



LanzaTech Global Inc.

First Quarter 2023 Earnings Conference Call

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C O R P O R A T E P A R T I C I P A N T S

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Jason Gabelman, *TD Cowen*

P R E S E N T A T I O N

Operator

Greetings, and welcome to the LanzaTech Global Inc. First Quarter 2023 Earnings Call. At this time all participants are in a listen-only mode. A question-and-answer session will follow the formal presentation. (Operator instructions).

As a reminder, this conference is being recorded.

I would now like to turn the conference over to your host, Omar El-Sharkawy, Vice President, Corporate Development for LanzaTech Global Inc. Thank you. You may begin.

Omar El-Sharkawy

Good morning and thank you for joining us for LanzaTech Global, Inc.'s First Quarter 2023 Earnings Conference Call.

On the call today, I'm joined by our Chairman and CEO, Dr. Jennifer Holmgren, and our CFO, Geoff Trukenbrod.

Earlier this morning, we issued a press release with our first quarter 2023 financial and operating results as well as an Investor Presentation summarizing the Company's performance and key operational highlights

for the quarter. Please also reference our quarterly report on Form 10-Q for the quarter ending March 31, 2023, filed today. Both our press release and results summary Investor Presentation can be found in the Investors section of our website at www.lanzatech.com.

Before we begin, I'd like to direct you to the disclaimers in the front of the Company's Investor Presentation and remind you that today's call may include forward-looking statements. Any statements describing our beliefs, goals, plans, strategies, expectations, projections, forecasts, and assumptions are forward-looking statements. Please note that the Company's actual results may differ from those anticipated by such forward-looking statements for a variety of reasons, many of which are beyond our control. Please see our recent filings with the Securities and Exchange Commission, which identify the principal risks and uncertainties that could affect our business, prospects, and future results. We assume no obligation to update publicly any forward-looking statements.

In addition, we will be discussing and providing certain non-GAAP financial measures today, including Adjusted EBITDA. Please see our earnings release and filings for a reconciliation of these non-GAAP measures to their most directly comparable GAAP measure.

Today's call will begin with remarks from Jennifer providing an overview of LanzaTech and our recent financial results. She will also highlight some key accomplishments and review our strategic objectives. Geoff will then review, in greater detail, our financial results from the first quarter. At the conclusion of these prepared remarks, we will open the line for questions.

With that, I'll turn the call over to Jennifer.

Jennifer Holmgren

Thank you, Omar, and thanks to all of you for joining us today. I am honored to represent LanzaTech's approximately 400 employees around the globe on our inaugural earnings conference call.

While LanzaTech has a rich history going back nearly two decades, we have a relatively short tenure as a public company, so we thought it would be helpful to begin today by providing an overview of our company and our progress toward our strategic and commercial goals.

I will provide context about our mission, how we got here, an overview of our financial and operational results for the first quarter of 2023 and share an outline of our strategic priorities. Geoff will then follow with a more detailed discussion of our first quarter financial results and our outlook for the remainder of the year.

Today we're faced with a seemingly impossible challenge. We need to disrupt and completely overhaul our current carbon economy. That's easy to say, but it's quite difficult to do when you consider that fossil carbon is not just found in gasoline and power. Fossil carbon is in everything we use in our daily lives. Unfortunately, in 2023, this carbon economy is not fit for purpose because we now understand the negative impact of wasted carbon, of putting carbon on a one-way street into our atmosphere, into our landfills and into our oceans.

To avoid potentially catastrophic consequences, we absolutely must stop adding carbon into our atmosphere. To do that, we must transition to a circular carbon economy.

That is what LanzaTech does. As you'll see on Slide 4 of the presentation, we have developed and commercialized a technology platform that utilizes waste carbon resources to produce the fuels and chemicals we need in our daily lives. This is the very definition of a circular carbon economy. While many companies talk about sustainability goals in terms of their plans for the future, I am proud to say that 100% of LanzaTech revenues are generated by providing sustainable solutions today.

We are focused on the goal of reducing the need for humans to constantly mine fossil carbon while, at the same time, maintaining production of the goods that define modern life.

What LanzaTech does is nothing less than miraculous. Over the last 18 years, we have built this company up from little more than a benchtop biology experiment in a New Zealand lab to a global technology company that allows its customers—the partners for whom we design facilities and to whom we supply microbes, equipment, and services—to turn decarbonization from a cost center into a profit center.

We have been able to do this while creating a new platform technology that redefines where the carbon in everything we use comes from. In fact, we use carbon pollution as our carbon resource. Our vision has been so compelling that now we must continue to grow to satisfy expanding demand—demand for our engineering services, demand for our contract research services, and demand for the carbon-negative chemical building blocks that constitute the products that we call CarbonSmart.

CarbonSmart products are those that are made from recycled carbon, carbon that would otherwise pollute our planet. We foresee that someday consumers will have an obvious choice of where the carbon in their products comes from: recycled carbon instead of fresh fossil carbon. This choice will be no different than opting for fair trade coffee or organic milk, and we are already making such products available with laundry detergents and apparel made from steel mill emissions available today on store shelves. Slide 5 is a simple illustration of this point, highlighting the items in our home that are currently derived from fossil carbon today including our clothes, our cosmetics, our toys, our packaging, and an endless list of home goods.

Creating a new paradigm is not easy. It has taken LanzaTech nearly two decades to prove, de-risk and commercialize its core carbon transformation technology, which enables carbon to be reused rather than wasted. We leverage the power of biology, chemistry, and cutting-edge engineering to transform greenhouse gases into the chemical building blocks of the products we use in our daily lives.

