will therefore require permits from various local, state and federal agencies that regulate mechanical and electrical infrastructure and fire and air pollution control. Our technology may be subject to heightened scrutiny since it will be new to these governing bodies. As such, there may be delays or rejections in applications of portions of or all of our technology in the individual jurisdictions involved.

We are uncertain of our profit margins and whether such profit margins, if achieved, will be able to sustain our business.

We have not fully developed all of our products and those products that have been developed have experienced limited sales. As a result, we cannot reliably predict our profit margins. Our operating costs could increase significantly compared to those we currently anticipate due to unanticipated results from the commercialization process, application of our technology to unique or difficult processes, regulatory requirements and particular field implementations. Further, we envision our pricing to be highly dependent on the benefits that our customers believe they will achieve using our products. Accordingly, we cannot predict whether or when we will achieve profitability, and if achieved, the amount of such profit margins.

Many of our potential competitors have greater resources, and it may be difficult to compete against them.

The combustion industry is characterized by intense competition. Many of our potential competitors have better name recognition and substantially greater financial, technical, manufacturing, marketing, personnel and/or research capabilities than we do. Although at this time we do not believe that any of our potential competitors have technology similar to ours, we are aware certain potential competitors are attempting to develop similar products. Many firms in the combustion industry have made and continue to make substantial investments in improving their technologies and manufacturing processes. In addition, they may be able to price their products below the marginal cost of production in an attempt to establish, retain or increase market share. Because of these circumstances, it may be difficult for us to compete successfully in the combustion market.

The loss of the services of our key management and personnel or the failure to attract additional key personnel could adversely affect our ability to operate our business.

A loss of one or more of our current officers or key employees could severely and negatively impact our operations. We have no present intention to obtain key-man life insurance on any of our executive officers or management. Additionally, competition for highly skilled technical, managerial and other personnel is intense. As our business develops, we might not be able to attract, hire, train, retain and motivate the highly skilled executives and employees we need to be successful. If we fail to attract and retain the necessary technical and managerial personnel, our business will suffer and might fail.

There are many risks we are exposed to relating to our presence and prior business activities in China.

We are exposed to risks relating to our presence and prior business activities in China. As a result, the economic, political, legal and social conditions in China could have a material adverse effect on our business. In addition, the legal system in China has inherent uncertainties that may limit the legal protections available in the event of any claims or disputes that we may have with third parties, including our ability to protect the intellectual property we may use in China. As China's legal system is still evolving, the interpretation of many laws, regulations and rules is not always uniform and enforcement of these laws, regulations and rules involve uncertainties, which may limit the remedies available in the event of any claims or disputes with third parties. Some of the other risks we may be exposed to include, but is not limited to:

- the Chinese government exerts substantial influence over the manner in which we can conduct business activities;
- restrictions on currency exchange may limit the ability to receive and use cash effectively;
- the Chinese government may favor local businesses and make it more difficult for foreign businesses to operate in China on an equal footing, or in general;
- there are uncertainties related to the enforcement of contracts with certain parties; and
- more restrictive rules on foreign investment could adversely affect our ability to resume our operations in China.

To the extent we resume our operations in China, these risks could have a material adverse effect on our business, results of operations and financial condition.

Finally, the U.S. Foreign Corrupt Practices Act and similar foreign anti-corruption laws generally prohibit companies and their intermediaries from making improper payments or providing anything of value to improperly influence foreign government officials for the purpose of obtaining or retaining business or obtaining an unfair advantage. While we make every attempt to comply with these laws, our operations outside the United States may increase the risk of violating such laws. Violations of these laws may result in severe criminal or civil sanctions, could disrupt our business and result in a material adverse effect on our reputation, business and results of operations or financial condition.

We cannot provide assurance that rising inflation will not adversely affect our operations.

The impact of inflation on our operating results has been moderate in recent years, despite the recent increase in inflation generally across the economy. While inflation has not had a material impact upon operating results, there is no assurance that our business will not be affected by inflation in the future.

Due to the nature of our business and products, we may be liable for damages based on product liability and other tort and warranty claims.

We face an inherent risk of exposure to claims in the event that the failure, use or misuse of our products results, or is alleged to result, in death, bodily injury, property damage, or economic loss.

Although we currently maintain product liability coverage, which we believe to be adequate for the continued operation of our business, such insurance may become difficult or impossible to obtain in the future on terms acceptable to us. Moreover, our insurance coverage includes customary exclusions and conditions, may not cover certain specialized applications and generally does not cover warranty. A successful product liability claim or series of claims against us, including one or more consumer claims purporting to constitute class actions or claims resulting from extraordinary loss events, in excess of or outside our insurance coverage, or a significant warranty claim or series of claims against us, could materially decrease our liquidity, impair our financial condition and adversely affect our results of operations. Furthermore, regardless of the outcome, product liability claims can be expensive to defend, divert the attention of management and other personnel for significant periods of time and cause reputational damage.

We cannot provide assurance that global supply-chain constraints and the threat of, or implementation of tariffs on imported or exported goods and materials will not adversely affect our commercialization efforts and business operations.

The impact of the global supply-chain constraints has been moderate for our company, reflecting generally modest increases in lead-time commitments from our suppliers and strategic partners. While these constraints have not had a material impact to-date, we can provide no assurance that our business will not be affected by in the future. Our products utilize components manufactured from materials that are frequently imported, and any increase in the cost of materials may increase costs and may impact our profit margin on goods sold. Tariffs applied to exported goods may inhibit our ability to develop our business overseas. In addition, the countries from which our products and materials are manufactured or imported may, from time to time, impose additional quotas, duties, tariffs, or other restrictions on their imports or adversely modify existing restrictions. Adverse changes in these import costs and restrictions, or our strategic partners' and suppliers' failure to comply with customs regulations or similar laws, could harm our business. However, it is not always possible to replace a supplier on short notice without disruption in our operations, and replacement of a supplier is often at higher prices.

Further, the materials that our subcontractors may import from time to time are generally at prices that support our current operating margins. These imports may be subject to custom requirements, tariffs, and quotas set by governments through mutual agreements or unilateral actions. The U.S. tariffs on steel and other imported goods may increase the costs of our foreign sourced materials, and any escalation in the tariffs may increase the impact, including without limitation recent tariffs against goods imported from China, Mexico, and Canada recently enacted by the current administration, as modified from time to time, and any retaliatory tariffs issued in response thereto. In case our operating costs increase materially as a result of any implemented tariffs, in order to sustain current operating margins, we may increase the costs of our products to customers and end users, or find alternative, similarly priced sources that are not subject to tariffs, which may delay our operations. If we are unable to effectively implement countermeasures to any proposed, or implemented, tariffs, our operating margins will be impacted.

Our subcontractors ability to import products in a timely and cost-effective manner may also be affected by conditions at ports or issues that otherwise affect transportation and warehousing providers, such as port and shipping capacity, high demand for ocean freight, labor disputes, hostilities or terrorism against ocean vessels or changes in shipping routes to avoid the same, severe weather, or increased homeland security requirements in the U.S. and other countries. These issues could delay importation of materials, increase our transit costs, or require us to locate alternative ports or warehousing providers to avoid disruption to customers. These alternatives may not be available on short notice or could result in higher transit costs, which could have an adverse impact on our business and financial condition.

We are dependent on third-party suppliers.

Although we are not dependent on any one supplier, we are dependent on the ability of our third-party suppliers to supply our raw materials, such as raw steel and fabricated steel. The third-party suppliers upon which we depend may default on their obligations to us due to bankruptcy, insolvency, lack of liquidity, adverse economic conditions, operational failure, fraud, loss of key personnel, or other reasons. We cannot assure that our third-party suppliers will dedicate sufficient resources to meet our scheduled delivery requirements or that our suppliers will have sufficient resources to satisfy our requirements during any period of sustained demand. Failure of suppliers to supply, or delays in supplying, our raw materials or certain components, or allocations in the supply of certain high demand raw components, for any reason, including, without limitation, disruptions in our suppliers' business activities due to cybersecurity incidents, terrorist activity, public health crises (such as coronavirus), fires or other natural disasters could materially adversely affect our operations and ability to meet our own delivery schedules on a timely and competitive basis. Additionally, our third-party suppliers may provide us with raw materials or component parts that fail to meet our expectations or the expectations of our customers, which could subject us to product liability claims, other claims and litigation.

Failure of third parties to manufacture quality products or provide reliable services in a timely manner could cause delays in developing, constructing, and operating our projects, which could damage our reputation, adversely affect our partner relationships or adversely affect our growth.

Our success depends on our ability to develop, construct, and operate projects in a timely manner, which depends in part on the ability of third parties to provide us with timely and reliable products and services. In developing, constructing, and operating our projects, we rely on products meeting our design specifications and components manufactured and supplied by third parties, and on services performed by subcontractors. We also rely on subcontractors to perform substantially all of manufacturing work related to our projects, and we may need to engage subcontractors with whom we have no experience.

We currently have a collaboration agreement in place with Zeeco. If Zeeco or any of our subcontractors are unable to provide services that meet or exceed our customers' expectations or satisfy our contractual commitments, our reputation, business and operating results could be harmed. In addition, if we are unable to avail ourselves of warranties and other contractual protections with providers of products and services, we may incur liability to our customers or additional costs related to the affected products and services, which could adversely affect our business, financial condition and results of operations. Moreover, any delays, malfunctions, inefficiencies or interruptions in these products or services could adversely affect the quality and performance of our projects and require considerable expense to find replacement products and to maintain and repair our projects. This could cause us to experience interruption in our production and distribution of our products, difficulty retaining current relationships and attracting new relationships, or harm our brand, reputation or growth. Additionally, because the Company's contracts generally include progress payments from customers upon the completion of certain defined milestones, the revenue recognition of such project will depend on our subcontractor's services in order for us to be able to achieve such milestones timely. Any subcontractor delays in fulfilling our contracts may result in delay of revenue recognition by the Company, which in turn can affect our financial condition and results of operations.

Macroeconomic pressures in the markets in which we operate may adversely affect our financial results.

Geopolitical issues around the world can impact macroeconomic conditions and could have a material adverse impact on our financial results. For example, the ultimate impact of the conflict in Ukraine, Israel and Strait of Hormuz on fuel prices, inflation, the global supply chain and other macroeconomic conditions is unknown and could materially adversely affect global economic growth, disrupting discretionary spending habits and generally decreasing demand for our products and services. While we do not purchase any of significant raw materials directly from these regions, they have significant global reach on commodity prices. Disruptions in the markets for those inputs could negatively impact the world and domestic economy. Also, these conflicts have exacerbated geopolitical tensions globally. While the demand of our services in the U.S. have not yet been affected by these conflicts, we cannot predict the impact that the conflicts may have on future financial results. For example, domestic customers for some of our product lines may choose to reduce discretionary spending on goods and services such as ours until this volatility subsides.

We are exposed to fluctuations in the market values of our investments and in interest rates, either of which could impair the market value of our investments and harm our financial results.

As of December 31, 2024, we had investments in short-term (i.e., less than three months) U.S. treasuries and money market accounts backed by U.S. treasuries. In the future, we may invest in long- or short-term U.S. treasuries or other marketable securities with maturities of up to one year. Currently, we do not use financial derivatives to hedge our interest rate exposure.

These investments, as well as any cash deposit in bank accounts, are subject to general credit, liquidity, market, inflation and interest rate risks, which may be exacerbated by unusual events, such as higher interest rates, potential recession and debates on the debt-ceiling, which may affect various sectors of the financial markets and lead to global economic slowdown and high inflation. If the global credit and capital market continues to experience volatility or deteriorates, and to the extent we make future investments, our investment portfolio may be impacted, and we could determine that some or all of our investments experienced an other-than-temporary decline in fair value, requiring impairment, which could adversely impact our financial position and operating results.

Risks Related to Owning Our Securities

The public market for our securities is volatile. This may affect not only the ability of our investors to sell their securities, but the price at which they can sell their securities.

We completed the initial public offering of our common stock in April 2012. Since that time, our common stock (NASDAQ: CLIR) has traded as low as \$0.35 per share and as high as \$11.75 per share based upon daily closing prices, and day-to-day trading has been volatile at times. This volatility may continue or increase in the future. The market price for the securities may be significantly affected by factors such as progress in the development of our technology, agreements with research facilities or co-development partners, commercialization of our technology, variations in quarterly and yearly operating results, general trends in the alternative energy industry or clean technology industry, and changes in state or federal regulations affecting us and our industry. Furthermore, in recent years the stock market has experienced extreme price and volume fluctuations that are unrelated or disproportionate to the operating performance of the affected companies, such as the market reactions to internet marketed ‘short squeezes’. Such broad market fluctuations may adversely affect the market price of our securities.

There may be future sales of our common stock, or a perception that these sales could occur, which events could cause the price of our common stock to decline.

Sales of a substantial number of shares of our common stock in the public market or the perception that such sales might occur could materially adversely affect the market price of the shares of our common stock. For instance, the securities issued in our recent equity offerings (see “Note 8 – Equity” for additional information), as well as the Warrant Shares, have been registered for resale and are freely tradable without restriction or further registration under the Securities Act. As a result, a substantial number of shares of common stock may be sold in the public market, subject to certain beneficial ownership restrictions. We cannot predict the effect, if any, that market sales of those shares of common stock or the availability of those shares for sale will have on the market price of our common stock.

We may be required to raise additional capital by issuing new securities, which may have terms or rights superior to those of our shares of common stock, which could adversely affect the market price of our shares of common stock and our business.

We will require additional financing to fund research, development and commercialization of our technology, to obtain and maintain patents and other intellectual property rights in our technology, and for working capital and other purposes. We may not be able to obtain financing on favorable terms, if at all. If we raise additional funds by issuing equity securities, the percentage ownership of our then-current stockholders will be reduced. Further, we may have to offer new investors in our equity securities rights that are superior to the holders of common stock, which could adversely affect the market price and the voting power of shares of our common stock. If we raise additional funds by issuing debt securities, the holders of these debt securities would similarly have some rights senior to those of the holders of shares of common stock, and the terms of these debt securities could impose restrictions on operations and create a significant interest expense for us which could have a materially adverse effect on our business and results of operations.

We will have broad discretion as to the proceeds that we receive from the cash exercise by any holder of our Warrants, and we may not use the proceeds effectively.

We may receive up to approximately \$22.5 million in aggregate gross proceeds from cash exercises of our outstanding Warrants based on the per share exercise price of such Warrants, and to the extent that we receive such proceeds, we intend to use the net proceeds from cash exercises of the Warrants for working capital, research and development, marketing and sales, and general corporate purposes. We have considerable discretion in the application of such proceeds. You must rely on our judgment regarding the application of the net proceeds from cash exercises of the Warrants, which may be used for corporate purposes that do not improve our profitability or increase the price of our shares of common stock. Such proceeds may also be placed in investments that do not produce income or that lose value. The failure to use such funds by us effectively could have a material adverse effect on our business, financial condition, operating results and cash flow.

You may experience future dilution as a result of issuance of the Warrant Shares, future equity offerings by us and other issuances of our common stock or other securities. In addition, the issuance of the Warrant Shares, to the extent the Warrants are exercisable, and future equity offerings and other issuances of our common stock or other securities may adversely affect our common stock price.

You may experience future dilution as a result of the issuance of the Warrant Shares and other issuances of our common stock or other securities. In order to raise additional capital, if needed, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share as prior issuances of common stock. We may not be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share previously paid by investors, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock or securities convertible into common stock in future transactions may be higher or lower than the prices per share for previous issuances of common stock or securities convertible into common stock paid by certain investors. In addition, the exercise price of the Warrants may be equal to or greater than the price per share previously paid by certain investors. You will incur dilution upon exercise of any outstanding stock options, warrants or upon the issuance of shares of common stock under our equity incentive programs.

We have not paid dividends in the past and have no immediate plans to pay dividends.

We plan to reinvest all of our earnings, to the extent we have earnings, in order to continue to develop our products, to market our products, to cover operating costs and to otherwise become and remain competitive. We do not plan to pay any cash dividends with respect to our securities in the foreseeable future. We cannot assure you that we would, at any time, generate sufficient surplus cash that would be available for distribution to the holders of our common stock as a dividend.

We have a significant number of options and restricted stock units outstanding and we may issue additional awards in the future to employees, officers, directors, independent contractors and agents. Sales of the underlying shares of common stock could adversely affect the market price of our common stock.

As of December 31, 2024, we had outstanding options for the purchase of 2,943 thousand shares of common stock and 864 thousand shares of outstanding restricted stock units (“RSUs”). Under the ClearSign Technologies Corporation 2021 Equity Incentive Plan (the “2021 Plan”) and the ClearSign Technologies Corporation 2013 Consultant Stock Plan (the “2013 Consultant Plan,” and collectively, the “Plans”), we have the ability to grant awards of shares, RSU’s or options to purchase shares of our common stock to employees, officers, directors, independent contractors and agents. Furthermore, the Plan provides for increases in the number of shares available for awards based on the terms outlined in such Plan. Certain holders may sell these shares in the public markets from time to time, without limitations on the timing, amount or method of sale. If our stock price rises, the holders may exercise their options and RSUs and sell a large number of shares. This could cause the market price of our common stock to decline.

We have the right to issue shares of preferred stock. If we were to issue preferred stock, it is likely to have rights, preferences and privileges that may adversely affect our common stock or other securities.

We are authorized to issue 2 million shares of “blank check” preferred stock, with such rights, preferences and privileges as may be determined from time-to-time by our board of directors (the “Board”). The Board is empowered, without stockholder approval, to issue preferred stock in one or more series, and to fix for any series the dividend rights, dissolution or liquidation preferences, redemption prices, conversion rights, voting rights, and other rights, preferences and privileges for the preferred stock. No shares of preferred stock are presently issued and outstanding and we have no immediate plans to issue shares of preferred stock. The issuance of shares of preferred stock, depending on the rights, preferences and privileges attributable to the preferred stock, could adversely reduce the voting rights and powers of the common stock and the portion of our assets allocated for distribution to common stockholders in a liquidation event, and could also result in dilution in the book value per share of our common stock. The preferred stock could also be utilized, under certain circumstances, as a method for raising additional capital or discouraging, delaying or preventing a change

in control of the Company, to the detriment of our stockholders. We cannot assure you that we will not, under certain circumstances, issue shares of our preferred stock.

Our certificate of incorporation (as amended, the “certificate of incorporation”) provides that the Court of Chancery of the State of Delaware is the exclusive forum for certain disputes between us and our stockholders, which could limit our stockholders’ ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our certificate of incorporation provides that, with certain limited exceptions, the Court of Chancery of the State of Delaware is the exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of fiduciary duty owed by any director, officer or stockholder;
- any action asserting a claim against us arising under the Delaware General Corporation Law (“DGCL”), or as to which the DGCL confers jurisdiction on the Court of Chancery of the State of Delaware;
- any action arising pursuant to any provision of our bylaws or certificate of incorporation; and
- any action asserting a claim against us or any current or former director, officer or stockholder that is governed by the internal-affairs doctrine.

This provision does not apply to suits brought to enforce a duty or liability created by the Securities Act, the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction. In addition, unless we consent in writing to the selection of an alternative forum, to the fullest extent permitted by law, the federal district courts of the United States of America shall be the exclusive forum for the resolution of any complaint asserting a cause or causes of action arising under the Securities Act, including all causes of action asserted against any defendant to such complaint.

For the avoidance of doubt, this provision is intended to benefit and may be enforced by us, our officers and directors, the underwriters to any offering giving rise to such complaint, and any other professional entity whose profession gives authority to a statement made by that person or entity and who has prepared or certified any part of the documents underlying the offering. However, these choice of forum provisions may limit a stockholder’s ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, or other employees. Further, these choice of forum provisions may increase the costs for a stockholder to bring such a claim and may discourage them from doing so.

While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions, and there can be no assurance that such provisions will be enforced by a court in those other jurisdictions. If a court were to find the choice of forum provision contained in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions. For example, the Court of Chancery of the State of Delaware recently determined that the exclusive forum provisions of federal district courts of the United States of America for resolving any complaint asserting a cause of action arising under the Securities Act is not enforceable. We note that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder.

The rights of our stockholders to take action against our directors and officers are limited.

Our certificate of incorporation provides for indemnification of our directors and officers to the fullest extent authorized or permitted under Delaware law, except to the extent such exemption from liability or limitation thereof is not permitted under the DGCL as the same exists or hereafter may be amended.

Our bylaws obligates us to indemnify each of our directors or officers who is or is threatened to be made a party to or witness in a proceeding by reason of his or her service in those or certain other capacities, to the maximum extent permitted by Delaware law, from and against any claim or liability to which such person may become subject or which such person may incur by reason of his or her status as a present or former director or officer of us or serving in such

other capacities. In addition, we may be obligated to reimburse the expenses reasonably incurred by our present and former directors and officers in connection with such proceedings. As a result, we and our stockholders may have more limited rights to recover money damages from our directors and officers than might otherwise exist absent these provisions in our bylaws or that might exist with other companies, which could limit your recourse in the event of actions that are not in our best interests.

We have incurred and will incur significant costs as a result of being a public company that reports to the Securities and Exchange Commission and our management is required to devote substantial time to meet compliance obligations.

