

*In connection with the previously announced business combination between Athena Technology Acquisition Corp. ("Athena") and Heliogen, Inc. ("Heliogen"), the following presentation was made on November 9, 2021. A transcript of the presentation is being filed herewith as a written communication pursuant to Rule 425 under the Securities Act (17 CFR 230.425)*

## **Heliogen Presentation Transcript**

### **R.W. Baird Industrial Conference**

**November 9, 2021**

#### **Bill Gross - CEO, Heliogen**

Thank you very much, George. It's really a pleasure to be here. Thank you for taking the time to listen to our story today. We have a disruptive company and renewable energy to really make a big impact, positive impact on the energy transition. I'll tell you more about our technology, our background and our potential and our customers. And I'll begin by sharing my screen with you so you can see some of the key features of our product and that I look forward to answering any questions you have at the end of our session.

Heliogen is focused on industrial decarbonization. We have a huge, huge market, because all of heavy industry uses a tremendous amount of fossil fuels. And they're all looking to replace that with something that's more cost effective and looking to replace that with something that reduces their CO<sub>2</sub> emissions. We are helping these companies replace their fossil fuel use with concentrated sunlight. We have come up with a new disruptive technology that takes advantage of Moore's Law, and recent increases in processing power and AI to dramatically reduce the cost of concentrated sunlight to dramatically increase the temperature of concentrated sunlight to make it effective for industrial applications.

Right now, in the world. All of industry needs a new resource to help them power the transition. And that's including heat which they need, power, electricity and green hydrogen. Fortunately, solar energy provides 10,000 times all the energy our planet uses and it's also one of the most evenly distributed natural resources. But there have been two problems with solar energy and actually almost all renewable energy. First is that solar and renewable energy is extremely intermittent. And second, solar energy, renewable energy is very difficult to transport long distances. We fundamentally have solved those two problems. Our product, which we're calling the Heliogen sunlight refinery is a 100-acre field that concentrates sunshine like a huge magnifying glass, producing near always available and transportable renewable energy cost effectively. This really is a breakthrough for these industrial companies.

The four fundamental insights that we had that set us apart from all other renewable companies are first, that heavy industry was a critical market for decarbonizing and that is currently underserved, which is, the second is that renewable energy for heavy industry must be near constantly available. They can't handle energy which only comes during noon, when the sun is out of speed or at nighttime when we decided to speak they need something that's nearly always available and cost effective. The third fundamental insight we had was that using AI software, computation power, those things can simplify reduce both the hardware costs the installation cost, the maintenance cost those are things that only recently became possible. And we have harnessed those technologies. And then the fourth idea is high volume manufacturing techniques, which have reduced the cost of everything in our lives, from our cars, to our iPhones to everything. Those needed to be deployed and employed on concentrated solar in a way they had not before. By making modular units that are smaller and factory producible we're doing what the Model T did make something mass producible automated and low cost by doing it in a factory as opposed to doing it in the field. So, these things will really ensure reliability, scale, learning curve cost reduction, and we harness all those breakthroughs to make this new thing possible. So, when you look at what we're going after this high growth, underserved market, there are many, many companies going after residential, commercial solar. There are many, many companies going after utility scale solar. There are very few if no companies going after industrial scale decarbonization and that's what Heliogen plans to own.

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We really want to meaningfully address climate change, meaningfully save these customers money and become the leading public solar technology company to do that. So, what do we do that's unique to do that? Well, the biggest differentiator we have is this near always available renewable energy. The problem is renewable energy, as I said, is solar peaks at noon. We have peaks at night. We, however, can run flat all day long. We take this curve of solar energy, which peaks in the afternoon, and we store that energy thermally by storing that energy thermally in solid media, like rocks or sand or ceramic, we can have that energy availability and industrial customers being that is a critical breakthrough of our technology. The other breakthrough I told you is the way we use Moore's Law and more computation.