At the core of our technology is a specialized microbe that consumes diverse carbon sources from hard-to-decarbonize processes and metabolizes them into the critical chemical building blocks upon which so many consumer products are based. Similar to the process by which yeast consumes sugar to make alcohol, our microbe consumes carbon in the form of either carbon dioxide or carbon monoxide and produces ethanol that can be used as a chemical intermediate for a wide variety of applications.

In addition to our commercial microbe, we've engineered and optimized the design of a proprietary bioreactor in which the process takes place on a continuous basis, very much like a refinery unit. We've built our business around the mission of deploying this technology through licensing partnerships across the globe with key players in a wide variety of industries.

As of today, LanzaTech technology is deployed at three commercial facilities. To date, these facilities have produced over 160,000 tons or 54 million gallons of ethanol, resulting in the mitigation of over 275,000 tons of carbon dioxide from the atmosphere, the equivalent of CO₂ emissions from over 28 million gallons of gasoline consumed.

Our designs and engineering expertise have been so well received across many hard-to-decarbonize industries that we are seeing tremendous demand from asset owners and growth in our commercial pipeline. As a response, we expect to more than double our installed nameplate production capacity by the end of this year, with an additional three licensed commercial scale plants coming online in new geographies, including in India and the European Union. These projects include a facility utilizing oil refinery off-gas in India, with partner IndianOil; a facility utilizing steel mill off-gas in Belgium, with partner ArcelorMittal; and a facility utilizing ferroalloy off-gas in China, with partner Shougang Steel. Once all are operational, the cumulative installed nameplate capacity of our partners' licensed facilities will be

approximately 300,000 tons per year of ethanol production, approximately double from where we ended last year. This is the equivalent of removing over 500,000 tons of CO₂ from the atmosphere per year, or comparable to removing approximately 110,000 passenger cars from the road each year. This is the start of our journey to realize our potential to abate gigatons of carbon through our technology.

In 2022, we generated just over \$37 million in revenue, representing a 1.5x increase over 2021.

As outlined on Slide 9 of the presentation, we have had significant growth over the last few years as seen in the approximate 27% compounded annual growth rate of our revenue from 2020 to 2022. We expect continued growth in the quarters and years ahead. Recent commercial operations position us well to accelerate deployment of our technology over the near and medium terms.

In the first quarter 2023, we saw growth across our business as our revenue continued to expand year-on-year to reach \$9.6 million, which is consistent with our 2023 plan and 2023 revenue guidance.

As we look ahead over the rest of the year, we are focused on execution and commercial project development and deployment.

As you'll see on Slide 10, we have the right executive leadership in place to deliver on our commercial growth objectives. Our commercial team is led by our Chief Commercial Officer, Dr. Steven Stanley, who joined us in May 2022 following a more than 30-year career as a leader in the global petrochemicals industry. Most recently, Steven served as President of Univation Technologies, a joint venture between Dow and ExxonMobil Chemical. Steven brings a wealth of experience scaling and licensing technologies across broad global portfolios and the technical knowledge to help take the chemicals portfolio in new directions.

Over the course of last year, we saw great demand for our decarbonization solution from several strategic infrastructure investors. We believe that infrastructure investment partners, attracted to our de-risked technology and profitable carbon abatement offering could provide LanzaTech with sophisticated and flexible project financing capabilities that will allow us to deploy our technology more rapidly and more broadly.

In October of 2022, we announced a strategic partnership with Brookfield Renewable, whereby Brookfield committed up to \$500 million in commercial project equity, with the ability to add more capital, up to \$1 billion, to fund commercial deployment. As outlined on Slide 7, our partnership with Brookfield will enable us to take a more active role in commercial development for select opportunities, allowing those facilities to advance more quickly and catalyze our deployment. LanzaTech will have access to up to 50% of the production volumes from any facility built through our partnership with Brookfield to place into our CarbonSmart supply chains or use as feedstock for the production of sustainable aviation fuel through the LanzaJet Alcohol to Jet Process.

LanzaTech will also participate in the economic upside, capturing additional value from the performance of the commercial facilities once Brookfield has achieved certain return hurdles. In addition to being an investor in LanzaTech, Brookfield is an invaluable commercial partner for us and we look forward to unlocking significant value and bringing strategic commercial facilities online together.

To help facilitate this, we were excited to recently announce the addition of Ms. Aura Cuellar as our new Executive Vice President of Growth and Strategic Projects to lead and accelerate commercial and capital deployment in partnership with Brookfield. Ms. Cuellar joins us from Shell, where she has spent nearly her entire career, most recently as the Vice President of Energy Transition and Head of Capital Projects and Turnarounds for Shell US. Ms. Cuellar has a record of running and implementing large-scale capital projects

for the refining and chemicals sectors. We look forward to her leadership as she stewards this important partnership and business unit for LanzaTech.

With Aura's and Steven's leadership, LanzaTech is strongly positioned to deploy our technology rapidly and globally through our capital-light licensing model.

Our commercial and engineering teams are focused on advancing the more than 80 identified potential licensing projects in our pipeline through the various development stages into commercial operation. Our business model for biorefining projects produces revenues for LanzaTech throughout a project's lifecycle, very similar to other technology licensing businesses. Our approach enables us to capture both one-time and recurring revenues.

First, we realize one-time revenue during the development stage through engineering services and sales of equipment. During the operational stage, we realize long-tail recurring revenues through licensing royalties, sales of microbes & media, as well as through sales of software and analytics services.

We are constantly working to improve and drive efficiencies in our process, and as a result we are pleased to have scaled and further validated the performance of LanzaTech's second generation bioreactor technology at a demonstration-scale in partnership with Emissions Reduction Alberta and Suncor. This second generation bioreactor design operates at greater efficiency and at a lower operating cost, allowing us to utilize more waste streams, expanding our pipeline.