As a public company reporting to the Securities and Exchange Commission (the “SEC”), we incur significant legal, accounting, investor relations, printing, board compensation, and other expenses that we did not incur as a private company. These costs totaled \$1.6 million in 2024. We are subject to the reporting requirements of the Exchange Act and the Sarbanes-Oxley Act of 2002 (with the exception of the requirement of auditor attestation of internal control over financial reporting from which we are currently excluded as a non-accelerated filer company), as well as rules subsequently implemented by the SEC that impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. In addition, there are significant corporate governance and executive compensation-related provisions in the Dodd-Frank Wall Street Reform and Protection Act that as we grow could increase our legal and financial compliance costs, make some activities more difficult, time-consuming or costly and may also place undue strain on our personnel, systems and resources. Our management and other personnel continually devote a substantial amount of time to these compliance initiatives. Furthermore, these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified people to serve on our Board, our Board committees or as executive officers.

ITEM 1B. UNRESOLVED STAFF COMMENTS.

None.

ITEM 1C. CYBERSECURITY.

We recognize the critical importance of developing, implementing, and maintaining robust cybersecurity measures to safeguard our information systems and protect the confidentiality, integrity, and availability of our data.

Governance

The audit and risk committee of our Board (the “Audit Committee”) oversees risks related to cybersecurity, including the security of corporate information and the steps management takes to monitor and control these risks. Management regularly briefs the audit committee on our cybersecurity risk profile, potential threats, and continuous improvement initiatives. Our approach to managing cybersecurity risks is part of a continuous improvement process, both in the context of cybersecurity and broader operational risk management. This ongoing process, which includes employee training, is aimed at routinely reviewing and, as necessary, enhancing our oversight processes and tools to ensure they remain effective and resilient in their management of cybersecurity risk.

Risk Management and Strategy

We engage a third-party Managed Service Provider (“MSP”) to implement technology infrastructure and oversee its tactical operations. Our MSP employs multiple people with experience in technical leadership, system architecture, network infrastructure and cybersecurity. We believe using an MSP provides economies of scale for a smaller-sized company such as ours, by allowing us access to a broad range of experience and tool sets that would otherwise be difficult to acquire in-house. Our MSP uses specialized third-party services and tool sets for identifying, protecting against, and detecting cyber incidents. Through these services and tools, our detection capabilities include, but

are not limited to, near real-time monitoring, intrusion detection systems, and advanced analytics to identify abnormal patterns of behavior. These third-party detection tools provide near real-time alerts, log aggregation, and threat intelligence feeds.

In addition, we have engaged cybersecurity consultants, unaffiliated with our MSP, to advise management, assess our technology tools and review our cybersecurity practices. Our consultants utilized the National Institute of Standards and Technology (“NIST”) Cybersecurity Framework to assess our cybersecurity risk and governance practices. The NIST Cybersecurity Framework enables organizations, regardless of size, to apply principles and best practices of risk management to improve security and resilience.

Material Impact of Cybersecurity Threats

While to date we are not aware of any material information security breaches and have not incurred significant operating expenses related to information security breaches, we acknowledge the persistent and evolving nature of these threats, which have the potential to materially impact our business strategy, operations, and financial standing adversely. See Item 1A, “Risk Factors” under the risks related to our business section for more information. Our incident response practices require incident assessments to be conducted in concert with our Chief Executive Officer, Chief Financial Officer and MSP. This enables faster response and effective communication, including public disclosure if a material cybersecurity event were to occur.

ITEM 2. PROPERTIES.

Our principal office is located at 8023 East 63rd Place, Suite 101 Tulsa, Oklahoma 74133 with satellite offices located in Seattle and Beijing, China. At our principal office in Tulsa, we lease 3,922 square feet of office space, under a lease which expires in September 2027. Monthly minimum rent is approximately \$5 thousand with an annual 2.0% increase. The Company also sub-leases 940 square feet of office space located in Seattle, Washington and 656 square feet in Beijing, China. The minimum monthly rent for our Seattle location is approximately \$2 thousand with a termination date of September 30, 2025. The term of the Beijing lease began on June 1, 2024 and expires in June 2025. The monthly minimum rent for our Beijing location is approximately \$3 thousand (20,000 RMB).

ITEM 3. LEGAL PROCEEDINGS.

From time to time we may become involved in various lawsuits and legal proceedings which arise in the ordinary course of business. Litigation is subject to inherent uncertainties and an adverse result in any such matter may harm our business. As of the date of this report, we are not a party to any material pending legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES.

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES.

Market Information for Common Stock

Our common stock is listed on the Nasdaq Capital Market under the symbol "CLIR".

Holders of Record

According to our transfer agent, as of March 21, 2025, we had 289 stockholders of record. This number does not include an indeterminate number of holders whose shares are held by brokers in street name. Our stock transfer agent is VStock Transfer, LLC, 18 Lafayette Place, Woodmere, NY 11598.

Recent Issuances of Unregistered Securities

On December 31, 2024, we issued 3.8 thousand shares of common stock, having a weighted average per share value of \$0.90 from our 2013 Consultant Plan to our investor relations firm, Firm IR Group LLC, for services provided in the three months ended December 31, 2024. We relied on Section 4(a)(2) of the Securities Act of 1933, as amended, and Regulation D promulgated thereunder to issue the stock.

Equity Compensation Plan Information

See "Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters," for information about our equity compensation plans.

Dividend Policy

We have not paid any cash dividends on our common stock to date. The payment of cash dividends in the future is dependent upon our revenues and earnings, if any, capital requirements, the terms of any indebtedness and general financial condition. The payment of any cash dividends will be within the discretion of the board at such time. In addition, the board is not currently contemplating and does not anticipate declaring any stock dividends in the foreseeable future.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

We had no share repurchase activity for the three months ended December 31, 2024.

ITEM 6. [RESERVED]

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with the audited consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. In addition to historical information, this discussion and analysis here and throughout this Form 10-K contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements due to a number of factors, including but not limited to, the risks described in the section titled "Risk Factors."

Overview

We design and develop technologies for the purpose of decarbonization and improving key performance characteristics of industrial and commercial combustion systems, including emission and operational performance, energy efficiency and overall cost-effectiveness. Our ClearSign Core™ technology has been proven in full scale industrial test furnaces and boilers and first customer installations are currently operating in normal commercial applications. Our revenues to date have not been sufficient enough to meet operating expenses.

We have incurred losses since inception totaling \$99.0 million and we expect to experience operating losses and negative cash flow for the foreseeable future. We have historically financed our operations primarily through issuances of equity securities. As of December 31, 2024, we have raised approximately \$105.3 million in gross proceeds through the sale of our equity securities. We may need to raise additional capital in the future, however, the significant volatility in the capital markets may negatively affect our ability to raise this additional capital.

In order to generate meaningful revenues, our technologies must gain market recognition and acceptance to develop sufficient recurring sales. In addition, management believes that the successful growth and operation of our business is dependent upon our ability to obtain adequate sources of funding through co-development agreements, strategic partnering agreements, or equity or debt financing to support commercialization of our research and development efforts, protect intellectual property, form relationships with strategic partners and provide for working capital and general corporate purposes. There can be no assurance that we will be successful in achieving our long-term plans, or that such plans, if consummated, will result in profitable operations or enable us to continue in the long-term as a going concern.

Our costs include employee salaries and benefits, compensation paid to consultants, materials and supplies for prototype development and manufacture, costs associated with development activities including materials, sub-contractors, travel and administration, legal and accounting expenses, sales and marketing costs, general and administrative expenses, and other costs associated with an early stage, publicly traded technology company. We currently have 18 full-time employees. Because using third party expertise and resources is more efficient than maintaining full time resources, we also expect to incur ongoing consulting expenses related to technology development and some administrative, sales and legal functions commensurate with our current level of activities.

The amount that we spend for any specific purpose may vary significantly, and could depend on a number of factors including, but not limited to, the pace of progress of our commercialization and development efforts, actual needs with respect to product testing, development and research, market conditions, and changes in or revisions to our sales and marketing strategies.

Research, development, and commercial acceptance of new technologies are, by their nature, unpredictable. Although we undertake development and commercialization efforts with reasonable diligence, there can be no assurance that the net proceeds from our securities offerings will be sufficient to enable us to develop our technology to the extent needed to create sufficient future sales to sustain operations. If the net proceeds from these offerings are insufficient for this purpose, we will consider other options to continue our path to commercialization, including, but not limited to, additional financing through follow-on equity offerings, debt financing, co-development agreements, sale or licensing of developed intellectual or other property, or other alternatives.

We cannot assure that our technologies will be accepted, that we will ever earn revenues sufficient to support our operations, or that we will ever be profitable. Furthermore, we have no committed source of financing, and we cannot assure that we will be able to raise money as and when we need it to continue our operations. If we cannot raise funds as and when we need them, we may be required to scale back our development by reducing expenditures for employees, consultants, business development and marketing efforts or to otherwise severely curtail, or even to cease, our operations.

Recent Developments

Public Offering and Concurrent Private Placement

On April 23, 2024, we completed an underwritten public offering, whereby we sold 4,620,760 shares of common stock and 5-year redeemable warrants to purchase up to 4,620,760 shares of common stock (the “Public Warrants”) (plus a 45-day option to purchase up to an additional 693,114 shares of common stock and Public Warrants to purchase up to 693,114 shares of common stock, or up to 693,114 shares of common stock only) at a price of \$0.92 per set of one share of common stock and one Public Warrant. Concurrently, we completed a private placement, whereby we sold 2,249,763 shares of common stock, pre-funded warrants (the “Pre-Funded Warrants”) to purchase up to 3,155,642 shares of common stock and redeemable warrants (the “Private Warrants”) to purchase up to 8,108,106 shares of common stock. The offering prices in the private placement were \$0.91 per share and \$0.01 per Private Warrant, or \$0.9099 per Pre-Funded Warrant and \$0.01 per Private Warrant, as applicable. The redeemable warrants issued in both offerings have an exercise price equal to \$1.05 per share.

In connection with this offering, we issued Public Ventures, LLC (“Public Ventures”) 5-year warrants to purchase up to 369,660 shares of common stock at an exercise price of \$1.1375 per share as part of their underwriter compensation, which underwriter warrants became exercisable on October 16, 2024 (the “Underwriter Warrants”). We also issued Public Ventures 5-year warrants to purchase up to 432,432 shares of common stock at an exercise price of \$1.1375 per share as part of their placement agent compensation in connection with the private placement, which warrants became exercisable on October 16, 2024 (the “Placement Agent Warrants,” and together with the Public Warrants, Private Warrants, Pre-Funded Warrants and Underwriter Warrants, the “Warrants,” and the shares issuable upon exercise of the Warrants, the “Warrant Shares”). Both sets of warrants may be exercised on a cashless basis based on a formula set forth in the respective warrants.

Subsequently, on May 15, 2024, Public Ventures exercised its option in full to purchase an additional 693,114 shares of common stock and Public Warrants to purchase up to 693,114 shares of common stock at a price of \$0.92 per set of one share of common stock and one Public Warrant, in connection with which we issued Public Ventures additional Underwriter Warrants to purchase up to 55,449 shares of common stock.

The public offering and the concurrent private placement resulted in combined gross proceeds of approximately \$9,300 thousand, and net proceeds of approximately \$8,100 thousand. The exercise of Public Ventures’ option to purchase additional shares of common stock and Public Warrants resulted in additional gross proceeds of approximately \$638 thousand.

Participation Right Exercise

On June 24, 2024, following clirSPV LLC’s (the “SPV”) notice to exercise its participation right in connection with the underwritten public offering and concurrent private placement discussed above (see “Note 8 – Equity” for additional information), we entered into a securities purchase agreement (the “Securities Purchase Agreement”) with the SPV whereby we issued an aggregate of (i) 3,907,000 shares of common stock, (ii) Pre-Funded Warrants to purchase up to 786,000 shares of common stock, and (iii) Private Warrants to purchase up to 7,039,500 shares of common stock.

Subsequently, on June 26, 2024, the SPV and we entered into an Amendment to the Securities Purchase Agreement (the “Amendment”) to provide for a revised allocation of the SPV’s subscription between shares of common stock and Pre-Funded Warrants in lieu thereof. Pursuant to the Amendment, the SPV subscribed for: (i) 3,350,000 shares of common stock, (ii) Pre-Funded Warrants to purchase up to 1,343,000 shares of common stock and (iii) Private

Warrants to purchase up to 7,039,500 shares of common stock, for aggregate gross proceeds of approximately \$4.3 million.

Amendment to Certificate of Incorporation

On June 25, 2024, we held our 2024 annual meeting of stockholders, at which our stockholders approved, among other items, an increase in the number of authorized shares of common stock available for issuance under our certificate of incorporation to 87,500,000 shares from 62,500,000 shares previously authorized.

Accordingly, on June 25, 2024, we filed an amendment to our certificate of incorporation with the Secretary of State of the State of Delaware, reflecting the increase of our authorized shares of common stock to 87,500,000 shares, which became effective upon filing.

Suspension of Activities in China

On October 1, 2024, we informed our employees that we were suspending our operations in China as a result of delayed progress in the commercialization of our products in that geographic market and as part of our efforts to align strategic priorities and to reduce operating costs. The suspension of our operations in China involved declaring our Beijing, China wholly-owned subsidiary dormant, a legal entity status available under current China law, which became effective on March 12, 2025. Under this legal entity status, operational activities will cease for a time period not to exceed three years. By pursuing this entity status, we initiated a project to suspend current operational activities. Suspension activities include disposal and shipment of certain equipment in China, the termination of 2 employees and related benefit costs, and legal entity filing fees. In connection with this action, we estimated that we would incur certain one-time costs, primarily consisting of employee termination payments, as well as equipment disposal and shipment and legal filing fees. See “Note 2 – Summary of Significant Accounting Policies – Foreign Operations” below for additional information.

Termination of clirSPV LLC Agreement

Effective as of February 19, 2025, that certain Stock Purchase Agreement, dated as of July 12, 2018, between us and the SPV (the “SPV Purchase Agreement”) was terminated as a result of the SPV’s beneficial ownership percentage declining to less than 10% of our issued and outstanding shares of common stock, as reported on a SPV filing with the SEC dated February 19, 2025. As a result of the termination of the SPV Purchase Agreement, the related Voting Agreement entered into with the SPV, pursuant to which the SPV had a right to nominate one director to our Board at each of our annual meeting of stockholders, or any other meeting of stockholders at which members of our Board were to be elected, was also terminated, effective immediately.

Critical Accounting Policies

The following discussion and analysis of financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in conformity with accounting principles generally accepted in the United States of America. Certain accounting policies and estimates are particularly important to the understanding of our financial position and results of operations. These policies and estimates require the application of significant judgment by management. These estimates can be materially affected by changes from period to period as economic factors and conditions outside of our control change. As a result, they are subject to an inherent degree of uncertainty. In applying these policies, our management uses their judgment to determine the appropriate assumptions to be used in the determination of certain estimates. Those estimates are based on our historical operations, our future business plans and projected financial results, the terms of existing contracts, our observance of trends in the industry, information provided by our customers and information available from other outside sources, as appropriate. See “Note 2 – Summary of Significant Accounting Policies” to our consolidated financial statements included elsewhere in this report for a more complete description of our significant accounting policies.

Revenue Recognition and Cost of Goods Sold.

The Company recognizes revenue and related cost of goods sold in accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) 606, *Revenue from Contracts with Customers*. Revenues and cost of goods sold are recognized once the goods or services are delivered to the customer’s control or non-refundable performance obligations are satisfied. The Company’s contracts with customers generally have performance obligations and a schedule of non-refundable cancellation obligations. The contracts generally will be fully performed upon delivery of certain documents or equipment. Revenue related to the contracts is recognized following the completion of non-refundable performance obligations as defined in the contract.

The Company’s contracts generally include progress payments from customers upon completion of defined milestones. As these payments are received, they are offset against accumulated project costs and recorded as either contract assets or contract liabilities. Upon completion of the performance obligations and collectability is determined, revenue can be recorded. The Company records cost of goods sold based on allocated costs assigned to performance obligations. Allocations can occur based on overall estimated contract profit or readily identifiable cost assignments. For any contract in connection with which the Company is expected to incur costs in excess of the contract price, the Company accrues the estimated loss in full in the period such determination is made.

Impairment of Long-Lived Assets

The Company tests long-lived assets, consisting of fixed assets, patents, and other intangible assets, for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable through the estimated undiscounted cash flows expected from the use and eventual disposition of the assets. In the event an asset is not fully recoverable a loss is recognized based on the amount by which the carrying amount exceeds the fair value of the long-lived assets. Fair value is determined based on the present value of estimated expected cash flows using a discount rate commensurate with the risks involved, quoted market prices, or appraised values depending upon the nature of the assets. Losses on long-lived assets to be disposed of are determined in a similar manner, except those fair values are reduced for the cost of disposal.

Product Warranties

The Company warrants all installed products against defects in materials and workmanship, and shortcomings in performance compared to contractual guarantees for a period specified in each contract. Accruals for product warranties are based on expected warranty experience and current product performance trends which are recorded as a component of cost of goods sold at the time revenue is recognized. The warranty liabilities are reduced by material and labor costs during the warranty period in the periods in which the costs are incurred. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary, and such adjustments could be material if estimates differ significantly from actual warranty expense. The warranty liabilities are included in accounts payable and accrued liabilities in the consolidated balance sheets.

Research and Development

The cost of research and development is expensed as incurred. Research and development costs consist of salaries, benefits, share-based compensation, consumables, computer modeling costs and consulting fees, including costs to develop and test prototype equipment and parts. Research and development costs are offset by any funds received from strategic partners in cost sharing, collaborative projects. During the years ended December 31, 2024 and 2023, the Company received \$145 thousand and \$60 thousand, respectively, from such arrangements.

Share-Based Compensation

The costs of all employee stock options, as well as other equity-based compensation arrangements, are reflected in the audited, condensed consolidated financial statements based on the estimated fair value of the awards on the grant date. That cost is recognized over the period during which an employee is required to provide service in exchange for the award, or in the case of performance options, expense is recognized upon completion of a milestone as defined in the

grant agreement. Share-based compensation for stock grants to non-employees is determined as the fair value of the consideration received or the fair value of equity instruments issued, whichever is more reliably measured.

Results of Operations

Comparison of the Years Ended December 31, 2024 and 2023

Highlights of our annual financial performance are as follows:

(in thousands, except per share data)	For the Year Ended December 31,		\$ Change	% Change
	2024	2023		
Revenues	\$ 3,596	\$ 2,403	\$ 1,193	49.6 %
Cost of goods sold	2,478	1,586	\$ 892	56.2 %
Gross profit	1,118	817	\$ 301	36.8 %
Research and development	1,471	739	\$ 732	99.1 %
General and administrative	6,135	6,059	\$ 76	1.3 %
Operating Expenses	7,606	6,798	\$ 808	11.9 %
Other income, net	1,189	787	\$ 402	51.1 %
Net loss	\$ (5,299)	\$ (5,194)	\$ (105)	(2.0)%
Basic and diluted net income per common share	\$ (0.11)	\$ (0.13)	\$ 0.02	15.4 %

Revenues and Gross Profit

Consolidated revenues for the years ended December 31, 2024 and 2023 were \$3,596 thousand and \$2,403 thousand, respectively. Revenues increased by \$1,193 thousand, or 49.6%, during the year ended December 31, 2024 as compared to the same period in 2023. Revenues for the years ended December 31, 2024 and 2023 were generated from orders related to both our product lines, process burners and boiler burners, with the predominate amount of revenues generated from our process burner product line. Typically, our process burner contracts include three different performance obligations by which we can recognize revenue, which include design engineering, customer witness tests and burner shipment. We allocate process burner contractual revenue to each of these performance obligations with weighting allocations assigned in the following order of importance: burner shipment, customer witness test and engineering design. The difference in revenue from the year ended December 31, 2024, to the same period in 2023, is mainly due to the higher number of process burners shipped. During the year ended December 31, 2024, we shipped twenty-five process burners to two separate California refineries operated by two different customers, compared to eight process burners to a California refinery and three separate customer witness tests during the same period in 2023.

Gross profit increased by \$301 thousand, or 36.8%, for the year ended December 31, 2024 compared to the same period in 2023. The favorable increase in gross profit for the year ended December 31, 2024, was predominantly due to higher revenues. Profit margin decreased by 2.9% from 34.0% for the year ended December 31, 2023, to 31.1% for the year ended December 31, 2024, which impacted our gross profit for such period by \$104 thousand. The unfavorable impact to profit margin was due to higher than expected start-up costs from our 1,200 HP boiler burner project during the fourth quarter of 2024, which caused us to incur an overall loss on the project.

Operating Expenses

Operating expenses consist of research and development (“R&D”) and general and administrative (“G&A”) expenses. These are addressed separately below.

Research and Development

R&D expenses increased \$732 thousand, or 99.1%, for the year ended December 31, 2024, as compared to the same period in 2023. This unfavorable year-over-year increase in R&D expenses was mainly driven by additional head

count and related benefit costs of \$269 thousand that did not exist in the same period in 2023. In addition, we incurred an unfavorable additional year-over-year expense related to product development costs for our process burner product line for a total of \$367 thousand for the year ended December 31, 2024.

During the year ended December 31, 2023, we experienced a year-over-year unfavorable increase of \$234 thousand primarily attributable to \$83 thousand related to the hiring of our new Chief Technology Officer, and \$60 thousand related to our hydrogen burner project. The hydrogen burner development project costs are offset by government assistance monies (see the “Other Income” discussion below for further details).