#### **Bill Gross – CEO, Heliogen 5:28**

We had a fundamental insight that smaller is actually better. Other people in the industry for the last 50 years have always been making their systems larger and larger and larger with the thought that by going larger, they would amortize more costs. Over bigger systems and drive down the price. But in fact, if you use more bytes instead of atoms, if you use more software instead of atoms of steel and glass, you actually benefit by going smaller, not by going larger. Yes, you increase your software states. However, you get much, much lower cost much, much more reliability, much much more modularity and manufacturability. And we're the first ones to harness Moore's Law, more computation to make concentrated solar both more effective, higher temperature and more affordable. So, we went the opposite direction than everybody else with the software breakthrough that we came up with. We use that to build a modular plant.

This is a top view of our plant. It's about 100 acres, 650 meters by 650 meters. It puts out five megawatts almost always continuously, all year long. And the way we do the almost always continuously is we store the energy from the daytime, to use it when the sun goes down, or to even produce power during clouds. Regular PV panels, when they're getting photons from the sun, they're producing electrons, but the electrons stop the millisecond the photons stop. Our system doesn't stop when the photons stop. We're gathering the photons from this huge magnifying glass, we build this computer controlled magnifying glass, and then we store that thermal energy so it stays around even after the sun goes down. That's what customers love about our technology.

This is what it looks like in an aerial view of the full five-megawatt module. This is the actual system we built in the desert in Lancaster, California. You can see the field of mirrors. This is a field of mirrors, relatively low-tech mirrors. The high-tech part is the computer control system. So those mirrors are concentrating sunlight from the bouncing off each mirror up to the top of the tower where we achieve temperatures well above 1000 degrees - we need to achieve more than 1500 degrees centigrade. So extremely high temperatures. These are the temperatures that are necessary to produce power around the clock. To produce steam, the customers need to produce melting of aluminum, creation of concrete melting of steel, all the industrial products that these companies make. They need high temperatures and they need electricity and we can provide both. The core invention that we came up with is this AI based computer vision-based system that uses cameras up on the tower. We have cameras on our tower that stare at the field of mirrors. And by looking at those in real time and doing analysis, computer vision based analysis on those images, we can figure out the exact angle to nearly a 30<sup>th</sup> of a degree less than a 30<sup>th</sup> of a degree that every mirror is pointing and then adjust those at 30 frames per second. That's never been done before. That's part of our core patent. That's part of why we have six patents granted and 30 more pending on a variety of technology used to do this. But fundamentally, we're a software company blended with hardware to drive down the cost of concentrated solar. So, this system that we invented with the camera based closed loop feedback system enables lower cost, higher temperature, higher reliability.

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**Bill Gross – CEO, Heliogen 9:00**

This is what it looks like on our system. This on the left is previous concentrated solar when there's huge mirrors pointing to a huge 200-meter-tall five or 10 meter diameter tower. And you can even see in this picture that many beams are missing the tower completely because the accuracy of moving these huge mirrors is very, very challenging. These mirrors are almost the size of a tennis court. So, imagine trying to hold a tennis court stable in the wind and pointing into those reflections hit this tower very far away. Our system on the other hand, you can see on the right has these cameras looking at the field for cameras and every single spot of light is reflected to something only 18 inches across basically the size of a basketball hoop with no spillage or misbehaves at all. That's again because of this closed loop system. That's AI based software based we get this higher accuracy, and this accuracy was only even possible in the last five years or so, because of the processing power of the Nvidia GPU. The Nvidia GPU chip which we buy to use in our system only cost \$1,000. And that enables us to power a whole multi-million dollar plant so the computing power is so insane that I could do that. The chip was invented for cryptocurrency mining, and for virtual reality gaming, and we're harnessing it to reduce the price of solar energy in a way that's never been done before.