Core to our process is biology. We have been able to leverage biology's innate ability to capture and transform the carbon in diverse waste gases into products. On a commercial scale, our licensing partners are producing ethanol while profitably abating and decarbonizing their production processes. This ethanol can be converted into multiple building blocks such as ethylene, one of the most widely used petrochemicals in the world with a market value of approximately \$125 billion in 2022. Ethanol can also be converted into monoethylene glycol (MEG), an ingredient in the manufacture of PET, with a total addressable market of approximately \$30 billion in 2022. As such, the ethanol is the basis for all the consumer products our partners have manufactured to date.

Through paid, contracted work, our world-class synthetic and computational biology teams are working on commercializing the portfolio of next generation microbes that will enable the production of a wide variety of chemicals directly, using our platform. For your reference, direct production of chemicals means we are producing these chemicals directly from waste and not indirectly through ethanol. At demonstration-scale we have been able to directly produce carbon negative acetone, a key ingredient for solvents, lacquers and textiles as well as carbon negative isopropanol, the building block used to make polypropylene, a key material in multiple sectors, including automotive and for medical devices, with a market of over \$120 billion in 2022. The ability to go beyond the production of ethanol will increase our total addressable market and allow us to access new markets.

In addition, we recently announced the ability to transform waste carbon gas directly into ethylene and MEG rather than through conversion of ethanol, and by going from waste directly to these products we should be able to achieve significant cost reductions in the production of these widely used commodity chemicals.

We are not pursuing niche specialty chemical markets. The ethylene market is anticipated to surpass \$287 billion by 2030, while MEG is expected to reach nearly \$40 billion by 2030. In leveraging advanced manufacturing technologies such as synthetic biology, we are targeting direct production of these bulk chemical commodities to bring consumers everyday goods into the circular economy. We believe this commodities focus will have a significant impact in the lives of billions of people daily and by reducing costs enable access to sustainable solutions, no matter how much you earn or where you live.

LanzaTech, therefore, represents an exceptional opportunity to implement meaningful carbon removal in a distributed and decentralized fashion from waste resources and to create sustainable synthetic chemicals that we believe can replace fossil carbon.

Fundamental to our mission is the belief that the world has enough carbon above ground to make everything we need and we are delivering on that mission. The ethanol from our licensed plants has been converted into the chemical building blocks to make polyester yarn, PET packaging, surfactants, and many other products, representing a potential market of over \$335 billion per year.

In 2022, we announced the expansion of our core business model to include CarbonSmart. In our CarbonSmart business, we partner with brands to provide sustainable, alternatives to materials in their existing supply chains. As an example, we have partnered with consumer brands such as Zara, H&M Move, Mibelle, and Unilever and have seen these products sold in global markets. The demand pull we are seeing for sustainable products and materials creates an enormous demand for further licensing of our technology and engineering services.

In addition to products and materials, we believe that sustainable aviation fuel, or SAF as it's often referred to, produced through the LanzaJet Alcohol-to-Jet process will create a massive demand pull for waste-based ethanol.

In 2020, we formed and spun out LanzaJet, following over a decade of process technology development in partnership with the U.S Department of Energy and the Pacific Northwest National Laboratories to convert alcohol to sustainable aviation fuel. We retain an approximate 25% ownership in LanzaJet, supported by co-investors and partners including All Nippon Airways, Breakthrough Energy, International Aviation Group, the Microsoft Climate Fund, Mitsui & Co., Shell, and Suncor Energy. Together, we are pleased to see the progress LanzaJet is making towards the completion of the construction of the world's first ethanol-based alcohol-to-jet sustainable aviation fuel plant at the 10 million gallon per year LanzaJet Freedom Pines Fuels facility in the state of Georgia, which is slated to be completed in 2023. Once operational, this facility will account for almost 10 percent of global SAF production and will increase production of SAF in the United States by 60%. Sustainable fuel offtake agreements are in place to cover 100% of the fuels produced at the site for the next 10 years, including agreements in place with Suncor, British Airways, ANA, and others.

It has been a tremendous journey over the past 18 years, but one of the most monumental achievements in the company's history occurred just a few months ago in February as we closed our business combination with AMCI Acquisition Corp. II and became publicly listed on the NASDAQ as LanzaTech Global, Inc.

Through the business combination, which is summarized on Slide 12 of the presentation, LanzaTech raised \$242 million in gross proceeds. In addition to the cash left in the SPAC trust account following redemptions net of the Forward Purchase Agreement, this amount includes \$185 million from a common equity PIPE anchored by accredited investors, institutional buyers, and strategic partners including ArcelorMittal, BASF, K1W1, Khosla Ventures, Mitsui, New Zealand Superannuation Fund, Oxy Low Carbon Ventures, Primetals, SHV Energy, Trafigura, as well as a \$50 million investment from our strategic infrastructure investment partner Brookfield. We expect that the proceeds raised from the transaction will fully fund the business through to positive Adjusted EBITDA by the end of 2024, and we are heads-down as a company working to execute on our plan. I would like to thank all our partners and investors for believing in us and helping us get to this point.

Since going public in February, we have made several exciting announcements regarding our CarbonSmart business, some of which you can see summarized on Slide 13. Notably, Coty, one of the world's largest beauty companies with an iconic portfolio of brands, released a new Gucci fragrance that contains 100% carbon-captured ethanol. Separately, H&M Move partnered with LanzaTech to launch a capsule collection using ethanol produced through our process as the building block for the polyester in their garments. Adidas

recently introduced collections including the Melbourne Tennis Collection, Adizero Ubersonic 4, and Adidas by Stella McCartney Truenature Collection, all utilizing raw materials that started as industrial emissions before being carbon and transformed by the LanzaTech process. This broader acceptance of the value of using recycled carbon as a feedstock has the potential to significantly accelerate the growth of our business.