General and Administrative

G&A expenses increased \$76 thousand, or 1.3%, for the year ended December 31, 2024, as compared to the same period in 2023. This unfavorable increase in G&A expenses is primarily comprised of \$394 thousand for a one-time non-recurring accrual estimate related to the decision to suspend our operations in China (see “Recent Developments – Suspension of Activities in China” above for more details). This suspension involved declaring our Beijing, China wholly-owned subsidiary dormant, which is a legal entity status available under China law. Under this legal entity status, operational activities cease for a period not to exceed three years. The unfavorable increase in G&A expenses was partially offset by a decrease of \$248 thousand in human capital costs primarily driven by the timing of employee departures and subsequent onboarding.

During the year ended December 31, 2023, we experienced a year-over-year unfavorable increase of \$331 thousand primarily attributable to a \$172 thousand difference for a non-cash, non-recurring expense related to the vesting of restricted stock units triggered by the departure of a director on our board, and a \$81 thousand non-cash, non-recurring impairment of demonstration burners.

Other Income

Other income increased by \$402 thousand, or 51.1%, for the year ended December 31, 2024, as compared to the same period in 2023. The favorable increase is primarily attributable to \$442 thousand increase in government assistance from our DOE hydrogen burner development grant, and \$192 thousand increase in interest income from a higher cash balance during 2024, as compared to the same period in 2023. The favorable increase was partially offset by an unfavorable decrease of \$197 thousand related to the decommissioning project of our Seattle office whereby we sold used equipment and materials during the year ended December 31, 2023.

During the year ended December 31, 2023, we experienced a favorable year-over-year increase of \$428 thousand primarily attributable to an increase of \$241 thousand in interest income and an increase of \$197 thousand from our Seattle office decommissioning project.

Liquidity and Capital Resources

At December 31, 2024, our cash and cash equivalents balance totaled \$14,035 thousand compared to \$5,684 thousand at December 31, 2023, an increase of \$8,351 thousand. The increase in cash and cash equivalents is primarily attributable to our public offering and the concurrent private placement and the related SPV’s exercise of its participation right during 2024 (see “Note 8 – Equity” for additional information), which was partially offset by our net loss of \$5,299 thousand.

At December 31, 2024, our current assets were in excess of current liabilities resulting in working capital of \$12,809 thousand as compared to \$4,253 thousand at December 31, 2023. We believe we have sufficient cash and expected cash collections to fund current operating expenses for over twelve months. We have no contractual debt obligations and to the extent we may require additional funds beyond twelve months from the date hereof, and customer cash collections cannot fund our needs, we may utilize equity offerings. Historically, we have funded operations predominantly through equity offerings. Until the growth of revenue increases to a level that covers operating expenses, we intend to continue to fund operations in this manner, although the volatility in the capital markets may negatively affect our ability to do so. As of December 31, 2024, approximately 21.3 million shares of our common stock are

issuable upon exercise of our outstanding warrants, which number excludes the shares of common stock issuable upon exercise of the Pre-Funded Warrants, and we may receive up to \$22.5 million in aggregate gross proceeds from the cash exercises thereof, subject to certain beneficial ownership limitations set forth therein. The Warrants require the warrant holder to tender cash upon exercise, with the exception of the Underwriter Warrants (as defined above) which allow the holder to exercise cashless if they so desire. These equity financial instruments may from time-to-time fund future cash needs, but the volatility of our common stock price and the risk tolerance of warrant holders will determine the extent in which we will be able to raise funds in this manner.

Operating activities for the year ended December 31, 2024, resulted in cash outflows of \$4,373 thousand, primarily due to the net loss of \$5,299 thousand and a decrease in contract liabilities of \$1,043 thousand during such period, which was partially offset by net non-cash expenses of \$846 thousand, and an increase in accounts payable, accrued liabilities and lease liabilities of \$816 thousand. The decision to suspend our China operations during the third quarter of 2024 continues to impact our accounts payable and accrued liabilities by an increase of \$239 thousand during the year ended December 31, 2024. During the third quarter of 2024, we recorded a one-time accrual estimate of \$394 thousand for the costs to prepare and place our Beijing, China subsidiary into a dormant state. As of December 31, 2024, we have incurred \$155 thousand in cash outflows with the remaining \$239 thousand in accrued liabilities predominantly related to severance costs. Our warranty reserve naturally increased due to increased product shipments during the year ended December 31, 2024, which impacted accounts payable and accrued liabilities (see “Note 6 – Product Warranties” below for additional information). The change in contract liabilities during the year ended December 31, 2024, was predominantly impacted by our shipment of process burners during the year ended December 31, 2024 (see “Note 5 – Revenue, Contract Assets and Contract Liabilities” below for additional information).

Operating activities for the year ended December 31, 2023 resulted in cash outflows of \$3,233 thousand, primarily due to the loss for the period of \$5,194 thousand, offset with non-cash expenses of \$1,045 thousand, and an increase of \$869 thousand of contract liabilities, which represents payments from customers in advance of future project costs.

Investing activities for the year ended December 31, 2024, resulted in cash outflows of \$218 thousand, which is primarily attributable to \$179 thousand of disbursements for patents and other intangible assets.

Investing activities for the year ended December 31, 2023 resulted in cash inflows of \$2,490 thousand, which is primarily attributable to the redemption \$4,847 thousand of short-term held-to-maturity U.S. treasuries, partially offset by \$2,162 thousand of purchases for the same type of investments.

Financing activities for the year ended December 31, 2024, resulted in cash inflows of \$12,946 thousand, which is primarily attributable to the net proceeds received of \$12,967 thousand from the issuance of securities in connection with the recent equity offerings (see “Note 8 – Equity” for additional information).

Financing activities for the year ended December 31, 2023 included \$15 thousand in disbursements for taxes paid related to vesting of employee restricted stock units.

Off-Balance Sheet Transactions

We do not have any off-balance sheet transactions.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

As a smaller reporting company, we are not required to provide this information.

ITEM 8. CONSOLIDATED FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Please see the financial statements beginning on page F-1 located in this report and incorporated herein by reference.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE.

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act that are designed to reasonably ensure that information required to be disclosed in our reports filed under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal accounting and financial officer, as appropriate, to allow timely decisions regarding required disclosure.

We carried out an evaluation under the supervision and with the participation of management, including our Chief Executive Officer (principal executive officer) and our Chief Financial Officer (principal accounting and financial officer), of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2024, the end of the period covered by this Annual Report on Form 10-K. Based upon the evaluation of our disclosure controls and procedures as of December 31, 2024, our Chief Executive Officer (principal executive officer) and our Chief Financial Officer (principal accounting and financial officer) concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Report on Internal Control over Financial Reporting

Our Chief Executive Officer (principal executive officer) and our Chief Financial Officer (principal accounting and financial officer) are responsible for establishing and maintaining internal control over financial reporting. Internal control over financial reporting is defined in Rule 13a-15(f) and 15d-15(f) promulgated under the Act as a process designed by, or under the supervision of, our principal executive and principal financial officers and effected by our Board, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of management and our directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, our internal control over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2024. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) in Internal Control – Integrated Framework (“2013 Framework”). Based on this assessment, our management, with the participation of our Chief Executive Officer (principal executive officer) and our Chief Financial Officer (principal accounting and financial officer), has concluded that, as of December 31, 2024, our internal control over financial reporting was effective based on those criteria.

Changes in Internal Control over Financial Reporting

There have been no changes in the Company’s internal control over financial reporting that have materially affected, or that are reasonably likely to materially affect, the Company’s internal control over financial reporting.

ITEM 9B. OTHER INFORMATION.

None of the Company’s directors or officers adopted, modified or terminated a Rule 10b5-1 trading arrangement or a non-Rule 10b5-1 trading arrangement during the Company’s fiscal quarter ended December 31, 2024, as such terms are defined under Item 408(a) of Regulation S-K.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS.

Not applicable

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE.

The following table sets forth the names and ages of the directors and executive officers serving as of the date hereof. Our officers are appointed by, and serve at the pleasure of, the Board.

<u>Name</u>	<u>Age</u>	<u>Position</u>
Colin James Deller	57	Chief Executive Officer and Director
Brent Hinds	46	Chief Financial Officer
Judith S. Schrecker	72	Director and Lead Independent Director
Catharine M. de Lacy	67	Director
David M. Maley	64	Director
G. Todd Silva	60	Director

Our business, property and affairs are managed by, or under the direction of, our Board, in accordance with the DGCL and our bylaws. Members of the Board are kept informed of our business through discussions with the Chief Executive Officer, Chief Financial Officer and other key members of management, by reviewing materials provided to them by management, and by participating in meetings of the Board and its committees.

Stockholders may communicate with the members of the Board, either individually or collectively, or with any independent directors, individually or as a group, by writing to the Board at 8023 East 63rd Place, Suite 101, Tulsa, Oklahoma 74133. These communications will be reviewed by the Company's Secretary who, depending on the subject matter, will (i) forward the communication to the director or directors to whom it is addressed or who is responsible for the topic matter, (ii) attempt to address the inquiry directly (for example, where it is a request for publicly available information or a stock related matter that does not require the attention of a director), or (iii) not forward the communication if it is primarily commercial in nature or if it relates to an improper or irrelevant topic. At each meeting of the Nominating and Corporate Governance Committee (the "Governance Committee"), the Company's Secretary presents a summary of communications received, if any, and will make those communications available to any director upon request.

Executive Officers

Colin James Deller, Chief Executive Officer and Director

Dr. Deller joined us as our President in February 2019, transitioned to the office of Chief Executive Officer on April 1, 2019 and was appointed as a director on February 13, 2020. Dr. Deller began his career at Hamworthy Combustion while also completing his Ph.D. In 1996, Dr. Deller joined Callidus, where he was employed in Project Engineering and Sales, and over the course of ten years advanced to serve as Chief Combustion Engineer and Manager of Burner Order Execution before being promoted to oversee Callidus' entire burner business. From 2010 until he left Callidus, following the acquisition of Callidus by Honeywell, Dr. Deller served as General Manager with full profit and loss accountability for the Honeywell UOP Callidus burner business worldwide. During that time, he led his team in developing new international markets, including developing a leading market position in China. From May 2018 until he joined the Company, Dr. Deller served as the interim Global Operations Director for the entire Honeywell International UOP Callidus business, which includes flares and thermal oxidizers in addition to burners. Dr. Deller has a Bachelor of Engineering in mechanical engineering from Portsmouth Polytechnic, U.K., a doctorate in flame chemistry from the University of Portsmouth, U.K., and an MBA from The University of London.

Brent Hinds, Chief Financial Officer

Mr. Hinds was appointed as our Vice President of Finance, Controller, Treasurer, principal financial officer, and principal accounting officer on October 18, 2021. Mr. Hinds was promoted to Chief Financial Officer effective August 8, 2023. Prior to joining the Company, from July 2014 to September 2021, Mr. Hinds was employed by Enovation Controls, Inc. ("Enovation Controls"). Enovation Controls is a stand-alone subsidiary of Helios Technologies

(NASDAQ: HLIO), focused on global sales, manufacturing, and application engineering operations, working directly with original equipment manufacturers. Mr. Hinds successively held the positions of Assistant Controller, Controller and Vice President of Finance. In his capacity, Mr. Hinds was responsible for overseeing accounting and finance department activities to ensure accuracy and timely dissemination of reports, including income statement, balance sheet, and cash flow. Prior to joining Enovation Controls, Mr. Hinds worked for Stinnett & Associates, LLC, a professional advisory firm for public and private companies, where he established risk-based audit programs to determine the adequacy and effectiveness internal control environments. Additionally, Mr. Hinds served as a compliance analyst at Baker Hughes Company. Mr. Hinds earned his Bachelor of Science in Accounting from Oklahoma State University and is a certified public accountant.

Non-Employee Directors of the Board

We believe that the finance and investment experience that Mr. Maley and Mr. Silva bring to our Board includes experience in analyzing the operations of businesses, and particularly smaller capitalized companies, to determine the likelihood of success. Ms. Schrecker has significant financial, business, operational and industrial experience. Ms. de Lacy and Mr. Maley have significant experience in the areas of corporate governance and risk management. In addition, Ms. de Lacy has experience in the areas of environmental policy and cybersecurity. We believe that their experience, together with the expertise brought to our operations by Dr. Deller, will help us achieve our goals of proving commercial viability of our products, generating interest from end users and original equipment manufacturers and licensing our technology. For these reasons, we concluded that each of these individuals below should serve as a director.

Judith S. Schrecker, Director and Lead Independent Director

Ms. Schrecker became a director in February 2021. Ms. Schrecker brings more than 40 years of financial and operating leadership and board participation with broad international experience. From May 2016 until June 2020, Ms. Schrecker was VP of Finance of Flat Rolled Products at ATI, Inc., a global manufacturer of technically advanced specialty materials and complex components, overseeing revenues of over \$1 billion. Prior to that, Ms. Schrecker was Chief Financial Officer of Alcoa's Global Rolled Products business and a member of the executive council of the company. Under her leadership, the Global Rolled Products business achieved historically high profitability. Ms. Schrecker previously served on the board of directors of Finacity Corporation and Dress for Success Worldwide. She attended the University of Pittsburgh Graduate School of Public and International Affairs along with a B.A. in History, Economics, and Latin American Studies from Temple University. Additionally, Ms. Schrecker is a 2020 Exceptional Women Awardees Foundation (EWA) recipient.

Catharine M. de Lacy, Director

Ms. de Lacy became a director in February 2023. She is a widely recognized expert in ESG/Sustainability initiatives, public affairs, corporate governance, and risk management. Ms. de Lacy has worked for both public and privately held companies including Albemarle Corporation, the Clorox Corp., Sun Products, Cabot Corp, AlliedSignal, and Occidental Petroleum Corp. Ms. de Lacy is the co-founder and Managing Director of Riar Associates, LLC, a management consultancy where she continues to work as a business advisor and subject matter expert on climate, sustainability, business strategy, public policy and advocacy, communications, and risk management matters for public and private companies. She is a former board member of TORC Oil & Gas, Ltd. (TSX:TOG), the Environmental Law Institute's Leadership Council and the Executive Advisory Council of the Responsible Battery Coalition. She also currently serves as a board member of privately-held NTES LLC, which provides strategic, financial, and operations management expertise in evolving energy markets and real estate investment, and the U.S.A. Bobsled/Skeleton Foundation, and she has been a member of the advisory board for Lithium Technologies, a private company focused on developing innovative technologies to extract lithium from waste rock since June 2024. Ms. de Lacy holds a Board Certificate in ESG from UC Berkeley's Law School, is a Certified Director through the Harvard Business School, and is a Qualified Risk Director® and holds a certificate in Cyber Risk Governance®. Ms. de Lacy received a B.A. from Merrimack College, and an M.S. from Tufts University.

David M. Maley, Director

Mr. Maley became a director in April 2024. Mr. Maley brings forty years of broad investment experience with more than half of that period focused on micro-cap equity research and portfolio management. Mr. Maley currently serves as the Chief Investment Officer and Chief Compliance Officer of 1102 Partners, LLC, a family office, and investment advisory firm founded by Mr. Maley in 2021. Prior to his current role, Mr. Maley served as a Senior Vice President at Ariel Investments, where he was Lead Portfolio Manager for the Ariel Micro-Cap Value Product fund and the Ariel Small-Cap Deep Value Product fund. During that time, he was named a “Micro-Cap Superstar” in a 2014 Red Chip Review publication. Mr. Maley also took on management of the domestic trading team at Ariel Investments and chaired the Trade Oversight Committee during his tenure at Ariel Investments. Prior to Ariel Investments, Mr. Maley founded and ran Maple Hill Capital Management and served as a Vice President and Senior Portfolio Manager for ultra-high net worth clients at Harris Bank. Mr. Maley began his career in institutional equity sales at Goldman Sachs. He received an M.B.A from the University Of Chicago Booth School of Business and a B.B.A in finance from the University Of Notre Dame.

G. Todd Silva, Director

Mr. Silva became a director in August 2024. Mr. Silva brings over 30 years of leadership and finance experience in industries spanning industrials, financial services, technology, media, health care and others. Mr. Silva is the Chief Financial Officer of Radiance Therapeutics, Inc., an ophthalmic medical device company. Prior to his current role, Mr. Silva served as the Chief Financial Officer of Point Pickup Technologies, Inc., a logistics platform service where he worked to consummate and integrate acquisitions, raise capital through various private transactions and assist with corporate governance tasks for their board of directors. Additionally, Mr. Silva was the founder and director of Silva Partnership & Co., a firm providing corporate advisory services to early-stage technology businesses. Prior to Silva Partnership & Co., Mr. Silva was the executive director of corporate advisory services at Las Olas Capital Partners, a registered investment advisor firm where he advised a variety of companies on mergers and acquisitions, capital raises, recapitalizations and the launch of special purpose vehicles to invest in corporate and real estate transactions. Mr. Silva spent the earlier part of his career as a founder, portfolio manager, and research analyst in the institutional investment management industry in New York. Mr. Silva holds an MBA from Columbia University and a BS in economics and finance from Lehigh University.

Independence of Directors

In determining the independence of our directors, we apply the definition of “independent director” provided under the listing rules of The Nasdaq Stock Market LLC (“Nasdaq”). On an annual basis, the Board reviews the independence of all directors under guidelines established by Nasdaq and in light of each director’s background, employment and affiliations with the Company and members of management, as well as significant holdings of Company securities. This review considers all known relevant facts and circumstances in making an independence determination. The Board concluded its annual review of director independence in March 2025. After considering all relevant facts and circumstances, the Board affirmatively determined that all of the directors serving on the Board, including those nominated for election at the Annual Meeting, are independent within the meaning of Nasdaq Listing Rule 5605(a)(2) and Rule 10A-3(b) promulgated under the Exchange Act, with the exception of Colin James Deller.

Board of Directors and Committees

The Board has three standing committees: the Audit Committee, human capital and compensation committee (the “Compensation committee”) and the nominating and governance committee (collectively, the “Board Committees”). All member of the Board Committees are non-employee directors who are deemed independent.

None of our directors or executive officers have been involved in a legal proceeding that requires disclosure pursuant to Item 401(f) of Regulation S-K promulgated under the Exchange Act. None of our directors or executive officers were selected as a result of an arrangement or understanding between him/her and any other person, except for Mr. Silva, who was appointed as a director to our Board in connection with that certain Voting Agreement, dated

July 12, 2018, between us and the SPV, which has been terminated as of February 19, 2025 (see “Recent Developments – Termination of clirSPV LLC Agreement” above for more information).

Audit and Risk Committee

As of the date hereof, the Audit Committee was comprised of Judith S. Schrecker (Chairperson), Catharine M. de Lacy, and David M. Maley. Each member of the Audit Committee is financially literate and our Board has determined that Judith S. Schrecker qualifies as an “audit committee financial expert,” as defined in applicable SEC rules. The role of the Audit Committee includes, but is not limited to, the following:

- overseeing management’s preparation of our financial statements and management’s conduct of the accounting and financial reporting processes;
- appointing, compensating, retaining, and overseeing the work of the independent registered public accounting firm engaged for the purpose of preparing or issuing an audit report or performing other audit, review or attest services for the Company;
- overseeing management’s maintenance of internal controls and procedures for financial reporting at least annually;
- overseeing risks related to cybersecurity, including the security of corporate information and the steps management takes to monitor and control cybersecurity risks;
- overseeing our compliance with applicable legal and regulatory requirements, including without limitation, those requirements relating to financial controls and reporting;
- overseeing the independent registered public accounting firm’s qualifications and independence;
- preparing the report required by the rules of the Securities and Exchange Commission to be included in our proxy statement; and
- discharging such duties and responsibilities as may be required of the Audit Committee by the provisions of applicable laws, rules or regulations.

The Audit Committee is authorized (without seeking Board approval) to retain or terminate special legal, accounting or other advisors and may request any officer or employee of the Company or the Company’s outside counsel or independent registered public accounting firm to meet with any members of, or advisors to, the Audit Committee.

A copy of the charter of the Audit Committee is available on our website at www.clearsign.com (under “Investors - Corporate Governance”).

Human Capital and Compensation Committee

As of the date hereof, the Compensation Committee was comprised of Judith S. Schrecker (Chairperson), Catharine M. de Lacy, and David M. Maley. The role of the Compensation Committee is to:

- review, approve, and recommend to the Board our compensation and benefits policies generally and the annual compensation (base salary, bonus and other benefits) for all of our executives, including our Chief Executive Officer;
- administer the 2021 Plan, the 2013 Consultant Plan and the ClearSign Technologies Corporation 2011 Equity Incentive Plan (the “2011 Plan,” and collectively, the “Equity Incentive Plans”); and
- annually review and make recommendations to the Board with respect to the compensation of non-executive directors, including any incentive plan compensation.

A copy of the charter of the Compensation Committee is available on our website at www.clearsign.com (under “Investors – Corporate Governance”).

The Compensation Committee may engage outside advisers, including outside auditors, attorneys, and consultants, as it deems necessary to discharge its responsibilities. The Compensation Committee has sole authority to

retain and terminate any compensation expert or consultant used to provide advice on compensation levels or assist in the evaluation of director, Chief Executive Officer or senior executive compensation, including sole authority to approve the fees of any expert or consultant and other retention terms. In addition, the Compensation Committee considers, but is not bound by, the recommendations of our Chief Executive Officer with respect to the compensation packages of our other executive officers.

Pursuant to the terms of the 2021 Plan, the Compensation Committee may delegate to one or more officers of the Company the authority to grant awards under the 2021 Plan to participants who are not insiders of the Company.