Effectively what we've done is taken that huge mirror that you saw, we break it up into 100 small mirrors that can be made in a factory without cranes and without all this installation. And now we deploy them much more like farming. We spread them out in the field, and then software wakes them up and makes them all point to become that huge magnifying glass and previous concentrated solar. There's one big system built by BrightSource right near Las Vegas, and that was 3500 acres, it was more than \$2 billion. It took many, many, many years to construct. Our system is 35 times smaller than a traditional CSP plant. That modularity allows us to put our plant right on the customer's premises. We go right on the mining company's field we can go right at a steel mill's location. That is a game changer for them because now they can produce their own energy. They don't have to buy from utility. They don't have to import fossil fuel. They can make their own energy 24/7 on their own property. And that's why customers inbound are reaching out to us so enthusiastically to go forward with this technology. I told you we have many patents on the system, that we're an IP company at heart by being a software and hardware company. We have the ability to make upgrades over time, improve the performance over time, and that really gives us a great opportunity for higher margins as we grow the software portfolio.

The critical difference I want you to understand about our technology versus other renewables is capacity factor to make green hydrogen affordable and, to make all the industrial partners satisfied with our energy, we need to be high capacity factor. I'll tell you what that means. Traditional PV panels are about 20% capacity factor. That means about 20% of the hours of the day or hours of the year. They are producing power, wind can be up in the 40s but we're up in the 80s by being between 80% and 90% capacity factor we meet the needs of industrial customers in a way that traditional renewable energy cannot. Also high capacity factor is needed to make cost effective green hydrogen, for which there is huge demand, because without high capacity factor, hydrogen is not affordable, because the capex of your system to make the hydrogen is not leveraged over enough hours of the day or enough hours of the year. We solve that with a high capacity.

So now what do we do with our product and why do our customers care? And who's our team to pull this off? So, what do we do with our product? The three things we can make for our customers are heat for customers who need that, power, electricity for customers who need that, and fuel we can make hydrogen for customers who need that. Some customers want one of these three. Some customers want to have these three, many of them want that both heat and power. We call it CHP for Combined Heat Power. And many customers also want all three. Take a steel mill customer like Arcelor Mittal, who's also an investor in our company. They want all three they need to make steel the power and the hydrogen. So, they're an example of a customer who needs everything that we make, and they were so excited about our company. They invested in our company when we were private, and they invested in our company and our IPO by investing in our PIPE.

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**Bill Gross, CEO, Heliogen 13:35**

Before I tell you about the first business that we have, let me tell you about the team that we have to pull this off. We've been able to assemble an astounding team for a few reasons, primarily because the opportunity is so big, and the mission is so important. So, my own background. I've been starting companies all my life. I started a solar energy company when I was a teenager called Solar Devices. And I used that to actually pay my way through college. I was selling kits and plans in the back of Popular Science Magazine when I was 15 years old, passionate about this even back then, because I grew up during the Arab oil embargo and that gave me a lot of enthusiasm about alternative energy sources. I didn't know about climate change that most people didn't know about climate change back in 1976. But I really, really cared about renewable energy and alternative sources of energy. So, I started studying that early on. I used that to pay for my engineering degree at Caltech. And when I graduated from Caltech, the IBM PC came out and I had a great experience building software companies. I built one company that I sold to Lotus development. I built another company called Knowledge Adventure, they sold to Vivendi and I started Idealab as a technology incubator, where I started more than 150 companies over the last 25 years, including eight of them that had become more than billion dollar companies that I personally started. What I've learned from all those startups, is that combining hardware and software and expertise from your team, in a powerful way can make a difference.