Turning to portfolio expansion, we were recently awarded and initiated new R&D projects in partnership with multiple governmental agencies, including the US Department of Energy and the US Department of Defense, highlighting our continued focus on expanding and improving our capabilities.

The team has also expanded LanzaTech's fermentation portfolio, recently demonstrating a 400-fold increase in the direct production of MEG at lab scale. We remain focused on continuing to optimize the direct production of other commodity chemicals, including acetone, ethylene, isopropanol, and MEG. Indeed in 2023, one of our strategic priorities, as outlined on Slide 16, is to operate at least one non-ethanol microbe at demonstration scale outside of our development facilities.

To truly change the current system by which everyday items are produced, we are targeting the supply chains that underpin our material economy. By pursuing these massive commodity chemical markets and using waste carbon as a resource, we believe we can create a new carbon economy whereby cost-competitive supply chains provide access to sustainable goods for everyone, not just the first movers nor the wealthy. By increasing access to these sorts of sustainable products, we believe much more carbon will be abated.

We have grown to approximately 400 full-time employees with offices across the world. Throughout this tremendous growth, safety has remained our central operating focus. We are proud that 2022 marked our fourth consecutive year without a lost-time injury. This trend carried over into the first quarter 2023 as we not only had zero lost time injuries, but also zero recordable injuries across our global operations.

Diversity and inclusion are core to our values as a company and we have not lost sight of this as we've grown. I am proud to report that our Board of Directors is comprised of greater than 40% women, and that with the addition of Ms Aura Cuellar earlier this month, our executive team is now majority women. Additionally, we are proud that over 60% of our technical leadership team is comprised of women. Approximately 48% of our global workforce is ethnically diverse and approximately 35% of our US-based workforce is comprised of underrepresented minorities.

Our commitment to diversity is one of our strengths. We are committed to fostering a diverse, equitable, and inclusive workplace where people of all cultures and backgrounds can succeed. Our people are our greatest asset. Diversity matters for advancing innovation, and we will continue to prioritize growing a global team that is representative of those our technology serves.

Before turning it over to Geoff to walk through our financial results in greater detail, I want to go back to our five strategic priorities for 2023, which are outlined on Slide 16 of the presentation.

First, and as I mentioned earlier in my remarks, safety is a critical operational focus, and we are focused on having zero lost-time injuries across our global sites. I am proud to say that this focus has thus far resulted in four consecutive years without a lost-time injury. We have a global team and global sites, including commercial scale facilities, and have implemented several trainings, tutorials, and audits across our organization to ensure we continue to prioritize a safety-first mindset.

Second, we are focused on our path toward profitability. We expect that through our anticipated top line growth, and disciplined cost management, we will achieve this goal. We will continue to focus on accretive opportunities, and accelerating the deployment of our technology platform, significantly improving margins as our revenue mix shifts towards recurring biorefining revenues over the long term. Through focused

execution on our plan, we anticipate that the Company will turn Adjusted EBITDA positive by the end of 2024.

Third, we are committed to growing our total installed nameplate production capacity by 100% to approximately 300,000 tons of waste-based ethanol per year. As mentioned previously, there are three commercial-scale plants that are expected to start up in 2023, and with those start-ups we will further expand the commercial reach of our technology.

Fourth, we are focused on moving the more advanced projects through our current pipeline backlog, and anticipate that sales of engineering services, key equipment packages, and expansion of our CarbonSmart business will contribute meaningfully to revenue throughout the remainder of the year. This is evidenced in our 2023 revenue guidance of \$80 million to \$120 million, which we introduced earlier this year and reflects year-over-year growth of approximately 2.7x at the midpoint. We are also focused on further developing and advancing the project pipeline for earlier stage projects to move those through to key revenue-generation milestones in 2024, which supports our goal of doubling annual revenue in 2024 relative to our already strong 2023 growth expectations.

Finally, we continue to prioritize process optimization, focusing on driving greater profit per ton of carbon dioxide abatement at our partners' facilities and accelerating deployment of our technology, maximizing carbon abatement potential.

The LanzaTech solution shifts our partners' focus to assess the profit per ton of carbon abated in their operations, rather than the cost per ton associated with most other carbon abatement solutions. We provide this profitable decarbonization solution for our partners today, but we are working collectively across all teams to drive further efficiencies and profitability for our customers in the future. Additionally, as previously mentioned, we are focused on demonstrating at scale the application of non-ethanol producing microbes.

With that, I'll turn the call over to Geoff to provide details on our financial performance and outlook, and then I'll come back with a few closing remarks.

Geoff, please go ahead.

Geoff Trukenbrod

Thank you, Jennifer, and good morning. Thank you to everyone joining us.

Before I get into our first quarter results, I would like to provide some additional details of our recently completed business combination with AMCI, the implications of the transaction on our accounting presentation, and how the proceeds from the transaction set us up to execute on our current business plan.

As Jennifer mentioned earlier, and as shown on Slide 12, we closed our business combination on February 8, 2023. Legacy LanzaTech completed its business combination with AMCI with Legacy LanzaTech continuing as the surviving corporation and as a wholly-owned subsidiary of AMCI. The reporting entity is LanzaTech Global, Inc. and its subsidiaries. Accordingly, for accounting purposes, the financial statements of LanzaTech represent a continuation of the financial statements of pre-combination Legacy LanzaTech with the acquisition being treated as the equivalent of pre-combination Legacy LanzaTech issuing stock for the net assets of AMCI, accompanied by a recapitalization.

Over the duration of the transaction, we raised \$242 million in gross proceeds through a combination of \$185 million of proceeds from investors in the common equity PIPE, \$50 million of proceeds from an investment made by Brookfield, and the remainder from the cash trust account of AMCI net of the Forward Purchase Agreement.