Nominating and Corporate Governance Committee

As of the date hereof, the Governance Committee was comprised of Catharine M. de Lacy (Chairperson), Judith S. Schrecker, and David M. Maley. The role of the Governance Committee is to:

- evaluate from time to time the appropriate size (number of members) of the Board and recommend any increase or decrease;
- determine the desired skills and attributes of members of the Board, taking into account the needs of the business and listing standards;
- establish criteria for prospective members, conduct candidate searches, interview prospective candidates, and oversee programs to introduce the candidate to us, our management, and operations;
- review planning for succession to the position of Chief Executive Officer and other senior management positions;
- annually recommend to the Board persons to be nominated for election as directors;
- annually recommend to the Board the members and leadership of all standing committees, as well as leadership of the Board and to fill vacancies as needed;
- adopt or develop for Board consideration corporate governance principles and policies; and
- periodically review and report to the Board on the effectiveness of corporate governance procedures and the Board as a governing body, including conducting an annual self-assessment of the Board and its standing committees.

A copy of the charter of the Governance Committee is available on our website at www.clearsign.com (under “Investors - Corporate Governance”).

Director Qualifications and Diversity

The Board seeks independent directors who represent a diversity of backgrounds, ages and experiences that will enhance the quality of the Board’s deliberations and decisions. Candidates should preferably have board experience with one or more companies or should have achieved a high level of distinction in their chosen fields. The Board is particularly interested in maintaining a mix that includes individuals who are active or retired executive officers and senior executives, particularly those with experience in combustion, technology, air pollution control and air emission regulation, intellectual property, start-up companies, research and development, strategic planning, business development, upstream, midstream and downstream oil and gas, energy, finance, accounting and banking, as well as impact investing and environmental, social and governance investing, reporting and/or compliance.

In evaluating nominations to the Board, the Governance Committee also looks for certain personal attributes, such as integrity, ability and willingness to apply sound and independent business judgment, comprehensive understanding of a director’s role as a fiduciary to stockholders and with respect to corporate governance, availability for meetings and consultation on Company matters, and the willingness to assume and carry out such fiduciary responsibilities.

Risk Oversight by the Board of Directors

It is the management's responsibility to assess and manage the various risks we face. It is the Board's responsibility to oversee management in this effort, in order to ensure that risks and uncertainties that may relate to our ongoing operations and to our plans for the future are considered and sought to be managed appropriately. In exercising its oversight, the Board has allocated some areas of focus to the Board Committees and has retained areas of focus for itself, as more fully described below.

Full Board. Risks and exposures focused on by the full Board include risk management as a whole as well as strategic, financial and execution risks including safety risks, risks associated with intellectual property, and other current matters that may present material risk to our operations, plans, prospects or reputation. Throughout the year, the Chief Executive Officer discusses these risks with the Board during meetings that focus on a particular function or aspect of our business.

Audit Committee. Risks and exposures focused on by the Audit Committee are those associated with financial matters, particularly financial reporting, tax, accounting, disclosure, internal control over financial reporting, cyber, the Foreign Corrupt Practices Act, financial policies, investment guidelines, and credit and liquidity matters.

Governance Committee. Risks and exposures focused on by the Governance Committee are those relating to corporate governance and management and director succession planning.

Compensation Committee. Risks and exposures focused on by the Compensation Committee are those associated with leadership assessment and compensation programs and arrangements, including incentive plans, to ensure that compensation incentives are aligned with our risk management objectives.

Board Leadership Structure

Pursuant to our bylaws, the chairman of each Board and stockholder meeting is the Chairman of the Board (the "Chairman of the Board"). In the absence of a Chairman of the Board, or upon his/her inability or refusal to act as the chairman of a meeting, the Chief Executive Officer serves as the chairman of the meeting, or upon his/her inability or refusal to act as such, the President serves as chairman of the meeting. Additionally, pursuant to our lead independent director charter, in the absence of a Chairman of the Board, Chief Executive Officer and President, or upon their inability or refusal to act as chairman of a meeting, the lead independent director acts as chairman of a meeting. The lead independent director charter also provides that the lead independent director acts as chairman of any meeting of the independent and/or non-employee directors of the Board, as applicable. Ms. Schrecker is currently serving as our lead independent director.

The responsibilities of our lead independent director set forth in the lead independent director charter include:

- to act as a liaison between the independent and non-independent directors;
- to develop, maintain and revise the annual Board calendar;
- to review and approve Board meeting agendas;
- to preside and act as chairman of all meetings of the independent and/or non-employee directors of the Board, as applicable;
- to preside and act as chairman of all Board meetings at which the Chairman of the Board, if any, Chief Executive Officer and President are not present; and
- other duties as may be assigned to the lead independent director by the Board.

The lead independent director charter provides that the lead independent director must be a member of the Board and be considered independent. Further, the lead independent director may be elected annually by at least a majority of the independent directors of the Board.

Compensation Committee Interlocks and Insider Participation

None of our prior or current executive officers serves as a member of the Board or Compensation Committee of any entity that has one or more executive officers serving as a member of our Board or the Compensation Committee.

Code of Business Conduct and Ethics

We adopted a Code of Business Conduct and Ethics (the “Code of Ethics”) that applies to our principal executive officer and principal financial and accounting officer and any persons performing similar functions, as well as to our employees, officers, directors, agents and representatives. The Code of Ethics requires, among other things, that all of the foregoing people avoid conflicts of interest, comply with all laws and other legal requirements, conduct business in an honest and ethical manner, and otherwise act with integrity and in our best interests. The Code of Ethics is posted on our website at www.clearsign.com. We will promptly disclose any amendment to, or a waiver from, a provision of our Code of Ethics that applies to members of our board of directors, our principal executive officer, principal financial officer, or persons performing similar functions by posting the information on our website, www.clearsign.com. We also have a written committee charter for each of our Board Committees that are also posted on our website.

Insider Trading Policy

We maintain an insider trading policy that governs the purchase, sale and/or other dispositions of our securities by our directors, officers and employees, which we believe is reasonably designed to promote compliance with insider trading laws, rules, regulations and any applicable listing standards. Our insider trading policy also prohibits all directors, officers and employees from engaging in any short sales of our securities, hold our securities in a margin account, or pledge our securities as collateral for a loan.

Family Relationships

There are no family relationships among any of our executive officers or directors.

Delinquent Section 16(a) Reports

Section 16(a) of the Exchange Act requires that our directors, executive officers, and greater than 10% stockholders to file with the SEC initial reports of ownership and reports of changes in ownership of common stock and other equity securities of the Company. To our knowledge, all Section 16(a) filing requirements applicable to its officers, directors, and greater than 10% stockholders for the years ended December 31, 2024 and 2023, were complied with, except for the following inadvertent delinquent reports:

Dr. Deller inadvertently failed to timely disclose one transaction in a Form 4, and Mr. Hinds inadvertently failed to timely disclose two transactions in a Form 4, both of which were related to their one-time bonus grant from February 2, 2023, in the form of shares of common stock and restricted stock units, as applicable, which was disclosed on a Form 4 filed for each of Dr. Deller and Mr. Hinds on February 14, 2023.

Each of Dr. Deller and Mr. Hinds inadvertently failed to timely disclose one transaction relating to the tax withholding disposition in connection with their one-time bonus grants from February 2, 2023. These transactions were disclosed on an amendment to each of their respective Form 4 filed on February 14, 2023, which amendments were filed on February 26, 2024.

ITEM 11. EXECUTIVE COMPENSATION.

Executive Officers Compensation

The table below summarizes the total compensation paid to or earned by our Chief Executive Officer and Chief Financial Officer in the years ended December 31, 2024 and 2023, in accordance with Item 402(m)(2) of Regulation S-K. These officers are referred to herein as the “named executive officers.” The amounts represented in the “Bonus” and “Restricted Stock Awards” column reflects the stock compensation expense recorded by the Company pursuant to ASC 718, “*Compensation-Stock Compensation*” (“ASC 718”), and does not necessarily equate to the income that will ultimately be realized by the named executive officers for such awards.

Summary Compensation Table

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Restricted Stock Awards (1) (\$)	All Other Compensation (2) (\$)	Total (\$)
Colin J. Deller	2024	350,000	86,821 (3)	—	38,435	475,256
Chief Executive Officer	2023	350,000	138,989 (4)	—	38,320	527,309
Brent Hinds	2024	200,000	44,124 (3)	26,915 (5)	33,758	304,797
Chief Financial Officer	2023	200,000	47,780 (4)	24,000 (5)	33,637	305,417

- (1) The amounts included in this column are the aggregate dollar amounts of compensation expense recognized by us for financial statement reporting purposes in accordance with ASC 718, and includes amounts from restricted stock awards granted. For information on the valuation assumptions used in calculating these dollar amounts, see “Note 2 – Summary of Significant Accounting Policies,” and “Note 8 – Equity” to our consolidated financial statements included in this report. These amounts reflect our accounting expense for these awards and do not reflect the actual economic value that may be realized by the individuals upon vesting of such awards.
- (2) Relates to healthcare benefits and employer matching in a defined contribution retirement plan available to all employees.
- (3) Bonuses for the year ended December 31, 2024, were accrued in the fiscal year ended December 31, 2024. The bonuses for the fiscal year ended December 31, 2024, were approved by the Compensation Committee on February 20, 2025, and were paid in shares of common stock during the first quarter of 2025. Share amounts are calculated by dividing the fixed monetary accrual amount by the closing price of our stock on the day the Compensation Committee approves the bonus payout.
- (4) Bonuses for the year ended December 31, 2023, were accrued in the fiscal year ended December 31, 2023. The bonuses for the fiscal year ended December 31, 2023, were approved by the Compensation Committee on February 22, 2024, and were paid in shares of common stock during the first quarter of 2024. Share amounts are calculated by dividing the fixed monetary accrual amount by the closing price of our stock on the day the Compensation Committee approves the bonus payout.
- (5) Relates to time-based restricted stock awards from our 2021 Plan granted to Mr. Hinds in the years ended December 31, 2024 and 2023. These are expensed over the service period when the service conditions associated with the restricted stock award are satisfied in accordance with ASC 718.

Outstanding Equity Awards

The following table sets forth information concerning outstanding equity awards held by our named executive officers at December 31, 2024.

Name	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Options (#) Exercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date	Equity Incentive Plan Awards: Number of Restricted Stock Units (#) Unvested
Colin J. Deller					
	178,161 (1)	—	\$ 0.94	2/14/30	—
	200,000 (1)	—	\$ 2.25	1/28/29	—
	400,000 (1)	—	\$ 1.16	1/28/29	—
	200,000 (2)	390,000 (2)	\$ 3.37	2/11/31	—
Brent Hinds					
	100,000 (1)	—	\$ 1.83	10/18/31	42,895 (3)
	12,788 (1)	—	\$ 1.44	1/6/32	—

(1) As of December 31, 2024, these options have fully vested.

(2) Unearned options vest upon completion of performance milestones as outlined in the option award agreement. The Compensation Committee regularly monitors performance milestones to determine option vesting eligibility.

(3) Restricted stock units vest upon completion of time-based requirements.

Employment Contracts and Change-in-Control Arrangements

Employment Agreement with Colin James Deller

On January 28, 2019 (the “Effective Date”), the Company and Colin James Deller entered into an employment agreement pursuant to which the Company employed Dr. Deller as its President until April 1, 2019, at which time Dr. Deller became the Company’s Chief Executive Officer. Pursuant to the agreement, the Company pays Dr. Deller an annual salary of \$350,000. As an inducement to accept employment with the Company, Dr. Deller was also granted an option to purchase 400,000 shares of the Company’s common stock at an exercise price of \$1.16 per share and an option to purchase 200,000 shares of the Company’s common stock at an exercise price of \$2.25 per share. Each option has a term of 10 years and has vested as follows: one-third of the options vested on the Effective Date; one-third of the options vested on the first anniversary of the Effective Date; and one-third of the options vested on the second anniversary of the Effective Date. Dr. Deller is also eligible to participate in such healthcare and other benefit programs made available to employees of the Company. Dr. Deller was eligible for annual bonuses with a value of up to 60% of his annual salary during the year ended December 31, 2024, which percentage was subsequently modified by the Compensation Committee on November 13, 2024, to 80% of his annual base salary, effective as of January 1, 2025.

Dr. Deller and the Compensation Committee meet annually to establish (i) performance standards and goals (“Standards and Goals”) to be met by him and (ii) bonus targets based on the Standards and Goals that are achieved. Any bonuses will be paid at the Compensation Committee’s discretion in cash and/or via equity awards made under our 2021 Plan, or any successor plan thereto, of the type of equity award as authorized by the Compensation Committee, which may include options to purchase Company’s common stock to be valued using the Black-Scholes option valuation model, and/or common stock, restricted stock, restricted stock units, performance stock or performance stock units. If Dr. Deller is terminated without cause, if he resigns for any reason, dies, or becomes disabled, he is entitled to certain severance benefits. Dr. Deller may voluntarily resign for any reason by providing us with 30 days’ prior notice. If the

Company terminates Dr. Deller without cause or he is terminated within 12 months of a change in control, then Dr. Deller will be entitled to severance benefits, including 12 months of his annual salary.

Offer Letter with Brent Hinds

Brent Hinds received an offer letter from the Company, dated as of September 30, 2021 and effective as of October 18, 2021 (the “Offer Letter”), setting forth the terms of his employment and compensation arrangement, which he accepted. Pursuant to the Offer Letter, Mr. Hinds is paid an annual base salary of \$200,000 in addition to equity compensation and other benefits set forth in the Offer Letter. On November 13, 2024, the Compensation Committee approved a raise to Mr. Hinds’ annual base salary from \$200,000 to \$220,000, effective as of January 1, 2025. Mr. Hinds is eligible for annual bonuses with a value up to 40% of his annual salary, and comprised of long- and short-term incentives awards.

Mr. Hinds is also eligible to participate in such healthcare and other benefit programs made available to employees of the Company. His employment has no specified term and is on an at-will basis.

On August 8, 2023, we promoted Mr. Hinds to Chief Financial Officer of the Company. In connection with the promotion, the Company amended the Offer Letter to provide for severance payments in certain instances (the “Amendment”). Specifically, the Amendment provides for severance payments in an amount equal to one (1) year salary plus any accrued but unpaid salary, vacation, and bonus amounts upon termination of Mr. Hinds’ employment without “Cause” or upon a “Change in Control,” as such terms are defined in the Amendment. Additionally, if Mr. Hinds’ employment is terminated for Cause, he will not be eligible for any severance payments. No other changes were made to the Offer Letter.

Change of Control Arrangements

All of the option awards and stock awards granted to the Company’s executive officers pursuant to our 2021 Plan include change-in-control arrangements whereby, in the event that a successor corporation does not assume or substitute the outstanding executive officers’ awards, any unvested award will be fully vested, including awards contingent on performance-based goals. Upon a change-in-control, these vested awards will be exercisable for a period of time determined by the administrator of the 2021 Plan, and any award that becomes fully vested as a result of a change-in-control will terminate upon expiration of such period.

Compensation Discussion

Overview

The Compensation Committee administers our executive compensation and benefit programs. The Compensation Committee is comprised exclusively of independent directors and oversees all compensation and benefit programs and actions that affect our executive officers.

Compensation Process and Role of Management

The Compensation Committee is responsible for determining and approving all compensation for our executive officers. Pursuant to its charter, the Compensation Committee reviews and approves, subject to applicable Board ratification, the salary, annual incentive compensation or bonus, long-term incentive compensation in the form of stock options, restricted stock units, or stock grants, all other employment, severance and change-in-control agreements and any other compensation applicable to executive officers. As discussed below, our Chief Executive Officer assists the Compensation Committee in its deliberations with respect to the compensation payable to our other executive officers.

At the end of or immediately following each fiscal year, our Chief Executive Officer evaluates executive officer performance for the prior fiscal year, other than his own performance, and discusses the results of such evaluations with the Compensation Committee. The Chief Executive Officer assesses each executive officer’s performance during the year based upon subjective factors concerning such officer’s individual business goals and objectives, and the

contributions made by the executive officer to our overall results. The Chief Executive Officer then makes specific recommendations to the Compensation Committee for adjustments to base salary and the grant of a target bonus and/or equity award, if appropriate, as part of the compensation package for each executive officer, other than himself, for the next fiscal year.

The Compensation Committee reviews the performance of the Chief Executive Officer and determines all compensation for the Chief Executive Officer. The Chief Executive Officer is not present at the time the Compensation Committee reviews his performance and discusses his compensation.

Evaluation of Compensation Practices

In developing our director compensation program and as basis for establishing such compensation, the Compensation Committee gathers and reviews data from the National Association of Corporate Directors as well as for various publicly traded companies that the Compensation Committee believes to be similar to the Company in some respect, taking into consideration market capitalization, number of employees, amount of revenue, net cash used or generated in operations and the industries in which such companies operate. The goal is to attract qualified candidates and motivate director behavior by adequately compensating for the time, effort, and commitment required. Establishing a transparent process that includes industry standards and comparisons, while factoring in the unique circumstances of the Company, is critical. Compensation may be in the form of cash, options, restricted stock units, or stock with consideration given to the Company's overall resources during any given period when making a determination regarding the appropriate mix of each component of director compensation. As a result of such review, starting in 2023, our non-executive director's annual compensation has been paid in restricted stock units. Equity compensation for directors is designed to build an ownership stake in the Company while conveying incentives relative to the returns recognized by our stockholders.

Corporate Incentive Program

In order to enable us to attract, retain and reward our employees for their superior work, and to motivate such employees to achieve our specific corporate and individual objectives, the Compensation Committee provide incentives based upon or exceeding specified targets that are challenging but achievable.

At the beginning of each fiscal year, the Compensation Committee reviews and recommends to the Board the Corporate Incentive Plan (the "CIP") and the performance target metric and internal milestones thereunder, which provides bonus awards to certain employees, including our named executive officers, subject to the review and approval by the Compensation Committee of the achieved metrics under the CIP. The annual CIP is broken into three target categories: company based goals, employee specific goals and time-based goals. Bonuses are calculated based on the Compensation Committee's determination of target achievement and category apportionment percentages. The Compensation Committee may, from time to time, recommend changing target categories and apportionment percentages based on their annual review of the CIP.

Grants under the CIP are generally made in the form of equity, including common stock and restricted stock units.

Director Compensation Plan

Our non-executive directors are entitled to an annual compensation of \$60,000, plus reimbursement for ordinary and reasonable expenses incurred in exercising their responsibilities in accordance with our expense reimbursement procedure applicable to all of our employees. Our lead independent director is also entitled to receive additional annual compensation of \$15,000.

Our non-executive directors received the following additional annual compensation for service on the committees of the Board, as applicable, during the year ended December 31, 2024:

<u>Committee</u>	<u>Chair</u>	<u>Member</u>
Audit and Risk Committee	\$ 19,000	\$ 7,500
Human Capital and Compensation Committee	\$ 7,500	\$ 3,000
Nominating and Corporate Governance Committee	\$ 6,500	\$ 3,000

In the year ended December 31, 2024, each non-executive director's annual compensation was paid in restricted stock units. This component of our director compensation program is designed to build an ownership stake in the Company while providing an incentive to directors that corresponds with the returns recognized by our stockholders. Restricted stock unit awards to non-executive directors are anticipated to continue in future years as a means to increase alignment of directors with the Company's stockholders. Other than the 2021 Plan, the independent directors are not eligible to participate in our employee benefit plans, including the retirement plan.

Director Compensation

The following table sets forth information concerning compensation for services rendered by our non-executive directors for the year ended December 31, 2024. The amounts represented in the "Restricted Stock Units" column reflects the grant date fair value of the restricted stock units computed in accordance with ASC 718 and do not necessarily equate to the income that will ultimately be realized by the director for such awards.

<u>Name</u>	<u>Fees Earned or Paid in Cash</u>	<u>Restricted Stock Units</u>	<u>Option Awards</u>	<u>Non-Equity Incentive Plan Compensation</u>	<u>Nonqualified Deferred Compensation Earnings</u>	<u>All Other Compensation</u>	<u>Total</u>
Robert T. Hoffman, Sr.	(1) \$ —	\$ 39,999	\$ —	\$ —	\$ —	\$ —	\$ 39,999
Judith S. Schrecker	(2) —	104,498	—	—	—	—	104,498
Catharine de Lacy	(3) —	76,997	—	—	—	—	76,997
David Maley	(4) —	49,042	—	—	—	—	49,042
G. Todd Silva	(5) —	24,767	—	—	—	—	24,767
	\$ —	\$295,303	\$ —	\$ —	\$ —	\$ —	\$295,303

- (1) Since his appointment as a director and as of December 31, 2024, Mr. Hoffman received grants of 13,153 shares of common stock, 224,311 shares of restricted stock units, and options for the purchase of 186,500 shares of common stock for his services. Mr. Hoffman resigned as a director, effective as of June 16, 2024, and, as a result, the amounts for Mr. Hoffman represent the pro-rated amounts for the period in which he served on the Board during the year ended December 31, 2024.
- (2) Since her appointment as a director and as of December 31, 2024, Ms. Schrecker has received 333,132 shares of restricted stock units, and options for the purchase of 17,000 shares of common stock for her services.
- (3) Since her appointment as a director and as of December 31, 2024, Ms. de Lacy has received 148,077 shares of restricted stock units as compensation for her services.
- (4) Since his appointment as a director and as of December 31, 2024, Mr. Maley has received 59,044 shares of restricted stock units as compensation for his services.
- (5) Since his appointment as a director and as of December 31, 2024, Mr. Silva has received 30,841 shares of restricted stock units as compensation for his services.