So, I've combined all my experiences in forming Heliogen which we started in 2013. Bill Gates became our first investor. And as we grow the company, I've been able to assemble a team of people ranging from Steve Schell, our CTO, Chief Engineer, graduated number one in his class and account manager and from Caltech. I've worked with him for more than 20 years. Thomas Patrick as my Chief of Staff, who was CEO of Deutsche Bank Americas helping us scale the company so we can take advantage of the size of the opportunity. Christie Obiaya, who's our CFO. She spent the last decade almost at Bechtel, most recently as the CFO of their energy division, their biggest division, and prior to that has MIT MBA and MIT chemical engineering degree. And Andy Lambert, our head of manufacturing, incredible background in manufacturing, working directly for Elon for almost the last decade, building rockets and SpaceX and for a decade before that, building cars for BMW building all the assembly line to do that. So, he's building out the capability for us to scale the system for all the inbound demand that we have. Another person I'll call out Tom Doyle, our Chief Commercial Officer, he has built five gigawatts of renewable energy projects for NRG. And then previously, he worked on the Brightsource project, the huge project I showed you earlier, the multi-billion dollar project he put together both the project finance EPC firms everything to make that project happened. So, this team has the capability to scale to meet the customer demand.

And let me use that as a segue to tell you about that customer demand. Our first customers our first strategic and commercial relationships are with Arcelor Mittal as I mentioned, they've invested in our company and we're exploring where to build first projects with them. The Department of Energy selected, selected us for a \$39 million award to build a plant in the United States to demonstrate our technology to produce power around the clock. That was a competitive bid that we won last year. Our first site customer is Woodside Energy a global oil and gas producer in Australia. We've signed a deal with them to produce a first plant we have a limited those two receipt were beginning procurement for that first project that will be in California. After that they would like to build many, many more of these in Australia both have their own power needs and also for producing hydrogen for export to Southeast Asia. When the discussions with Rio Tinto, about powering their steam and heat needs for facilities in California, Boron, California, which is about a half an hour away from our facility in Lancaster, California. And we also have a partnership with Bloom Energy. Bloom Energy is a leading provider of solid oxide fuel cells, and they have modified their solid oxide fuel cell to work with us as an electrolyzer. A high temperature electrolyzer, so we can make green hydrogen more cost effectively than others because we can use a portion of the energy as heat in addition to a portion of the energy being electricity, while other electrolyzers take all of the energy in the form of electricity. That gives us a significant competitive advantage. And we're very excited to announce that partnership with Bloom and there'll be more coming from them soon.

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**Bill Gross – CEO, Heliogen 18:09**

So now what about our rollout? You can see that we grow to 120 modules in 2026 at just under 2.4 billion in revenue with \$831 million. By that time, we have driven our levelized cost of electricity down to below five cents per kilowatt hour. Right now, gas powered electricity is about six cents per kilowatt hour and going up because gas prices are going up. So, we'll be very competitive by 2026. We start out with our first heat modules. They'll be starting in now and be completed in 2023. But then those will be one module per project. You can see in 2026. We're building about 24 modules per project. Most of our customers want 10, 20, 50 or 100 modules per project. So, we'll be building out many of them at a time. And that's how we drive the price down is to mobilize the team to go deploy a system. It costs very little more to build 10 modules at one location than it cost to build one. Of course, there's the extra materials but the mobilization cost is negligible, the more for many modules at the same site. So that's how we drive the profitability significantly up as we're driving the cost down the upsides that we have to our business are strong.

Right now, COP26 is going on. And there's belief that there'll be lots of other future government subsidies and carbon taxes. We don't take any of those into account except for the current investment tax credit of the United States. So other new credits that come in the coming years are strong tailwinds to our business. Further, there could be government or country mandates for 40 renewable energy percent percentages. Those will help us right now - almost all of our customers are setting their own internal renewable energy targets, such as I want to be 30% reduction in carbon emissions by 2030. Some of our customers have made those commitments, then they come to us to help them achieve those commitments. But there might be government or country mandates to do those in addition, and that will be another strong tailwind to us - further carbon taxes or credits. We have not taken any of those into account in our business model. And we believe that those will be coming in the coming years.

And then finally, we definitely think that there's future licensing opportunity, potential to scale beyond what we can build ourselves with our EPC construction partners and license our technology to others because our technology is so software based, and so on, fundamentally IP based, we have something that we can license at scale to other something we can even upgrade over time. And that gives us great potential.