In addition, prior to the closing, on February 3, 2023, LanzaTech entered into a Forward Purchase Agreement, or FPA, where the FPA counterparties purchased approximately \$60 million worth of shares in the open market from holders who had previously elected to redeem their shares. This amount, incremental to the \$242 million raised through the transaction, was paid by LanzaTech to the FPA counterparties upon closing out of the funds held in the trust account. The FPA provides the potential for additional liquidity to LanzaTech of up to \$60 million if the FPA counterparties are able to sell the purchased shares above the redemption price in effect at closing. The FPA has been recorded as a derivative asset and a liability and is measured at fair value. The subsequent change in the fair value of this derivative asset was recorded as a noncash expense and significantly impacted our net loss result for the quarter. Additional details of the FPA and its accounting treatment can be found in our 10-Q filing.

As you will see on Slide 18, I am pleased to report that we continued to see growth year-on-year with \$9.6 million in total revenue in the quarter, increasing 23% from \$7.9 million in the first quarter 2022, which again was consistent with our forecasts and previously provided guidance for the year.

On a disaggregated basis, revenue from our biorefining carbon capture and utilization category grew 31% year-on-year in the quarter reaching \$6.4 million, driven predominately by increases in engineering and other services revenue.

Research and development revenue, which includes our joint development and contract research work, grew 45% year-on-year to \$3.3 million. As we anticipated, there was no revenue from our CarbonSmart line of business in the first quarter, although we expect meaningful revenue from CarbonSmart through the rest of the year.

Cost of revenues in the quarter increased 34% to \$7.8 million from \$5.8 million in the prior corresponding period, mainly as a result of an increase in the number of customer projects and a shift in the sales mix with certain projects generating a higher cost of revenue due to the shifting nature of the development pipeline.

Operating expenses were \$34.4 million in the first quarter, an 86% increase from the prior corresponding period, mainly as a result of higher SG&A expenses driven primarily from one-time expenses including external consulting fees and other expenses related to the business combination, as well as higher personnel costs as the Company scaled up non-R&D related functions.

Net loss in the quarter was \$63.3 million. Net loss was significantly impacted by Other Expenses net, which increased primarily as a result of the \$51.1 million non-cash accounting impacts of the FPA. Adjusted EBITDA loss was \$27.6 million in the quarter compared to an Adjusted EBITDA loss of \$14.8 million in the first quarter of 2022.

We completed the first quarter of 2023 with cash, cash equivalents, restricted cash, and investments in US Treasuries totaling approximately \$195 million. This included \$145.8 million in cash, cash equivalents, and restricted cash, up from \$83.7 million at the end of 2022. In addition, LanzaTech invested approximately \$49.1 million in short-term held-to-maturity investments in the form of US Treasuries.

LanzaTech does not have any outstanding debt, other than the Brookfield SAFE classified as a liability for accounting purposes, on its balance sheet as of March 31, 2023.

As we look at the financial forecast, we believe the associated proceeds from the transaction and the current cash and liquidity position is sufficient for the Company to execute its business plan and achieve positive Adjusted EBITDA by the end of 2024.

As recapped on Slide 19, we recently introduced our guidance for the full year 2023, including revenue of \$80 million to \$120 million, which we are reiterating today. The midpoint of this 2023 revenue guidance implies a compounded annual growth rate of 76% since 2020.

We anticipate significant quarter-on-quarter growth throughout the rest of the year as projects have advanced in our pipeline, are in advanced engineering and beginning to move toward a final investment decisions or FID and construction starts. We expect that revenues generated from engineering and development services, as well as sales of equipment packages, will make up the majority of the Biorefining revenue this year. Additionally, we expect significant and continued growth from CarbonSmart this year.

Our full year 2023 Adjusted EBITDA guidance is expected to be negative \$55 million to negative \$65 million, as previously communicated.

I will now turn the call back over to Jennifer, for some closing remarks before we open the call for Q&A. Jennifer?

Jennifer Holmgren

Thank you, Geoff.

In summary, we had a strong quarter with continued growth across our business. Our focus is squarely on business execution and delivering the results we guided the market to for the rest of the year. We are proud of the numerous accomplishments and milestones we've achieved, not only in this quarter, but over the last 18 years.

Our technology is proven at commercial scale and we continue to innovate and push the envelope on what is possible. As UN Secretary General Antonio Guterres said in March, the climate time bomb is ticking. We firmly believe that the world has enough carbon above ground to make everything we need.

Our current carbon economy is not sustainable, and it's time for a fundamental paradigm shift. Our goal is to significantly reduce the need for virgin fossil carbon by changing the way the world uses carbon.

There are significant tailwinds to our business and LanzaTech is uniquely positioned to play leading role in enabling a circular economy. I'm proud to represent LanzaTech's many employees and look forward to continuing to drive growth in the future.

Thank you again for joining us and to so many of you for your support.

Operator, we can now open the lines for Q&A, please.

Operator

Thank you. (Operator instructions).

Our first question comes from the line of Leo Mariani with ROTH MKM. Please proceed with your question.

Leo Mariani

Good morning. I was hoping to get a little bit more color in terms of your thoughts on the progression of revenues throughout the year. If I look at first quarter '23, it looks like you were down about \$2 million versus fourth quarter '22, and if I look at the number it's kind of circa \$10 million. You've got your midpoint of guidance as \$100 million for the year. I guess that implies an average of \$30 million per quarter for the rest

of the year to kind of hit that midpoint. Can you kind of talk us through the important pieces here that can drive the significant growth? And maybe also just talk about the range on the guidance. You guys are at \$80 million to \$120 million, which is about a 50% bottom to the kind of top increase there, so maybe just kind of talk about what gets you to the lower end versus the higher end in terms of how that might play out.

Jennifer Holmgren

I can start addressing that question, Leo. Thank you for joining us and for asking it. Then I'll pass it over to Geoff.