Clawback Policy

We have adopted a compensation recovery policy designed to comply with the mandatory compensation “clawback” requirements under Nasdaq rules (the “Clawback Policy”). Under the Clawback Policy, in the event of certain accounting restatements, we will be required to recover erroneously received incentive-based compensation from our executive officers representing the excess of the amount actually received over the amount that would have been received had the financial statements been correct in the first instance. The Compensation Committee has discretion to make certain exceptions to the clawback requirements (when permitted by Nasdaq rules) and ultimately determine whether any adjustment will be made under the Clawback Policy.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED SHAREHOLDER MATTERS.

The following table shows information known to us about beneficial ownership of our common stock by:

- each of our directors;
- each individual identified as a named executive officer in the section of this report titled “Executive Compensation”;
- all of our directors and executive officers as a group; and
- each stockholder known by us to beneficially own 5% or more of our common stock.

Beneficial ownership and percentage ownership are determined in accordance with the rules of the SEC. Under these rules, beneficial ownership generally includes any shares as to which the individual or entity has sole or shared voting power or investment power and includes any shares that an individual or entity has the right to acquire ownership of on or before May 25, 2025, which is 60 days from March 26, 2025, through the exercise of any option, warrant, conversion privilege or similar right. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, shares of our common stock that could be issued upon the exercise of outstanding options, restricted stock units, and warrants that are exercisable on or before May 25, 2025 are considered to be outstanding. These shares, however, are not considered outstanding as of March 26, 2025 when computing the percentage ownership of each other person.

To our knowledge, except as indicated in the footnotes to the following table and subject to state community property laws where applicable, all beneficial owners named in this table have sole voting and investment power with respect to all shares shown as beneficially owned by them. Applicable percentage of ownership is based on 52,418,782 shares of our common stock outstanding as of March 26, 2025.

<i>Name and Address of Beneficial Owner (1)</i>	<i>Amount of Beneficial Ownership (2)</i>	<i>Percent of Class</i>
Directors and Officers:		
Colin James Deller	1,150,014 (3)	2.1 %
Brent Hinds	230,628 (4)	* %
Judith S. Schrecker	17,000 (5)	* %
Catharine M. de Lacy	— (6)	— %
David M. Maley	— (7)	— %
G. Todd Silva	— (8)	— %
All Directors and Executive Officers as a Group (6 persons)	1,397,642	2.6 %
5% Stockholders:		
Otter Capital LLC	10,991,774 (9)	19.99 %

* Less than one percent

- (1) Except as set forth below, the address of each executive officer and director is 8023 East 63rd Place, Suite 101, Tulsa, Oklahoma 74133.
- (2) Beneficial ownership is determined in accordance with Rule 13d-3 under the Exchange Act, and is generally assigned to the person holding voting power and/or investment power with respect to securities. With the exception of the securities beneficially owned by our officers and directors and their affiliates, the ownership of the shares of common stock listed above were determined using public records. These amounts are based upon information available to us as of the date of this filing.
- (3) Includes 171,853 shares of common stock, and options to purchase 978,161 shares of common stock that may be exercised on or before May 25, 2025. Excludes options to purchase 390,000 shares of common stock, none of which will vest on or before May 25, 2025.
- (4) Includes 117,840 shares of common stock, and options to purchase 112,788 shares of common stock that may be exercised on or before May 25, 2025. Excludes 53,167 shares of restricted stock units, none of which will vest on or before May 25, 2025.
- (5) Includes options to purchase 17,000 shares of common stock that may be exercised on or before May 25, 2025. Excludes 351,926 shares of restricted stock units, none of which are expected to vest on or before May 25, 2025.
- (6) Excludes 161,925 shares of restricted stock units, none of which are expected to vest on or before May 25, 2025.
- (7) Excludes 72,263 shares of restricted stock units, none of which are expected to vest on or before May 25, 2025.
- (8) Excludes 41,632 shares of restricted stock units, none of which are expected to vest on or before May 25, 2025.
- (9) Consists of (i) 8,434,774 shares of common stock, and (ii) 2,557,000 shares of common stock issuable upon the exercise of the Private Warrants (as defined above), which were assigned by the SPV (as defined above) to Otter Capital LLC on February 27, 2025, and are exercisable until June 16, 2029. The number of shares beneficially owned by Otter Capital LLC excludes (i) 4,076,315 shares of our common stock issuable upon the exercise of the Private Warrants because such Private Warrants include a beneficial ownership limitation of 19.99%, which provides that Otter Capital LLC will not have the right to exercise any portion of its Private Warrants if it, together

with its affiliates, would beneficially own in excess of 19.99%, or 4.99% or 9.99% if subsequently elected by the holder in accordance and subject to the conditions of the Private Warrants, as applicable, of the number of shares of common stock outstanding immediately after giving effect to such exercise. The business address of Otter Capital LLC is PO Box 620067, Woodside, CA 94062.

Securities Authorized for Issuance under Equity Compensation Plans

The following table provides information as of December 31, 2024, regarding the equity compensation plans approved by our stockholders and inducement option awards granted to certain employees at the time of their hiring pursuant to individual compensation arrangements that were granted without stockholder approval in accordance with Nasdaq Listing Rule 5635(c)(4). Our equity compensation plans include the 2021 Plan and the 2013 Consultant Plan, which are currently active, and the 2011 Plan, which is currently inactive but has awards outstanding thereunder (as defined above, the “Equity Incentive Plans”). As of December 31, 2024, we had no awards outstanding under equity compensation plans that have not been approved by our stockholders, except for the aforementioned inducement option awards.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted average exercise price of outstanding options, warrants and rights (b) ⁽¹⁾	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by stockholders ⁽²⁾⁽³⁾⁽⁴⁾	3,317,871 (5)\$	1.77	1,855,722
Equity compensation plan not approved by stockholders ⁽⁶⁾	491,382	\$ 1.53	— ⁽⁷⁾
Total	3,809,253	\$ 1.74	1,855,722

- (1) The weighted average exercise price does not take into account outstanding restricted stock units, which have no exercise price.
- (2) Consists of shares of common stock available for issuance under the Equity Incentive Plans.
- (3) The Board has adopted, and our stockholders approved, the 2021 Plan. The 2021 Plan provides that the number of shares issuable under the plan increase annually by an amount equal the lesser of: (i) 10% of the aggregate number of shares of common stock issued in the prior fiscal year or (ii) such number of shares of common stock as determined by the administrator of the 2021 Plan no later than the last day of the immediately preceding fiscal year; provided, that, in no event will the total cumulative increase in the number of shares available for issuance under the 2021 Plan exceed 400,000 shares of common stock in any given year. Effective as of January 1, 2025, the number of shares available for issuance under the 2021 Plan automatically increased by 400,000 shares pursuant to this feature.
- (4) The Board has adopted, and our stockholders approved, the 2013 Consultant Plan. The 2013 Consultant Plan provides for quarterly increases in the available number of authorized shares equal to the lesser of 1% of any new shares issued by us during the quarter immediately prior to the adjustment date or such lesser amount as the Board and Compensation Committee shall determine.
- (5) Represents the number of shares of common stock underlying outstanding restricted stock units under the 2021 Plan, and the shares of common stock underlying the stock options under the 2011 Plan.
- (6) Consists of (i) an inducement option to acquire 150,000 shares of common stock at an exercise price of \$0.91 per share, (ii) an inducement option to acquire 141,382 shares of common stock at an exercise price of \$1.16 per share, and (iii) an inducement option to acquire 200,000 shares of common stock at an exercise price of \$2.25 per share.

- (7) We may from time-to-time issue additional inducement option awards to prospective employees as a material inducement to such prospective employee's entering into employment with us in accordance with Nasdaq Listing Rule 5635(c)(4).

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE.

Except as disclosed herein, no director, executive officer, stockholder holding at least 5% of shares of our common stock, or any family member thereof, had any material interest, direct or indirect, in any transaction, or proposed transaction since January 1, 2022, in which the amount involved in the transaction exceeds the lesser of \$120,000 or one percent (1%) of the average of our total assets at the year-end for the last two completed fiscal years.

Review, Approval or Ratification of Transactions with Related Persons

The Board reviews issues involving potential conflicts of interest, and reviews and approves all related party transactions, including those required to be disclosed as a "related party" transaction under applicable federal securities laws. The Board has not adopted any specific procedures for conducting reviews of potential conflicts of interest and considers each transaction in light of the specific facts and circumstances presented. However, to the extent a potential related party transaction is presented to the Board, the Company expects that the Board would become fully informed regarding the potential transaction and the interests of the related party, and would have the opportunity to deliberate outside of the presence of the related party. The Company expects that the Board would only approve a related party transaction that was in the best interests of, and fair to, the Company and our stockholders, and further would seek to ensure that any completed related party transaction was on terms no less favorable to the Company than could be obtained in a transaction with an unaffiliated third party.

Investments by *clirSPV LLC*

In connection with a private placement of shares of our common stock pursuant to the SPV Purchase Agreement, we granted the SPV a right to purchase certain new equity securities that we sold for the purpose of raising capital on terms and conditions no different from those offered to other purchasers (the "Participation Right") so that it could maintain a 19.99% percentage ownership (the Percentage Ownership") of our outstanding common stock. The Participation Right expired on December 31, 2024. Further, in conjunction with this investment made by the SPV, we entered into a Voting Agreement with the SPV pursuant to which Robert T. Hoffman, Sr. was originally appointed to the Board as the director designee of the SPV in connection with the Voting Agreement. Following Mr. Hoffman's resignation from the Board on June 16, 2024, Mr. Silva was appointed to the Board as the SPV's director designee on August 1, 2024.

The purpose of the Participation Right was to allow the SPV to keep its Percentage Ownership. The Participation Right could not be exercised to the extent it would cause the SPV to own 20% or more of our then outstanding shares of common stock or hold shares with 20% or more of our voting power. Additionally, because certain elements of the Participation Right, such as the notice provisions and closing period, were not compatible with raising capital in a public offering, on May 26, 2022 (the "Waiver Date"), the SPV agreed to waive the notice requirements and other related closing mechanics for such Participation Right (the "Waiver"). In exchange for such Waiver, we and the SPV agreed that, following the Waiver Date, the SPV may purchase from us, at the price sold to the investors in an offering, unregistered shares of our common stock in a number that will allow it to maintain the Percentage Ownership our outstanding common stock, provided that the SPV notifies us that it will exercise such right within 30 days following the final closing of such offering (the "Offering Response Date") and the completion of such purchase must occur within six (6) business days of the Offering Response Date.

Following the completion of an underwritten offering in June 2022, on July 8, 2022, the SPV exercised its Participation Right and purchased 1,591,594 shares of common stock at \$1.11 per share.

In addition, the SPV agreed that effective upon the Investor Holder Consent (as defined below), the Participation Right, subject to the Waiver and modification contained therein, would be extended from December 31,

2023 to such date that the holders of two-thirds of the outstanding units of the SPV agree (the “Investor Holder Consent”) to extend such holder’s existing agreement that he/she/it will have no right to force a redemption of his/her/its interests in the SPV (the “Redemption Right”); provided, however, that the SPV provided written notice to us of the Investor Holder Consent prior to December 31, 2023 and the Participation Right would in no event extend beyond June 30, 2027. On December 30, 2023, we received notice from the SPV that the holders of at least two-thirds of the outstanding units of the SPV agreed to extend the waiver of the Redemption Right until December 31, 2024. Accordingly, the Participation Right expired on December 31, 2024.

In June 2024, following the completion of our underwritten offering and concurrent private placement in April 2024 and the SPV’s notice to exercise its Participation Right in connection with such equity offerings discussed above (See “Note 8 – Equity” for additional information), we entered into the Securities Purchase Agreement with the SPV whereby we issued an aggregate of (i) 3,907,000 shares of common stock at \$0.91 per share, (ii) Pre-Funded Warrants to purchase up to 786,000 shares of common stock, and (iii) Private Warrants to purchase up to 7,039,500 shares of common stock. Subsequently, on June 26, 2024, the SPV and we entered into the Amendment to provide for a revised allocation of the SPV’s subscription between shares of common stock and Pre-Funded Warrants in lieu thereof. Pursuant to the Amendment, the SPV subscribed for: (i) 3,350,000 shares of common stock at \$0.91 per share, (ii) Pre-Funded Warrants to purchase up to 1,343,000 shares of common stock and (iii) Private Warrants to purchase up to 7,039,500 shares of common stock, for aggregate gross proceeds of approximately \$4.3 million. For more details on these equity offerings and subsequent Participation Right exercise, see “Recent Developments” above.

Effective as of February 19, 2025, the SPV Purchase Agreement was terminated as a result of the SPV’s beneficial ownership percentage declining to less than 10% of our issued and outstanding shares of common stock, as reported on a SPV filing with the SEC dated February 19, 2025. As a result of the termination of the SPV Purchase Agreement, the related Voting Agreement entered into with the SPV, pursuant to which the SPV had a right to nominate one director to our Board at each of our annual meeting of stockholders, or any other meeting of stockholders at which members of our Board were to be elected, was also terminated, effective immediately.

Independence of Directors

In determining the independence of our directors, we apply the definition of “independent director” provided under the Nasdaq listing rules. On an annual basis, the Board reviews the independence of all directors under guidelines established by Nasdaq and in light of each director’s background, employment and affiliations with the Company and members of management, as well as significant holdings of our securities. This review considers all known relevant facts and circumstances in making an independence determination. The Board concluded its annual review of director independence in March 2025. After considering all relevant facts and circumstances, the Board affirmatively determined that all of the directors serving on the Board, including those nominated for election at the Annual Meeting, are independent within the meaning of Nasdaq Listing Rule 5605(a)(2) and Rule 10A-3(b) promulgated under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), with the exception of Colin James Deller.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES.

The following table presents aggregate fees for professional audit services rendered BPM CPA LLP (“BPM”) for the audit of our consolidated financial statements for the years ended December 31, 2024 and 2023, respectively, and fees billed for other services rendered by BPM during those periods.

	2024	2023
Audit Fees	\$ 88,725	\$ 84,500
All Other Fees	\$ 24,536	\$ 40,665
Total	<u>\$ 113,261</u>	<u>\$ 125,165</u>

Audit Fees. “Audit Fees” are the aggregate fees of BPM attributable to professional services rendered in 2024 and 2023 for the audit of our annual consolidated financial statements and for review of condensed consolidated financial statements included in our quarterly reports on Form 10-Q, and for services that are normally provided by BPM in connection with statutory and regulatory filings or engagements for those fiscal years.

All Other Fees. “All Other Fees” are attributable to customary agreed upon professional services in connection with our public offering and concurrent private placement in April 2024, “at the market” offering sales agreement executed in December 2020, filing our shelf registration statement on Form S-3 in August 2023, and review of our annual proxy statement.

Pre-approval Policies and Procedures

The Audit Committee is required to review and approve in advance the retention of the independent registered public accounting firm for the performance of all audit and lawfully permitted non-audit services and the fees for such services. The required pre-approval policies and procedures were complied with during the years ended December 31, 2024 and 2023.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES.

(a) (1) Consolidated Financial Statements

The financial statements filed as part of this report are listed and indexed in the Index to Consolidated Financial Statements on page 54 located in this Annual Report on Form 10-K. Financial statement schedules have been omitted because they are not applicable, or the required information has been included elsewhere in this report.

(a) (2) Financial Statement Schedules

Not applicable.

(a) (3) Exhibits

The exhibits filed as part of this Annual Report on Form 10-K are listed in the Exhibit Table below. The Company has identified in the Exhibit Table each management contract and compensation plan filed as an exhibit to this Annual Report on Form 10-K in response to Item 15(a) (3) of Form 10-K.

(b) The exhibits set forth in the following index of exhibits are filed or incorporated by reference as a part of this Annual Report on Form 10-K:

ITEM 16. FORM 10-K SUMMARY.

None.

ClearSign Technologies Corporation

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

**Page
No.**

ANNUAL FINANCIAL INFORMATION

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
ClearSign Technologies Corporation and Subsidiary

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of ClearSign Technologies Corporation and subsidiary (the “Company”) as of December 31, 2024 and 2023, and the related consolidated statements of operations and comprehensive loss, stockholders’ equity, and cash flows for each of the two years in the period ended December 31, 2024, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2024 and 2023, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2024, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of this critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the account or disclosures to which it relates.

Carrying Cost of Patents and Other Intangible Assets

As described in Notes 2 and 4 to the consolidated financial statements, the Company’s patents and other intangible assets, net balance was \$0.8 million as of December 31, 2024. The Company capitalizes third-party legal costs and filing fees, if any, associated with obtaining patents or other intangible assets. Once a patent asset has been placed in service, the Company amortizes these costs over the shorter of the asset’s legal or estimated economic life using the straight-line

method. The Company also evaluates for potential impairment of long-lived assets, including intangible assets composed of patents, no less frequently than annually or whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable.

The principal considerations for our determination that performing procedures relating to the carrying value of intangible assets is a critical audit matter are the significant amount of judgment by management in developing the assumptions of future economic benefit in an impairment analysis, which in turn led to significant auditor judgment, subjectivity and effort in performing audit procedures and evaluating audit evidence relating to the analysis.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included, among others, reviewing current and forecasted operating conditions for indication of impairment. We also reviewed board minutes, news, and industry reports for indications of impairment. Last, we obtained an understanding of potential future customers indicating future recoverability.

/s/ BPM CPA LLP

We have served as the Company's auditor since 2011.

San Jose, California

March 31, 2025

ClearSign Technologies Corporation
Consolidated Balance Sheets

(in thousands, except share and per share data)

	December 31,	
	2024	2023
<u>ASSETS</u>		
Current Assets:		
Cash and cash equivalents	\$ 14,035	\$ 5,684
Accounts receivable	165	287
Contract assets	194	188
Prepaid expenses and other assets	454	350
Total current assets	14,848	6,509
Fixed assets, net		
Fixed assets, net	238	275
Patents and other intangible assets, net	830	836
Total Assets	\$ 15,916	\$ 7,620
<u>LIABILITIES AND STOCKHOLDERS' EQUITY</u>		
Current Liabilities:		
Accounts payable and accrued liabilities	\$ 1,220	\$ 366
Current portion of lease liabilities	75	71
Accrued compensation and related taxes	671	703
Contract liabilities	73	1,116
Total current liabilities	2,039	2,256
Long Term Liabilities:		
Long term lease liabilities	113	172
Total liabilities	2,152	2,428
Commitments and contingencies (Note 11)		
Stockholders' Equity:		
Preferred stock, \$0.0001 par value, 2,000,000 shares authorized, no shares issued or outstanding	—	—
Common stock, \$0.0001 par value, 87,500,000 shares authorized, 50,285,509 and 38,687,061 shares issued and outstanding	5	4
Additional paid-in capital	112,796	98,922
Accumulated other comprehensive loss	(21)	(17)
Accumulated deficit	(99,016)	(93,717)
Total stockholders' equity	13,764	5,192
Total Liabilities and Stockholders' Equity	\$ 15,916	\$ 7,620

The accompanying notes are an integral part of these consolidated financial statements.

ClearSign Technologies Corporation
Consolidated Statements of Operations and Comprehensive Loss

(in thousands, except share and per share data)

	For the Year Ended December 31,	
	2024	2023
Revenues	\$ 3,596	\$ 2,403
Cost of goods sold	2,478	1,586
Gross profit	1,118	817
Operating expenses:		
Research and development	1,471	739
General and administrative	6,135	6,059
Total operating expenses	7,606	6,798
Loss from operations	(6,488)	(5,981)
Other income, net:		
Interest income	516	324
Government assistance	664	255
Other income, net	9	208
Total other income, net	1,189	787
Net loss	\$ (5,299)	\$ (5,194)
Net loss per share - basic and fully diluted	\$ (0.11)	\$ (0.13)
Weighted average number of shares outstanding - basic and fully diluted	48,935,988	38,500,933
Comprehensive loss:		
Net loss	\$ (5,299)	\$ (5,194)
Foreign-exchange translation adjustments	(4)	(9)
Comprehensive loss	\$ (5,303)	\$ (5,203)

The accompanying notes are an integral part of these consolidated financial statements.