So, our business combination is that we're merging with a SPAC called Athena. It's a really terrific all women's SPAC led by Isabelle Freidheim, and Phyllis Newhouse. It's a \$250 million SPAC. We also did \$165 million PIPE for a total of \$415 million of proceeds before fees. It's a \$2 billion valuation transaction when the transaction is complete, and it's expected to be in Q4. We will trade as HLGX on the New York Stock Exchange. And we're really looking forward to using this capital to scale our company to meet all this inbound demand we have around the world. The inbound demand right now is staggering because of the increasing price of fossil fuels and their volatility because of the commitments that people have made to decarbonization, and because heavy industry has pretty much no other solution. They look to us as a great way to lower their costs to lower their carbon footprint and to take ownership of their own energy creation on their premises. I hope that gives you a good backdrop and summary of the company. And I'm happy to answer any questions that you have.

**George Gianarikas – R.W. Baird 21:47**

Thanks so much for that. Super fascinating story and congratulations on getting credit. Started just taught us a little bit about the last point that you made and staggering.

Can you talk about at least going around projects that you have commitments around? One that feels like just any way we can as investors build confidence in the revenue projections.

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**Bill Gross – CEO, Heliogen 22:22**

Yes, the energy industry is 10% of all global GDP. So, the global GDP is at \$6 trillion and energy is \$8.6 trillion a year. McKinsey predicts that the spending on the energy transition this decade will be \$8 trillion. So, the TAM is just absurd. Of that 8 trillion of course, we can't capture all of that. But there's a very large percentage of that TAM that we actually impact, probably a trillion dollars. So, a trillion dollars of customers who are using energy in this industrial sector are looking for ways to reduce their bill. And they are companies like Arcelor Mittal, who's got a huge energy. Cement Company, huge. CEMEX told us that energy is their single biggest expense as a company more than people like it's more than the all employees of CEMEX their cost of energy exceeds that. So, the inbound demand that we have is coming from industrial customers who typically come to us and say, over this decade, I would need 1000 towers just to meet my own needs. So, what do I want to do? I'll start with one then I want to build 10 then I want to build 50 and then I'll start going to multiple locations. So, we feel we have the revenue projections and we built our own metrics what we feel we can comfortably execute against demand that far exceeds that. So, what my goal will be by 2026, hopefully by 2024, I show people that I can deliver what they need. And then we scale faster if I want to scale fast. And then what I've shown you where we put forward projections that we believe are a thoughtful, measured pace to grow to make 1000s of towers someday.

Each investor slash customer base that you asked there was enough demand to fill that book to 20 more places. But one customer alone would say energy would fill our entire book for 2026. And I'll tell you how. You saw we have 120 modules in 2026, that's projected to be five customers times 24 each in 2026. But one site alone needs 16 modules just for their own power and their plant in Western Australia, and 200 modules to make green hydrogen to export. So that one customer could exceed our entire pipeline all the way through 2026. And we have 10 different customers like that in discussions with right now. So, we demand is not the problem. We need to thoughtfully execute our business to meet our cost targets and meet our deployment deadlines. Show that we can be reliable to do that. So, it's an execution problem, not a customer demand problem and we plan to execute to do that

**George Gianarikas – R.W. Baird 25:25**

In the past one of the things that I found very fascinating, your company's sort of lens, both technology and renewables, which was kind of sort of wired to talk about your thoughts on that particular viewpoint and also how hard is it to hire people in AI - engineers tend to be in very, very high demand and if you didn't end up getting some?