The guidance \$80 million to \$120 million relates simply to timing. Our expectation is to hit the midpoint, however we gave \$80 million as a bottom number because often, as you know, in our business there can be delays related to licensing, business decisions, etc.

The first quarter numbers are within what our expectations for that quarter were. Quite a bit of our revenue for this year will come from some equipment and that equipment will not materialize in revenues until the second half of the year. That is the driver. We are reaffirming \$80 million to \$120 million, and we feel comfortable with that.

Geoff, do you want to add to that?

Geoff Trukenbrod

Yes, I'm just going to reiterate a couple of the other points that you were making there, I think. Leo, I appreciate the question.

In terms of Q4 last year versus Q1 this year, as you know a lot of our revenue is based on project development work at this point in time. This is really just about the timing of key things being recognized in revenue during these separate quarters. We do reiterate that this is consistent with our forecast for the year and our revenue guidance for the year. We do expect significant upticks quarter-over-quarter, and ramp and increasings up the line in terms of revenue generation over subsequent quarters as we ramp based on projects that are in development currently.

The guidance range is really timing related as to whether or not it will be realized in 2023 or 2024, just depending on the pace as those projects progress.

Leo Mariani

Okay. I guess would you say that each quarter you see significant growth going forward? Are we going to see big second quarter growth? Is it more second half weighted on the revenue? Can you provide any kind of quantification of what you expect in the first half versus the second half this year on revenues?

Geoff Trukenbrod

We do expect significant growth quarter-over-quarter. And so it will ramp quarter by quarter. It is heavily weighted to the back half of the year.

Leo Mariani

Okay. You referred in some of your prepared comments to some onetime costs in the first quarter of '23. I mean it looks like a lot of that might have hit the G&A line. Can you provide kind of what that number was in terms of what the onetime costs were in 1Q?

Geoff Trukenbrod

Sure. I'll take a shot at that.

There are a variety of onetime costs in addition to our cash flow impacts from ongoing operations. We have a variety of things that do tend to hit in the first quarter that are including bonuses that were related to—some of which were expensed in Q1. There's a variety of other consulting costs that were related to the close of the business combination. A lot of those flow through SG&A.

Leo Mariani

I was trying to see if you guys had a number for that. I mean, I'm just looking at your cash G&A number for the quarter. It was around \$13.3 million if I exclude the noncash stock comp piece here. Looking at the previous quarter here it was, like, \$6.9 million, so, you know, up fairly significantly. I mean is \$5 million of that onetime? What can you kind of quantify here for us?

Geoff Trukenbrod

Yes. I mean there was a little bit of increase year-over-year and quarter-over-quarter in terms of just our SG&A expenses as we continue to grow the team, but the majority of that increase is onetime in nature for the quarter.

Leo Mariani

Okay. Then can you talk about your cash burn? I think it closed with the deal which was early to mid-Feb. You guys press released you got about \$230 million of cash and equivalents. Now at March 31 it looks like you're down about \$35 million at that \$195 million that you guys talked about. Can you talk about where that \$35 million went?

Jennifer Holmgren

Yes, go ahead.

Geoff Trukenbrod

Sure. Thanks, Leo. The basics associated with it, there are obviously—we are projecting negative EBITDA. We recognize we're going to have negative EBITDA for the quarter so there are cash flow impacts purely associated with that. But there was in excess of \$20 million of onetime cash uses in the quarter of the year. That includes a series of onetime expenses, tax payments, as well as some increases in our prepaid assets, which you can see on the statement of cash flows those did bump up and it includes certain things like D&O insurance, prepayments for some of the products—some of our CarbonSmart materials, as those we look to turn around to generate revenues on in subsequent quarters.

Leo Mariani

Okay. Obviously you guys have your EBITDA guidance this year of negative \$55 million to negative \$65 million. It looks like you guys did just over \$27 million of negative EBITDA in the first quarter here, so I guess that kind of implies somewhere around negative \$11 million of EBITDA on average per quarter.

You've got your revenue guidance there. It certainly looks like kind of cash G&A and R&D are kind of your two main cost components that will drive that forecast, so can you kind of help us out with what you think the cash G&A is going to be here in 2023 and what you think the R&D is going to be in '23?

Geoff Trukenbrod

Leo, we haven't provided guidance specifically on those components of the P&L, but what I can say at this point in time is that the expectation for the EBITDA—consistent with our EBITDA guidance is that we do expect the EBITDA, the Adjusted EBITDA loss to decline quarter-over-quarter as a couple of things happen. One, revenue grows and gross profit increases quarter-over-quarter and a material impact on that as we also continue to kind of manage our operating costs. We don't expect to cut back on those costs but we do expect that the gross profit generated from our revenue growth will continue to offset and reduce that EBITDA loss.

Leo Mariani

Okay. Thank you.

Operator

Thank you. Our next question comes from the line of Jordan Levy with Truist Securities. Please proceed with your question.

Jordan Levy

Morning all, and appreciate all the color. I wanted to start out maybe understanding you're in the early stages of getting a lot of this scaled up, but maybe if you could just walk through how you see the marketing segment with CarbonSmart evolving kind of over the next few quarters, and then maybe longer term over the next few years? Is it just a matter of getting projects up and volumes online there given your pipeline? Or is it kind of balancing that with partnership growth?

Then maybe kind of as a second part of that, how have you seen that pipeline develop since your last update?

Jennifer Holmgren

Thank you for that question.

The key element of this year's CarbonSmart were—actually, last year's CarbonSmart was really getting a few capsule collections out there, so that each of our brand partners had the opportunity to work with this new fiber, etc., these new materials. And so what you start to see happen this year is that we'll start to see broader portfolio where our brand partners will introduce not just capsule collections but entire collections that are not just available on the Internet but actually in stores, like the work that Adidas did where you could literally walk into a store and buy the Melbourne Tennis Collection. So, there's a transition from capsule collection or trying out the materials to actually starting to build their whole polyester portfolio around our fiber derived from waste carbon. So that will result in much larger revenue.