ClearSign Technologies Corporation
Consolidated Statement of Stockholders' Equity
For the Year Ended December 31, 2024

(in thousands, except per share data)	<u>Common Stock</u>		<u>Additional</u>	<u>Accumulated Other</u>	<u>Accumulated</u>	<u>Total</u>
	<u>Shares</u>	<u>Amount</u>	<u>Paid-In Capital</u>	<u>Comprehensive</u>	<u>Deficit</u>	<u>Stockholders'</u>
				<u>Loss</u>		<u>Equity</u>
Balances at December 31, 2023	38,687	\$ 4	\$ 98,922	\$ (17)	\$ (93,717)	\$ 5,192
Share-based compensation	314	—	528	—	—	528
Fair value of stock issued in payment of accrued compensation	307	—	326	—	—	326
Shares issued for services	40	—	29	—	—	29
Issuance of common stock in public offering, net of expenses	5,314	1	2,390	—	—	2,391
Issuance of warrants in public offering, net of expenses	—	—	1,831	—	—	1,831
Issuance of common stock in private placement, net of expenses	2,250	—	865	—	—	865
Issuance of prefunded warrants in private placement, net of expenses	—	—	1,214	—	—	1,214
Issuance of warrants in private placement, net of expenses	—	—	2,389	—	—	2,389
Issuance of common stock for participation right exercise, net of expenses	3,350	—	1,447	—	—	1,447
Issuance of prefunded warrants for participation right exercise, net of expenses	—	—	580	—	—	580
Issuance of warrants for participation right exercise, net of expenses	—	—	2,250	—	—	2,250
Exercise of warrants	24	—	25	—	—	25
Foreign-exchange translation adjustment	—	—	—	(4)	—	(4)
Net loss	—	—	—	—	(5,299)	(5,299)
Balances at December 31, 2024	<u>50,286</u>	<u>\$ 5</u>	<u>\$ 112,796</u>	<u>\$ (21)</u>	<u>\$ (99,016)</u>	<u>\$ 13,764</u>

ClearSign Technologies Corporation
Consolidated Statement of Stockholders' Equity
For the Year Ended December 31, 2023

(in thousands, except per share data)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balances at December 31, 2022	38,023	\$ 4	\$ 98,079	\$ (8)	\$ (88,523)	\$ 9,552
Share-based compensation	339	—	599	—	—	599
Fair value of stock issued in payment of accrued compensation	296	—	234	—	—	234
Shares issued for services (\$0.66 per share)	12	—	7	—	—	7
Shares issued upon exercise of options (\$0.54 per share)	12	—	—	—	—	—
Shares issued for services (\$0.81 per share)	3	—	3	—	—	3
Shares issued upon exercise of options (\$1.31 per share)	2	—	—	—	—	—
Foreign-exchange translation adjustment	—	—	—	(9)	—	(9)
Net loss	—	—	—	—	(5,194)	(5,194)
Balances at December 31, 2023	<u>38,687</u>	<u>\$ 4</u>	<u>\$ 98,922</u>	<u>\$ (17)</u>	<u>\$ (93,717)</u>	<u>\$ 5,192</u>

The accompanying notes are an integral part of these consolidated financial statements.

ClearSign Technologies Corporation
Consolidated Statements of Cash Flows

(in thousands)

	For the Years Ended December 31,	
	2024	2023
Cash flows from operating activities:		
Net loss	\$ (5,299)	\$ (5,194)
Adjustments to reconcile net loss to net cash used in operating activities:		
Common stock issued for services	29	10
Share-based compensation	528	614
Depreciation and amortization	186	299
Impairment of fixed assets	—	81
Impairment of intangible assets	20	14
Gain from sale of fixed assets	—	(5)
Right-of-use asset amortization	86	125
Realized gain from marketable securities	—	(79)
Lease amendments	(3)	(14)
Change in operating assets and liabilities:		
Contract assets	(5)	(168)
Accounts receivable	122	(208)
Prepaid expenses and other assets	(104)	18
Other long term assets	—	10
Accounts payable, accrued liabilities, and lease liabilities	816	(57)
Accrued compensation and related taxes	294	452
Contract liabilities	(1,043)	869
Net cash used in operating activities	<u>(4,373)</u>	<u>(3,233)</u>
Cash flows from investing activities:		
Acquisition of fixed assets	(39)	—
Disbursements for patents and other intangible assets	(179)	(200)
Proceeds from sale of fixed assets	—	5
Purchases of held-to-maturity short-term U.S. treasuries	—	(2,162)
Redemption of held-to-maturity short-term U.S. treasuries	—	4,847
Net cash provided by (used in) investing activities	<u>(218)</u>	<u>2,490</u>
Cash flows from financing activities:		
Proceeds from issuance of common stock, net of offering costs	12,967	—
Proceeds from exercise of warrants	25	—
Taxes paid related to share-based compensation	(46)	(15)
Net cash provided by (used in) financing activities	<u>12,946</u>	<u>(15)</u>
Effect of exchange rate changes on cash and cash equivalents	<u>(4)</u>	<u>(9)</u>
Net change in cash and cash equivalents	8,351	(767)
Cash and cash equivalents, beginning of period	5,684	6,451
Cash and cash equivalents, end of period	\$ 14,035	\$ 5,684
Supplemental disclosure of cash flow information:		
Officer and employee equity awards for prior year accrued compensation	\$ 326	\$ 234
Prepaid expenses repurposed to fixed assets as demonstration equipment	—	209
Non-cash impact of new lease	32	34

The accompanying notes are an integral part of these consolidated financial statements.

ClearSign Technologies Corporation
Notes to Consolidated Financial Statements

Note 1 – Organization and Description of Business

ClearSign Technologies Corporation (“ClearSign” or the “Company”) designs and develops products and technologies for the purpose of decarbonization and improving key performance characteristics of industrial and commercial systems, including operational performance, energy efficiency, emission reduction, safety, and overall cost-effectiveness. The Company’s patented technologies are designed to be embedded in established original equipment manufacturers (“OEM”) products as ClearSign Core™ and ClearSign Eye and other sensing configurations in order to enhance the performance of combustion systems and fuel safety systems in a broad range of markets. These markets include energy (upstream oil production and down-stream refining), commercial/industrial boiler, chemical, petrochemical, transport and power industries. The Company’s primary technology is its ClearSign Core™ technology, which achieves very low emissions without the need of selective catalytic reduction.

The Company was originally incorporated in the State of Washington in 2008. During January 2022, the Company relocated its headquarters from Seattle, Washington to Tulsa, Oklahoma. Effective June 15, 2023, the Company changed its state of incorporation to Delaware. On July 28, 2017, the Company incorporated a subsidiary, ClearSign Asia Limited, in Hong Kong to represent the Company’s business and technological interests throughout Asia. Through ClearSign Asia Limited, the Company has established a wholly foreign owned enterprise (“WFOE”) in China – ClearSign Combustion (Beijing) Environmental Technologies Co., LTD. On August 22, 2024, the Company’s Board of Directors (the “Board”) authorized management to move forward with filing for dormancy with Chinese regulators to suspend the Company’s Beijing, China operations. A dormancy filing allows the Company to keep its China legal entity in a suspended status for up to three years. The Company can revive its China operations at any time during those three years with minimal cost impact. The effective date of our dormancy filing was March 12, 2025.

Unless otherwise stated or the context otherwise requires, the terms “we,” “us,” “our,” “ClearSign” and the “Company” refer to ClearSign Technologies Corporation and its subsidiary, ClearSign Asia Limited.

Business Segments

The Company operates in one operating and reportable segment engaged in the design, development and sale of combustion technologies that improve the performance and cost-effectiveness of industrial combustion systems, referred to herein as the “Combustion” segment. The Company manages its business activities on a consolidated basis. Since the operations comprise a single reportable segment, amounts reported in the consolidated balance sheets, statements of operations and comprehensive loss, stockholders’ equity, and cash flows represent the activities of the Combustion segment.

The Combustion segment derives revenues by delivering products and technology solutions to OEM’s and end-users. Our products and solutions can be incorporated into a new or existing customer infrastructure or equipment. Customer contracts can include multiple billing milestones and performance obligations. The Company can typically satisfy its performance obligations within a twelve month period, but customer project delays, some of which can be beyond the Company’s control, can impact timing of performance and there is no assurance we will satisfy all performance obligations in such period of time.

The Company’s Chief Executive Officer, who is the chief operating decision maker (“CODM”), reviews quarterly financial information on a consolidated basis for making operating decisions, allocating resources and evaluating financial performance. The CODM consistently reviews the consolidated statements of operations and comprehensive loss to manage operations and monitor performance against management expectations. Factors considered by the CODM when assessing a reportable segment include factors such as, but not limited to, human capital, intellectual property, customer relationships and business model design.

Substantially all the Company’s operating activities, including its long-lived assets, are located within the United States. Customers in the United States accounted for 100% of revenues during the years ended December 31, 2024 and 2023. The Company disaggregates geographical revenues by selling location, since many of our target customers are global entities, and it would be more likely than not, that these customers would negotiate sales within our current territory in the United States. Our two California refinery customers accounted for 86% and 87% of our annual revenues for the years ended December 31, 2024 and 2023, respectively. No other customer represented greater than ten percent of annual revenues for the years ended December 31, 2024 and 2023.

	For the Year Ended December 31,	
	2024	2023
Customer A	59 %	28 %
Customer B	27	59
	<u>86 %</u>	<u>87 %</u>

Liquidity

As of December 31, 2024, the Company’s cash and cash equivalents totaled \$14,035 thousand, which is sufficient to fund current operating expenses beyond twelve months from the date of issuance of these consolidated financial statements. The Company’s technologies are currently deployed in fully operational commercial installations. In order to generate meaningful revenues and achieve cash flow break-even, we must continue to gain market recognition and acceptance and achieve a critical level of successful sales and product installations.

Historically, the Company has financed operations primarily through issuances of equity securities. Since inception, the Company has raised approximately \$105.3 million in gross proceeds through the sale of its equity securities. During the year ended December 31, 2024, the Company sold equity securities on April 23, 2024, May 15, 2024, and June 24, 2024, which resulted in aggregate gross proceeds of approximately \$14.2 million and net proceeds of approximately \$13.0 million, after broker discounts and related fees. Refer to “Note 8 – Equity” for further details about the offerings effectuated during the year ended December 31, 2024.

The Company has incurred losses since its inception totaling \$99.0 million and expects to experience operating losses and negative cash flows for the foreseeable future. Management believes that the successful growth and operation of the Company’s business is dependent upon its ability to obtain adequate sources of funding through co-development agreements, strategic partnering agreements, or equity or debt financing to adequately support product commercialization efforts, protect intellectual property, form relationships with strategic partners, and provide for working capital and general corporate purposes. There can be no assurance that the Company will be successful in achieving its long-term plans as set forth above, or that such plans, if consummated, will result in profitable operations or enable the Company to continue in the long-term as a going concern.

Note 2 – Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements include the accounts of ClearSign and its subsidiary. Intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

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

Revenue Recognition and Cost of Sales

The Company recognizes revenue and related cost of goods sold in accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) Topic 606, *Revenue from Contracts with Customers* (“ASC 606”). When applying ASC 606, the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the promises and performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the performance obligations are satisfied. Revenues and cost of goods sold are recognized once the goods or services are delivered to the customer’s control or non-refundable performance obligations are satisfied. The Company’s contracts with customers generally have a schedule of performance obligations that are used to allocate transaction prices, as well as a schedule of non-refundable cancellation obligations. The contracts generally will be fully performed upon delivery of certain drawings or equipment. Revenue related to the contracts is recognized following the completion of non-refundable performance obligations as defined in the contract.

The Company’s contracts generally include progress payments from the customer upon completion of defined milestones. As these payments are received, they are offset against accumulated project costs and recorded as either contract assets or contract liabilities. Upon completion of the performance obligations and collectibility is determined, revenue is recorded at a point in time. The Company records cost of goods sold based on allocated costs assigned to performance obligations. Allocations can occur based on overall estimated contract profit or readily identifiable cost assignments. For any contract that is expected to incur costs in excess of the contract price, the Company accrues the estimated loss in full in the period such determination is made.

Advertising

The Company expenses selling and marketing expenses when incurred within the statements of operations and comprehensive loss in general and administrative expenses. The total amount charged to advertising expense for the years ended December 31, 2024 and 2023 was \$114 thousand and \$73 thousand, respectively.

Product Warranties

The Company warrants all installed products against defects in materials and workmanship for a period specified in each contract by replacing failed parts. Accruals for product warranties are based on historical or expected warranty experience and current product performance trends and are recorded as a component of cost of sales at the time revenue is recognized. The warranty liabilities are reduced by material and labor costs used to replace parts over the warranty period in the periods in which the costs are incurred. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary, and such adjustments could be material in the future if estimates differ significantly from actual warranty expense. Product warranties are included in accounts payable and accrued liabilities in the consolidated balance sheets. Although a warranty is a type of guarantee, assurance-type warranties are not subject to the general recognition provisions of ASC Topic 460, *Guarantees*, which requires recognizing guarantees at fair value.

Cash and Cash Equivalents

Cash and cash equivalents consist of cash on deposit in a checking and savings account, and short-term money market instruments and U.S. treasury bills with an original maturity of three months or less.

Accounts Receivable and Allowance for Credit Losses

Trade accounts receivable are stated at the cost less an allowance for expected credit losses. The Company performs ongoing credit evaluations of its customers’ financial condition and generally requires no collateral from its customers or interest on past due amounts. Management estimates the allowance for credit losses based on review and analysis of specific customer balances that may not be collectible and how recently payments have been received in addition to an expected credit loss model based on aging analysis as per the invoice date as re-imbursement risks could exist. Though an exception exists, the vast majority of the outstanding accounts receivable share the same expected credit risk due to

the re-imbursement risk is same for the current customer pool. Accounts are considered for write-off when they become past due and when it is determined that the probability of collection is remote. The allowance for credit losses as of December 31, 2024 and 2023 was zero.

Fixed Assets and Leases

Fixed assets are recorded at cost. Fixed assets are depreciated over three to five years. Maintenance and repairs are expensed as incurred.

At contract inception, the Company determines whether the contract is, or contains, a lease and whether the lease should be classified as an operating or a financing lease and reassesses that conclusion if the contract is modified. Operating leases are recorded in operating lease right-of-use (“ROU”) assets, lease liability, current and lease liability, noncurrent on the consolidated balance sheets. The Company did not have any finance leases during the periods presented.

The Company recognizes operating lease ROU assets and operating lease liabilities based on the present value of the future minimum lease payments over the lease term at commencement date. The lease ROU asset is reduced for tenant incentives, if any, and excludes any initial direct costs incurred, if any. The Company uses its incremental borrowing rate based on the information available at commencement date to determine the present value of future payments and the appropriate lease classification. In determining the inputs to the incremental borrowing rate calculation, the Company makes judgments about the value of the leased asset, its credit rating and the lease term including the probability of its exercising options to extend or terminate the underlying lease. The Company defines the initial lease term to include renewal options determined to be reasonably certain. If the Company determines the option to extend or terminate is reasonably certain, it is included in the determination of lease assets and liabilities. The Company reassesses the lease term if and when a significant event or change in circumstances occurs within the control of the Company, such as construction of significant leasehold improvements that are expected to have economic value when the option becomes exercisable. The Company recognizes a single lease cost on a straight-line basis over the term of the lease, and the Company classifies all cash payments within operating activities in the consolidated statements of cash flows.

The Company has lease agreements with lease and non-lease components, which it has elected to not combine for all asset classes. In addition, the Company does not recognize ROU assets or lease liabilities for leases with a term of 12 months or less of all asset classes.

Patents and Trademarks

Third-party expenses related to patents and trademarks are recorded at cost, less accumulated amortization. Amortization is computed using the straight-line method over the estimated useful lives of the assets once they are awarded. Patent application costs are deferred pending the outcome of patent and trademark applications. Costs associated with unsuccessful patent applications and abandoned intellectual property are expensed when determined to have no continuing value in current business activity. The Company evaluates the recoverability of the carrying values of intangible assets each reporting period.

Impairment of Long-Lived Assets

The Company tests long-lived assets, consisting of fixed assets, patents, trademarks, and other intangible assets, for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable through the estimated undiscounted cash flows expected from the use and eventual disposition of the assets. In the event an asset is not fully recoverable a loss is recognized based on the amount by which the carrying amount exceeds the fair value of the long-lived assets. Fair value is determined based on the present value of estimated expected cash flows using a discount rate commensurate with the risks involved, quoted market prices, or appraised values depending upon the nature of the assets. Losses on long-lived assets to be disposed are determined in a similar manner, except those fair values are reduced for the cost of disposal.

Fair Value of Financial Instruments

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Assets and liabilities measured at fair value are categorized based on whether or not the inputs are observable in the market and the degree that the inputs are observable. The categorization of financial assets and liabilities within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The three levels of inputs used to establish fair value are the following:

- Level 1 – Quoted prices in active markets for identical assets or liabilities.
- Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities; and
- Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The Company's financial instruments primarily consist of cash equivalents, accounts receivable, accounts payable, and accrued expenses. The fair value of the Company's cash equivalents was determined based on Level 1 inputs. Our cash equivalents consist of cash, money market and short-term U.S. treasuries. As of December 31, 2024 and 2023, we had \$1,354 thousand and \$4,228 thousand in our money market account, and \$10,792 thousand and zero in short-term U.S. treasuries, respectively.

As of the balance sheet dates, the estimated fair values of the financial instruments were not materially different from their carrying values as presented on the consolidated balance sheets. This is primarily attributable to the short-term nature of these instruments.

The Company did not identify any other recurring or non-recurring assets and liabilities that are required to be presented in the consolidated balance sheets at fair value.

Research and Development, and Government Assistance

The cost of research and development is expensed as incurred. Research and development costs consist of salaries, benefits, share-based compensation, consumables, and consulting fees, including costs to develop and test prototype equipment and parts. Research and development costs have been offset by funds received, if any, from strategic partners in cost sharing, collaborative projects. During the years ended December 31, 2024 and 2023, the Company received \$145 thousand and \$60 thousand, respectively, from these types of arrangements.

Additionally, from time to time, the Company may receive government grants to fund research and development projects. We record gross monies received from government entities within other income, net, and associated expenses such as salaries and supplies in research and development or general and administration expense, depending on the nature of expenditure. We accrue for reimbursement requests submitted to government entities in accounts receivable.

Income Taxes

The Company accounts for income taxes using an asset and liability approach which allows for the recognition and measurement of deferred tax assets based upon the likelihood of realization of tax benefits in future years. Under the asset and liability approach, deferred taxes are provided for the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. A valuation allowance is provided for deferred tax assets if it is more likely than not the Company would not be able to realize their benefits, or that future deductibility is uncertain. Tax benefits are recognized only if it is more likely than not that the tax benefits will be utilized in the foreseeable future.

Share-Based Compensation

The costs of all employee stock options, as well as other equity-based compensation arrangements, are reflected in the consolidated financial statements based on the estimated fair value of the awards on the grant date. That cost is recognized over the period during which an employee is required to provide service in exchange for the award, or in the case of performance options, expense is recognized upon completion of a milestone as defined in the grant agreement. Share-based compensation for stock grants to non-employees is determined as the fair value of the consideration received or the fair value of equity instruments issued, whichever is more reliably measured.

Foreign Operations

The accompanying consolidated balance sheets as of December 31, 2024 and 2023 include assets amounting to approximately \$145 thousand and \$334 thousand, respectively, relating to the operations of ClearSign Asia Limited. The Beijing registered capital requirement is \$350 thousand, which is required to be paid by June 30, 2032, and of which \$211 thousand has been paid as of December 31, 2024. On August 22, 2024, the Board authorized management to move forward with filing for dormancy with Chinese regulators to suspend the Company's Beijing, China operations. A dormancy filing allows the Company to keep its China legal entity in a suspended status for up to three years. The Company can revive its China operations at any time during those three years with minimal cost impact. The Company completed the dormancy filings as of March 12, 2025. We estimated that we will incur a total of \$394 thousand in one-time non-recurring costs related to this project for severance and related benefit costs, equipment disposal and shipment costs, and legal filing fees, which was recorded in the third quarter of 2024. As of December 31, 2024, we had \$239 thousand remaining in the accrual related to these costs, which is included in accounts payable and accrued liabilities on the consolidated balance sheets.

Foreign Currency

Assets and liabilities of ClearSign Asia Limited with non-U.S. Dollar functional currency are translated to U.S. Dollars using exchange rates in effect at the end of the period. Revenue and expenses are translated to U.S. Dollars using rates that approximate those in effect during the period. The resulting translation adjustments are included in the Company's consolidated balance sheets in the stockholders' equity section as a component of accumulated other comprehensive loss.

Net Loss per Common Share

Basic net loss per share is computed by dividing loss available to common stockholders by the weighted-average number of common shares outstanding. Diluted loss per share is computed similar to basic net loss per share except that the denominator is increased to include additional common shares available upon exercise of stock options and warrants using the treasury stock method, except for periods for which no common share equivalents are included because their effect would be anti-dilutive. As of December 31, 2024 and 2023, potentially dilutive shares outstanding amounted to 25.1 million and 3.9 million, respectively.

Recently Issued Accounting Pronouncements

In November 2023, the FASB issued ASU No. 2023-07, *Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures* ("ASU 2023-07"). ASU 2023-07 requires expanded disclosures about reportable segments including additional information on segment expenses, expanded interim period disclosures, and an explanation of how the CODM utilizes segment information in evaluating segment performance. The Company adopted ASU 2023-07 as of December 31, 2024.

In December 2023, the FASB issued ASU No. 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax Disclosures* ("ASU 2023-09") to enhance the transparency and decision-making usefulness of income tax disclosures by requiring additional information on an entity's tax rate reconciliation, as well as income taxes paid. ASU 2023-09 is effective for our reporting period beginning January 1, 2025. We are currently assessing the impact that the adoption of ASU 2023-09 will have on the disclosures in our consolidated financial statements.

In November 2024, the FASB issued ASU No. 2024-03, Income Statement—Reporting Comprehensive Income—Expense Disaggregation Disclosures (Subtopic 220-40) (“ASU 2024-03”). ASU 2024-03 requires enhanced disclosures about types of expenses, including purchases of inventory, employee compensation, depreciation, and amortization, in commonly presented expense captions. The amendments are effective for fiscal years beginning after December 15, 2026, and interim periods beginning after December 15, 2027, with early adoption permitted. Entities may apply the amendments prospectively or retrospectively to any or all prior periods presented in the financial statements. We are currently evaluating the impact that this guidance will have on the disclosures within our consolidated financial statements. While ASU 2024-03 will impact only our disclosures and not our financial condition and results of operations, we are assessing when we will adopt the ASU 2024-03.