**Bill Gross – CEO, Heliogen 25:52**

That's a great question. So, first, I feel that we fundamentally in this energy transition, we're competing with fossil fuels that you dig out of the ground, put on a ship and move it's practically zero cost of goods. So, you're competing with something that the sun has baked dinosaurs for millions and millions of years. So, you need to you need to be very clever if you want to compete with them. So how do you compete with that? You need to compete with that with software. The only thing that goes toward free with almost zero cost of goods like fossil fuels are bytes. But two the only other thing in the world to do so I feel that the way to compete and make something viable, and to make this transition happen is use more software and less atoms. And that's what we do. So now where do you get the great software people to do that? We get them from Google and Microsoft and Apple and everywhere. How do we get people from Google? We have a lot of people in our company from Google. We have 15 years of Google. Why do they leave to come here? They feel this mission is the most important thing you can be working on. They say my brain power used to end this problem is the most exciting thing I can do in my life and the thing that I could be proudly telling my children about at dinner that I'm working on. So we have a mission that is so powerful for getting the talent that we're very fortunate to have that of course we have a great business. Hopefully we'll make everybody very, very rich with their stock options. And of course, we believe very strongly in sharing the whole company with all of our employees, so everybody feels like an owner. But people love what they're doing in our company. And the mission driven nature of it is what allows us to get back great talent.

**George Gianarikas – R.W. Baird 27:28**

I think we'll end it there. Thank you so much for being with us.

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### **Additional Information and Where to Find It**

In connection with the proposed business combination, Athena Technology Acquisition Corp. (“Athena”) has filed with the Securities and Exchange Commission (“SEC”) a registration statement on Form S-4 containing a preliminary proxy statement and a preliminary prospectus, which has not yet become effective. After the registration statement is declared effective, Athena will mail a definitive proxy statement/prospectus relating to the proposed business combination to its stockholders. This communication does not contain all the information that should be considered concerning the proposed business combination and is not intended to form the basis of any investment decision or any other decision in respect of the business combination. Additional information about the proposed business combination and related transactions is described in Athena’s combined proxy statement/prospectus relating to the proposed business combination and the businesses of Athena and Heliogen, Inc. (“Heliogen”), which Athena has filed with the SEC. The proposed business combination and related transactions will be submitted to stockholders of Athena for their consideration. Athena’s stockholders and other interested persons are advised to read the preliminary proxy statement/prospectus and the amendments thereto and the definitive proxy statement/prospectus, when available, and other documents filed in connection with Athena’s solicitation of proxies for its special meeting of stockholders to be held to approve, among other things, the proposed business combination and related transactions, because these materials will contain important information about Heliogen, Athena and the proposed business combination and related transactions. When available, the definitive proxy statement/prospectus and other relevant materials for the proposed business combination will be mailed to stockholders of Athena as of a record date to be established for voting on the proposed business combination and related transactions. Stockholders may also obtain a copy of the preliminary or definitive proxy statement/prospectus, once available, as well as other documents filed with the SEC by Athena, without charge, at the SEC’s website located at [www.sec.gov](http://www.sec.gov) or by directing a request to Phyllis Newhouse, President and Chief Executive Officer, Athena Technology Acquisition Corp., 125 Townpark Drive, Suite 300, Kennesaw, GA 30144, or by telephone at (970) 924-0446.

### **Participants in the Solicitation**

Athena, Heliogen and their respective directors and executive officers and other persons may be deemed to be participants in the solicitations of proxies from Athena’s stockholders in respect of the proposed business combination and related transactions. Information regarding Athena’s directors and executive officers is available in its Registration Statement on Form S-1 and the prospectus included therein filed with the SEC on March 3, 2021. Additional information regarding the participants in the proxy solicitation and a description of their direct and indirect interests is contained in the preliminary and, when available, will be contained in the definitive proxy statements/prospectus related to the proposed business combination and related transactions, and which can be obtained free of charge from the sources indicated above.

### **No Offer or Solicitation**

This communication shall not constitute a solicitation of a proxy, consent or authorization with respect to any securities or in respect of the proposed transaction. This communication shall also not constitute an offer to sell or the solicitation of an offer to buy any securities, nor shall there be any sale of securities in any states or jurisdictions in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction.

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