The other thing that you'll also see in CarbonSmart is we're going to start to consolidate supply chains. As we start to have plants come up in many jurisdictions other than just in China, as you know this year we'll be bringing up a plant in India and a plant in Europe. We'll be able to be consolidating the production from the ethanol all the way to the fiber in one jurisdiction, which will reduce costs and will then also drive

additional adoption. So, we believe CarbonSmart will become an increasingly important part of our revenue portfolio this year.

Jordan Levy

I appreciate that. Maybe as a follow-up to that, I know you might now want to get into too many specifics this early on, but at a really high level I'm just curious how you're thinking about pricing on the CarbonSmart side and how you expect to trend over time versus the fossil-derived alternatives.

Jennifer Holmgren

That's a great question. The fact that we are consolidating supply chains means that we'll be driving—a lot of the costs right now are in the movement of the materials from China to India to Taiwan and then to wherever the product is being used. So we expect that we'll go from where we are today in terms of multiple times the price of the fossil equivalent to, say, 50% of it. That is what we're trying to get to, 130% to 150% versus 200% to 300%, and a lot of that will come just from driving down the cost of the logistics.

Jordan Levy

Thanks so much. That's very helpful.

Operator

Thank you. Our next question comes from the line of Pavel Molchanov with Raymond James. Please proceed with your questions.

Pavel Molchanov

Thanks for taking my question. Given that this is your inaugural call, let me zoom out for a moment. You talked a lot about having a licensing-centric business model, but at the same time the Brookfield relationship gives you the ability to invest your own capital in, co-invest in various projects. How do you kind of discern where you are 100% licensing versus where LanzaTech will be an equity partner?

Jennifer Holmgren

Thanks for the question. On the projects where we are doing work with Brookfield, actually those would be licensing deals. It's just that we will need to co-develop the project in advance, because they will really only pick it up at FID. So we'll develop the project. We'll work to develop the project with the site owner, with the gas owner, and Brookfield will be working with us on those projects, but we'll be taking it to FID which means the engineering, the EPC, the sitework preparation, etc. But when it comes to the actual equity investment, we are not intending to then invest. We will flip the project over, if you will, to Brookfield at FID, and then they will pick it up, pay us all our development costs, but also it will become a traditional licensing project and we'll get all of the spending (phon) revenues.

How do we select the project for a pure license versus a Brookfield project? The key difference will be the owner. A company like IndianOil intends to build out plants. They're very familiar with the process industry, so they will adopt their technology, fully fund it, fully own it. But there are some steel companies, there are alloy companies that have never built a process plant and would rather just hand over the gas over the fence and in those cases we can say, "Okay, the gas is available. All we need to do is develop the project and it will not be owned by the site owner. It will be owned by Brookfield," and we'll develop it for them.

That's really the key break point, is does the site owner want to own the asset or not, in which case we just go straight to license. If the site owner does not or they only want to own a portion, we'll develop it for Brookfield who will then become just the licensing partner after we flip it at FID at final investment decision.

Geoff, do you want to add something to that?

Geoff Trukenbrod

Yes, no problem. Thanks again for the question. I think just for the sake of clarity, two things about the Brookfield agreement with us. One was there were two pieces of capital associated with it. One was an investment into LanzaTech. We intend to use that for operating purposes. That was \$50 million. Then there was the additional \$500 million, up to a billion dollars that was made available for the projects that Jennifer was talking about. So, two different pieces of capital, just to clarify.

The only other thing I would add is that as the development partner and operating partner of those plants that we will work on with Brookfield, it does generate the opportunity for additional revenues for LanzaTech kind of beyond our traditional licensing deals. Again, the development services that Jennifer mentioned, but also we'll work longer term with Brookfield to help operate and oversee those plants, and so there are some additions to our long-tail recurring revenue aspects of those plants as well as the access to the offtake.

Pavel Molchanov

Okay. Let me ask about the policy dimension of all this. You're operating in China. There is a carbon tax there. You will soon be in Europe, which of course has some of the highest carbon pricing in the world but you're also looking at jurisdictions which have no significant kind of carbon policy historically. What's the role of carbon pricing in how you are thinking about the economics of various opportunities?

Jennifer Holmgren

The projects we have so far are not based on carbon pricing. The value comes from the fact that in those jurisdictions our ethanol gets the same premium as other ethanol gets. However, there is a lot going on right now globally. As you know, the IRA in the United States is going to have a massive impact. The IRA in particular incentivizes green hydrogen and CO₂, carbon dioxide capture. And so for us, combining lower costs on hydrogen to fix and refine carbon dioxide will help us accelerate implementation in the U.S. That is a massive, massive impact for us.

India is also a great growth opportunity with the first project starting up there. India is really focused on growing and they have a 20% ethanol mandate by 2025. That's their goal. The target is 20% by 2025, so that will help us tremendously.

So, it's not really the carbon mandates per se, but rather all the other things around it. What I mean, it's not the carbon pricing.

Having said that, of course, CO (phon) when it comes to jet fuel, it's essentially a carbon tax, right? So we will see demand for our ethanol because of (inaudible) impact on sustainable aviation fuel, and in addition concerns over ETS and the impact of green border taxes, which is essentially a carbon tax on large hard to abate sectors will both have an impact on our business.

Pavel Molchanov

Then lastly, in fact kind of dovetailing with what you just said about jet fuel, as LanzaJet begins to produce in Georgia later this year, as you talked about, you're not a majority holder of LanzaJet, so is that revenue going to be recognized in LanzaTech's revenue?

Jennifer Holmgren

We use an equity method to recognize the revenue from LanzaJet and we will continue to do that.