Note 3 – Fixed Assets, Net

Fixed Assets, Net

Fixed assets, net are summarized as follows:

<i>(in thousands)</i>	December 31,	
	2024	2023
Office furniture and equipment	\$ 99	\$ 60
Leasehold improvements	43	43
	142	103
Accumulated depreciation and amortization	(85)	(63)
	57	40
Operating lease ROU assets, net	181	235
Total	\$ 238	\$ 275

Depreciation expense for the years ended 2024 and 2023 totaled \$21 thousand and \$152 thousand, respectively. In the year ended December 31, 2023, we recorded an impairment of \$81 thousand for machinery and equipment, specifically demonstration burners. These burners were capitalized at \$209 thousand and, at the time of impairment, the associated accumulated depreciation amounted to \$128 thousand. There were no similar impairments in the year ended December 31, 2024.

Leases

The Company leases office space in Tulsa, Oklahoma, Seattle, Washington and Beijing, China. During years ended December 31, 2024 and 2023, the Company renewed its Beijing, China lease for 13 months with monthly rent at approximately \$3 thousand. As a result of these renewals, the Company increased the right of use (“ROU”) asset and lease liability by \$32 thousand and \$34 thousand during the years ended December 31, 2024 and 2023, respectively.

The Company exited our long term Seattle operating lease on September 30, 2023. During October 2023, the Company entered into a sub-lease agreement to rent office space in Seattle for approximately \$2 thousand per month for twelve months. We renewed the twelve month Seattle sub-lease during October 2024 with substantially the same terms. The Seattle lease is considered a short-term lease, as the lease term is 12 months or less from the commencement date. The short-term lease expense was \$22 thousand and \$5 thousand for the years ended December 31, 2024 and 2023, respectively. The Tulsa and Beijing leases are classified as operating leases, with remaining terms ranging from less than twelve months to approximately three years; contractual language requires renewal negotiations to occur at or near termination. These leases are normal and customary for office space, in that, contractual guarantees exist requiring the lessee return the premises to its original functional state. During the years ended December 31, 2024 and 2023, the Company incurred restoration expenses of zero and \$33 thousand, respectively.

The Tulsa lease contains fixed annual lease payments that increase annually by 2%. The Seattle, Tulsa, and Beijing total monthly minimum rent is approximately \$10 thousand. Operating lease costs for the years ended December 31, 2024 and 2023 were \$97 thousand and \$141 thousand, respectively.

Supplemental balance sheet information related to operating leases is as follows:

<i>(in thousands)</i>	December 31, 2024	December 31, 2023
Operating lease ROU assets, net	<u>\$ 181</u>	<u>\$ 235</u>
Lease Liabilities:		
Current lease liabilities	\$ 75	\$ 71
Long term lease liabilities	113	172
Total lease liabilities	<u>\$ 188</u>	<u>\$ 243</u>
Weighted average remaining lease term (in years):	2.6	2.4
Weighted average discount rate:	5.3 %	5.2 %

Supplemental cash flow information related to operating leases is as follows:

<i>(in thousands)</i>	For the Year Ended December 31,	
	2024	2023
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows used in operating leases	\$ 98	\$ 158
Non-cash impact of new leases and lease modifications		
Change in operating lease liabilities	\$ 29	\$ 25
Change in operating lease ROU assets	\$ 32	\$ 39

Minimum future payments under the Company's operating lease liabilities as of December 31, 2024 are as follows:

<i>(in thousands)</i>	Payments due under lease agreements
2025	\$ 82
2026	67
2027	52
Total future lease payments	201
Less: imputed interest	(13)
	<u>\$ 188</u>

Note 4 – Patents and Other Intangible Assets

Patents and other intangible assets are summarized as follows:

<i>(in thousands)</i>	December 31,	
	2024	2023
Patents		
Patents pending	\$ 346	\$ 477
Issued patents	1,034	810
	<u>1,380</u>	<u>1,287</u>
Trademarks		
Trademarks pending	—	4
Registered trademarks	86	86
	<u>86</u>	<u>90</u>
Other	8	8
	<u>1,474</u>	<u>1,385</u>
Accumulated amortization	(644)	(549)
	<u>\$ 830</u>	<u>\$ 836</u>

Amortization expense for the years ended December 31, 2024 and 2023 totaled \$165 thousand and \$147 thousand, respectively. Future amortization expense associated with issued patents and registered trademarks as of December 31, 2024 is as follows:

<i>(in thousands)</i>	
2025	\$ 157
2026	125
2027	102
2028	66
2029	25
Thereafter	1
	<u>\$ 476</u>

The amortization life for patents ranges between three to five years, with trademark lives set at ten years. The Company does not amortize patents or trademarks classified as pending.

During the years ended December 31, 2024 and 2023, the Company assessed its patent and trademark assets, and recorded impairments of \$20 thousand and \$14 thousand, respectively. These impairment costs are included within research and development in the consolidated statements of operations and comprehensive loss. The Company also evaluated its strategic approach to the pursuit and protection of its intellectual property. It is the intent of the Company to continue to pursue intellectual property protection. If the Company identifies certain assets where the intellectual property does not directly align with its core technology, the Company will impair the intangible asset and write-off the asset as an expense.

Note 5 – Revenue, Contract Assets and Contract Liabilities

The Company's contracts with customers generally have performance obligations and a schedule of non-refundable cancellation obligations. Performance obligations typically fall into one of three categories, product shipment, burner performance tests and engineering design. Customer payment milestones are unique to individual contracts and may occur prior to completion of performance obligations. Customer payment terms typically range between thirty and sixty days from the date of billing. Our customer contracts typically have a duration of less than twelve months. Delays in contract performance, if any, typically occur as a result of customer onsite project delays outside of our control.

The Company recognized \$3,596 thousand of revenues and \$2,478 thousand of cost of goods sold during the year ended December 31, 2024. The revenue and cost of goods sold predominantly related to the Company's process burner product

line. The Company delivered multiple burners for different customers, successfully completed engineering studies including the computational fluid dynamic analysis, and fulfilled multiple spare parts orders. These products and services constitute performance obligations.

The Company recognized \$2,403 thousand of revenues and \$1,586 thousand of cost of goods sold during the year ended December 31, 2023. Revenues and cost of goods sold relate predominantly to the Company's process burner product line. During the year ended December 31, 2023, the Company delivered multiple burners in connection with a single customer order. Prior to delivery, we successfully completed multiple customer witness tests at a burner test facility for three separate customer orders. Both the witness tests and burner shipment constitute contractual performance obligations.

The Company had contract assets of \$194 thousand and \$188 thousand and contract liabilities of \$73 thousand and \$1,116 thousand at December 31, 2024 and 2023, respectively. Of the \$1,116 thousand contract liability balance as of December 31, 2023, the Company recognized revenue of \$1,116 thousand during the year ended December 31, 2024.

Note 6 – Product Warranties

A summary of the Company's warranty liability activity, which is included in accounts payable and accrued liabilities in the accompanying consolidated balance sheets as of December 31, 2024 and 2023, is as follows:

<i>(in thousands)</i>	December 31,	
	2024	2023
Warranty liability at beginning of year	\$ 110	\$ 5
Accruals	478	105
Payments	(114)	—
Changes in accrual related to expirations	(3)	—
Warranty liability at end of period	<u>\$ 471</u>	<u>\$ 110</u>

Note 7 - Income Taxes

For the years ended December 31, 2024 and 2023 the Company's loss before provision for income taxes were as follows:

<i>(in thousands)</i>	For the Year Ended December 31,	
	2024	2023
Domestic	\$ (5,072)	\$ (5,144)
Foreign	(227)	(50)
Loss before provision for income taxes	<u>\$ (5,299)</u>	<u>\$ (5,194)</u>

There was no provision for income taxes recorded for the years ended December 31, 2024 and 2023.

Income tax benefit attributable to losses from continuing operations differed from the amounts computed by applying the statutory U.S federal income tax rate of 21% to pretax loss from continuing operations as a result of the following:

<i>(in thousands)</i>	For the Year Ended December 31,	
	2024	2023
Tax benefit at federal statutory rate	\$ (1,113)	\$ (1,091)
Tax benefit at state rate	(406)	(126)
Other	(149)	(70)
Change in valuation allowance	1,668	1,287
	<u>\$ —</u>	<u>\$ —</u>

The significant components of the Company’s deferred tax assets and liabilities as of December 31, 2024 and 2023 were as follows:

<i>(in thousands)</i>	For the Year Ended December 31,	
	2024	2023
Deferred tax assets:		
Accrued expenses	\$ 197	\$ 86
Share-based compensation	540	388
Depreciation	405	177
Prepaid expenses	12	61
Accrued vacation	(4)	(1)
ASC 842 lease standard	11	(51)
Net operating loss carryforwards	22,128	21,020
Gross deferred tax assets	23,289	21,680
Valuation allowance	(23,054)	(21,598)
Total deferred tax assets, net of valuation allowance	235	82
Deferred tax liabilities		
Other	(235)	(82)
Net deferred tax assets	\$ —	\$ —

For the year ended December 31, 2024, based on all available objective evidence, including the existence of cumulative losses, the Company determined that it was not more likely than not that the net deferred tax assets were fully realizable as of December 31, 2024. Accordingly, the Company established a full valuation allowance against its deferred tax assets.

As of December 31, 2024, the Company had \$89.1 million of federal and \$52.4 million of state net operating loss carryforwards available to reduce future taxable income, of which federal net operating loss carryforwards of \$42.2 million have an indefinite life. The remaining federal net operating losses begin to expire in 2028, while state net operating losses begin to expire in 2025.

The Company experienced an “ownership change” within the meaning of Section 382 of the Internal Revenue Code in April 2012, subjecting net operating loss carryforwards (incurred prior to the ownership change) to an annual limitation, which may restrict the ability to use these losses to offset taxable income in periods following the ownership change. The Company determined the amount of the annual limitation to be \$686 thousand annually. The net operating loss carryforwards generated before 2018 may be used to reduce taxable income through the years 2028 to 2037. Federal net operating loss carryforwards generated for year 2018 and thereafter do not expire.

The Company files income tax returns in the U.S. federal, state and foreign jurisdictions. All tax years generally remain subject to examination by the IRS and various state taxing authorities, although the Company is not currently under examination in any jurisdiction.

The Company’s policy is to recognize interest and penalties related to income tax matters in income tax expense. As of December 31, 2024 and 2023, there was no accrued interest or penalties related to uncertain tax positions.

Note 8 – Equity

Common Stock and Preferred Stock

The Company is authorized to issue 87.5 million shares of common stock and 2.0 million shares of preferred stock. Preferences, limitations, voting powers and relative rights of any preferred stock to be issued may be determined by the Board. The Company has not issued any shares of preferred stock.

In July 2018, in connection with a private placement of the Company's common stock pursuant to a Stock Purchase Agreement, the Company granted clirSPV LLC ("clirSPV") a right to purchase certain new equity securities that the Company sells for purpose of raising capital on terms and conditions no different from those offered to other purchasers (the "Participation Right"), so that clirSPV could maintain a 19.99% percentage ownership of the Company's outstanding common stock. In no event may the Participation Right be exercised to the extent it would cause clirSPV or any of its affiliates to beneficially own 20% or more of the Company's then outstanding common stock.

In May 2022, in connection with a waiver of the Participation Right's notice requirements and other related closing mechanics for such Participation Right (the "Waiver") the Company and clirSPV, agreed that the Participation Right may be extended from December 31, 2023, to such date that the holders of two-thirds of the outstanding units of clirSPV agree to extend each such holder's existing agreement that he/she/it will have no right to force a redemption of his/her/its interests in clirSPV (the "Redemption Right"); provided, however, that the Participation Right could not be extended to a date later than June 30, 2027. On December 30, 2023, the Company received notice from clirSPV that the holders of at least two-thirds of the outstanding units of clirSPV agreed to extend the waiver of the Redemption Right until December 31, 2024. Accordingly, the Participation Right has expired as of December 31, 2024.

The Company has an At-The-Market ("ATM") program pursuant to a Sales Agreement with Virtu Americas LLC, as sales agent, dated December 23, 2020 (the "Sales Agreement"), pursuant to which the Company may sell shares of common stock with an aggregate offering price of up to \$8.7 million. On March 18, 2024, the Company filed a prospectus supplement suspending the ATM program. The Company will not make any sales of its common stock pursuant to the Sales Agreement unless and until a new prospectus supplement is filed with the SEC; however, the Sales Agreement remains in full force and effect. During the year ended December 31, 2024, the Company issued zero shares of its common stock from the ATM program. As of December 31, 2024, the Company has cumulatively issued approximately 1.6 million shares of common stock under the ATM program, at an average price of \$3.84 per share. Gross proceeds totaled approximately \$6.1 million and net cash proceeds was approximately \$5.9 million.

The Company is currently subject to the SEC's "baby shelf rules," which prohibit companies with a public float of less than \$75 million from issuing securities under a shelf registration statement in excess of one-third of such company's public float in a 12-month period. These rules may limit future issuances of shares by the Company under our "shelf" registration statement on Form S-3, the ATM program or other securities offerings.

Equity Offerings

Public Offering

On April 23, 2024, we completed an underwritten public offering (the "Public Offering"), pursuant to which we sold approximately 4,621 thousand shares of our common stock and 4,621 thousand redeemable warrants (the "Public Warrants") at a price of \$0.91 per share of common stock and \$0.01 for the accompanying Public Warrant. On May 15, 2024, Public Ventures, LLC ("Public Ventures"), the underwriter of the Public Offering, exercised its over-allotment option in full to purchase an additional 693 thousand shares of common stock and 693 thousand Public Warrants. After deducting customary professional service fees, the net proceeds from the Public Offering amounted to approximately \$4,222 thousand.

Each Public Warrant has an exercise price of \$1.05 per share and is exercisable for a period of five years starting from the date of its issuance. Holders of the Public Warrants are not able to exercise their warrants on a cashless basis. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting the Company's common stock. We have the option, but not the obligation, to redeem the Public Warrants anytime between issuance and expiration, at a price of \$0.01 per Public Warrant, provided that the closing price of the common stock reported equals or exceeds \$2.275 (as adjusted for stock splits, stock dividends, reorganizations, recapitalizations and the like) per share for any 20 business days within a 30 consecutive business-day period.

In connection with the Public Offering, we also issued approximately 425 thousand warrants to Public Ventures (the "Underwriter Warrants"), as consideration for the services provided as underwriter for the Public Offering. The

Underwriter’s Warrants are exercisable at a per share exercise price of \$1.1375 commencing 180 days from April 19, 2024, and expire on their fifth year anniversary. The Underwriter’s Warrants can be exercised on a cashless basis based on a formula set forth therein and are non-redeemable.

The shares of common stock and Public Warrants issued in the Public Offering have been classified and recorded as part of stockholders’ equity. The amount allocated to such instruments were based on their relative fair value, resulting in an initial carrying value for each of those instruments to be as follows:

<i>(in thousands)</i>	Allocated Amount
Common Stock	\$ 2,391
Public Warrants	1,831
	<u>\$ 4,222</u>

In determining the fair values of the Public Warrants and Underwriter Warrants, we used a Black-Scholes option pricing model with the following assumptions:

Stock price	\$ 0.79
Expected volatility	108.01 %
Contractual/expected term (in years)	5.00
Risk-free interest rate	4.64 %
Expected dividend yield	0 %

The Underwriter Warrants issued in connection with the Public Offering have been accounted for as a direct cost of the Public Offering, resulting in no net effect to the overall stockholders’ equity.

The fair value of the shares of common stock issued in the Public Offering was determined using the closing price of our common stock immediately preceding the closing date of the Public Offering.

Private Placement

On April 23, 2024, we completed a private placement (the “Private Placement”) concurrent with the Public Offering noted above. As part of the Private Placement, we sold (i) approximately 2,250 thousand shares of common stock at a price of \$0.91 per share of common stock; (ii) redeemable warrants to purchase up to approximately 8,108 thousand shares of our common stock (the “Private Warrants”) at a price of \$0.01 per accompanying Private Warrant; and (iii) pre-funded warrants to purchase up to approximately 3,156 thousand shares of common stock (the “Private Pre-Funded Warrants”) at a price of \$0.9099 per accompanying Private Pre-Funded Warrant. After deducting customary professional service fees, the net proceeds from the Private Placement amounted to approximately \$4,468 thousand.

The Private Warrants have the same terms as the Public Warrants noted above, except that they are only exercisable six months after their issuance.

Each Private Pre-Funded Warrant has an exercise price of \$0.0001 per share and expire when exercised in full. In accordance with the terms of the Private Pre-Funded Warrants, the Company is prohibited from effecting an exercise of any Private Pre-Funded Warrants to the extent that such exercise would result in the number of shares of common stock beneficially owned by the holder and its affiliates exceeding 4.99% (or 9.99% at election of the holder) of the total number of shares of common stock outstanding immediately after giving effect to the exercise, which percentage may be increased or decreased at the holder’s election not to exceed 9.99%.

In connection with the Private Placement, we issued approximately 432 thousand warrants to Public Ventures, as compensation for their services as our exclusive placement agent in the Private Placement (the “Placement Agent Warrants”). The terms of the Placement Agent Warrants are the same as the Underwriter Warrants noted above.

The shares of common stock, Private Pre-Funded Warrants and Private Warrants issued in the Private Placement have been classified and recorded as part of stockholders' equity. The amount allocated to such instruments were based on their relative fair value, resulting in an initial carrying value for each of those instruments to be as follows:

<i>(in thousands)</i>	Allocated Amount
Common Stock	\$ 865
Private Pre-Funded Warrants	1,214
Private Warrants	2,389
	<u>\$ 4,468</u>

In determining the fair values of the Private Warrants, Private Pre-Funded Warrants, and Placement Agent Warrants, we used a Black-Scholes option pricing model with the following assumptions:

Stock price	\$ 0.79
Expected volatility	108.01 %
Contractual/expected term (in years)	5.00
Risk-free interest rate	4.64 %
Expected dividend yield	0 %

The Placement Agent Warrants issued in the Private Placement have been accounted for as a direct cost of the Private Placement resulting in no net effect to the overall stockholders' equity.

The fair value of the shares of common stock issued in the Private Placement was determined using the closing price of our common stock immediately preceding the closing date of the Private Placement.

Participation Right Exercise

On June 24, 2024, in connection with the Public Offering and concurrent Private Placement noted above, clirSPV exercised its Participation Right (the "Participation Right Exercise") and purchased (i) 3,350 thousand shares of our common stock at a price of \$0.91 per share; (ii) redeemable warrants to purchase up to approximately 7,040 thousand shares of our common stock (the "Participation Right Warrants," and together with the Public Warrants, Private Warrants, Underwriter Warrants, Placement Agent Warrants, the "Warrants") at a price of \$0.01 per accompanying Participation Right Warrant; and (iii) pre-funded warrants to purchase up to approximately 1,343 thousand shares of common stock (the "Participation Right Pre-Funded Warrants," and together with the Private Pre-Funded Warrants, the "Pre-Funded Warrants") at a price of \$0.9099 per accompanying Participation Right Pre-Funded Warrant. After deducting customary professional service fees, the net proceeds from the Participation Right Exercise amounted to approximately \$4,277 thousand.

The Participation Right Warrants have the same terms as the Private Warrants noted above.

The Participation Right Pre-Funded Warrants have the same terms as the Private Pre-Funded Warrants noted above, except that, in accordance with the terms of the Participation Right Pre-Funded Warrants, the Company is prohibited from effecting an exercise that would result in beneficial ownership exceeding 19.99%.

The shares of common stock, Participation Right Pre-Funded Warrants, and Participation Right Warrants issued in the Participation Right have been classified and recorded as part of stockholders' equity. The amount allocated to such instruments were based on their relative fair value, resulting in an initial carrying value for each of those instruments to be as follows:

<i>(in thousands)</i>	Allocated Amount
Common Stock	\$ 1,447
Participation Right Pre-Funded Warrants	580
Participation Right Private Warrants	2,250
	<u>\$ 4,277</u>

In determining the fair values of the Participation Right Warrants and Participation Right Pre-Funded Warrants, the Company used a Black-Scholes option pricing model with the following assumptions:

Stock price	\$ 0.65
Expected volatility	108.01 %
Contractual/expected term (in years)	5.00
Risk-free interest rate	4.25 %
Expected dividend yield	0 %

The fair value of the shares of common stock issued in connection with the Participation Right Exercise was determined using the closing price of the Company's common stock immediately preceding the closing date of the Participation Right Exercise.

Warrants and Pre-Funded Warrants

The following table summarizes the Warrants (as defined above) and Pre-Funded Warrants (as defined above) activity and outstanding balance as of December 31, 2024, along with the associated weighted average exercise price and weighted average remaining life.

<i>(in thousands, except per share data)</i>	<u>Warrants</u>			<u>Pre-Funded Warrants⁽¹⁾</u>	
	<u>Number</u>	<u>Wtd. Avg. Exercise Price</u>	<u>Wtd. Avg. Remaining Life (in years)</u>	<u>Number</u>	<u>Wtd. Avg. Exercise Price</u>
Beginning Balance	—	—	—	—	—
Granted	21,319	\$ 1.0535		4,499	\$ 0.0001
Exercised	(24)	1.0500		—	—
Forfeited/Expired	—	—		—	—
Outstanding at Period End	<u>21,295</u>	<u>\$ 1.0535</u>	4.74	<u>4,499</u>	<u>\$ 0.0001</u>

(1) Pre-Funded warrants have no expiration date and only expire when exercised in full.

Equity Incentive Plan

On June 17, 2021, the Company's stockholders approved and the Company adopted the ClearSign Technologies Corporation 2021 Equity Incentive Plan (the "2021 Plan") which permits the Company to grant incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock, restricted stock units, performance units, and performance shares, to eligible participants, which includes employees, directors and consultants. The Board's Human Capital and Compensation Committee (the "Compensation Committee") is authorized to administer the 2021 Plan.

The 2021 Plan provides for an annual increase in available shares equal to the lesser of (i) 10% of the aggregate number of shares of common stock issued by the Company in the prior fiscal year; or (ii) such number provided by the

Compensation Committee; provided, however, that the total cumulative increase in the number of shares available for issuance pursuant to this automatic share increase shall not exceed 400 thousand shares of common stock. In 2024, the Board did not exercise their right to limit the automatic increase. Accordingly, the 2021 Plan share reserve increased by 66 thousand shares.

Ending balances for the 2021 Plan is as follows:

<i>(in thousands)</i>	December 31, 2024	December 31, 2023
Outstanding options and restricted stock units	3,316	3,430
Reserved but unissued shares under the Plan	1,858	2,302
Reserved but unissued shares at end of period	<u>5,174</u>	<u>5,732</u>

Stock Options

Under the terms of the 2021 Plan, incentive stock options and nonstatutory stock options must have an exercise price at or above the fair market value on the date of the grant. At the time of grant, the Company will determine the period within which the option may be exercised and will specify any conditions that must be satisfied before the option vests and may be exercised. The Company estimates the fair value of stock options on the date of grant using the Black-Scholes option-pricing model.

As permitted by SEC Staff Accounting Bulletin (“SAB”) 107, management utilized the simplified approach to estimate the expected term of the options, which represents the period of time that options granted are expected to be outstanding. Expected volatility has been determined through the Company’s historical stock price volatility. The Company has not made an estimate of forfeitures at the time of the grant, but rather accounts for forfeitures at the time they occur. The risk-free rate for periods within the expected life of the option is based on the U.S. Treasury yield in effect at the time of grant. The Company has never declared or paid dividends and has no plans to do so in the foreseeable future.

Equity Incentive Plan Options

Compensation expense associated with stock option awards for the years ended December 31, 2024 and 2023 totaled \$113 thousand and \$174 thousand, respectively.

A summary of the Company’s 2011 Equity Incentive Plan and the 2021 Plan stock option activity and changes is as follows:

	December 31, 2024				December 31, 2023			
	Options to Purchase Common Stock	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value	Options to Purchase Common Stock	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value
<i>(in thousands, except per share data)</i>								
Outstanding at beginning of year	2,759	\$ 2.07	5.38	180	2,779	\$ 2.05	6.43	—
Granted	—	\$ —		—	—	\$ —		—
Exercised	—	\$ —		—	(20)	\$ 0.54		20
Forfeited/Expired	(307)	\$ 2.25		18	—	\$ —		—
Outstanding at end of period	<u>2,452</u>	\$ 2.04	4.92	496	<u>2,759</u>	\$ 2.07	5.38	180
Exercisable at end of period	<u>1,872</u>	\$ 1.70	4.55	485	<u>2,024</u>	\$ 1.71	4.87	171

The intrinsic value is the difference between the Company’s common stock price and the option exercise prices multiplied by the number of in-the-money options. This amount changes based on the fair value of the Company’s common stock.

At December 31, 2024, there was \$286 thousand of total unrecognized compensation cost related to non-vested stock option-based compensation arrangements. Vesting criteria ranges from time-based to performance-based. The Company records costs for time-based arrangements ratably across the timeframe, whereas performance-based arrangements require management to continually evaluate predetermined goals against actual circumstances. The maximum contractual term for these options are ten years from the grant date.

Inducement Options

During the year ended December 31, 2023, the Company granted non-qualified stock options to its Chief Technology Officer to purchase an aggregate of 150 thousand shares of common stock with an exercise price of \$0.91 as a material inducement to accept employment with the Company. These inducement options vest in three equal installments, with one third of the option vesting on the grant date, and each remaining third vesting on the second and third anniversaries of the grant date, subject to continued employment with the Company. The fair value of these options were estimated on the grant date using the Black Scholes valuation model, which resulted in \$112 thousand. The compensation expense recognized for these awards for the years ended December 31, 2024 and 2023 was \$37 thousand and \$43 thousand, respectively. Total unrecognized compensation expense for these inducement options as of December 31, 2024 was \$32 thousand.

During the year ended December 31, 2023, the Company granted non-qualified stock options to its Director of Customer Relationships and Business Development to purchase an aggregate of 150 thousand shares of common stock with an exercise price of \$1.31 as a material inducement to accept employment with the Company. These inducement options vest in three equal installments, with one third of the option vesting on the grant date, and each remaining third vesting on the second and third anniversaries of the grant date, subject to continued employment with the Company. The fair value of these options were estimated on the grant date using the Black Scholes valuation model, which resulted in \$160 thousand. The compensation expense recognized for these awards for the year ended December 31, 2023 was \$74 thousand. Two-thirds of these inducement options were forfeited in 2023 upon the departure of the Director of Customer Relationships and Business Development.

These inducement options were granted outside of the 2021 Plan and in accordance with the employment inducement exemption provided under Nasdaq Listing Rule 5635(c)(4).

A summary of the Company's inducement option activity and changes is as follows:

	December 31, 2024				December 31, 2023			
	Options to Purchase Common Stock	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value	Options to Purchase Common Stock	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value
<i>(in thousands, except per share data)</i>								
Outstanding at beginning of year	491	\$ 1.53	4.04	\$ 30	341	\$ 1.80	6.01	\$ —
Granted	—	\$ —			300	\$ 1.11		
Exercised	—	\$ —			(50)	\$ 1.31		
Forfeited/Expired	—	\$ —			(100)	\$ 1.31		
Outstanding at end of period	491	\$ 1.53	3.04	\$ 119	491	\$ 1.53	4.04	\$30
Exercisable at end of period	441	\$ 1.60	3.29	\$ 93	391	\$ 1.69	4.61	\$10

Restricted Stock Units

The Company awards employees and directors restricted stock units ("RSUs") in lieu of cash payment for compensation. These awards are granted from the 2021 Plan. Employee vesting criteria is time-based, and compensation expense is recognized ratably across the timeframe. The Company pays payroll withholding taxes on behalf of the employee at vesting, and withholds shares from the employee's award to cover the taxes payable. The Company accrued taxes for RSU share-based compensation of \$32 thousand and \$16 thousand for the years ended December 31, 2024 and 2023, respectively. Total unrecognized compensation expense for employee restricted stock units as of December 31, 2024 was \$179 thousand.

Director vesting criteria is contingent upon the occurrence of one of four future events, which the Company cannot predict or control. Therefore, compensation expense for director RSUs is not recognized until one of these four future events occur, which is in accordance with FASB ASC Topic 718, “*Compensation – Stock Compensation.*” Total unrecognized compensation expense for director services as of December 31, 2024 was \$579 thousand. Director compensation is earned on a quarterly basis with the target value of compensation set at \$79 thousand per quarter, assuming four directors, one lead independent director, one chairperson for each committee and two committee members for each of the three committees.

A summary of the Company’s RSUs activity is as follows:

	December 31, 2024			December 31, 2023		
	Number of Shares	Weighted Average Grant Date Fair Value	Weighted Average Contractual Life (in years) (1)	Number of Shares	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Life (in years) (1)
<i>(in thousands, except per share data)</i>						
Nonvested at beginning of period	671	\$ 1.05	1.08	423	\$ 1.49	0.02
Granted	517	\$ 0.97		617	\$ 0.82	
Vested	(323)	\$ 1.08		(361)	\$ 1.18	
Forfeited	—	\$ —		(8)	\$ 0.79	
Nonvested at end of period	865	\$ 0.99	0.88	671	\$ 1.05	1.08

- 1) Weighted Average Contractual Life calculation excludes the number of director RSUs that vest upon one of four performance events (refer to discussion above for details).

A summary of the Company’s RSU compensation expense is as follows:

<i>(in thousands, except per share data)</i>	For the Year Ended December 31,	
	2024	2023
Share-based compensation expense	\$ 397	\$ 337
Weighted average value per share	\$ 1.27	\$ 0.83

Stock Awards

The Company awards employees stock in lieu of cash payment for compensation, typically to satisfy accrued bonus compensation. The awards are granted from the 2021 Plan.

<i>(in thousands, except per share data)</i>	2024			2023		
	Number of Shares	Fair Value	Weighted Average per Share	Number of Shares	Fair Value	Weighted Average per Share
Share-based compensation	24	\$ 27	\$ 1.15	—	\$ —	\$ —
Fair value of stock payments in accrued compensation	307	\$ 326	\$ 1.06	296	\$ 234	\$ 0.79

Consultant Stock Plan

The 2013 Consultant Stock Plan (the “Consultant Plan”) provides for the granting of shares of common stock to consultants who provide services related to capital raising, investor relations, and making a market in or promoting the Company’s securities. The Company’s officers, employees, and Board members are not entitled to receive grants from the Consultant Plan. The Compensation Committee is authorized to administer the Consultant Plan and establish the grant terms. The Consultant Plan provides for quarterly increases in the available number of authorized shares equal to

the lesser of 1% of any new shares issued by the Company during the quarter immediately prior to the adjustment date or such lesser amount as the Board shall determine.

The Consultant Plan activity is as follows:

<i>(in thousands)</i>	December 31,	
	2024	2023
Reserved but unissued shares at beginning of period	188	196
Increases in the number of authorized shares	116	7
Grants	(40)	(15)
Reserved but unissued shares at end of period	264	188

The Consultant Plan compensation expense is summarized as follows:

<i>(in thousands, except per share data)</i>	For the Year Ended December 31,	
	2024	2023
Share-based compensation expense	\$ 29	\$ 10
Weighted average value per share	\$ 0.75	\$ 0.69

Note 9 – Net Loss per Common Share

The Company calculates net loss per common share in accordance with ASC 260 *Earnings Per Share* (“ASC 260”). Basic and diluted net loss per common share was determined by dividing net loss applicable to common stockholders by the weighted average number of shares of common stock outstanding during the period. Under ASC 260, shares issuable for little or no cash consideration are considered outstanding common shares and included in the computation of basic net loss per share. As such, for the years ended December 31, 2024 and 2023, the Company included the Pre-Funded Warrants in its computation of net loss per share. The Pre-Funded Warrants were issued in April and June 2024 with an exercise price of \$0.0001 per Pre-Funded Warrant (See “Note 8 – Equity” for additional information).

The following potentially dilutive securities have not been included in the computation of diluted net loss per share for the years ended December 31, 2024 and 2023, as the result would be anti-dilutive:

<i>(in thousands)</i>	December 31, 2024	December 31, 2023
	Stock Options	2,943
Restricted Stock Units	864	671
Warrants	21,295	—
Total shares excluded from calculation	25,102	3,921

Note 10 – Retirement Plan

The Company has a defined contribution retirement plan covering all of its U.S. employees whereby the Company matches employee contributions up to 3% of their base salary. The Company’s matching contribution expense totaled \$68 thousand and \$64 thousand during the years ended December 31, 2024 and 2023, respectively.

Note 11 – Commitments and Contingencies

Litigation

From time to time the Company may become involved in various lawsuits and legal proceedings which arise in the ordinary course of business. Litigation is subject to inherent uncertainties and an adverse result in any such matter may harm the Company’s business. As of the date of this report, the Company is not a party to any material pending legal

proceedings or claims that the Company believes will have a material adverse effect on the business, financial condition or operating results.

Indemnification Agreements

The Company maintains indemnification agreements with our directors and officers that may require the Company to indemnify these individuals against liabilities that arise by reason of their status or service as directors or officers, except as prohibited by law.

Note 12 – Government Assistance

During 2022, the Company was awarded a research grant from the Department of Energy (“DOE”) for approximately \$250 thousand with the completion of such grant occurring in March 2023. The purpose of the grant was to produce a research paper for a flexible fuel ultra-low NOx process burner capable of burning 100% hydrogen fuel. During 2023, the Company was awarded a Phase 2 grant from the DOE to continue developing this ultra-low NOx hydrogen burner. The Phase 2 grant amount totaled approximately \$1.6 million over a two-year period. These awards allow the Company to request reimbursements for expenditures such as labor, material, and administrative costs. During the years ended December 31, 2024 and 2023, the Company recognized \$633 thousand and \$191 thousand in reimbursements from the DOE, respectively.

Beginning in 2021, the Company received funds relating to the Oklahoma 21st Century Quality Jobs Act. The estimated duration of the program is up to 10 years and is designed to attract growth industries to Oklahoma. By reporting quarterly salary statistics and meeting agreed upon employment thresholds, the state remits benefit monies to the Company. During the years ended December 31, 2024 and 2023, the Company recognized \$31 thousand and \$64 thousand in government assistance from this program, respectively.

Note 13 – Quarterly Results (unaudited)

Quarterly results for the years ended December 31, 2024 and 2023 are as follows:

(in thousands, except per share data)				
For the year ended December 31, 2024	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue	\$ 1,102	\$ 45	\$ 1,859	\$ 590
Gross profit	\$ 437	\$ 42	\$ 551	\$ 88
Operating expense	\$ 1,689	\$ 2,179	\$ 1,984	\$ 1,754
Net loss	\$ (1,108)	\$ (1,872)	\$ (1,155)	\$ (1,164)
Net loss per share - basic and fully diluted	\$ (0.03)	\$ (0.04)	\$ (0.02)	\$ (0.02)

For the year ended December 31, 2023

Revenue	\$ 894	\$ 150	\$ 85	\$ 1,274
Gross profit	\$ 106	\$ 129	\$ 24	\$ 558
Operating expense	\$ 1,810	\$ 1,758	\$ 1,521	\$ 1,709
Net loss	\$ (1,429)	\$ (1,478)	\$ (1,332)	\$ (955)
Net loss per share - basic and fully diluted	\$ (0.04)	\$ (0.04)	\$ (0.03)	\$ (0.02)

Note 14 – Subsequent Events

On February 6, 2025, clirSPV exercised 1,343,000 of the Participation Right Pre-Funded Warrants at an exercise price of \$0.0001, resulting in the issuance of 1,343,000 shares of common stock. On March 21, 2025, the accredited investor from our Private Placement exercised 360,247 of his Private Pre-Funded Warrants at an exercise price of \$0.0001, which exercise price per share was paid upon issuance of the Private Pre-Funded Warrants, resulting in the issuance of 360,247 shares of common stock.

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.

CLEARSIGN TECHNOLOGIES CORPORATION

Date: March 31, 2025

By: /s/ Colin J. Deller
Colin J. Deller
Chief Executive Officer

Date: March 31, 2025

By: /s/ Brent Hinds
Brent Hinds
Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Colin James Deller and Brent Hinds as their true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agents, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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 capacities and on the dates indicated.

Date: March 31, 2025

/s/ Colin J. Deller
Colin J. Deller
Chief Executive Officer and Director
(Principal Executive Officer)

Date: March 31, 2025

/s/ Brent Hinds
Brent Hinds
Chief Financial Officer
(Principal Financial and Accounting Officer)

Date: March 31, 2025

/s/ Judith S. Schrecker.
Judith S. Schrecker, Lead Independent Director

Date: March 31, 2025

/s/ Catharine Marie de Lacy
Catharine Marie de Lacy, Director

Date: March 31, 2025

/s/ David Maley
David Maley, Director

Date: March 31, 2025

/s/ G. Todd Silva
G. Todd Silva, Director

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K/A
(Amendment No. 1)

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 For the fiscal year ended December 31, 2024
OR

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

For the transition period from _____ to _____

Commission file number 001-35521

CLEARSIGN TECHNOLOGIES CORPORATION

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

26-2056298
(I.R.S. Employer
Identification No.)

8023 East 63rd Place, Suite 101
Tulsa, Oklahoma 74133
(Address of principal executive offices)
(Zip Code)

(918) 236-6461
(Registrant's telephone number, including area code)

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock	CLIR	The Nasdaq Stock Market LLC

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 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 every Interactive Data File required to be submitted 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 such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

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

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

State the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter.

As of June 30, 2024, the aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, computed by reference to the last sale price of the common equity was \$33,474,132.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date.

As of May 28, 2025, the registrant has 52,422,532 shares of common stock, par value \$0.0001, issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

None.

Auditor name **BPM CPA LLP**
Location **Santa Monica, CA**
Auditor Firm ID **PCAOB: ID 207**

Technologies Corporation

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EXPLANATORY NOTE

This Amendment No. 1 (this “Amendment,” or this “report”) amends the Annual Report on Form 10-K for the year ended December 31, 2024 of ClearSign Technologies Corporation (the “Company”), filed with the Securities and Exchange Commission (the “SEC”) on March 31, 2025 (the “Original Form 10-K”). The purpose of this Amendment is to amend “Item 14. Principal Accountant Fees and Services” of Part III of the Original Form 10-K to (i) correct the aggregate fees for professional audit services rendered by BPM CPA LLP (“BPM”), our independent registered public accounting firm, for the audit of the Company’s consolidated financial statements for the years ended December 31, 2024 and 2023, respectively, and fees billed for other services rendered by BPM during those periods; and (ii) reflect in “Audit-Related Fees,” instead of “All Other Fees,” the fees incurred by the Company in connection with certain professional services rendered by BPM relating to certain equity offerings and the filing of proxy statements and registration statements with the SEC. In addition, pursuant to the rules of the SEC, “Item 15. Exhibits and Financial Statement Schedules” of Part III of the Original Form 10-K has been amended to provide currently dated certifications from the Company’s Principal Executive Officer and Principal Financial Officer as required by Sections 302 and 906 of the Sarbanes-Oxley Act of 2002, which are included as Exhibits 31.1, 31.2 and 32.1 hereto.

Except as stated herein, this Amendment does not reflect events occurring after the filing of the Original Form 10-K and no attempt has been made in this Amendment to modify or update other disclosures as presented in the Original Form 10-K.

Unless otherwise stated or the context otherwise requires, the terms “ClearSign,” “we,” “us,” “our” and the “Company” refer to ClearSign Technologies Corporation and its subsidiary, ClearSign Asia Limited.

PART III

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES.

The following table presents aggregate fees for professional audit services rendered BPM CPA LLP (“BPM”) for the audit of our consolidated financial statements for the years ended December 31, 2024 and 2023, respectively, and fees billed for other services rendered by BPM during those periods.

	2024	2023
Audit Fees	\$ 95,101	\$ 84,500
Audit-Related Fees	67,557	40,665
Total	<u>\$ 162,658</u>	<u>\$ 125,165</u>

Audit Fees. “Audit Fees” are the aggregate fees of BPM attributable to professional services rendered in the fiscal years ended December 31, 2024 and 2023 for the audit of our annual consolidated financial statements, for review of condensed consolidated financial statements included in our quarterly reports on Form 10-Q and for services that are normally provided by BPM in connection with statutory and regulatory filings or engagements for those fiscal years.

Audit-Related Fees. “Audit-Related Fees” are attributable to customary agreed upon professional services in connection with our public offering and concurrent private placement in April 2024, “at the market” offering, the filing of registration statements on Form S-3 in August 2023 and Form S-8 in 2024 and 2023, and review of our proxy statements for the annual meetings held on 2024 and 2023.

Pre-approval Policies and Procedures

The Audit Committee is required to review and approve in advance the retention of the independent registered public accounting firm for the performance of all audit and lawfully permitted non-audit services and the fees for such services. The required pre-approval policies and procedures were complied with during 2024 and 2023.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES.

(a) (1) Consolidated Financial Statements

The financial statements required to be filed as part of this report are listed and indexed in the Index to Consolidated Financial Statements on page 33 located in the Original Form 10-K. Financial statement schedules have been omitted because they are not applicable, or the required information has been included elsewhere in the Original Form 10-K.

(a) (2) Financial Statement Schedules

Not applicable.

(a) (3) Exhibits

The exhibits required to be filed by Item 15 are set forth in, and filed with or incorporated by reference in, the “Exhibit Index” of the Original Form 10-K. The attached list of exhibits in the “Exhibit Index” sets forth the additional exhibits required to be filed with this Amendment and are incorporated herein by reference in response to this item.

(b) The exhibits set forth in the following index of exhibits are filed or incorporated by reference as a part of this Amendment:

ITEM 16. FORM 10-K SUMMARY.

None.

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.

CLEARSIGN TECHNOLOGIES CORPORATION

Date: May 28, 2025

By: /s/ Colin J. Deller
Colin J. Deller
Chief Executive Officer

Date: May 28, 2025

By: /s/ Brent Hinds
Brent Hinds
Chief Financial Officer

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 capacities and on the dates indicated.

Date: May 28, 2025

/s/ Colin J. Deller
Colin J. Deller
Chief Executive Officer and Director
(Principal Executive Officer)

Date: May 28, 2025

/s/ Brent Hinds
Brent Hinds
Chief Financial Officer
(Principal Financial and Accounting Officer)

Date: May 28, 2025

/s/ Anthony DiGiandomenico
Anthony DiGiandomenico, Director

Date: May 28, 2025

/s/ Louis J. Basenese
Louis J. Basenese, Director

Date: May 28, 2025

*
Judith S. Schrecker, Director

Date: May 28, 2025

*
Catharine M. de Lacy, Director

Date: May 28, 2025

*
David M. Maley, Director

Date: May 28, 2025

*
G. Todd Silva, Director

Date: May 28, 2025

* /s/ Colin J. Deller
Colin J. Deller, Attorney-in-Fact

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