Pavel Molchanov

Okay, so that's not included in your revenue guidance?

Jennifer Holmgren

It is included, yes. The equity portion of that—Geoff can get into the details.

Geoff Trukenbrod

The revenue doesn't necessarily flow through. We take a percentage, we take our associated percentage of their gain or loss into our income statement. So, it doesn't flow through our revenue, so our revenue guidance isn't based at all on their revenues in particular, but our net loss for the year would include our participation in that.

And just for the sake of clarity, as you mentioned we are not a majority owner. We do have a mechanism in our agreement with LanzaJet where we do expect at some point in time to go back to being a more significant holder. That mechanism is described in our filings, but even in those situations we won't take control of the business; we don't expect to change the way that we account for that. So, even should we go back to being 50% owners, we still expect to treat it as an equity method investment.

Operator

Thank you. Our next question comes from the line of Derrick Whitfield with Stifel. Please proceed with your questions.

Derrick Whitfield

Good morning all and thanks for taking my questions. Perhaps picking up with Freedom Pines facility, wanted to see if you could speak to the key remaining construction milestones (inaudible) when you're expecting to see first production.

Jennifer Holmgren

Thank you for that question. (Inaudible) the main unit is 80% is in place right now at Freedom Pines, and so it's a matter now of building out the additional (inaudible) and all of the other elements that constitute the outside of the unit's main battery limit.

We expect that plant to be mechanically complete by the end of this year and it is tracking on schedule to be mechanically complete by then, and to start operations soon after.

Derrick Whitfield

Terrific. Then with respect to the next generation bioreactor facility you referenced in your prepared remarks, could you speak to its ability to improve efficiency and lower operating costs?

Jennifer Holmgren

Yes, absolutely. I can't quote you the exact numbers on the call because we've not disclosed them yet, but what it does is it allows us to go to much more dilute gases. What that means is our ability to expand the portfolio of gases is going to increase. It will be super helpful in the work that we're doing with municipal solid wastes of trash, and it will be very, very helpful with some of the 20%-ish kind of level active ingredient gas streams. We have a lot of steel mill plants that only have about 20% carbon monoxide versus the higher 40% and 50% we've been using. That's where this reactor will be useful. For the higher gas streams, the ones we already use, it will have a significant operating cost reduction, and it essentially will get the same performance with a much smaller reactor, so there will be a lot of savings also in the capital on the construction side.

Operator

Thank you. Our next question comes from the line of Jason Gabelman with TD Cowen. Please proceed with your question.

Jason Gabelman

Hey, thanks for taking my questions. You reference in the press release an opportunity set of about 80 projects, I think. I was hoping if you could characterize that a bit more in terms of phase of engineering and how close they are to being sanctioned, kind of the pace of project development as you look out over the next few years. And the types of projects, how many of those sit in LanzaJet, how many of those sit in LanzaTech, how many of those will be within Brookfield? Just any kind of details around that opportunity set would be great. Thank you.

Jennifer Holmgren

The first part of that on LanzaJet, we do not put LanzaJet projects in our pipeline. The only time a LanzaJet related project will be in our pipeline is when it's an integrated LanzaTech plus LanzaJet unit. Otherwise, you won't see a LanzaJet project. These are all LanzaTech ethanol production plants.

When it comes to Brookfield versus non-Brookfield, right now because it's early days on the Brookfield, the Brookfield piece would constitute less than 15% of that portfolio. Everything else will be LanzaTech.

We are on a, I would say 10%—no, more. Twenty percent of that number of 80 is equipment related projects, in other words projects where we will actually deliver a 1 ton per day or a 10 ton per day facility to be installed at a partner site. Everything else is just conventional licensing.

I do not expect construction on any of the projects in our pipeline to begin until later this year, but I expect on the order of I believe 10—and I'll have Geoff correct me—as going into engineering throughout the year.

Geoff, can you add to that, if I missed something.

Geoff Trukenbrod

Yes. No, I think that's all right and I think that—Jason, thanks for the question. It's good to hear from you.

I think the pipeline as you think about it is a function of converting our traditional projects. Jennifer mentioned the handful that are Brookfield related. There are a couple of what we kind of consider to be demo scale facilities in here as well, but the vast majority are traditional licensing projects that kind of go through our traditional staged gates of development. So you just kind of see them in our provided materials. We talk about something getting through the techno-economic assessment phase, the TEA stage, that's really the beginning step of something in our pipeline for a traditional licensing project. Those projects have been looked at in terms of what is the feedstock, what is the site? We're under confidentiality agreements with our partners, looking at their actual data and determining if those are economically viable projects. Once we have a good TEA, that's when it goes into the pipeline and then we're trying to move those into early engineering, then into later stage engineering, into construction, into operation, etc.

The timeframe from kind of TEA all the way through to the startup ranges between, say 24 and 36 months. Getting to that construction start is in that 6 to 12 month timeframe. So, if you're kind of looking at the numbers that we have in there, you can kind of do a little of your own math to kind of make some—to look at which ones should be making their way through the pipeline during the course of this year.

Jason Gabelman

Got it. So just to clarify, do you have a sense of how many projects you expect to start up in 2024?

Geoff Trukenbrod

Not that we've disclosed at this point in time.

Jason Gabelman

All right. I'll leave it there. Thanks.

Operator

Thank you. Ladies and gentlemen, this concludes our question-and-answer session. I'll turn the floor back to Dr. Holmgren for final comments.

Jennifer Holmgren

Thank you very much for joining us today at our first earnings call. We're very excited about 2023 and I hope you'll continue to join us on this journey as we continue to make progress and show that climatetech can be a profitable business.

Thank you for your time.

Operator

Thank you. This concludes today's conference. You may disconnect your lines at this time. Thank you for your participation.